



Technical Publication

Vivid™ *iq*

Software version: v204, v206, v208



Proprietary Service Manual

Direction Number: 5822851-100 English

Rev. 16

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Regulatory Requirement

Vivid *iq* complies with regulatory requirements of the following European Directive 93/42/EEC concerning medical devices.



This manual is a reference for the Vivid *iq*. It applies to all versions of the 204.x.x, v206.x.x and v208.x.x software for the Vivid *iq* ultrasound system.



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Revision history

Revision History

REV	DATE (YYYY/MM/DD)	REASON FOR CHANGE
Rev. 1	2019/08/29	Initial Release
Rev. 2	2020/03/20	Update software download feature
Rev. 3	2020/08/20	Update the packaging methods for SAGE in CH3 Update Supported probes table for E-pat in CH7 Update the replacement procedure for MST PWA in CH8 Delete Patch Installation Notes section in CH8 Update e-Delivery section in CH8 Update the ECG cables and power cord table in CH9 Update renew part list in CH9: • Add 5794927-S, 5820689-S, 5824239, 5848545 • Delete 5726047-S • Update 5721378-2-S, 5721377-2-S, 5693770-2S, 5721484-2-S, 5721342-2-S, 5721713-2-S, 5694177-2-S, 5694116-2-S, 5726620-2-S, 5721390-2-S, 5721396-2-S
Rev. 4	2020/09/24	Update User Level of the Service Desktop table in CH5
Rev. 5	2021/01/04	Add 5726620-3-S, 5863054-S, 5829265, update 5721484-2-S, 5693770-2S, 5725617-S, 5802285-4-S, remove 5762357-S in CH9; Update 'Data Transfer' in CH7; Update 'Peripheral List' in CH9; Add 'Remove procedure for 4PP probe release knob', Update 'Remove procedure for Trackpad' in CH8;
Rev. 6	2021/09/18	Add 5816033-2-S MST board and replacement procedure Add Icelandic Declaration Add GPN for supported probe Add ECG adapter cable connection Add 5790989-S cable clip and replacement procedure
Rev. 7	2021/11/1	Update cable power clip
Rev. 8	2022/02/15	Add a note for adding a note about removing the protective film when installing the 5828 MST Board.
Rev. 9	2022/06/15	Update connectivity section

REV	DATE (YYYY/MM/DD)	REASON FOR CHANGE
Rev. 10	2022/07/18	Add Ethernet protection cable connection in CH3 Add temperature warning messages in CH7 Add the following v206 new contents and combine v204/v206 PSM: (1)probe check in CH7 (2)v206 connectivity in CH3 (3)imaging insights in CH3 (4)Update FRU list (printer, ECG cable, power cord) in CH9 (5)Add R6 compatability for FRU list in CH9 (6)Add two new probes (10T-D, L4-20t-RS) in CH9
Rev. 11	2022/11/01	Update charge box graphics Update eDelivery section Correct EU/USA print kit HCAT# and Part Number Add FELLER Japan power cord Update '5786704' to '5786704-S' Update '5717315-S' to '5717315-2-S' for battery Update graphics for power cord clip
Rev. 12	2023/05/08	1.Improve structure for device update, portal update and reload SW 2.Add replacement procedure for 5719207-S SAGE cart Power Box Circuit Breaker kit 3. Update printer list 4. Update installation procedure with/without ECG adapter cable 5. Add 5725646-S 6. Update the compatibility for 5816033-2-S 7. Add 2 FRU parts of D-view touch panel 8. Update graphics for 5719211-S and 5719207-S 9. Add new CPU fan 5721481-2-S 10. Add battery replacement and disposition information

REV	DATE (YYYY/MM/DD)	REASON FOR CHANGE
Rev. 13	2024/05/06	Update to add R8 new contents: 1. Add FRU parts and the replacement procedures for premium/standard cart 2. Add new FRU parts for R8: • 5946611-S Vivid iq v208 CPU Service Kit • 5948245-S Vivid iq v208 CPU fan SVC Kit • 5721390-8-S Vivid iq v208 Flexible Arm Service Kit • 5721377-R8-S Vivid iq v208 LCD Service Kit from CPC • 5931615-R8-S Vivid iq v208 LCD Service Kit from D-view 3. Add FRU parts for View-X: • 066E8948 Epiphan Pearl Nano Broadcaster, HDMI 12G SDI • 070D2950 CABLE ETHERNET PATCH 5,00M • 5788613-40 Ethernet Cable 4. Add battery diagnostic information 5. Update upgrade kit section to add R8 upgrade kits 6. Add FRU parts for 512G SSD • 5874231-S Transcend 512G SSD 7. Add Tutorial gesture 8. Add FRU parts: • 5721397-3-S Vivid iq Main Hinge with Rubber SVC kit • 5721390-3-S Vivid iq Arm with small hinge SVC kit • Add FRU parts 5933000-S for Wireless USB Adapter A8000 • Add FRU parts for printer shelf: 5936564-S, 5946770-S • Add alternative FRU parts for ECG cables
Rev.14	2024/11/07	1. Add installation procedures for printer and DVD-RW on standard/premium cart 2. Update the compatibility for standard/premium cart to Vivid iq R6 and R8 3. Update the replacement procedure for power box assy on standard/premium cart 4. Update the replacement procedure for 4PP bracket with rear handle on standard/premium cart 5. Update e-PAT probe assessment to add crystal probes 6. Update upgrade kit section to add senario only CPU replacement is needed for upgrade 7. Add Carto Interface Setup section 8. Add new tutorial section 9. Update fan speed information 10. Add a note: Tricefy is not support R8 11. Add input CPU/GTIN number senarios and procedure
Rev.15	2025/07/20	1. Update insite auto connect and CSD for SAGE R8 2. Add a note for SSD 5874231-S 3. Add service part 5974261-S Ergonomic P2D Probe Holder 4. Update Rewrite the Serial Number and GPN/GTIN number information 5. Add HCAT#s for Charge box in table 9-12
Rev.16	2025/10/09	1. Update digital streaming information 2. Update removal Procedure for LCD Panel Assy

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Important precautions

Translation policy

WARNING

- English
(EN)
- This Service Manual is available in English only.
- If a customer's service provider requires a language other than English, it is the customer's responsibility to provide translation services.
 - Do not attempt to service the equipment unless this Service Manual has been consulted and is understood.
 - Failure to heed this Warning may result in injury to the service provider, operator or patient from electric shock, mechanical or other hazards.

AVERTISSEMENT

- Français
(FR)
- Ce manuel de maintenance est disponible en anglais uniquement.
- Si un client de la personne responsable de la maintenance demande une langue autre que l'anglais, il est de la responsabilité du client de fournir les services de traduction.
 - N'essayez pas d'effectuer vous-même la maintenance de l'équipement avant d'avoir préalablement lu et compris le manuel de maintenance.
 - Le non-respect cet avertissement peut entraîner des blessures dues à un choc électrique, une défaillance mécanique ou à d'autres éléments dangereux chez la personne en charge de la maintenance, l'opérateur ou le patient.

ADVERTENCIA

- Español
(ES)
- Este Manual de servicio está disponible en idioma inglés únicamente.
- Si un proveedor de servicio del cliente requiere un idioma distinto, es responsabilidad del cliente ofrecer servicios de traducción.
 - No intente reparar el equipo a menos que haya consultado y comprendido este Manual de servicio.
 - Si no presta atención a esta Advertencia, se pueden ocasionar lesiones al proveedor de servicio, al operador o al paciente por descarga eléctrica, por riesgos mecánicos o de otra índole.

WARNUNG

Deutsch
(DE)

Dieses Wartungshandbuch ist nur auf Englisch verfügbar.

- Wenn der Kundendiensttechniker eines Kunden eine andere Sprache als Englisch benötigt, unterliegt es der Verantwortung des Kunden eine Übersetzung anfertigen zu lassen.
- Warten Sie das Gerät nur, wenn Sie dieses Wartungshandbuch gelesen und verstanden haben.
- Die Nichtbeachtung dieses Warnhinweises kann zu Verletzungen des Kundendiensttechnikers, Anwenders oder Patienten durch Stromschläge, mechanische oder andere Gefahren führen.

AVVERTENZA

italiano
(IT)

Il presente Manuale di assistenza è disponibile solo in inglese.

- Se il fornitore di servizi di un cliente ne richiede una copia in una lingua diversa dall'inglese, è responsabilità del cliente fornire il servizio di traduzione.
- Non tentare di riparare l'apparecchio se questo Manuale di assistenza non è stato letto e compreso.
- Il mancato rispetto di questa avvertenza può comportare il rischio di lesioni al fornitore di servizi, all'operatore o al paziente causate da scosse elettriche o da pericoli di origine meccanica o di altro tipo.

WAARSCHUWING

Nederlands
(NL)

Deze servicehandleiding is alleen beschikbaar in het Engels.

- Als de serviceleverancier van een klant vraagt om een andere taal dan Engels, is het de verantwoordelijkheid van de klant om een vertaalde versie te bieden.
- Probeer geen onderhoud aan de apparatuur uit te voeren tenzij deze servicehandleiding is geraadpleegd en begrepen.
- Het niet opvolgen van deze waarschuwing kan bij de serviceleverancier, de operator of de patiënt leiden tot letsel door elektrische schokken, mechanische of andere gevaren.

ADVERTÊNCIA

Português
(PT-BR)

Este Manual de Manutenção está disponível apenas em Inglês.

- Caso um prestador de serviços do cliente solicite o manual em idioma diferente do inglês, é de responsabilidade do cliente o fornecimento de serviços de tradução.
- Não tente realizar a manutenção do equipamento antes de ler e compreender este Manual de manutenção.
- O não cumprimento desta advertência pode resultar em danos por choque elétrico e riscos mecânicos para o prestador de serviços, operador ou paciente.

HOIATUS!

Eesti
(ET)

- Service Manual (Hooldusjuhend) on saadaval ainult ingliskeelsena.
- Kui kliendi teenusepakkuja nõue on, et juhend oleks mõnes muus keeles, korraldab juhendi tõlkimise klient.
 - Tutvuge enne seadme hooldustööde tegemist kindlasti juhendiga Service Manual (Hooldusjuhend).
 - Selle nõude eiramise korral võib teenindaja, kasutaja või patsient saada elektrilöögi, samuti võivad kaasneda muud ohud.

OPOZORILO

Slovenščina
(SL)

- Ta servisni priročnik je na voljo samo v angleščini.
- Če ponudnik servisnih storitev za stranko potrebuje navodila v drugem jeziku, mora stranka sama poskrbeti za prevajanje.
 - Ne poskušajte servisirati opreme, ne da bi prej prebrali in razumeli servisni priročnik.
 - Če tega opozorila ne upoštevate, obstaja nevarnost električnega udara, mehanskih ali drugih nevarnosti in posledičnih poškodb ponudnika servisnih storitev, uporabnika opreme ali pacienta.

警告

日本語
(JA)

- このサービスマニュアルは英語版のみ提供されています。
- お客様の保守担当者が英語以外のマニュアルを必要とされる場合は、お客様の負担にて翻訳サービスをご利用ください。
 - 装置の保守を行う前に、必ずサービスマニュアルを読み、内容を理解してください。
 - この警告に注意を払わない場合、保守担当者やオペレータ、患者に対して、電気ショック、機械またはその他の危険による傷害が発生する恐れがあります。

警告

中文
简体
(ZH-CN)

- 本维修手册仅提供英文版。
- 如果客户需要其它语种版本，请自行翻译。
 - 在维修机器前，请务必阅读并完全理解本维修手册。
 - 若违反本警告，有可能会给维修提供商、操作员或患者带来电击伤害、机械损伤或其它危害。

VARNING

Svenska
(SV)

Den här servicehandboken finns endast på engelska.

- Om en kunds servicetekniker kräver ett annat språk än engelska är det kundens ansvar att tillhandahålla en översatt version.
- Försök inte att utföra service på utrustningen om du inte har läst igenom och förstått den här servicehandboken.
- Om du inte tar hänsyn till den här varningen kan serviceteknikern, operatören eller patienten utsättas för elektriska stötar eller mekaniska eller andra faror, vilket kan leda till personskador.

警告

繁體中文
(ZH-TW)

此服務手冊僅推出英文版。

- 若客戶的維修人員需要英文以外的其他語言版本，客戶需自行負責提供翻譯服務。
- 在詳閱此服務手冊並充分理解其內容之前，請勿試圖開始維修設備。
- 若忽視此警告，可能導致維修人員、操作人員或病患因為觸電、機械問題或其他危險而受傷。

경고

한국어
(KO)

이 서비스 설명서는 영어로만 제공됩니다.

- 고객의 서비스 공급자가 영어 이외의 언어를 요구하는 경우 번역 서비스를 제공할 책임은 고객에게 있습니다.
- 이 서비스 설명서를 참조 및 이해하지 못한 경우 장비를 만지지 마십시오.
- 이 경고를 무시한 경우 서비스 공급자, 오퍼레이터 또는 환자가 감전, 기계적 위험 또는 기타 위험으로 인한 부상을 입을 수 있습니다.

ПРЕДУПРЕЖДЕНИЕ

На русском языке
(RU)

Данное руководство по обслуживанию доступно только на английском языке.

- Если специалисту по техническому обслуживанию клиента требуется документация на каком-либо другом языке, ответственность за выполнение перевода возлагается на клиента.
- Приступайте к обслуживанию оборудования только после того, как изучите данное руководство по обслуживанию и полностью поймете его содержание.
- Несоблюдение данного требования может привести к травмированию специалиста по техническому обслуживанию, пользователя или пациента вследствие поражения электрическим током, механических и прочих повреждений.

OSTRZEŻENIE

Polski
(PL)

Niniejszy podręcznik serwisowy jest dostępny wyłącznie w języku angielskim.

- Jeżeli dostawca usług klienta posługuje się językiem innym niż angielski, za zapewnienie usług tłumaczeniowych odpowiada klient.
- Przed przystąpieniem do czynności serwisowych należy zapoznać się z informacjami zawartymi w niniejszym podręczniku serwisowym i je zrozumieć.
- W przeciwnym wypadku dostawca usług, operator lub pacjent mogą odnieść obrażenia spowodowane porażeniem prądem elektrycznym, działaniem elementów mechanicznych lub innymi zagrożeniami.

ΠΡΟΕΙΔΟΠΟΙΗΣΗ

Ελληνικά
(EL)

Το παρόν Εγχειρίδιο σέρβις διατίθεται μόνο στα Αγγλικά.

- Εάν ο πάροχος σέρβις του πελάτη απαιτεί γλώσσα εκτός των Αγγλικών, η παροχή μεταφραστικών υπηρεσιών αποτελεί ευθύνη του πελάτη.
- Μην επιχειρήσετε να επισκευάσετε τον εξοπλισμό εάν πρώτα δεν συμβουλευτείτε και κατανοήσετε το παρόν Εγχειρίδιο σέρβις.
- Σε περίπτωση μη τήρησης της παρούσας προειδοποίησης, ενδέχεται να προκληθεί τραυματισμός στον πάροχο σέρβις, το χειριστή ή τον ασθενή εξαιτίας ηλεκτροπληξίας καθώς και μηχανικών ή άλλων κινδύνων.

FIGYELMEZTETÉS

Magyar
(HU)

A szervizkézikönyv kizárólag angol nyelven érhető el.

- Amennyiben az ügyfél szolgáltatójának nem felel meg az angol nyelvű dokumentáció, úgy a fordításról az ügyfélnek kell gondoskodnia.
- Kizárólag úgy lászon hozzá a berendezés karbantartásához, hogy elolvasta és megértette a szervizkézikönyvben foglaltakat.
- Ezen figyelmeztetés figyelmen kívül hagyása esetén a szolgáltató, a kezelő vagy a páciens áramütést, mechanikus sérülést vagy más veszély által okozott személyi sérülést szenvedhet.

VAROVANIE

Slovenčina
(SK)

Táto servisná príručka je dostupná iba v anglickom jazyku.

- Ak poskytovateľ služieb zákazníkovi vyžaduje iný jazyk ako anglický jazyk, jeho povinnosťou je zabezpečiť prekladateľské služby.
- Zariadenie nepoužívajte bez prečítania a porozumenia tejto servisnej príručky.
- Nedodržanie tejto výstrahy môže viesť k zraneniu poskytovateľa služieb, operátora alebo pacienta spôsobeného elektrickým šokom, mechanickým alebo iným nebezpečenstvom.

VÝSTRAHA

česky

(CZ)

Tato servisní příručka je k dispozici pouze v angličtině.

- Pokud poskytovatel služby zákazníkovi požaduje jiný jazyk než angličtinu, je odpovědností zákazníka poskytnout služby překladu.
- Nepokoušejte se provádět servis zařízení, dokud si neprostudujete a neporozumíte servisní příručce.
- Nevěnování pozornosti této výstraze může způsobit poskytovateli služeb, obsluze nebo pacientovi úraz elektrickým proudem, mechanická nebo jiná nebezpečí.

UYARI

Türkçe

(TK)

Servis Kılavuzu yalnızca İngilizce olarak mevcuttur.

- Müşterinin servis sağlayıcısı için kılavuzun İngilizce dışında başka bir dile çevrilmesi gerekiyorsa çeviri hizmeti sağlamak müşterinin sorumluluğudur.
- Bu Servis Kılavuzu'na bakıp talimatları anlamadan ekipmanı kullanmaya çalışmayın.
- Bu Uyarının göz ardı edilmesi servis sağlayıcısının, operatörün veya hastanın, elektrik çarpması, mekanik arıza ya da diğer tehlikeler nedeniyle yaralanmasına neden olabilir.

ADVARSEL

Dansk

(DA)

Denne servicemanual fås kun på engelsk.

- Hvis en kundes tjenesteudbyder kræver et andet sprog end engelsk, er det kundens ansvar at sørge for oversættelsesydelse.
- Forsøg ikke at udføre service på udstyret, medmindre denne servicemanual er læst og forstået.
- Manglende overholdelse af denne advarsel kan medføre skade på serviceudbyderen, operatøren eller patienten som følge af elektrisk stød, mekaniske eller andre farer.

ADVARSEL

Norsk

(NO)

Denne servicehåndboken er bare tilgjengelig på engelsk.

- Hvis en kundes tjenestetilbyder krever et annet språk enn engelsk, er det kundens ansvar å tilby oversettelsestjenester.
- Ikke forsøk å utføre service på utstyret før denne servicehåndboken er lest og forstått.
- Dersom det ikke tas hensyn til denne advarselen, kan det føre til skader på tjenestetilbyderen, operatøren eller pasienten fra elektrisk støt, mekaniske eller andre farer.

VAKAVA VAROITUS

Suomi
(FI)

Tämä huolto-opas on saatavana vain englanniksi.

- Jos asiakkaan palveluntarjoaja tarvitsee oppaan jollain muulla kielellä, käännöspalveluiden hankkiminen on asiakkaan vastuulla.
- Laitetta ei saa huoltaa ellei huolto-oppaaseen ole sitä ennen tutustuttu huolellisesti.
- Jos tätä varoitusta ei noudateta, palveluntarjoaja, käyttäjä tai potilas saattaa saada sähköiskun, ja saattaa aiheutua mekaanisia tai muita vaurioita.

ПРЕДУПРЕЖДЕНИЕ

Български
(BG)

Настоящото Сервизно ръководство се предлага само на английски език.

- Ако доставчикът на сервизни услуги на клиента изисква ръководство на език, който се различава от английския, клиентът има отговорност да осигури адекватен превод.
- Не правете опити за сервиз на оборудването, без да проверите и да разберете съветите в Сервизното ръководство.
- Неспазването на това предупреждение може да доведе до нараняване на доставчика на сервизни услуги, оператора или пациента вследствие на токов удар, механична или други опасности.

AVERTISMENT

Română
(RO)

Acest manual de service este disponibil doar în engleză.

- Dacă furnizorul de servicii al unui client solicită altă limbă decât engleza, este responsabilitatea clientului să ofere servicii de traducere.
- Nu încercați să efectuați lucrări de service asupra echipamentului, în afară de cazul când ați consultat acest manual de service și l-ați înțeles.
- Nerespectarea acestui avertisment poate avea ca rezultat rănirea furnizorului de servicii, a operatorului sau a pacientului ca urmare a electrocutării, pericolelor mecanice sau a altor pericole.

UPOZORENJE

Hrvatski
(HR)

Ovaj servisni priručnik dostupan je samo na engleskom jeziku.

- Ako klijentov serviser zahtijeva jezik koji nije engleski, odgovornost klijenta je pružiti usluge prijevoda.
- Nemojte pokušavati servisirati opremu ako niste pročitali i razumjeli servisni priručnik.
- Ako ne poštujuete ovo upozorenje, može doći do ozljede serviser, operatera ili pacijenta prouzročene strujnim udarom, mehaničkim i drugim opasnostima.

ĪSPĒJIMAS

Lietuvių k.
(LT)

- Šis priežiūros vadovas galimas tik anglų kalba.
- Jei kliento paslaugų teikėjas reikalauja kitos kalbos nei anglų, klientas atsako už vertimo paslaugos teikimą.
 - Atlikite įrangos priežiūrą tik gerai susipažinę su priežiūros vadovu ir jį supratę.
 - Nesilaikant šio įspėjimo galimas paslaugos teikėjo, operatoriaus ar paciento sužeidimas dėl elektros šoko, mechaninio ar kito pavojaus.

BRĪDINĀJUMS

Latviski
(LV)

- Šī apkalpes rokasgrāmata ir pieejama tikai angļu valodā.
- Ja klienta pakalpojumu sniedzējam ir nepieciešama cita valoda, kas nav angļu valoda, klienta pienākums ir nodrošināt tulkojumu.
 - Nemēģiniet apkalpot aprīkojumu, ja apkalpes rokasgrāmata nav izlasīta un izprasta.
 - Ja šis brīdinājums netiek ievērots, pakalpojumu sniedzējs, operators vai pacients var gūt traumas no elektrošoka vai var rasties mehānisks vai cita veida apdraudējums.

UPOZORENJE

Srpski
(SR)

- Ovaj priručnik za servisiranje dostupan je samo na engleskom jeziku.
- Ako klijentov serviser zahteva jezik koji nije engleski, odgovornost je na klijentu da pruži usluge prevođenja.
 - Nemojte da pokušavate da servisirate opremu ako prethodno niste pročitali i razumeli ovaj priručnik.
 - Ako ne poštujete ovo upozorenje, može doći do povređivanja serviser, operatera ili pacijenta uzrokovanog električnim udarom, mehaničkim i drugim opasnostima.

AVISO

Português
(Portugal)
(PT-PT)

- Este manual de assistência está disponível apenas em inglês.
- Se o prestador de serviços de assistência do cliente necessitar do manual noutro idioma, a disponibilização dos serviços de tradução é da responsabilidade do cliente.
 - Não tente reparar o equipamento se não tiver consultado e compreendido este manual de assistência.
 - O não cumprimento das instruções constantes neste aviso pode resultar em ferimentos no prestador de serviços de assistência, no operador ou no paciente devido a choques eléctricos, perigos mecânicos ou outros problemas.

ПОПЕРЕДЖЕННЯ

Цей посібник із технічного обслуговування доступний лише англійською мовою.

Українська
(UK)

- Якщо постачальнику послуг із технічного обслуговування потрібна інформація мовою, відмінною від англійської, відповідальність за надання послуг перекладу несе користувач.
- Технічне обслуговування обладнання можна виконувати лише після ознайомлення з посібником із технічного обслуговування та усвідомлення його змісту.
- Недотримання цього попередження може призвести до травм постачальника послуг, оператора або пацієнта, спричинених дією електричного струму, механічних або інших пошкоджень.

PERINGATAN

Bahasa
Indonesia
(ID)

Panduan Servis ini hanya tersedia dalam Bahasa Inggris.

- Jika penyedia layanan pelanggan memerlukan bahasa di luar Bahasa Inggris, maka pelanggan bertanggung jawab untuk memberikan layanan tersebut.
- Jangan mencoba menyervis peralatan ini, kecuali Panduan Servis ini telah dijadikan rujukan dan dipahami dengan baik.
- Kelalaian memperhatikan Peringatan ini dapat menyebabkan cedera terhadap penyedia layanan, operator, atau pasien akibat bahaya kejutan listrik, mekanik, dan bahaya lainnya.

คำเตือน

ไทย
(TH)

คู่มือซ่อมบำรุงนี้เฉพาะภาษาอังกฤษเท่านั้น

- หากผู้ให้บริการของคุณต้องการคำแนะนำนอกเหนือจากภาษาอังกฤษ กรุณาติดต่อเป็นผู้รับผิดชอบในการจัดเตรียมคู่มือซ่อมบำรุงฉบับแปล
- โปรดอย่าซ่อมอุปกรณ์โดยไม่ศึกษา และทำความเข้าใจคู่มือซ่อมบำรุงนี้
- หากไม่ปฏิบัติตามคำเตือนนี้ อาจส่งผลให้ผู้ให้บริการ ผู้ใช้งานอุปกรณ์ หรือผู้ป่วยได้รับบาดเจ็บจากไฟฟ้าช็อต อันตรายจากกลไกของอุปกรณ์ หรืออันตรายอื่น ๆ

CẢNH BÁO

(Tiếng Việt)

Hướng dẫn sử dụng dịch vụ này chỉ sẵn dùng bằng tiếng Anh.

- Nếu nhà cung cấp dịch vụ của khách hàng yêu cầu ngôn ngữ khác ngoài tiếng Anh, thì khách hàng phải có trách nhiệm cung cấp các dịch vụ dịch thuật.
- Không được tìm cách sửa chữa thiết bị trừ khi đã tham khảo và hiểu rõ Hướng dẫn sử dụng dịch vụ này.
- Bỏ qua lời cảnh báo này có thể gây thương tích cho nhà cung cấp dịch vụ, nhân viên vận hành hoặc bệnh nhân do sốc điện, những nguy hiểm về máy móc hoặc yếu tố khác.

ЕСКЕРТУ

(Қазақ тілінде)

Осы қызмет көрсету нұсқаулығы тек ағылшын тілінде қолжетімді.

- Егер тұтынушылардың қызметтер жеткізушісі ағылшын тілінен басқа тілді талап етсе, аудару қызметтерімен қамтамасыз ету тұтынушының жауапкершілігіне кіреді.
- Осы қызмет көрсету нұсқаулығын түсініп, ол туралы кеңес алмайынша жабдыққа қызмет көрсетуге тырыспаңыз.
- Осы ескертуді орындамау электр тогының соғуы, механикалық немесе басқа да қауіптер салдарынан қызметтер жеткізушісінің, оператордың немесе емделушінің жарақаттануына алып келуі мүмкін.

BABALA

(Tagalog)

Available lamang sa Ingles ang Manwal ng Serbisyo ng ito.

- Kung ang kailangan lamang ng tagabigay ng serbisyo ng kustomer ng wika maliban sa Ingles, responsibilidad ng kustomer na magbigay ng serbisyo sa pagsasalin wika nito.
- Huwag subukan na iserbisyo ang mga kasangkapan maliban kung nakonsulta ang nauunawaan itong Manwal ng Serbisyo.
- Ang pagkabigong maunawaan ang Babalang ito ay maaring maging resulta ng pinsala sa tagabigay ng serbisyo, nagpapagana o pasyente mula sa pagkakakoryente, mekanikal o iba pang peligro.

VIÐVÖRUN

(Íslenska)

Þessi þjónustuhandbók er aðeins fánleg á ensku.

- Ef þjónustuaðili viðskiptavinarar þarf annað tungumál en ensku er það á ábyrgð viðskiptavinarins að veita þýðingarþjónustu.
- Ekki reyna að þjónusta búnaðinn nema þessir þjónustuhandbækur hafi verið skoðaðir og skilið.
- Ef ekki er gætt að þessari viðvörðun getur það valdið meiðslum á þjónustuaðila, stjórnanda eða sjúklingi vegna raflosts, vélrænni hættu eða annarri hættu.

Damage in transportation

All packages should be closely examined at time of delivery. If damage is apparent, write "Damage In Shipment" on ALL copies of the freight or express bill BEFORE delivery is accepted or "signed for" by a GE representative or hospital receiving agent. Whether noted or concealed, damage MUST be reported to the carrier immediately upon discovery, or in any event, within 14 days after receipt, and the contents and containers held for inspection by the carrier. A transportation company will not pay a claim for damage if an inspection is not requested within this 14 day period.

Certified electrical contractor statement - For USA Only

All electrical Installations that are preliminary to positioning of the equipment at the site prepared for the equipment shall be performed by licensed electrical contractors. Other connections between pieces of electrical equipment, calibrations and testing shall be performed by qualified GE Healthcare personnel. In performing all electrical work on these products, GE will use its own specially trained field engineers. All of GE's electrical work on these products will comply with the requirements of the applicable electrical codes.

The purchaser of GE equipment shall only utilize qualified personnel (i.e., GE's field engineers, personnel of third-party service companies with equivalent training, or licensed electricians) to perform electrical servicing on the equipment.

Omission and errors

If there are any omissions, errors or suggestions for improving this documentation, contact the GE Healthcare Global Documentation Group with specific information listing the system type, manual title, part number, revision number, page number and suggestion details.

**Mail the
information to:**

GE Medical Systems (China) Co., Ltd.
No. 19 Changjiang Road
Wuxi National Hi-Tech Dev. Zone
214028 Jiangsu China

GE employees should use TrackWise to report service documentation issues.

These issues will then be in the internal problem reporting tool and communicated to the writer.

Service Safety Considerations



DANGER

DANGEROUS VOLTAGES, CAPABLE OF CAUSING DEATH, ARE PRESENT IN THIS EQUIPMENT. USE EXTREME CAUTION WHEN HANDLING, TESTING AND ADJUSTING.



WARNING

Use all Personal Protection Equipment (PPE) such as gloves, safety shoes, safety glasses, and kneeling pad, to reduce the risk of injury.

For a complete review of all safety requirements, refer to Chapter 1, Safety Considerations section of the latest version of Vivid *iq* Proprietary Service Manual, Direction 5822851-100 English.

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Index

Chapter 1

Introduction

This chapter describes important issues related to safely servicing the Ultrasound system. The service provider must read and understand all the information presented here before installing or servicing the units.

Overview

Contents in this chapter

- 'Overview' on *page 1-2*
- 'Manual Overview' on *page 1-3*
- 'Important conventions' on *page 1-8*
- 'Product icons' on *page 1-12*
- 'Labels locations' on *page 1-13*
- 'Safety considerations' on *page 1-15*
- 'Dangerous procedure warnings' on *page 1-23*
- 'Lockout/Tagout (LOTO) requirements' on *page 1-24*
- 'Returning probes and repair parts' on *page 1-25*
- 'EMC, EMI and ESD' on *page 1-27*
- 'Customer assistance' on *page 1-29*

Manual Overview

This manual provides installation and service information for the Vivid *iq* Ultrasound system. It is divided in ten chapters as shown below.

Contents in this manual

The manual is divided into ten chapters.

In the beginning of the manual, before chapter 1, you will find the *Revision overview*, the *Important precautions* including *Translation policy*, *Damage in transportation*, *Certified electrical contractor statement*, *Omission & errors*, *Service safety considerations* and *Legal notes*, and the *Table of Contents (TOC)*.

An Index has been included after Chapter 10.

Table 1-1: Contents in this manual

Chapter number	Chapter title	Description
1.	Introduction	Contains a content summary and warnings.
2.	Site preparations	Contains pre-setup requirements for the Vivid <i>iq</i> .
3.	System Setup	Contains setup procedure with procedure checklist for the system.
4.	General Procedures and Functional Checks	Contains functional checks that must be performed as part of the installation, or as required during servicing and periodic maintenance.
5.	Components and Functions (Theory)	Contains block diagrams and functional explanations of the electronics.
6.	Service Adjustments	Contains instructions on how to make any available adjustments to the Vivid <i>iq</i> .
7.	Diagnostics/Troubleshooting	Provides procedures for running diagnostic or related routines for the Vivid <i>iq</i> .

Table 1-1: Contents in this manual (Continued)

Chapter number	Chapter title	Description
8.	Replacement procedures	Provides disassembly procedures and reassembly procedures for all changeable FRU.
9.	Renewal Parts	Contains a complete list of replacement parts for Vivid <i>iq</i> .
10.	Care & Maintenance	Provides periodic maintenance procedures for Vivid <i>iq</i> .
N/A	Index	A quick way to the topic you're looking for.

Typical users of the Proprietary Service Manual

- GEHC Service Personnel (setup, maintenance, etc.)
- GEHC Online Center Personnel
- Licensed Hospital's Service Providers

Vivid iq models covered by this manual

Table 1-2: Vivid iq v204 Model Designations

Model Number	Description
H48572BA	Vivid iq v204
H48572BB	Vivid iq v204 Premium
H48572BC	Vivid iq v204 4D
H48572BD	Vivid iq v204 PoC
H48572BE	Vivid iq R4 Generic console
H48572BF	Vivid iq v204_US
H48572BG	Vivid iq v204 US_Premium
H48572BH	Vivid iq R3 US 4D
H48572BJ	Vivid iq v204_US Poc
H48562BK	Vivid iq v204 Vet console
H48562BL	Vivid iq v204 Premium Vet console
H48562BW	Vivid iq v204 4D Vet console

Table 1-3: Vivid iq v206 Model Designations

Model Number	Description
H48932BA	Vivid iq v206 PoC
H48932BB	Vivid iq v206 Standard
H48932BC	Vivid iq v206 Premium
H48932BD	Vivid iq v206 4D
H48942BE	Vivid iq v206 US PoC
H48942BF	Vivid iq v206 US Standard
H48942BG	Vivid iq v206 US Premium
H48942BH	Vivid iq v206 US 4D
H48942BJ	Vivid iq v206 Vet Console
H48942BK	Vivid iq v206 Premium Vet Console
H48942BL	Vivid iq v206 4D Vet Console

Vivid iq models covered by this manual(continued)

Table 1-4: Vivid iq v208 Model Designations

Model Number	Description
H48232DD	Vivid iq v208
H48232DF	Vivid iq v208 Premium
H48232DG	Vivid iq v208 4D
H48232DH	Vivid iq v208 US
H48232DK	Vivid iq v208 US Premium
H48232DL	Vivid iq v208 US 4D
H48232DM	Vivid iq Vet v208 console
H48232DN	Vivid iq Vet v208 Premium console
H48232DP	Vivid iq Vet v208 4D console

NOTE: When not otherwise specified, the contents of this manual applies to all Vivid iq models.

Product description

Overview of the Vivid *iq* Ultrasound system

This Vivid *iq* is a high performance digital ultrasound imaging system with total data management.

The Ultrasound system provides image generation in 2D, Color Doppler, Power Doppler, M-Mode, Color M-Mode, PW and 4D, Tissue Velocity imaging, and Contrast applications.

The fully digital architecture of the Vivid *iq* allows optimal usage of all scanning modes and probe types throughout the full spectrum of operating frequencies.

Signal flows from the Probe Connector Panel through the Ultrasound system and finally to the monitor and peripherals.

System configuration is stored on the hard drive.

All necessary software is loaded from the hard drive on power up.

FRUs for the ultrasound system

Please refer to Chapter 9 in this manual.

How to turn the Vivid *iq* ON and OFF

Please refer to:

- [‘Power ON/Boot Up’ on page 4-5](#)
- [‘Power shut down’ on page 4-9](#)

Purpose of the operator manual(s)

The operator manuals should be fully read and understood before operating the Vivid *iq*.

The online versions of the operator manuals are available via the Help function on Vivid *iq*’s Operating Panel.

The translated user manuals are available as PDF files on the USB Flash Drive (UFD) delivered with the Vivid *iq*.

Important conventions

Conventions used in book

Important conventions, used in this document, are described next.

Model designations

This manual covers the Vivid *iq* Ultrasound systems listed in:
[‘Vivid iq models covered by this manual’ on page 1-5.](#)

Icons

Pictures, or icons, are used wherever they will reinforce the printed message. The icons, labels, and conventions used on the product and in the service information are described in this chapter.

Safety precaution messages

Various levels of safety precaution messages may be found on the equipment and in the service information. The different levels of concern are identified by a flag word that precedes the precautionary message. Known or potential hazards to personnel are labeled in one of three ways:

- DANGER
- WARNING
- CAUTION



Danger is used to indicate the presence of a hazard that will cause severe personal injury or death if the instructions are ignored.



Warning is used to indicate the presence of a hazard that can cause severe personal injury and property damage if instructions are ignored.



Caution is used to indicate the presence of a hazard that will or can cause minor personal injury and property damage if instructions are ignored. Equipment damage possible.

NOTE: *Notes are used to provide important information about an item or a procedure.*

NOTE: *Be sure to read the notes; the information contained in a note can often save you time or effort.*

Standard hazard icons

Important information will always be preceded by either the exclamation point (!) contained within a triangle, or the symbols for “Danger”, “Warning” or “Caution”, as seen throughout this chapter. In addition to text, several different graphical icons (symbols) may be used to make you aware of specific types of hazards that could possibly cause harm. Even if a symbol isn’t used in this manual, it may be included for your reference.

Table 1-5: Standard hazard icons

	ELECTRICAL
	MECHANICAL
	RADIATION
	LASER
	HEAT
	PINCH

NOTE: *Even if a symbol isn’t used on the product or in this manual, it may be included for your reference.*

Standard Icons that indicate that a special procedure is to be used

Some others icons make you aware of specific procedures that should be followed.

Table 1-6: Standard Icons that indicates that a special procedure is to be used

Avoid Static Electricity	Tag and Lock Out	Wear Eye Protection
		
Hand Protection	Foot Protection	Wear Eye Protection
		

Be sure to read the notes; the information contained in a note can often save you time or effort.

Product icons

It is important to refer to the current revision of the Ultrasound system's User Manual for a full list of product labels prior to servicing the system.

Labels locations

Introduction

It is important to refer to the current revision of the Ultrasound system's User Manual for a full list of product labels prior to servicing the system.

Vivid *iq* labels are provided in English.

The labels are at the bottom of the system. The label content may be different for different regions and systems. Please refer to the labels on the system for the actual content.

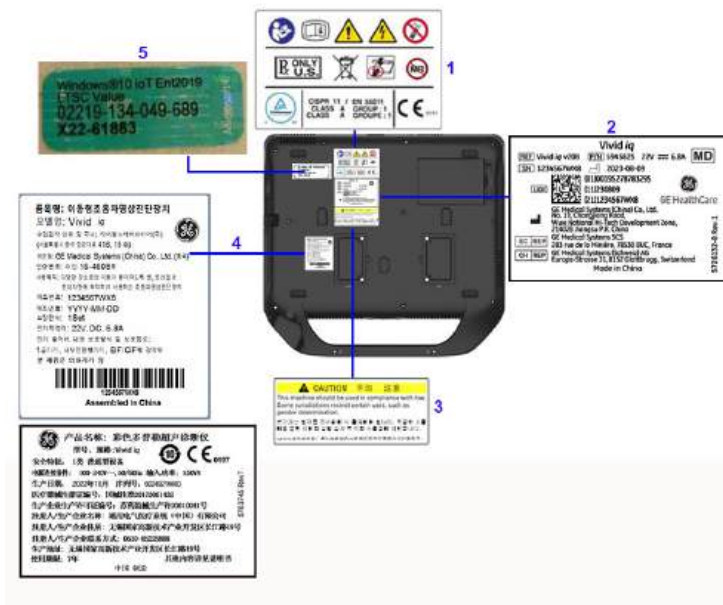


Figure 1-1. Vivid *iq* label location

Introduction(continued)

- 1. Safety label
- 2. Rating plate
- 3. Gender label (for China, Korea, and India only)
- 4. Rating plate for Korea or China (for Korea and China only)
- 5. Windows sticker

Table 1-7: Label Icons

Label/Icon	Purpose/Meaning	Location
	Every system has a unique marking for identification, the Unique Device Identification (UDI) Label. The UDI label consists of a series of alpha-numeric characters and barcode which uniquely identify the Vivid iq system as a medical device manufactured by General Electric. Scan or enter the UDI information into the patient health record as required by country-specific laws.	Rating plate
	Serial Number.	Rating plate

NOTE: If the new label is needed during the service activities, please click “Ask an Expert” to submit the case in the support central: http://supportcentral.ge.com/products/sup_products.asp?prod_id=44177.

Safety considerations

Contents in this section

- 'Introduction' on [page 1-15](#)
- 'Human Safety' on [page 1-15](#)
- 'Mechanical safety' on [page 1-18](#)
- 'Electrical safety' on [page 1-21](#)

Introduction

The following safety precautions must be observed during all phases of operation, service and repair of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual, violates safety standards of design, manufacture and intended use of the equipment.

Human Safety

- Operating personnel must not remove the system covers.
- Servicing should be performed by authorized personnel only.

Only personnel who have participated in a Vivid *iq* Training Seminar are authorized to service the equipment.



DANGEROUS VOLTAGES, CAPABLE OF CAUSING DEATH, ARE PRESENT IN THIS EQUIPMENT. USE EXTREME CAUTION WHEN HANDLING, TESTING AND ADJUSTING.



If the covers are removed from an operating Vivid *iq*, some metal surfaces may be warm enough to pose a potential heat hazard if touched, even while in shutdown mode.

Human Safety(continued)



WARNING

Because of the limited access to cabinets and equipment in the field, placing people in awkward positions, GE has limited the lifting weight for one person in the field to 16 KG (35 LBS). Anything over 16 KG (35 LBS) requires 2 people.



WARNING

Have two people available to deliver and unpack the Vivid *iq*.

Attempts to move the Ultrasound system considerable distances or on an incline by one person could result in injury or damage or both.



WARNING

Explosion Warning

DO NOT operate the equipment in an explosive atmosphere. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.



WARNING

DO NOT substitute parts or modify equipment

Because of the danger of introducing additional hazards, ONLY install GE approved parts. DO NOT perform any unauthorized modification of the equipment.



WARNING

Ensure that the Ultrasound system is turned off and unplugged

Wait for at least 20 seconds for capacitors to discharge as there are no test points to verify isolation. The amber light on the OP panel ON/OFF button will turn off.

Ultrasound system components may be energized. Always refer to the Ultrasound system's Proprietary Service Manual for LOTO warnings and cautions

Human Safety(continued)



WARNING

Risk of electrical shock, Ultrasound system must be turned off and disconnected from power source. Cord must be controlled at all times.

Wait for at least 20 seconds for capacitors to discharge as there are no test points to verify isolation. The amber light on the OP panel on/off button will turn off.

Ultrasound System components may be energized. Always refer to the Ultrasound system's Proprietary Service Manual for LOTO warnings and cautions



WARNING

Use all Personal Protection Equipment (PPE) such as gloves, safety shoes, safety glasses, and kneeling pad, to reduce the risk of injury.



WARNING

Beware of possible sharp edges on all mechanical parts. If sharp edges are encountered, the appropriate PPE should be used to reduce the risk of injury.



WARNING

Wear all PPE including gloves as indicated in the chemical MSDS.

Mechanical safety



WARNING

While the software install procedure is designed to preserve data, you should save any patient data, images, system setups to removable media or hardcopy before doing a software upgrade.



WARNING

Ultrasound probes are highly sensitive medical instruments that can easily be damaged by improper handling. Use care when handling and protect from damage when not in use. **Do NOT** use a damaged or defective probe. Failure to follow these precautions can result in serious injury and equipment damage.



WARNING

Never use a probe that has fallen to the floor. Even if it looks OK, it may be damaged.



WARNING

When the Ultrasound system is raised for a repair or moved along any incline, use extreme caution since it may become unstable and tip over.



CAUTION

Take extra care when moving the system.

The Vivid *iq* weighs approximately 65 kg (144 lbs) or more, depending on installed peripherals, when ready for use. To avoid possible injury and equipment damage when transporting from one area of use to another:

- Be sure the pathway is clear.
- Limit movement to a slow careful walk.
- Use two or more persons to move the equipment on inclines or long distance.



CAUTION

Before you move or transport the Ultrasound system, make sure to lock the LCD monitor arm firmly and flip down the monitor to prevent damage to the Ultrasound system.

Mechanical safety(continued)



CAUTION

To avoid injury when you move the LCD monitor and the monitor arm, do not put your finger, hand, or object on the joint of the monitor or the monitor arm.



CAUTION

Ensure that nobody touches the console arm when moving the operator panel.



CAUTION

Do not move the Ultrasound system if the Operator Panel is in unlocked position.



CAUTION

Do not transport Vivid *iq* in a vehicle without locking the casters (wheels) and securing it as described in chapter 4.



CAUTION

Use protective glasses during drilling, filing smooth surfaces, and during all other work where eyes need protection.



CAUTION

Use safety shoes when doing work where there is any chance of foot injury.



Mechanical safety(continued)



CAUTION

Use protective gloves when working with sharp edges or when directed to wear PPE during a removal/replacement procedure.



CAUTION

Be careful not to pinch any of the cables.

NOTE: *Special care should be taken when transporting the Ultrasound system in a vehicle:*

- Before transporting, place the system in its special storage case.
- Lock the wheels (brake)
- Ensure that the system is firmly secured while inside the vehicle.
- Secure system with straps or as directed otherwise to prevent motion during transport.
- Prevent vibration damage by driving cautiously. Avoid unpaved roads, excessive speeds, and erratic stops or starts.

Electrical safety

Safe practices

Follow these guidelines to minimize shock hazards whenever you are using the Ultrasound system:

- To minimize shock hazard, the equipment chassis must be connected to an electrical ground.
- The Ultrasound system is equipped with a three-conductor AC power cable. This must be plugged into an approved electrical outlet with safety ground.
- The power outlet used for this equipment should not be shared with other types of equipment.
- Both the system power cable and the power connector must meet international electrical standards



Connecting a Vivid *iq* to the wrong voltage level will most likely destroy it.

Probes

Follow these guidelines before connecting a probe to the Ultrasound system:

- Inspect the probe prior to each use for damage or degradation to the:
 - housing
 - cable strain relief
 - lens
 - seal
 - connector pins
 - locking mechanism
- Do not use a damaged or defective probe.
- Never immerse the probe connector or adapter into any liquid.
- The system has more than one type of probe port. Use the appropriate probe port designed for the probe you are connecting.

Peripherals

Refer to the Patient Safety Environment section of the User's Manual for peripheral isolation information.

Dangerous procedure warnings

Warnings, such as the example below, precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed.



DANGER



DANGEROUS VOLTAGES, CAPABLE OF CAUSING DEATH, ARE PRESENT IN THIS EQUIPMENT. USE EXTREME CAUTION WHEN HANDLING, TESTING AND ADJUSTING.



WARNING

If the covers are removed from an operating Vivid *iq*, some metal surfaces may be warm enough to pose a potential heat hazard if touched, even while in shutdown mode.



WARNING

Explosion Warning

DO NOT operate the equipment in an explosive atmosphere. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.



WARNING

DO NOT substitute parts or modify equipment

Because of the danger of introducing additional hazards, **ONLY** install GE approved parts. **DO NOT** perform any unauthorized modification of the equipment.



WARNING

SHUT DOWN FORCEDLY OR PLUG IN/OUT ACDC INVALID MAY CAUSE THE DAMAGE OF SYSTEM FILES.

Lockout/Tagout (LOTO)

requirements

Follow Lockout/Tagout requirements by ensuring you are in total control of the AC power plug at all times during the service process.

To apply Lockout/Tagout (LOTO):

1. Plan and prepare for shutdown.
2. Shutdown the equipment.
3. Isolate the equipment.
4. Remove/disconnect the battery, if present.
5. Apply Lockout/Tagout Devices.
6. Control all stored and residual energy.
7. Verify isolation.

All potentially hazardous stored or residual energy is relieved.



Energy Control and Power Lockout for Vivid *iq*.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:

1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.
6. Remove/disconnect the battery, if present.

Ultrasound System components may be energized.

Returning probes and repair parts

Overview

Equipment being returned must be clean and free of blood and other infectious substances. GE Healthcare policy states that body fluids must be properly removed from any part or equipment prior to shipment. GE Healthcare employees, as well as customers, are responsible for ensuring that parts/equipment have been properly decontaminated prior to shipment. Under no circumstance should a part or equipment with visible body fluids be taken or shipped from a clinic or site (for example, body coils or an ultrasound probe).

The purpose of the regulation is to protect employees in the transportation industry, as well as the people who will receive or open this package.

NOTE: *The US Department of Transportation (DOT) has ruled that “items that were saturated and/or dripping with human blood that are now caked with dried blood; or which were used or intended for use in patient care” are “regulated medical waste” for transportation purposes and must be transported as a hazardous material.*

Overview(continued)

NOTE: *The USER/SERVICE staff should dispose of all the waste properly, per federal, state, and local waste disposal regulations.*

The Ultrasound system is not meant to be used for long-term storage of patient data or images. The user is responsible for the data on the system and a regular backup is highly recommended.

If the system is sent for repair, please ensure that any patient information is backed up and erased from the system before shipping. It is always possible during system failure and repair to lose patient data. GE is not responsible for the loss of this data.

If PHI (Patient Healthcare Information) data needs to be sent to GE employees for service purposes, GE will ascertain agreement from the customer. Patient information shall only be transferred by approved service processes, tools and devices restricting access, protecting or encrypting data where required, and providing traceability in the form of paper or electronic documents at each stage of the procedure while maintaining compliance with cross-border restrictions of patient information transfers.

EMC, EMI and ESD

What is EMC?

Electromagnetic compatibility describes a level of performance of a device within its electromagnetic environment. This environment consists of the device itself and its surroundings including other equipment, power sources and persons with which the device must interface. Inadequate compatibility results when a susceptible device fails to perform as intended due to interference from its environment or when the device produces unacceptable levels of emission to its environment. This interference is often referred to as radio-frequency or electromagnetic interference (RFI/EMI) and can be radiated through space or conducted over interconnecting power or signal cables. In addition to electromagnetic energy, EMC also includes possible effects from electrical fields, magnetic fields, electrostatic discharge and disturbances in the electrical power supply.

CE Compliance

Vivid *iq* conforms to all applicable conducted and radiated emission limits and to immunity from electrostatic discharge, radiated and conducted RF fields, magnetic fields and power line transient requirements.

For applicable standards, refer to the Safety Chapter of the Ultrasound system User's Manual.

NOTE: *For CE Compliance, it is critical that all covers, screws, shielding, gaskets, mesh, clamps, are in good condition, installed tightly without skew or stress. Proper installation following all comments noted in this service manual is required in order to achieve full EMC performance.*

Electrostatic discharge (ESD) prevention



DO NOT touch any boards with integrated circuits prior to taking the necessary ESD precautions.

Always connect yourself, via an arm-wrist strap, to the advised ESD connection point located on the rear of the Ultrasound system (near the power connector).



Follow general guidelines for handling of electrostatic sensitive equipment.



Risk of electrical shock, Ultrasound system must be turned off. Avoid all contact with electrical contacts, conductors and components. Always use non-conductive handles designed for the removal and replacement of ESD sensitive parts. All parts that have the potential for storing energy must be discharged or isolated before making contact.

Customer assistance

Contact information

If this equipment does not work as indicated in this service manual or in the user manual, or if you require additional assistance, please contact the local distributor or appropriate support resource, as listed below.

Before you call, identify the following information, and acquire image to send to the Customer Care team:

1. System ID serial number.
2. Software version.
3. Date and time of occurrence.
4. Sequence of events leading to issue.
5. Is the issue repeatable?
6. Imaging mode, probe, preset/application.
7. Media brand, speed, capacity, type.
8. Save secondary image capture, cine loop.

NOTE: Restart the application before resuming clinical scanning.

NOTE: The serial number can be found at the rear of the system.

Phone numbers for Customer Assistance

Table 1-8: Phone numbers for Customer Assistance

LOCATION	PHONE NUMBER	
USA GE Healthcare - GE Medical Systems Ultrasound Service Engineering 9900 Innovation Drive Wauwatosa, WI 53226	Service: On-site	1-800-437-1171
	Service Parts	1-800-558-2040
	Application Support	1-800-682-5327 or 1-262-524-5698
Canada	Phone:	1-800-668-0732
LATAM	Brazil Phone	3004-2525 (Capitais e Regiões metropolitanas) 08000 165 799 (Demais localidades)
	Mexico Phone	8002000111
	Colombia Phone	01 8000 181350
	Puerto Rico Phone	1-855-964-0639
	Argentina Phone	0800-222-4342
	Peru Phone	0800-5-4342
	Chile Phone	1888-0020-4342 800204302
Europe (OLC-EMEA) GE Ultraschall Deutschland GmbH & Co. KG Beethovenstraße 239 Postfach 11 05 60, D-42655 Solingen Germany	OLC - EMEA Phone:	+49 (0) 212 2802 - 652 +33 1 3083 1300
	Fax:	+49 (0) 2122-8024-31
Online Services Ultrasound Asia	Phone: • Australia • China • India • Japan • Korea • Singapore	+ (61) 1-800-647-855 + (86) 800-810-8188 + (91) 1800-425-8025 + (81) 42-648-2940 + (82) 2620 13585 + (95) 6277-3444

System manufacturer

Table 1-9: System manufacturer

MANUFACTURER	PHONE NUMBER	FAX NUMBER
GE Medical Systems (China) Co., Ltd. No. 19, Changjiang Road, Wuxi National Hi-Tech Development Zone, 214028 Jiangsu P.R. China	+86 510 85225888	+86 510 85226688

Authorized Representative

Table 1-10: Authorized Representative

AUTHORIZED REPRESENTATIVE	
The location of the CE marking is shown in the Safety chapter of the User manual.	
EC	REP
Authorized EU Representative: GE Medical Systems SCS 283 rue de la Minière 78530 BUC, France	

Chapter 2

Site Preparations

This chapter provides the information required to plan and prepare for the setup of an Ultrasound system. Included are descriptions of the facility and electrical needs to be met by the purchaser of the units.

Overview

Contents in this chapter

- 'Overview' on *page 2-2*
- 'General Ultrasound system requirements' on *page 2-3*
- 'Facility needs' on *page 2-12*
- 'Environmental Dangers' on *page 2-23*

General Ultrasound system requirements

Contents in this section

- 'Ultrasound system environmental requirements' on [page 2-3](#)
- 'Electrical requirements' on [page 2-6](#)
- 'EMI limitations' on [page 2-9](#)
- 'Probes environmental requirements' on [page 2-11](#)
- 'Time and manpower requirements' on [page 2-11](#)

Ultrasound system environmental requirements

If the Ultrasound system is very cold or hot

When unpacking the Ultrasound system, allow the temperature of the Ultrasound system to stabilize before powering up. The following table describes guidelines for reaching operational temperatures from storage or transport temperatures.



CAUTION

If the Ultrasound system is very cold or hot, do not turn on its power until it has had a chance to acclimate to its operating environment.

Table 2-1: System Acclimation Time Chart

Degree C	-4.5	-2	0.5	3	40	42.5	45	47.5	50	55	60
Degree F	23.9	28.4	32.9	37.4	104	108.5	113	117.5	122	131	140
hours	3	2	1	0	0	1	2	3	4	6	8

Environmental specifications for Ultrasound system

The system should be operated, stored, or transported within the parameters outlined below. Either its operational environment must be constantly maintained or the unit must be turned off.

Table 2-2: System Environmental Requirements

	Operational	Storage	Transport (<16hrs.)
Temperature	3° - 40°C 38° - 104°F	-5° - 50°C 23° - 122°F	-5° - 50°C 23° - 122°F
Humidity	30 - 80% non-condensing	10 - 90% non-condensing	10 - 90% non-condensing
Pressure	700 - 1060hPa	700 - 1060hPa	700 - 1060hPa



Ensure that the probe face temperature does not exceed the normal operation temperature range.



The Vivid *iq* system and probe connector is not waterproof. Do not expose the device to water or any kind of liquid.

Cooling

The cooling requirement for a console Ultrasound system with monitor and on board peripherals, is up to 3800 BTU/h. This figure does not include cooling needed for lights, people, or other equipment in the room.

NOTE: Each person in the room places an additional 300 BTU/h demand on the cooling system.

Lighting

Bright light is needed for Ultrasound system installation, updates and repairs. However, operator and patient comfort may be optimized if the room light is subdued and indirect. Therefore a combination lighting system (dim/bright) is recommended. Keep in mind that lighting controls and dimmers can be a source of EMI which could degrade image quality. These controls should be selected to minimize possible interference.

Electrical requirements

General requirements

NOTE: *GE Healthcare requires a dedicated power and ground for the proper operation of its Ultrasound equipment. This dedicated power shall originate at the last distribution panel before the Ultrasound system.*

Sites with a mains power system with defined Neutral and Live:

The dedicated line shall consist of one phase, a neutral (not shared with any other circuit), and a full size ground wire from the distribution panel to the Ultrasound outlet.

Sites with a mains power system without a defined Neutral:

The dedicated line shall consist of one phase (two lines), not shared with any other circuit, and a full size ground wire from the distribution panel to the Ultrasound outlet.

NOTE: *Please note that image artifacts can occur, if at any time within the facility, the ground from the main facility's incoming power source to the Ultrasound system is only a conduit.*

Electrical requirements for the Ultrasound system

In the table below, the electrical specifications for the Ultrasound system includes monitor and on board peripherals.

Table 2-3: Electrical Specifications for Vivid iq system

Voltage	Tolerance	Power Consumption	Frequency
100-240 VAC	±10%	Max. 150VA	50/ 60HZ

Site circuit breaker



CAUTION

Power outage may occur. The Vivid *iq* requires a dedicated single branch circuit. To avoid circuit overload and possible loss of critical care equipment, make sure you do not have any other equipment operating on the same circuit.

It is recommended that the branch circuit breaker for the Ultrasound system be readily accessible.



CAUTION

POWER OUTAGE MAY OCCURE.

The Vivid *iq* requires a dedicated single branch circuit. To avoid circuit overload and possible loss of critical care equipment, make sure you **DO NOT** have any other equipment operating on the same circuit.

Site power outlets

A dedicated AC power outlet must be within reach of the Ultrasound system without extension cords. Other outlets adequate for the external peripherals, medical and test equipment needed to support this Ultrasound system must also be present within 1 m (3.2 ft.) of the Ultrasound system. Electrical installation must meet all current local, state, and national electrical codes.

Unit power plug

If the Ultrasound system arrives without a power plug, or with the wrong plug, you must contact your GE dealer or the installation engineer must supply what is locally required.

Power stability requirement

Table 2-4: Power stability requirement

IEC 61000-4-11 Voltage dips, short interruptions and voltage variations on mains supply	< 5%T (> 95% dip) for 0.5 cycle;	< 5%T (> 95% dip) for 0.5 cycle;	Mains power quality should be that of a typical commercial or hospital environment.
	40%T (60% dip) for 5 cycles;	40%T (60% dip) for 5 cycles;	
	70%T (30 dip) for 25 cycles;	70%T (30 dip) for 25 cycles;	
	< 5%T (>95% dip) for 5 sec	< 5%T (>95% dip) for 5 sec	

EMI limitations

Ultrasound systems are susceptible to Electromagnetic Interference (EMI) from radio frequencies, magnetic fields, and transients in the air or wiring. They also generate EMI. The Ultrasound system complies with limits as stated on the EMC label. However there is no guarantee that interference will not occur in a particular installation.

Possible EMI sources should be identified before the Ultrasound system is installed.

Electrical and electronic equipment may produce EMI unintentionally as the result of a defect. Some of these sources include:

- medical lasers
- scanners
- cauterizing guns
- computers
- monitors
- fans
- gel warmers
- microwave ovens
- light dimmers
- mobile phones
- in-house wireless phones (DECT phones)
- wireless computer keyboard and mouse
- air conditioning system
- High Frequency (HF) surgery equipment
- general AC/DC adapters

The presence of a broadcast station or broadcast van may also cause interference.

See: '[EMI prevention/abatement](#)' on [page 2-10](#) for EMI prevention tips.

EMI prevention/abatement

Table 2-5: EMI prevention/abatement

EMI RULE	DETAILS
Be aware of Radio Frequency sources	• Keep the Ultrasound system at least 5 meters (15 feet) away from other EMI sources. • Special shielding may be required to eliminate interference problems caused by high frequency, high powered radio or video broadcast signals.
Ground the Ultrasound system	Poor grounding is the most likely reason an Ultrasound system will have noisy images. Check grounding of the power cord and power outlet.
Replace all screws, Radio Frequency gaskets, covers, cores	• After you finish repairing or updating the Ultrasound system, replace all covers and tighten all screws. • Any cable with an external connection requires a magnet wrap at each end. • Install all covers. Loose or missing covers or Radio Frequency gaskets allow radio frequencies to interfere with the ultrasound signals.
Replace broken Radio Frequency gaskets	If more than 20% or a pair of the fingers on an Radio Frequency gasket are broken, replace the gasket. Do not turn on the Ultrasound system until any loose metallic part is removed.
Do not place labels where Radio Frequency gaskets touch metal	Where applicable, never place a label where Radio Frequency gaskets meet the Ultrasound system. Otherwise, the gap created will permit Radio Frequency leakage. Or, if a label has been found in such a position, move the label.
Use GE specified harnesses and peripherals	The interconnect cables are grounded and require ferrite beads and other shielding. Also, cable length, material, and routing are all important; do not change from what is specified.
Take care with cellular phones	Cellular phones may transmit a 5 V/m signal; that could cause image artifacts.
Properly route peripheral cables	Where applicable, do not allow cables to lie across the top of the Card Rack or hang out of the peripheral bays. Loop the excess length for peripheral cables inside the peripheral bays. Attach the monitor cables to the frame.

Probes environmental requirements

Operation, storage and transport temperatures for probes

Probes should be operated, stored, or transported within the parameters outlined below.



CAUTION

Ensure that the probe face temperature does not exceed the normal operation temperature range.

Table 2-6: Probe Environmental Requirements

	Operational	Storage	Transport
Temperature	3° - 40° C 38° - 104° F	-5° - 50° C 23° - 122° F	-5° - 50° C 23° - 122° F
Humidity	30 - 80% non-condensing	10 - 90% non-condensing	10 - 90% non-condensing
Pressure	700 - 1060hPa	700 - 1060hPa	700 - 1060hPa



CAUTION

Check the room temperature before you use the probe.



CAUTION

Ensure that the probe face temperature does not exceed the normal operation temperature range.

NOTE: Refer to [Table 2-1 on page 2-3](#) to determine the needed settlement time.

Time and manpower requirements

Site preparation takes time. Begin site preparation checks as soon as possible, if possible, six weeks before delivery, to allow enough time to make any changes.

Facility needs

Contents in this section

- 'Purchaser responsibilities' on *page 2-13*
- 'Required facility needs' on *page 2-14*
- 'Desirable features' on *page 2-15*
- 'Minimal floor plan suggestion' on *page 2-16*
- 'Recommended floor plan suggestion' on *page 2-17*
- 'Suggested floor plan, Ultrasound system, and EchoPAC PC in same room' on *page 2-18*
- 'Networking setup requirements' on *page 2-18*

Purchaser responsibilities

The work and materials needed to prepare the site is the responsibility of the purchaser. Delay, confusion, and waste of manpower can be avoided by completing pre-installation work before delivery. Purchaser responsibility includes:

- Procuring the materials required
- Completing the preparations before delivery of the Ultrasound system
- Paying the costs for any alterations and modifications not specifically provided in the sales contract

NOTE: *All electrical installations that are preliminary to the positioning of the equipment at the site prepared for the equipment must be performed by licensed electrical contractors. Other connections between pieces of electrical equipment, calibrations, and testing must also be performed by qualified personnel. The products involved (and the accompanying electrical installations) are highly sophisticated and special engineering competence is required. All electrical work on these products must comply with the requirements of applicable electrical codes. The purchaser of GE equipment must only utilize qualified personnel to perform electrical servicing on the equipment.*

The desire to use a non-listed or customer provided product or to place an approved product further from the Ultrasound system than the interface kit allows, presents challenges to the installation team. To avoid delays during installation, such variances should be made known to the individuals or group performing the installation at the earliest possible date (preferably prior to the purchase).

The ultrasound suite must be clean prior to delivery of the Ultrasound system. Carpet is not recommended because it collects dust and creates static. Potential sources of EMI (electromagnetic interference) should also be investigated before delivery. Dirt, static, and EMI can negatively impact Ultrasound system reliability.

Required facility needs

NOTE: *GE Healthcare requires a dedicated power and ground for the proper operation of its Ultrasound equipment. This dedicated power shall originate at the last distribution panel before the Ultrasound system.*

Sites with a mains power system with defined Neutral and Live:

The dedicated line shall consist of one phase, a neutral (not shared with any other circuit), and a full size ground wire from the distribution panel to the Ultrasound outlet.

Sites with a mains power system without a defined Neutral:

The dedicated line shall consist of one phase (two lines), not shared with any other circuit, and a full size ground wire from the distribution panel to the Ultrasound outlet.

Required facility needs(continued)

NOTE: *Please note that image artifacts can occur, if at any time within the facility, the ground from the main facility's incoming power source to the Ultrasound unit is only a conduit.*

- Dedicated single branch power outlet of adequate amperage meeting all local and national codes which is located less than 2.5 m (8 ft.) from the unit's proposed location
- Door opening is at least 76 cm (30 in) wide
- Proposed location for unit is at least 0.5m (1.5 ft.) from the wall for cooling
- Power outlet and place for any external peripheral are within 2 m (6.5 ft.) of each other with peripheral within 1 m of the unit to connect cables.
- Power outlets for other medical equipment.
- Power outlets for test equipment within 1 m (3.2 ft.) of Ultrasound system.
- Clean and protected space to store probes (in their cases or on a rack)
- Material to safely clean probes (done with a plastic container, never metal)

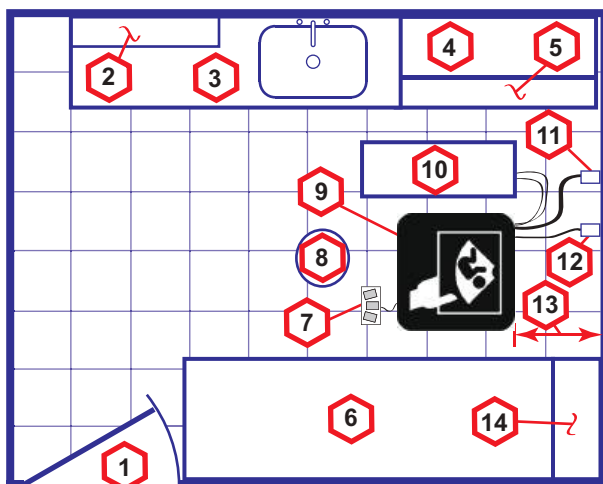
For the amperage requirements, see: '[Electrical requirements](#)' on [page 2-6](#).

Desirable features

- Door is at least 92 cm (3 ft.) wide
- Circuit breaker for dedicated power outlet is easily accessible
- Sink with hot and cold water
- Receptacle for bio-hazardous waste, like used probe sheaths
- Emergency oxygen supply
- Storage for linens and equipment
- Nearby waiting room, lavatory, and dressing room
- Dual level lighting (bright and dim)
- Lockable cabinet ordered by GE for its software and proprietary manuals

Minimal floor plan suggestion

CSI 8x10



Scale:

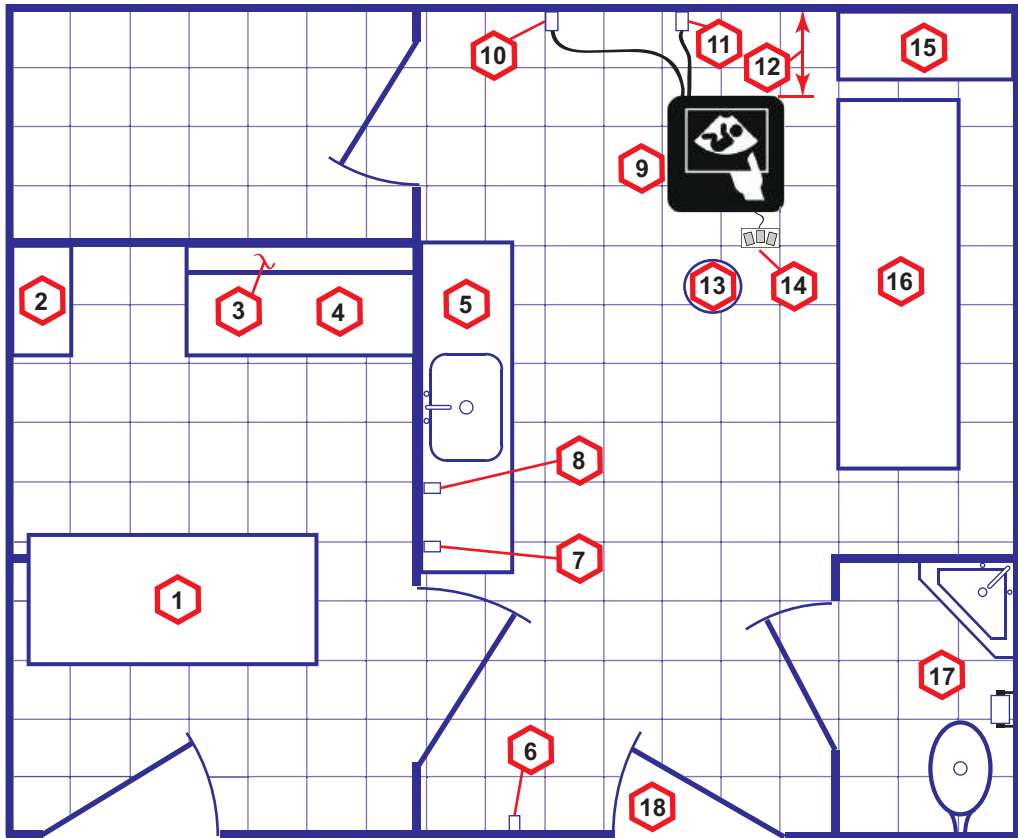
Each square equals one square foot (app. 31 x 31 cm)

1. Door – at least 762 mm (30 inches)	6. Examination Table – 1930 x 610 mm (76 x 24 inches)	12. Network Interface
2. Film Viewer	7. Footswitch	13. 457 mm (18 inches) distance of Ultrasound system from wall or objects
3. Counter Top, Sink with hot and cold water and Supplies Storage	8. Stool	14. GE Cabinet for Software and Manuals
4. Linen Supply	9. Ultrasound system	
5. Probes/Supplies	10. External Peripherals	
	11. Dedicated Power Outlet - Circuit Breaker protected and easily accessible	

Figure 2-1. Minimal floor plan, 2.5 m x 3 m (8 by 10 foot)

Recommended floor plan suggestion

CSI 14x17

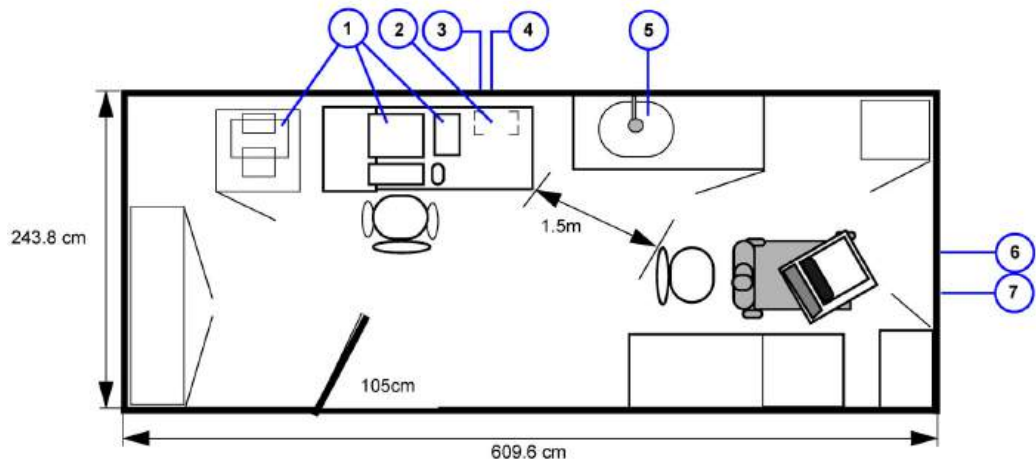


Scale: Each square equals one square foot (app. 31 x 31 cm)

1. Secretaries or Doctors Desk	8. Suction Line	14. Footswitch
2. File Cabinet	9. Ultrasound system	15. Storage for Linens and Equipment
3. Film Viewer	10. Dedicated Power Outlet - Circuit Breaker protected and easily accessible	16. Examination Table – 1930 x 610 mm (76 x 24 inches)
4. Counter Top	11. Network Interface	17. Lavatory and Dressing Room
5. Counter Top and Sink with hot and cold water	12. 457 mm (18 inches) distance of Ultrasound system from wall or objects	18. Door – at least 762 mm (30 inches)
6. Overhead Lights Dimmer - Dual Level Lighting (bright and dim)	13. Stool	
7. Emergency Oxygen		

Figure 2-2. A 14 by 17 foot recommended floor plan

Suggested floor plan, Ultrasound system, and EchoPAC PC in same room



1. EchoPAC PC workstation parts	4. 3x mains power outlets	7. Ethernet network wall outlet
2. UPS	5. Hot and Cold water	
3. Ethernet network wall outlet	6. Dedicated mains power outlet	

Figure 2-3. Suggested Room with EchoPAC PC workstation and Ultrasound Scanner

Networking setup requirements

Stand alone Ultrasound system (without network connection)

None.

Scanner connected to hospital's network

Supported networks:

100/1000 Mbit Ethernet/DICOM network (option)

InSite requirements

InSite requires an Ethernet connection via:

- 100/1000 Mbit Interface

Purpose of the DICOM network function

DICOM services provide the operator with clinically useful features for moving images and patient information over a hospital network.

Examples of DICOM services include the transfer of images to workstations for viewing or transferring images to remote printers.

As an added benefit, transferring images in this manner frees up the on-board monitor and peripherals, enabling viewing to be done while scanning continues.

With DICOM, images can be archived, stored, and retrieved faster, easier, and at a lower cost.

DICOM option setup requirements

To configure the Ultrasound system to work with other network connections, the site's network administrator must provide information to complete the form "Worksheet for DICOM Network Information". Ensure that there are no spaces in any field of the form.

See:

Entries must include:

- A host name, local port number, AE Title, IP address and Net Mask for the Ultrasound system.
- The IP addresses for the default gateway and other routers at the site for ROUTING INFORMATION.
- The host name, IP address, port and AE Title for each device the site wants connected to the Ultrasound system for DICOM APPLICATION INFORMATION. A field for the make (manufacturer) and the revision of the device, is also included. This information may be useful for error solving.

DICOM option setup requirements(continued)

Vivid™ iq

Host NameLocal PortIP Address

AE TitleNet Mask

ROUTING INFORMATION

Destination
IP Addresses

ROUTER1

ROUTER2

ROUTER3

GATEWAY IP Addresses

Default

DICOM APPLICATION INFORMATION

	NAME	MAKE/REVISION	AE TITLE	IP ADDRESSES	PORT
Store 1					
Store 2					
Store 3					
Store 4					
Store 5					
Store 6					
Work list					
Storage Commit					
MPPS					

Figure 2-4. Worksheet for DICOM Network Information

Connectivity Installation Worksheet

Site System Information

Site:

Floor:

Comments:

Dept:

Room:

Vivid™ iq

Type:

REV:

CONTACT INFORMATION

Name	Title	Phone	E-Mail Address

TCP/IP Settings

Scanner IP Settings

Name - AE Title:

IP Address:

Subnet Mask:

Default Gateway:

Remote Archive Setup

(Echo Server/GEMNet Server/EchoPac PC)

Name - AE Title:

IP Address:

Subnet Mask:

Default Gateway:

Server Name:

Remote DB User Name:

Services (Destination Devices)

	Device Type	Manufacturer	Name	IP Address	Port	AE Title
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

Figure 2-5. Connectivity Installation Worksheet

2-22

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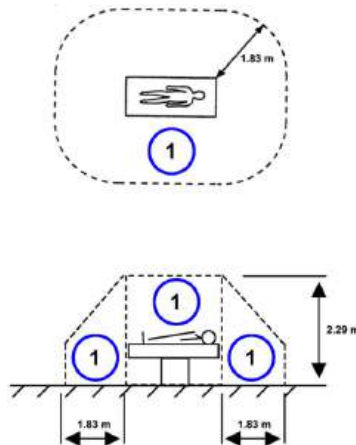
Environmental Dangers

Commercial devices such as laser cameras, printers, VCRs and external monitors, usually exceed allowable leakage current limits and, when plugged into separate AC outlets, are in violation of patient safety standards. Suitable electrical isolation of such external AC outlets, or providing the device with extra protective earth, will be required in order to meet UL60601-1 and IEC60601-1 / IEC60601-1-1 standards for electrical leakage.

Patient Vicinity UL60601-1 (USA)

2.12.20DV (UL60601-1:2003)

In area in which patients are normally cared for, the patient vicinity is the space with surfaces likely to be contacted by the patient or attendant who can touch the patient. This encloses a space within the room 1.83 m (6 ft.) beyond the perimeter of the bed (examination table, dental chair, treatment booth, and the like) in its intended location, and extending vertically 2.29 m (7.5 ft.) above the floor.



1. Patient environment

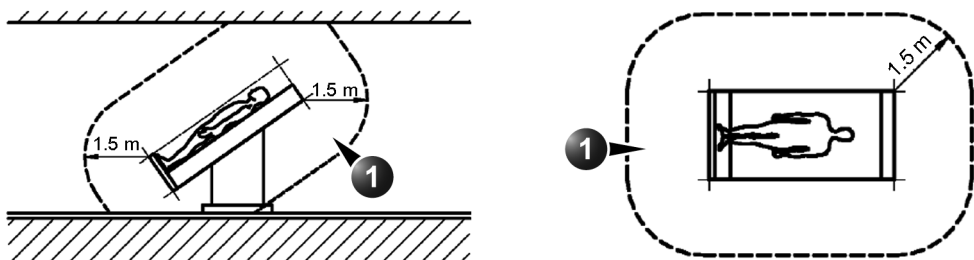
Patient Environment IEC60601-1 and ANSI AAMI ES60601-1

Sub Clause 3.79 and figure A.9 (IEC60601-1:2005 and ANSI AAMI ES60601-1:2005)

Such an area is an environment in which medical diagnosis, monitoring or treatment is carried out. It is very difficult to attach unique dimensions to the PATIENT ENVIRONMENT.

In practice a distance of 2,5 m (8.2 ft.) above the floor on which the medical personnel stand and a horizontal distance of 1,5 m (4.9 ft.) have justified themselves as indicative of the dimensions of the Patient Environment.

The patient environment/vicinity will be depicted as a dashed line in this procedure. See example below.



1. Patient environment

Figure 2-6. Patient environment

Chapter 3

System Setup

This chapter contains information needed to install Vivid iq system.

Included is a procedure that describes how to receive and unpack the equipment and how to file a damage or loss claim.

How to prepare the facility and Ultrasound system of the actual installation, and how to check and test the Ultrasound system, probes, and external peripherals for electrical safety are also included in this procedure.

Overview

Contents in this chapter

- 'Overview' on *page 3-2*
- 'Setup reminders' on *page 3-3*
- 'Receiving and unpacking the equipment' on *page 3-6*
- 'Packing materials - recycling information' on *page 3-13*
- 'Preparing for setup' on *page 3-14*
- 'Completing the setup' on *page 3-15*
- 'System Configuration' on *page 3-19*
- 'Peripherals Installation' on *page 3-24*
- 'Software Options Configuration' on *page 3-33*
- 'Connectivity Overview' on *page 3-35*
- 'v204 Connectivity' on *page 3-37*
- 'v208v206 Connectivity setup' on *page 3-131*
- 'Paperwork after setup' on *page 3-219*

Setup reminders

Average setup time

- Unpacking the Vivid *iq*: 20 minutes
- Set up Vivid *iq* options: 15 minutes
- DICOM Network Configuration: 30 minutes or more, depending on the configuration
- Installing Insite: 0.5 hour

The Vivid *iq* installation and functional checkout will take approximately 1 hour. Vivid *iq* consoles with optional equipment may take slightly longer.

Setup warnings



DANGER

WHEN USING ANY TEST INSTRUMENT THAT IS CAPABLE OF OPENING THE AC GROUND LINE (I.E., METER'S GROUND SWITCH IS OPEN), DON'T TOUCH THE ULTRASOUND SYSTEM!



CAUTION

To prevent electrical shock, connect the unit to a properly grounded power outlet. **DO NOT** use a three to two prong adapter. This defeats safety grounding.



CAUTION

DO NOT wear the ESD wrist strap when you work on live circuits and more than 30 V peak is present.



CAUTION

DO NOT operate this unit unless all board covers and frame panels are securely in place. System performance and cooling require this.

Setup warnings(continued)

- 1. There are no operator serviceable components. To prevent shock, do not remove any covers or panels. Should problems or malfunctions occur, unplug the power cord. Only qualified service personnel should carry out servicing.

NOTE: For information regarding packing labels, refer to LABELS ON PACKAGE.

- 2. After being transported, the unit may be very cold or hot. If this is the case, allow the unit to acclimate before you turn it on. It requires one hour for each 2.5°C increment it's temperature is below 3°C or above 40°C.

 **DANGER** Equipment damage possibility. Turning the system on without acclimation after arriving at site may cause the system to be damaged.

 **CAUTION** If the Ultrasound system is very cold or hot, do not turn on its power until it has had a chance to acclimate to its operating environment.

The following table describes guidelines for reaching operational temperatures from storage or transport temperatures.

Table 3-1: System Acclimation Time Chart

Degree C	-4.5	-2	0.5	3	40	42.5	45	47.5	50	55	60
Degree F	23.9	28.4	32.9	37.4	104	108.5	113	117.5	122	131	140
hours	3	2	1	0	0	1	2	3	4	6	8

Setup warnings(continued)



CAUTION

Operator Manual(s)

The User Manual(s) should be fully read and understood before operating the Vivid *iq* and kept near the Ultrasound system for quick reference.



CAUTION

Acoustic Output Hazard

Although the ultrasound energy transmitted from the Vivid *iq* probe is within AIUM/NEMA standards, avoid unnecessary exposure. ultrasound energy can produce heat and mechanical damage.



Receiving and unpacking the equipment

Purpose of this section

This section describes how to receive and unpack Vivid *iq*.

Contents in this section

- 'Warnings for receiving and unpacking' on [page 3-6](#)
- 'Receiving the Vivid *iq*' on [page 3-7](#)
- 'Unpacking the Vivid *iq*' on [page 3-9](#)
- 'Packing the Equipment' on [page 3-12](#)

Warnings for receiving and unpacking

GENERIC CRT
VERSION



CAUTION

Two people are needed to unpack the Ultrasound system because of its weight. Attempts to move the Ultrasound system considerable distances or on an incline by one person could result in injury or damage or both.

Two people are required whenever a part weighing 16 KG (35 LBS) or more must be lifted.



CAUTION

Remember to use relevant personal protecting equipment (PPE) during packing and unpacking. Check with your local EHS representative.

Receiving the Vivid iq

Overview

Improper handling during transportation may harm the equipment inside the package even if the package itself is undamaged.

Examine all packages

Examine package closely at time of delivery, as described in the procedure below.

Table 3-2: Examine all packages

Step	Task	Illustrations
1.	Is damage apparent? • If YES; continue with the instructions in 'Damage in transportation' on page 3-8. • If NO; continue with the next step.	
2.	Continue with the instructions in 'Unpacking the Vivid iq' on page 3-9.	

Damage in transportation

Follow this procedure if damage is apparent:

1. Write "Damage In Shipment" on ALL copies of the freight or express bill **BEFORE** delivery is accepted or "signed for" by a GE representative or hospital receiving agent.
2. Report the damage to the carrier.
 - Whether noted or concealed, damage **MUST** be reported to the carrier immediately upon discovery, or in any event, within 14 days after receipt, and the contents and containers held for inspection by the carrier.
 - A transportation company will not pay a claim for damage if an inspection is not requested within this 14 day period.

Vivid *iq* transportation box label

The Vivid *iq* transportation box label is located at the front of the transportation box.

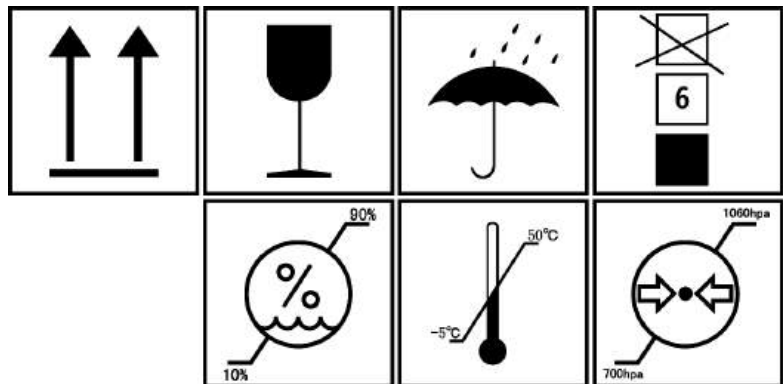


Figure 3-1. Vivid *iq* transportation box label

Unpacking the Vivid iq

When a new system arrives, check that any components are not damaged and are not in short supply. If shipping damage or shortage occurs, contact the address shown in Chapter 1.



CAUTION

Please carefully unpack the system, and do not dispose the package of Vivid iq, so that it can be reused for service.

NOTE: Please check the Vivid iq console is well assembly after unpacking the system.

Table 3-3: Unpacking the Vivid iq

Step	Description	
1.	Tear the adhesive tape and open the box.	
2.	Take out the card kit and remove the foam cover of the accessory kit. Note: There is no USB flash drive designed in the accessory kit for Vivid iq V204.	

Table 3-3: Unpacking the Vivid iq

Step	Description	
3.	Take out the accessory kit and take the system out of the box.	
		
4.	Remove the foams and dust bag from the unit.	

Table 3-3: Unpacking the Vivid iq

Step	Description	
5.	Put the system on the inclined supporter.	
6.	Take out the battery from the accessory kit, remove the white sticker and stick the black strip.	
7.	Install the battery onto the system.	

Moving into Position

Please refer to User Manual on how to move the system.

Packing the Equipment

Please pack Vivid *iq* in the reverse order of unpacking.

Packing materials - recycling information

The packing materials for Vivid *iq* are recyclable:

- The Transportation Box is made of spruce or similar material. ("PHYTOSANITARY CERTIFICATE" included in all shipments to The People's Republic of China.)
- Lever lockings (hinges) are made of zinc plated steel.
- The inner reinforcements are made of Ethafoam (Polyethylene foam).
- The plastic foil is made of LDPE (Low Density Polyethylene).

Preparing for setup

Verify customer order

Compare items received by the customer to that which is listed on the delivery order. Report any items that are missing, back ordered, or damaged.

Physical inspection

Verify that the system arrived intact (visual inspection).

If the system has been damaged, please refer to '[Damage in transportation](#)' on [page i-15](#) in the beginning of this manual.

EMI protection

The Vivid *iq* has been designed to minimize the effects of Electro-Magnetic Interference (EMI). Many of the covers, shields, and screws are provided primarily to protect the system from image artifacts caused by this interference. For this reason, it is imperative that all covers and hardware are installed and secured before the unit is put into operation.

See '[EMI limitations](#)' on [page 2-9](#) for more information about EMI protection.

Completing the setup

Purpose of this section

This section describes how to complete the installation of Vivid *iq*.

Contents in this section

- 'System specifications' on [page 3-16](#)
- 'Electrical specifications' on [page 3-17](#)
- 'Connections on the I/O Rear Panel' on [page 3-18](#)
- 'Connecting probes' on [page 3-18](#)
- 'Powering the system' on [page 3-18](#)

System specifications

System requirements verification

- Verify that the site meets the requirements listed in Chapter 2.
(See: '[Facility needs](#)' on [page 2-12](#).)
- Verify that the specifications below don't conflict with any on-site conditions.

Physical dimensions

Table 3-4: Physical dimensions of Vivid *iq*

Length	Width	Thickness	Depth
390	362	72	mm
15.4	14.3	2.8	Inches

Console Weight

- Weight: approx. 5 kg (11 lbs)

Electrical specifications



WARNING

Connecting a Vivid *iq* to the wrong voltage level will most likely destroy it.

Verification of the system’s voltage setting

Verify that the mains voltage specified for the Vivid *iq* is available on-site.

The voltage setting for the Vivid *iq* is found on a label at the bottom of the Vivid *iq*.

Electrical specifications for Vivid *iq*

In the table below, the electrical specifications for Vivid *iq* includes monitor and on board peripherals.

Table 3-5: Electrical specifications for Vivid *iq*

Description	Voltage	Tolerances	Power consumption	Frequency
English version Vivid <i>iq</i>	100-240V	±10%	Max.150VA	50/60 Hz

Connections on the I/O Rear Panel

NOTE: *Accessory equipment connected to the analog and digital interfaces must be certified according to the respective IEC standards (e.g. IEC60950 for data processing equipment and IEC60601-1 for medical equipment). Furthermore, all complete configurations shall comply with the valid version of the system standard IEC60601-1. Everybody who connects additional equipment to the signal input part or signal output part of Vivid iq, configures a medical system, and is therefore responsible that the Ultrasound system complies with the requirements of the valid version of IEC60601-1. If in doubt, consult the technical service department or your local representative for GE.*

Connect Ethernet

Connect the network cable to the Ethernet connector on the I/O Rear Panel.

The connector is located on the rear side of Vivid iq.

Connect USB Flash Drive

NOTE: *USB Flash Drive approved for Vivid iq are verified for EMC performance according to EN55011 class B. The use of any other USB Flash Drive will compromise this verification, and may cause interference on Vivid iq itself, or on other electronic devices.*

For approved models, please refer to Chapter 9.

NOTE: *The Vivid iq does not support software encrypted USB stick.*

Insert the USB Flash Drive in one of the USB ports on the Vivid iq.

Connecting probes

Please refer to User Manual on how to connect/disconnect a probe.

Powering the system

Please refer to User Manual on how to power the system.

System Configuration

Purpose of this section

This section describes how to configure the Vivid *iq*.

Vivid *iq* configuration

For complete instructions, refer to the latest revision of the Vivid *iq* User Manual, Chapter 4.

Information includes Selecting System Settings screen, Entering Location, Adjusting Date and Time, Selecting User Interface Language, Selecting Online Manual Language, Selecting Unites of Measure.

Service Screen setup

Contents in this sub-section

- 'Open Service Screen' on [page 3-20](#)
- 'Alphanumeric Keyboard configuration' on [page 3-21](#)
- 'Add printer' on [page 3-23](#)

Open Service Screen

Follow these steps to open the Service Screen:

1. Press **Config** on the shortcut bar and log on as **ADM**.
2. Press **Service** tab to view the **Service** screen.

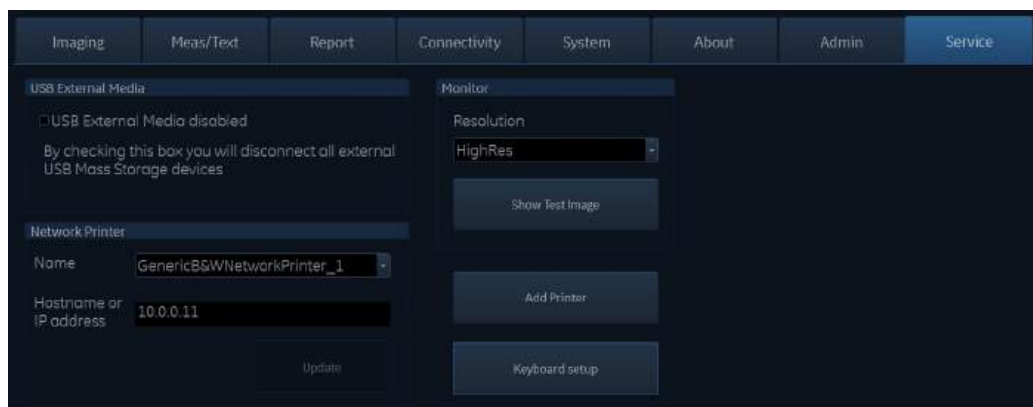


Figure 3-2. Service screen

Alphanumeric Keyboard configuration

NOTE: You don't need to perform this procedure if the alphanumeric keyboard is a US keyboard, since the default setting is set to US English keyboards.

Table 3-6: Select keyboard

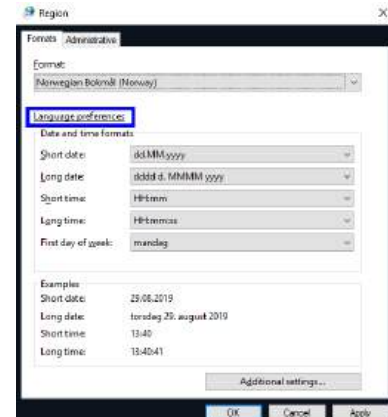
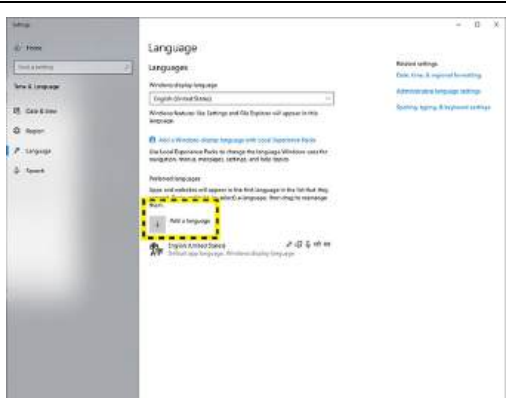
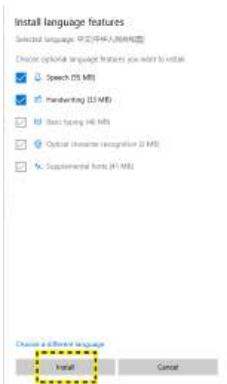
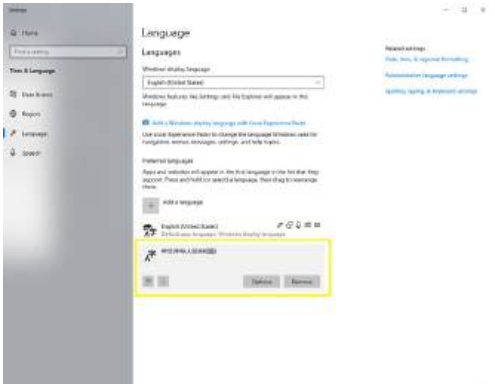
No.	Steps	Corresponding Graphic
1.	Select Keyboard Setup to get access to Keyboard Properties.	
2.	Select Language Preferences .	
3.	Select Add a language .	

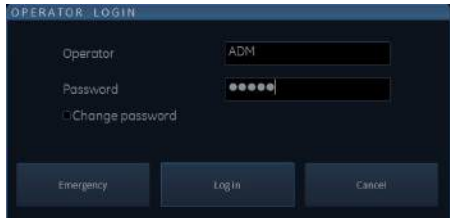
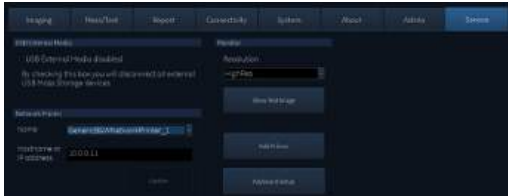
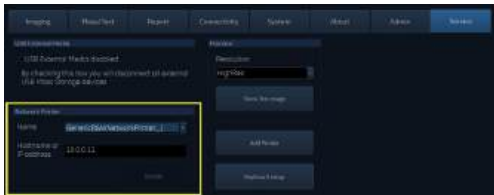
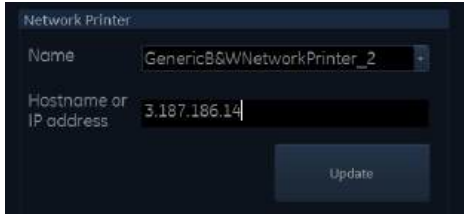
Table 3-6: Select keyboard

No.	Steps	Corresponding Graphic
4.	Select the desired language and press Next .	
5.	Select Install .	
6.	The desired language is listed and user can press Alt+Shift to change the input language.	

Add printer

Follow the instructions below to add a Network Printer:

Table 3-7: Add printer

No.	Steps	Corresponding Graphic
1.	Power up the Ultrasound System. and log on as ADM .	
2.	Press Config on the shortcut bar and select Service tab to open the Service Screen.	
3.	Under Network Printer , select the generic printer of your own choosing in the Name pulldown menu.	
4.	After selecting the generic printer name, type in the printer's IP-address , then press the Set IP-address button.	
5.	Restart the Ultrasound System before you continue.	
6.	Instructions for how to assign a printer to one of the printer keys, are described in the User Manual in 'Printing configuration' in the 'Peripherals chapter'.	
7.	For verification, see 'Printer checks' in Chapter 4.	

Peripherals Installation

Overview

This section describes how to install and configure the peripherals validated for the Vivid *iq*.

The system supports external USB mouse and keyboard as well.

About the operation check-out of peripherals, '[Peripheral checks](#)' on [page 4-50](#)

Table 3-8: Vivid *iq* Peripherals

Description	Weight (kg)	Power	Control	Model
B/W USB Printer			USB port	Sony UP-D898MD Printer
Color USB Printer			USB port	Sony UP-D25MD Printer
3-Pedal Footswitch			USB port	MKF 2-MED GP26
USB Stick			USB port	USB Memory Stick
USB2.0 HDD			USB port	USB HDD 1T
ECG			ECG Port	ECG Cable

Furnished materials

This section describes the materials furnished with the Peripherals and with the system.

Retain the original carton and packing materials in case transport is needed in the future.

- B/W USB Printer

Table 3-9: Materials furnished with B/W Printer

Item	Description	Quantity	Note
1	Sony UP-D898 MD Printer	1	
2	Paper Roll	1	
3	USB cable	1	

- Color USB Printer

Table 3-10: Materials furnished with Color USB Printer

Item	Description	Quantity	Note
1	Sony UP-D25MD Printer	1	
2	Paper Roll	1	
3	AC Power Cord (local purchase)	1	
4	USB cable	1	

- USB Stick

Table 3-11: Materials furnished with USB Stick

Item	Description	Quantity	Note
1	USB Memory Stick	1	
2	Paper Roll	1	
3	USB cable	1	

Furnished materials(continued)

- USB 2.0 HDD

Table 3-12: Materials furnished with the USB 2.0 HDD

Item	Description	Quantity	Note
1	USB 2.0 HDD	1	
2	USB Cable	1	

- 3 Pedal Footswitch

Table 3-13: Materials furnished with the Footswitch

Item	Description	Quantity	Note
1	MKF 2-MED GP26 Footswitch	1	

Peripherals Installation Instructions

Sony UP-D25MD Printer Installation

Tools

No special tools needed.

Manpower

One person 5 min.

Preparations

1. Unpack the Sony UP-D25MD Printer.

Installation Procedure

1. Place the device in a suitable place.
2. Connect the USB Cable on the Printer.
3. Connect the power cord with the AC output in the wall outlet, then turn on the printer.
4. Connect USB cable to Vivid *iq* USB port.



Figure 3-3. Color Printer connection

UP-D898 MD Printer Installation

Tools

No special tools needed.

Manpower

One person 5 min.

Preparations

1. Unpack the UP-D898 MD Printer.

Installation Procedure

1. Place the device in a suitable place.
2. Connect the USB Cable on the Printer.
3. Connect the power cord with the AC output in the wall outlet, then turn on the printer.
4. Connect USB cable to Vivid *iq* USB port.



Figure 3-4. UP-D898 MD connection

Footswitch Installation

Tools

No special tools needed.

Manpower

One person 5 min.

Preparations

1. Unpack the Footswitch.
2. Ensure no physical damage.

Installation Procedure

1. Connect the Footswitch to the USB port on the Vivid *iq* system.



Figure 3-5. Connect Footswitch to the system

ECG

Tools

No special tools needed.

Manpower

One person 5 min.

Preparations

1. Unpack the ECG adapter cable.
2. Ensure no physical damage.

Installation Procedure without ECG Adapter Cable (For v204)

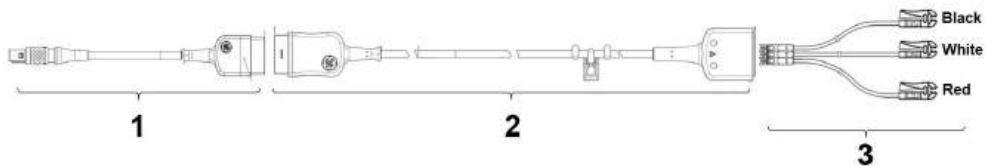
1. Connect the ECG cable on the Vivid *iq* system.



Figure 3-6. Connect ECG to the system

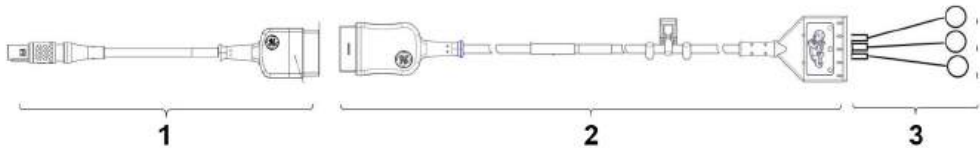
Installation Procedure with ECG Adapter Cable (For v204 and v206)

1. Connect the round connector of this ECG Adapter Cable to Vivid iq.
2. Connect the rectangular connector of this ECG Adapter Cable to Multi-Link 3-lead ECG Trunk cable.
3. Connect the leadwire set to the electrodes. Verify that the ECG signal appears on the ultrasound screen.



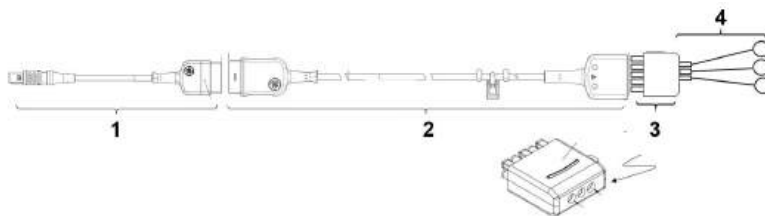
1. ECG Adapter Cable (H48552BR)
2. ECG cable, adult (H45601SB/H45601SD)
3. ECG lead set, adult (H45601SC/H45601SE)

Figure 3-7. Adult Configuration



1. ECG Adapter Cable (H48552BR)
2. ECG cable, neo (H45601SF/H45601SG)
3. Lead electr, neo (H45571RJ/H45571RK)

Figure 3-8. Neonatal Configuration 1



1. ECG Adapter Cable (H48552BR)
2. ECG cable, adult (H45601SB/H45601SD)
3. Adapter, ECG 3-lead (H45601SK)
4. Lead electr, neo (H45571RJ/H45571RK)

Figure 3-9. Neonatal Configuration 2

Ethernet protection cable

Tools

No special tools needed.

Manpower

One person 5 min.

Preparations

1. Unpack the ethernet protection cable.

Installation Procedure for Ethernet protection cable

1. Prepare the Ethernet protection cables (two).



2. Combine two Ethernet cables.

Green color: connect to Ethernet cable

Red color: connect to Ethernet port of console



Software Options Configuration

Software Option Installation Procedure

NOTE: Not all features described in this section may be available or cleared for sale in all markets. Please contact with your local GE Ultrasound representative to get the latest information.

1. Power on the system.

NOTE: Keep the power cord connection during the installation.

2. After the power-up sequence is complete, press **Config** on the Shortcut Bar, and then select **Admin**.



WARNING

For Software Option Installation, the operator must login as Administrator.

3. In **System Admin** tab, select **New**.

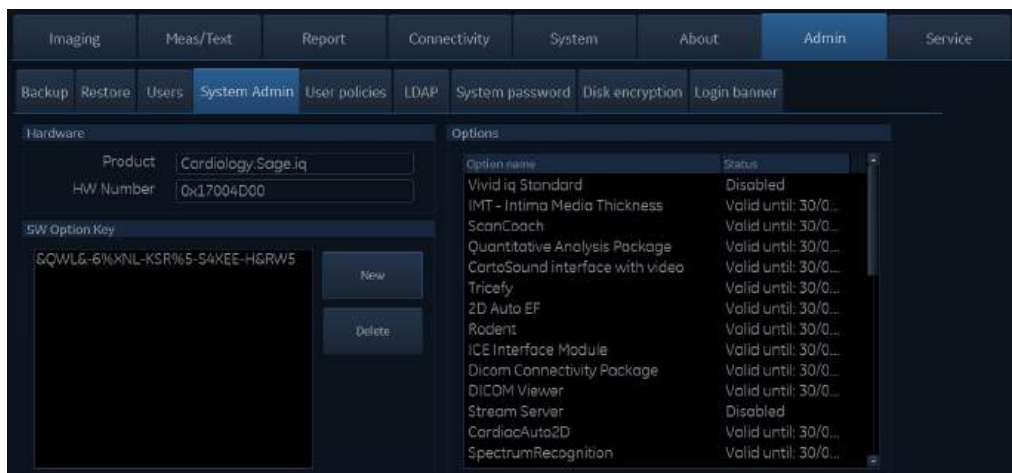


Figure 3-10. New Option Key

Software Option Installation Procedure(continued)

4. In the pop-up screen, input the new key and select **Save**.

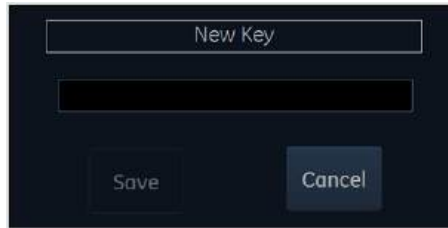


Figure 3-11. Dialog Window

NOTE: *There is no need to restart the system after each installation, if several option keys are installed at one time. Select Cancel for the first several times, and select OK after the last installation to activate all the changes.*

5. After the system is powered on, check the option status.
The option status explanation:
 - Permanent: This option is enabled in the system.
6. Exit and check the function of the option installed.

Connectivity Overview

Physical connection

There are several possible connection methods, as outlined below.

Stand-alone Vivid *iq*

No network connection needed.

“Sneaker Net” environment

No network connection needed.

Use removable media to move the data.

Wired Ethernet from Vivid *iq* to a workstation

Either of these situations may apply:

- Direct cable connection from Vivid *iq* to a workstation via a crossover cable.
You will only need a crossover cable for the connection.
 - a. Connect one end of the crossover cable to the network connector on the Vivid *iq*.
 - a. Connect the other end to the network connector on the workstation.
- Connection via a Peer-to-Peer network.
You will need a network hub and one crossover cable for each Ultrasound system / workstation.
- Connection via Hospital Network.

You will need one crossover cable to connect the Vivid *iq* to a wall outlet on the hospital's network.

NOTE: *You must use static IP addresses on all involved devices.*

Connection from Vivid *iq* to a DICOM Server on a network

You will need on crossover cable.

1. Connect one end of the cable to the Ethernet connector on Vivid *iq*.
2. Connect the other end of the cable to the wall outlet.

NOTE: *If a Peer-to-Peer network is connected to the hospital's network, you may connect the Vivid *iq* to the Peer-to-Peer network.*

NOTE: *You must use static IP addresses on all involved devices.*

v204 Connectivity

Introduction

To be able to use the network functions when connected to a hospital network, the Vivid *iq* must have a proper network address.

- Before you can set up the Vivid *iq*, you need to collect some information.
- The Worksheet located near the end of Chapter 2 in this manual can be used for gathering this information (Refer to [‘DICOM option setup requirements’ on page 2-20](#)).
- The typical source for this information is the network administrator.

Contents in this Section

- [‘Dataflow’ on page 3-38](#)
- [‘Printing Configure’ on page 3-61](#)
- [‘Tools’ on page 3-64](#)
- [‘Select TCP/IP Screen’ on page 3-66](#)
- [‘Set Server Network Settings’ on page 3-68](#)
- [‘Network Configuration’ on page 3-72](#)
- [‘Client Certificate’ on page 3-82](#)
- [‘Network Proxy Settings’ on page 3-91](#)
- [‘View-X’ on page 3-93](#)
- [‘View-X Direct’ on page 3-98](#)
- [‘Data Streaming’ on page 3-102](#)
- [‘Export configuration’ on page 3-107](#)
- [‘DICOM’ on page 3-110](#)
- [‘Tricefy’ on page 3-112](#)
- [‘Patient ID’ on page 3-122](#)
- [‘Patient List’ on page 3-123](#)
- [‘Disk Management’ on page 3-125](#)
- [‘Other’ on page 3-127](#)

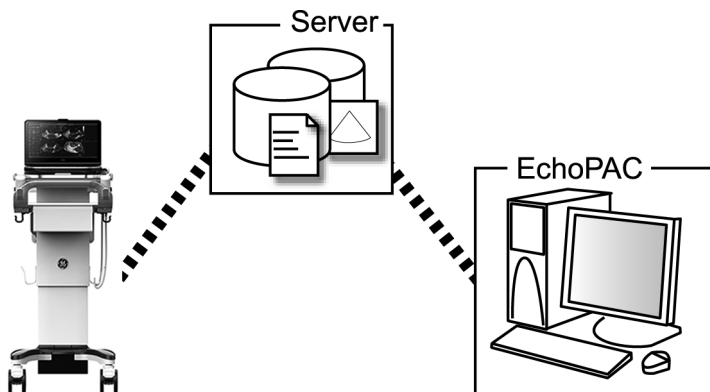
Dataflow

The dataflow concept

Communication between the Vivid *iq* ultrasound unit and other information providers on the network takes the form of dataflows. Selecting a dataflow will automatically customize the ultrasound unit to work according to the services associated with this dataflow. Each dataflow defines the location and format of patient information. Patient information can include demographic data and images, as well as reports, measurement and analysis data. By utilizing dataflows, the user can configure the Vivid *iq* ultrasound unit to optimally meet the connectivity needs of the facility, while keeping the user interface unchanged. The dataflow concept allows the flexibility of data to be obtained from various sources and allows data to flow to various output sources.

Dataflow examples

Stand-alone scanner	
Scanner 	
Acquisition: Scanner dataflow: LocalArchive-Int.HD	Review: Scanner dataflow: LocalArchive-Int.HD
The local database is used for patient archiving. Images are stored to internal harddrive.	

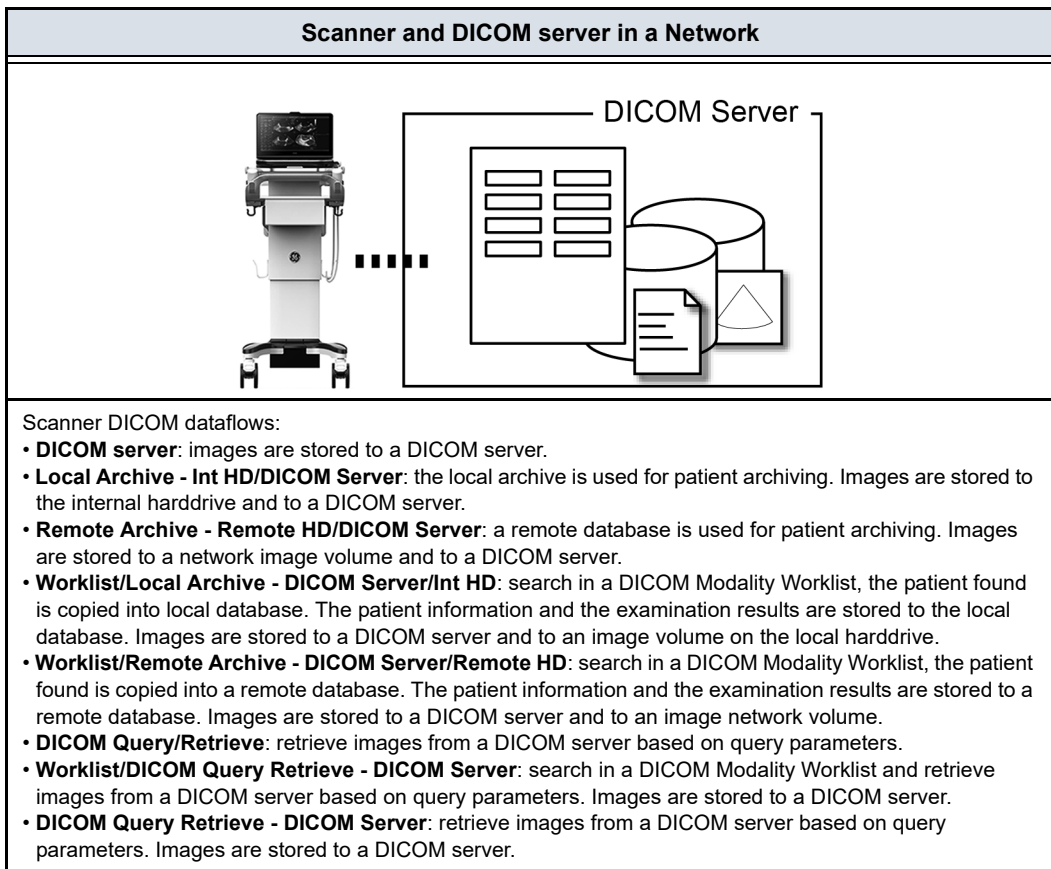
Scanner and Workstation in a network environment

Acquisition:
Scanner dataflow: **RemoteArch-Remote HD**

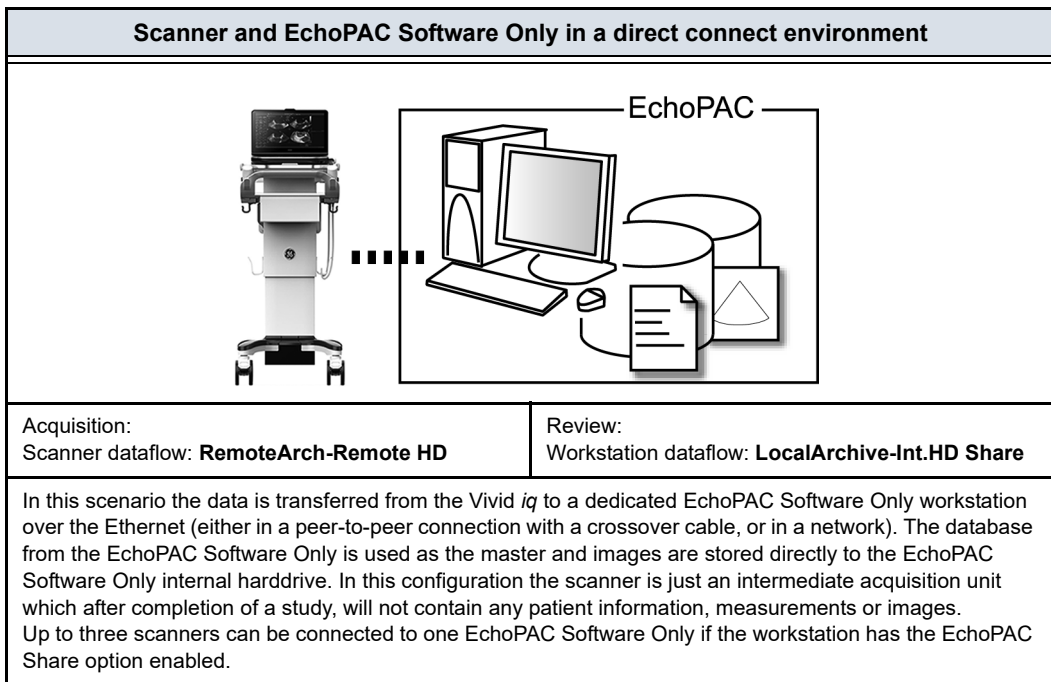
Review:
Workstation dataflow: **RemoteArch-Remote HD**

In this scenario the Vivid *iq* is configured to work with an ImageVault patient demographics and image server in a network environment. Images are first saved on the local image buffer on the scanner and transferred to the server when saving the examination.

Dataflow examples(continued)



Dataflow examples(continued)



Dataflows available

A set of pre-defined dataflows is available on the unit as listed in the table below.

NOTE: *Not all dataflow listed below are visible by default.*

NOTE: *The list of dataflow available is configurable.*

Dataflow	Description
LocalArchive - Int.HD	The local database is used for patient archiving. Images are stored to internal harddrive.
LocalArchive - Int HD/DICOM Server	The local archive is used for patient archiving. Images are stored to the internal hard drive and to a DICOM server. Some of the measurements are stored if DICOM SR is turned on (see page 3-53 for more information about DICOM SR and supported measurements).
RemoteArchive - RemoteHD	A remote database (either on EchoPAC Software Only or a server) is used for patient archiving. Images are stored to a network image volume (either internal HD on EchoPAC Software Only or a server).
Remote Archive - Remote HD/DICOM Server	A remote database is used for patient archiving. Images are stored to a network image volume and to a DICOM server. Some of the measurements are stored if DICOM SR is turned on (see page 3-53 for more information about DICOM SR and supported measurements).
Worklist/LocalArchive - DICOMServer/Int.HD	Search in a DICOM Modality Worklist, the patient found is copied into local database. The patient information and the examination results are stored to the local database. Images are stored to a DICOM server and to an image volume on the local harddrive. Some of the measurements are stored if DICOM SR is turned on (see page 3-53 for more information about DICOM SR and supported measurements).
Worklist/RemoteArchive - DICOMServer/RemoteHD	Search in a DICOM Modality Worklist, the patient found is copied into a remote database. The patient information and the examination results are stored to a remote database. Images are stored to a DICOM server and to an image network volume. Some of the measurements are stored if DICOM SR is turned on (see page 3-53 for more information about DICOM SR and supported measurements).

Dataflow	Description
Worklist/Local Archive - LocalHD	Search in a DICOM Modality Worklist, the patient found is copied into the local database. The patient information and the examination results are stored to the local database. Images are stored to an image volume on the local harddrive.
Worklist/Remote Archive - Remote HD	Search in a DICOM Modality Worklist, the patient found is copied into a remote database. The patient information and the examination results are stored to a remote database. Images are stored to an image network volume.
DICOM CD/DVD read	Read DICOM images from the CD/DVD-drive. Read only dataflow, no data can be stored.
DICOM Server	Store pure DICOM images to a DICOM device. Raw data may also be saved depending on the dataflow configuration. Some of the measurements are stored if DICOM SR is turned on (see page 3-53 for more information about DICOM SR and supported measurements).
DICOM Query Retrieve	Retrieve images from a DICOM server based on query parameters.
Worklist - DICOM Server	Search in the DICOM Modality Worklist. Images are stored to a DICOM Server. Some of the measurements are stored if DICOM SR is turned on (see page 3-53).
DICOM Query Retrieve - DICOM Server	Retrieve images from a DICOM server based on query parameters. Images are stored to a DICOM server. Some of the measurements are stored if DICOM SR is turned on (see page 3-53 for more information about DICOM SR and supported measurements).
Worklist/DICOM Query Retrieve - DICOM Server	Search in a DICOM Modality Worklist, retrieve images from a DICOM server based on query parameters. Images are stored to a DICOM server. Some of the measurements are stored if DICOM SR is turned on (see page 3-53 for more information about DICOM SR and supported measurements)
DICOM USB Harddisk/Memstick Read	Read DICOM data from an USB device. Read only dataflow, no data can be stored.
No Archive	Enables to perform an examination without storing the data to any archive.
Local Archive - Tricefy Store	The local archive is used for patient archiving. Images are stored to the local archive and to Tricefy. If DICOM SR is enabled, measurements are also sent to Tricefy.

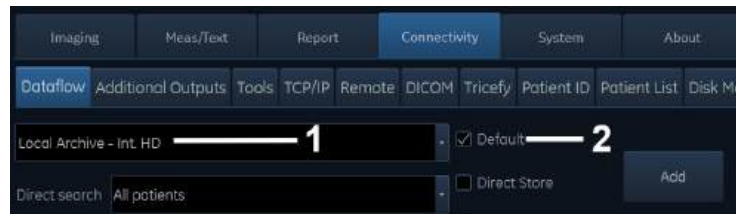
Dataflow	Description
Tricefy Store	Store images to Tricefy. If DICOM SR is enabled, measurements are also sent to Tricefy.
Local Archive - Tricefy Patient Share	The local archive is used for patient archiving. Images are stored to the local archive and to Tricefy. Images are also shared with the patient. If DICOM SR is enabled, measurements are also sent to Tricefy.
Tricefy Patient Share	Store images to Tricefy and share them with the patient. If DICOM SR is enabled, measurements are also sent to Tricefy.
Tricefy QR - Tricefy Store	Search in Tricefy patients and examinations. Retrieve images from Tricefy. Images are stored to Tricefy. If DICOM SR is enabled, measurements are also sent to Tricefy.
Tricefy QR - Tricefy Patient Share	Search in Tricefy patients and examinations. Retrieve images from Tricefy. Images are stored to Tricefy and shared with the patient. If DICOM SR is enabled, measurements are also sent to Tricefy.
Worklist/Tricefy QR - Tricefy Store	Search in a DICOM Modality Worklist, retrieve images from Tricefy. Images are stored to Tricefy. If DICOM SR is enabled, measurements are also sent to Tricefy.
Worklist/Local Archive - Tricefy Store	Search in a DICOM Modality Worklist, the patient found is copied into the local archive. The patient information and the examination results are stored to the local database. Images are stored to Tricefy and to the local archive. If DICOM SR is enabled, measurements are also sent to Tricefy.

Dataflow selection

Select a dataflow from the *Archive* screen or configure the system with a **default** dataflow from the Configuration management package as described below.

Default dataflow selection

1. Press **Config** and log on as administrator if required.
2. Select the **Connectivity** category and **Dataflow** subgroup. The *Dataflow* sheet is displayed (see [Figure 3-12](#)).
3. Select the desired dataflow in the *Dataflow* pull-down menu and check the option **Default**.
4. Press **Config** to exit the Configuration management package.



1. Select a dataflow
2. Default option for the selected dataflow

Figure 3-12. Default dataflow setting

Worklist configure

1. Press **Config** on the shortcut bar and log on as **ADM**.
2. Select **Connectivity** and then select **Dataflow** tab.

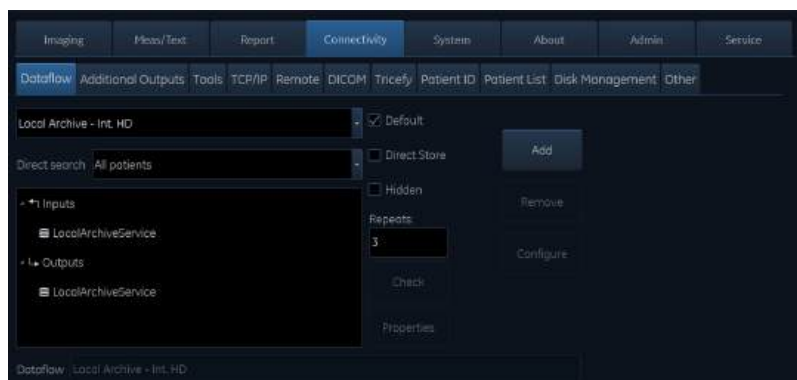


Figure 3-13. Select Dataflow

3. Open the **Dataflow** name pull-down menu.
4. Select the dataflow you want to configure.
In this example, **Worklist/Local Archive - DICOM Server/Int.HD** is selected.

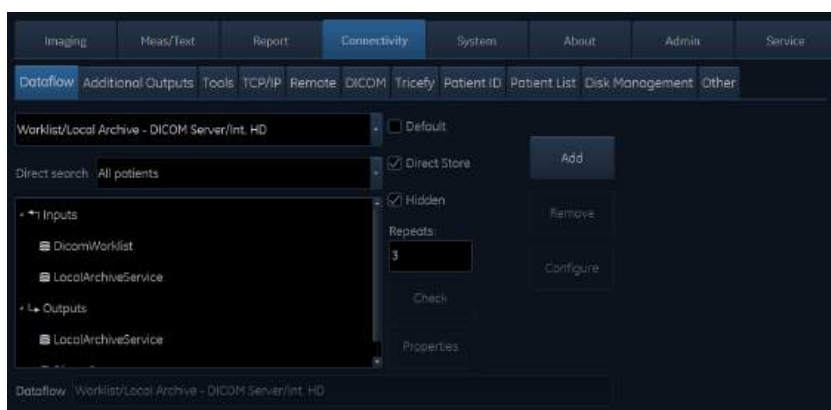


Figure 3-14. Select Dataflow Worklist/Local Archive - DICOM Server/Int.HD

Worklist configure(continued)

The selected flow, **Worklist/Local Archive - DICOM Server/Int.HD**, is shown.

Setup of other dataflows are similar to this example.

- If **Default** is enabled, this will be the default dataflow.
- If **Direct Store** is enabled, the image will go to the DICOM server immediately after it is acquired. You will need to verify that the DICOM server is capable of keeping the connection open for the time it takes to complete an examination.
- If **Hidden** is enabled, the dataflow will be invisible in the **Search/Create Patient** screen. Uncheck **Hidden** to display the dataflow in the **Search/Create Patient** screen.

5. Select **DicomWorklist**.

6. Select **Properties** to display the “Properties” dialog.

Figure 3-15. Select DicomWorklist > Properties

Worklist configure(continued)

7. In the **Properties** dialog, select the **IP-address** pull-down menu to select the Worklist Server.

It is not possible to change the setting in the *IP-address* filed by editing it.

To change the IP-Address settings, refer to '[Set Server Network Settings](#)' on [page 3-68](#).

- Enter the DICOM server's **AE Title**. This entry is case sensitive and must match exactly.
- Enter the DICOM server's **Port No.(Port number)**.
- For some DICOM servers, the default Time-out setting (30) is too low.
- Select **OK** to close the Worklist properties dialog and save changes.

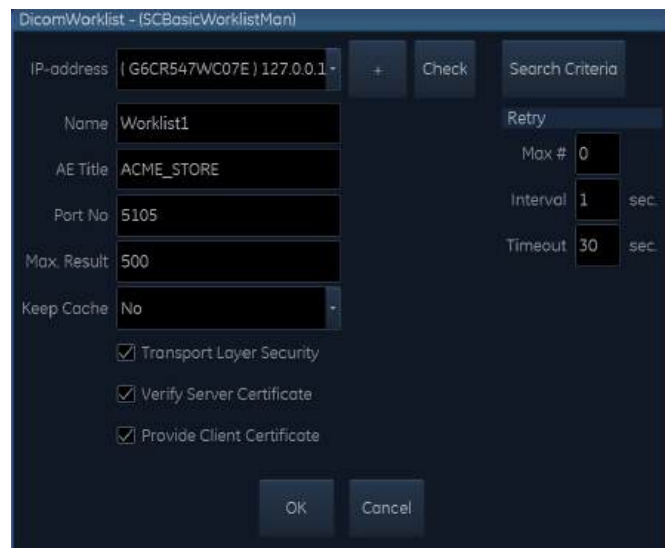


Figure 3-16. DICOM worklist properties window

Worklist configure(continued)

Search Criterias can be used to narrow the search in a Worklist.

Follow the steps below to change the Search Criteria parameters:

- Press **Search Criteria** and a *Search Criteria* window is displayed.
- Select the correct tage from the *Select tag* pull-down menu.
- If needed, type in the value.
- Select **Update list** to add search criteria.
- To remove, select the search criteria to delete from the Name list box then select Remove.

DICOM Storage configure

1. Press **Config** on the shortcut bar and log in as ADM.
2. Select **Connectivity** and then select **Dataflow** tab.
3. Select a appropriate **DICOM** dataflow.
4. Select **DicomStorage**.

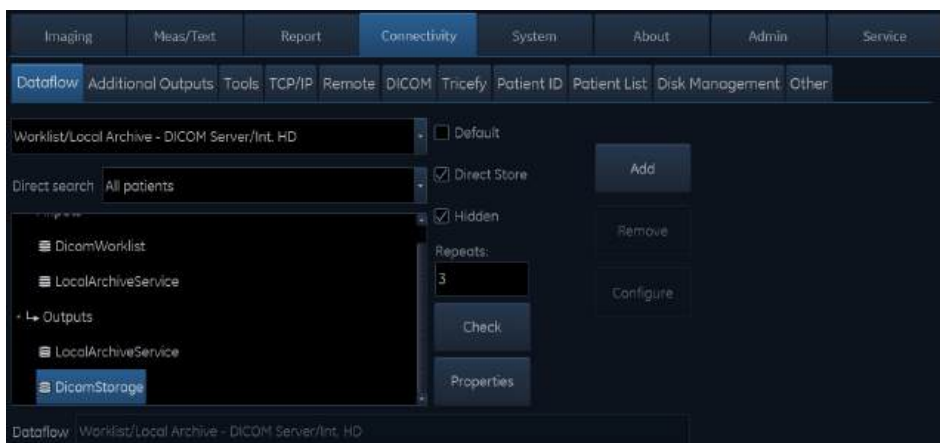


Figure 3-17. Select DICOM Storage

5. Select **Properties** to display the **DICOM Storage properties** screen.

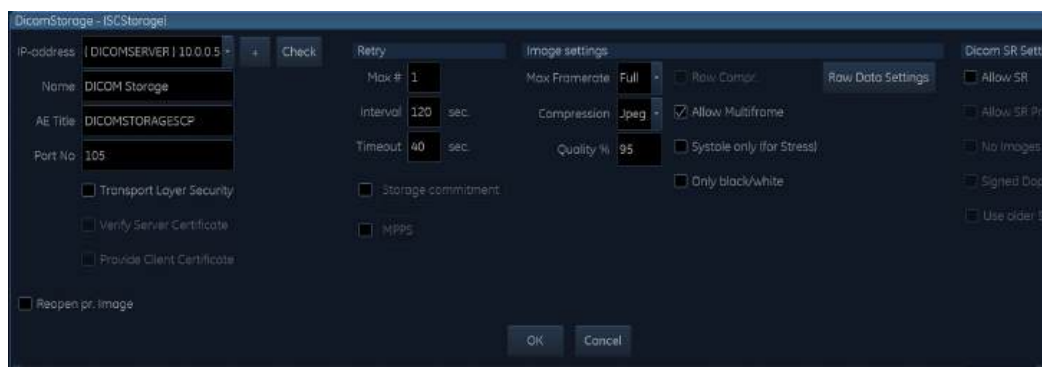


Figure 3-18. DICOM Storage Properties

DICOM Storage configure(continued)

- **Image Settings**



CAUTION

In Image Settings, setting compression to None may lead to very long transfer time and loops larger than 500s frames will be truncated. In case it happens, a warning is displayed on the screen.

The pull-down menu gives these choices:

- Jpeg - JPEG/JPG compression (Default). JPEG is not lossless.
- None - (un-compressed data with huge files).

NOTE:

If you are using compression None, it is strongly advised to reduce Frame Rate to 25 or 30 to avoid truncating loops.

- Rle - Run Length Encoding. This is lossless compression.
- Quality % - Set the wanted quality %. Default value is 95%.

If files are stored with a quality lower than 95% they will occupy less space, but lose some quality.

NOTE:

Setting the quality % too low may add too much artifacts to the images that they cannot be used for diagnosis. If files are stored with a quality above 95%, the files will grow much larger without almost no quality change.

- **Retry**

Max# - The number of times the software will try to connect if the connection doesn't succeed the first time(s).

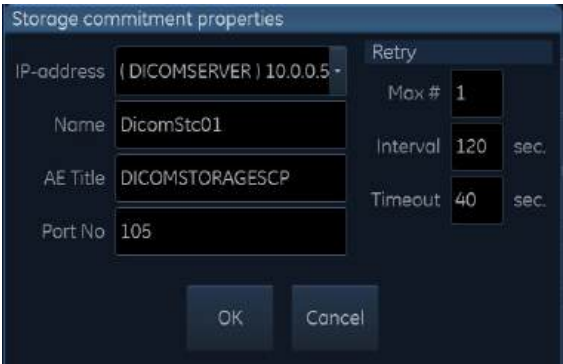
Interval - The interval in seconds between each attempt to connect.

Timeout- Adjust the time-out setting.

The retry settings can be used to make jobs retry on bad networks. There is no need to set retries for mobile (off-line) use.

DICOM Storage configure(continued)

- Storage Commitment**
If enable Storage Commitment, check the check-box and select *Storage commitment*. In the dialog, enter *IP address*, *Name*, *AE Title* and *port Number*.



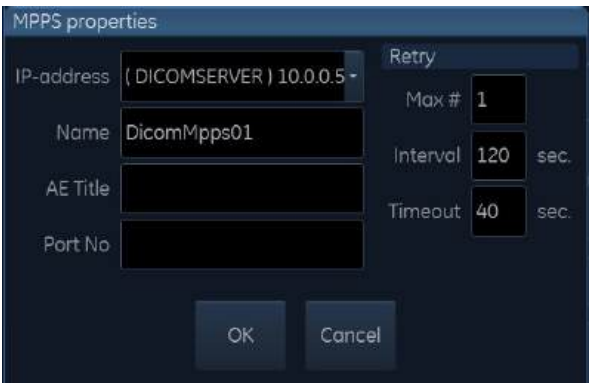
The 'Storage commitment properties' dialog box contains the following fields and settings:

Field	Value
IP-address	(DICOMSERVER) 10.0.0.5
Name	DicomStc01
AE Title	DICOMSTORAGESCP
Port No	105
Retry Max #	1
Interval	120 sec.
Timeout	40 sec.

Buttons: OK, Cancel

Figure 3-19. Storage Commitment Properties

- MPPS**
If enable MPPS, check the check-box and select **MPPS**.In the dialog, enter *IP address*, *Name*, *AE Title* and *port Number*.



The 'MPPS properties' dialog box contains the following fields and settings:

Field	Value
IP-address	(DICOMSERVER) 10.0.0.5
Name	DicomMpps01
AE Title	
Port No	
Retry Max #	1
Interval	120 sec.
Timeout	40 sec.

Buttons: OK, Cancel

Figure 3-20. MMPS Properties

DICOM SR

DICOM Structured Reporting (SR) is a standardized for medical results. Vivid *iq* supports the specialized form for Adult Echo Ultrasound (TID 5200 Echocardiography Procedure Report) and Vascular Ultrasound (TID 5100 Vascular Ultrasound Procedure Report) for M&A results.

With the DICOM SR support, M&A for an exam can be sent at the end of the exam or when exported from local archive. The destination can be either a server on the network or a removable media (DICOM Media), depending on the DICOM dataflow selected.

“TID 5200 Echocardiography Procedure Report” is sent if the exam contains M&A from category Cardiac or Pediatric (Heart).

“TID 5100 Vascular Ultrasound Procedure Report” is sent if the exam contains M&A from category Vascular or Abdominal. If the exam contains M&A from both Cardiac/Pediatric (Heart) and Vascular/Abdominal categories, two SR documents are sent.

“TID 5200 Echocardiography Procedure Report” and “TID 5100 Vascular Ultrasound Procedure Report” do not support all M&A results from Vivid E80/E90/E95. They are limited to the following:

- No unassigned measurement.
- The following modes: 2D, M-mode, Color Flow, PW Doppler, CW Doppler, 3D and TDI.
- Not modifies Simpson or Bullet methods.
- Basic derivations (Average, last, Min and Max), no references between the derived measurements and the ones they were made from.
- Wall Motion Scoring: individual segment scores only according to 16-segment model, no graded hypokinesis (only Hypokinesis is used).

DICOM SR(continued)

DICOM SR must be activated for each DICOM device.

1. Press **Config** on the shortcut bar and log on as **ADM**.
2. Select **Connectivity-> Dataflow**, the dataflow sheet is displayed.
3. Select the DICOM dataflow to configure in the *Dataflow* pull-down menu.
4. Select a DICOM storage device and press **Properties**.
The *Properties* window for the selected DICOM storage device is displayed.

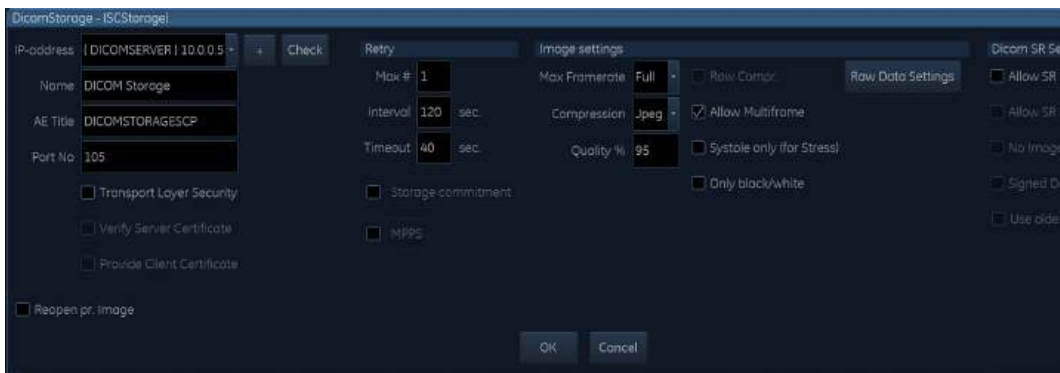


Figure 3-21. DICOM Storage Properties Window

5. Check the option **Allow SR** to enable DICOM SR.
The following additional options are available:
 - **Allow SR Private Data:** send the current exam data in private format. This option is by default unchecked and should only be used with DICOM storage devices that can handle private data format.
 - **Signed Doppler Velocities:** send signed Doppler velocities.
 - **No images:**no images are sent, only M&A
 - **Use older SR version:**when checked a *Use older SR version* pull-down menu is displayed. The current exam data will be sent in the same format as the selected SR version. Details about format and content of the SR version can be found in the corresponding user manual of the selected version.
6. Select **OK**.

XML Export

Display the XML Export Dataflow

Follow these steps to display the XML Export dataflow:

1. Press **Config** on the shortcut bar and log on as ADM.
2. Select **Connectivity** -> **Dataflow**.
The *Dataflow* sheet is displayed.
3. Select the dataflow **Export to XML** in the *Name* pull-down menu.

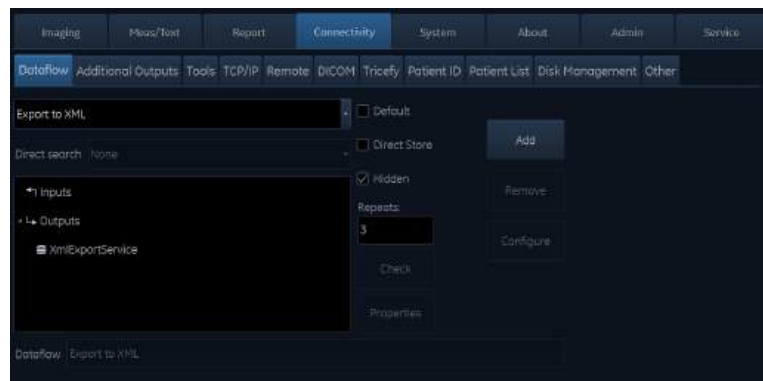


Figure 3-22. XML Export Dataflow

Export to Xml

1. Select the **XmlExportService** device and press **Properties**.
The *Excel properties* window is displayed.

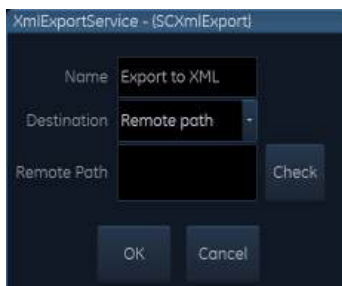


Figure 3-23. The XML Export Properties window

2. Select a removal media or a network volume as the destination in the Destination pull-down menu.

NOTE: *Remote paths of network volumes must be entered once in the Remote path field before they can be selected from the Destination pull-down menu.*

3. Select **OK**.

Query/Retrieve Configure

Overview

The Query/Retrieve function makes it possible to search and retrieve DICOM data from a DICOM server for further analysis on the Vivid *iq*.

NOTE: *You may have to set up Vivid iq as a destination on the server.*

Query/Retrieve Configure on Vivid iq

1. Press **Config** on the shortcut bar and log on as ADM.
2. Select **Connectivity** -> **Dataflow**.
3. Select **Query retrieve** from the pull-down menu.

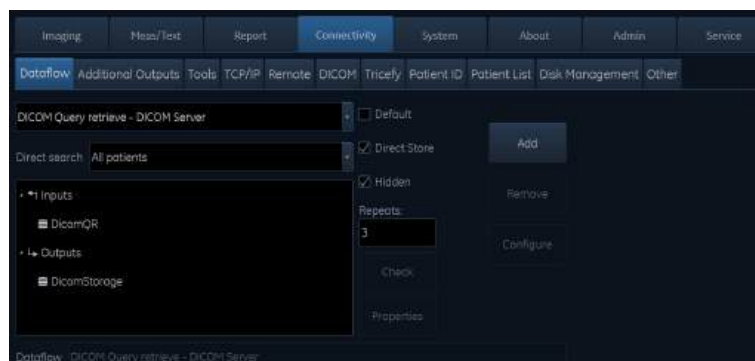


Figure 3-24. Select DICOM Query Retrieve - DICOM Server Dataflow

4. Select **DicomQR** and then select **Properties** to display the Properties dialog.

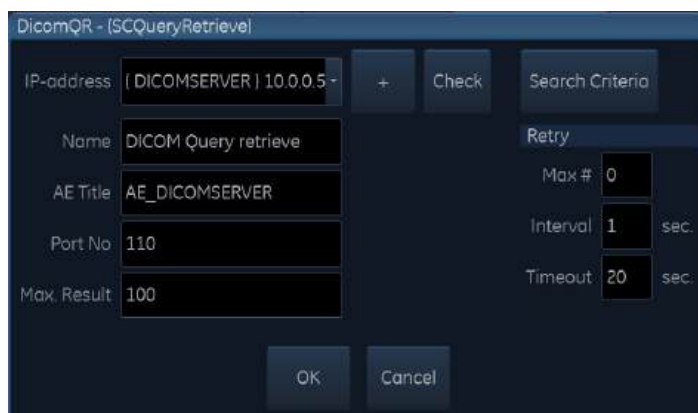


Figure 3-25. Select DicomQR Properties

5. Select the IP-address down-arrow to choose the DICOM Query/Retrieve server from the pull down menu. In some cases, the server to use is the same as used for DICOM Storage.
6. Enter the correct AE Title and Port Number for the DICOM Query/Retrieve server in the respective fields in the Dicom QR's Properties screen.

Query/Retrieve Verification

1. Follow the steps in ['Verify the Network Connection to a Device' on page 3-60](#) to verify the TCP/IP connection of the Query/Retrieve Server.
2. Follow the steps in ['Verify the Network Connection to a Device' on page 3-60](#) to verify the connection to the Query/Retrieve Server.

Verify the Network Connection to a Device

Follow the steps below to do a First Test (TCP-IP Ping) of the network connection:

1. Highlight the device to be verified and select **Properties**.
2. Select the **"Check"** button to **Ping** the server.

NOTE: By selecting the "Check" button, a ping is sent to the remote server to see if it is accessible via the network. It is not a DICOM Echo (DICOM ping), so it does not check AE title or port number.

3. If the network connection to the server is OK, it will be illustrated by the "Pass" sign, a white check mark on a green background .

The "Fail" sign  indicates that the network connection is failing.

Typical causes:

- Network cable not connected
- Configuration error(s)

Printing Configure

Introduction

System configuration for printing requires to:

- configure the **P1** tab on the Shortcut bar.
- select and set up a printer.

Print tab configuration

The **Print** tab on the shortcut bar can be configured to perform several actions (e.g. Video Print, Laser print, DICOM storage...etc.).

To configure the **P1** button:

1. Select **Config** on the operation panel.
2. Select the **Connectivity** category and **Additional outputs** subgroup.

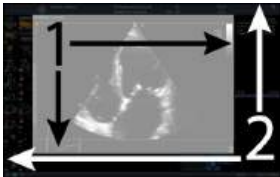
The *Additional output* sheet is displayed.

3. In *Button* field select **P1**.
4. Select an output device in the *Available output* field and press the **Right arrow** button to assign the device to the selected button.

The *Properties* window for the selected device is displayed, if configurable.

5. Adjust the device specific parameters and select **OK**.
6. Adjust the image specific parameters (see table below).

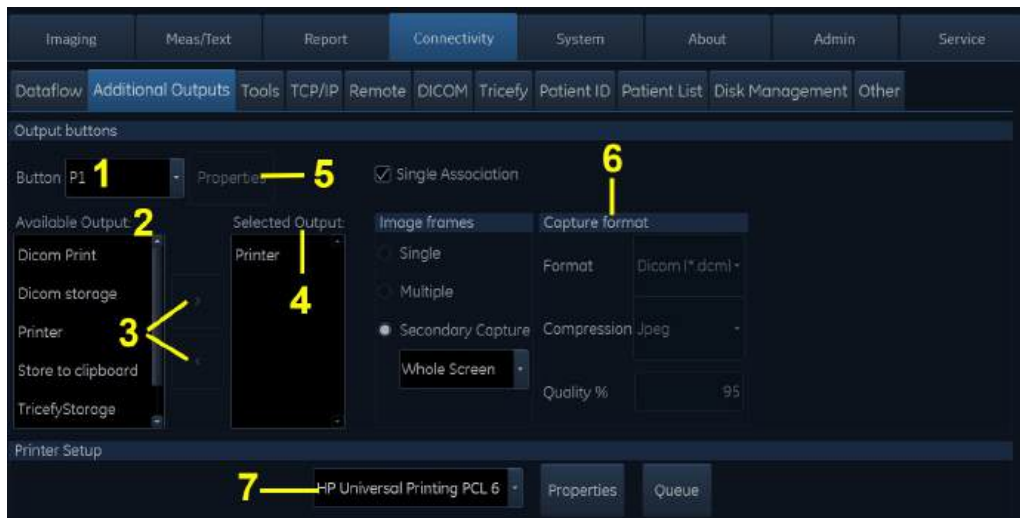
Print tab configuration(continued)

Image parameters	
Format	Select between: • Raw DICOM • DICOM
Image compression	Select compression mode or no compression.
Quality	When JPEG compression is selected, adjust the picture quality between 1 and 100%. A low picture quality level allows high data compression, while a high picture quality restrains the compression.
Image frames	Select between: • Single: stores single frame only • Multiple: stores cineloops • Secondary Capture: stores a screen shot
Capture Area	Select between: 1. Video Area (1) 2. Whole Screen (2) 

To remove a device, select the device in the *Selected devices* field and press the **Left arrow** button.

Printer setup

1. In the *Printer setup* field select a printer.
2. Press **Properties**.
The *Printer Properties* window is displayed.
3. Adjust the parameters for the printer.
4. Select **OK** to close the *Printer Properties* window.



1. Select **P1**.
2. Available output devices that can be assigned to the current button.
3. Add or remove selected device to/from the current button.
4. Output devices assigned to the current button.
5. Adjust the device settings of the selected assigned device.
6. Select the type of images to produce and adjust image settings.
7. Printer configuration (see page 3-63)

Figure 3-26. The Additional outputs sheet

Tools

Formatting removable media



CAUTION

The formatting process will erase any data present on the media.

To format removable media:

1. Insert the USB drive in the USB port.
2. Select **Config** on the Shortcut Bar.
3. If required, log on to the system.
4. Select the category **Connectivity** and select the tab **Tools** (Figure 3-27).
5. Select the removable media from the *Media* drop-down menu (CD-R, DVD-R or USB device).

NOTE: Select **Refresh** if the media does not appear on the list.

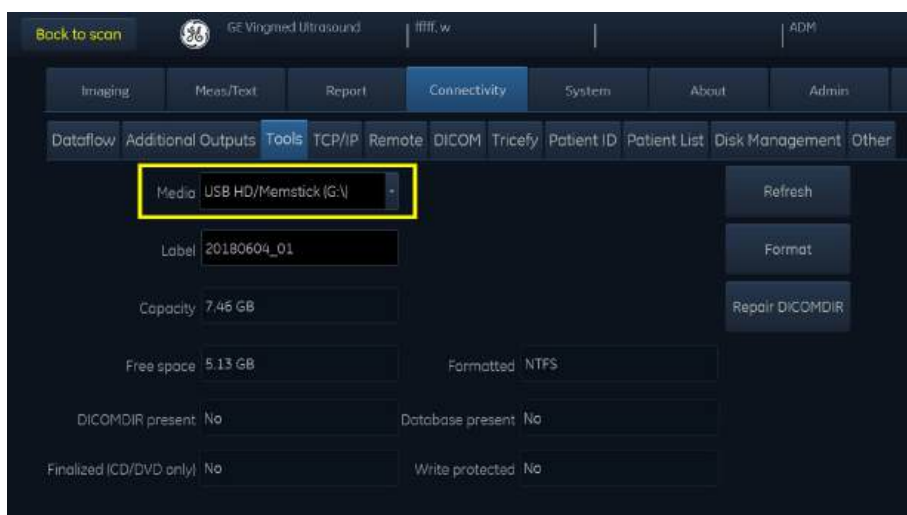


Figure 3-27. The Tools tab

Formatting removable media(continued)

6. Enter a name for the removable media in the *Label* field.

NOTE: *Only the following characters and signs can be used when labelling a media: A - Z, a - z, 0 - 9, “_” and “-”. Do not use more than 11 characters or signs. Do not use space.*

7. Press **Format**.

A confirmation window is displayed.



Figure 3-28. Formatting process

8. Select **YES** to continue.
9. Waiting for the display of the information window indicating that the formatting process is completed.

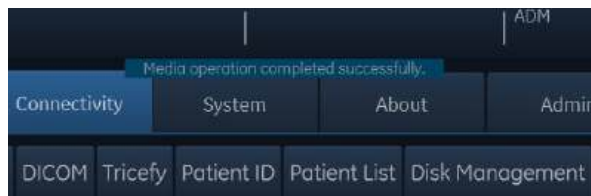


Figure 3-29. Formatting is completed

10. Eject the media as described below.

NOTE: *Removable media used during Disk space management, Backup, Export, or Save as do not need to be formatted in advance as the formatting process is part of these procedures if required.*

Select TCP/IP Screen

1. Press **Config** on the shortcut bar and login as **ADM**, refer to [‘Logging on to Vivid iq as “ADM”’ on page 4-12](#).
2. Select **Connectivity** on the screen.
3. Select **TCP/IP** tab.

The resulting screen gives you an overview of the network settings for Vivid *iq*.

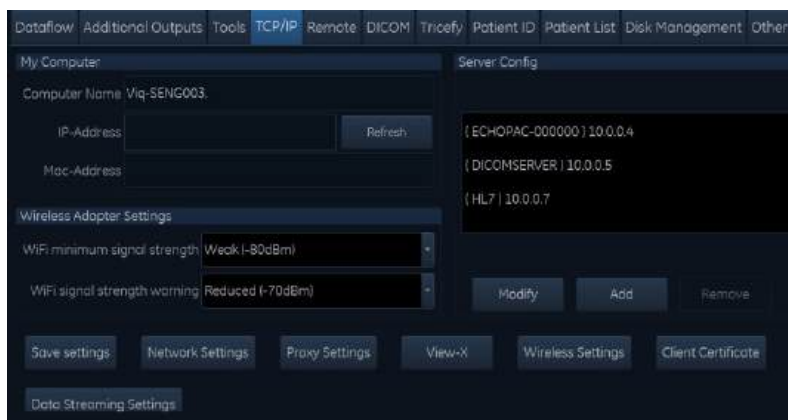


Figure 3-30. TCP/IP Screen

Select TCP/IP Screen(continued)

- **My Computer**
 - **Computer Name:** For Vivid *iq*, it is of this form: VIVIDX-00NNNN, NNNN is the Ultrasound system's serial number.
 - **IP-Address**
 - **Mac-Address**
4. **Server Config:**
 - **Servers:** List of servers.
 - **Buttons:** Use the buttons to Add, Modify, or Remove servers.
 5. **Wireless Adapter Settings:**
 - **Saving Settings:** Select to archive any changes that have been done to the TCP/IP Settings.
 6. **Network Settings:** Select to change the system's IP settings or turn DHCP on or off.
 7. **Proxy Settings:** Configure network proxy settings.
 8. **View-X:** Configure streaming source for View-X.
 9. **Wireless Settings:** Select to configure WiFi network connection.
 10. **Client Certificate:** Click this button to be able to enter certificates.
 11. **Data Streaming Settings:** Configure streaming of live ultrasound image data

Set Server Network Settings

To be able to connect to a remote archive on a remote computer or server, you must configure Vivid *iq* to communicate with it.

The configuration is done in the Server Config setup area on the TCP/IP screen.

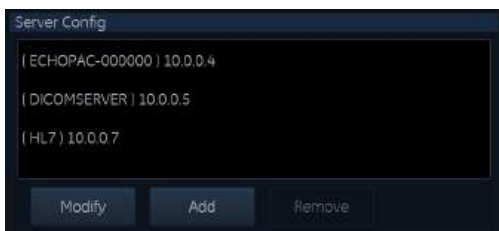


Figure 3-31. Server Config

To Access the TCP/IP Screen

Follow this procedure to access the TCP/IP screen:

1. Log on as **ADM**.
2. Select **Connectivity>TCP/IP**.

To Add a Server in the Server Config List

Follow this procedure to add a server in the list:

1. Select **Add**.

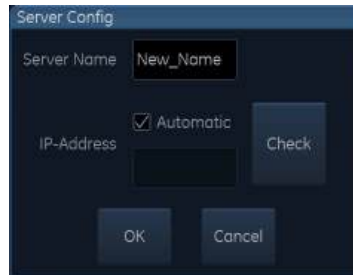


Figure 3-32. Server Config

2. Add the server's name in the *Server Name* field.
3. Add the server's IP address in the *IP-Address* field.
4. Select **Check** to verify that the server is found.

This check is a network Ping. A symbol to the right of the Check button indicates the result:

- A green check mark next to the Check button indicates that the IP-Address is found on the network.
- A red check mark indicates that the IP-Address can't be found.

Possible reasons:

- No network connection between the ultrasound system and the server.
- The wrong IP address.

To Modify the Setup for a Server in the List

NOTE: Both the pre-defined servers and new servers can be modified.

Follow this procedure to modify the setup for a server in the list:

1. Highlight the server you want to modify.
2. Select **Modify**.
3. Update the information as needed.
4. Select **Check** to verify that the server is found.

This check is a network Ping. A symbol to the right of the Check button indicates the result:

- A green check mark next to the Check button indicates that the IP-Address is found on the network.
- A red check mark indicates that the IP-Address can't be found.

Possible reasons:

- No network connection between the ultrasound system and the server.
- The wrong IP address.

5. Select **OK** to confirm your new settings, or **Cancel** to leave without doing any changes.

To Delete a Server from the List

Follow these steps to delete a server from the list:

1. Highlight the server you want to delete from the list.

NOTE: You can only delete extra servers. The predefined servers (listed on-screen) can be modified, but not deleted.

2. Select **Remove**.

Save the New Settings

1. Press **Save Settings** to save the new settings.
The new settings are saved to a common settings file. After a restart, the settings are also included in other screens.
2. Restart ultrasound system to activate the changes.

Network Configuration

Wired configuration setup

1. Connect system with network.
2. Select **Config-> Connectivity-> TCP/IP-> Network Settings**.

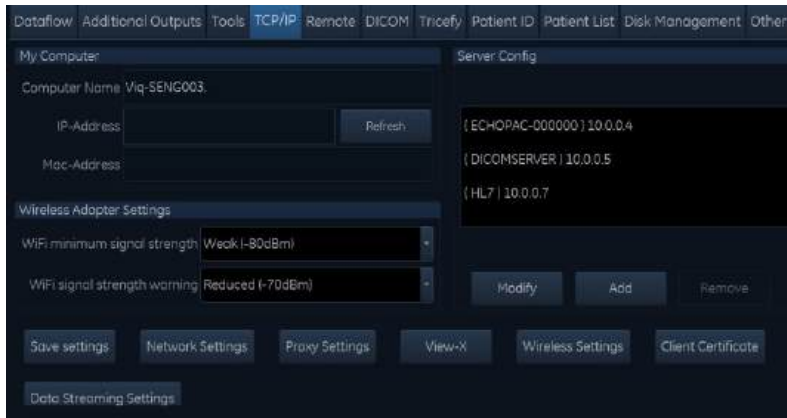


Figure 3-33. Network Settings

Wired configuration setup(continued)

3. Select **Ethernet**.



Figure 3-34. Network Connection

4. Select **Properties** in the Local Area Connection Status window.

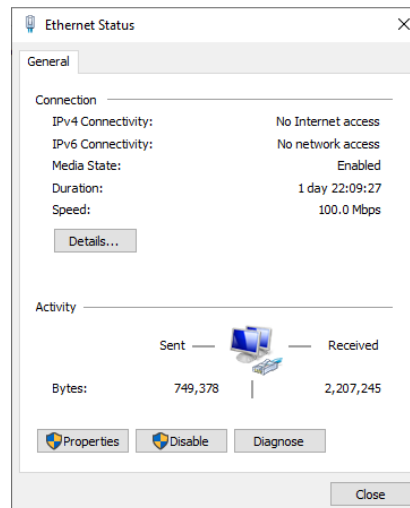


Figure 3-35. Connection Status

Wired configuration setup(continued)

5. Select **Internet Protocol (TCP/IPv4)** from the terms, and then select **Properties**.

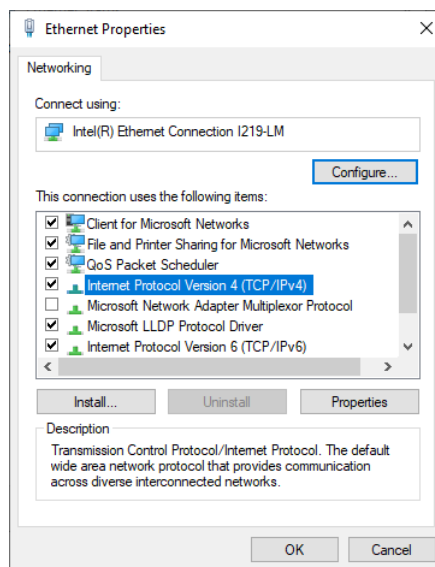


Figure 3-36. TCP/IP Protocol

Wired configuration setup(continued)

6. Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**, and then select **OK**.

NOTE: *If user wants to setup static IP address, input static address in **IP-Address box**, **Subnet Mask** and **Default Gateway** box.*

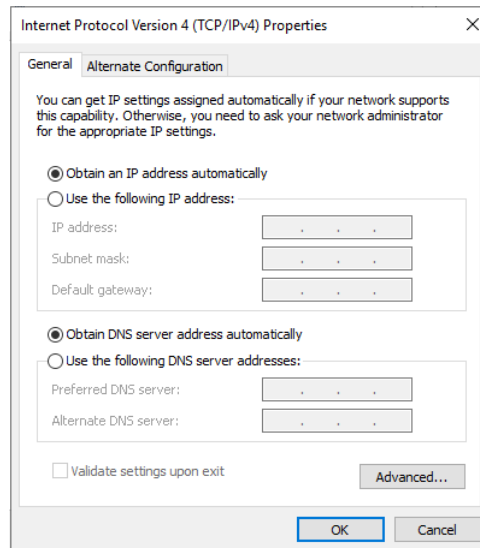


Figure 3-37. IP Address

7. The network icon at the bottom of the the screen displays as connected.

Wireless-LAN Network

The following procedure is used to configure the Ultrasound System for a wireless network environment. This procedure is required for every new wireless network.

NOTE: *Do not use any type of wireless network adaptor other than a GE-approved adaptor.*

Wireless protocols on Vivid iq Ultrasound System

The following wireless protocols are supported:

- IEEE 802.11a
- IEEE 802.11b
- IEEE 802.11g
- IEEE 802.11n
- IEEE 802.11ac

The following security protocols are supported on the wireless interface:

- No authentication (Open)
- WPA2-Personal
- WPA-Personal
- WPA2-Enterprise
- WPA-Enterprise
- 802.1X

Configuring the Wireless Network Adaptor

Follow this procedure to configure the Wireless Network Adaptor:

1. Press **Config** and log on as **ADM**.
2. Select **Connectivity**.
3. Select the **TCP/IP** tab.
4. Click the **Wireless Settings** button.

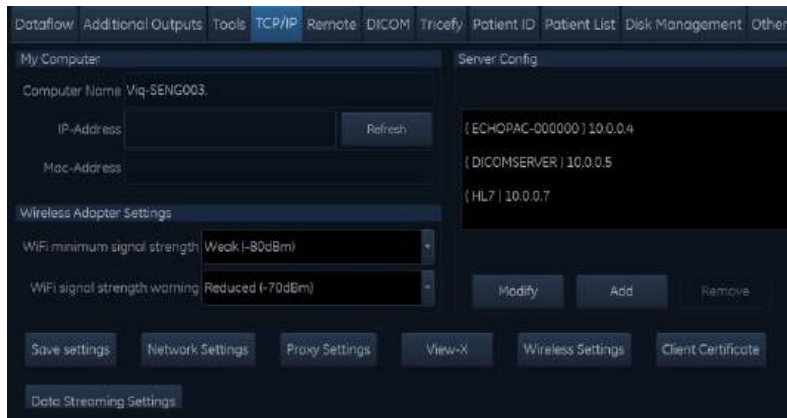


Figure 3-38. Connectivity - TCP/IP Tab



Figure 3-39. Wireless Settings Main Screen

Wireless-LAN Network(continued)

NOTE: *If a wireless network adapter is not connected, or if the connected wireless network adapter is not the correct model, no wireless networks will be listed in the Wireless Settings page.*

5. Either double-click or select the network you want to connect to, and press the **Connect** button.
If this is the first time you attempt to connect to the network, a dialog will pop up on screen asking you to configure the network setting.

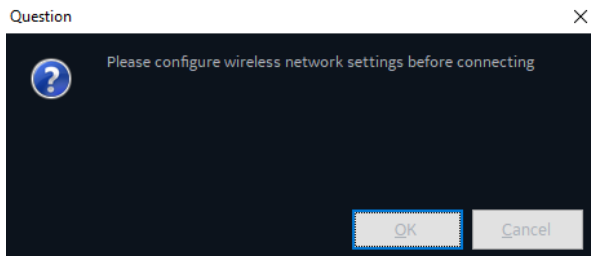


Figure 3-40. First Time Connection Dialog

6. Press **OK** in the dialog window. A new window for setting up your connection will open

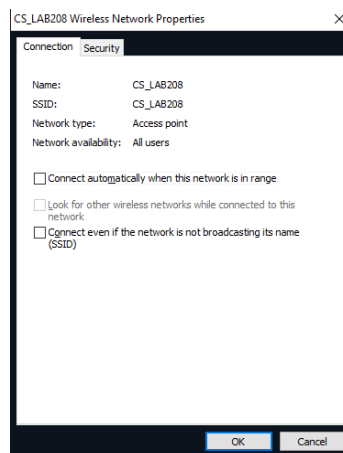


Figure 3-41. Network Settings Window - Connection

Wireless-LAN Network(continued)

7. Select check-boxes according to preference.
If **Connect automatically when this network is in range** setting is selected, then this network will auto-connect when available, without needing to enter the **Wireless Settings** page.
8. Set up security options in the Security tab of connection setup dialog.

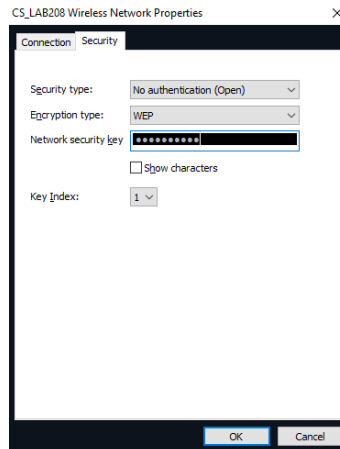


Figure 3-42. Network Settings Window - Security

Wireless-LAN Network(continued)

- 9. If the wireless network is to be configured for WPA/WPA2 Enterprise and a customer specific certificate is to be installed on the system, this can be done by use of the certificate dialog available from the LDAP config page.
 - a. First go to LDAP config,

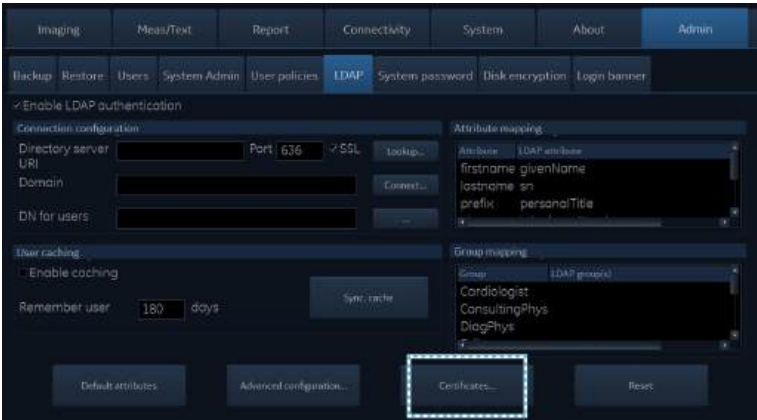


Figure 3-43. LDAP Config Screen

- b. Then click on the Certificates... button to open the Certificate dialog,

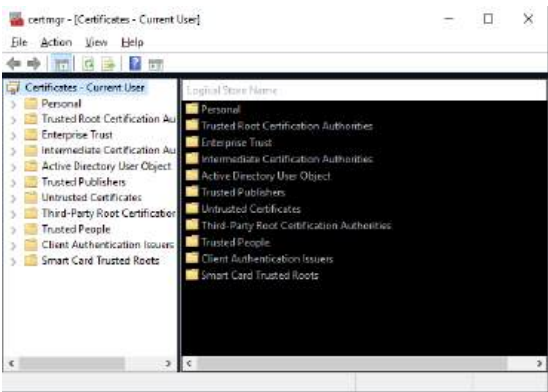


Figure 3-44. Certificate Dialog

Wireless-LAN Network(continued)

10. After you have finished setting up your connection press **OK**. The ultrasound system will then try to establish a connection to your network. A dialog will be shown on screen while this is in progress.

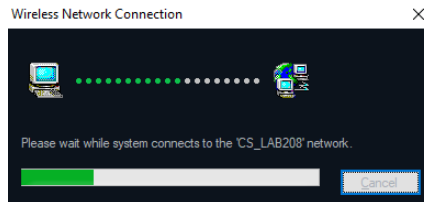


Figure 3-45. Connecting to Network Dialog

11. Once a connection has been established you will see the status **Connected** in the **Wireless Settings** page, next to the network you have connected to.

All network connections that are configured will also be displayed with a star icon.

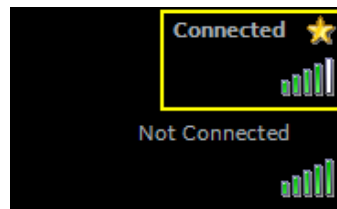


Figure 3-46. Connection Established

NOTE: *The system is now connected to the desired Wireless Network. In future, as long as the same Wireless Network is available, connection will be automatic.*

NOTE: *Whenever connection to a new/different Wireless Network is required, it will be necessary to repeat all steps above.*

Client Certificate

How to import certificate

For DICOM TLS and Enterprise wireless configuration, certificate import is needed. User can import certificate without service dongle on software 204.92.0 and above as per the following procedures:

1. Press **Config** on the shortcut panel as administrator.
2. Select **Security** category and the **LDAP** subgroup.
The **LDAP** sub groups is displayed.

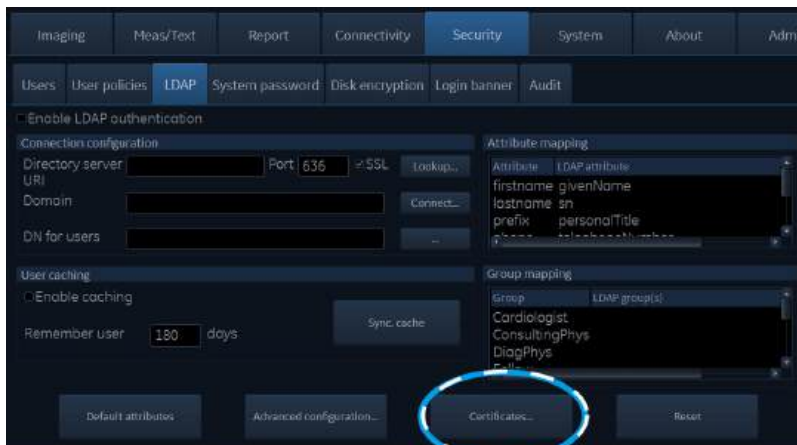


Figure 3-47. LDAP Subgroup

3. Click on the **Certificates** button.
The **Certificate Manager** window is displayed.
4. In the **Certificate Manager** window, select the folder where the certificate is to be imported to.
5. Click **Action-> All Tasks-> Import...** from the drop-down menu.

How to import certificate(continued)

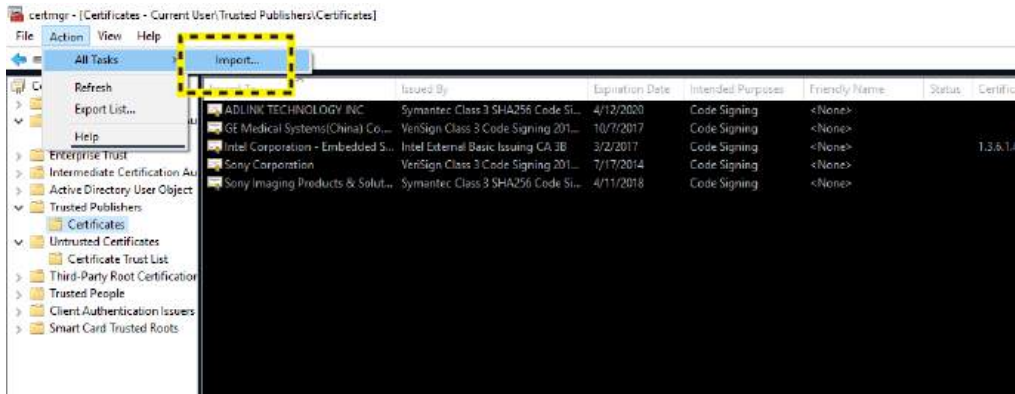


Figure 3-48. Import Certificate

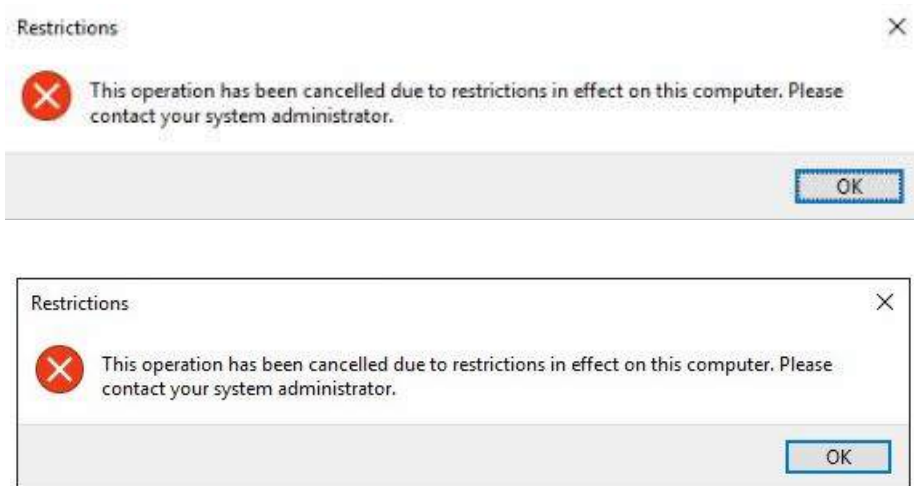
- Press **'Next'** button on the pop-up welcome window.



Figure 3-49. Certificate Import Wizard

How to import certificate(continued)

NOTE: If there is no dongle inserted, two warning boxes will appear, click "**OK**" to ignore them and continue importing; if a dongle is inserted, no warning boxes will appear.



7. Press **Browse** to find the certificate file to import.

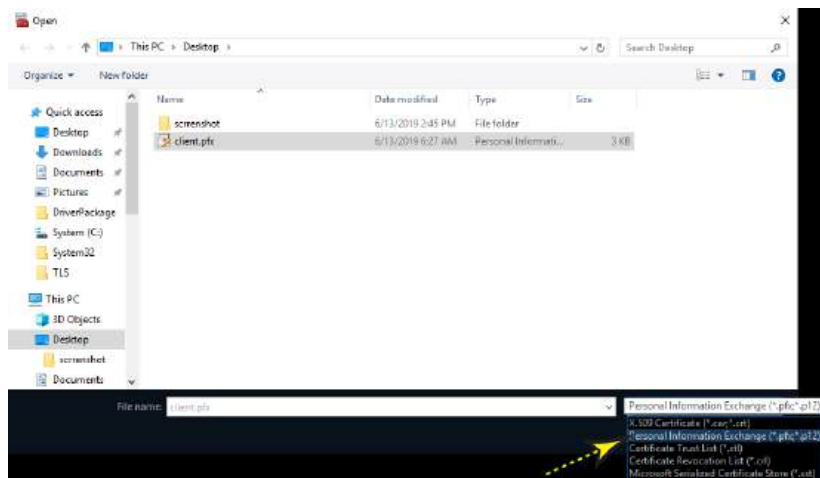


Figure 3-50. Import Certificate

How to import certificate(continued)

NOTE: *If importing a Client Certificate including a private key (e.g. in case of importing a certificate used for authenticating towards the DICOM server, the 'Provide Client Certificate' option) choose the certificate type from the list on the right of the 'File Name' box. Only the '*.pfx' certificate is supported for Client certificates.*

8. Browse to the certificate file to import, select the file and press **'Next'** to confirm.
9. (Optional) Enter the password and press the **'Next'** button to confirm the certificate import.

How to import certificate(continued)

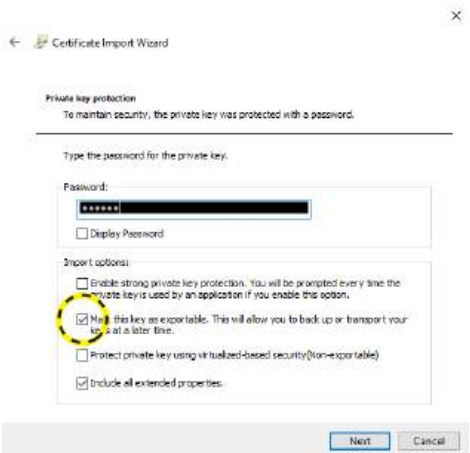


Figure 3-51. Import Options

10. Press the **‘Next’** button to do the **Certificate Store**.

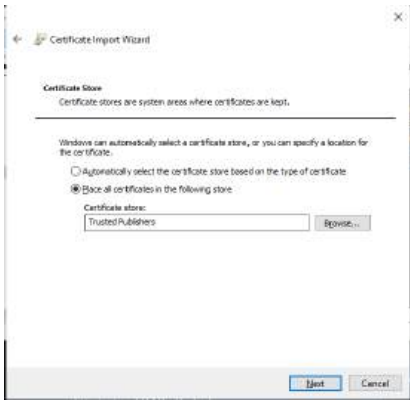


Figure 3-52. Certificate Store

11. Press the **‘Finish’** button.

How to import certificate(continued)

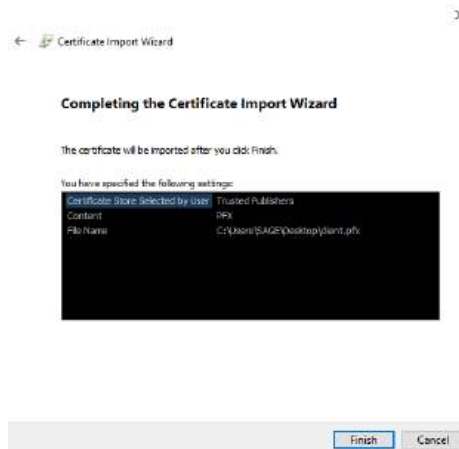


Figure 3-53. Completing the Certificate Import Wizard

12. A window is displayed to indicate the import was successful. Press **OK** to close the window.
13. Close the **Certificate Manager** window when finished.

How to delete certificate

1. Press **Config** on the shortcut panel as administrator.
2. Select **Security** category and the **LDAP** subgroup.
The **LDAP** sub groups is displayed.

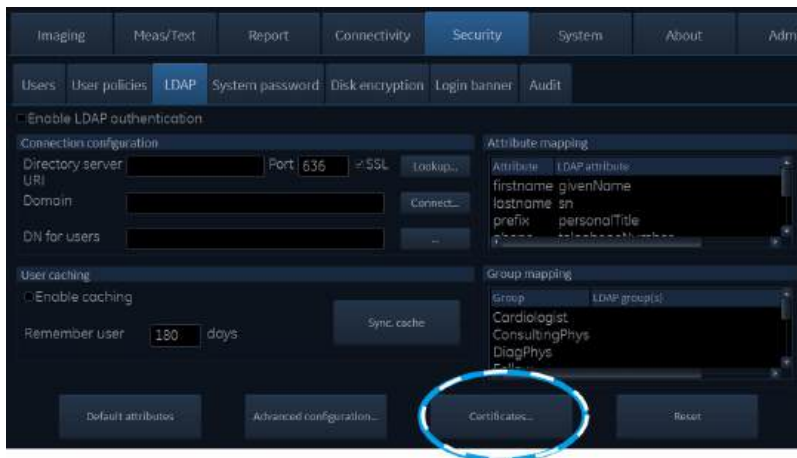


Figure 3-54. LDAP Subgroup

3. Click on the **Certificates** button.
The **Certificate Manager** window is displayed.
4. In the **Certificate Manager** window select the certificate to delete.
5. Select the **Delete** from the **Action** drop-down menu to delete the certificate.
6. Press **Yes** to finally delete the certificate or **No** to keep it.

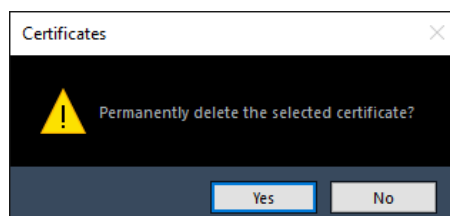


Figure 3-55. Delete the Certificate

How to select certificate

1. Press **Config** on the shortcut panel as administrator.
2. Select **Connectivity** category and the **TCP/IP** subgroup.
The **TCP/IP** sub groups is displayed.



Figure 3-56. TCP/IP Subgroup

3. Click on the **Client Certificates**.
The **Select Client Certificate** window is displayed.

How to select certificate(continued)

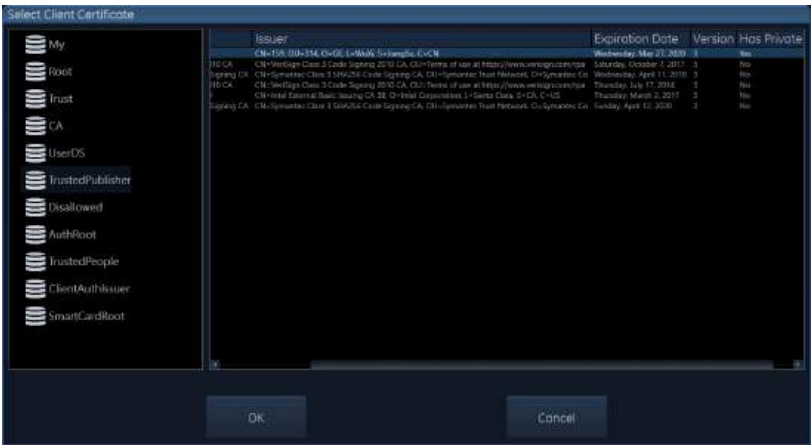


Figure 3-57. Select Client Certificate

NOTE: Only the certificate with a private key can be selected.

- 4. Select a folder and a certificate.
- 5. Press **OK** and the certificated is selected as the client certificate to use.

Network Proxy Settings

How to setup Network Proxy Settings

Press the **Proxy Settings** button on the Connectivity > TCP/IP configuration screen to show Network Proxy Settings dialog.

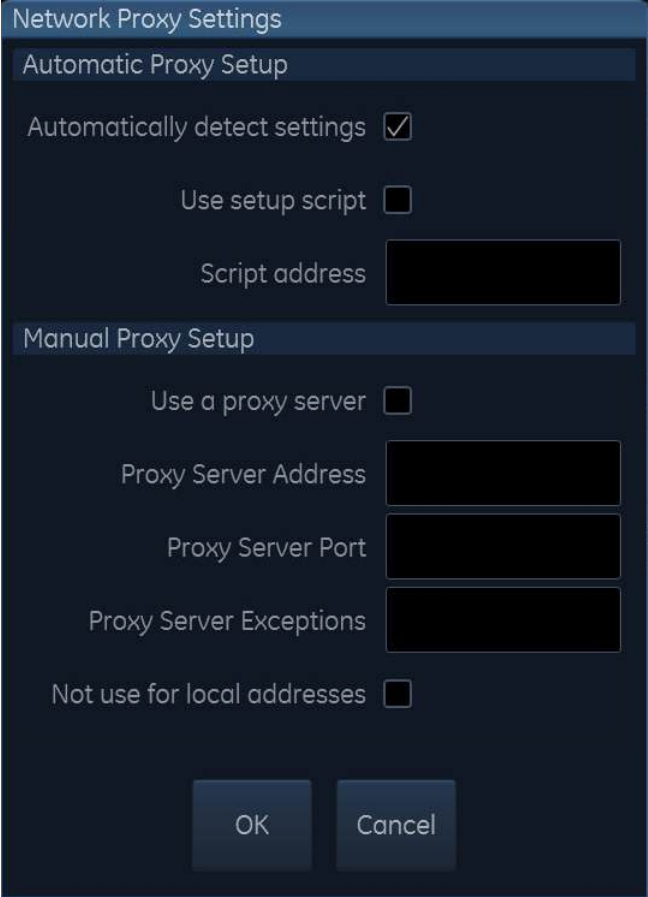
The image shows a 'Network Proxy Settings' dialog box with a dark blue header and a dark gray body. It is divided into two sections: 'Automatic Proxy Setup' and 'Manual Proxy Setup'. In the 'Automatic Proxy Setup' section, there are three options: 'Automatically detect settings' (checked), 'Use setup script' (unchecked), and 'Script address' (empty text field). In the 'Manual Proxy Setup' section, there are four options: 'Use a proxy server' (unchecked), 'Proxy Server Address' (empty text field), 'Proxy Server Port' (empty text field), and 'Proxy Server Exceptions' (empty text field). At the bottom, there is a 'Not use for local addresses' option (unchecked) and two buttons: 'OK' and 'Cancel'.

Figure 3-58. Network Proxy Settings window

Automatic Proxy Setup

Enable the *Automatically detect settings* option to use Web Proxy Auto-Discovery Protocol (WPAD) for detecting proxy settings. If the connected network requires a proxy and it provides that proxy via WPAD, the proxy will be automatically configured and used.

Enable the *User setup script* option and insert the network address of the script into the Script address box to setup script for your proxy configuration. This script may also be referred to as a .PAC file.

Manual proxy setup

Enable the *Use a proxy server* option to manually configure the proxy server. The manual configuration of a proxy requires you to have a specific IP address and port for the server that you want to use. This information should be entered in the *Proxy Server Address* and *Proxy Server Port* fields.

For addresses you do not want the system to use the proxy server on, enter web or IP addresses separated with a semicolon (;) in the *Proxy Server Exceptions* field.

Enable the *Not use for local addresses* option to bypass the proxy server when you connect to resources on your local network or intranet.

Click **OK** to save and apply network proxy settings or click **Cancel** to ignore the recent changes.

View-X

Overview

View-X is an option that enables streaming from an external video signal in a dedicated window on the system. The video signal is received by means of multimedia streaming over the IP network and without audio. For instructions to connect and set up View-X, consult the documentation for the device itself and the Service Manual.

Video streaming setup is described in [‘TCP/IP Configuration for View-X’ on page 3-94](#).

In Side Bar, there is a Show View-X button to control the On/Off of streaming window. When toggled On a dedicated window showing the streamed video appears in the lower right corner by default ([Figure 3-59](#)).

NOTE: *Network connection quality may impact streaming quality. Under ideal networking conditions a delay of approx. 1 sec will still persist.*

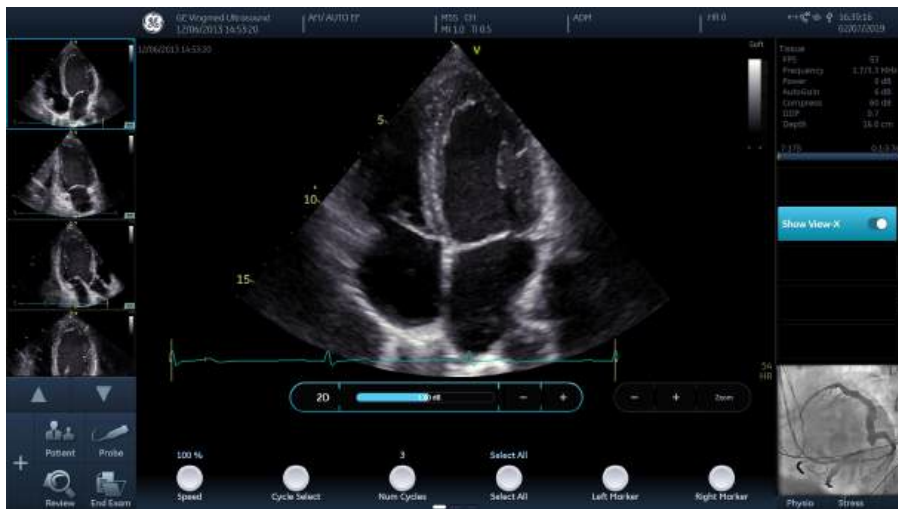


Figure 3-59. Scanning window with View-X on.

TCP/IP Configuration for View-X

Streaming source and client configuration is set through the **View-X** settings:

1. Press **Config** on the shortcut bar and log on as administrator if required.
2. Select the **Connectivity** category and the **TCP/IP** subgroup.
3. Select **View-X** (Figure 3-60).

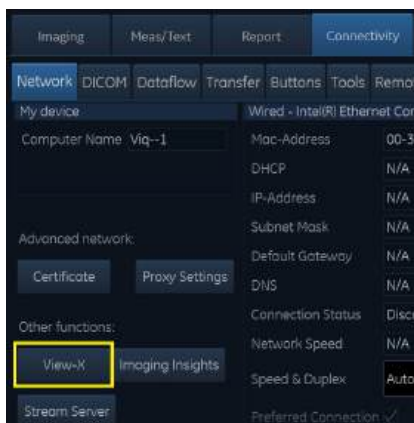
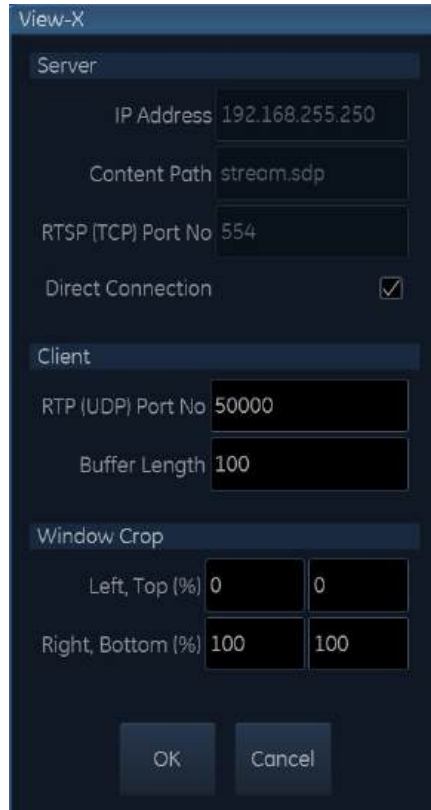


Figure 3-60. Video Streaming under TCP/IP configuration.

4. Configure the *View-X* server and client as necessary (Figure 3-61).

TCP/IP Configuration for View-X(continued)

The image shows a 'View-X' configuration window with three sections: 'Server', 'Client', and 'Window Crop'. The 'Server' section includes fields for 'IP Address' (192.168.255.250), 'Content Path' (stream.sdp), and 'RTSP (TCP) Port No' (554), along with a checked 'Direct Connection' checkbox. The 'Client' section has 'RTP (UDP) Port No' (50000) and 'Buffer Length' (100). The 'Window Crop' section features four input boxes for 'Left, Top (%)' (0, 0) and 'Right, Bottom (%)' (100, 100). 'OK' and 'Cancel' buttons are at the bottom.

Server	
IP Address	192.168.255.250
Content Path	stream.sdp
RTSP (TCP) Port No	554
Direct Connection	☒

Client	
RTP (UDP) Port No	50000
Buffer Length	100

Window Crop			
Left, Top (%)	0	0	
Right, Bottom (%)	100	100	

OK Cancel

Figure 3-61. View-X Video streaming setup

Installing the Epiphan DVI Broadcaster

Connecting the Epiphan DVI Broadcaster to the X-ray System

NOTE: *The Epiphan DVI Broadcaster and the Power Injector must be placed outside the Patient environment.*

The Epiphan DVI Broadcaster needs a video signal as input from the X-ray System. Use the included DVI-I Dual Link cable for this purpose. The included HDMI to DVI adapter may be used, if needed.

- If the X-ray System or the X-ray Workstation has a dedicated video outlet, you may connect from this dedicated video outlet to VGA/DVI In on the Epiphan DVI Broadcaster. The connection to the monitor is untouched.
- If no dedicated video outlet is available, you must use the monitor output. Connect the monitor output from the X-ray System or from the X-ray Workstation to VGA/DVI IN on the Epiphan DVI Broadcaster and connect the X-ray monitor or the workstation's monitor to VGA/DVI OUT on the Epiphan DVI Broadcaster. This setup is illustrated in the figure below.

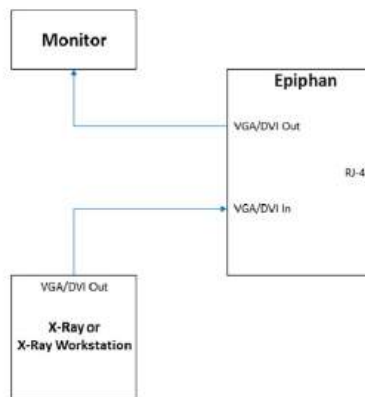


Figure 3-62. Connect video signal to the Epiphan DVI Broadcaster

Install a point-to-point connection

Install a point-to-point Ethernet connection from the Epiphan DVI Broadcaster to the Ultrasound System.

The Epiphan DVI Broadcaster is powered via the Ethernet cable. A Power Injector is used to add the needed power to the Epiphan DVI Broadcaster.

The Ethernet signals used for the View-X signal is transmitted via Ethernet from the Epiphan DVI Broadcaster via the Power Injector to the Ultrasound System. This is illustrated below.

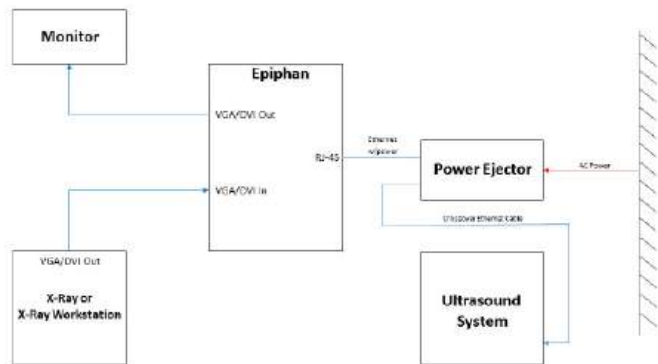


Figure 3-63.

1. Connect an Ethernet cable from the DATA & POWER OUT (RJ-45) connector on the Power Ejector to the RJ-45 connector on the Epiphan DVI Broadcaster
2. Connect a Crossed Ethernet cable from the other RJ-45 connector on the Power Ejector to the Ultrasound System.
3. Connect a power cable from a mains wall outlet to the Power Ejector.

View-X Direct

Activating View-X Direct

The View-X Direct button is available on the top right tray menu when Direct Connection is enabled in Config (default=enabled). See [‘Enable Direct Connection’ on page 3-100](#) for information related to Direct Connection, if needed.

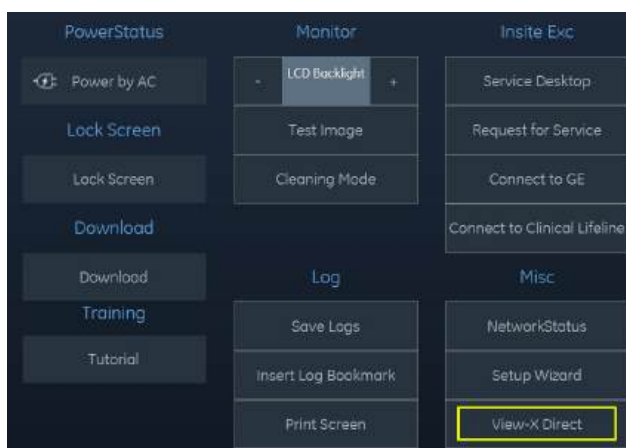


Figure 3-64. View-X Direct button on the Utility page

Typical Use Scenario

Prepare for examination:

- If needed, load worklist using the worklist dataflow while connected to the hospital network. It will still be available offline. Pull up the patient from Local Archive.
- If not using a network, start the exam with Patient name/ID in Local Archive. Connect to the Epiphan DVI Broadcaster:
 1. Connect the Epiphan DVI Broadcaster to the ultrasound system with the crossover network cable.
 2. Open the Utility tab and click View-X Direct to toggle on. This activates the IP addresses that allow the Epiphan DVI Broadcaster and the ultrasound system to communicate.
 3. Complete the study.
 4. Click View-X Direct to toggle off the setting.
 5. To transfer the study, connect back to the hospital network and transfer the study/exam/patient from Local Archive as needed.

NOTE: *The Epiphan DVI Broadcaster static IP address is 192.168.255.250 and the ultrasound system's underlying static IP address when View-X Direct is enabled is 192.168.255.249. These addresses cannot be changed while View-X Direct is active. When View-X Direct is not active, the system reverts to default TCP/IP settings.*

Enable Direct Connection

Follow these sections to select the Direct Connection to the Epiphan DVI Broadcaster for video streaming.

1. Ensure that the network cable from the Epiphan DVI Broadcaster is connected to the ultrasound system, and that the Epiphan DVI Broadcaster is switched on.
2. On the ultrasound system, enter: **Config > Connectivity > TCP/IP** and activate **View-X**. The *Video Streaming* dialog opens.

The screenshot shows the 'View-X' dialog box with the following settings:

- Server**
 - IP Address: 192.168.255.250
 - Content Path: stream.sdp
 - RTSP (TCP) Port No: 554
 - Direct Connection: ☐
- Client**
 - RTP (UDP) Port No: 50000
 - Buffer Length: 100
- Window Crop**
 - Left, Top (%): 0, 0
 - Right, Bottom (%): 100, 100

Buttons: OK, Cancel

Figure 3-65. The Video Streaming dialog

3. Click the **Direct Connection** check box to activate direct connection to the Epiphan DVI Broadcaster.

Enable Direct Connection(continued)



The screenshot shows the 'View-X' configuration window. It has three main sections: 'Server', 'Client', and 'Window Crop'. In the 'Server' section, the 'Direct Connection' checkbox is checked and highlighted with a yellow rectangle. The 'Client' section has fields for 'RTP (UDP) Port No' (50000) and 'Buffer Length' (100). The 'Window Crop' section has four fields for 'Left, Top (%)', 'Right, Bottom (%)', 'Left, Top (%)', and 'Right, Bottom (%)' with values 0, 0, 100, and 100 respectively. At the bottom are 'OK' and 'Cancel' buttons.

Server	
IP Address	192.168.255.250
Content Path	stream.sdp
RTSP (TCP) Port No	554
Direct Connection	☒

Client	
RTP (UDP) Port No	50000
Buffer Length	100

Window Crop			
Left, Top (%)	0	0	
Right, Bottom (%)	100	100	

OK Cancel

Figure 3-66. Activate Direct Connection

Selecting *Direct Connection* enables the **View-X Direct** button on the Utility page which will set the ultrasound system to a static IP so it can connect to the factory default static IP on the Epiphan DVI Broadcaster.

4. Select **OK** to exit.
5. Log out of the ultrasound system.

Data Streaming

Overview

- NOTE:

The **StreamServer** option key should be installed to enable streaming live ultrasound data.
- NOTE:

Only sector and TEE probes are supported for streaming live ultrasound data.
- The system has the capability to stream live ultrasound image data (both 2D and 3D) over the network connection to enabled devices. To configure this capability perform the following steps:

Enable data streaming

1. Press **Config...** on the shortcut bar.
2. Select the tab **Connectivity**, then **TCP/IP**
3. Press the button **Data Streaming Settings**
4. Check **Enable Streaming** on the **Data Streaming Settings** dialog
5. Enter stream server **Port No** (or use the default port)

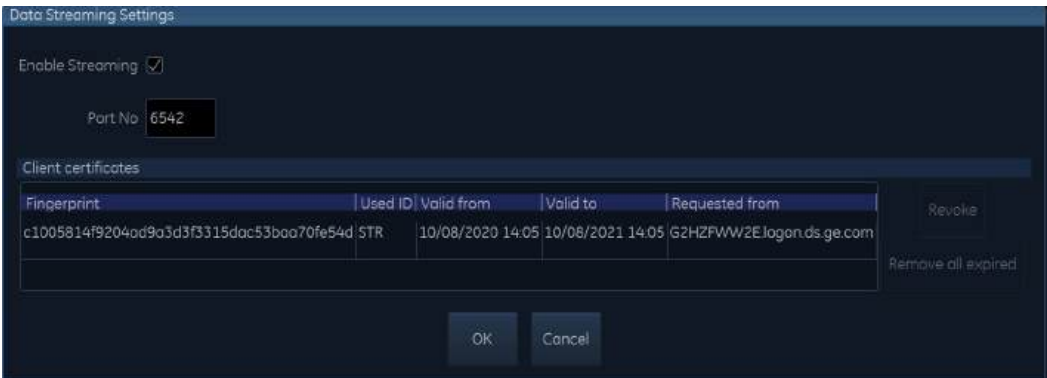


Figure 3-67. Data Streaming Settings

User setup for data streaming

Only a member of the group “ConsultingPhys” will have permission to receive streamed data.

See example of users who can receive streaming data below.

The screenshot displays the 'Security' configuration page, specifically the 'Users' sub-tab. On the left, a 'User List' shows three users: 'ADM', 'STR' (highlighted in blue), and 'USR'. Below this list are 'New' and 'Delete' buttons, and an 'Autologin' dropdown set to 'Disable'. Further down are checkboxes for 'Auto screenlock (min)' (set to 30) and 'Prohibit default password', along with a 'Show login history' link. The main area is divided into two sections: 'Identity' and 'Member of Group(s)'. The 'Identity' section contains fields for 'Id' (set to 'STR'), 'Blocked' (unchecked), 'Change Password' (checked), 'Last Name' (set to 'STR'), 'First Name', 'Email', 'Address', 'Title', and 'Phone Number'. The 'Member of Group(s)' section lists several groups with checkboxes: 'Cardiologist', 'Operator', 'ConsultingPhys' (checked), 'Physician', 'DiagPhys', 'RefDoc', 'Fellow', 'Sonographer', 'GEAdmin', 'SysAdmin', 'HospAdmin', and 'PresetAdmin'. Below this is the 'Operator Rights' section, which includes checkboxes for 'Admin', 'PrintRep', 'Create', 'ReceiveStreaming' (checked), 'Delete', 'Service', 'Diagnose', and 'StoreRep'.

Figure 3-68. User setup for data streaming

If LDAP authentication is enabled, at least one of the LDAP groups that the user belongs to must be mapped to the group “ConsultingPhys” in order to allow the user to receive streaming data.

User setup for data streaming(continued)

ImagingMeas/TextReportConnectivitySecuritySystemAboutAdmin

UsersUser policiesLDAPSystem passwordDisk encryptionLogin bannerAudit

☐ Enable LDAP authentication

Connection configuration

Directory server Port ☒ SSL

URI

Domain

DN for users

User caching

☐ Enable caching

Remember user days

Attribute mapping

Attribute	LDAP attribute
firstname	givenName
lastname	sn
prefix	personalTitle
phone	telephoneNumber

Group mapping

Group	LDAP group(s)
Cardiologist	
ConsultingPhys	
DiagPhys	
Full-time	

Default attributes

Advanced configuration...

Certificates...

Reset

Figure 3-69. LDAP configuration

Authentication

Before an enabled device can receive streamed live ultrasound data, authentication is required to start. The user will be authenticated using both username/password and a PIN code generated by the system upon first connected. Subsequent connections will use a certificate generated after the first successful connection. The client will be asked to enter a PIN code if the client application has no valid client certificate. The system shows a dialog window with the PIN code (Figure 3-70).

After entering correct PIN code, client certificate will be issued and sent to client application automatically. The next attempts of connection do not require entering PIN code as long as the certificate is valid.

NOTE: *The certificate will automatically expire after one year.*

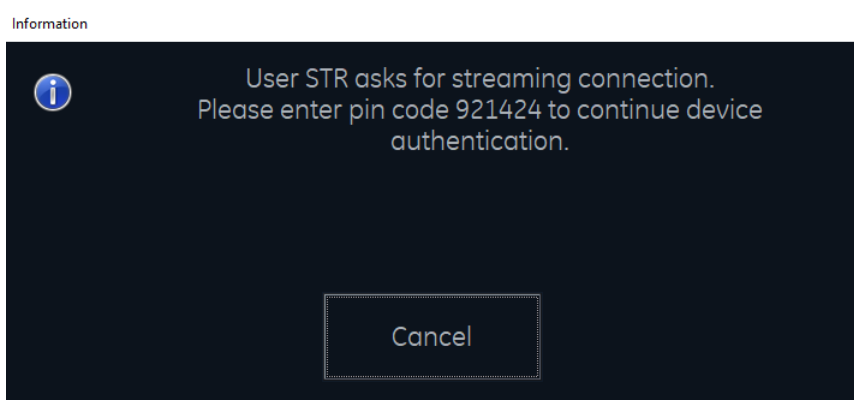


Figure 3-70. PIN code window

NOTE: *Operator can refuse streaming data by pressing **Cancel** button.*

Revoke Client certificate

All issued client certificates are listed in the *Data Streaming Settings* dialog. See [‘Enable data streaming’ on page 3-102](#).

To revoke a client certificate:

- 1. Select a client certificate
- 2. Press **Revoke**

NOTE: At the next attempt to connect, this client will be asked for authentication again (see page 3-105).

Press **Remove all expired** to clear the list of client certificates.

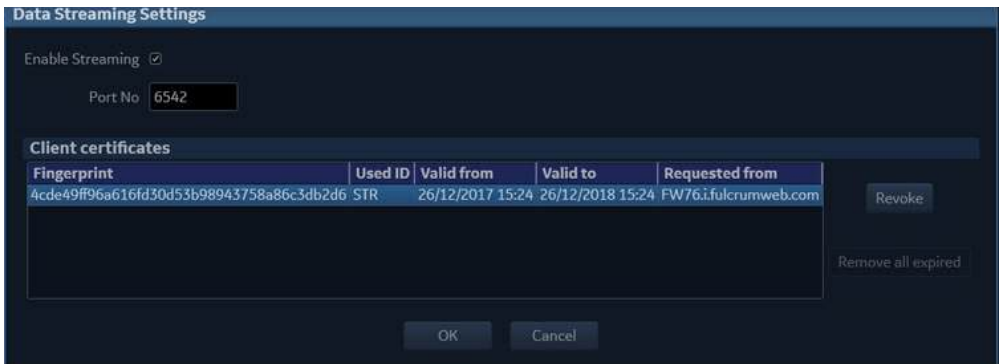


Figure 3-71. Client certificate example

Export configuration

The destination for Export of patient records to Excel must be configured prior to use. This is done from the **Dataflow** screen.

Remote Share Setup

Required setup on the remote share:

NOTE: This is for the onsite IT Professional to perform on their own server. GE personnel shall not set up shares without Microsoft™ training.

1. create a user/password
2. create a share folder
3. add user (above) to share, with full share/security permissions
4. remove "everyone" user from share

For instructions, see ['Configurable Remote Path User' on page 3-108](#).

Configurable Remote Path User

Remote Path User Setup

- NOTE:

The default User/Password is always used as primary log in credential. No attempt is made to use the secondary user if log in succeeds using the primary.
- NOTE:

The configurable User/Password is used for all remote paths configurable throughout the system as secondary log in credential.
- NOTE:

The User on the remote share must have all rights/controls for the shared folder.

Follow these steps to set up a Secondary Remote Path User:

1.

Press **Config** on the shortcut bar and log on as administrator if required.
2.

Select **Connectivity** -> **Remote**.
The *Remote* sheet is displayed.

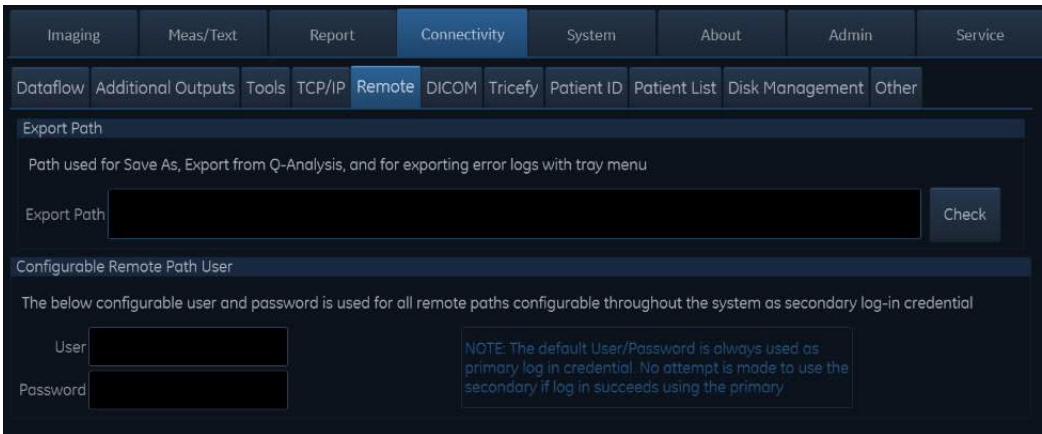


Figure 3-72. The Tools sheet

3.

Enter the User and Password in the respective fields.
- NOTE:

The filed User can either be on the form of username or domain\username.

Remote Path Troubleshooting

Use **Sclogwindow** to visualize error:

- bad user/password
- bad path
- hostname name does not resolve/ping
 - add hostname/IP to HOSTS file in Windows
- network session is already connected to destination,different user
 - "net use" in DOS to display all sessions
 - "net use /delete *" to close all sessions

DICOM

Changing the AE title and/or Port Number

1. Press **Config** on the shortcut bar and login as **ADM**.
2. Select **Connectivity** and **DICOM** tab.
3. Assign an **AE Title** to the Vivid *iq*. (AE stands for Application Entity. DICOM services use this to identify the Vivid *iq*.) AE Title is case-sensitive. This title may contain the Computer Name from the TCP/IP page, if desired. Maximum number of characters in AE Title is 16 characters.)

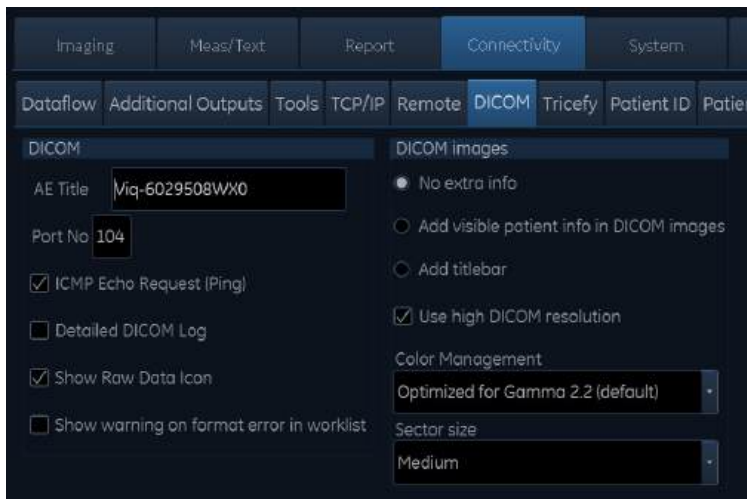


Figure 3-73. AE Title/Port No

4. If needed, edit the **Port Number**. '104' is typical.
5. To generate a detailed DICOM log file, select **Detailed DICOM Log**.
6. Save your changes and reboot the Vivid *iq*.

DICOM images

From DICOM images the user can select between:

- **No extra info**
- **Add visible patient info in the DICOM images:** displays patient information (name, date of birth and ID) on DICOM images.
- **Add title bar:** adds the Title bar to the DICOM images. Must be enabled in order for images from the 4D Auto AVQ tool to contain traces, bullseye, 3D model and measurements as part of the stored DICOM Multiframe/Singleframe files when using a dataflow with RAW data disabled.

When **Use high DICOM resolution** is enabled, DICOM images are stored using a higher pixel density. Use this setting when exporting to systems accessed by high definition DICOM viewing stations.

NOTE: Using high DICOM resolution will double the file size of the DICOM data when using standard compression settings. Such files will consume more disk space and also slow down storage, recall and transfer of files.

Color management provides a selection of gamma settings for optimized representation of the Vivid images on DICOM workstations.

Tricefy

Overview

Tricefy, an online platform for sharing and distributing medical images, enables physicians to archive, collaborate and share exam data with patients and colleagues. After registration, the studies can be archived and viewed in the cloud.



1. Archive securely in the cloud.
2. Access anytime from any device.
3. Share with patients instantly
4. Collaborate with colleagues easily.

Figure 3-74. How the Tricefy server works

To register a Tricefy account

1. Press **Config** on the shortcut bar.
2. If required, log on to the system.
3. Select the **Connectivity** category and the **Tricefy** subgroup.
The *Tricefy* screen is displayed (see [Figure 3-75](#)).
4. Check the button “**Enable Tricefy**” and a registration text field is displayed.
5. Type your e-mail address and then press **Activate account**.
If it is the first connection, there will be a registration letter sent to the email address you entered. Follow the instructions to complete the Tricefy registration.
- After the account is successfully registered, press **Test Connection** button. The account active information is displayed, indicating the account name, customer name and account status (see [Figure 3-75](#)).



Figure 3-75. The Tricefy Screen

NOTE: There is an icon on the bottom left corner of the title bar to illustrate the Tricefy connection status.

The icon  indicates that Tricefy is successfully connected.

The icon  indicates that registration is incomplete.

The icon  indicates that Tricefy is disconnected.

Configuration of Tricefy storage

The following dataflows are available to be used to send images from the ultrasound system to the Tricefy cloud server:

Dataflow	Description
Local Archive - Tricefy Store	The local archive is used for patient archiving. Images are stored to the local archive and to Tricefy. If DICOM SR is enabled, measurements are also sent to Tricefy.
Tricefy Store	Store images to Tricefy. If DICOM SR is enabled, measurements are also sent to Tricefy.
Local Archive - Tricefy Patient Share	The local archive is used for patient archiving. Images are stored to the local archive and to Tricefy. Images are also shared with the patient. If DICOM SR is enabled, measurements are also sent to Tricefy.
Tricefy Patient Share	Store images to Tricefy and share them with the patient. If DICOM SR is enabled, measurements are also sent to Tricefy.
Tricefy QR - Tricefy Store	Search in Tricefy patients and examinations. Retrieve images from Tricefy. Images are stored to Tricefy. If DICOM SR is enabled, measurements are also sent to Tricefy.
Tricefy QR - Tricefy Patient Share	Search in Tricefy patients and examinations. Retrieve images from Tricefy. Images are stored to Tricefy and shared with the patient. If DICOM SR is enabled, measurements are also sent to Tricefy.
Worklist/Tricefy QR - Tricefy Store	Search in a DICOM Modality Worklist, retrieve images from Tricefy. Images are stored to Tricefy. If DICOM SR is enabled, measurements are also sent to Tricefy.
Worklist/Local Archive - Tricefy Store	Search in a DICOM Modality Worklist, the patient found is copied into the local archive. The patient information and the examination results are stored to the local database. Images are stored to Tricefy and to the local archive. If DICOM SR is enabled, measurements are also sent to Tricefy.

Configuration of Tricefy storage(continued)

There needs to do some configurations as follows before storing exams to Tricefy.

1. Press **Config** on the shortcut bar.
2. If required, log on to the system as **ADM**.
3. Select the **Connectivity** category and the **Dataflow** subgroup.

The *Dataflow sheet* is displayed (see [Figure 3-76](#)).

4. Select the dataflow **Local Archive - Tricefy Store**.

NOTE: *Dataflows listed in the above table can also be selected as needed.*

5. Uncheck the **Hidden** button.

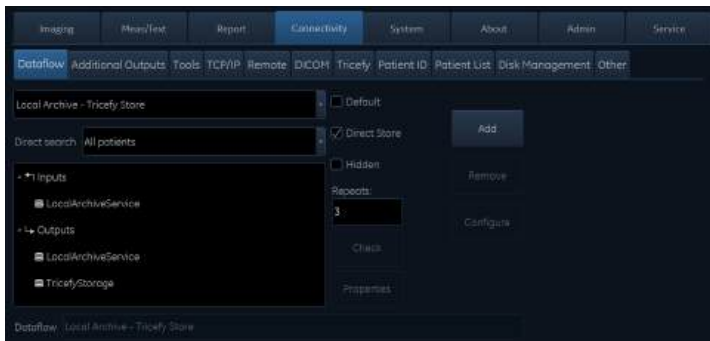


Figure 3-76. The Dataflow sheet

Storing an exam to Tricefy (Example 1)

1. In the *Patients/Exams* list, select dataflow **Local Archive - Tricefy Storage**.
2. Get back to scan and press **Store** key, the image is stored in the clipboard.
3. End the exam, the exam data will be sent to the Tricefy website (https://tricefy4.com/users/sign_in) in addition to the local archive.

Storing an exam to Tricefy (Example 2)

1. In the *Patients/Exams* list, select dataflow **Local Archive - TricefyPatientShare**.

NOTE: If TricefyPatientShare is selected as dataflow, the patient telephone number must be entered under patient data (see Figure 11-87) so that the patient will be informed automatically when images for him/her are uploaded to Tricefy.

NOTE: If the exam results are shared with more than one person, you can type several telephone numbers seperated by semicolon.

2. Get back to scan and press **Store** key, the image is stored in the clipboard.
3. End the exam, the exam data will be sent to Tricefy website (https://tricefy4.com/users/sign_in) in addition to the local archive.

*NOTE: If the **Direct Store** checkbox is checked in the *Dataflow* sheet, the selected image will be directly sent to the Tricefy website when pressing **Store** key.*

How to export an existing exam from local archive to Tricefy

1. Press **Transfer** from the Patients/Exams list (see Figure 3-77).
1. The *Transfer screen* is displayed (see Figure 3-78).
2. Select **Local Archive** from *Source* drop-down menu and select **Tricefy Storage** from *Destination* drop-down menu.
3. Press **Add to list** to make the selected items ready for transfer.
1. Press **Copy** (see Figure 3-78). The exam data is sent to the Tricefy website (https://tricefy4.com/users/sign_in).

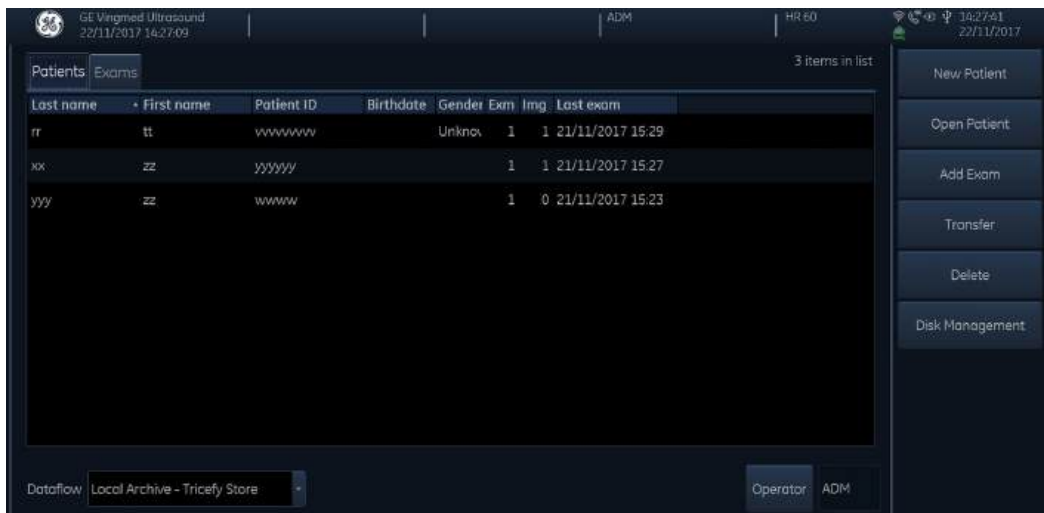


Figure 3-77. The Patients/Exams list

How to export an existing exam from local archive to Tricefy(continued)

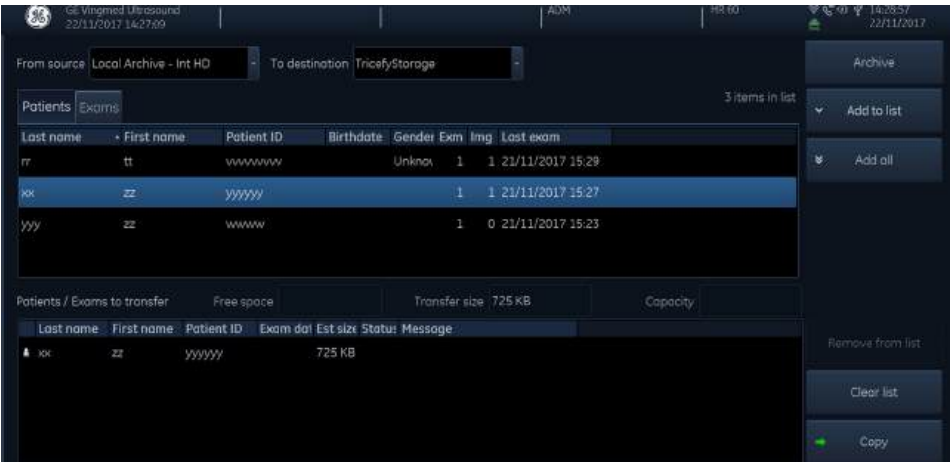


Figure 3-78. The Transfer screen

Accessing exams on the Tricefy web

Open the Tricefy web (https://tricefy4.com/users/sign_in) and log in with your account and password to access the exam results in the 'Studies' tab.

Configuration of the P1 button

The P1 button can also be configured to store images directly to the Tricefy website. With this method one can send selected images instead of the whole exam, like shown in the two previous examples.

Configuring P1 button as TricifyStorage

1. Press **Utility/Config** on the Touch panel.
2. If required, log on to the system.
3. Select the **Connectivity** category and the **Additional Outputs** subgroup.
 1. The *Additional output sheet* is displayed.
 2. In *Button* field select **P1**.
 3. Select **TricifyStorage** from the *Available output* field and press the Right arrow button to assign it to the *Selected Output* field.

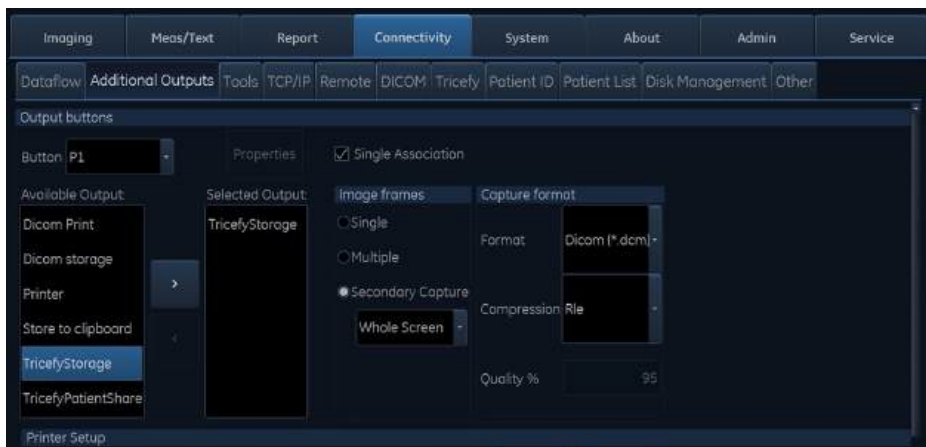


Figure 3-79. The Additional Outputs Sheet

4. Get back to scan and press **P1** button, the exam data will be sent to the spooler and kept there (press **Spooler** on the control panel to see the data).

Configuring P1 button as TricefyStorage(continued)

5. End the exam and the exam data will be sent to the Tricefy website (https://tricefy4.com/users/sign_in).

NOTE: *If the Single Association button is unchecked in the Additional outputs sheet, the exam data will be directly uploaded to the Tricefy website when pressing P1 button, without being held on the spooler page.*

NOTE: *List of exam results sent to the Tricefy server will be displayed on the spooler page (press Spooler on the control panel to see the data).*

Configuring P1 button as TricefyPatientShare

1. Press **Utility/Config** on the Touch panel.
2. If required, log on to the system.
3. Select the **Connectivity** category and the **Additional Outputs** subgroup.
The *Additional output sheet* is displayed.
4. In *Button* field select **P1**.
5. Select **TricefyPatientShare** from the *Available output* field and press the Right arrow button to assign it to the *Selected Output* field.

NOTE: *The patient telephone number must be entered under patient data so that the patient will be informed automatically when images for him/her are uploaded to Tricefy.*

NOTE: *If the exam results are shared with more than one person, you can type several telephone numbers seperated by semicolon.*

6. Get back to scan and press **P1** button, the exam data will be held on the spooler page.
7. End the exam, the exam data will be sent to the Tricefy website (https://tricefy4.com/users/sign_in).

Configuration of Tricefy QR

Tricefy QR, similar to DICOM Query Retrieve, enables users to check the exam results stored to the Tricefy website via scanner.

1. Log in to the Tricefy website (https://tricefy4.com/users/sign_in).
2. Enable Q/R for corresponding IP address matched with your ultrasound system from the 'Uplinks' tab of the website.

NOTE: *Contact your Tricefy representative to get support for any Tricefy web site questions.*

3. Press **Utility/Config** on the touch panel and log on to the system as **ADM**.
4. Select the **Connectivity** category and the **Dataflow** subgroup.
5. Select the dataflow **Tricefy QR -Tricefy Store**.
6. Uncheck the **Hidden** button and connect the system with Internet.
7. Go to patient page and select **Tricefy QR -Tricefy Store**.

The exam results stored to the Tricefy website will be displayed in the *Patients/Exams* list.

NOTE: *Disable Q/R on the Tricefy website to prevent exam data being used by any other person logging in to the system with the same IP address.*

Patient ID

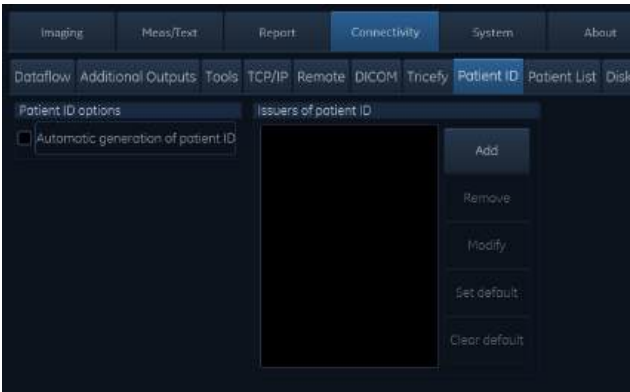


Figure 3-80. The Patient ID sheet

Setting	Description
Automatic generation of patient ID	In the Archive screen, the issuer of a patient id may be specified for a patient id. ☒: A Patient ID is automatically generated by the system. ☐: A Patient ID is required and must be entered by the user when creating a new patient record in the archive.
Issuers of patient ID	In the Archive screen, the issuer of a patient id may be specified for a patient id. An issuer may be added, modified, or deleted. The issuer set as default will be used as issuer for all new patients that are created. In addition, in transfer between remote and local archive, two patients with same patient id, one with empty issuer and one with default issuer, are considered the same patient.

Patient List

Configuration of the archiving functions

- Press **Config** from the shortcut bar and log on as administrator if required.
- Select the **Connectivity** category and **Patient List** subgroup.

The *Patient List* sheet is displayed.

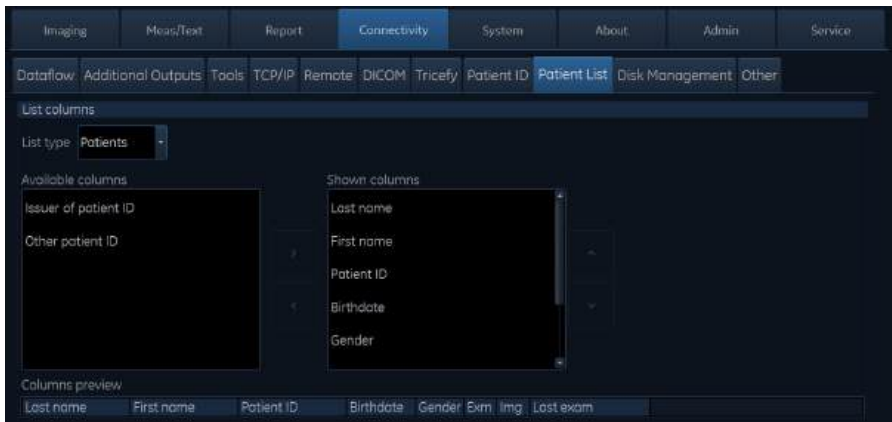


Figure 3-81. The Patient List sheet

Configuration of the Patient, Worklist and Examination list in the Archive screen

1. In the *List type* drop-down menu, select the list to edit.
2. To add a column to the list:
 - Select a column to display in the Available columns field and press  to add it to the list.
 - Press  /  to move the column.
3. To remove a column from the list:
 - Select the column to remove in the Show columns field and press  .

NOTE: *The columns First name, Last name, Patient ID, Last exam and Exam date cannot be removed for the lists.*

Disk Management

Introduction

The Disk Management function allows the user to manage hard disk space while maintaining the patient database on the Ultrasound system. The Disk Management function can be used to move, copy or delete images and move or copy reports from the oldest patient records. The Disk Management function has also an auto-purge feature that will automatically delete images and reports that have already been copied if the local hard disk is getting full.

For more information, see “Disk management” in the User Manual.

NOTE: *The User Manual is available on the Help function on the shortcut bar.*

Select Destination Device

Select a removable media, USB storage, or network share folder from the Destination Device pull-down menu.

Using Removable Media

If using removable media, it is recommended to use dedicated media to the Disk Management process. Don't use Removable Media already used for data backup, when performing Disk Management.

Do not use the same Removable Media on different systems.

Set Remote Path for Disk Management

- To be able to select a network share folder in the Destination Device pull-down menu, the path must first be entered in the Remote Path field.
- To be able to set up the connection from the Vivid *iq* to the server, the correct User and Password must be entered both on the server side to allow access, and on the Vivid *iq* to be able to get access to the server.

Follow the steps below to setup the Remote Path:

1. Select the Disk Management screen.
2. Enter the path to the remote server in the Remote Path field, refer to the example below:

Example:

- The server name is: **BigStore**
- The folder to use, is: **ImageArchive**

Example procedure:

- a. Enter **\\BigStore\\ImageArchive** in the Remote Path field.
- b. Press **Enter** on the external keyboard.

The Remote Path will now be available for selection in the Destination Device pull-down menu.

NOTE: *The Computer Name for the Vivid iq is included at the end of the path.*

3. If not already done, select the Remote Path as the Destination Device.

Setup on the Remote Share

For setup on the Remote Share, see: “[Remote Share Setup](#)’ on [page 3-107](#)’.

Configure Remote Path User on the Vivid *iq*

To configure the Remote Path User on the Vivid *iq*, see “[Configurable Remote Path User](#)’ on [page 3-108](#)’.

Other

Imaging	Meas/Text	Report	Connectivity	System	About	Admin	Service
Dataflow	Additional Outputs	Tools	TCP/IP	Remote	DICOM	Tricify	Patient ID
Patient List	Disk Management	Other					
Database maintenance		Activity Report		Workflow options		Exam Screen / Report Headings	
View Audit Log		View Activity Report		☒ Go directly to scanning from search ☐ Request acknowledge of End Exam action		Comments Diagnosis Referral Reasons	
Unlock Patient							
Last Name	First Name	Birthdate			Unlock		
Patient ID	Exam after			Unlock all			
Select Remote Archive dataflow where patients records need to be unlocked.							

Figure 3-82. The Other sheet

Database maintenance

1. Press **View Audit Log**.
The *Audit log viewer* window is displayed.
2. Adjust the filters as required and press **Search**.
A log is generated showing the activity on the unit.

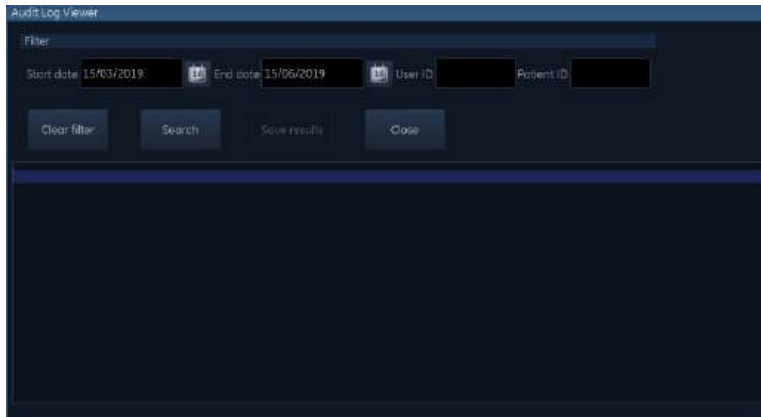


Figure 3-83. The Audit log viewer

3. Press **Save results** to save the log file.
The *Save as* window is displayed.
4. Select the destination media and enter a file name.
5. Press **Save** to save the log file.

Activity report

The Activity report function enables the creation of a report based on study type and user for a defined time frame.

1. Press **View activity report**.
The *Activity report* window is displayed.
2. Adjust the time frame, select the type of studies and users.
3. Select whether to print or save the report as a file.
4. Press **Send** to create the report.

The screenshot shows the 'Activity Report' window with the following sections:

- Time frame:** Includes a 'Last' button with a dropdown set to '1' and 'months', and a 'Date range' section with 'from' and 'to' date pickers both set to '15/06/2019'.
- Activities to be reported:** A grid of checkboxes for various study types and categories, including:
 - TOTAL NUMBER OF STUDIES, FETAL ECHO STUDIES, PEDIATRIC ECHO STUDIES, VASCULAR, ABDOMINAL AND SHARED SERVICE
 - ADULT ECHO STUDIES, 0 - 12 weeks, 0 - 2 years, Carotid studies, Abdominal
 - Cardiac studies, 12 weeks and older, 2 - 5 years, Lower extremity vein, Small parts
 - Contrast studies, Fetal heart, 5 - 10 years, Lower extremity arterial, Ob/Gyn
 - Stress echo studies, 10 - 15 years, Upper extremity vein, Contrast
 - 2-level stress, 15 - 20 years, Upper extremity arterial
 - 3-level stress, 20 years and older
- Show activities for:** Checkboxes for 'Sonographer (operator)', 'Referring physician', 'Diagnosing/reading physician', 'Lab', and 'Ward/Department'.
- Report settings:** A 'Template' dropdown set to 'Standard (landscape)' and a 'Send to' dropdown set to 'Printer'.
- Buttons:** 'Preview', 'Send', and 'Close' at the bottom.

Figure 3-84. The Activity report window

Unlock patients

If for any reason an examination is not properly finished, the patient record is locked and cannot be opened again unless it is unlocked.

To unlock patient records:

1. Press **Config**.
2. Select the **Connectivity** category and the **Other** subgroup.
3. In the *Other* sheet, select the patient record(s) to unlock.
You can search for a specific patient record or a group of patient record using the searching filters.
4. Select **Unlock** to unlock the selected patient record(s) or select **Unlock all** to unlock all patient records listed.
A *Confirmation* window is displayed.
5. Select **OK**.

Patient management presets

The following settings related to patient management can be adjusted:

Setting	Description
Request acknowledge of End Exam action	☒ : The user is asked to confirm action when ending an examination.
Go directly to scanning from search	☒ : The unit goes directly to the <i>Scanning</i> screen after creating a patient record. ☐ : The unit displays the <i>Patient info and exam</i> screen after creating a patient record for further information entry. The user must press Patient or one of the scanning keys on the Control panel to enter the <i>Scanning</i> screen.
Exam screen/Report headings	Enter user-defined headings for Comments, Diagnosis and Referral reasons fields in the <i>Patient info and exam</i> screen.

v208v206 Connectivity setup

Introduction

To be able to use the network functions when connected to a hospital network, the Vivid *iq* must have a proper network address.

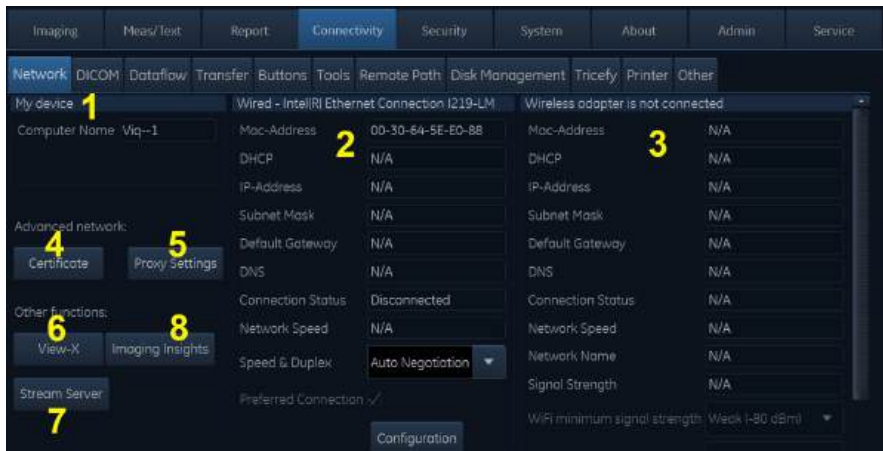
- Before you can set up the Vivid *iq*, you need to collect some information.
- The Worksheet located near the end of Chapter 2 in this manual can be used for gathering this information (Refer to [‘DICOM option setup requirements’ on page 2-20](#)).
- The typical source for this information is the network administrator.

Contents in this Section

- [‘Select TCP/IP Screen’ on page 3-66](#)
- [‘Certificate’ on page 3-133](#)
- [‘Network Proxy Settings’ on page 3-141](#)
- [‘View-X’ on page 3-93](#)
- [‘View-X Direct’ on page 3-146](#)
- [‘Imaging Insights’ on page 3-150](#)
- [‘Data Streaming’ on page 3-152](#)
- [‘Network Configuration’ on page 3-157](#)
- [‘DICOM’ on page 3-167](#)
- [‘Dataflow’ on page 3-173](#)
- [‘Transfer’ on page 3-190](#)
- [‘Buttons’ on page 3-191](#)
- [‘Tools’ on page 3-192](#)
- [‘Default remote path setting’ on page 3-195](#)
- [‘Disk Management’ on page 3-196](#)
- [‘Tricify Uplink’ on page 3-206](#)
- [‘Printer setup’ on page 3-63](#)
- [‘Others’ on page 3-217](#)

Network Screen

1. Press **Config** on the shortcut bar and login as **ADM**.
2. Select **Connectivity** category and **Network** subgroup.
The *Network* subgroup is displayed.



1. Section - **My Device**
Computer name: is shown but not editable
2. Section - **Wired** network adapter. Fields are automatically populated from the network adapter settings. In order to change them, press the **Configuration** button of this area. Speed and Duplex can be selected on this page.
3. Section - **Wireless** network adapter. Fields are automatically populated from the network adapter settings. In order to changes them, press the **Configuration** button of this area.
Note that both Wi-Fi minimal strength and strength warning can be selected on this page.
Note that the **Preferred Connection** method (wired/wireless) can be selected by checking a box.
4. Certificate: Click this button to be able to enter certificates.
5. Proxy Settings: Configure network proxy settings.
6. View-X: Configure streaming source for View-X.
7. Streaming Server (Option): Configure streaming of live ultrasound image data.
8. Imaging Insights: Configure connection to the **Imaging Insights** server by providing device usage information.

Figure 3-85. Network subgroup

3. Select **Configuration** (in the Wired network section) to configure:
 - The IP address for the system
 - The subnet mask for the system
 - The IP address for the Default Gateway

This is done at the Windows level.

NOTE:

Save button is not needed since the setting now is saved automatically when user switches to another tab.

Certificate

How to import certificate

For DICOM TLS and Enterprise wireless configuration, certificate import is needed. User can import certificate as per the following procedures:

1. Press **Config** on the shortcut panel as ADM.
2. Go to **Connectivity -> Network** subgroup and click on the **Certificate** button.

The **Certificate Manager** window is displayed.

NOTE: *Certificate button is also accessible by **Security-> LDAP-> Certificate**.*

3. In the **Certificate Manager** window, select the folder where the certificate is to be imported to.
4. Click **Action->All Tasks-> Import...** from the drop-down menu.

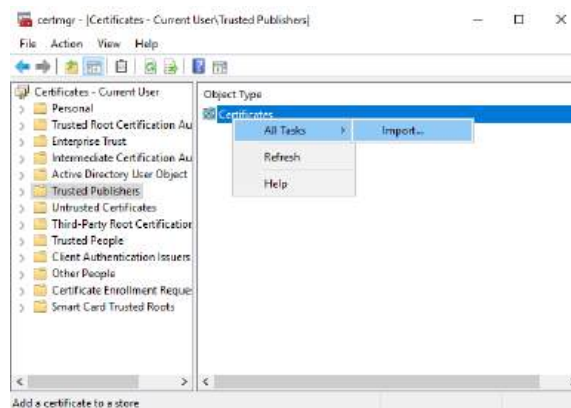


Figure 3-86. Import Certificate

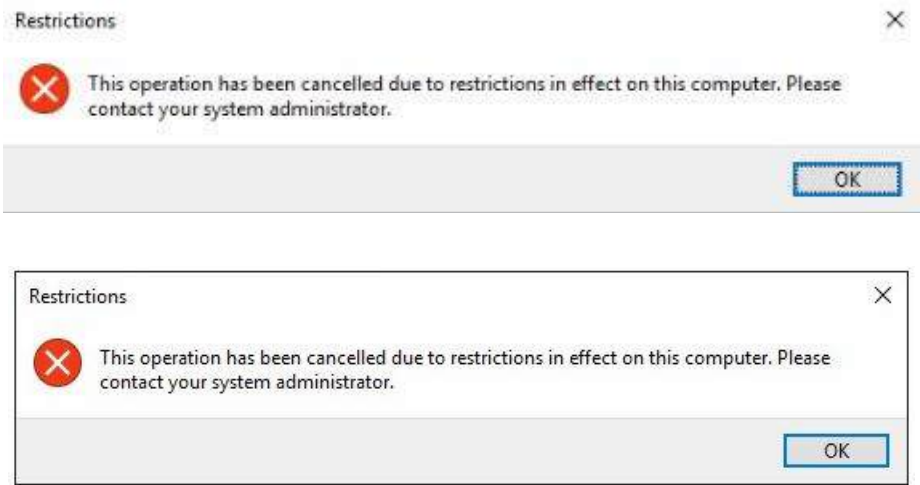
How to import certificate(continued)

- 5. Press **'Next'** button on the pop-up welcome window.



Figure 3-87. Certificate Import Wizard

NOTE: If there is no dongle inserted, two warning boxes will appear, click **"OK"** to ignore them and continue importing; if a dongle is inserted, no warning boxes will appear.



How to import certificate(continued)

6. Press **Browse** to find the certificate file to import.

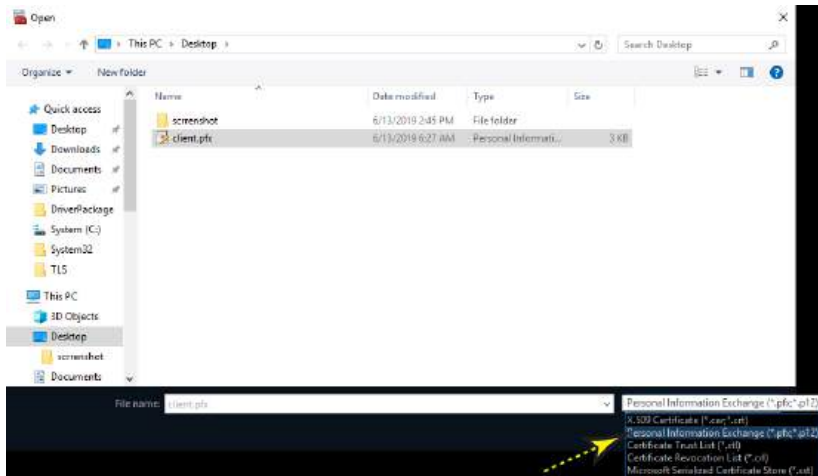


Figure 3-88. Import Certificate

NOTE: *If importing a Client Certificate including a private key (e.g. in case of importing a certificate used for authenticating towards the DICOM server, the 'Provide Client Certificate' option) choose the certificate type from the list on the right of the 'File Name' box. Only the '*.pfx' certificate is supported for Client certificates.*

7. Browse to the certificate file to import, select the file and press **'Next'** to confirm.

How to import certificate(continued)

8. (Optional) Enter the password and press the '**Next**' button to confirm the certificate import.

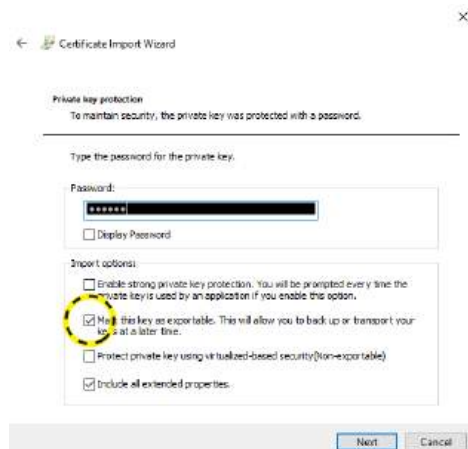


Figure 3-89. Import Options

9. Press the '**Next**' button to do the **Certificate Store**.

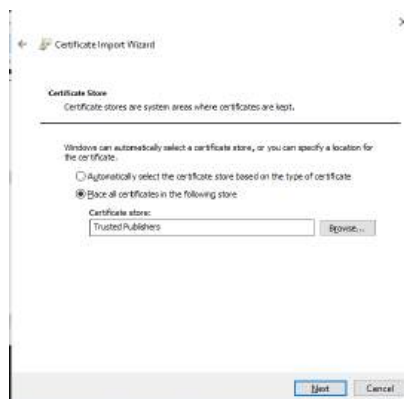


Figure 3-90. Certificate Store

How to import certificate(continued)

10. Press the **'Finish'** button.

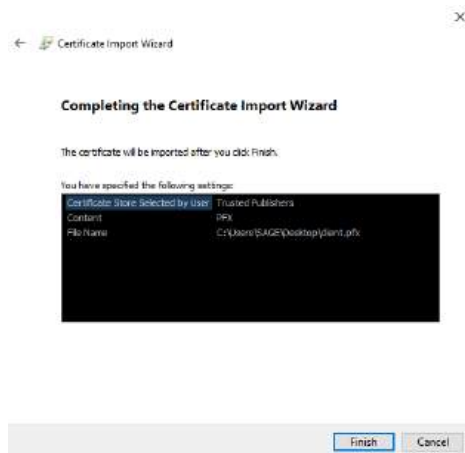


Figure 3-91. Completing the Certificate Import Wizard

11. A window is displayed to indicate the import was successful. Press **OK** to close the window.
12. Close the **Certificate Manager** window when finished.

How to delete certificate

1. Press **Config** on the shortcut panel as ADM.
2. Go to **Connectivity** -> **Network** subgroup and click on the **Certificate** button.
The **Certificate Manager** window is displayed.
3. In the **Certificate Manager** window select the certificate to delete.
4. Select the **Delete** from the **Action** drop-down menu to delete the certificate.
5. Press **Yes** to finally delete the certificate or **No** to keep it.

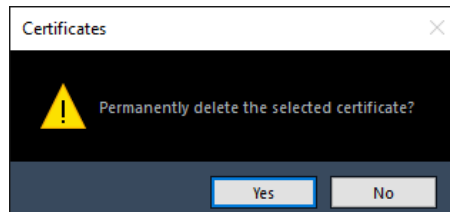


Figure 3-92. Delete the Certificate

How to select certificate

1. Press **Config** on the shortcut panel as administrator.
2. Select **Connectivity** category and the **DICOM** subgroup.
3. The **DICOM** sub group is displayed.



Figure 3-93. DICOM Subgroup

4. Click on the **Client Certificates**.
The **Select Client Certificate** window is displayed.

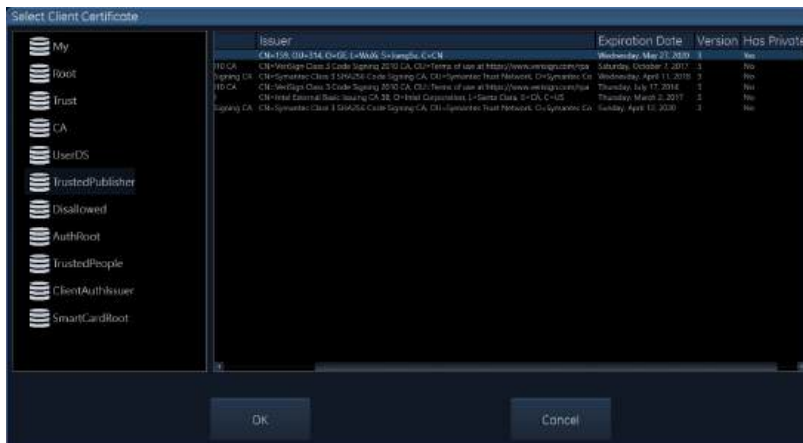


Figure 3-94. Select Client Certificate

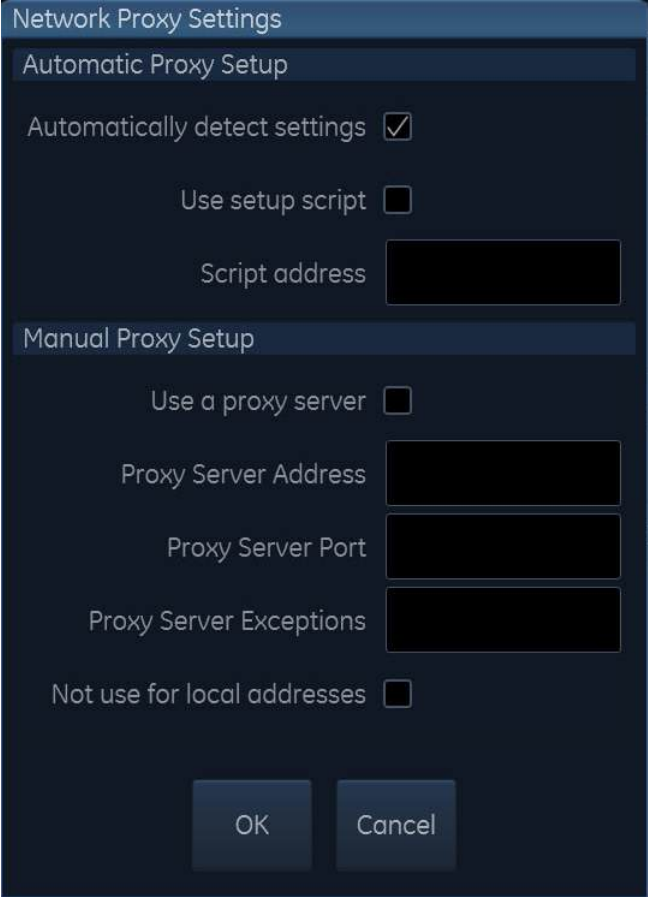
NOTE: *Only the certificate with a private key can be selected.*

5. Select a folder and a certificate.
6. Press **OK** and the certificated is selected as the client certificate to use.

Network Proxy Settings

How to setup Network Proxy Settings

Press the **Proxy Settings** button on the **Connectivity > Network** configuration screen to show Network Proxy Settings dialog.



The image shows a 'Network Proxy Settings' dialog box with a dark blue header and a dark grey body. It is divided into two sections: 'Automatic Proxy Setup' and 'Manual Proxy Setup'. In the 'Automatic Proxy Setup' section, 'Automatically detect settings' is checked, while 'Use setup script' is unchecked. There is a text input field for 'Script address'. The 'Manual Proxy Setup' section has 'Use a proxy server' unchecked, with text input fields for 'Proxy Server Address', 'Proxy Server Port', and 'Proxy Server Exceptions'. A 'Not use for local addresses' checkbox is also present and unchecked. At the bottom are 'OK' and 'Cancel' buttons.

Network Proxy Settings	
Automatic Proxy Setup	
Automatically detect settings	☒
Use setup script	☐
Script address	
Manual Proxy Setup	
Use a proxy server	☐
Proxy Server Address	
Proxy Server Port	
Proxy Server Exceptions	
Not use for local addresses	☐
OK Cancel	

Figure 3-95. Network Proxy Settings window

Automatic Proxy Setup

Enable the *Automatically detect settings* option to use Web Proxy Auto-Discovery Protocol (WPAD) for detecting proxy settings. If the connected network requires a proxy and it provides that proxy via WPAD, the proxy will be automatically configured and used.

Enable the *User setup script* option and insert the network address of the script into the Script address box to setup script for your proxy configuration. This script may also be referred to as a .PAC file.

Manual proxy setup

Enable the *Use a proxy server* option to manually configure the proxy server. The manual configuration of a proxy requires you to have a specific IP address and port for the server that you want to use. This information should be entered in the *Proxy Server Address* and *Proxy Server Port* fields.

For addresses you do not want the system to use the proxy server on, enter web or IP addresses separated with a semicolon (;) in the *Proxy Server Exceptions* field.

Enable the *Not use for local addresses* option to bypass the proxy server when you connect to resources on your local network or intranet.

Click **OK** to save and apply network proxy settings or click **Cancel** to ignore the recent changes.

View-X

View-X is an option that enables streaming from an external video signal in a dedicated window on the system. The video signal is received by means of multimedia streaming over the IP network and without audio. For instructions to connect and set up View-X, consult the documentation for the device itself and the Service Manual.

Video streaming setup is described in [‘TCP/IP Configuration for View-X’ on page 3-94](#).

In Side Bar, there is a Show View-X button to control the On/Off of streaming window. When toggled On a dedicated window showing the streamed video appears in the lower right corner by default ([Figure 3-59](#)).

NOTE: *Network connection quality may impact streaming quality. Under ideal networking conditions a delay of approx. 1 sec will still persist.*



Figure 3-96. Scanning window with View-X on.

Network Configuration for View-X

Streaming source and client configuration is set through the **View-X** settings:

1. Press **Config** on the shortcut bar and log on as administrator if required.
2. Select the **Connectivity** category and the **Network** subgroup.
3. Select **View-X** (Figure 3-60).

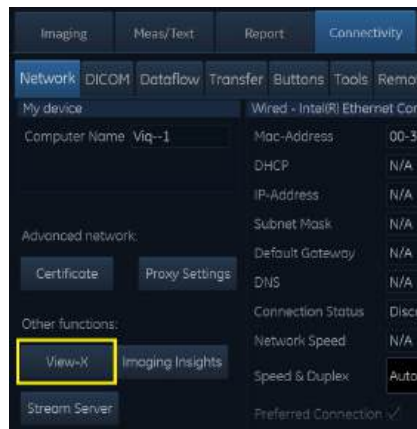


Figure 3-97. Video Streaming under network configuration.

4. Configure the *View-X* server and client as necessary (Figure 3-61).

TCP/IP Configuration for View-X(continued)

View-X

Server

IP Address192.168.255.250

Content Pathstream.sdp

RTSP (TCP) Port No554

Direct Connection☒

Client

RTP (UDP) Port No50000

Buffer Length100

Window Crop

Left, Top (%)00

Right, Bottom (%)100100

OKCancel

Figure 3-98. View-X Video streaming setup

View-X Direct

Activating View-X Direct

The View-X Direct button is available on the top right tray menu when Direct Connection is enabled in Config (default=enabled). See ['Enable Direct Connection' on page 3-100](#) for information related to Direct Connection, if needed.

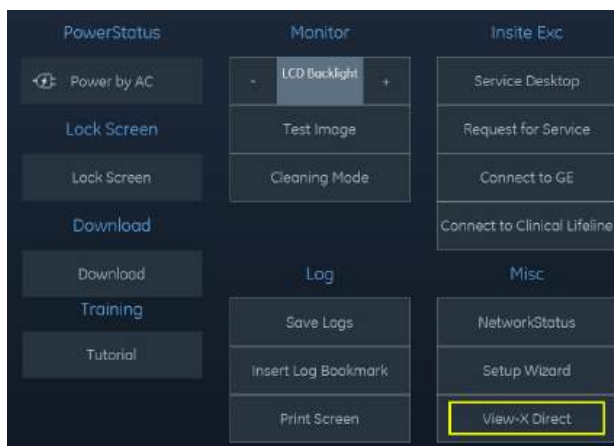


Figure 3-99. View-X Direct button on the Tray Menu

Typical Use Scenario

Prepare for examination:

- If needed, load worklist using the worklist dataflow while connected to the hospital network. It will still be available offline. Pull up the patient from Local Archive.
- If not using a network, start the exam with Patient name/ID in Local Archive. Connect to the Epiphan DVI Broadcaster:
 1. Connect the Epiphan DVI Broadcaster to the ultrasound system with the crossover network cable.
 2. Open the Utility tab and click View-X Direct to toggle on. This activates the IP addresses that allow the Epiphan DVI Broadcaster and the ultrasound system to communicate.
 3. Complete the study.
 4. Click View-X Direct to toggle off the setting.
 5. To transfer the study, connect back to the hospital network and transfer the study/exam/patient from Local Archive as needed.

NOTE: *The Epiphan DVI Broadcaster static IP address is 192.168.255.250 and the ultrasound system's underlying static IP address when View-X Direct is enabled is 192.168.255.249. These addresses cannot be changed while View-X Direct is active. When View-X Direct is not active, the system reverts to default TCP/IP settings.*

Enable Direct Connection

Follow these sections to select the Direct Connection to the Epiphan DVI Broadcaster for video streaming.

1. Ensure that the network cable from the Epiphan DVI Broadcaster is connected to the ultrasound system, and that the Epiphan DVI Broadcaster is switched on.
2. On the ultrasound system, enter: **Config > Connectivity > Network** and activate **View-X**. The *View-X* dialog opens.

View-X

Server

IP Address 192.168.255.250

Content Path stream.sdp

RTSP (TCP) Port No 554

Direct Connection ☐

Client

RTP (UDP) Port No 50000

Buffer Length 100

Window Crop

Left, Top (%) 0 0

Right, Bottom (%) 100 100

OK Cancel

Figure 3-100. The Video Streaming dialog

3. Click the **Direct Connection** check box to activate direct connection to the Epiphan DVI Broadcaster.

Enable Direct Connection(continued)

The screenshot shows the 'View-X' configuration window. It has three main sections: 'Server', 'Client', and 'Window Crop'. In the 'Server' section, the 'IP Address' is 192.168.255.250, 'Content Path' is stream.sdp, and 'RTSP (TCP) Port No' is 554. The 'Direct Connection' checkbox is checked and highlighted with a yellow rectangle. In the 'Client' section, the 'RTP (UDP) Port No' is 50000 and 'Buffer Length' is 100. In the 'Window Crop' section, 'Left, Top (%)' is 0 and 'Right, Bottom (%)' is 100. At the bottom are 'OK' and 'Cancel' buttons.

Server	
IP Address	192.168.255.250
Content Path	stream.sdp
RTSP (TCP) Port No	554
Direct Connection	☒

Client	
RTP (UDP) Port No	50000
Buffer Length	100

Window Crop			
Left, Top (%)	0	0	
Right, Bottom (%)	100	100	

OK Cancel

Figure 3-101. Activate Direct Connection

Selecting *Direct Connection* enables the **View-X Direct** button on the Utility page which will set the ultrasound system to a static IP so it can connect to the factory default static IP on the Epiphan DVI Broadcaster.

4. Select **OK** to exit.
5. Log out of the ultrasound system.

Imaging Insights

Imaging Insights automatically collects DICOM data from GE and other vendors' ultrasound equipment or equipment fleet and displays system utilization and operator usage insights in a plotted dashboard. Operational insights include exam volumes, first and last exam time, probes utilization, exam type; operator usage data includes length of exam, scan mode, probes, and exam type. It helps optimize system and probe fleet investment plans, identify staff assignment and training needs, and monitor variability of staff usage patterns.

1. Press **Config** and log on as administrator.
2. Select the **Connectivity** category and the **Network** subgroup.
The *Network* sheet is displayed.
3. Press **Imaging Insights** button and a window will pop up.



Figure 3-102. Imaging Insights button

Imaging Insights(continued)

4. Configure the server information from the pop-up window and then click **Check**.

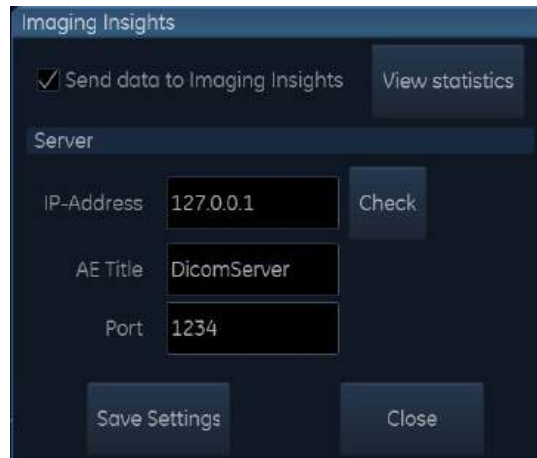


Figure 3-103. Server Configuration

- If the network connection to the server is OK, it will be illustrated by the “Pass” sign, a green check mark . The “Fail” sign indicates that the network connection is failing.

Typical causes:

- Network cable not connected
 - Configuration error(s)
5. Check **Send data to Imaging Insights** check box, then the data of this scanner will be sent to the Imaging Insights server.

NOTE: *If the doctor is doing the exam with patient information created, the data will be sent to server immediately when click **End Exam**: If the doctor is doing emergency scanning without creating patient information, the data will be sent to the server every two hours before system shutdown.*

NOTE: *User can press **View statistics** button to check whether the data is sent successfully or not.*

Data Streaming

NOTE: The **StreamServer** option key should be installed to enable streaming live ultrasound data.

NOTE: Only sector and TEE probes are supported for streaming live ultrasound data.

The system has the capability to stream live ultrasound image data (both 2D and 3D) over the network connection to enabled devices. To configure this capability perform the following steps:

Enable data streaming

1. Press **Config...** on the shortcut bar.
2. Select the tab **Connectivity**, then **Network**.
3. Press the **StreamSever** button.
4. Check **Enable Streaming** on the **Data Streaming Settings** dialog
5. Enter stream server **Port No.** (or use the default port).

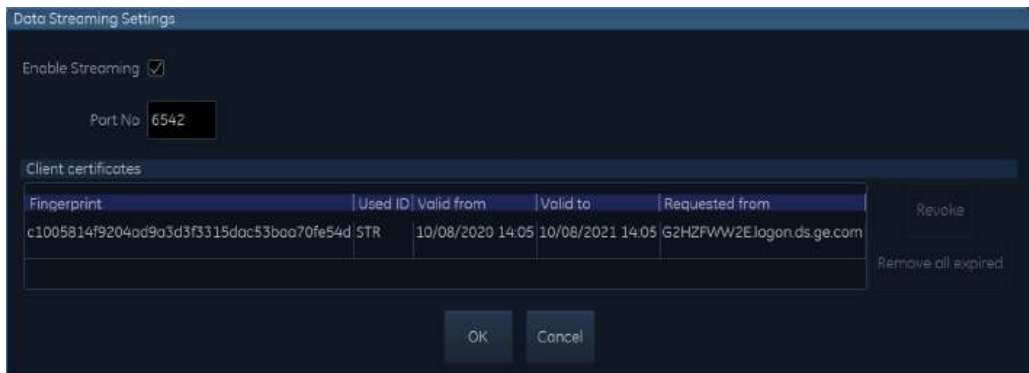


Figure 3-104. Data Streaming Settings

User setup for data streaming

Only a member of the group “ConsultingPhys” will have permission to receive streamed data.

See example of users who can receive streaming data below.

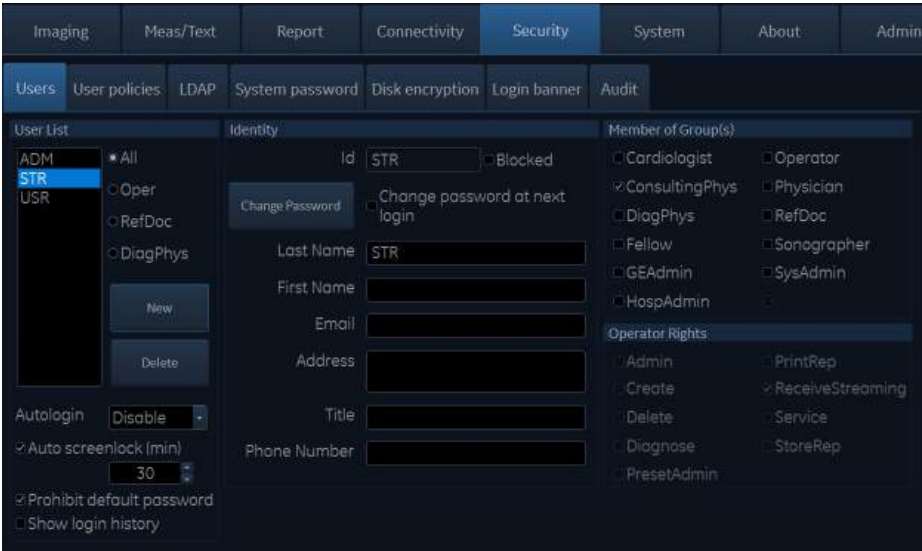


Figure 3-105. User setup for data streaming

If LDAP authentication is enabled, at least one of the LDAP groups that the user belongs to must be mapped to the group “ConsultingPhys” in order to allow the user to receive streaming data.

User setup for data streaming(continued)

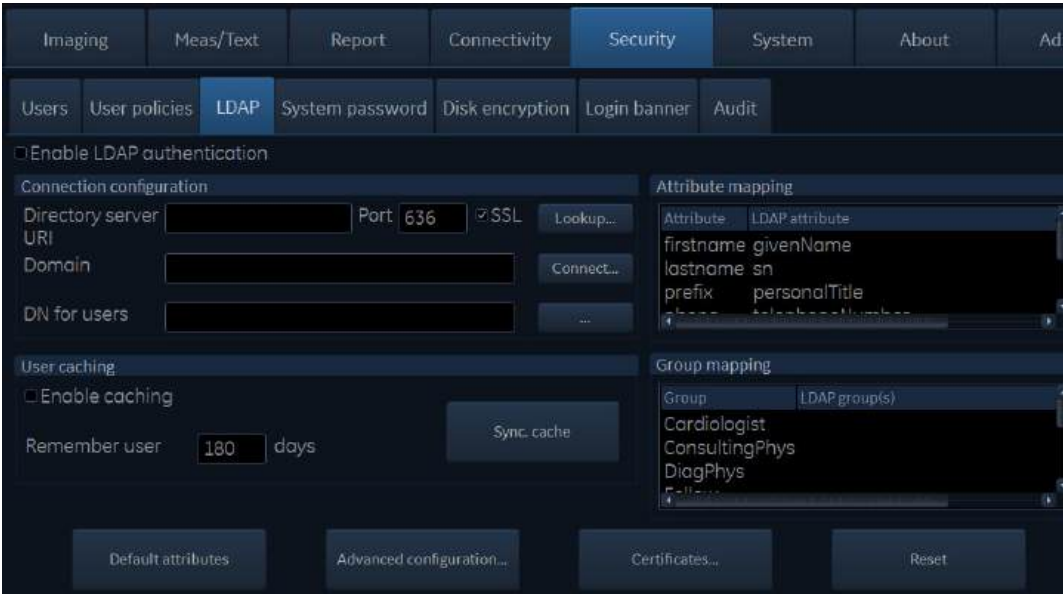


Figure 3-106. LDAP configuration

Authentication

Before an enabled device can receive streamed live ultrasound data, authentication is required to start. The user will be authenticated using both username/password and a PIN code generated by the system upon first connected. Subsequent connections will use a certificate generated after the first successful connection. The client will be asked to enter a PIN code if the client application has no valid client certificate. The system shows a dialog window with the PIN code (Figure 3-70).

After entering correct PIN code, client certificate will be issued and sent to client application automatically. The next attempts of connection do not require entering PIN code as long as the certificate is valid.

NOTE: *The certificate will automatically expire after one year.*

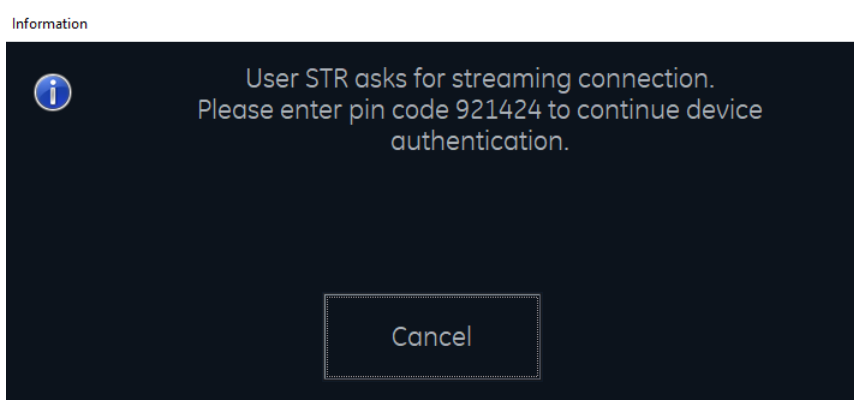


Figure 3-107. PIN code window

NOTE: *Operator can refuse streaming data by pressing **Cancel** button.*

Revoke Client certificate

All issued client certificates are listed in the *Data Streaming Settings* dialog. See [‘Enable data streaming’ on page 3-102](#).

To revoke a client certificate:

- 1. Select a client certificate
- 2. Press **Revoke**

NOTE: At the next attempt to connect, this client will be asked for authentication again (see page 3-105).

Press **Remove all expired** to clear the list of client certificates.

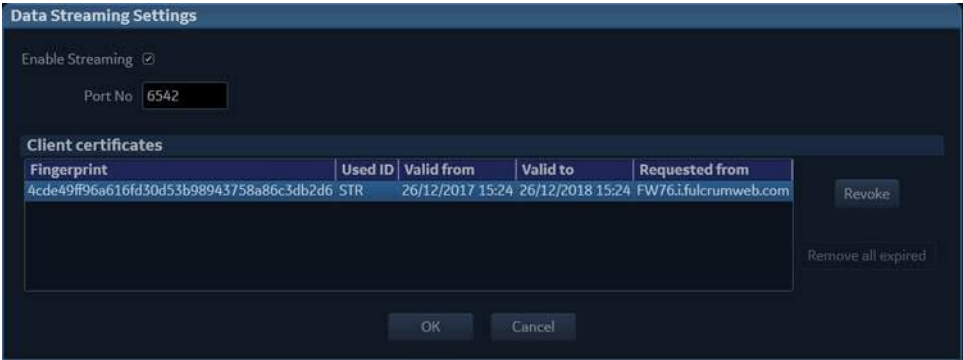


Figure 3-108. Client certificate example

Network Configuration

Wired Configuration Set-up

1. Connect system with network.
2. Select **Config-> Connectivity-> Network-> Configuration**.

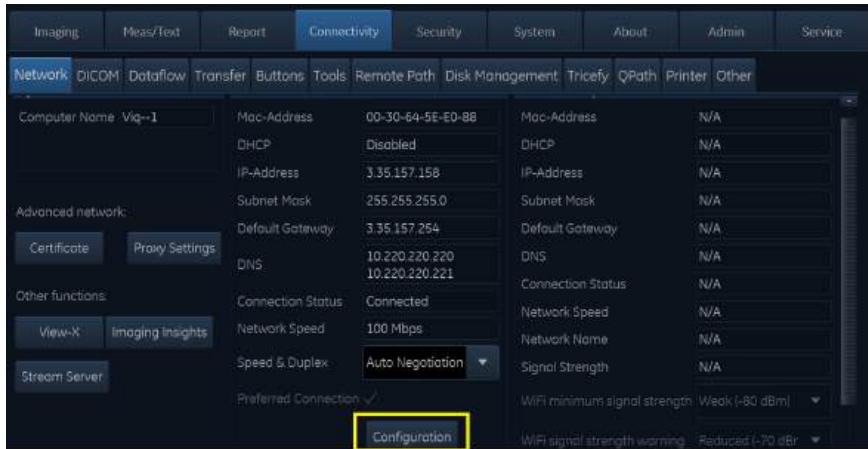


Figure 3-109. Network Settings

Wired Configuration Set-up(continued)

- 3. Select **Ethernet**.



Figure 3-110. Network Connection

- 4. Select **Properties** in the Local Area Connection Status window.

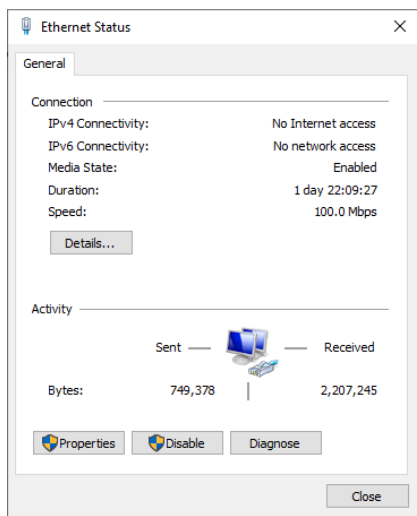


Figure 3-111. Connection Status

Wired Configuration Set-up(continued)

5. Select **Internet Protocol (TCP/IP)** from the terms, and then select **Properties**.

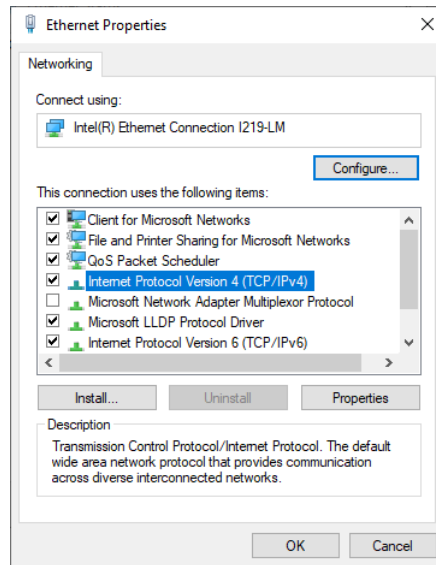


Figure 3-112. TCP/IP Protocol

Wired Configuration Set-up(continued)

6. Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**, and then select **OK**.

NOTE: *If user wants to setup static IP address, input static address in **IP-Address box**, **Subnet Mask** and **Default Gateway** box.*

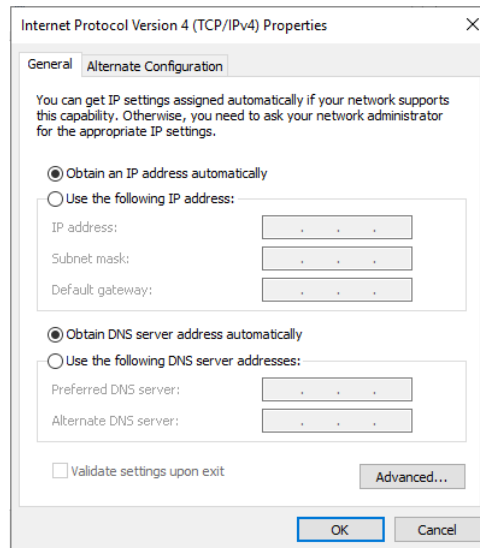


Figure 3-113. IP Address

7. The network icon at the bottom of the the screen displays as connected.

Wireless-LAN Network

The following procedure is used to configure the Ultrasound System for a wireless network environment. This procedure is required for every new wireless network.

NOTE: *Do not use any type of wireless network adaptor other than a GE-approved adaptor.*

Wireless protocols on Vivid *iq* Ultrasound Sysem

The following wireless protocols are supported:

- IEEE 802.11a
- IEEE 802.11b
- IEEE 802.11g
- IEEE 802.11n
- IEEE 802.11ac

The following security protocols are supported on the wireless interface:

- No authentication (Open)
- WPA2-Personal
- WPA-Personal
- WPA2-Enterprise
- WPA-Enterprise
- 802.1X

Configuring the Wireless Network Adaptor

Follow this procedure to configure the Wireless Network Adaptor:

1. Press **Config** and log on as **ADM**.
2. Select **Connectivity**.
3. Select the **Network** tab.
4. Click the **Configuration** button (see [Figure 3-38](#)).

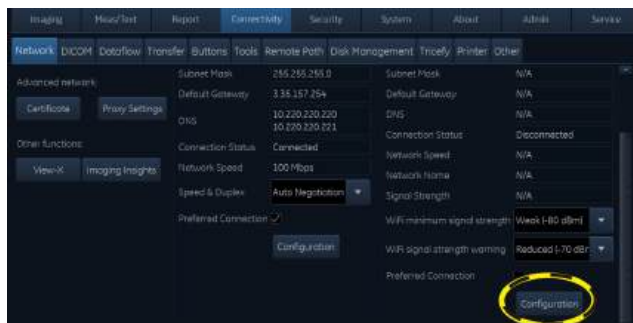


Figure 3-114. Connectivity - Network Tab

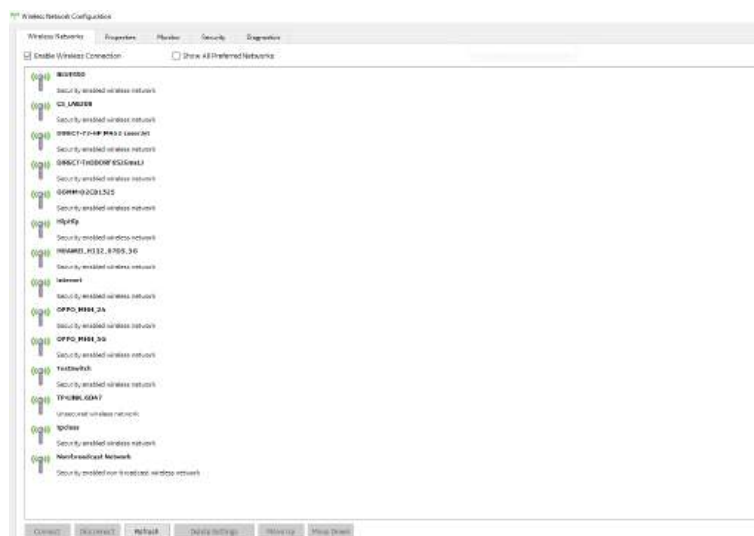


Figure 3-115. Wireless Settings Main Screen

Wireless-LAN Network(continued)

NOTE: *If a wireless network adapter is not connected, or if the connected wireless network adapter is not the correct model, no wireless networks will be listed in the Wireless Settings page.*

5. Either double-click or select the network you want to connect to, and press the **Connect** button.
If this is the first time you attempt to connect to the network, a dialog will pop up on screen asking you to configure the network setting.

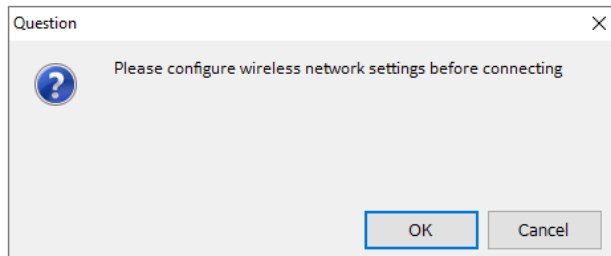


Figure 3-116. First Time Connection Dialog

6. Press **OK** in the dialog window. A new window for setting up your connection will open.

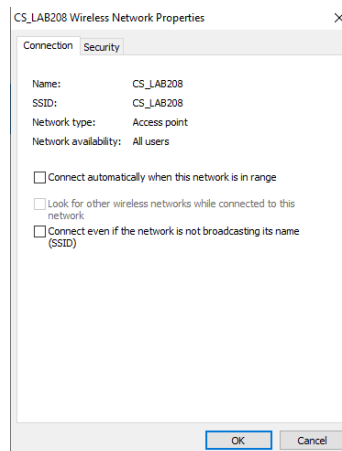


Figure 3-117. Network Settings Window - Connection

Wireless-LAN Network(continued)

7. Select check-boxes according to preference.
If **Connect automatically when this network is in range** setting is selected, then this network will auto-connect when available, without needing to enter the **Wireless Settings** page.
8. Set up security options in the Security tab of connection setup dialog.

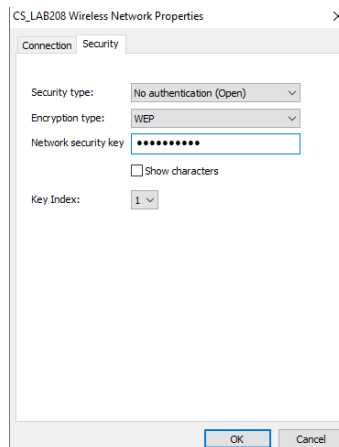


Figure 3-118. Network Settings Window - Security

Wireless-LAN Network(continued)

9. If the wireless network is to be configured for WPA/WPA2 Enterprise and a customer specific certificate is to be installed on the system, this can be done by use of the certificate dialog available from the **LDAP** config page.
 - a. First go to **LDAP** config,

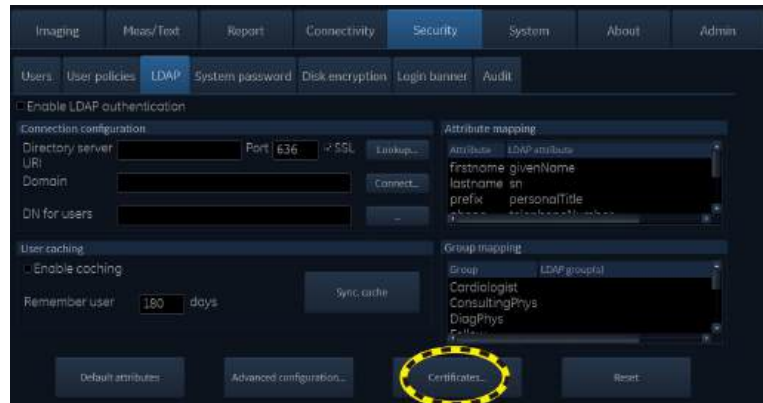


Figure 3-119. LDAP Config Screen

- b. Then click on the Certificates... button to open the Certificate dialog,

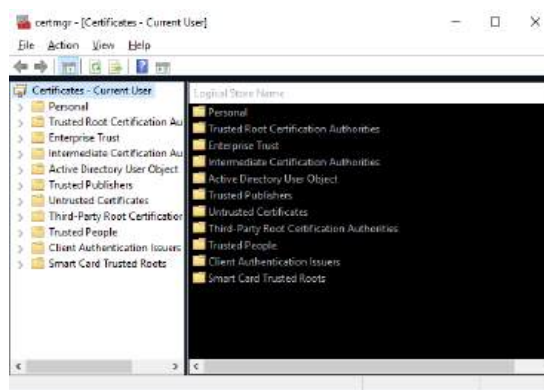


Figure 3-120. Certificate Dialog

Wireless-LAN Network(continued)

10. After you have finished setting up your connection press **OK**. The ultrasound system will then try to establish a connection to your network. A dialog will be shown on screen while this is in progress.

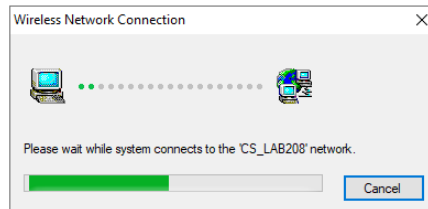


Figure 3-121. Connecting to Network Dialog

11. Once a connection has been established you will see the status **Connected** in the **Wireless Settings** page, next to the network you have connected to.

All network connections that are configured will also be displayed with a star icon.

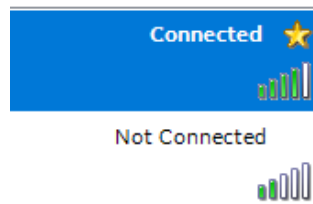


Figure 3-122. Connection Established

NOTE: *The system is now connected to the desired Wireless Network. In future, as long as the same Wireless Network is available, connection will be automatic.*

NOTE: *Whenever connection to a new/different Wireless Network is required, it will be necessary to repeat all steps above.*

DICOM

DICOM images

To configure DICOM images:

1. Press **Config** on the Touch panel and log on as **ADM**.
2. Select the **Connectivity** category and **DICOM** subgroup.
The *DICOM* sheet is displayed.

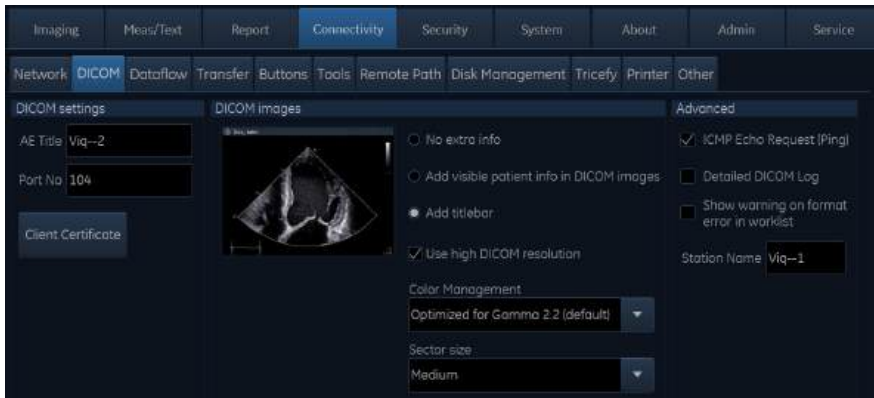


Figure 3-123. The DICOM sheet

From DICOM images the user can select between:

- **No extra info**
- **Add visible patient info in the DICOM images:** displays patient information (name, date of birth and ID) on DICOM images.
- **Add title bar:** adds the Title bar to the DICOM images. Must be enabled in order for images from the 4D Auto AVQ tool to contain traces, bullseye, 3D model and measurements as part of the stored DICOM Multiframe/Singleframe files when using a dataflow with RAW data disabled.

DICOM images(continued)

When **Use high DICOM resolution** is enabled, DICOM images are stored using a higher pixel density. Use this setting when exporting to systems accessed by high definition DICOM viewing stations.

NOTE: Using high DICOM resolution will double the file size of the DICOM data when using standard compression settings. Such files will consume more disk space and also slow down storage, recall and transfer of files.

Color management provides a selection of gamma settings for optimized representation of the Vivid images on DICOM workstations.

Sector size offers three different sizes of the 2D sector for viewing on DICOM work stations.

Changing the AE title and/or Port Number

1. Press **Config** on the shortcut bar and login as **ADM**.
2. Select **Connectivity** and **DICOM** tab.
3. Assign an **AE Title** to the Vivid *iq*. (AE stands for Application Entity. DICOM services use this to identify the Vivid *iq*.) AE Title is case-sensitive. This title may contain the Computer Name from the Network page, if desired. Maximum number of characters in AE Title is 16 characters.)

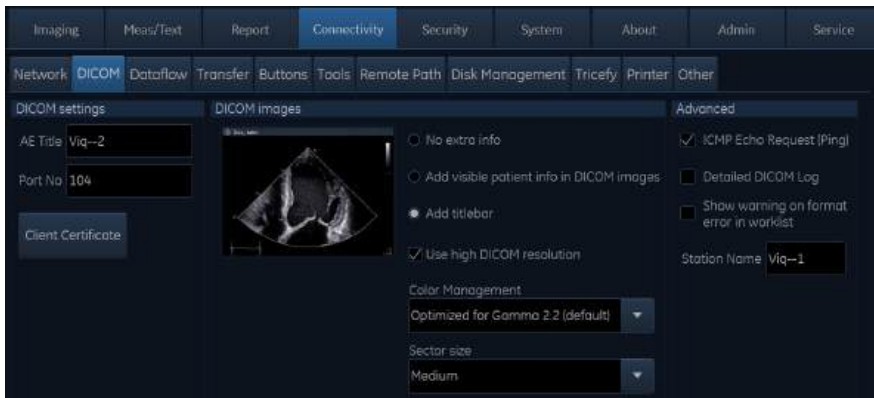


Figure 3-124. AE Title/Port No

4. If needed, edit the **Port Number**. '104' is typical.
5. To generate a detailed DICOM log file, select **Detailed DICOM Log**.
6. Save your changes and reboot the Vivid *iq*.

Set Server Settings

To be able to connect to a remote archive on a remote computer or server, you must configure Vivid iq to communicate with it.

The configuration is done by pressing **Servers** button in **Dataflow** tab.

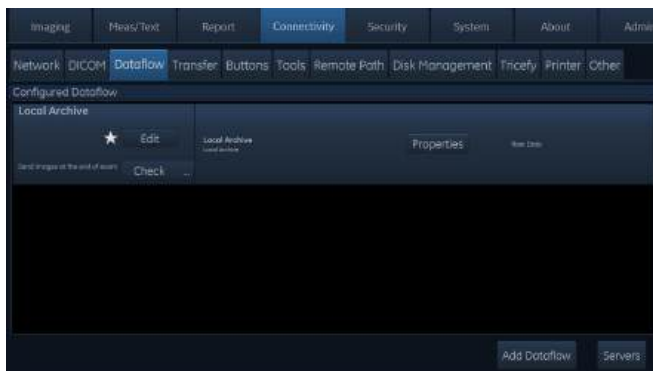


Figure 3-125. The Dataflow tab

To Add a Server in the Server Config List

Follow this procedure to add a server in the list:

1. Select **Add**.

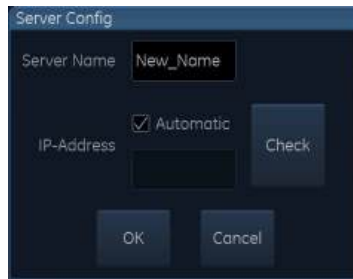


Figure 3-126. Server Config

2. Add the server's name in the *Server Name* field.
3. Add the server's IP address in the *IP-Address* field.
4. Select **Check** to verify that the server is found.

This check is a network Ping. A symbol to the right for the Check button indicates the result:

- A green check mark next to the Check button indicates that the IP-Address is found on the network.
- A red check mark indicates that the IP-Address can't be found.

Possible reasons:

- No network connection between the ultrasound system and the server.
- The wrong IP address.

To Modify the Setup for a Server in the List

NOTE: Both the pre-defined servers and new servers can be modified.

Follow this procedure to modify the setup for a server in the list:

1. Highlight the server you want to modify.
2. Select **Modify**.
3. Update the information as needed.
4. Select **Check** to verify that the server is found.

This check is a network Ping. A symbol to the right for the Check button indicates the result:

- A green check mark  next to the Check button indicates that the IP-Address is found on the network.
- A red check mark  indicates that the IP-Address can't be found.

Possible reasons:

- No network connection between the ultrasound system and the server.
 - The wrong IP address.
5. Select **OK** to confirm your new settings, or **Cancel** to leave without doing any changes.

To Delete a Server from the List

Follow these steps to delete a server from the list:

1. Highlight the server you want to delete from the list.

NOTE: You can only delete extra servers. The predefined servers (listed on-screen) can be modified, but not deleted.

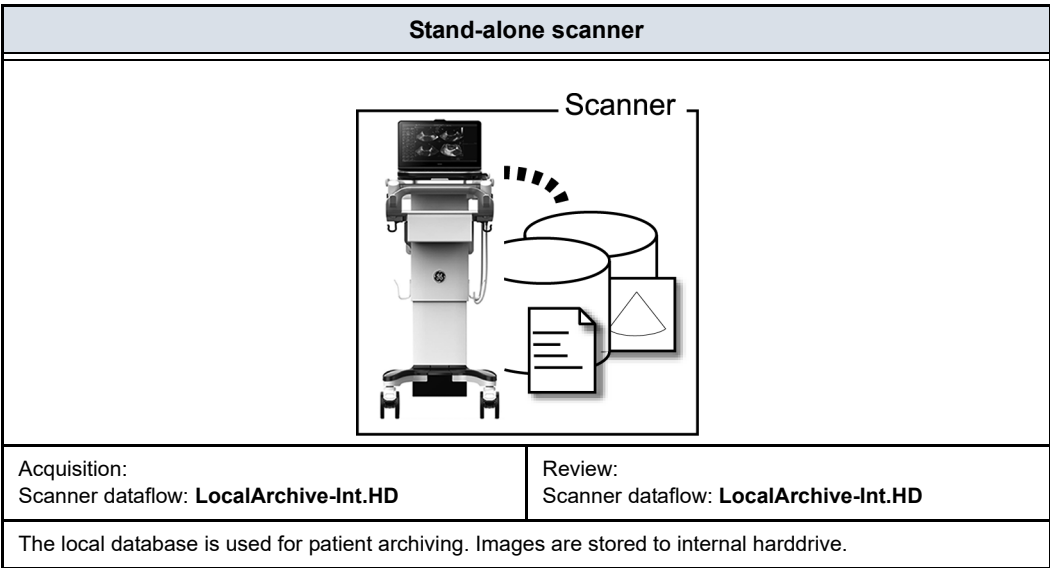
2. Select **Remove**.

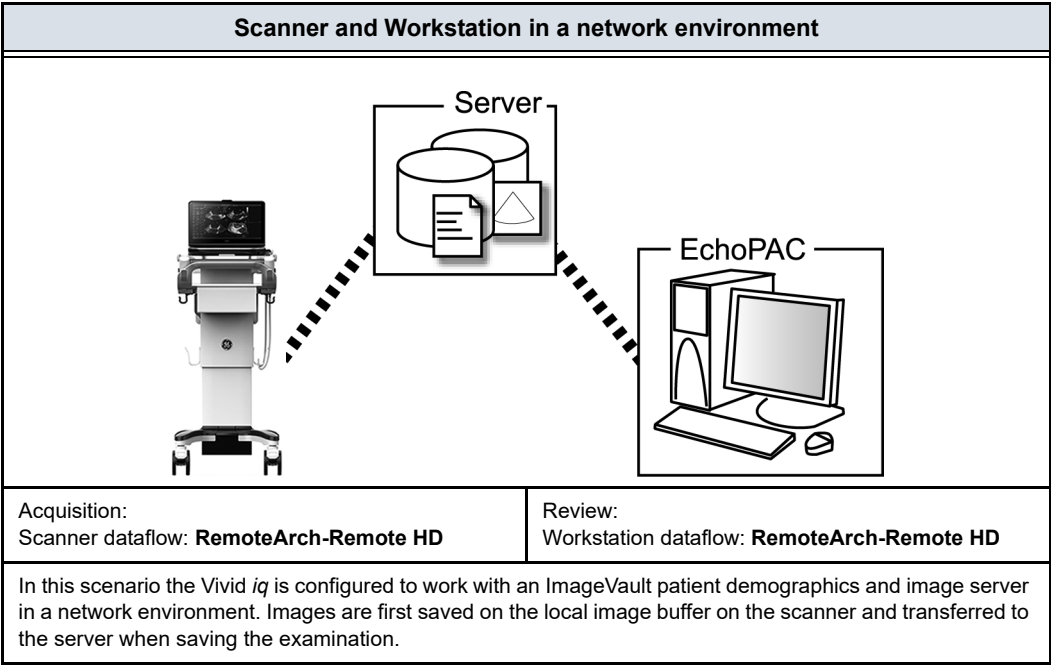
Dataflow

The dataflow concept

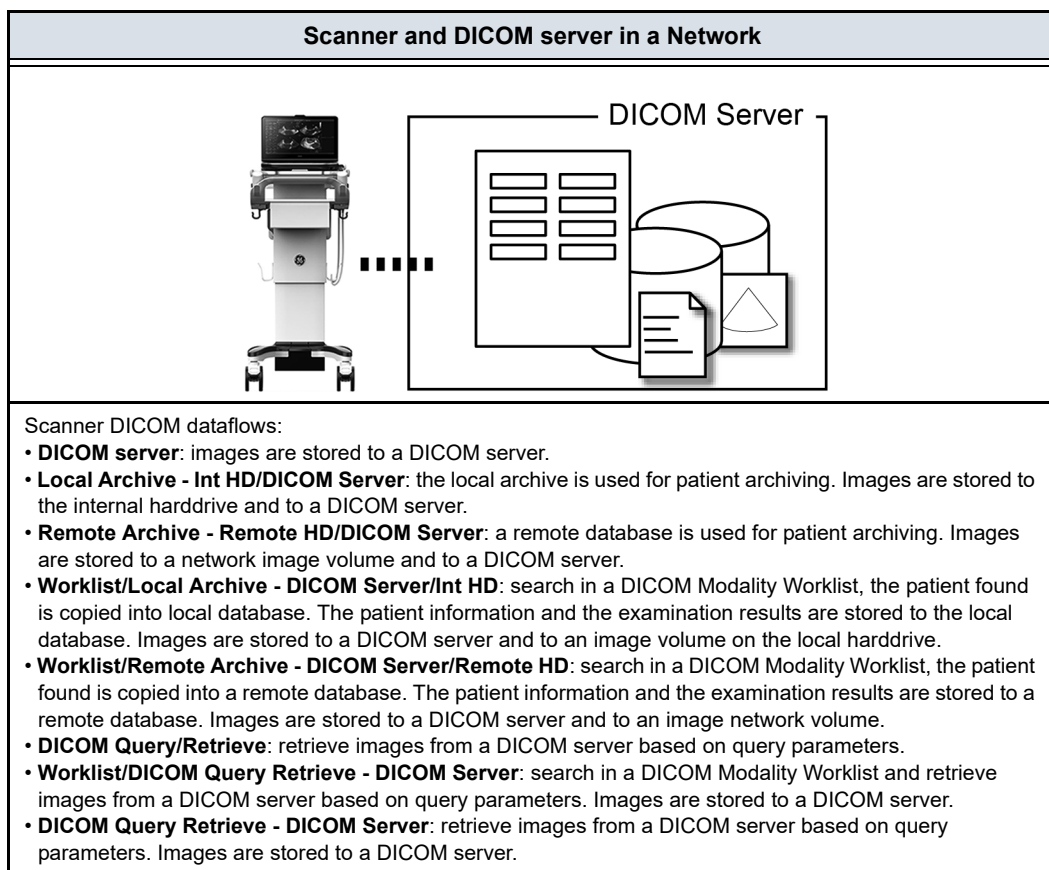
Communication between the Vivid *iq* ultrasound unit and other information providers on the network takes the form of dataflows. Selecting a dataflow will automatically customize the ultrasound unit to work according to the services associated with this dataflow. Each dataflow defines the location and format of patient information. Patient information can include demographic data and images, as well as reports, measurement and analysis data. By utilizing dataflows, the user can configure the Vivid *iq* ultrasound unit to optimally meet the connectivity needs of the facility, while keeping the user interface unchanged. The dataflow concept allows the flexibility of data to be obtained from various sources and allows data to flow to various output sources.

Dataflow examples

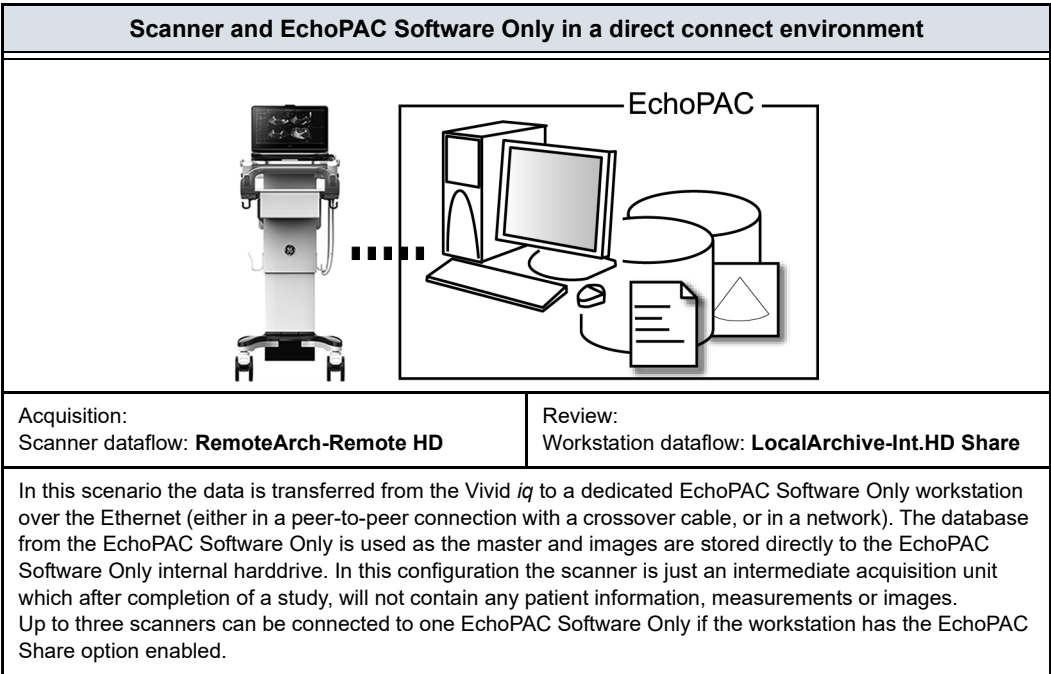




Dataflow examples(continued)



Dataflow examples(continued)



Dataflows available

A set of pre-defined dataflows is available on the unit as listed in the table below.

NOTE: *Not all dataflow listed below are visible by default.*

NOTE: *The list of dataflow available is configurable.*

Dataflow	Description
LocalArchive	The local database is used for patient archiving. Images are stored to internal harddrive.
LocalArchive / DICOM Server	The local archive is used for patient archiving. Images are stored to the internal hard drive and to a DICOM server. Some of the measurements are stored if DICOM SR is turned on.
EchoPAC Archive / DICOM Storage Image Vault Archive / DICOM Storage	A remote database (either on EchoPAC Software Only or a server) is used for patient archiving. Images are stored to a network image volume (either internal HD on EchoPAC Software Only or a server).
EchoPAC Archive / DICOM Storage	A remote database is used for patient archiving. Images are stored to a network image volume and to a DICOM server. Some of the measurements are stored if DICOM SR is turned on.
Worklist / LocalArchive / DICOM Storage	Search in a DICOM Modality Worklist, the patient found is copied into local database. The patient information and the examination results are stored to the local database. Images are stored to a DICOM server and to an image volume on the local harddrive. Some of the measurements are stored if DICOM SR is turned on.
Worklist / LocalArchive / DICOM Storage Worklist / Image Vault Archive / DICOM Storage	Search in a DICOM Modality Worklist, the patient found is copied into a remote database. The patient information and the examination results are stored to a remote database. Images are stored to a DICOM server and to an image network volume. Some of the measurements are stored if DICOM SR is turned on.
Worklist / Local Archive	Search in a DICOM Modality Worklist, the patient found is copied into the local database. The patient information and the examination results are stored to the local database. Images are stored to an image volume on the local harddrive.

Dataflow	Description
Worklist / Image Vault Archive	Search in a DICOM Modality Worklist, the patient found is copied into a remote database. The patient information and the examination results are stored to a remote database. Images are stored to an image network volume.
DICOM DVD Read only	Read DICOM images from the CD/DVD-drive. Read only dataflow, no data can be stored.
DICOM Storage	Store pure DICOM images to a DICOM device. Raw data may also be saved depending on the dataflow configuration. Some of the measurements are stored if DICOM SR is turned on.
DICOM Query Retrieve	Retrieve images from a DICOM server based on query parameters.
Worklist - DICOM Storage	Search in the DICOM Modality Worklist. Images are stored to a DICOM Server. Some of the measurements are stored if DICOM SR is turned on.
DICOM Query Retrieve / DICOM Storage	Retrieve images from a DICOM server based on query parameters. Images are stored to a DICOM server. Some of the measurements are stored if DICOM SR is turned on.
Worklist/DICOM Query Retrieve - DICOM Storage	Search in a DICOM Modality Worklist, retrieve images from a DICOM server based on query parameters. Images are stored to a DICOM server. Some of the measurements are stored if DICOM SR is turned on.
DICOM USB Read Only	Read DICOM data from an USB device. Read only dataflow, no data can be stored.
No Archive	Enables to perform an examination without storing the data to any archive.
Local Archive / Tricefy Store	The local archive is used for patient archiving. Images are stored to the local archive and to Tricefy. If DICOM SR is enabled, measurements are also sent to Tricefy.
Tricefy Store	Store images to Tricefy. If DICOM SR is enabled, measurements are also sent to Tricefy.
Local Archive - Tricefy Patient Share	The local archive is used for patient archiving. Images are stored to the local archive and to Tricefy. Images are also shared with the patient. If DICOM SR is enabled, measurements are also sent to Tricefy.

Dataflow	Description
Tricefy Patient Share	Store images to Tricefy and share them with the patient. If DICOM SR is enabled, measurements are also sent to Tricefy.
Tricefy QR / Tricefy Store	Search in Tricefy patients and examinations. Retrieve images from Tricefy. Images are stored to Tricefy. If DICOM SR is enabled, measurements are also sent to Tricefy.
Tricefy QR / Tricefy Patient Share	Search in Tricefy patients and examinations. Retrieve images from Tricefy. Images are stored to Tricefy and shared with the patient. If DICOM SR is enabled, measurements are also sent to Tricefy.
Worklist/Tricefy QR - Tricefy Store	Search in a DICOM Modality Worklist, retrieve images from Tricefy. Images are stored to Tricefy. If DICOM SR is enabled, measurements are also sent to Tricefy.
Worklist/Local Archive - Tricefy Store	Search in a DICOM Modality Worklist, the patient found is copied into the local archive. The patient information and the examination results are stored to the local database. Images are stored to Tricefy and to the local archive. If DICOM SR is enabled, measurements are also sent to Tricefy.

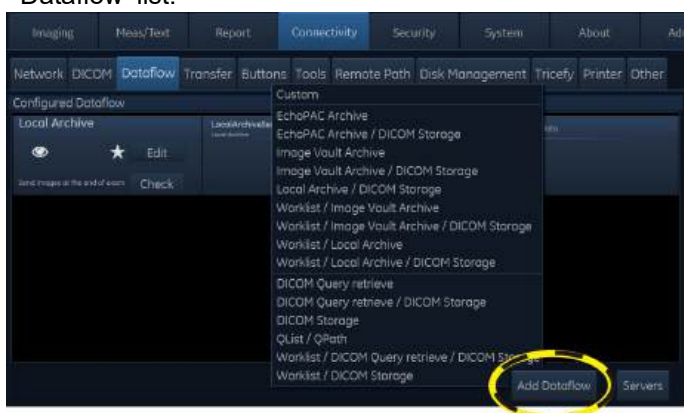
Dataflow selection

Select a dataflow from the *Archive* screen or configure the system with a **default** dataflow from the Configuration management package as described below.

Default dataflow selection

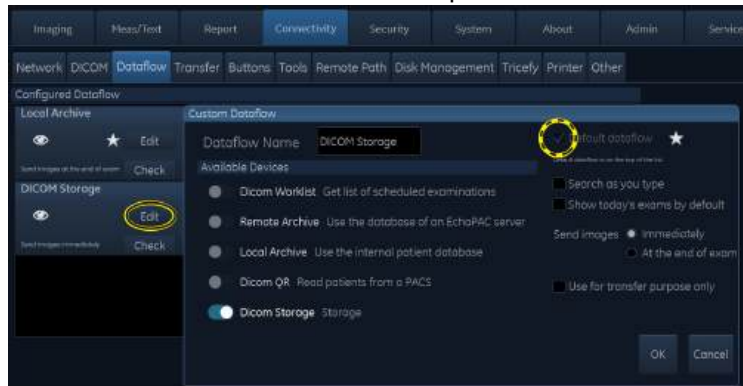
1. Press **Config** and log on as administrator if required.
2. Select the **Connectivity** category and **Dataflow** subgroup. The *Configured Dataflow* sheet is displayed.
3. Press **Add Dataflow** button and select the desired dataflow in the pull-down menu.

The selected dataflow is displayed in the 'Configured Dataflow' list.

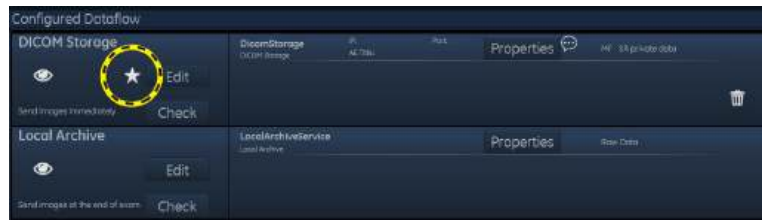


Dataflow selection(continued)

4. Press **Edit** button and check the option **Default dataflow**.

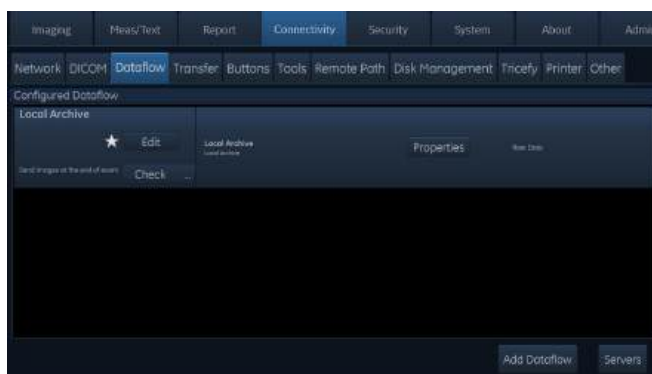


5. Press **OK** to close the window and there will be a star mark to indicate the default dataflow.



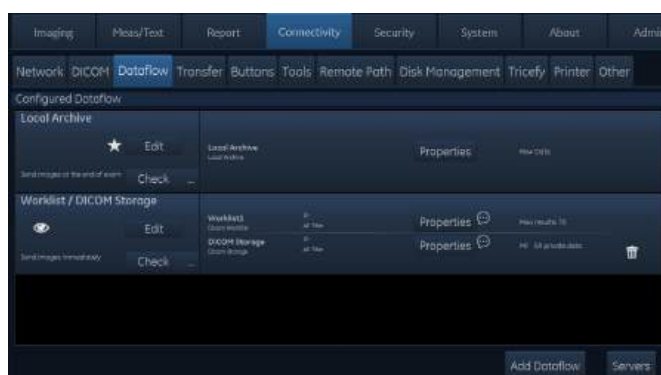
Worklist configure

1. Press **Config** on the shortcut bar and log on as **ADM**.
2. Select **Connectivity** and then select **Dataflow** tab.



3. Press **Add Dataflow** button and select the appropriate **Worklist** dataflow.

In this example, Worklist - DICOM Storage is selected.



4. Select **Properties** for the **Worklist** to display the "Properties" dialog.

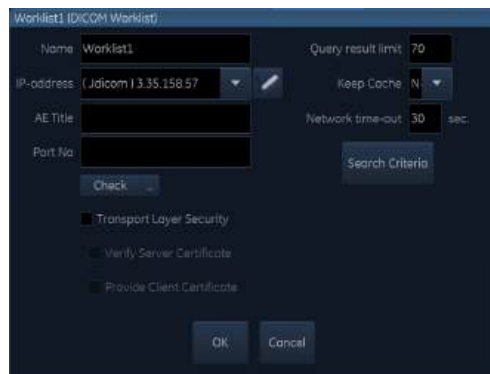
Worklist configure(continued)

5. In the **Properties** dialog, select the **IP-address** pull-down menu to select the Worklist Server.

It is not possible to change the setting in the *IP-address* filed by editing it.

To change the IP-Address settings, refer to '[Set Server Settings](#)' on [page 3-170](#).

- Enter the DICOM server's **AE Title**. This entry is case sensitive and must match exactly.
 - Enter the DICOM server's **Port No.(Port number)**.
 - For some DICOM servers, the default Time-out setting (30) is too low.
6. Select **OK** to close the Worklist properties dialog and save changes.



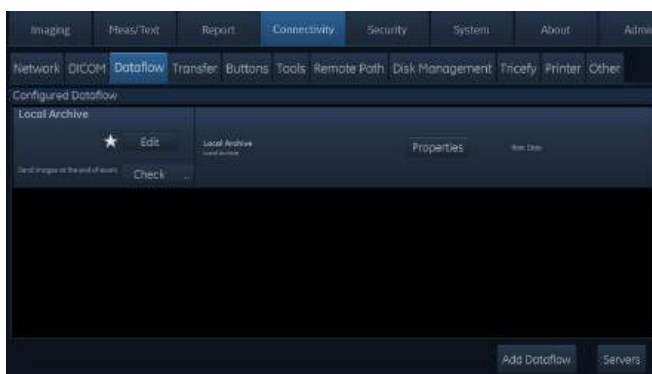
Search Criteria can be used to narrow the search in a Worklist.

Follow the steps below to change the Search Criteria parameters:

1. Select **Search Criteria** and a Search Criteria properties window appears.
2. Select the correct tag from the **Select Tag** pull-down menu.
3. If needed, type in the value.
4. Select **Update List**. to add search criteria.
5. To remove, select the search criteria to delete from the Name list box then select **Remove**.

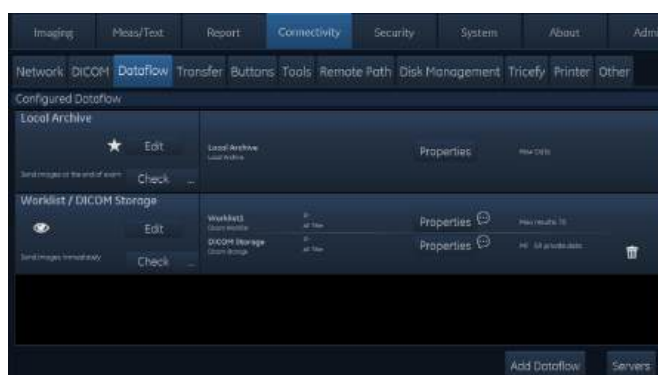
DICOM Storage configure

1. Press **Config** on the shortcut bar and log on as **ADM**.
2. Select **Connectivity** and then select **Dataflow** tab.



3. Press **Add Dataflow** button and select the appropriate **DICOM** dataflow.

In this example, **Worklist - DICOM Storage** is selected.



DICOM Storage configure(continued)

4. Select **Properties** for the **DICOM Storage** to display the “Properties” dialog.

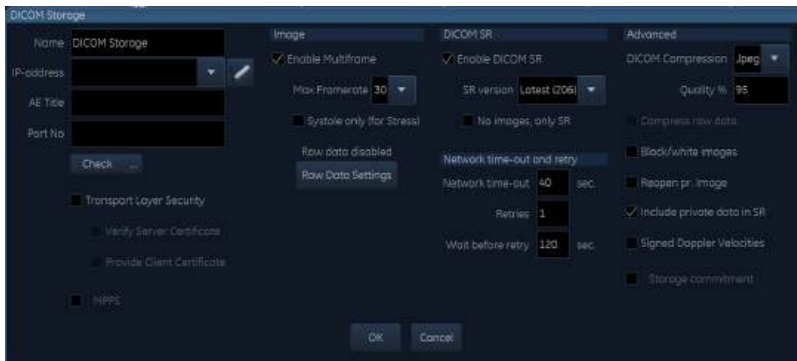


Figure 3-127. DICOM Storage Properties

5. In the **Properties** for **DICOM Storage**:
 - Select the server previously defined from the pull-down menu in the IP address field.
 - Enter the DICOM server **AE title**. This entry is case-sensitive and must match exactly.
 - Enter the DICOM server **Port No.**

For some DICOM servers, the default Timeout setting may be too low.

6. When configuring the DICOM storage device, the following image settings are recommended to enter in the *Properties* window (Figure 3-127):
 - Check **Enable DICOM SR** if required.
 - Keep **Reopen pr. image** unchecked.
 - Keep **Raw data disabled**.
 - Set **Max Framerate** to 30.
 - Keep **Black/white images** unchecked.
 - Set **Compression** to JPEG.
 - Set **Quality** to 95.
 - Check **Enable Multiframe**.

DICOM Storage configure(continued)

Raw Data Settings gives you the ability to select which images to transfer in raw data format by mode:

Systole only (for Stress). When this setting is active, all stress images will be sent to the DICOM server showing only systole. The setting is selectable when transferring only multiframe (not raw data).

NOTE:

*Setting **Compression** to None may result in long transfer time and cineloop with more than 500 frames will be truncated. If **Compression** is set to None, set **Max frame rate** to either 25 or 30 frames per second to reduce the risk of truncating loops.*

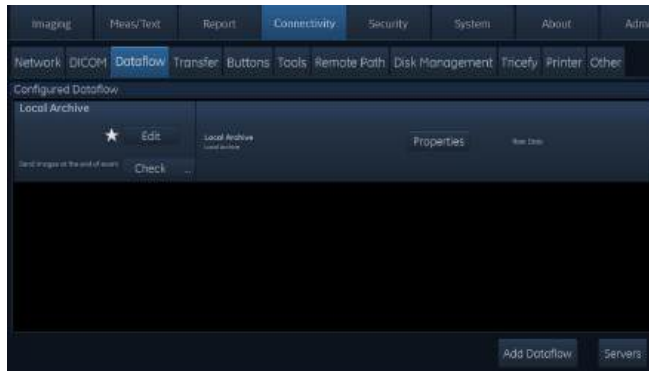
Query Retrieve Configure

The Query/Retrieve function makes it possible to search and retrieve DICOM data from a DICOM server for further analysis on the Vivid *iq*.

NOTE: You may have to set up Vivid *iq* as a destination on the server.

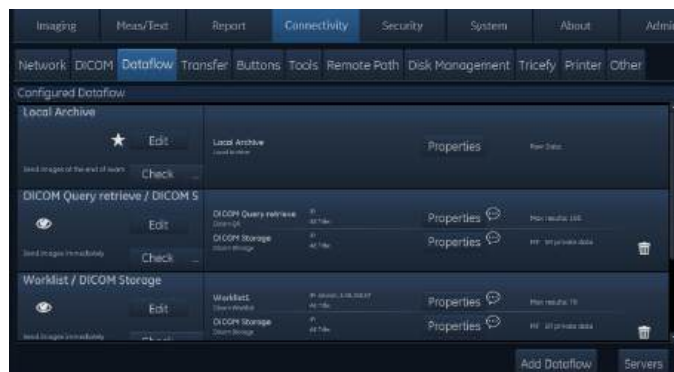
Follow the steps below to configure Query Retrieve:

1. Press **Config** on the shortcut bar and log on as ADM.
2. Select **Connectivity** and then select **Dataflow** tab.



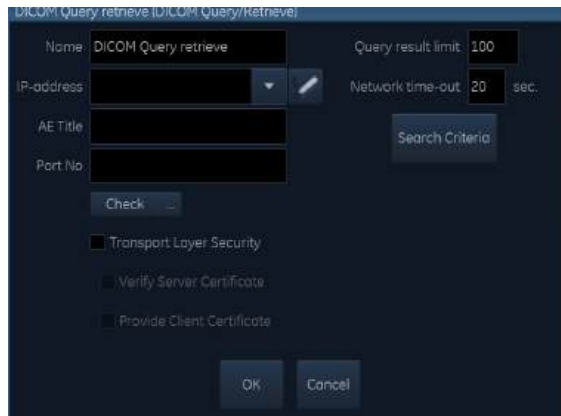
3. Press **Add Dataflow** button and select the appropriate **DICOM Query Retrieve** dataflow.

In this example, **DICOM Query Retrieve - DICOM Storage** is selected.



Query Retrieve Configure(continued)

4. Select **DicomQR** and then select **Properties** to display the Properties dialog.



The screenshot shows the 'DICOM Query retrieve IDICOM Query/Retrieve' dialog box. It contains the following fields and controls:

- Name:** A text field containing 'DICOM Query retrieve'.
- Query result limit:** A text field containing '100'.
- IP-address:** A dropdown menu with a pencil icon to its right.
- Network time-out:** A text field containing '20' followed by 'sec.'.
- AE Title:** A text field.
- Port No:** A text field.
- Search Criteria:** A button.
- Check:** A button.
- Transport Layer Security:** A checkbox.
- Verify Server Certificate:** A checkbox.
- Provide Client Certificate:** A checkbox.
- OK:** A button.
- Cancel:** A button.

5. Select the IP-address down-arrow to choose the DICOM Query/Retrieve server from the pull down menu. In some cases, the server to use is the same as used for DICOM Storage.
6. Enter the correct AE Title and Port Number for the DICOM Query/Retrieve server in the respective fields in the Dicom QR's Properties screen.

Verify the Network Connection to a Device

Follow the steps below to do a First Test (TCP-IP Ping) of the network connection:

1. Highlight the device to be verified and select **Properties**.
2. Select the **"Check"** button to **Ping** the server.

NOTE: By selecting the "Check" button, a ping is sent to the remote server to see if it is accessible via the network. It is not a DICOM Echo (DICOM ping), so it does not check AE title or port number.

3. If the network connection to the server is OK, it will be illustrated by the "Pass" sign, a green check mark .

The "Fail" sign  indicates that the network connection is failing.

Typical causes:

- Network cable not connected
- Configuration error(s)

Transfer

Transfer sources and destinations available

Dataflow	Description
DICOM USB	USB device defaulted to store DICOM data, but can also be configured to include raw data images as well as DICOM SR. No support for inclusion of other patient data.
DICOM DVD	DVD (or CD) device defaulted to store DICOM data, but can also be configured to include raw data images as well as DICOM SR. No support for inclusion of other patient data.
Export as XML	Media or remote path support from transfer of measurements and other parameters in XML format.
DICOM Print	Support for printing of images on a DICOM printer
Raw Data USB	USB device defaulted to store raw data but can also be configured to include DICOM images as well as DICOM SR. Support for inclusion of other patient data included for database transfer.
Raw Data DVD	DVD (or CD) device defaulted to store raw data but can also be configured to include DICOM images as well as DICOM SR. Support for inclusion of other patient data included for database transfer.

Buttons

You can assign print buttons via the **Connectivity -> Buttons** page.

Button configuration

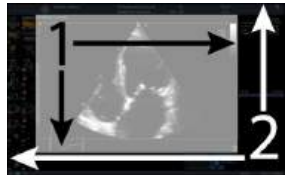
The **Print** tab on the shortcut bar can be configured to perform several actions (e.g. Video Print, Laser print, DICOM storage...etc.).

To configure the **P1/P2** button:

1. Select **Config** on the operation panel.
2. Select the **Connectivity** category and **Buttons** subgroup.
The *Buttons* sheet is displayed.
3. In *Output Buttons* field select **P1**.
4. Select an output device in the *Available output* field and press the **Right arrow** button to assign the device to the selected button.

The *Properties* window for the selected device is displayed, if configurable.

5. Adjust the device specific parameters and select **OK**.
6. Adjust the image specific parameters (see table below).

Image parameters	
Image frames	Select between: • Single: stores single frame only • Multiple: stores cineloops • Secondary Capture: stores a screen shot
Capture Area	Select between: 1. Video Area (1) 2. Whole Screen (2) 

To remove a device, select the device in the *Selected devices* field and press the **Left arrow** button.

Tools

Formatting removable media



CAUTION

The formatting process will erase any data present on the media.

To format removable media:

- 1. Insert the USB drive in the USB port.
- 2. Select **Config** on the Shortcut Bar.
- 3. If required, log on to the system.
- 4. Select the category **Connectivity** and select the tab **Tools** (Figure 3-27).
- 5. Select the removable media from the *Media* drop-down menu (CD-R, DVD-R or USB device).

NOTE: Select **Refresh** if the media does not appear on the list.

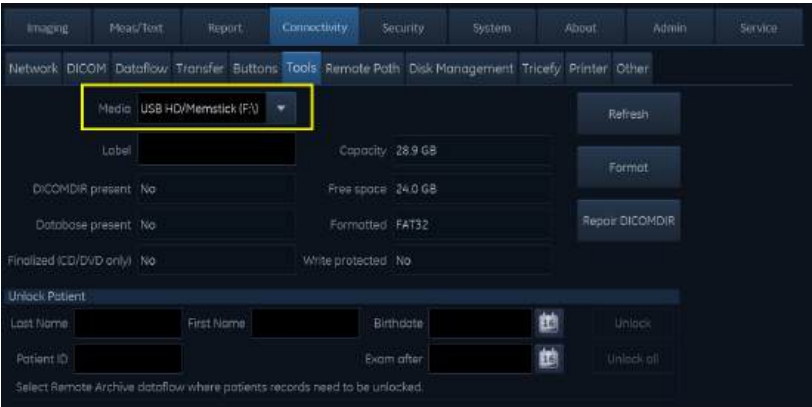


Figure 3-128. The Tools tab

Formatting removable media(continued)

6. Enter a name for the removable media in the *Label* field.

NOTE: *Only the following characters and signs can be used when labelling a media: A - Z, a - z, 0 - 9, “_” and “-”. Do not use more than 11 characters or signs. Do not use space.*

7. Press **Format**.

A confirmation window is displayed.



Figure 3-129. Formatting process

8. Select **YES** to continue.
9. Waiting for the display of the information window indicating that the formatting process is completed.

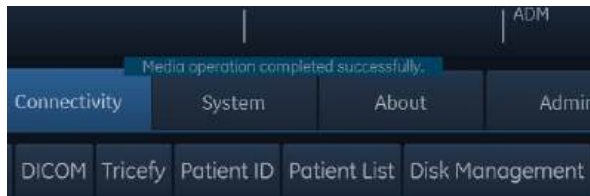


Figure 3-130. Formatting is completed

10. Eject the media as described below.

NOTE: *Removable media used during Disk space management, Backup, Export, or Save as do not need to be formatted in advance as the formatting process is part of these procedures if required.*

Unlock patients

If for any reason an examination is not properly finished, the patient record is locked and cannot be opened again unless it is unlocked.

To unlock patient records:

1. Press **Config** on the touch panel.
2. Select the **Connectivity** category and the **Tools** subgroup.
3. In the *Tools* sheet, select the patient record(s) to unlock.
You can search for a specific patient record or a group of patient record using the searching filters.
4. Select **Unlock** to unlock the selected patient record(s) or select **Unlock all** to unlock all patient records listed.
A *Confirmation* window is displayed.
5. Select **OK**.

Default remote path setting

The user can define a default remote path for a network shared folder (\\server-name\share-name). The default remote path can then be selected as a destination archive for the following operations:

- Export traces function in Q-Analysis
- Export of system error log file
- Export of report templates
- Save as function for images
- Save as function for reports

To define a default remote path:

1. Press **Config** and log on as administrator if required.
2. Select the **Connectivity** category and **Remote Path** subgroup.
The *Remote Path* sheet is displayed.
3. In the *Export Path* section, enter a remote path of a shared folder on the network.
To check the connection, press **Check**.
4. In the *Configurable Remote Path User* section enter the user name and password required to access the shared folder.

The screenshot shows the 'Remote Path' configuration window. At the top, there is a navigation bar with tabs: Imaging, Meas/Text, Report, Connectivity (selected), Security, System, and About. Below this is a sub-navigation bar with tabs: Network, DICOM, Dataflow, Transfer, Buttons, Tools, Remote Path (selected), Disk Management, Tricify, Printer, and Other. The main content area is divided into two sections. The first section, 'Export Path', has a description: 'Path used for Save As, Export from Q-Analysis, and for exporting error logs with tray menu'. It contains a text input field for 'Export Path' and a 'Check' button. The second section, 'Configurable Remote Path User', has a description: 'User and password below are used for all remote paths configurable throughout the system as secondary login credentials'. It contains two text input fields for 'User' and 'Password'. To the right of these fields is a 'NOTE' box stating: 'NOTE: The default User/Password is always used as primary login credentials. No attempt is made to use the secondary credentials if login succeeds using the primary ones. This user and password are secondary credentials for remote path access. Remote paths can be set up for Export, Disk Management, Backup and Restore.'

Figure 3-131. The Remote Path sheet

Disk Management

Introduction

The Disk management function allows the user to manage hard disk space while maintaining the patient database on the system. The Disk management function can be used to move, copy or delete images and move or copy reports from the oldest patient records. The Disk management function has also an auto-purge feature that will automatically delete images and reports that have already been copied if the local hard disk is getting full.

Three different disk management scenarios are possible depending on the system configuration:

- Disk management is set to **move** files: the user runs the Disk management function on a regular basis to move images and reports from older patient records to removable media or to a network volume. Using this setting, moved images and reports are deleted from the local hard drive and copied to the specified destination. This scenario prevents the local disk to fill up and keeps images and reports from the most recent patient records on the local disk. Using this scenario, the user can control what should remain on the system while keeping the disk free space at an operational level.
- Disk management is set to **copy** files: the user runs the Disk management function on a regular basis to copy images and reports from older patient records to removable media or to a network volume. To prevent the local disk to fill up, the auto-purge function automatically deletes files that were previously copied when the disk free space has reached the minimum allowed limit. This scenario lets the system automatically manage the disk space on the system.

Introduction(continued)

NOTE: When using this setting, the original images will be retrieved from the local hard drive as long as they are available there. When the images are deleted from the local hard drive by the auto-purge function, the copied images will be retrieved.

- Disk management is set to **delete** files: the user runs the Disk management function on a regular basis to delete images from older patient records.

NOTE: Ensure that you have established a data management protocol for your office/institution. The user MUST manage the removable media used when running Disk management by keeping a log and by creating a media filing system.

A person should be in charge of performing the process. The Disk management system can be set up so that a reminder is displayed at regular intervals.

It is always highly recommended to take a backup of moved/copied files, which is the responsibility of the customer. The unit does not offer functionality for taking backup of images and reports saved on long-term storage media.

NOTE: It is recommended that users should do data management in a specific time interval.

Configuring the Disk management function

Configuration of the Disk management system can only be done by user with administration rights.

1. Press **Config**.
If required log on as administrator.
2. Select the category **Connectivity**.
3. In the *Connectivity* category, select the sheet **Disk management**.

Configuring the Disk management function(continued)



1. Sets the reminder time interval for running Disk management.
2. Sets the files to be managed based on the examination dates.
3. Sets the Disk management to copy, move or delete images.
4. Sets the destination device.
5. Starts Disk management.

Figure 3-132. The Disk management sheet

Disk management schedule setting

1. Next to **Reminder interval**, specify the number of days/ weeks you want the system to prompt you to perform disk management.

This setting should be set based on the activity of your office/institution.

Data management settings

1. Select a number of days, weeks or months next to **Manage files older than**. Only files older than the specified setting will be copied, moved or deleted.
If **Today (all files)** is selected, all files will be copied or moved.
2. Next to **Operation** check:
 - **Copy**: the images and reports from the examinations older than the specified setting defined in step 1 are copied to the specified destination. Using this setting, the files will exist in two locations, the local hard drive and the destination.
 - **Move**: the images and reports from the examinations older than the specified setting defined in step 1 are copied to the specified destination, verified and then deleted from the local hard drive. Using this setting, the files will exist in one location, the destination media. They are removed from the local hard drive.
 - **Delete**: the images from the examinations older than the specified setting defined in step 1 are deleted from the hard drive.

Destination device setting

1. Next to **Destination device**, select a removable media or a network share folder.

NOTE: *When a network share folder is selected the path to the folder must be entered. Press **Check** to verify the connection.*



CAUTION

If using removable media, it is recommended to use dedicated media to the Disk management process. Removable media used for data backup must not be used when performing Disk management.

Do not use the same removable media on several systems.

Running the Disk management function

The Disk management function can be run at any time. In addition, the user may be prompted to run Disk management if the time since the last Disk management operation performed has reached the setting for the Reminder interval (see page 3-198), or if the local hard drive is about to be full.

Disk management can be run from the *Archive* screen (see below) or from **Config/Connectivity/Disk management** ([Figure 3-132 on page 3-198](#)).

Manual start of Disk management

1. Press **Patient**.
The *Archive* screen is displayed.
2. Press **Disk management**.
The *Disk management* window is displayed.

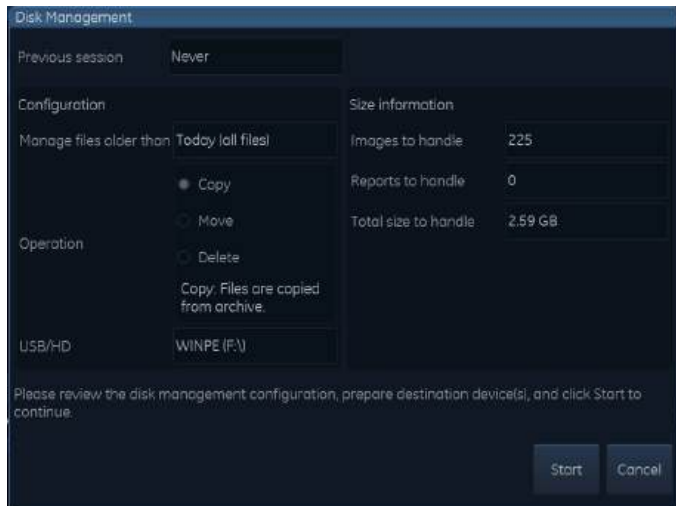


Figure 3-133. The Disk management window

Manual start of Disk management(continued)

The Disk management operation will either copy, remove or delete files from the local archives depending on the Disk management configuration (see page 3-197). Make sure the correct configuration is set.

Prepare the destination device(s). If a connected USB device is used, make sure the correct device is selected.

If using CD/DVD, the operation may require several disks as specified in the *Disk management* window. Make sure that the specified number of disks are available.

NOTE: CD/DVD do not need to be formatted.

- 3. Press **Start**.

The *Disk management processing files* window is displayed showing progression of the process (Figure 3-134).

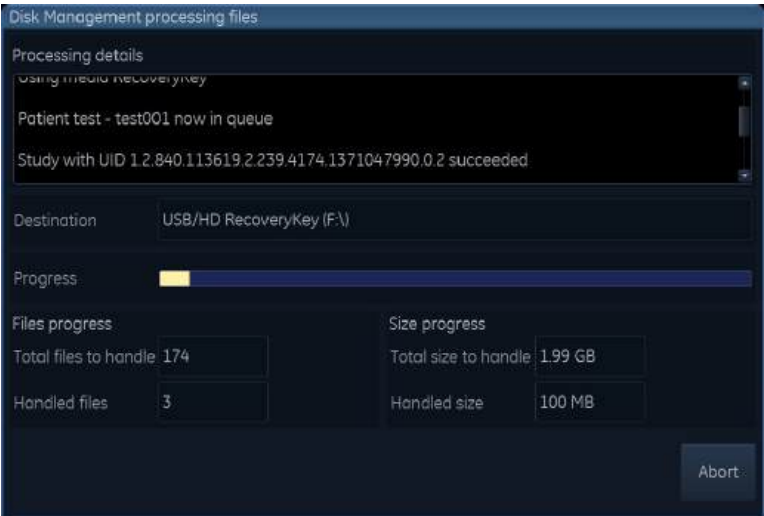


Figure 3-134. The Copying files window

Manual start of Disk management(continued)

If using CD/DVD as destination device, the system automatically formats the disks if required. If the media is formatted the user will be asked to enter a label for the media.

NOTE: The media label should have an identification of the system the Disk management is run from.

NOTE: Disk management is aborted if the destination device contains a database backup or exported patient data.

The information displayed on the *Disk management processing files* window is updated while the files are being copied.

4. If more than one media is necessary a dialogue window is displayed asking the user to insert a new media.
Press **OK** after the new media is inserted.
The operation is resumed.
5. When all the files are copied, the *Disk management completed* window is displayed ([Figure 3-135](#)), showing the list of processed examinations, the media used and a detailed log.

Manual start of Disk management(continued)

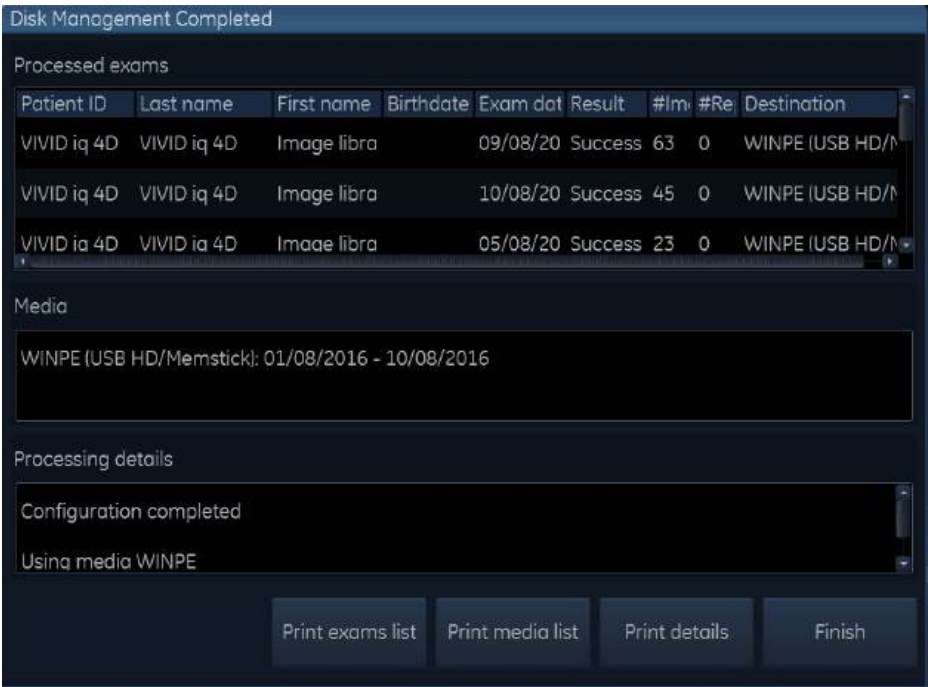


Figure 3-135. The Disk management completed window

Manual start of Disk management(continued)

- Select **Print exam list** to print the list of processed examinations.
 - Select **Print media list** to print the list of media.
 - Select **Print details** to print the detailed log.
6. Make sure that all media are physically labelled according to the list displayed in the *Disk management completed* window. The media label should also have an identification of the system the Disk management was run from.
 7. Press **Finish** to complete the Disk management operation and file the media.
A backup reminder window is displayed.

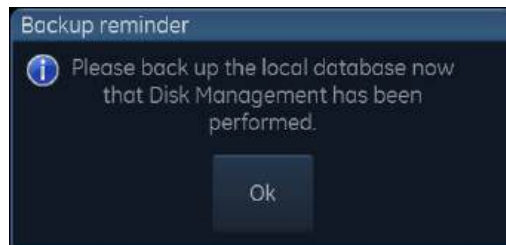


Figure 3-136. The Backup reminder window

8. Press OK.

Tricefy Uplink

Tricefy Uplink, an online platform for sharing and distributing medical images, enables physicians to archive, collaborate and share exam data with patients and colleagues. After registration, the studies can be archived and viewed in the cloud.

NOTE: *Tricefy is not supported in R8 system.*



1. Archive securely in the cloud.
2. Access anytime from any device.
3. Share with patients instantly
4. Collaborate with colleagues easily.

Figure 3-137. How the Tricefy server works

To register a Tricefy account

1. Press **Config** on the shortcut bar.
2. If required, log on to the system.
3. Select the **Connectivity** category and the **Tricefy** subgroup. The *Tricefy* screen is displayed (see [Figure 3-138](#)).
4. Check the button “**Enable Tricefy**”. A registration text field is displayed.
5. Type e-mail address and then press **Activate account**.
At first connection, a registration letter will be sent to the provided e-mail address. Follow the instructions to complete the Tricefy Uplink registration.
6. After the account is successfully registered, press the **Test Connection** button. The account information is displayed, indicating account name, customer name and account status (see [Figure 3-138](#)).



Figure 3-138. The Tricefy Screen

NOTE: An icon in the bottom left corner of the title bar shows the Tricefy connection status.

The icon  indicates that Tricefy Uplink is successfully connected.

The icon  indicates that registration is incomplete.

The icon  indicates that Tricefy Uplink is disconnected.

Configuration of Tricefy storage

The following dataflows are available for transferring images from the ultrasound system to the Tricefy cloud server:

Dataflow	Description
Local Archive / Tricefy Store	The local archive is used for patient archiving. Images are stored to the local archive and to Tricefy Uplink. If DICOM SR is enabled, measurements are also sent to Tricefy Uplink.
Tricefy Store	Store images to Tricefy Uplink. If DICOM SR is enabled, measurements are also sent to Tricefy Uplink.
Local Archive / Tricefy Patient Share	The local archive is used for patient archiving. Images are stored to the local archive and to Tricefy. Images are also shared with the patient. If DICOM SR is enabled, measurements are also sent to Tricefy Uplink.
Tricefy Patient Share	Store images to Tricefy and share them with the patient. If DICOM SR is enabled, measurements are also sent to Tricefy Uplink.
Tricefy QR / Tricefy Store	Search in Tricefy Uplink patients and examinations. Retrieve images from Tricefy Uplink. Images are stored to Tricefy Uplink. If DICOM SR is enabled, measurements are also sent to Tricefy Uplink.
Tricefy QR / Tricefy Patient Share	Search in Tricefy Uplink patients and examinations. Retrieve images from Tricefy Uplink. Images are stored to Tricefy Uplink and shared with the patient. If DICOM SR is enabled, measurements are also sent to Tricefy Uplink.
Worklist / Tricefy QR / Tricefy Store	Search in a DICOM Modality Worklist, retrieve images from Tricefy Uplink. Images are stored to Tricefy Uplink. If DICOM SR is enabled, measurements are also sent to Tricefy Uplink.
Worklist / Local Archive / Tricefy Store	Search in a DICOM Modality Worklist, the patient found is copied into the local archive. The patient information and the examination results are stored to the local database. Images are stored to Tricefy Uplink and to the local archive. If DICOM SR is enabled, measurements are also sent to Tricefy Uplink.

Configuration of Tricefy storage(continued)

Configure as follows before storing exams to Tricefy Uplink:

1. Press **Config** on the shortcut bar.
2. If required, log on to the system as **ADM**.
3. Select the **Connectivity** category and the **Dataflow** subgroup.

The *Dataflow sheet* is displayed (see [Figure 3-76](#)).

4. Select the dataflow **Local Archive - Tricefy Store**.

NOTE: *Dataflows listed in the above table can also be selected as needed.*

5. Uncheck the **Hidden** button.

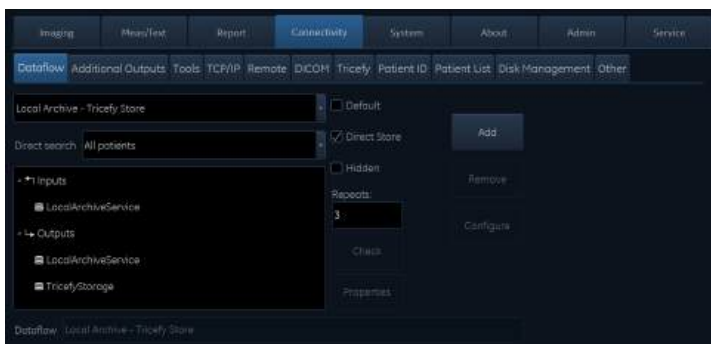


Figure 3-139. The Dataflow sheet

Storing an exam to Tricefy Uplink (Example 1)

1. In the *Patients/Exams* list, select dataflow **Local Archive - Tricefy Storage**.
2. Get back to scan and press **Store** key. The image is stored in the clipboard.
3. End the exam. The exam data will be sent to the Tricefy website (https://tricefy4.com/users/sign_in) in addition to the local archive.

Storing an exam to Tricefy Uplink (Example 2)

1. In the *Patients/Exams* list, select dataflow **Local Archive - TricefyPatientShare**.

NOTE: If TricefyPatientShare is selected as dataflow, the patient telephone number must be entered under patient data so that the patient will be informed automatically when images are uploaded to Tricefy Uplink.

NOTE: To share the exam results with more than one person, type several telephone numbers seperated by semicolon.

2. Get back to scan and press **Store** key. The image is stored in the clipboard.
3. End the exam. The exam data will be sent to Tricefy website (https://tricefy4.com/users/sign_in) in addition to the local archive.

*NOTE: If the **Direct Store** checkbox is checked in the Dataflow sheet, the selected image will be directly sent to the Tricefy website when pressing the **Store** key.*

How to export an existing exam from local archive to Tricefy

1. Press **Transfer** from the Patients/Exams list (see Figure 3-77).

The *Transfer* screen is displayed (see Figure 3-78).

2. Select **Local Archive** from *Source* drop-down menu. Select **Tricefy Storage** from *Destination* drop-down menu.
3. Press **Add to list** to make the selected items ready for transfer.
1. Press **Copy** (see Figure 3-78). The exam data is sent to the Tricefy website (https://tricefy4.com/users/sign_in).

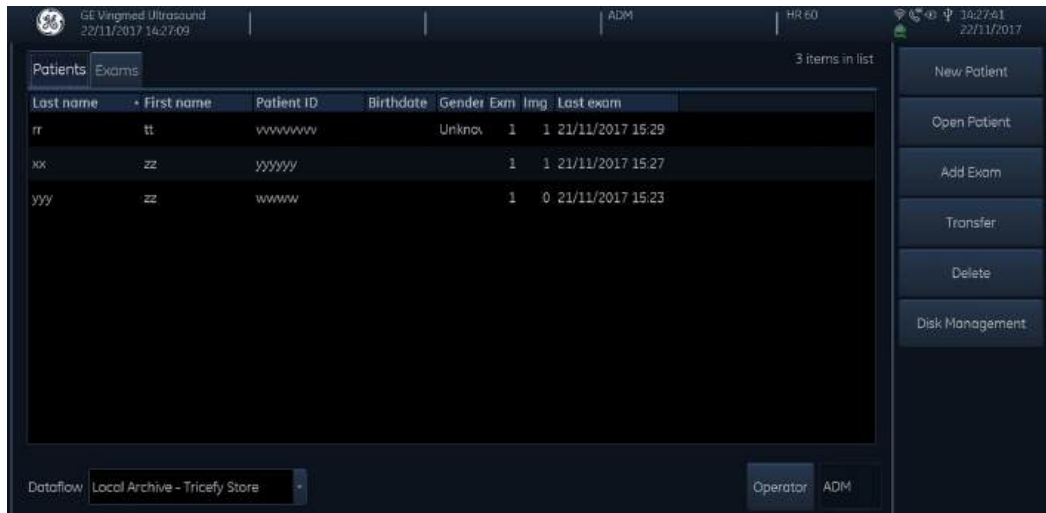


Figure 3-140. The Patients/Exams list

How to export an existing exam from local archive to Tricefy(continued)

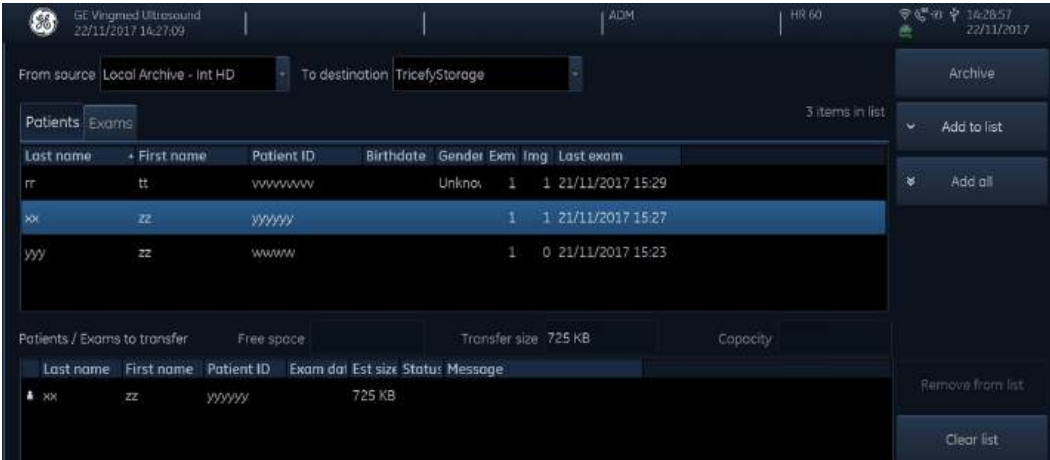


Figure 3-141. The Transfer screen

Accessing exams on the Tricefy web

Open the Tricefy website (https://tricefy4.com/users/sign_in).
Log in with user credentials and access the exam results in the *Studies* tab.

Configuration of the P1 button

The P1 button can also be configured to store images directly to the Tricefy website. With this method one can send selected images instead of the whole exam, like shown in the two previous examples.

Configuring P1 button as TricifyStorage

1. Press **Utility/Config** on the Touch panel.
2. If required, log on to the system.
3. Select the **Connectivity** category and the **Additional Outputs** subgroup.
 1. The *Additional output sheet* is displayed (see [Figure 3-142](#)).
 2. In *Button* field select **P1**.
 3. Select **TricifyStorage** from the *Available output* field and press the **Right arrow** button to assign it to the *Selected Output* field.

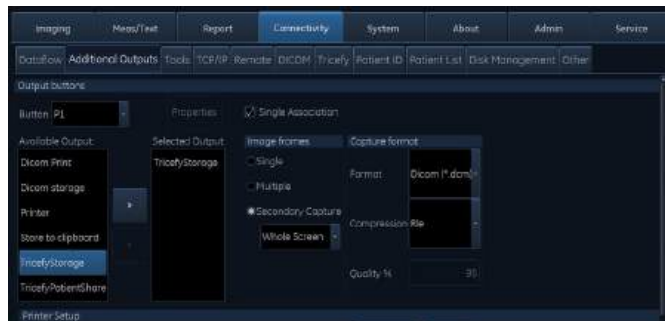


Figure 3-142. The Additional Outputs Sheet

4. Get back to scan and press **P1** button, the exam data will be sent to the spooler and kept there (press **Spooler** on the shortcut bar to see the data).

Configuring P1 button as TricefyStorage(continued)

5. End the exam. The exam data will be sent to the Tricefy website (https://tricefy4.com/users/sign_in).

NOTE: *If the **Single Association** button is unchecked in the Additional outputs sheet, the exam data will be directly uploaded to the Tricefy website when pressing P1 button, without being held on the spooler page.*

NOTE: *List of exam results sent to the Tricefy server will be displayed on the spooler page (press **Spooler** on the control panel to see the data).*

Configuring P1 button as TricefyPatientShare

1. Press **Utility/Config** on the Touch panel.
2. If required, log on to the system.
3. Select the **Connectivity** category and **Buttons** subgroup. The *Buttons output sheet* is displayed.
4. In the *Button* field select **P1**.
5. Select **TricefyPatientShare** in the *Available output* field and press the **Right arrow** button to assign it to the *Selected Output* field.

NOTE: *The patient telephone number must be entered under patient data so that the patient will be informed automatically when images are uploaded to Tricefy Uplink.*

NOTE: *To share the exam results with more than one person, type several telephone numbers seperated by semicolon.*

6. Get back to scan and press **P1** button. The exam data will be held on the spooler page.
7. End the exam. The exam data will be sent to the Tricefy website (https://tricefy4.com/users/sign_in).

Configuration of Tricefy QR

Tricefy QR, similar to DICOM Query Retrieve, enables users to check the exam results which are stored in the Tricefy website via scanner.

1. Log in to the Tricefy website (https://tricefy4.com/users/sign_in).
2. Enable Q/R for corresponding IP address matched with your ultrasound system from the *Uplinks* tab of the website.

NOTE: *Contact your Tricefy Uplink representative to get support for any Tricefy website questions.*

3. Press **Config** and log on to the system as **ADM**.
4. Select the **Connectivity** category and the **Dataflow** subgroup.
5. Select the dataflow **Tricefy QR -Tricefy Storage**.
6. Uncheck the **Eye** button and connect with Internet.
7. Go to patient page and select **Tricefy QR -Tricefy Storage**.

The exam results stored in the Tricefy website will be displayed in the *Patients/Exams* list.

NOTE: *Disable Q/R on the Tricefy website to prevent exam data being used by any other person logging in to the system with the same IP address.*

Printer setup

Printers are configured in the **Connectivity>Printer** tab:

1. To select a printer, highlight it in the table.
2. Click **Preferences** to adjust Paper size and Orientation.
3. Click **Set as Report Printer** to use it for printing reports.
4. Click **Add Printer** and use the windows printer wizard to add one.

NOTE: *Adding printer drivers is not possible*

5. Click **Remove Printer** to remove printers from the list available for the scanner.
6. Click **Open Queue** to view jobs in the printer spooler.

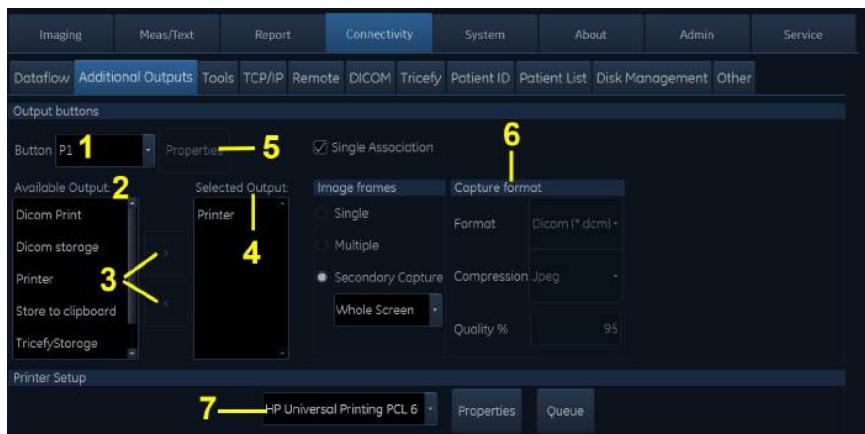


Figure 3-143. The Additional outputs sheet

Others

Patient ID

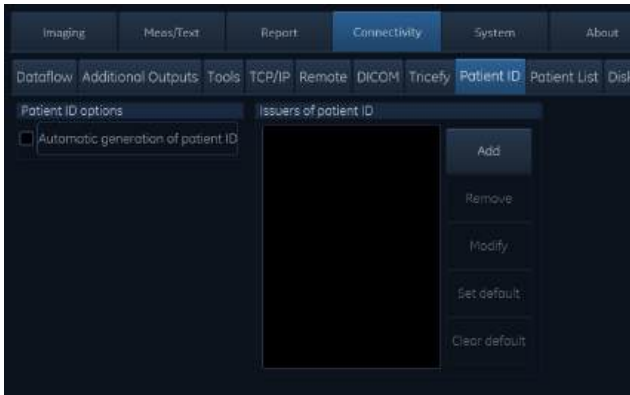


Figure 3-144. The Other sheet

Setting	Description
Automatic generation of patient ID	In the Archive screen, the issuer of a patient id may be specified for a patient id. ☒: A Patient ID is automatically generated by the system. ☐: A Patient ID is required and must be entered by the user when creating a new patient record in the archive.
Issuers of patient ID	In the Archive screen, the issuer of a patient id may be specified for a patient id. An issuer may be added, modified, or deleted. The issuer set as default will be used as issuer for all new patients that are created. In addition, in transfer between remote and local archive, two patients with same patient id, one with empty issuer and one with default issuer, are considered the same patient.

Workflow options

The following settings related to patient management can be adjusted in **Connectivity > Other** subgroup:

Setting	Description
Request acknowledge of End Exam action	☒ : The user is asked to confirm action when ending an examination.
Go directly to scanning from search	☒ : The unit goes directly to the <i>Scanning</i> screen after creating a patient record. ☐ : The unit displays the <i>Patient info and exam</i> screen after creating a patient record for further information entry. The user must press Patient or one of the scanning keys on the Control panel to enter the <i>Scanning</i> screen.

Configuration of the Patient, Worklist and Examination list in the Archive screen

1. In the *List type* drop-down menu, select the list to edit.
2. To add a column to the list:
 - Select a column to display in the *Available columns* field and press  to add it to the list.
 - Press  /  to move the column.
3. To remove a column from the list:
 - Select the column to remove in the *Show columns* field and press .

NOTE: *The columns First name, Last name, Patient ID, Last exam and Exam date cannot be removed for the lists.*

Paperwork after setup

NOTE: *During and after setup, the documentation (i.e. removable media with documentation, User Manuals, Installation Manuals, etc.) for the Vivid iq and the peripherals must be kept as part of the original Ultrasound system documentation. This ensures that all relevant safety and user information is available during the operation and service of the complete Ultrasound system.*

Contents in this Section

- [‘User’s Manual\(s\)’ on page 3-219](#)
- [‘Product Locator Installation Card’ on page 3-220](#)

User’s Manual(s)

Check that the correct User Manual(s) or removable media with User Manuals, per software (SW) revision and language, is included with the Ultrasound system.

For a complete list of User’s Manuals for Vivid iq, refer to Chapter 9 in this manual.

Product Locator Installation Card

NOTE: The Product Locator Installation Card shown may not be the same as the provided Product Locator card.

		GE Medical Systems Product Locator File P.O. Box 414 Milwaukee, WI 53201-0414		General Electric CGR Product Locator Adm. - DSE/SM 283 Route de la Miniere 78530 Buc, FRANCE		Yokogawa Medical Systems Ltd. GEMSA Service Administration 4-7-127 Asahigaoka Hino-shi Tokyo 191, JAPAN	
DESCRIPTION		FDA	MODEL		REV	SERIAL	
SYSTEM LTD.		OCP		BS	ORD		EMPLOYEE NO.
		DISTRICT		ROOM		DATE (MO - DA - YR)	
INSTALLATION		CUSTOMER NO.					
		DESTINATION NAME AND ADDRESS					
46-303268 Rev 5		ZIP CODE					

Figure 3-145. Product Locator Installation Card (Example)

CARTO® 3 Interface Setup

- NOTE:** *Only the Vivid iq system installation is done by GE personnel. GE field engineers are not responsible for any of the CARTO® 3 installation for Protocol 2.0 . For Protocol 1.0, GE installs the video box.*
- NOTE:** *CARTO® 3 is installed by the BWI field engineer. The ultrasound setup and the connection between the Vivid and the CARTO® 3 should be done by the BWI Field Engineer.*
- NOTE:** *GE service only check the Vivid iq connection, contact with Biosense Webster, Inc. if need ICE catheter for troubleshooting. Any other related troubleshooting should be done on system together with Biosense Webster, Inc. service.*

Overview

These versions of CARTO® 3 are supported by Vivid iq.

- Protocol 1.0: The video signal from the ultrasound system's HDMI Out port is connected to a video box. The video from the video box to the CARTO® 3 is distributed via a VGA cable.
- Protocol 2.0: The video signal is transferred through an Ethernet cable.

Contents in this chapter

- 'Prerequisites - CARTO® 3 Software Option' on [page 3-223](#)
- 'Install the CARTO® 3 Option Key' on [page 3-223](#)
- 'Vivid iq Interfacing with CARTO® 3 - Protocol 2.0 (v206v208)' on [page 3-226](#)
- 'Vivid iq Interfacing with CARTO® 3- Protocol 1.0' on [page 3-228](#)
- 'Scanning' on [page 3-232](#)

Vivid iq ICE Configuration with CARTO® 3

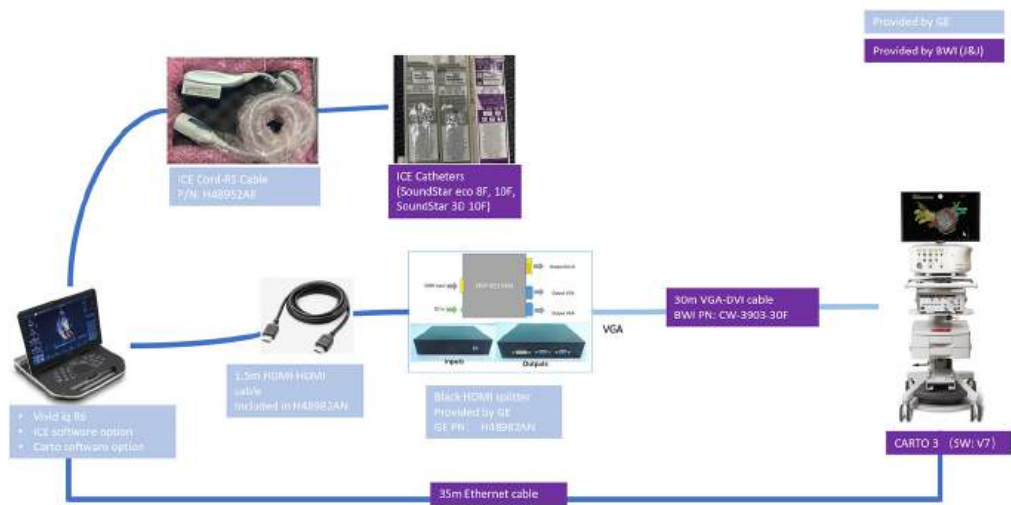


Figure 3-146. Vivid iq ICE configuration with CARTO® 3

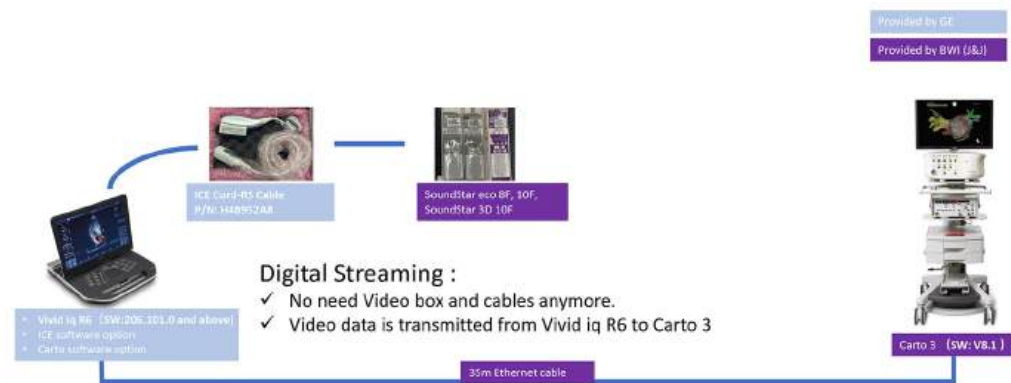


Figure 3-147. Vivid iq ICE Configuration with CARTO® 3(for v206.101.0 and above)

Prerequisites - CARTO® 3 Software Option

- The ultrasound system is delivered with the required software for communicating with CARTO® 3, but these options are not enabled by default, so they must be purchased and installed on the ultrasound system.
- The following software options are activated by an option key. The options are supplied according to the equipment purchased by the customer:
 - ICE Interface Module:
This software option activates the software that supports the ICE catheters.
 - CartoSound Interface with video:
This software option enables the workflow with CartoSound interface (used only with the SoundStar Catheter).

Install the CARTO® 3 Option Key

Install the Option Key on the ultrasound system. [See 'Software Option Installation Procedure' on page 3-33 for more information.](#)

CARTO® 3 Feature - Software Connectivity

The following software options should be activated:

- ICE Interface Module:
This software option activates software that supports the ICE catheters.
- CartoSound Interface with video:
This software option enables the workflow with the CartoSound interface.

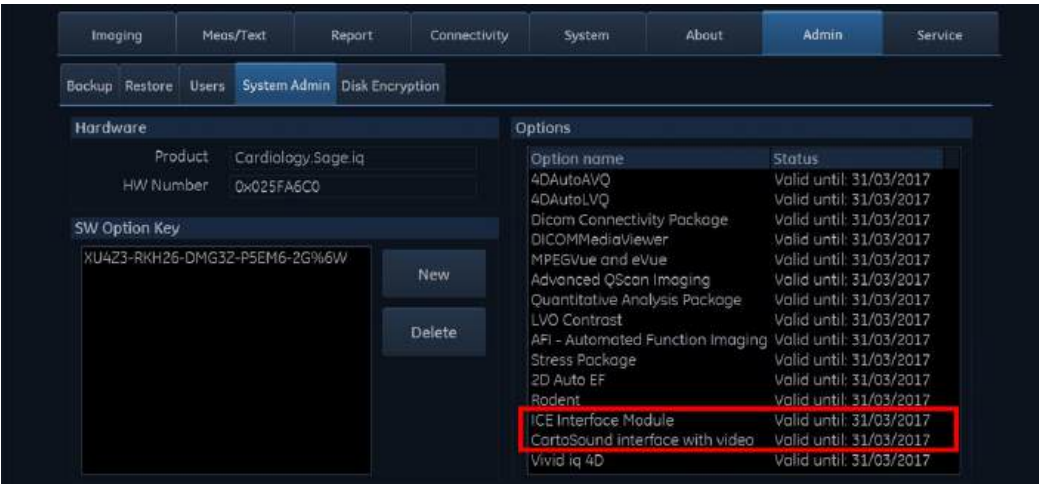


Figure 3-148. Options

User setup for Digital Video Streaming (for v206/v208)

When the CartoSound interface is connected, select **CartoSound** from the shortcut bar. An icon on the status bar shows the connection status:

	The Vivid <i>iq</i> system is waiting for connection from the Carto system.
	The Vivid <i>iq</i> system is connected to the Carto system. The live image on screen is transferred to the Carto system.
	The Vivid <i>iq</i> system is not connected to the Carto system.

Receiving images over peer-to-peer LAN connection is allowed only to members of the ConsultingPhys group. A user member of ConsultingPhys group must be available on the Vivid *iq*, and the Carto system must be configured to use this user when connecting to the Vivid *iq*.

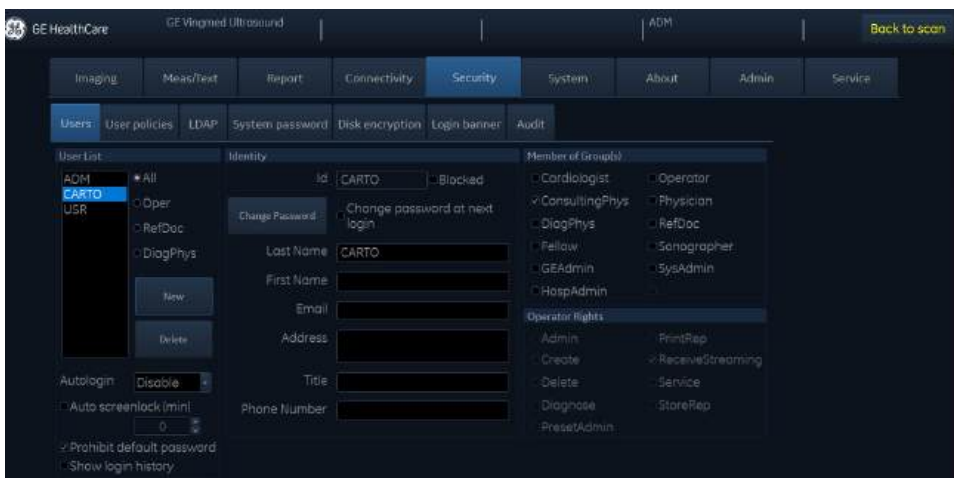


Figure 3-149. User setup for receiving images over peer-to-peer LAN connection

NOTE: The user ID needs to be generated manually, the one in the picture is just an example.

NOTE: The option for **ReceiveStreaming** needs to be checked.

Vivid *iq* Interfacing with CARTO® 3 - Protocol 2.0 (v206v208)

Starting from CARTO® 3 v8.1.x together with Vivid *iq* version 206.101.0 and above, it is possible to use digital video streaming over an Ethernet cable (peer-to-peer LAN).

NOTE: Only a member of the group “ConsultingPhys” will have permission to receive streamed data. For more information, refer to “User setup for data streaming” in the “Vivid *iq* User Manual”, direction number 5872801-1EN and 5936513-1EN.

To check the software version on the ultrasound system,

NOTE: The Isolated HDMI video splitter can be used for CARTO® 3 with protocol 2.0.

The video signal is transferred through an Ethernet cable from the ultrasound system to the CARTO® 3 device. The Ethernet Cable is provided by BWI (not by GE).

You can optionally connect a monitor to the ultrasound system's HDMI Out port.

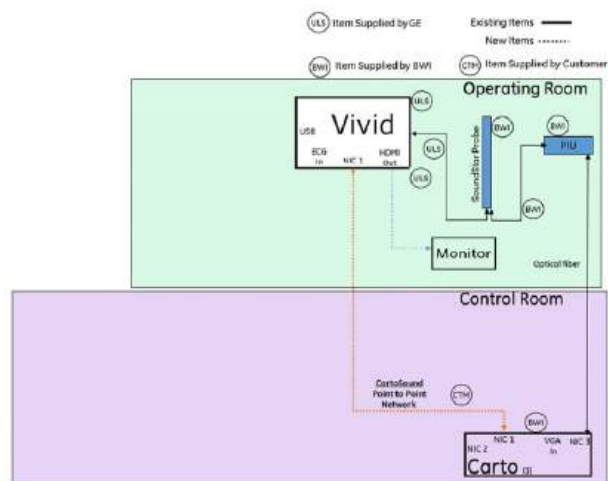


Figure 3-150. Vivid *iq* interfacing CARTO® 3 with protocol 2.0

Installation of CARTO® 3 - Protocol 2.0

1. Install the Option Key.
For instructions, See [‘Software Option Installation Procedure’ on page 3-33 for more information.](#)
2. Make sure that the Ethernet cable is connected to the dedicated ethernet port on CARTO® 3 system and on the other end to the Vivid *iq* Ethernet port.

NOTE: The ultrasound system is delivered with the required software for communicating with CARTO® 3, but these options are not enabled by default, so they must be purchased and installed on the ultrasound system.

The following software options are activated by an option key. The options are supplied according to the equipment purchased by the customer:

1. ICE Interface Module:
 - This software option activates the software that supports the ICE catheters.
2. CartoSound Interface with video:
 - This software option enables the workflow with CartoSound interface (used only with the SoundStar Catheter).

Vivid iq Interfacing with CARTO® 3- Protocol 1.0

In addition to the Option Key mentioned earlier, this CARTO® 3 sollution requires the installation of a Isolated HDMI Splitter (the Video BOX for CVUS).

Content in the HDMI Splitter kit used for Protocol 1.0

Table 3-14:

Item	Part Name	GPN	FRU	QTY	Remark
1	Video Box for CVUS	5794927	5794927-S	1	Includes: • Isolated HDMI Splitter × 1 • HDMI to HDMI cable(1.5M) × 1 • DVI to HDMI cable(1.5M) × 1 • Power Adaptor × 1 • Power Cord × 1 

Ultrasound system interfacing with CARTO® 3 - Protocol 1.0

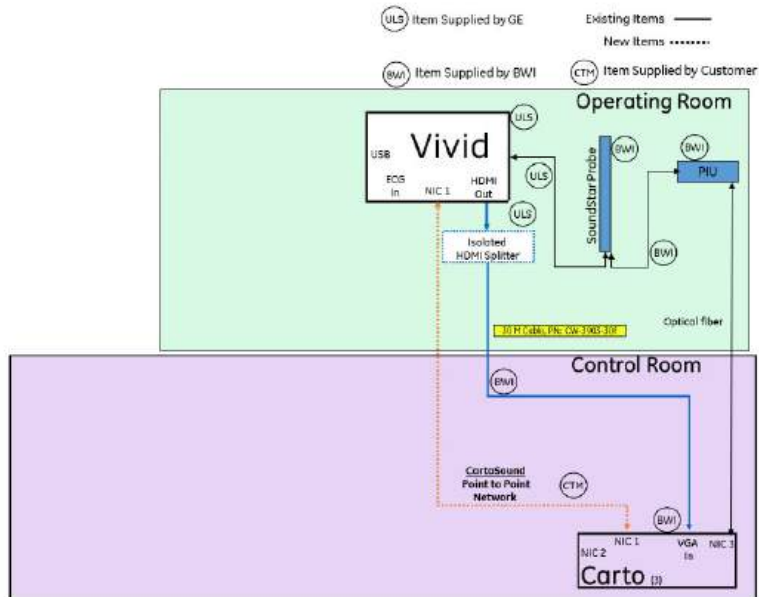


Figure 3-151. Ultrasound system interfacing with CARTO® 3

Ultrasound system interfacing with CARTO® 3 and an External Monitor - Protocol 1.0

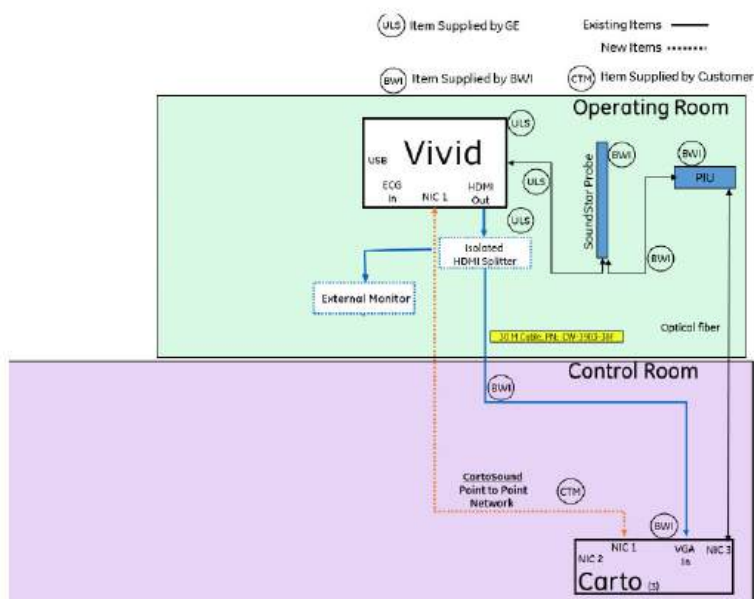


Figure 3-152. Ultrasound system interfacing with CARTO® 3 and an External Monitor

You can connect an additional monitor to the Isolated HDMI converter/splitter while being connected to CARTO® 3:

- Monitor with digital input
 - Connect to the DVI-D output
 - Resolution is 1920×1080 (complete Vivid *iq* monitor) - can only connect monitors accepting this resolution
- Analogue Monitor
 - Connect to the 2nd VGA output on the Isolated HDMI Splitter
 - Resolution is 800x600 (1440x1080 center area from the Vivid *iq* monitor cut, and scaled to 800x600)

NOTE: The two VGA outputs on the Isolated HDMI Splitter are identical.

Installation of CARTO® 3 - Protocol 1.0



DANGER

DO NOT CONNECT THE VIVID SYSTEM AND THE CARTO® 3 DIRECTLY WITH VIDEO CABLES.

USE THE ISOLATED HDMI SPLITTER.

A DIRECT CABLE CONNECTION MIGHT DAMAGE AND VOID SAFETY ISOLATION.

- Connect the HDMI cable to the HDMI port at the front of the Isolated HDMI Splitter and plug the other end of the cable into the Vivid *iq* system's HDMI port.
- Plug the mains power cord into the Isolated HDMI Splitter and then plug the other end of the mains cord into the mains power supply.
- Connect the VGA to DVI cable (provided by BWI) to one of the VGA output ports on the Isolated HDMI Splitter and plug the other end of the cable to the CARTO® 3 system.

NOTE: *The VGA to DVI cable is to be connected to the CARTO® 3 by BWI (CARTO® 3) and GE Invasive service personnel respectively.*

NOTE: *The number in the figure below represents the step in the connecting procedure.*



Figure 3-153. Vivid *iq* interfacing with the CARTO® 3 - Protocol 1.0

Important when Power On - Protocol 1.0

Ensure that the Isolated HDMI converter/splitter is switched off when you power up the Vivid *iq*.

Scanning

1. Start the ultrasound system.
2. Ensure the ICE Probe Interface Module and the CartoSound interface options are enabled.
3. Connect the ICEcord-RS to the ultrasound system.
4. Connect the ICE catheter to the ICEcord-RS and to the CARTO® 3 system.
5. Select the preset Carto on the ultrasound system to see the ICE image on the ultrasound system.
6. On the ultrasound system, select "CartoSound" from the shortcut bar.
7. Go back to the scanning screen, now the ultrasound system is ready to work with CARTO® 3.

Related Information: [See 'CARTO® 3 Interface' on page 5-29 for more information.](#)

Related Information: [See 'ICE Catheter' on page 5-39 for more information.](#)

Cart Setup

Overview

Contents in this chapter

- [‘Overview’ on page 3-233](#)
- [‘Set Up the Cart’ on page 3-235](#)
- [‘Cart Using’ on page 3-254](#)

Introduction

This chapter contains this information:

- How to setup Cart. Included are references to a procedure that describes how to receive and unpack the equipment and how to file a damage or loss claim. How to prepare the facility and unit of the actual setup, and how to check and test the unit and external peripherals for electrical safety are included in this procedure. Also included in this section are guidelines for transporting the unit to a new site.
- The procedures for mounting the system to Vivid *iq* and releasing the system from Cart.
- Explain the Cart’s concepts, component arrangement, and subsystem function.
- Describes how to test and adjust the functions. These tests are optional. You may use them to check the system for errors.
- Describes how to setup and run the tools that help Cart operation. Cart and board level diagnostics are run whenever power is applied. Some Service Tools may be run at the application level.

Safety Consideration

NOTE: Please refer to Chapter 1 and Chapter 2 for the safety information and site requirement for the Cart. Chapter 1 and Chapter 2 should be read before conducting any installation work on Cart.



CAUTION

The Cart weighs 41 kg (90 lb.) or more, depending on installed peripherals, when ready for use. Care must be used when moving it or replacing its parts.

Failure to follow the precautions listed below could result in injury, uncontrolled motion and costly damage.

ALWAYS:

- be sure the pathway is clear
- use slow, careful motions
- Limit movement to a slow careful walk.
- use two people when moving on inclines or lifting more than 16 kg (35 lbs)



WARNING

When the cart is raised for a repair or moved along any incline, use external caution since it may become unstable and tip over.



CAUTION

Do not move Cart with big incline angle.



CAUTION

The Cart is not water proof. Do not expose the Cart to water or any kind of liquid.

Never set liquids on the Cart to ensure that liquid does not drip into the unit.



CAUTION

Put peripherals in correct position to avoid Cart overload.

NOTE: Special care should be taken when transporting the Cart in a vehicle.

Set Up the Cart

Contents in This Section

- ‘Setup Reminders’ on *page 3-235*
- ‘Average Setup Time’ on *page 3-235*
- ‘Setup Warnings’ on *page 3-236*
- ‘Safety Reminders’ on *page 3-237*
- ‘Receiving and Unpacking the Equipment’ on *page 3-238*
- ‘Unpacking Cart’ on *page 3-238*
- ‘Moving into Position’ on *page 3-242*
- ‘Product Locator Installation Card’ on *page 3-242*
- ‘Preparing for Installation’ on *page 3-243*
- ‘Verify Customer Order’ on *page 3-243*
- ‘Electrical Specifications’ on *page 3-243*
- ‘EMI Protection’ on *page 3-243*
- ‘Physical Dimension and Weight’ on *page 3-244*
- ‘Peripheral Installation’ on *page 3-245*
- ‘On-Board Optional Peripherals’ on *page 3-245*
- ‘Install Printer’ on *page 3-246*
- ‘Connect DVD-RW to Cart’ on *page 3-249*
- ‘Install 4PP Assy to Cart’ on *page 3-251*
- ‘Paperwork’ on *page 3-253*
- ‘Product Locator Installation’ on *page 3-253*
- ‘User Manual’ on *page 3-253*

Setup Reminders

Average Setup Time

Table 3-15: Average Installation Time

Description	Average Setup Time	Comments
Unpacking the cart	0.5 hour	
Cart options	0.5 hour	Dependant on the configuration that is required

The Cart has been designed to be setup and checked out by an experienced service technician in approximately four hours. Cart consoles with optional equipment may take slightly longer.

Setup Warnings

- Since the Cart weighs approximately 41 kg.(90 lb) without options, preferably two people should unpack it. Two people are also preferable for setting up any additional bulky items.
- There are no operator serviceable components. To prevent shock, do not remove any covers or panels. Should problems or malfunctions occur, unplug the power cord. Only qualified service personnel should carry out servicing and troubleshooting.

NOTE: For information regarding packing labels, refer to LABELS ON PACKAGE.

- After being transported, the unit may be very cold or hot. If this is the case, allow the unit to acclimate before you turn it on. It requires one hour for each 2.5°C increment it's temperature is below 10°C or above 30°C.



CAUTION

Equipment damage possibility. Turning the system on without acclimation after arriving at site may cause the system to be damaged.

Table 3-16: Acclimation Time

°C	60	55	50	45	40	35	30	25	20	15	10
°F	140	131	122	113	104	95	86	77	68	59	50
hrs	8	6	4	2	0	0	0	0	0	0	0

°C	5	0	-5	-10	-15	-20	-25	-30	-35	-40
°F	41	32	23	14	5	-4	-13	-22	-31	-40
hrs	2	4	6	8	10	12	14	16	18	20

Safety Reminders



DANGER

WHEN USING ANY TEST INSTRUMENT THAT IS CAPABLE OF OPENING THE AC GROUND LINE (I.E., METER'S GROUND SWITCH IS OPEN), DON'T TOUCH THE UNIT!



CAUTION

Two people should unpack the unit because of its weight. Two people are required whenever a part weighing 19kg (42 lb.) or more must be lifted.



CAUTION

If the unit is very cold or hot, do not turn on its power until it has had a chance to acclimate to its operating environment.



CAUTION

To prevent electrical shock, connect the unit to a properly grounded power outlet. Do not use a three to two prong adapter. This defeats safety grounding.



CAUTION

Do not use a 20 Amp to 15 Amp adapter on the 120 Vac unit's power cord. This unit requires a dedicated 20 A circuit and can have a 15A plug if the on board peripherals do not cause the unit to draw more than 14.0 amps.



CAUTION

Do not operate this unit unless all board covers and frame panels are securely in place. System performance and cooling require this.



CAUTION

OPERATOR MANUAL(S)
The User Manual(s) should be fully read and understood before operating the Cart and kept near the unit for quick reference.



Figure 3-154. Environmental Labels

Receiving and Unpacking the Equipment

When a new Cart arrives, check that any components are not damaged and are not in short supply. If shipping damage or shortage occurs, contact the address shown in Chapter 1.



The crate with the Cart weighs approximately 58 kg. Be prepared for a sudden shift of weight as the unit is removed from its base (pallet).

Unpacking Cart

Table 3-17: Procedure to take out Cart

No.	Steps	Corresponding Graphic
1.	Tear the stop open mark.	
2.	Cut the two packing straps around the crate. <i>Note: To avoid injury, with one hand holding the strap clasp when cutting the strap.</i>	

Table 3-17: Procedure to take out Cart

No.	Steps	Corresponding Graphic
3.	Open the carton cover and remove it.	
4.	Remove the corrugated board with foam at both sides.	
5.	Flip up the lock and remove the belt.	

Table 3-17: Procedure to take out Cart

No.	Steps	Corresponding Graphic
6.	Remove the barrier bag and cut the wrapping bag with scissor. Then remove all the foam that protect the system. <i>Note: It is recommended not to use knife to cut the wrapping bag to prevent any cable damage.</i>	 
7.	Lift the cart from the wooden pallet by two people.	

Unpacking Cart(continued)

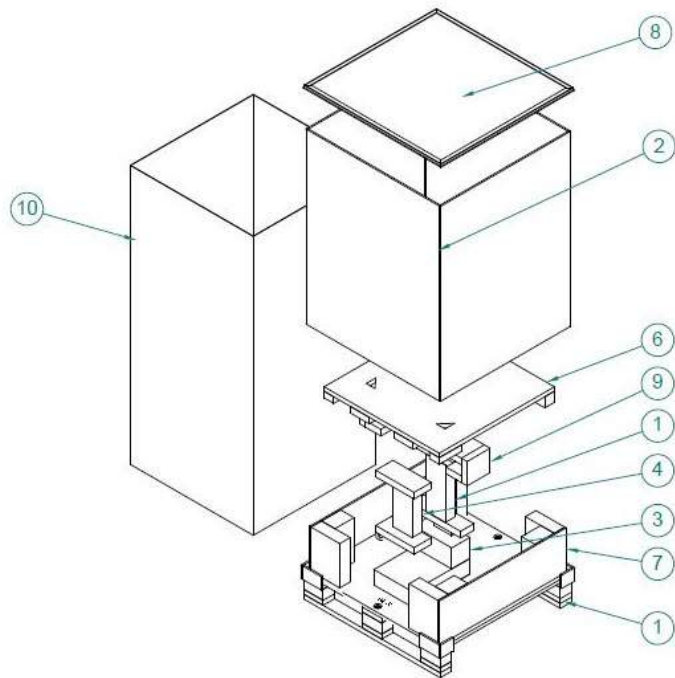


Figure 3-155. Remove Foam

1. Pallet with foam
2. Fefco 0501 BC-flute
3. Support foam 1
4. Support foam 2
5. Support foam 3
6. Top foam
7. Corrugated board with foam
8. ExPak type-P lid
9. Side foam
10. High-barrier bag

Moving into Position



CAUTION

Do not tilt the unit more than 5 degrees to avoid tipping it over.

In general, a single adult can move the Vivid *iq* along an even surface with no steep grades. At least two people should move the machine when large humps, grooves, or grades will be encountered. (It is better to pull from the rear rather than push from the front of the unit). Before moving, store all loose parts in the unit. Wrap transducers in soft cloth or foam to prevent damage.

Vivid *iq* is a compact and mobile machine, two people should move it over rough surfaces or up and down grades.

Product Locator Installation Card

NOTE: The Product Locator Installation Card shown in this manual may not be same as the provided Product Locator card.

		Mailing Address		GE Medical Systems Product Locator File P.O. Box 414 Milwaukee, WI 53201-0414	
DESCRIPTION		FDA	MODEL	REV	SERIAL
PREPARE FOR ORDERS THAT DO NOT HAVE A LOCATOR INSTALLATION REPORT		OCP		BS	ORD
SYSTEM ID NUMBER		DIST.-COUNTRY		ROOM	DATE (MO-DA-YR)
INSTALLATION		CUSTOMER NO.		EMPLOYEE NO.	
PRINTED IN USA		DESTINATION - NAME AND ADDRESS			
				ZIP CODE	

Figure 3-156. Product Locator Installation Card

Preparing for Installation

Verify Customer Order

Compare items received by the customer to that which is listed on the delivery order. Report any items that are missing, back ordered or damaged.

Electrical Specifications

Verify that Cart is set to the correct voltage.
The Voltage settings for the Cart is found on a label to the left of the Power switch and External I/O, on the rear of the system.



CAUTION

Connecting a Cart to the wrong voltage level will most likely destroy it.

Table 3-18: Electrical requirements for Cart

PARAMETER	AREA	LIMITS
Voltage Range	100-240V~	350VA
Power	All applications	More than or equal to 750 VA
Line Frequency	All applications	50/60Hz (± 2 Hz)
Power Transients	All applications	Less than 25% of nominal peak voltage for less than 1 millisecond for any type of transient, including line frequency, synchronous, asynchronous, or aperiodic transients.
Decaying Oscillation	All applications	Less than 15% of peak voltage for less than 1 millisecond.

EMI Protection

This Unit has been designed to minimize the effects of Electro Magnetic Interference (EMI). Many of the covers, shields, and screws are provided primarily to protect the system from image artifacts caused by this interference. For this reason, it is imperative that all covers and hardware are installed and secured before the unit is put into operation.

Physical Dimension and Weight

The physical dimension of the Cart is summarized in [Table 3-19 on page 3-244](#) including the size of Cart, 3 probe ports and speakers.

Table 3-19: Physical Dimensions of Cart

	Height	Width	Depth	Unit
Tall	950	470	617	mm
Tall	31.2	15.4	240.2	inch
Short	810	470	617	mm
Short	37	15.4	240.2	inch

The weight of Cart is 45 kg (99 lbs) with 3 probe ports.



Figure 3-157. Overall Dimensions

Peripheral Installation

On-Board Optional Peripherals

Table 3-20: Peripherals Validate for Cart

Device	Manufacturer	Model	Interface	Video Signal
B/W Printer	SONY	UP-D898MD	USB Interface	N/A (* USB Interface)
DVD-RW (5653589)	LITEON	LITEON eUAU108	USB Interface	N/A (* USB Interface)

See each option setup instructions for installation and connection procedures.

Install Printer

Tools

- Common Hex driver
- common Phillips screwdriver

Needed Manpower

- 1 person, 5 minutes+travel

Preparations

- Turn off all the power supply.

Table 3-21: Mounting Procedure of Printer Shelf Assy

No.	Step	Corresponding Graphic
1.	Push the printer into the printer shelf.	
		
2.	Screw 4 screws.	

Table 3-21: Mounting Procedure of Printer Shelf Assy

No.	Step	Corresponding Graphic
3.	Connect the 2 cables to the printer.	
4.	Pull out the locks on both sides of the bottom of the lower table assy, and then rotate the locks 90° clockwise.	
5.	Push the printer shelf into the slot.	
6.	Repeat step 4 to lock the printer shelf.	
7.	Connect the cables to the cart.	

Removal Procedure

- Remove the new parts in the reverse order of installation.

Connect DVD-RW to Cart

Tools

- NA

Needed Manpower

- 1 person, 8 minutes+travel

Preparations

- Shut down the system and switch off the main breaker.

Mounting Procedure

Table 3-22: Mounting Procedure of DVD-RW

No.	Step	Corresponding Graphic
1.	Put the DVD cover onto the DVD-RW.	
2.	Connect the USB Cable to the DVD-RW.	
3.	Let the USB cable come out from the left side of the printer shelf and then push the DVD-RW into the slot of the printer shelf.	

Table 3-22: Mounting Procedure of DVD-RW

No.	Step	Corresponding Graphic
4.	Install the printer shelf to the cart. See 'Install Printer' on page 3-246 for more information.	

Removal Procedure

Remove the new parts in the reverse order of installation.

Install 4PP Assy to Cart

Tools

- NA

Needed Manpower

- 1 person, 3 minutes+travel

Preparations

- Shut down the system and switch off the main breaker.

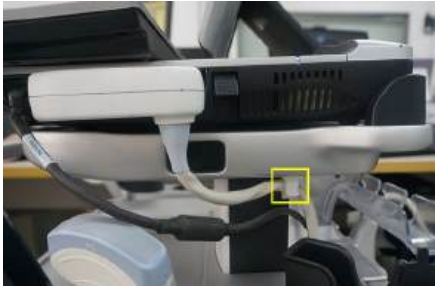
Mounting Procedure

NOTE: Please note 4PP has its own SN (serial number). In addition to SN of the scanner, it's recommended to also record the SN for the replaced 4PP for further track.

Table 3-23: Mounting Procedure of 4PP Assy

No.	Step	Corresponding Graphic
1.	Put the probe connector holder into the Cart.	
2.	Put the 4PP Assy onto the holder of the Cart, and press both sides to fix it on the cart.	
		

Table 3-23: Mounting Procedure of 4PP Assy

No.	Step	Corresponding Graphic
3.	Stick the cable clip onto the bottom of the main body assy and let the probe connector cable go through the clip.	
4.	Put the probe connector and cable into the probe connector holder.	

Removal Procedure

Remove the new parts in the reverse order of installation.

Paperwork

NOTE: During and after setup, the documentation (i.e. User Manuals...) for the peripheral units must be kept as part of the original system documentation. This will ensure that all relevant safety and user information is available during the operation and service of the complete system.

Product Locator Installation

User Manual

Check that the correct User Manual(s) for the Cart is included with the installation. Specific language versions of the User Manual may also be available. Check with your GE Sales Representative for availability.

Cart Using

Contents in This Section

- 'Introduction' on [page 3-254](#)
- 'Height Adjustment' on [page 3-254](#)
- 'Locking the Wheels' on [page 3-255](#)
- 'Mounting the System to Cart' on [page 3-256](#)
- 'Release the System from the Cart' on [page 3-257](#)
- 'Switch the Three Probes' on [page 3-258](#)
- 'System Operation' on [page 3-258](#)

Introduction

The Cart supports the ultrasound system as below:

- Vivid *iq*

The cart can supply power for the system and peripherals which are mounted to the cart.

Height Adjustment

To adjust the height of the mounting-platform, raise the Release lever and pull the platform up or push it down with both hands, the traveling distance is 290mm.

When the lever is released the platform remains at the adjusted height.

Locking the Wheels

Depress the front of the Brake Pedal with your foot. With the Brake Pedal down the rolling and swivel function are locked.



1. Locked Wheels
2. Unlocked Wheels

Figure 3-158. Wheels

When all the four wheels are in the same orientation as (1) in [Figure 3-159 on page 3-255](#), you can depress the green brake pedal, and then it is easier for you to move it.

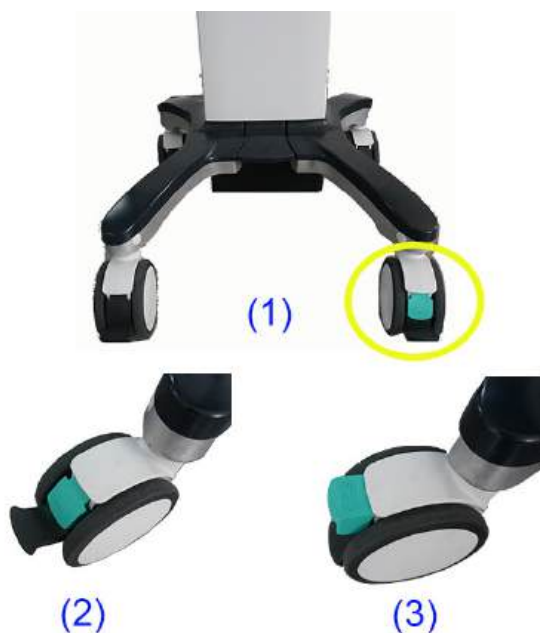


Figure 3-159. Green brake pedal

Mounting the System to Cart

The system can be mounted to Cart either while the display screen is closed with the system fully shut-down, or while the display screen is open with the system powered On or Off.

NOTE: *A battery or an empty battery-shell should always be attached to the system before mounting system to the cart.*



CAUTION

Use caution when mounting system while it is turned-on to avoid shocks or vibrations which may be harmful to the hard-drive.

To mount the system to the cart:



Figure 3-160. Mounting System to Cart

1. Hold the system slightly tilted towards you, place the front bottom part over the front sliding guides, and then put the system on the cart..

NOTE: *When put the system on the cart top cover ,aviod injuring the figures and hands.*

2. Connect the cable to the system.
3. Connect the probe connector of 3-probe Port to the system.
4. Press the probe connector locking lever up

Release the System from the Cart

The system can be mounted to Cart either while the display screen is closed with the system fully shut-down or while the display screen is open with the system powered On or Off.



CAUTION

Before dismounting the system while it is powered ON, be sure to check availability and charge of battery, as system will switch-over to battery operation as it is released.

To release the system from mounting platform:



Figure 3-161. Release the System from Cart

1. Press the probe connector locking lever down.
2. Disconnect the probe connector of 3-Probe Port and the cable from the system.
3. Push and hold the release button on the Cart with one hand, and then remove the system from the cart with another hand.

Switch the Three Probes

The system can switch the probe between the three probe which are connected in the Cart Three Probes Box.

From the keyboard, press the Exam key. The Probe screen appears. Select the probe which you want.



Figure 3-162. Probe Screen

NOTE: *If the cart loses power, the factory default probe is the probe which is connected to the port.*

System Operation

Vivid *iq* is supported on the Cart.

NOTE: *To upgrade the system, release the system from the Cart and connect the USB Memory Stick or SD Card to the system directly.*

NOTE: *To power off the Cart, open the circuit breaker and then pull out the AC Power Cord from the wall AC outlet.*

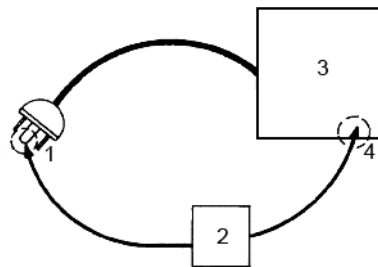
NOTE: *Do not plug the AC Power into the wall in the state of closing the circuit breaker.*

Grounding continuity



DANGER ELECTRIC SHOCK HAZARD. THE PATIENT MUST NOT BE CONTACTED TO THE EQUIPMENT DURING THIS TEST.

Measure the resistance from the third pin of the attachment plug to the exposed metal parts of the case. The ground wire resistance should be less than **0.2 ohms**. Reference the procedure in the IEC60601-1.



1. GROUND PIN
2. OHMMETER
3. Console with Cart
4. ACCESSIBLE METAL PART:
 - MONITOR HOUSING
 - PEAR PANEL CONNECTOR
 - ANY CASTER/WHEEL SUPPORT

Figure 3-163. Ground continuity test

Meter Procedure

Follow these steps to test the ground wire resistance.

- Turn the Vivid *iq* unit OFF.
- Plug the unit into the meter, and the meter into the tested AC wall outlet.
- Plug the black chassis cable into the meter's "CHASSIS" connector and attach the black chassis cable clamp to an exposed metal part of the Vivid *iq* unit.
- Set the meter's "FUNCTION" switch to the RESISTANCE position.
- Set the meter's "POLARITY" switch to the OFF (center) position.
- Measure and record the ground wire resistance.

Chapter 4

General Procedures and Functional Checks

This chapter provides procedures for quickly checking major functions of the Vivid iq and diagnostics instructions using the built-in service software.

Overview

Purpose of this chapter

This chapter provides procedures for quickly checking major functions of the scanner and diagnostics instructions using the built-in service software.

Contents in this chapter

- 'Overview' on *page 4-2*
- 'General procedure' on *page 4-3*
- 'Functional checks' on *page 4-26*
- 'Power supply test & adjustments' on *page 4-57*
- 'Application Turnover Check List' on *page 4-58*
- 'Site Log' on *page 4-59*

Special Equipment required

To perform these tests, you'll need any of the sector, linear, or convex probes. (Normally you should check all the probes used on the system).

General procedure

Overview

Some procedures are used more often than other. The intention with this section is to keep the most used procedures in one place.

Contents in this section

- 'Power ON/Boot Up' on [page 4-5](#)
- 'Power shut down' on [page 4-9](#)
- 'LCD Monitor position adjustment' on [page 4-25](#)
- 'Logging on to Vivid iq as "ADM"' on [page 4-12](#)
- 'Service Key (SSA)' on [page 4-13](#)
- 'Exit to Windows Desktop from the Application Software with an SSA Key' on [page 4-14](#)
- 'Removable media' on [page 4-21](#)
- 'Creating presets' on [page 4-21](#)
- 'Archiving and loading presets' on [page 4-22](#)
- 'Data Management' on [page 4-24](#)
- 'Backup' on [page 4-24](#)
- 'Deleting patient information' on [page 4-24](#)



Ultrasound system requires all covers.

Operate this Ultrasound system only when all board covers and frame panels are securely in place. The covers are required for safe operation, good Ultrasound system performance and cooling purposes.

Contents in this section(continued)



WARNING

Energy Control and Power Lockout for Vivid *iq*.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:

1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.
6. Remove/disconnect the battery, if present.



Ultrasound System components may be energized.

Power ON/Boot Up

Warnings



^d DANGER

ALWAYS CONNECT THE ULTRASOUND SYSTEM TO A FIXED POWER SOCKET WHICH HAS THE PROTECTIVE GROUNDING CONNECTOR.



^d DANGER

NEVER USE A THREE-TO-TWO PRONG ADAPTER; THIS DEFEATS THE SAFETY GROUND.



^d DANGER

ENSURE THAT THE POWER CORD AND PLUG ARE INTACT AND THAT THE POWER PLUG IS THE PROPER HOSPITAL-GRADE TYPE (WHERE REQUIRED).



^c CAUTION

Ultrasound system requires all covers.

Operate this Ultrasound system only when all board covers and frame panels are securely in place. The covers are required for safe operation, good Ultrasound system performance and cooling purposes.



^c CAUTION

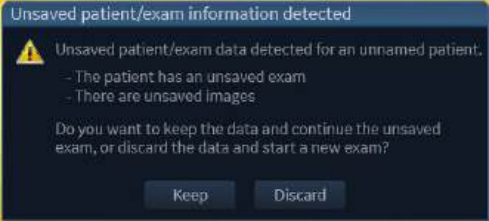
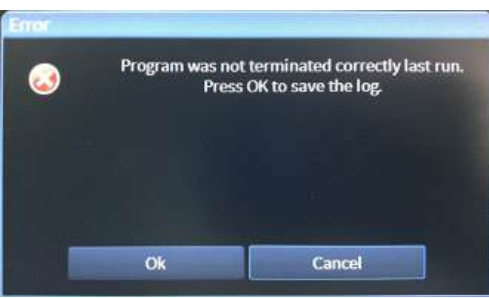
Use only power supply cords, cables and plugs provided by or designated by GE.

NOTE: *Do not cycle the Circuit Breaker ON-OFF-ON in less than five (5) seconds. When turning OFF the Circuit Breaker, the Ultrasound system should de-energize completely before turning the circuit breaker ON.*

System Messages

The following messages may appear during start-up. Please refer to the cause/action information provided when trying to resolve the issue.

Table 4-1: Messages

System Message	Cause/Action to Take
 Warning - Disk encryption is not enabled Disk encryption is currently disabled. To enable, log on as Administrator, enter Utility - Config - Admin - Disk Encryption and select 'Encryption ON', then follow instructions. Disk Encryption will protect against misuse of patient identifiable data. ☐ Do not show this warning at next start-up Ok	Cause: Disk encryption is currently disabled. Action to Take: • Check the check-box, system will not show this warning at next start-up. • Uncheck the check-box, system will show this warning at next start-up. Click Ok to continue loading the system. <i>Note: Do Not Check the check-box without Customer's approval, or leave it unchecked.</i>
 Warning - 'ADM' or 'USR' exist with default passwords At least one of the built-in users 'ADM' or 'USR' still have the default password. Please set new passwords on these users to increase the security of the system. ☐ Do not show this warning at next start-up Ok	Cause: 'ADM' or 'USR' exist with default passwords. Action to Take: • Check the check-box, system will not show this warning at next start-up. • Uncheck the check-box, system will show this warning at next start-up. Click Ok to continue loading the system.
 Unsaved patient/exam information detected Unsaved patient/exam data detected for an unnamed patient. - The patient has an unsaved exam - There are unsaved images Do you want to keep the data and continue the unsaved exam, or discard the data and start a new exam? Keep Discard	Cause: Unsaved patient/exam information detected. Action to Take: • Press Keep to keep the data and continue the unsaved exam. • Press Discard to discard the data and start a new exam.
 Error Program was not terminated correctly last run. Press OK to save the log. Ok Cancel	Cause: Program was not terminated correctly last run. Action to Take: • Press Ok to save the log. • Press Cancel to ignore the error.

Connect AC (mains) Power to Vivid *iq*

Connecting AC Power to the Vivid *iq* ultrasound unit, involves preliminary checks of the power cord, voltage level and compliance with electrical safety requirements.

1. Ensure that the wall outlet is of appropriate type, and that the Circuit Breaker is turned off.
2. Uncoil the power cable, allowing sufficient slack so that the unit can be moved slightly.
3. Verify that the power cable is without any visible scratches or any sign of damage.
4. Verify that the on-site mains voltage is within the limits indicated on the rating label near the Circuit Breaker on the rear of the unit.
5. Connect the Power Cable's female plug to the Power Inlet at the rear of the unit.
6. Lock the plug in position with the Retaining Clamp (ACC Clamp).
7. Verify that the Mains Power Circuit Breaker is in OFF position, if not, switch it OFF.
8. Connect the Power Cable's other end (male plug) to a hospital grade mains power outlet with the proper rated voltage, and the unit is ready for Power ON/Boot Up.

Switch ON the AC Power to Vivid iq

1. Switch ON the Mains Power Circuit Breaker at the rear of the unit.

You should hear a “click” from the relays in the AC Power and the unit is ready to boot.

2. Press once on the **On/Off** key on the Operator Panel to boot the unit.

During a normal boot, you may observe that:

- a. The unit's ventilation fan starts on full speed, but slows down after a few seconds (listen to the fan sound).
- b. Power is distributed to the peripherals, Operator Panel (Console), Monitor, Front End Processor and Back End Processor.
- c. Back End Processor and rest of scanner starts with the sequence listed in the next steps:
- d. Back End Processor is turned ON and starts to load the software.
- e. The Start Screen is displayed on the monitor.
- f. A start-up bar indicating the time used for software loading, is displayed on the monitor.
- g. The software initiates and sets up the Front End electronics and the rest of the instrument.
- h. The backlight in the keyboard is lit.
- i. As soon as the software has been loaded, either a 2D screen is displayed on the screen, indicating that a probe has been connected, or a No Mode screen is displayed, indicating that no probe has been connected.

NOTE:

Total time used for start-up is typical one and a half minutes or less. If starting after a power loss or a lock-up, the start-up time may be up to four minutes.

Power shut down

When you switch off the Ultrasound system, the Ultrasound system performs an automatic shutdown sequence.

The SYSTEM - EXIT menu, used when switching off the Ultrasound system, gives you these choices:

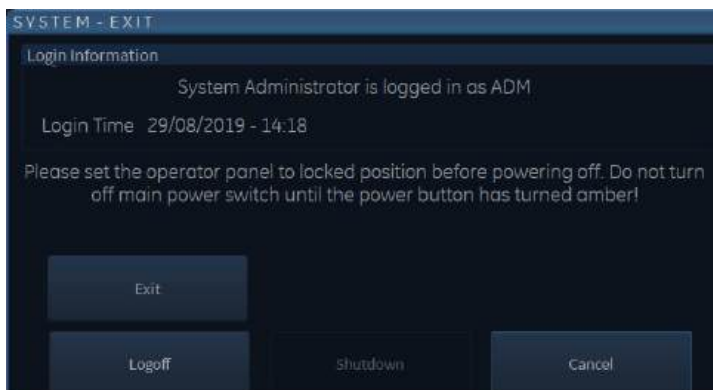


Figure 4-1. The Exit dialogue window

The SYSTEM - EXIT menu, used when switching off the Ultrasound system, gives you these choices:

- **Exit**
(Only available when logged in as GE Service with Service Dongle)
Select this button when you want to exit to the Windows Desktop.

NOTE: *If you need to restart Vivid iq when logged on to the Windows Desktop, ensure that you do a complete power down (Shut Down). This is required to power up the Front End Processor.*

- **Logoff**
Use this button to log off the current user.
The system remains ON and ready for a new user to log on.
If the Logoff button is dimmed, it indicates that no user is logged on to the unit at the moment.

Power shut down(continued)

- **Shutdown**
Use this button to shut down the system. The entire system will shut down. It is recommended to perform a full shutdown at least once a week.
If the Shutdown button is dimmed, use the key-combination <Ctrl+Alt+Delete> to shut down the unit.
- **Cancel**
Use this button to exit from the System-Exit menu and return to the previous operation.



DO NOT unplug and/or transport the unit until after the power off sequence has been completed. Failure to do so may result in corrupted patient files.

System battery LED Indicators Information

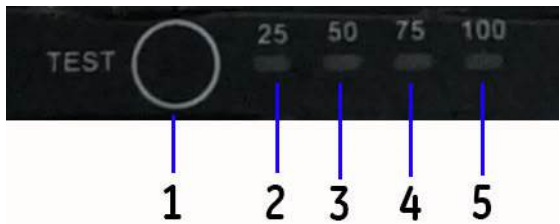


Figure 4-2. Charge box LED Indicators

- 1: Test Key
- 2, 3, 4, 5: LED indicators

LED indicators show different status of the system battery as shown below:

Table 4-2: System battery LED indicators information

LED	Color	Indication
LED2 ~ LED5	On	remaining capacity>=75%
LED2 ~ LED4	On	50%< =remaining capacity <75%
LED2 ~ LED3	On	25%<= remaining capacity <50%
LED2	On	remaining capacity <25%
LED2 ~ LED5	Off	EDV0=1

Charge box LED Indicators Information

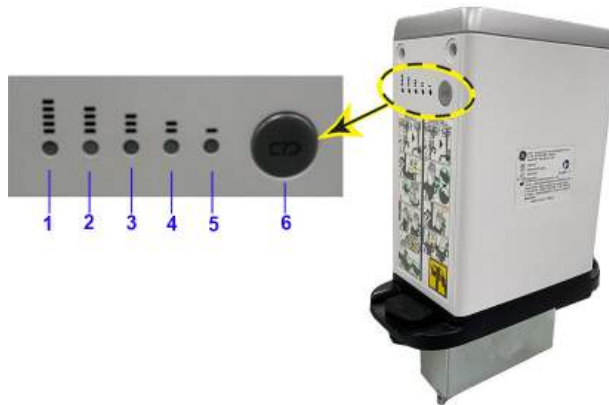


Figure 4-3. Charge box LED Indicators

- 1, 2, 3, 4, 5: LED indicators
- 6: Power Key

LED indicators show different status of the Charge Box as shown below:

Table 4-3: Charge box LED indicators information

LED	Color	Indication
LED1 ~ LED5	green	remaining capacity>90%
LED2 ~ LED5	green	70%< remaining capacity <=90%
LED3 ~ LED5	green	50%< remaining capacity <=70%
LED4 ~ LED5	green	30%< remaining capacity <=50%
LED5	green	10%< remaining capacity <=30%
LED5	flashing	remaining capacity <=10%

NOTE: When the AC power is ON, the LED indicators on the Charge Box will automatically display the remaining capacity. When the AC power fails or the AC cable is abruptly pulled out, you should press the Power Key on the Charge Box to show the remaining capacity of the charge box. In this case, the light of the LED indicators will only last for five minutes to save the battery power.

Logging on to Vivid *iq* as “ADM”

Press **Config** on the Shortcut Bar and log on as administrator if required.

It will bring up the **Operator Login** dialog where you must log on.

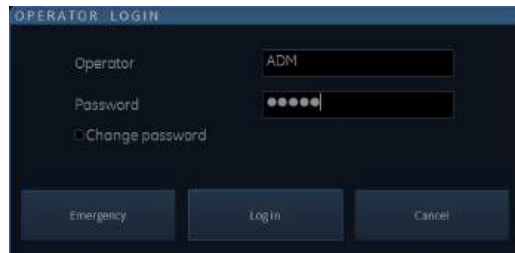


Figure 4-4. Operator Login Window

1. **Operator:** Select the operator.
2. **Password:** Enter Operator's password (optional).
3. Select the type of Login or Cancel.
 - **Emergency:** Stores data only from current patient examination.
 - **Log on:** Standard login.
 - **Cancel:** Cancel login.

By default, two users are defined, USR and ADM.

- USR

If you log on as **USR**, you will have access to perform setup tasks that a user may need to do during daily use.

By default, no password has been set for **USR**. Just type the name **USR**, and select **Login**.

- ADM

If you log on as **ADM**, you will have access to do general set-up, service adjustments, adjust network and connectivity settings.

By default, the password for **ADM** is **ulsadm**.

Select the name **ADM**, the password (**ulsadm**) and select **Login**.

NOTE: It is possible for the administrator (**ADM**) to establish new users and set unique passwords for each user, including a new password for ADM. If the login as ADM fails, contact the responsible person in the hospital to get access.

Service Key (SSA)

A Service Key and a proprietary GE Service password are necessary for use by GE Service when performing proprietary level diagnostics like accessing the desktop on the BEP. The password used with the GE service key changes at specific intervals.

The SSA key provides secure access for GE service personnel to advanced tools to service the system.

SSA is a class M key with the following characteristics:

- Access to all service features
- Access to Windows Desktop
- Key must be renewed every 30 days
- Tied to SSO
- Password locked via key pad

Please complete the course on GE Learning before using SSA:

Course name: Secure Service Access Training

Course ID: GEHC-SVCS-63061025

NOTE: *Press 'I Agree' to enter the Maintenance Access Screen when below Information dialogue window appears. Press OK before the status bar completes, otherwise the system may enter scanning screen.*

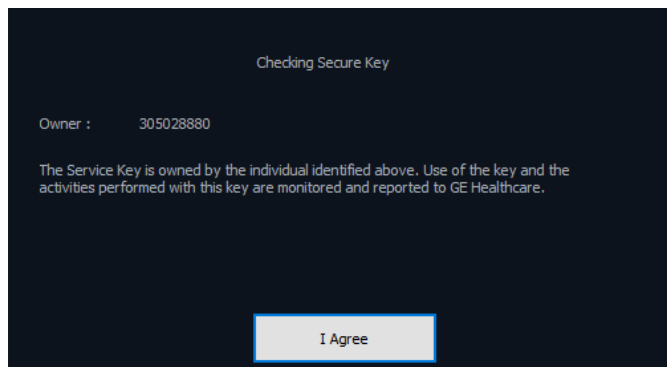


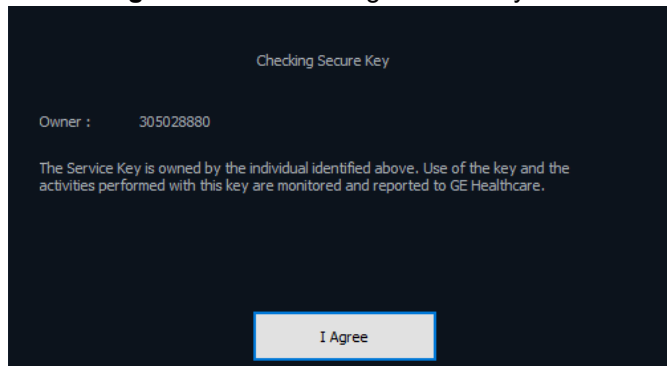
Figure 4-5. Service Key Information

Exit to Windows Desktop from the Application Software with an SSA Key

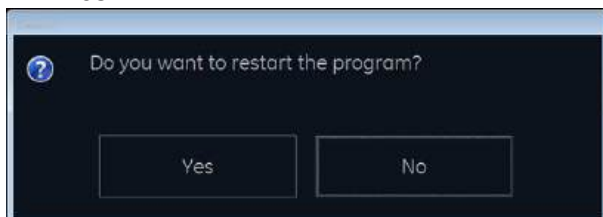
Follow these steps if you want to exit to the Windows Desktop when the application software is running.

NOTE: The SSA Class M service Key must be plugged in to one of the USB ports.

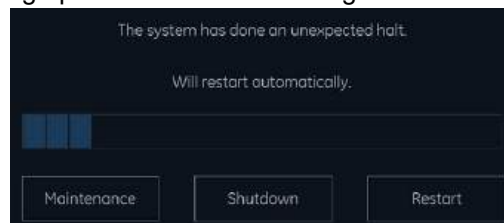
1. Unlock the SSA Class M Key and insert it into a USB port.
2. Select **I Agree** in the 'Checking Secure Key' window.



3. Go back to the scanning screen and press **Ctrl+Alt+R**.
4. Select **Yes** to continue.



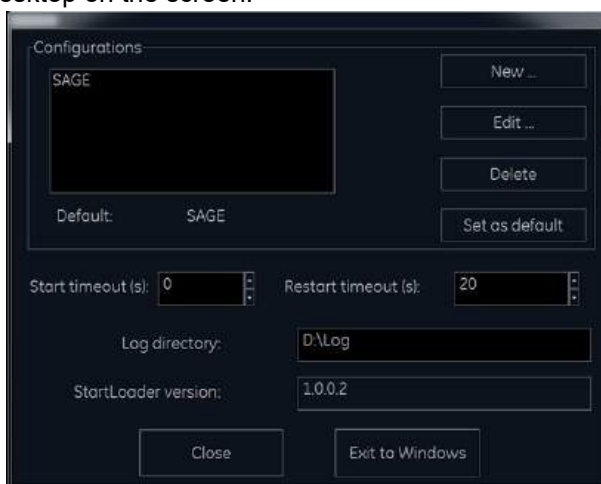
5. Select **MAINTENANCE...** to enter maintenance mode. This will bring up the Maintenance dialog.



Exit to Windows Desktop from the Application Software with an SSA Key(continued)

NOTE: After you have pressed '**I Agree**', the Start Application dialog will be displayed on screen. Be ready to press **Maintenance** before the Time Bar is "full", or the *Vivid iq* application software will be started.

6. Select **Exit to Windows**. This will display the Windows Desktop on the screen.



Exit to Windows Desktop during Boot-up with an SSA Key

Vivid *iq* Ultrasound system has two kinds of USB ports, refer to [Table 4-4](#). You should be aware of the time when you insert the SSA key if you want to exit to Windows Desktop during boot-up with specific USB port.

Table 4-4: Vivid *iq* USB ports



1. USB ports (3.0)
2. USB ports (2.0)

Exit to Windows Desktop during Boot-up with an SSA Key inserted into USB port 3.0

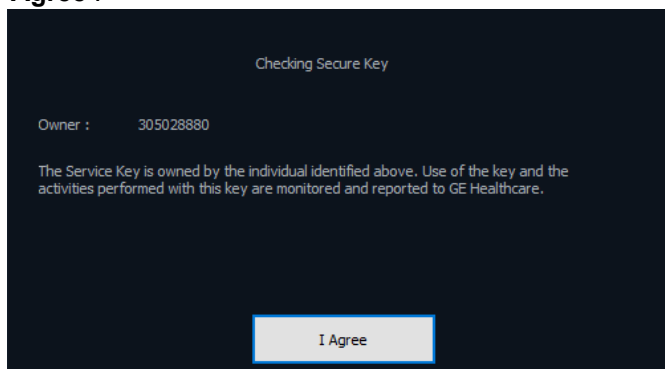
Follow these steps if you want to exit to the Windows Desktop during the boot sequence with an SSA key inserted into USB port 3.0.

NOTE: *In the case of USB 3.0, you can insert SSA key before or after powering on the Ultrasound system.*

1. Enable the SSA key and insert it to one of the USB port 3.0.
2. Power on the system. The UEFI begins to load.

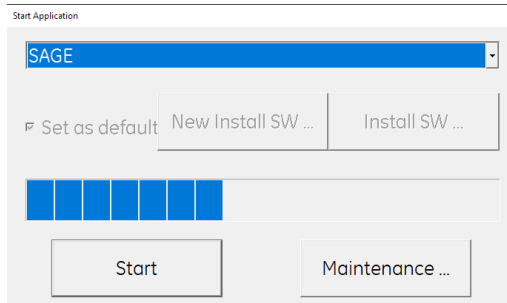


3. When the Checking Secure Key window appears, select '**I Agree**'.

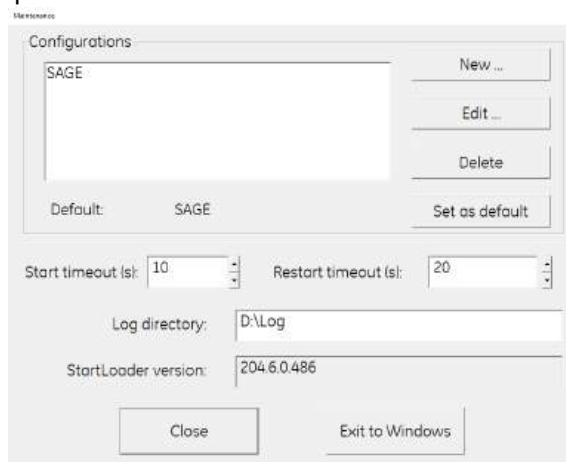


Exit to Windows Desktop during Boot-up with an SSA Key inserted into USB port 3.0(continued)

4. If the Start Application dialog is displayed, select Maintenance... to enter Maintenance mode.



5. In the Maintenance dialog, select Exit to Windows. This will display the Windows Desktop on the screen when boot-up is complete.



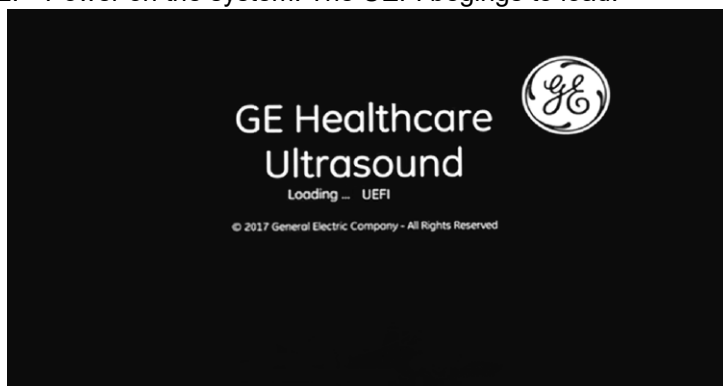
Exit to Windows Desktop during Boot-up with an SSA Key inserted into USB port 2.0

Follow these steps if you want to exit to the Windows Desktop during the boot sequence with an SSA key inserted into USB port 2.0.

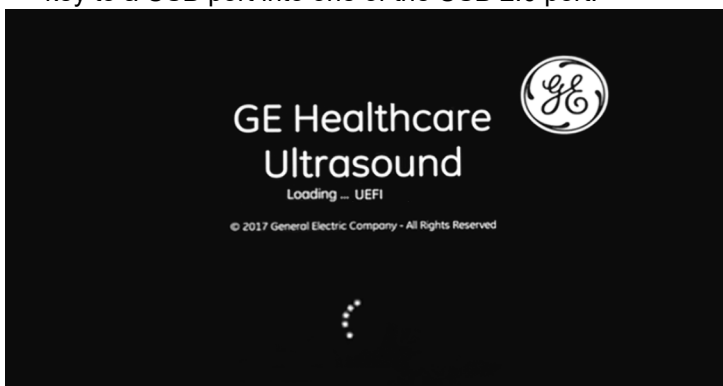
NOTE: *Please do not use the USB port 2.0 designed for connecting cart to exit to Windows Desktop.*

NOTE: *In the case of USB port 2.0, there is a small window of 2 to 3 seconds to insert the enabled SSA key. If you insert the SSA key early in the boot up, the OS resets the USBs and causes the SSA key to lose power. If you insert the SSA key late, the startloader initializes without the SSA key.*

1. Enable the SSA key.
2. Power on the system. The UEFI begins to load.

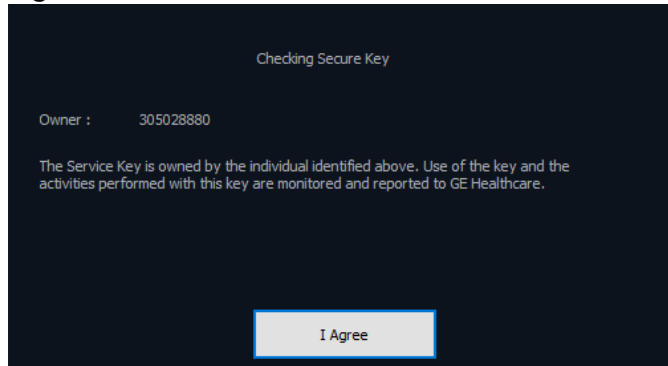


3. When the spinning icon appears, insert the enabled SSA key to a USB port into one of the USB 2.0 port.

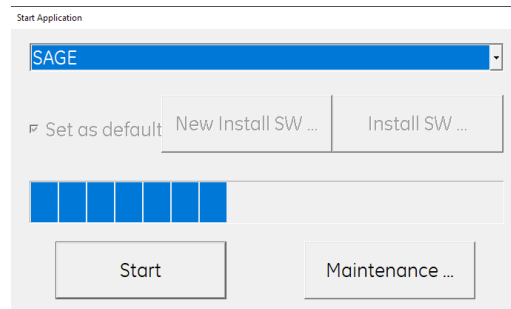


Exit to Windows Desktop during Boot-up with an SSA Key inserted into USB port 2.0(continued)

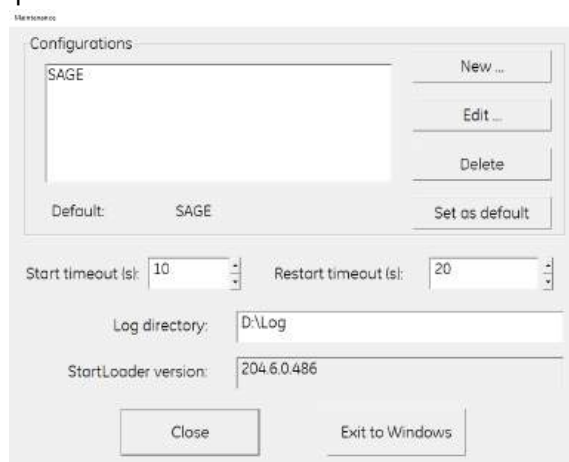
4. When the Checking Secure Key window appears, select **I Agree**.



5. If the Start Application dialog is displayed, select **Maintenance...** to enter Maintenance mode.



6. In the Maintenance dialog, select **Exit to Windows**. This will display the Windows Desktop on the screen when boot-up is complete.



Removable media

Refer to the latest revision of the User Manual to perform the following tasks:

- Using Removable Media
- Labeling Removable Media
- Formatting Removable Media
- Verifying Removable Media

Creating presets

Refer to the latest revision of the Vivid *iq* User Manual.

Archiving and loading presets

NOTE: Always save presets before any software reload. This ensures the presets loaded after the software reload are as up-to-date as possible.

All user presets except changes to Summary, Anatomy, and Biometry pages, can be saved on an DVD-R disk (or USB memory device) for reloading on the system.

NOTE: Presets should NOT be saved on the same USB memory device (or DVD-R disk) as images. The Archive Menu lists the images but does NOT list the presets stored on a USB memory device (or DVD-R disk).

Archiving Presets to a USB memory device (or DVD-R Disk)

- 1. Connect the USB memory device to the system’s USB port, or insert an empty (blank) DVD-R disk into the DVD-RW.
- 2. Access to the Config/Admin Menu, and select Backup. The Backup sheet will be shown on the LCD display.

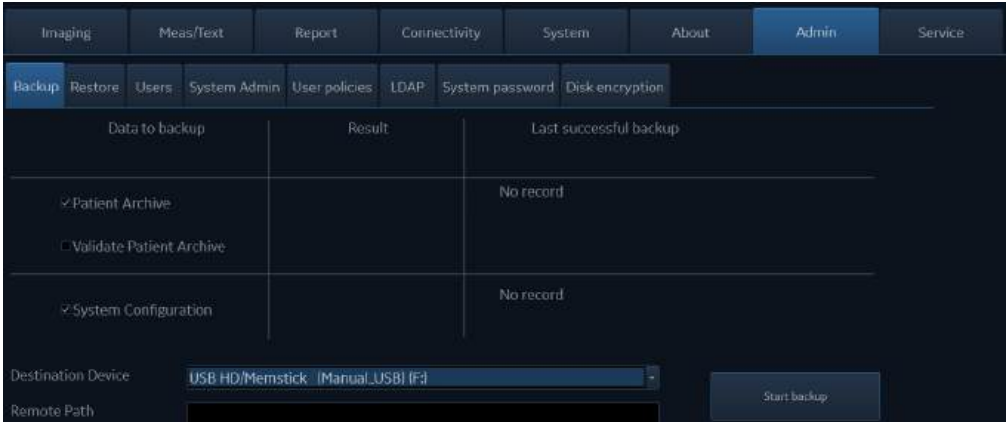


Figure 4-6. Backup Sheet

- 3. Select the item to Backup.
- 4. Enter backup destination or browse through the disk to locate the destination.
- 5. Select Backup. The backup status for each item is displayed on the Result column.

Loading Presets from a USB memory device (or DVD-R)

1. Connect the USB memory device or DVD-R with the archived Presets to the system.
2. Access to the Config/Admin Menu, and select Restore. The Restore sheet will be shown on the LCD display. See [Figure 4-6 on page 4-22](#).
3. Select the items needed to be restored.
4. Select Restore. The system performs the restore and restarts.

Data Management

For more information, refer to the latest revision of the Vivid *iq* User Manual.

Backup

For more information, refer to the latest revision of the Vivid *iq* User Manual.

Deleting patient information



Before you dispose of the hard drive, or return the BEP to the local parts organization, make sure you remove ALL PATIENT DATA from the hard drive, given that the hard drive is still functional. In some countries, you may be required to delete all software from the disk before returning the hard drive to the parts warehouse. Follow your local policies.

Ensure that **All Patient Information** has been deleted before:

- shipping/returning the Ultrasound system
- returning the Back End Processor to the local parts organization/parts warehouse
- you dispose of the hard drive

GE employees: Follow GE's procedures to complete Secure Wipe of Customer System Storage Media.

Other users of this manual: Contact GE Service for assistance to perform complete Secure Wipe of Customer System Storage Media.

Restore the factory defaults

For instructions, please see “Data Backup and Restore” in the User Manual.

NOTE: *It is not suggested to manually delete the files in `D:\ldunn\target\resources\ldunn\userdefs`.*



WARNING

To avoid lacking of connecting to Local Archive, `connectivity.res` and `IPSave` in `D:\ldunn\target\resources\ldunn\userdefs` could not be deleted. If they are deleted, refer to [‘Rewrite the Serial Number and GPN/GTIN number’ on page 7-149](#) to rewrite the system ID.

Installation and Setup Procedure for Peripherals

Please refer to [‘Peripherals Installation Instructions’ on page 3-27](#).

LCD Monitor position adjustment

Refer to User Manual for LCD Monitor position adjustment.

Functional checks

Overview

In this section, the functional checks for Vivid *iq* are described. Functional checks are used to verify that the product works as intended. Functional checks may also be used during troubleshooting.

Preparation

Turn on power to Vivid *iq*. For detailed description, '[Power ON/ Boot Up](#)' on [page 4-5](#)

Control Panel

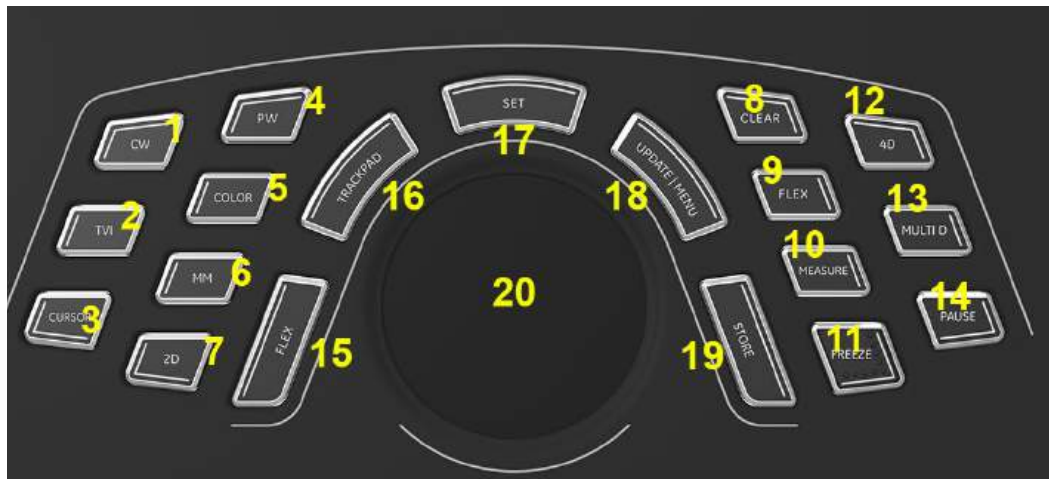


Figure 4-7. Control Panel Map

1. CW: Activate CW mode.	14. Pause: Stop or restart a function, start/restart LOGIQ View.	18. Update/Menu key:
2. TVI: Activate TVI mode.	15. Flex key: Configurable with specific functions	• In Live duplex mode (Doppler or M-mode):
3. Cursor: Activate sample volume adjustment to adjust the sample volume location, length and angle.	16. Trackpad key:	• Toggles Live/Freeze between the 2D image and the spectrum image.
4. PW: Activate PW mode.	• Toggles between trackpad functional groups.	• A select key which functions like the mouse right key.
5. Color: Activate Color Flow mode.	17. Set key:	19. Store key: Store Cine loop or images
6. MM: Activate M mode.	• A select key which functions like the mouse left key.	20. Trackpad:
7. 2D: Activate 2D mode.	• When Pos/Size is selected, press the Set key to switch between Pos and Size.	• Adjusts the selected control.
8. Clear: Erase function.		• Moves the pointer.
9. Flex: Configurable with specific functions		• Performs the selected control or highlighted menu item.
10. Measure: Activate measurement function.		
11. Freeze: Activate freeze mode.		
12. 4D: Activate 4D mode.		
13. Multid: Activate Multi-plane 4D.		

Performance Tests

Test Phantoms

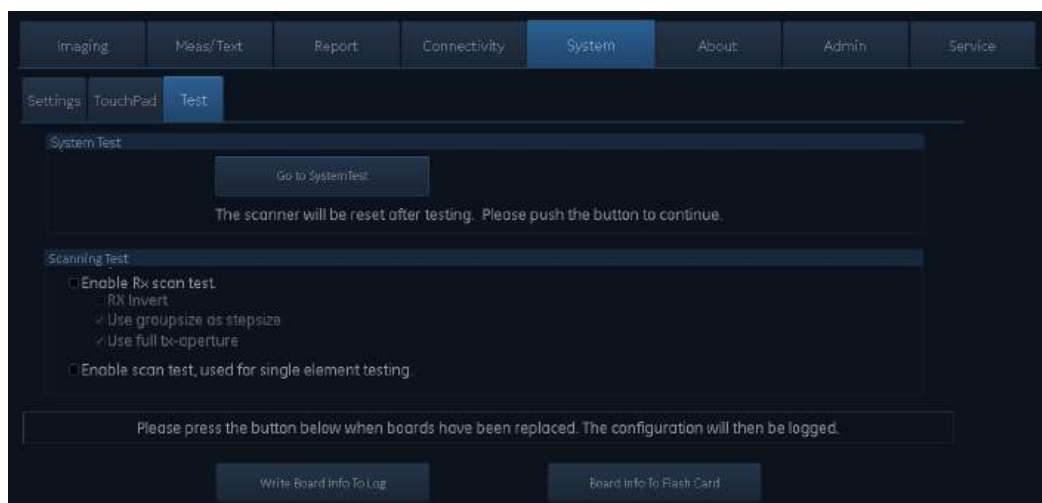
The use of test phantoms is only recommended if required by your facility's (customer's) QA program.

System Test

Run this test as part of the troubleshooting and after a Front End part has been replaced.

Follow this procedure to start the System Test:

1. Insert SSA service key.
2. Power up the Ultrasound system.
3. After initialization is complete, press **Config** on the shortcut bar.
4. Log on as **ADM**.
5. Select **System** tab from the subgroup menus of **Config**.
6. Select the **Test** tab. The Test screen is displayed.



System Test(continued)

7. Select **Go to System Test** and the System Test screen opens.



8. Select the '+' in front of the text **Vivid iq** in the top, leftside corner of the System Test screen.
9. Select the '+' in front of the text **Engineering** and select **System**.
10. Select the **Start** button to start the testing.
The Status field will display the result(s) from the test.

2D Mode (B mode) Checks

Introduction

The 2D Mode is the system's default mode.

Preparations

- Connect one of the probes.
- Turn ON the scanner.

The 2D Mode is displayed (default mode).

Adjust the 2D mode controls

The use of preset gives optimum performance with minimum adjustment. If necessary, the following controls can be adjusted to further optimize the 2D image:

- Press **Auto Tissue** on the Side Bar.
 - **Soft**: optimizes the radial and lateral uniformity and brightness of the tissue continuously in real-time.
The mention "Soft" is displayed on the upper right corner of the image area
 - **Sharp**: further enhances the image display by optimizing the grayscale curve.

The mention "Sharp" is displayed on the upper right corner of the image area

The Auto Tissue setting (Soft or Sharp) can be turned on/off by pressing **Auto Tissue** on the Side Bar. The last used setting is then applied.

The Auto Tissue settings are only available in live scanning and cannot be turned off when the image is stored.

- If available, press **Virtual Apex** (probe dependent) to improve near field imaging, allowing increased visibility up to the width of the full probe aperture close to the surface.

Adjust the 2D mode controls(continued)

- If available, press **Virtual Convex** (probe dependent) to provide a larger field of view in the far field.
Activating Virtual Convex may change the TI and/or MI. Observe the output display for possible effects.
- Use the **Gain** and **TGC** controls to optimize the overall image.
Gain increases or decreases the amount of echo information displayed. TGC compensates for depth-related attenuation in the image.
- Use the **Depth** control to adjust the range to be imaged.
- Use the **Frequency** control (move to higher frequencies) or the **Frame rate** control (move to lower frame rate) to increase resolution in image.
- Use the **Frequency** control (move to lower frequency) to increase penetration.
- Use the **Reject** control to reduce noise in the image.
- Use the **DDP** control to optimize imaging in the blood flow regions and make a cleaner, less noisy image.
- Use **UD Clarity** (Cardiac) or **UD Speckle reduce** (non-cardiac) to reduce image speckle. Extra care must be taken to select the optimal Speckle reduction level, as too much filtering of speckle can mask or obscure desired image detail.
- Adjust **Octave** to toggle between Fundamental and Harmonic mode.
- Press **Color maps** and select a gray map from the menu on screen.

M Mode Checks

M-Mode overview

This unit has three types of M-Mode:

- Conventional M-Mode (MM): displays a distance/time plot of a cursor line in the axial plane of the 2D-image.
- Anatomical M-Mode (AMM): displays a distance/time plot from a cursor line, which is independent from the axial plane. AMM is available in grayscale, color, TVI, Tissue Tracking, Strain rate and Strain modes.
- Curved Anatomical M-Mode (CAMM): displays a distance/time plot from a free-drawn cursor line. CAMM is available in grayscale, color, TVI, Tissue Tracking, Strain rate and Strain modes.

Conventional M-Mode can be combined with Color Mode.

Preparations

- Connect one of the probes to the scanner's left-most probe connector.
- Turn ON the scanner.
The 2D Mode window is displayed (default mode).
- Press **MM** on the Operator panel to bring up an M-Mode picture on the screen.

Use the trackpad to position the cursor over the required area of the image.

Adjust the M Mode controls

The use of preset gives optimum performance with minimum adjustment. If necessary, the following controls can be adjusted to further optimize the M-Mode display:

- Adjust **Horizontal sweep** to optimize the display resolution.
- Adjust **Gain** and **TGC** controls to adjust the range to be imaged.
- Use the **Frequency** (move to higher frequencies) or the **Frame rate** control (move to lower frame rate) to increase resolution in image.
- Adjust **Dynamic range** to optimize the useful range of incoming echoes to the available grayscale.
- Adjust **Compress** to further optimize the display.
- Adjust **Reject** to reduce noise while taking care not to eliminate significant low-level diagnostic information.

Color Mode Checks

Introduction

Color Flow screens are 2D or M Mode screens with colors representing blood or tissue movement.

Color Flow may be selected both from 2D mode or from M mode or a combination of these.

Preparations

- Connect one of the probes to the scanner's left-most probe connector.
- Turn ON the scanner.

The 2D Mode window is displayed (default mode).

Select Color 2D Mode

1. From an optimized 2D image, press **Color**.
2. Use the trackpad to position the ROI frame over the area to be examined.
3. Press **Select**. The instruction **Size** should be highlighted in the trackpad status bar. Use the trackpad to adjust the dimension of the ROI.

Adjust the Color 2D Mode controls

- Adjust the **Active mode gain** to set the gain in the color flow area.

Adjust **Scale** to the highest setting that provides adequate flow detection.

NOTE: The scale value may affect FPS, Low Velocity Reject, and Sample Volume.

Adjust **Low Velocity Reject** to remove low velocity blood flow and tissue movement that reduces image quality.

Adjust **Variance** to detect flow disturbances.

Adjust **Sample volume** (SV) to a low setting for better flow resolution, or a higher setting to more easily locate disturbed flows.

Adjust **Frequency** to optimize the color flow display. Higher settings improve resolution. Lower settings improve depth penetration and sensitivity. This does not affect the frequency used for 2D and M-Mode.

NOTE: Frequency setting may affect FPS, SV and Low Velocity Reject.

Adjust **Power** to obtain an acceptable image using the lowest setting possible.

NOTE: The Power setting affects all other operating modes.

Adjust the following settings to further optimize display of the image:

- Use **Invert** to reverse the color assignments in the color flow area of the display.

Use **Tissue priority** to emphasize either the color flow overlay, or the underlying grey scale tissue detail.

Use **Baseline** to emphasize flow either toward or away from the probe.

Use **Radial** and **Lateral Averaging** to reduce noise in the color flow area. Radial and Lateral Averaging smooths the image by averaging collected data along the same horizontal line. An increase of the lateral averaging will reduce noise, but this will also reduce the lateral resolution.

Select Color M Mode

1. Select M Mode.
2. Use the trackpad to position the ROI frame over the area to be examined.
3. Press **Select**. The instruction **Size** should be highlighted in the trackpad status bar. Use the trackpad to adjust the dimension of the ROI.

Adjust the Color M Mode controls

- Adjust the Active mode gain to set the gain in the color flow area.

Adjust **Scale** to the highest setting that provides adequate flow detection.

NOTE: The scale value may affect FPS, Low Velocity Reject, and Sample Volume.

Adjust **Low Velocity Reject** to remove low velocity blood flow and tissue movement that reduces image quality.

Adjust **Variance** to detect flow disturbances.

Adjust **Sample volume** (SV) to a low setting for better flow resolution, or a higher setting to more easily locate disturbed flows

Adjust **Frequency** to optimize the color flow display. Higher settings improve resolution. Lower settings improve depth penetration and sensitivity. This does not affect the frequency used for 2D and M-Mode.

NOTE: NOTE: Frequency setting may affect FPS, SV and Low Velocity Reject.

Adjust **Power** to obtain an acceptable image using the lowest setting possible.

NOTE: The Power setting affects all other operating modes.

Adjust the following settings to further optimize display of the image:

- Use **Invert** to reverse the color assignments in the color flow area of the display.

Use **Tissue priority** to emphasize either the color flow overlay, or the underlying grey scale tissue detail.

Use **Baseline** to emphasize flow either toward or away from the probe.

Use **Radial** and **Lateral Averaging** to reduce noise in the color flow area. Radial and Lateral Averaging smooths the image by averaging collected data along the same horizontal line. An increase of the lateral averaging will reduce noise, but this will also reduce the lateral resolution.

PW/CW Doppler Mode Checks

Introduction

PW and CW Doppler are used to measure velocity (most often in blood).

Doppler mode can be done with a special pencil probe or with an ordinary probe. By using an ordinary probe, you can first bring up a 2D picture for navigation purpose and then add PW/CW Doppler.

Preparations

- Connect one of the probes to the scanner.
- See ? [Probe/Connectors Check ?](#) on [page 4-44](#) for info about connecting the probes.

For available probes, see 'Probe' on [page 9-23](#):

- Turn ON the scanner
The 2D Mode window is displayed (default mode).
- If needed, adjust the Display's Brightness and Contrast setting.

Press **PW** or **CW** to start Pulsed Wave Doppler (PW) or Continuous Wave Doppler (CW).

Use the trackpad to select the Area of Interest (Sample Volume) in PW or direction of interest in CW.

Adjust the PW/CW Doppler Mode controls

- Adjust the **Active Gain** to set the gain in the spectral Doppler area.
- Adjust **Low velocity reject** to reduce unwanted low velocity blood flow and tissue movement.
- In PW mode, adjust **Sample volume** to low setting for better resolution, or higher setting to more easily locate the disturbed flows. Adjustment of the Sample volume may affect the PRF (Nyquist limit) settings.

Adjust the PW/CW Doppler Mode controls(continued)

- Adjust the **Compress** setting to balance the effect of stronger and weaker echoes and obtain the desired intensity display.
- Adjust **Frequency** to optimize flow display. Higher setting will improve resolution and the lower setting will increase the depth penetration.

NOTE: *Frequency and Frame rate settings may affect the Low Velocity Reject.*

- Adjust **Power** to obtain an acceptable image using the lowest setting possible. This is particularly important in CW mode, as the energy duty cycle is 100% (constant).

NOTE: *The Doppler Power setting affects only Doppler operating modes.*

**CAUTION**

Use all noise reduction controls with care. Excessive application may obscure low level diagnostic information.

Adjust the following settings to further optimize the display of the image.

- Use the **Horizontal sweep** to optimize the sweep speed.
- To view signal detail, adjust **Scale** to enlarge the vertical spectral Doppler trace. Velocity range directly controls the pulse repetition frequency, which is responsible for the setting of the Nyquist limit (the ability to detect maximum velocity without aliasing).
- Use **Invert** to reverse the vertical component of the spectral Doppler area of the display.
- Use **Quick angle** and **Angle correction** to steer the ultrasound beam to the blood flow to be measured (Not typically required during cardiac studies).
- Press **Auto** on the Operation Panel to activate Automatic Spectrum Optimization (ASO). ASO is used to automatically adjust baseline and scale of the PW/CW spectrum to optimize the spectral display. It will avoid the display of a folded spectrum and stretch the spectrum vertically as large as possible. ASO optimization is not continuous but performed instantaneously each time **Auto** is pressed.

Tissue Velocity Imaging (TVI) Checks

Introduction

TVI calculates and color codes the velocities in tissue. The tissue velocity information is acquired by sampling of tissue Doppler velocity values at discrete points. The information is stored in a combined format with grey scale imaging during one or several cardiac cycles with high temporal resolution.

Preparations

- Connect one of the probes, to the scanner's left-most probe connector.
- See '[Probe/Connectors Check](#)' on [page 4-44](#) for info about connecting the probes.
For available probes, see '[Probe](#)' on [page 9-23](#):
- Turn ON the scanner.
The 2D Mode window is displayed (default mode).
- If needed, adjust the Display's Brightness and Contrast setting.

Press **TVI**.

Use the trackpad (assigned function: Pos) to position the ROI frame over the area to be examined.

Press **Select**. The instruction Size should be highlighted in the trackpad status bar.

NOTE: *If the trackpad control pointer is selected, press **trackpad** to be able to select between Position and Size controls.*

Use the trackpad to adjust the dimension of the ROI.

Adjust the TVI Controls

The use of presets gives optimum performance with minimum adjustment. If necessary, the following controls can be adjusted to further optimize the TVI display:

- To reduce quantification noise (variance), the Nyquist limit should be as low as possible, without creating aliasing. To reduce the Nyquist limit: reduce the **Scale** value.

NOTE: The Scale value also affects the frame rate. There is a trade off between the frame rate and quantification noise.

- TVI provides velocity information only in the beam direction. The apical view typically provides the best window since the beams are then approximately aligned to the longitudinal direction of the myocardium (except near the apex). To obtain radial or circumferential tissue velocities, a parasternal view must be used. However, from this window the beam cannot be aligned with the muscle for all the parts of the ventricle.

NOTE: PW will be optimized for Tissue Velocities when activated from inside TVI.

Basic Measurements

*NOTE: The following instructions assume that you first scan the patient and then press **Freeze**.*

Check Distance and Tissue Depth Measurement

1. Press **Measure** once to display an active caliper.
2. Move the trackpad to position the active caliper at the start point (distance) or the most anterior point (tissue depth).
3. Press **Set** to fix the start point.
4. The system fixed the first caliper and displays a second active caliper.
5. Move the trackpad to position the second active caliper at the end point (distance) or the most posterior point (tissue depth).
6. Press **Set** to complete the measurement. The system displays the distance or tissue depth value in the measurement results window.

*NOTE: To toggle between active calipers, rotate **Cursor Select** button.*

Image Quality Check (IQC) preset for service

Image Quality Check (IQC) is intended to facilitate Image Quality checks during Quality Assurance Evaluation. Quality Assurance tests are used to determine whether a scanner is providing the same level of performance year after year.

By using the same setting year after year, this ensures that the data collection consistent, independently of who performs the test.

This preset only includes fundamental settings for 2D mode. Processing modes like SRI, Harmonics, etc., are turned off.

To do IQC, follow the steps below:

NOTE: *The IQCforService is only visible when SSA key is connected to the system.*

1. Press **Probe** button on the control panel.
2. Select the proper probe, and then select **IQCforService** in the Applications column.

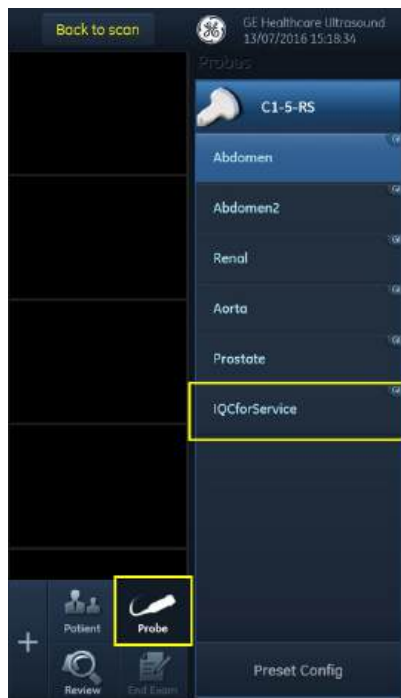


Figure 4-8. Image Quality Check

Probe/Connectors Check

NOTE: Probes can be connected at any time, whether the ultrasound system is ON or OFF.



CAUTION

TAKE THE FOLLOWING PRECAUTIONS WITH THE PROBE CABELS:

- KEEP AWAY FROM THE WHEELS
- DO NOT BEND
- DO NOT CROSS CABLES BETWEEN PROBES

To connect a Probe

1. Place the probe's carrying case on a stable surface and open the case.
2. Carefully remove the probe and unwrap the probe cable.
3. Put the porbe in the probe holder.



CAUTION

DO NOT allow the probe head to hang free. Impact to the probe head could result in irreparable damage.

4. Hold the probe connector vertically with the cable pointing upward.
5. Slide the connector lock to the left (unlocked position).
6. Align the connector with the probe port and carefully push into place.
7. Slide the connector lock to the right position to secure the probe connector.
8. Carefully position the probe cable in the probe cord holder spot so it is free to move, but not resting on the floor.

Table 4-5: Probe and Connectors Checks

Step	Task	Expected Results
1	Press Probe on the Operating Panel.	A list of the connected probes will pop up on the screen.
2	If not already selected, use the trackball to select the desired probe.	An application menu for the desired probe is listed on the screen.
3	Press Probe on the Touch Panel and select Application.	The selected application starts.
4	Verify no missing channels.	All channels are functioning.

Table 4-5: Probe and Connectors Checks

Step	Task	Expected Results
5	Verify there's no EMI/RFI or artifacts specific to the probe.	No EMI/RFI or artifacts.
6	Test the probe in each active connector slot.	It will display pictorial data each time.
7	Do a leakage test on the probe.	It passes the test.
8	Repeat this procedure for all available probes.	

The Vivid *iq* console itself can only support the latest new probe connector, just like the third one in below picture:



Figure 4-9. RS type probe connector

1. Not match with Vivid *iq* console, only match with multi-probe box
2. Not match
3. Match
4. Not match

The Vivid *iq* console of Multi-Probe Ports ASSY can support the first and the third probe connectors in the above picture. In order to use the second and fourth probe connector, you need to disassemble the Vivid *iq* Cart Multi-probe Cable Hook.



Figure 4-10. Multi-probe Cable Hook

ECG Check

Introduction

The ECG capability on this Ultrasound system is intended for use as a trigger for measurements, but can also be viewed on the screen.

Parts needed

- ECG Pads (3 pc)
- ECG Cable Europe Kit (H48952AB) or US Kit (H48952AC)

Preparations

None

ECG Check

Table 4-6: ECG Checks

Step	Task	Expected Result(s)
1	Connect the ECG harness to the connector under the control panel.	The unit displays a straight curve along the bottom edge of the image sector on the screen.
2	Connect the three leads to an ECG simulator, or Fasten the three ECG Pads to your body and connect the three leads to respective ECG Pad.	When connecting, the signal on the screen will be noisy. When the connection is completed, a typical clean ECG signal is displayed.

Cineloop Check

Introduction

A cineloop is a sequence of images recorded over a certain time frame. When using ECG the time frame can be adjusted to cover one or more heart cycles. When frozen, the System automatically displays the cineloop boundary markers on either side of the last detected heart cycle.

Preparation

- Connect one of the probes to the Ultrasound system.
- See '[Probe/Connectors Check](#)' on [page 4-44](#) for info about connecting the probes
For available probes, see '[Probe](#)' on [page 9-23](#):
- Turn ON the scanner. The 2D Mode is displayed (default mode).

Using cineloop

Selection of a cineloop

1. Press **Freeze** on the Control Panel.
The left and right markers are displayed on either side of the last detected heart cycle on the ECG trace.
2. Press **Pause** on the Control Panel.
The selected heart beat is played back.
3. Press **Pause** to freeze the cineloop.
4. Scroll through the acquisition and find the sequence of interest by using trackpad.
5. Adjust **Cycle select** to move from heart beat to heart beat and select the heart cycle of interest.
6. Adjust **Num cycles** to select the number of heart beats to play back.
7. Adjust **Left marker** and **Right marker** to trim or expand the cineloop boundaries.
8. Press **Pause** to run the cineloop and **Store** to store the cineloop or **Freeze** to return to live scanning.

NOTE: Cineloop storage can be configured to store heart cycles with additional time before and after the R-wave and to display a preview before storage.

Adjustment of cineloop playback

1. Select Speed on the Shortcut Bar and adjust **Speed** to set the speed of the cineloop playback.
The speed factor (%) is displayed on the right side of the ECG.

Back End Processor checks

- If all the previous tests have been passed successfully, the Back End Processor is most likely OK.

If the Ultrasound system seems to be operating erratically, please refer to '[Diagnostics/Troubleshooting](#)' on [page 7-1](#).

Operator Panel Test

- The Operator Panel is tested when the Vivid *iq* is powered up as part of the start-up scripts, run at every start-up.

For more info, please refer to '[Diagnostics/Troubleshooting](#)' on [page 7-1](#).

Peripheral checks

Printer checks

The internal printer is controlled from the **P1** key on the Vivid *iq* shortcut bar.

The factory default is:

- **P1** for the UP-D711MD printer

Table 4-7: Printer checks

Step	Task	Expected Result(s)
1	When scanning in 2D Color Mode, press Freeze to stop image acquisition.	Image scanning stops with the last picture on the screen.
2	Press P1 on the shortcut bar	The image displayed on the screen is printed on the assigned printer
3	Check if the print quality on the pictures from both printers are of expected quality.	

Mechanical Functions Checks

Operator Panel Movement

Please refer to:

- [‘LCD Monitor position adjustment’ on page 4-25](#)

Casters (Wheels) and Brakes Checks

Please refer to:

- [‘Locking the Wheels’ on page 3-255](#)

CPU Fan and MST Fan checks

Please check CPU Fan and MST Fan by ear.

Trackpad with Gesture(For v204 and v206)

Overview

Instead of pressing buttons on the operation panel, users can also adjust gain and depth with two fingers horizontally or vertically swiping on the trackpad.

Tutorial

For users feel strange about this feature, the system provides a tutorial instruction iconically showing how to do the adjustment on trackpad.

1. Press the **Tutorial** button on the drop-down tray menu on the right upper corner.

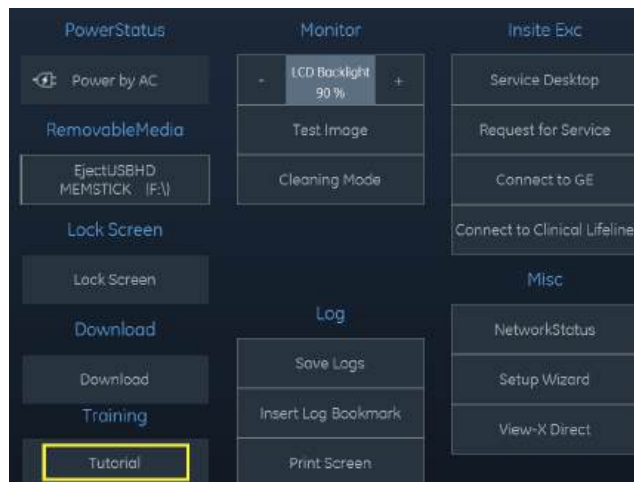


Figure 4-11. Tutorial Button

NOTE: There is a highlighted bar on the top of the scanning screen every time/week/month you start the system to inform users the trackpad gesture function. Press **Learn More** to learn more about the tutorial instruction. To hide the bar, you can go to the **Config(shortcut bar) -> System(tab) -> Trackpad(tab)** page and config the “**Show Tutorial**” section.



Figure 4-12. Highlighted Bar

Tutorial(continued)

2. Follow the indication on the display to adjust the Gain.



Figure 4-13. Gain Adjustment with Gesture

3. If you operate correctly, there will be a reminder to tell you will go to the next step.

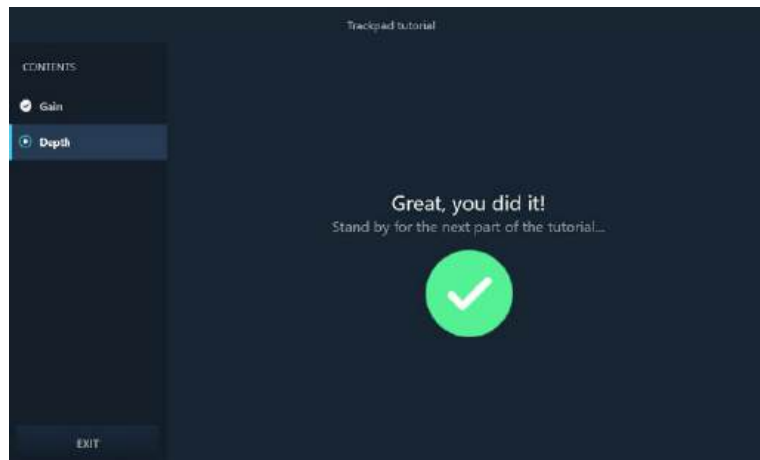


Figure 4-14. Stand by for the Next Step

Tutorial(continued)

4. Then, you will be prompted to adjust the **Depth**.



Figure 4-15. Depth Adjustment with Gesture

5. After the training is over, the system will inform you. Click the **Exit** button to start scanning.

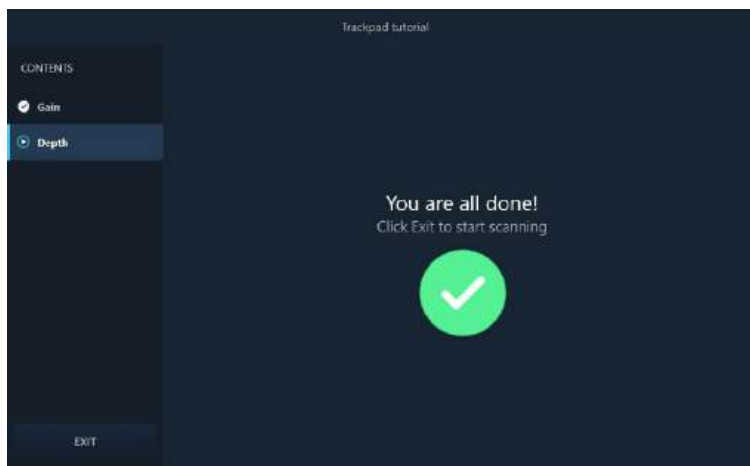


Figure 4-16. Finish Training

NOTE: You can stop the tutorial training anytime you want by clicking the **Exit** button.

Trackpad with Gesture(For v208)

Overview

Instead of pressing buttons on the operation panel, users can also adjust gain and depth with two fingers horizontally or vertically swiping on the trackpad.

Tutorial

For users feel strange about this feature, the system provides a tutorial instruction iconically showing how to do the adjustment on trackpad.

1. Press the **Tutorial** button on the drop-down tray menu on the right upper corner.

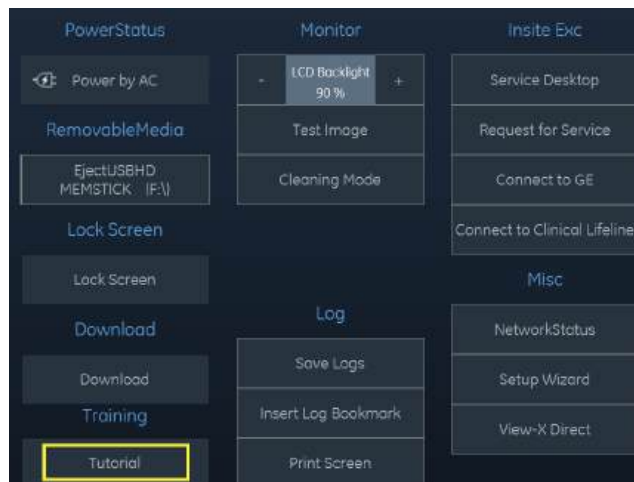


Figure 4-17. Tutorial Button

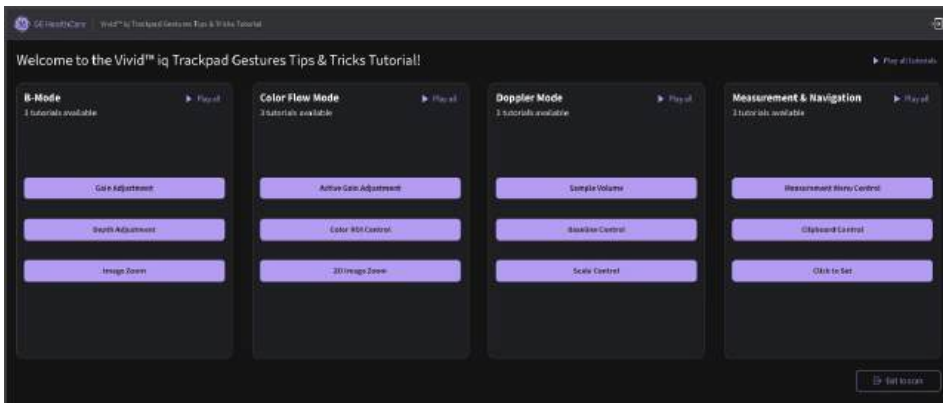
NOTE: There is a highlighted bar on the top of the scanning screen every time/week/month you start the system to inform users the trackpad gesture function. Press **Learn More** to learn more about the tutorial instruction. To hide the bar, you can go to the **Config(shortcut bar) -> System(tab) -> Trackpad(tab)** page and config the “**Show Tutorial**” section.



Figure 4-18. Highlighted Bar

Tutorial(continued)

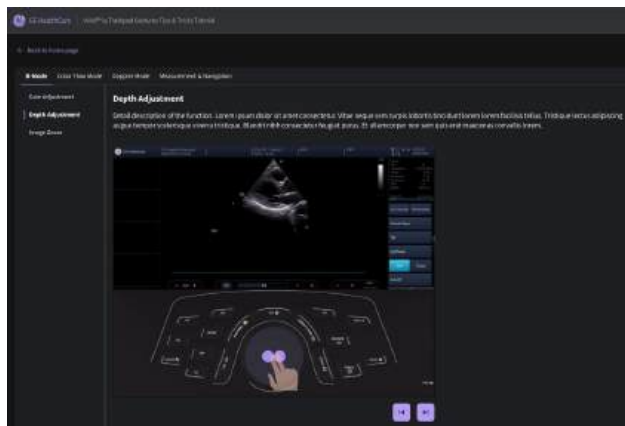
2. The tutorial main interface will be displayed .



1. Press PlayAll to play the whole gestures one by one
2. Press Play icon beside each mode to play all gesture videos for corresponding mode
3. Press the function block you desired to show gesture instruction video
4. Press Exit to return to the scanning page

Figure 4-19. Tutorial main page

3. Press the gesture you want to know and there will be a video as an instruction to tell you how to do the adjustment by gesture.



1. Press each Tab to show trackpad gesture video for the desired function
2. Press Next to go to next user senario
3. Press Back/Home to return to the main page of the tutorial
4. Press Exit to Scan to go back to the scanning page

Figure 4-20. Tutorial main page

Power supply test & adjustments

Power Supply Test Procedure

There is no need to do any special tests on the Power Supplies if there don't seem to be a problem that may be related to the Power Supply.

Power Supply Adjustment

There are no adjustments on the power supply. The DC Power is self-regulated. If a voltage is outside the specified range, it means that something is wrong, either with the power supply itself or with a unit connected to that specific power outlet. When an error occurs, the power will be turned off immediately.

Application Turnover Check List

Complete these checks before returning the Ultrasound system to the customer for use:

Software Configuration Checks

Table 4-8: Software Configuration Checks

Step	Task to do	Notes
1	Verify Date and Time is correct.	
2	Verify that Location (Hospital Name & Department) is correct.	
3	Verify Language settings are correct.	
4	Verify assignment of Printer Keys.	
5	Verify all of the customer's options are set up correctly.	Demo Option strings turn on

Site Log

Table 4-9: Site Log

DATE	SRVICE PERSON	PROBLEM	COMMENTS

Chapter 5

Components and Functions (Theory)

This chapter explains Vivid iq's system concepts, component arrangement, and subsystem functions.

It also describes the power distribution and the Common Service Desktop interface.

Overview

Contents in this chapter

- 'Overview' on *page 5-2*
- 'Block Diagram and Theory' on *page 5-3*
- 'Power Diagram' on *page 5-17*
- 'Service Desktop' on *page 5-19*
- 'CARTO® 3 Interface' on *page 5-29*

Block Diagram and Theory

General Information

Vivid *iq* is an ultrasound imaging scanner.

The system can be used for:

- 2D Gray Scale
- 2D Color Flow imaging
- M-Mode Gray Scale imaging
- Color M-Mode
- Doppler
- Different combinations of the above

Signal flow from the Probe Connector Panel to the Front End, to the Mid Processors and Back End Processor and finally to the LCD and peripherals.

System configuration is stored on a hard disk drive and all necessary software is loaded from the hard disk drive on power up.

Top Console

The Top Console includes a Standby/On switch, a keyboard, different controls for manipulating the picture quality, controls for use in Measure & Analyze (M&A), and loudspeakers for stereo sound output (used during Doppler scanning).

Block Diagram

System Diagram

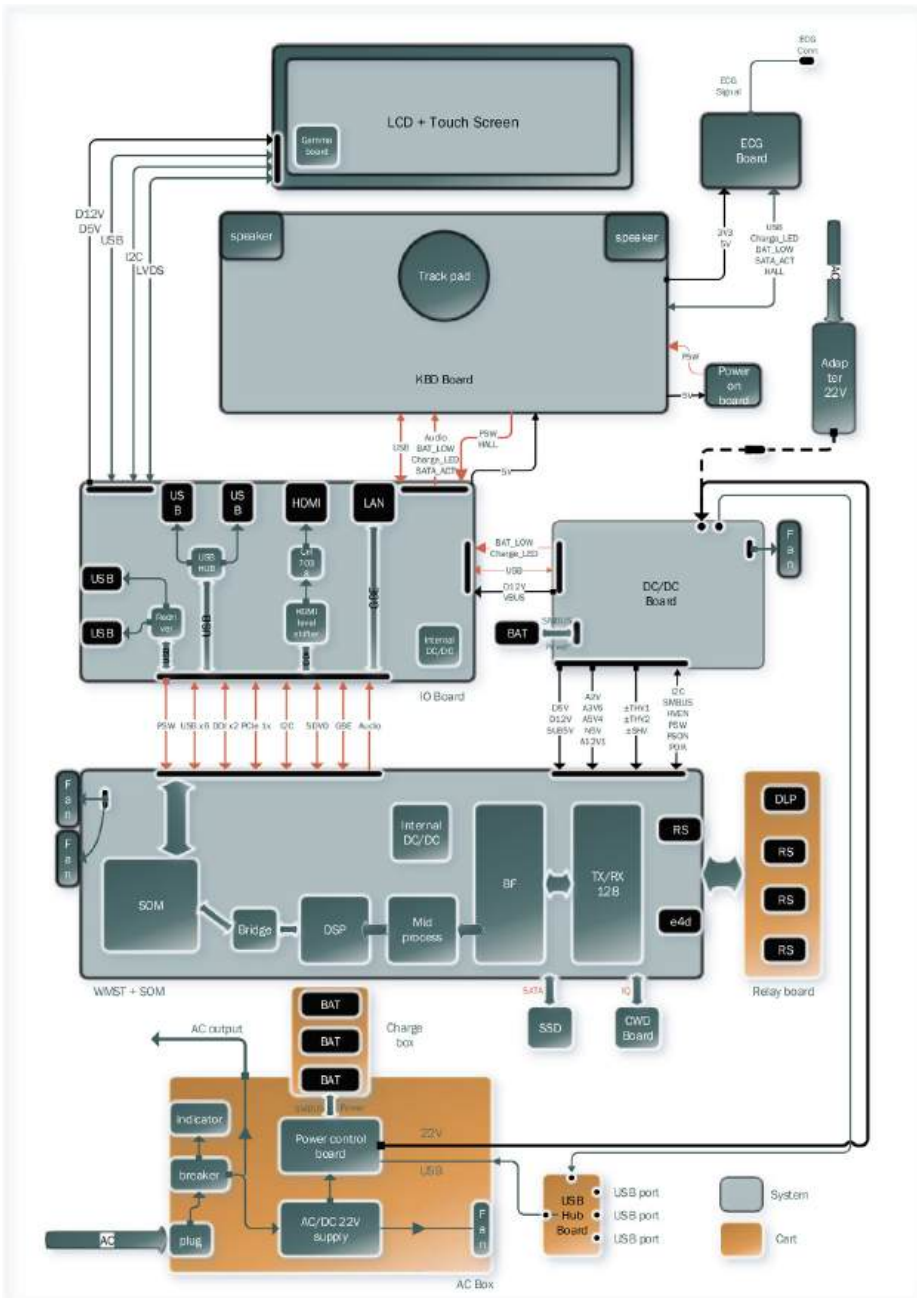


Figure 5-1. Vivid iq System Block Diagram

Introduction

WMST provides the main control function, 128 channels transmitting/receiving and related signal processing, and connects to CWD board.

SMIO board receives MISC signals from PWMST board and make necessary processing. And then, PMIO sends to Rear Panel and KBDTRSF board.

KBDTRSF board receives MISC signals from PMIO board. It makes necessary processing and then sends to LCD monitor, touch panel, main KBDboard, SoftKBD board and system speakers.

Power Control PWA is assembled in the power box. It provides an interface for AC power input and provides isolated AC power output for the system.

Relay board provides an interface for WMST and four probes. It transmits/receives signals from WMST and provides an interface for drive the LED board.

Rear Panel and BNC Board will receive MISC signals from SMIO board and make necessary processing. It provides MISC user interface.

WMST PWA

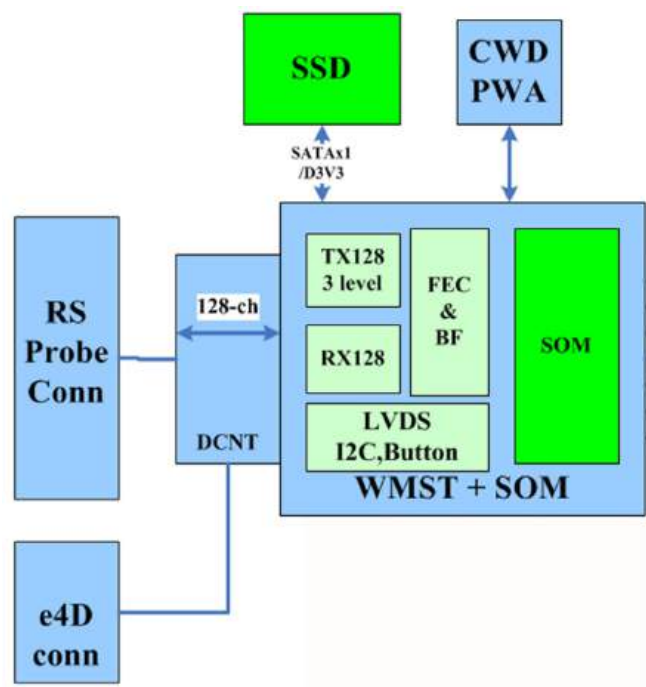


Figure 5-2. WMST module overview

Description

WMST PWA is the key part of ultrasound system. It generates transmit signals and receives the echo signals from probe. It consists of CPU, mid-processing FPGA, beamforming FPGA, scan-controller (DSP).

Major Components	• 128-channel Pulser • 128-channel AFE • 128-channel BF FPGA • Mid-processing FPGA • PCIE bridge • DSP • Internal DC/DC
Physical Interface	• Connected to WDC • Connected to SMIO • Connected to SRLY • Connected to CWD baord

Electrical Interface	• High voltage input: +/-SHV (about +/-85V), +/-THV (about +/-70V) • Low voltage input: +5v, -5v, +12V, +3.5V, +1.8V • Probe and relay control signals • Power on/off control signals • I2C bus signals to control high voltage • CWD signals • DDI signals for display from CPU • Audio signals from CPU • USB signals from CPU • Ethernet signals from CPU
Major function	• DC/DC generation • Transmit signals generation • Echo signals receiving • Echo signals Beam forming • Scan control • Generate display, USB, Audio signals

SMIO PWA

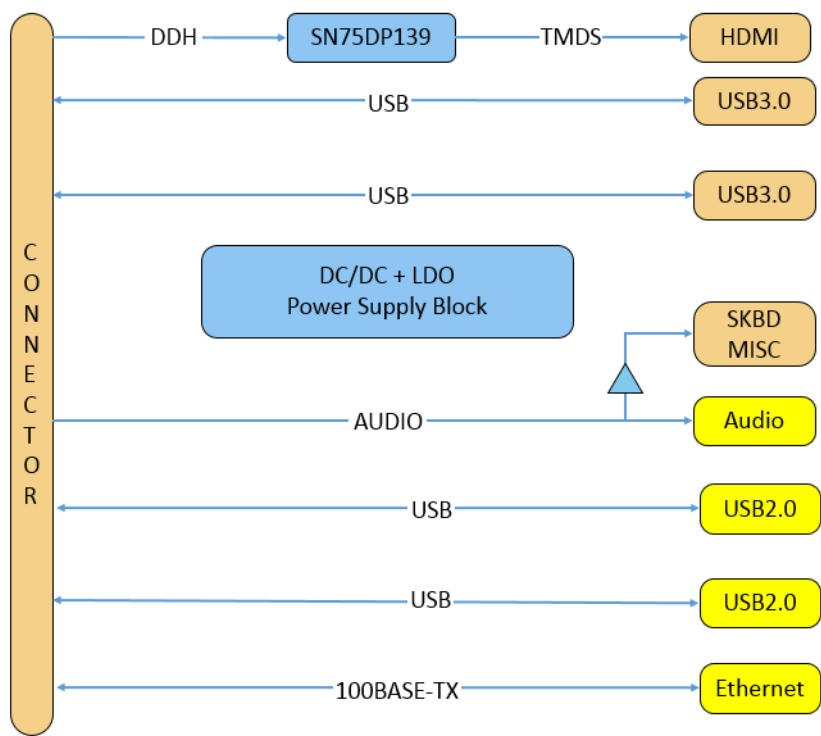


Figure 5-3. SMIO Overview

Dscription

SMIO PWA provides miscellaneous interface for user and internal use. The board generates several +5V and +12V power supplies from its DC/DC circuit and provides to the board itself, LCD, USB, HDD, fan and keyboard from a unique +18V input. The DC printer has a +18V power supply route in the board, which can be powered once the system powers on..

Major Components	• 1x audio stereo connector • 1x keyboard connector • 1x HDMI connector • 1x dual USB connector • 1x HDD power supply connector • 2x Fan power supply connectors • 1x DC input connector • 1x signal input connector from system

Physical Interface	• Connected to SFPC (WMST) • Connected to ACDC • Connected to LCD • Connected to SKBD • Connected to HDD • Connected to Fan • Connected to BNC connector
Electrical Interface	• Power input: +18V • Power button signals • Reset signals • PS_ON signal • I2C bus to board control • VGA RGB signals • Audio signals • DP signals • Ethernet signals • USB signals
Major function	• DC/DC generation • HDMI level-shifter • VGA to TVOUT convert • High-speed USB convert • Full speed USB isolation • VPRT power supply control

SKBD PWA

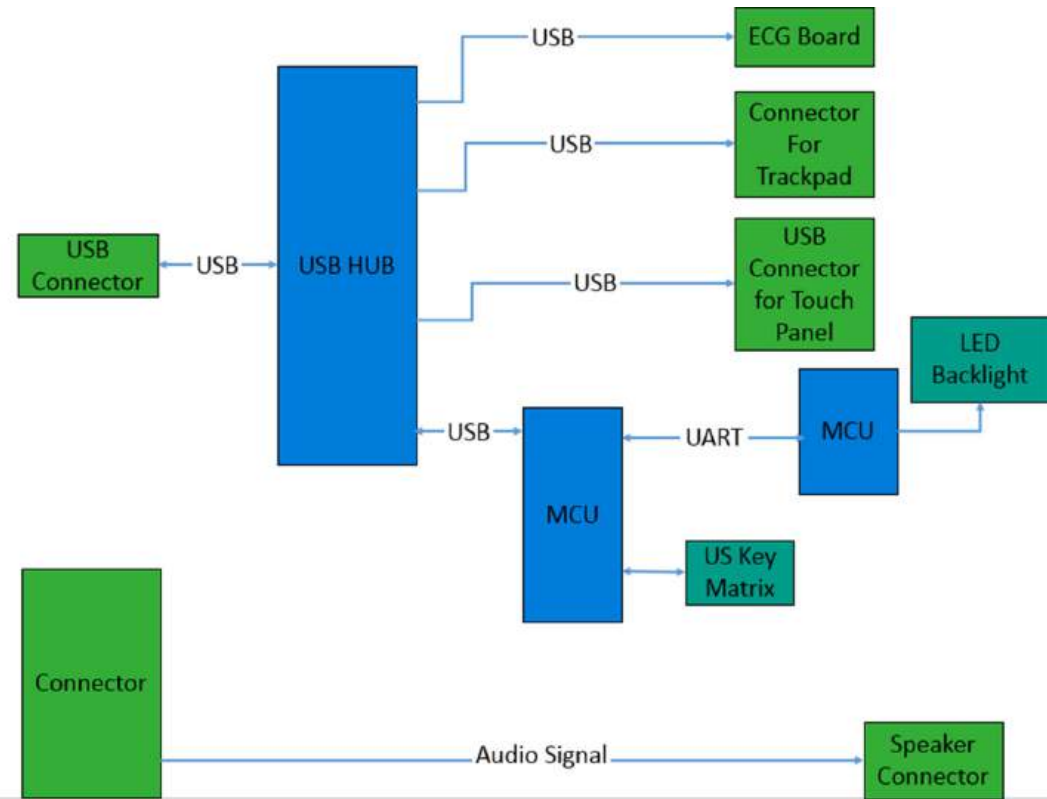


Figure 5-4. SKBD PWA Overview

Description

SKBD PWA supports an alphanumeric keyboard, US key for ultrasound system, backlighting and touch panel option.

Major Components	• 1x connector to SMIO • 1x USB connector to SMIO • 1x USB connector to touch panel • 1x power connector to touch panel • 2x speaker connector • 2x connectors for trackpad • 1x connector for AN key
Physical Interface	• Connected to SMIO • Connected to trackpad • Connected to Touch Panel • Connected to AN key • Connected to Speaker

Electrical Interface	• Power input: +12V/+5V • Power button signals • Audio signals • USB signals
Major function	• AN key input • US key input • Trackpad

WPWR PWA

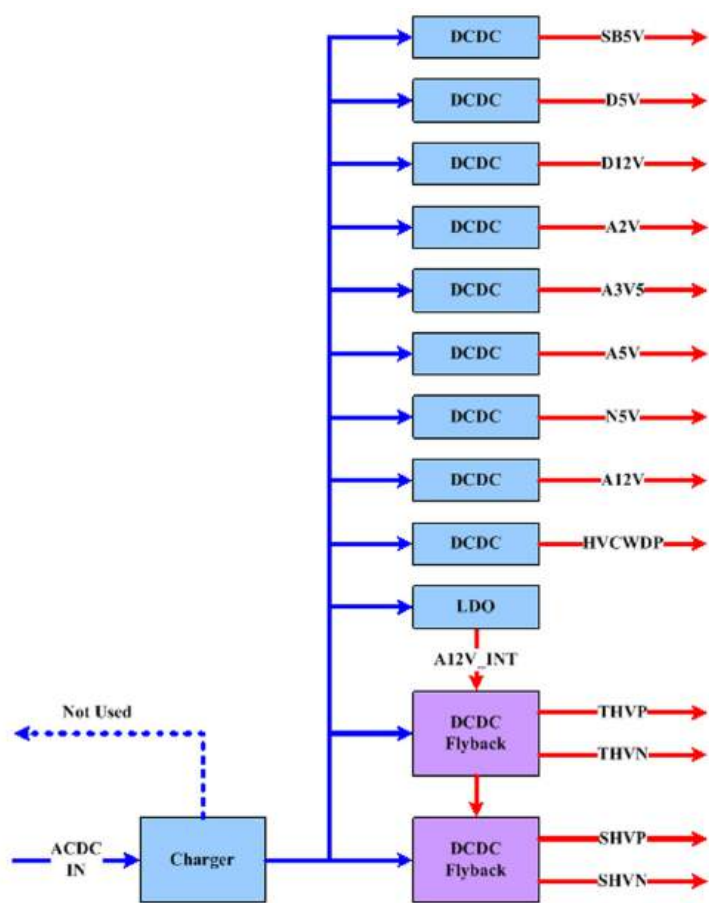


Figure 5-5. WPWR PWA Overview

Description

WPWR PWA supports an MST board and IO board power.

Major Components	• 1x connector of charge • 1x connector of fan • 1x connector for WMST • 1x power connector for ACDC module
Physical Interface	• Connected to battery pack • Connected to fan • Connected to WMST board • Connected to ACDC module

Electrical Interface	• Connected to battery pack • Connected to fan • Connected to WMST board • Connected to ACDC module
Major function	• Connected to battery pack • Connected to fan • Connected to WMST board • Connected to ACDC module

Relay Board

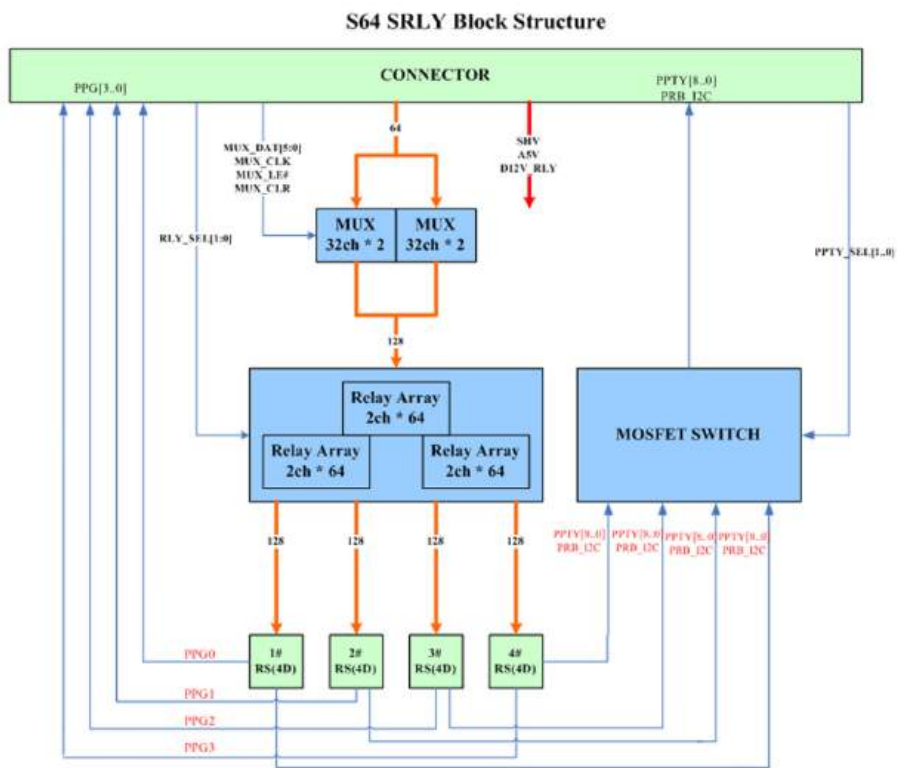


Figure 5-6. Relay Board Overview

Description

Relay board PWA implements 64-channel into 128-channel multiplexing using relay matrix. And it switches those 128 channel element signals, probe control signals and high-voltage power to the selected probe port. It also reports probe status and types to WMST PWA through the connector.

LED board connected to relay board is to indicate which probe is activated.

Major Components	• 3 x RS + 1 DLP Connectors (For Relay PWA) (For Cart) • 1x 300PIN BGA Connectors • Relays to select signal path • EEPROM stores board ID information which can be ready by PWMST • 4 pcs high voltage analog switches which implement 64-channel signals to 128-element signal mulplexing • 4 pcs CMOS bus switch ICs implement probe control signal for APM testing

Physical Interface	• Connected to WMST • Connected to probes
Electrical Interface	Interface to RS Probe connector: • 128 element signals • High voltage power: +/-SHV (about +/-85V) • Low voltage power: 5V • I2C interface for board ID reading (stored in on-board EEPROM) • I2C interface for probe ID reading • PPTY probe ID reading • Probe plug well indication signals • Probe ID indication signals Interface to WMST (300Pin BGA Connector) • 64-channel signals • Probe control signals • 64-channel-to-128-element multiplexing control signals • High voltage power: +/-SHV (about +/-85V) • Low voltage power: 5V, 12V • I2C signals • APM trigger signal
Major function	• Support 4 ports for RS type probe • Receives analog/digital/power signals from WMST through a connector • Transition 64-channel into 128-element transmit/receive • Under the control of WMST, select one probe and transmit all probe related signals (analog/digital/power) to that probe

SUSB PWA

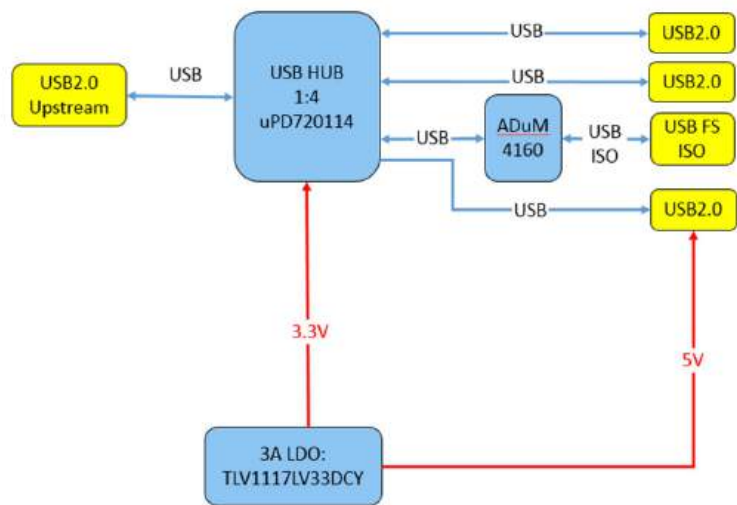


Figure 5-7. SUSB PWA

Description

SUSB PWA provides 3 USB interface and DC printer power supply VPRT. One of the USB interfaces is for the DC printer. DC/DC generate internal power supply from VPRT input for USB hub circuit.

Major Components	• 3 x USB down-stream connector • 1 x USB up-stream connector • 4 x DC connector for printer • 1 x power supply connector
Physical Interface	• Connected to DC printer • Connected to SMIO
Electrical Interface	• Power input: +18V • USB signals
Major function	• DC/DC generation • High-speed USB Hub

Power Diagram

Overview

The AC Power assy's main tasks are to isolate and output to the DC/DC unit which is inside the system console. The input of AC power pack will be the AC outlet and it's universal, the range is AC 90V-264V, 47-63Hz. And no main power switch located on this power pack.

AC Power

The mains cord has plugs in one side end. A male plug connects to the mains outlet on site.

The mains voltage is routed to the AC power pack through a Circuit Breaker located on the site.

The Circuit Breaker is of the auto fuse type, if for some reason the current grows to high, the switch will automatically break the power.

From the Main Circuit Breaker, the AC power is routed via an Inrush Current Limiter to a internal outlet connector for the Mains Transformer.

Service Desktop

Overview

The Service Desktop is an interface that provides access to system information, status and diagnostics.

- Basic view is the standard view, restricted only by the user through the user profile settings. Administrator default user has access to the Service Desktop. Any user with "local Service access" in their user profile can have access to this view.
- Class C view is the view enabled by the service options purchased.
 - Service Advanced
 - Service Expert (requires Service Advanced)
 - Service Pro (requires Service Advanced)

Service Platform (InSite)

Common Service Desktop Overview

Introduction

The Service Platform contains a set of software modules that are common to all ultrasound and cardiology systems containing a PC back end. This web-enabled technology provides linkage to e-Services, e-Commerce, and the iCenter, making GE Healthcare's ultrasound systems more e-enabled than ever. The Service Platform will increase service productivity and reduce training and service costs.

iLinq Interactive Platform Features

Many of the services of the Common Service Desktop come from its integration with iLinq. The following list includes a brief introduction to iLinq features:

1. **Web server/browser**

The Service Platform and other Service software use the iLinq web server and the XXX browser.

2. **Connectivity**

NOTE: *This feature that allow the customer to contact the GE Healthcare OnLine Center are available for Warranty and Contract customers only.*

This feature provides basic connectivity between the ultrasound system and the OnLine Center (OLC).

3. **Configuration**

This feature provides the interfaces to configure various iLinq parameters.

4. **Contact GE Healthcare**

NOTE: *This feature that allows the customer to contact the OnLine Center are available for Warranty and Contract customers only.*

This feature allows for an on-screen one-touch button to contact the OnLine Center and describe their issues in an easy and convenient way.

5. **Interactive Application**

The main application is displayed in the form of HTML pages whenever the browser starts. This is the entry point for any user to start any iLinq application.

Global Service User Interface (GSUI)

Internationalization

The user interface provided by the service platform is designed for GE Healthcare personnel and as such is in English only. There is no multi-lingual capability built into the Service Interface.

Service Login

1. Select the Insite ExC icon on the tray menu.

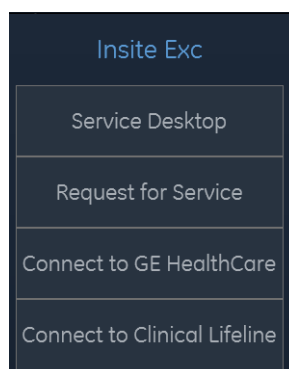


Figure 5-9. InSite ExC pop-up screen

2. Select Service Desktop from the pop-up screen. The user or Field Engineer (FE) will be directed to the service login screen.

Access / Security

Before the service interface displayed, the system will need to verify the access of the login account. specified user account. Each user is only granted access to the tools that are authorized for their use.

Table 5-1: Service Interface Access

Account	Access Authorization
USR	Cannot access the service interface unless a service dongle / Class M option key is working
ADM	Can access the service interface.

User Level of the Service Desktop

Table 5-1 shows Service Desktop widgets available for local service user without an SSA Key and with these service options.

Table 5-2: User Level of the Service Desktop

Main Menus	Main Sub-menus	Service Basic	Class C View Levels			
			Service Advanced	Service Expert	Service Pro	Service Pro2
Home		X	X	X	X	X
	System Information	X	X	X	X	X
	System Status	O	X	X	O	O
	Disk Drive Space	O	X	X	O	O
	Software Status	X	X	X	X	X
	Network Configuration	O	X	X	O	O
	Connected Probes	X	X	X	X	X
Diagnostics		O	X	X	O	O
	Run Diagnostics	O	X	X	O	O
	Diagnostic History	O	X	X	O	O
DICOM		O	X	X	O	O
	DICOM Spooler	O	X	X	O	O
Utilities		X	X	X	X	X
	Change Password	X	X	X	X	X
	Data Transfer	X	X	X	X	X
	Checkpoints	O	X	X	O	O
	Clean Userdefs	O	O	X	O	O
	Delete Files	X	X	X	X	X
	Disk Defragment	O	X	X	O	O

Table 5-2: User Level of the Service Desktop

	Disruptive Mode Utility	O	X	X	O	O
	Gather Logs	X	X	X	X	X
	Network Capture	X	X	X	X	X
	Resolve Agent Quarantine*(not support in R8 CSD version for all user levels)	X	X	X	X	X
	Disable Remote Connectivity	O	O	O	O	O
	Reset Patient Database	O	O	X	O	O
	Software Reload	O	O	X	O	O
	SSA License	X	X	X	X	X
	SSH	O	O	O	O	O
	System Shutdown	O	O	O	O	O
	Third Party Licenses	X	X	X	X	X
	Virtual Console Observation	O	O	O	O	O
Options		X	X	X	X	X
Agent Configuration		X	X	X	X	X
Software Maintenance		X	X	X	X	X

Advanced Information -Service Desktop

This table shows Class M view compared to Class C and Basic view.

Class M view:

- When at the site, the field engineer needs to log in with a user with "local service" access and requires the connection of the SSA key regardless of the service options enabled prior to click the service icon  at the right top of the display screen.
- When connecting remotely, the SSA or the user with "local service" access are not needed. But the user logged in has to have "remote service" access to authorize any Disruptive mode.

NOTE: *x represents applicable, o represents not applicable.*

Table 5-3: User Level of the Service Desktop

Main Menus	Main Sub-menus	Service Basic	Class C View Levels				Class M View Levels	
			Service Advanced	Service Expert	Service Pro	Service Pro2	SSA Key	Remote-via inSite
Home		X	X	X	X	X	X	X
	System Information	X	X	X	X	X	X	X
	System Status	O	X	X	O	O	X	X
	Disk Drive Space	O	X	X	O	O	X	X
	Software Status	X	X	X	X	X	X	X
	Network Configuration	O	X	X	O	O	X	X
	Connected Probes	X	X	X	X	X	X	X
Diags		O	X	X	O	O	X	X
	Run Diags	O	X	X	O	O	X	X
	Diag History	O	X	X	O	O	X	X
DICOM		O	X	X	O	O	X	X
	DICOM Spooler	O	X	X	O	O	X	X

Table 5-3: User Level of the Service Desktop

Utilities		X	X	X	X	X	X	X
	Change Password	X	X	X	X	X	X	O
	Data Transfer	X	X	X	X	X	X	X
	Checkpoints	O	X	X	O	O	X	X
	Clean Userdefs	O	O	X	O	O	X	X
	Delete Files	X	X	X	X	X	X	X
	Disk Defragment	O	X	X	O	O	X	O
	Disruptive Mode Utility	O	X	X	O	O	X	X
	Gather Logs	X	X	X	X	X	X	X
	Network Capture	X	X	X	X	X	X	X
	Resolve Agent Quarantine* (not support in R8 CSD version for all user levels)	X	X	X	X	X	X	X
	Disable Remote Connectivity	O	O	O	O	O	X	X
	Reset Patient Database	O	O	X	O	O	X	X
	Software Reload	O	O	X	O	O	X	X
	SSA License	X	X	X	X	X	X	X
	SSH	O	O	O	O	O	X	X
	System Shutdown	O	O	O	O	O	X	X
	Third Party Licenses	X	X	X	X	X	X	X
	Virtual Console Observation	O	O	O	O	O	X	X
Options		X	X	X	X	X	X	X

Table 5-3: User Level of the Service Desktop

Agent Configuration		X	X	X	X	X	X	X
Software Maintenance		X	X	X	X	X	X	X

Advanced Information -Service Desktop and SSA (Secure Service Access)

The SSA key provides secure access for GE service personnel to advanced tools to service the system.

SSA is a class M key with the following characteristics:

- Access to all service features
- Access to Windows Desktop
- Key must be renewed every 30 days
- Tied to SSO
- Password locked via key pad

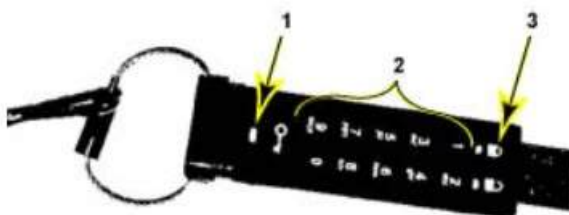


Figure 5-10. SSA Key

Item	Description
1	Blue LED
2	Key Pad
3	Lock Indicators

Access Service Desktop

Click the Insite ExC icon on the tray menu. Select **Service Desktop** in the pop-up screen to access service desktop.

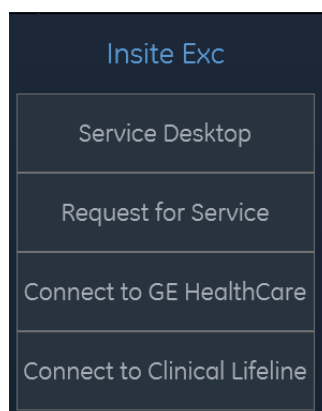


Figure 5-11. Select Service Desktop

CARTO® 3 Interface

- NOTE:** *Only the Vivid iq system installation is done by GE personnel. GE field engineers are not responsible for any of the CARTO® 3 installation for Protocol 2.0 . For Protocol 1.0, GE installs the video box.*
- NOTE:** *CARTO® 3 is installed by the BWI field engineer. The ultrasound setup and the connection between the Vivid and the CARTO® 3 should be done by the BWI Field Engineer.*
- NOTE:** *GE service only check the Vivid iq connection, contact with Biosense Webster, Inc. if need ICE catheter for troubleshooting. Any other related troubleshooting should be done on system together with Biosense Webster, Inc. service.*

Overview

These versions of CARTO® 3 are supported by Vivid iq.

- Protocol 1.0: The video signal from the ultrasound system's HDMI Out port is connected to a video box. The video from the video box to the CARTO® 3 is distributed via a VGA cable.
- Protocol 2.0: The video signal is transferred through an Ethernet cable.

Contents in this chapter

- ['General Description of CARTO® 3' on page 5-30](#)
- ['CARTO® 3 Description' on page 5-31](#)
- ['CARTO® 3 Connection Overview with Protocol 2.0' on page 5-33](#)
- ['CARTO® 3 Connection Overview with Protocol 1.0' on page 5-34](#)

General Description of CARTO® 3

CARTO® 3 is an electroanatomical mapping system by BWI used in EP labs mainly in ablation procedures in conjunction with ICE catheter.

When the ultrasound system is connected (through direct Ethernet connection) to a CARTO® 3 system, the user can initiate a CartoSound connection between the two systems.

As soon as the handshake between the ultrasound system and the CARTO® 3 system pass, the ultrasound system opens these communication channels:

- CARTO® 3 protocol channels:
The CARTO® 3 protocol channels are used to communicate using XML messages between the two systems.
- Video streaming channel:
The Video streaming channel is used to send the content on Vivid *iq* main screen to the CARTO® 3 system.
- Raw data streaming channel:
The raw data streaming channel is used to send 2D raw data to the CARTO® 3 system.

CARTO® 3 Description

The CARTO® 3 System is an advanced imaging technology that utilizes electromagnetic technology to create real-time three-dimensional (3D) maps of a patient's cardiac structures.

The system is designed to help electrophysiologists navigate the heart by generating an accurate 3D map, as well as pinpointing the exact location and orientation of catheters in the heart during diagnostic and therapeutic procedures for patients suffering from heart rhythm conditions (cardiac arrhythmias).

During a therapeutic catheter ablation procedure, doctors insert a catheter through a small incision in the groin where it is then weaved up to the heart through a blood vessel in the leg. Once it reaches the heart, radiofrequency energy is delivered to specific areas of the heart wall to produce a small lesion, or scar, to block faulty electrical impulses that can cause heart rhythm disorders. The 3D image that is generated by the system helps doctors steer the catheter to areas in the heart where RF energy needs to be administered.

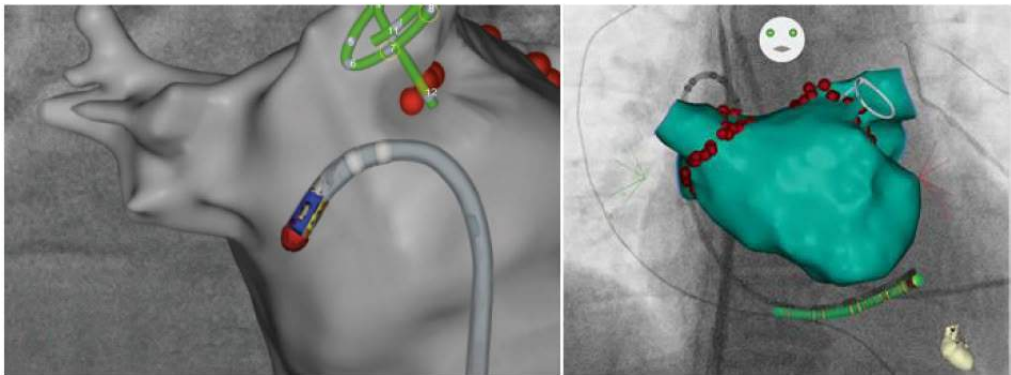


Figure 5-12. 3D maps generated by the CARTO® 3 System

The CARTO® 3 System is sold and provided by Biosense Webster.

CARTO® 3 Description(continued)



Figure 5-13. CARTO® 3 System

CARTO® 3 Connection Overview with Protocol 2.0

Starting from CARTO® 3 v8.1.x together with Vivid *iq* version 208.x or later, it is possible to use digital video streaming in HD over the Ethernet cable (peer-to-peer LAN) and the isolated HDMI splitter is not used.

An external monitor may be connected to the HDMI Out port on the ultrasound system.

NOTE: *Receiving images over peer-to-peer LAN connection is allowed only to members of the ConsultingPhys group. A user member of ConsultingPhys group must be available on the Vivid *iq* and the CARTO® 3 system must be configured to use this user when connecting to the Vivid *iq*.*

For further details, please refer to CartoSound/SoundStar support in User Manual, Direction 5936513-1EN.

The screenshot displays the 'Security' tab in the CARTO® 3 interface. The 'Users' sub-tab is active, showing a list of users on the left and a detailed user configuration form on the right. The user 'ADM' is selected.

User List	Identity	Member of Group(s)
ADM	Id: ADM, Blocked: ☐	☐ Cardiologist ☒ ConsultingPhys ☐ DiagPhys ☐ Fellow ☐ GEAdmin ☐ HospAdmin

User Configuration Details:

- Change Password:** ☐ Change password at next login
- Last Name:** System Administrator
- First Name:**
- Email:**
- Address:**
- Title:**
- Phone Number:**

Operator Rights:

- ☐ Admin
- ☐ Create
- ☐ Delete
- ☐ Diagnose
- ☐ PresetAdmin
- ☐ PrintRep
- ☐ ReceiveStreaming
- ☐ Service
- ☐ StoreRep

User List Options:

- ☒ All
- ☐ Oper
- ☐ RefDoc
- ☐ DiagPhys

Buttons: New, Delete

Autologin: Disable

Auto screenlock (min): 0

☒ Prohibit default password

☐ Show login history

Figure 5-14. User setup for receiving images over peer-to-peer LAN connection

Related Information: [See 'CARTO® 3 Interface Setup' on page 3-221 for more information.](#)

CARTO® 3 Connection Overview with Protocol 1.0

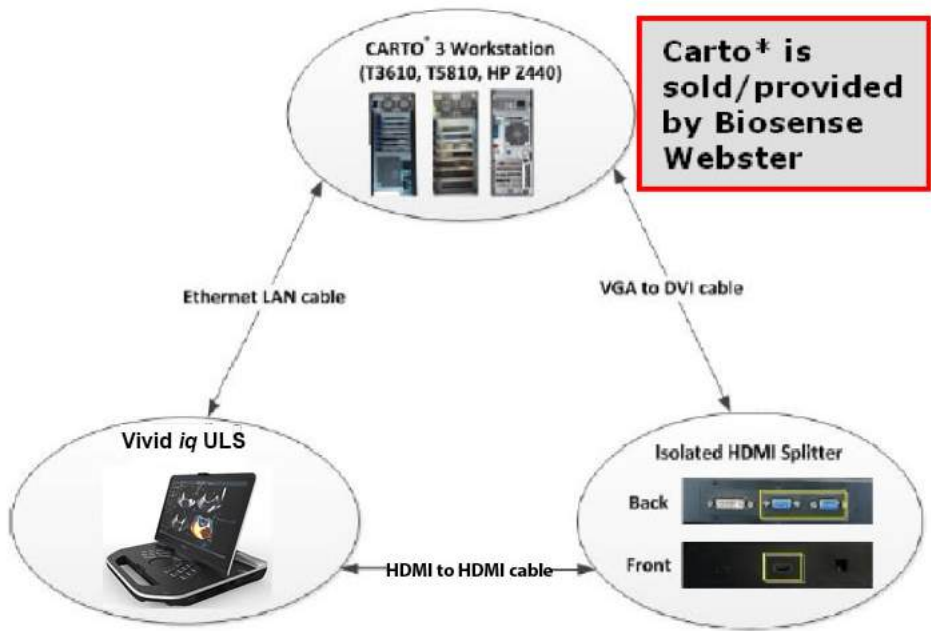


Figure 5-15. CARTO® 3 overview

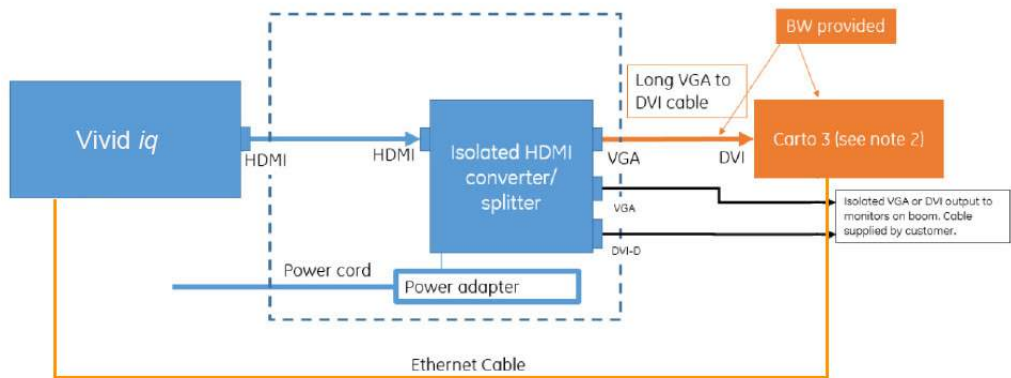


Figure 5-16. CARTO® 3 Connection diagram

Color Description:

- Blue items: Provided by GE
- Orange items: Provided by Biosense Webster, Inc
- Ethernet Cable: Provided by Biosense Webster, Inc

CARTO® 3 Connection Overview with Protocol 1.0(continued)

NOTE: The long VGA cable that connects isolated HDMI converter/splitter to the CARTO® 3 system is supplied by Biosense Webster.

NOTE: Vivid iq is compatible with CARTO® 3 v6.0.60.70 or above.

HDMI Video Splitter Connector Overview (Used with Protocol 1.0)

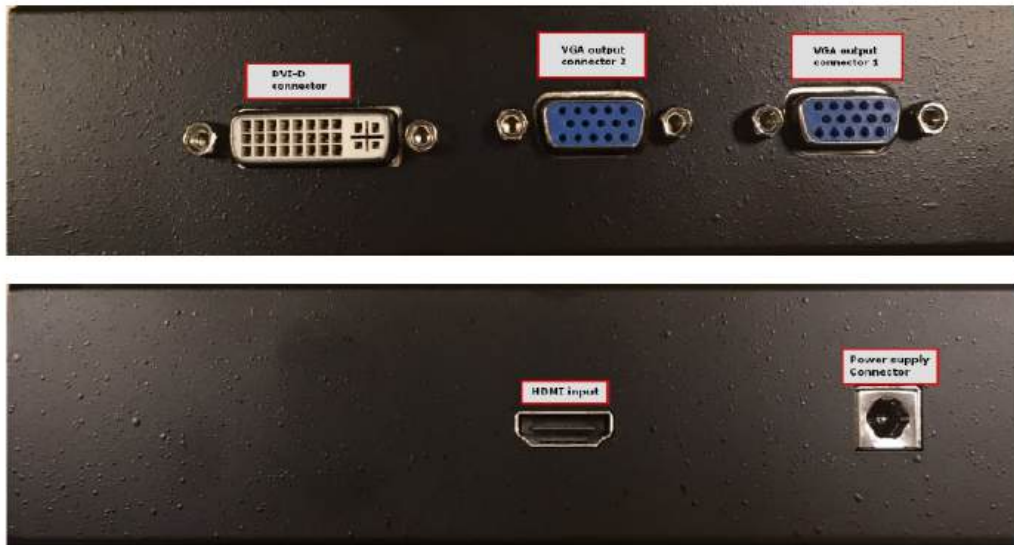


Figure 5-17. HDMI video splitter connector overview



WARNING

Advantech HDMI splitter Model number DVP-8211HM is the only splitter that is approved with Vivid iq.

Isolated HDMI Converter/Splitter Overview (Used with Protocol 1.0)

Isolated HDMI converter/splitter overview

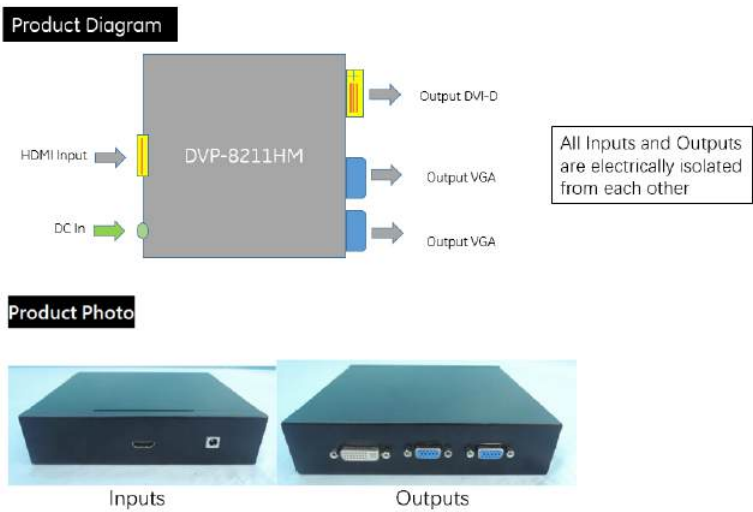
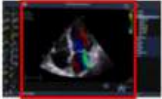


Figure 5-18. Isolated HDMI converter/splitter overview

Video Input Formats (Used with Protocol 1.0)

Specifications	
Model	DVP-8211HM Isolated HDMI Splitter
Description	HDMI to VGA and DVI-D Down Converter
Feature	➤ Wall mounting plate supported ➤ Auto source format detection ➤ Dual converted VGA output
Input interface	HDMI x 1
Output interface	VGA x 2 / DVI-D x 1
Supported Video Input Format	HDMI 1920×1080p@60/50fps → Vivid provides 1920 x 1080 1920×1080p@30/25/24fps 1920×1080i@60/50fps 1280×720p@60/50fps 1280×1024p@60fps 1280×960p@60fps 1024×768p@60fps 800×600p@60fps 640×480p@60fps 720×480p@60fps 720×576p@50fps 720×480i@60fps 720×576i@50fps

Video Output Formats (Used with Protocol 1.0)

Supported Video Output Format	DVI-D : 1920×1080p@60/50fps → Digital Output follows the HDMI Input → Vivid iq 1920×1080p@30/25/24fps 1920×1080i@60/50fps 1280×720p@60/50fps 1280×1024p@60fps 1280×960p@60fps 1024×768p@60fps 800×600p@60fps 640×480p@60fps 720×480p@60fps 720×576p@50fps 720×480i@60fps 720×576i@50fps	 Scale image area down for analogue video devices, incl. Carto
	VGA 800×600p@60fps (Cut the 1440*1080 center area from the input, and re-scale to 800*600) ②	
Plug & Play	Support	② For input formats <1920x1080: center parts is cut and scaled to 800x600 (but is not fitting Carto) For input format 800x600: No cutting and scaling
Power Input	12V, 5A	

- **Digital video Output** has always the same resolution like the HDMI input.
- Both **Analog video Outputs** have always the resolution 800×600.

Optional Monitor Connection (Used with Protocol 1.0)

An additional optional monitor can be connected to the Isolated HDMI converter/splitter while being connected to CARTO® 3:

- Monitors with DVI connection
 - DVI-D input
 - Monitor resolution: requirement: 1920×1080 or higher
- Monitors with Analog VGA connection
 - Monitor must support resolution of 800×600

Related Information: [See 'CARTO® 3 Interface Setup' on page 3-221 for more information.](#)

Component Overview

ICE Catheter

Intracardiac Echo (ICE): Ultrasound transducer is integrated into a catheter.

NOTE: *The catheter is sterile, disposable, and licensed for single use only.*

GE doesn't sell the ICE catheters. The ICE catheters are distributed by Biosense Webster. GE sells and services ICE cord-RS cable.

Refer to [Table 5-4](#) for ICE catheter and Swiftlink ICE Cord-RS compatibility with your ultrasound system.

Table 5-4: Compatibility of Swiftlink ICE Cord-RS and ICE Catheters

SwiftLink	P/N	ICE Catheter	Product
Acunav Swiftlink cable	S2423364-1	AcuNav 8F, AcuNav 10F, SoundStar 3D 10F, SoundStar eco 10F, SoundStar eco 8F	R1~R8
SwiftLink Plus CRYSTAL	5877427-S	AcuNav CRYSTAL, Soundstar CRYSTAL	R8

Table 5-5: ICE catheters

Item	Name	Image
1.	AcuNav8F	
2.	AcuNav10F	
3.	SoundStar3D 10F	

Table 5-5: ICE catheters

Item	Name	Image
4.	SoundStar eco 10F	
5.	SoundStar eco 8F	
6.	AcuNav CRYSTAL Foot Print:9F Diameter	
7.	Soundstar CRYSTAL Foot Print:9F Diameter	
8.	ICEcord-RS cable (S2423364-1)	
9.	CRYSTAL ICECord-RS service kit (5877427-S)	

Related Information: [See 'CARTO® 3 Interface Setup' on page 3-221 for more information.](#)

Chapter 6

Service Adjustments

This chapter describes how to test and make adjustments to the Vivid iq. You can use these to test the system for errors.

Overview

Contents in this chapter

- 'Overview' on *page 6-2*
- 'LCD Monitor adjustments' on *page 6-3*

LCD Monitor adjustments

Purpose of this section

This section describes how to test and adjust the monitor. These tests are optional. You may use them to check the system for errors.

Monitor Adjustments

Please refer to User Manual for how to adjust the LCD Monitor Position and Brightness.

Chapter 7

Diagnostics/Troubleshooting

This chapter describes how to setup and run the tools and software that help maintain image quality and system operation. Very basic host, system and board levels are run whenever power is applied. Some Service Tools may be run at the application level.

Overview

Contents in this chapter

- 'Overview' on *page 7-2*
- 'Gathering Troubleshooting Data' on *page 7-5*
- 'Screen Captures' on *page 7-8*
- 'System Warning' on *page 7-12*
- 'Service Desktop' on *page 7-14*
- 'Common Diagnostics' on *page 7-83*
- 'Probe Check(only for v208/v206)' on *page 7-98*
- 'Network and Insite II Configuration' on *page 7-112*
- 'Troubleshooting' on *page 7-128*

Service Safety Considerations



DANGER

DANGEROUS VOLTAGES, CAPABLE OF CAUSING DEATH, ARE PRESENT IN THIS EQUIPMENT. USE EXTREME CAUTION WHEN HANDLING, TESTING AND ADJUSTING.



WARNING

IF THE COVERS ARE REMOVED FROM AN OPERATING VIVID IQ SYSTEM, SOME METAL SURFACES MAY BE WARM ENOUGH TO POSE A POTENTIAL HEAT HAZARD IF TOUCHED, EVEN WHILE IN SHUT DOWN MODE.



WARNING

USE ALL PERSONAL PROTECTION EQUIPMENT (PPE) SUCH AS GLOVES, SAFETY SHOES, SAFETY GLASSES, AND KNEELING PAD, TO REDUCE THE RISK OF INJURY.

Service Tools

Service Software Tools

A set of Service Software tools are available on the Common Service Desktop.

Related information:

- [‘Service Desktop’ on page 7-14](#)

Special GE Service Tools

- For software v204, the SSA key is used. For more information, see [Figure 5-10. ‘SSA Key’ on page 5-27](#)

Gathering Troubleshooting Data

Overview

Problem images and system data (logs) can be acquired at the Ultrasound system or through service remote connectivity. Use this data to perform service at the Ultrasound system or to send it back to the manufacturer for analysis.

Collect Vital System Information

The following information is necessary in order to properly analyze data or images being reported as a malfunction or being returned to the manufacturer:

NOTE: This information is normally collected with Alt+D or Gather Logs.

Product Name = Vivid iq

From the **Config (F2) > About** screen:

Applications Software

- Software Version
- Software Revision
- Software Part Number
- Build Date

System Software

- System Software Version
- System Software Part Number
- System Software Build Date

Collect a Trouble Image with Logs

If the system should malfunction, press Save Logs or simultaneously press the Alt+D keys on the external keyboard. This will collect a screen capture of the monitor, system presets and several log files in a date and time stamped '.zip' file.

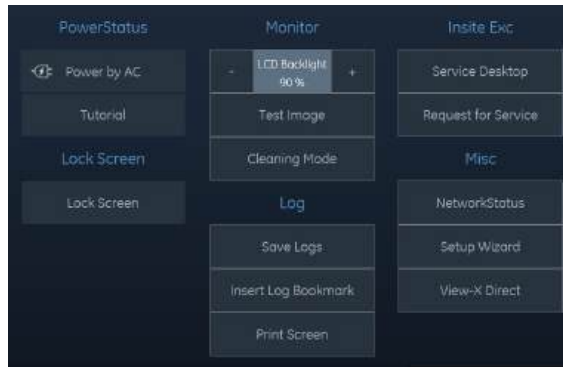


Figure 7-1. Tray menu

NOTE: This function may also be used to make a Print Screen (screen dump).

The Alt+D function is available at all times.

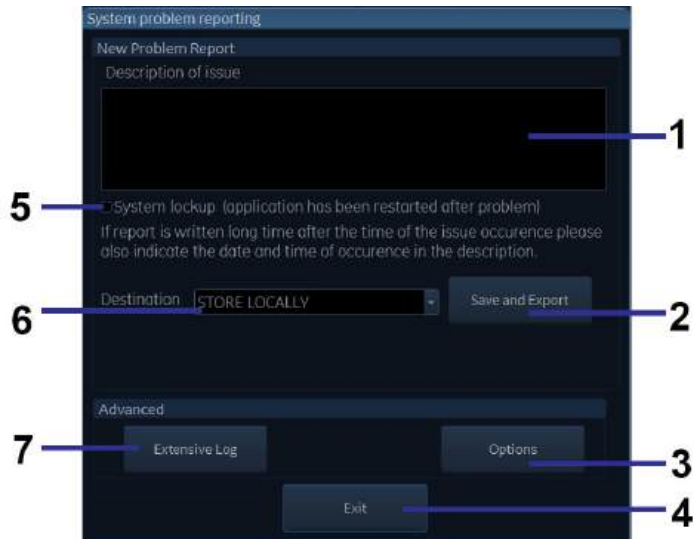
When Alt+D is pressed, a menu box appears that allows for;

- a place to enter a description of the issue
- a check box to indicate a System lockup
- a choice to Export to a pre-formatted removable media or save to the Export directory D: drive (for remote viewing through InSite).

NOTE: You MUST select one of the available devices as the destination device if it is to be different than the default Export directory on the hard drive.

The screen capture is a bitmap which eliminates the possibility of artifacts from compression.

Collect a Trouble Image with Logs(continued)



1. Type description of issue here
2. Select this button when ready to Save and Export
3. See '[Advanced Log Options](#)' on [page 7-7](#)
4. Exit
5. Select if you've had a system lockup (after restart)
6. Select where to store the report
7. See '[Advanced Log Options](#)' on [page 7-7](#)

Figure 7-2. System Problem Reporting (ALT+D dialog box)

Advanced Log Options

- **Extensive Log** enables the creation of a log file containing additional information for the selected functionality.
- **Options** enables creation of a log file based on a selected bookmark or for a user configurable time frame. Different type of information can be selected to be part of the log file.

Screen Captures

To capture screen images that can be used for diagnostic and troubleshooting purposes.

Capture a screen image using Print Screen button

A Print Screen button on the tray menu is available for quickly capturing the image displayed on the Ultrasound system. Images captured using this button are saved in the D:\export\Image using the JPEG (.jpg) formats.

Screen Capture using P1 Key

Configuring P1 key to screen capture

If the **P1** Key is not set to screen capture:

1. While on the Connectivity screen, with the Buttons tab displayed, go to the *Available Output* list.
2. From the list select **Store to clipboard**. Press [>] to add the selection to the **Selected Output** section.
3. Ensure that the **Button** section for **Image frames** is set to Whole Screen, secondary Capture and None Image Compression.
4. The **P1** Key should now be set up for whole screen capture, sending the screens to the image buffer (clipboard).

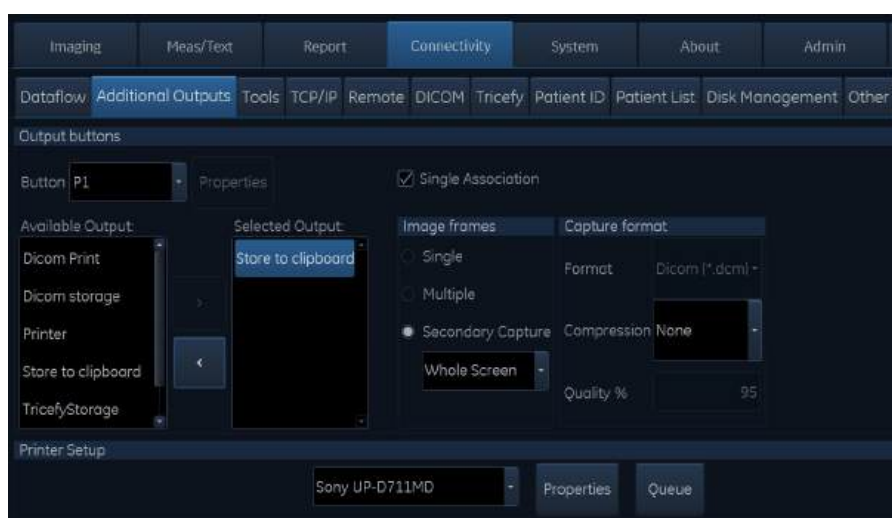


Figure 7-3. Configuring the P1 Key

Capturing a screen using P1 key

The following is a generic process to capture any screen from the scanner using P1 key:

1. Navigate to and display the image/screen to be captured.
2. Press **P1**. This will place a snapshot of the screen on the “clipboard” displayed at the bottom of the scan image display.



Figure 7-4. Select Image to Capture

3. Select and highlight the snapshot to be stored.

Capturing a screen using P1 key(continued)

4. Press **Update/Menu** key on the control panel and the system menu is displayed. Select **Save as**.

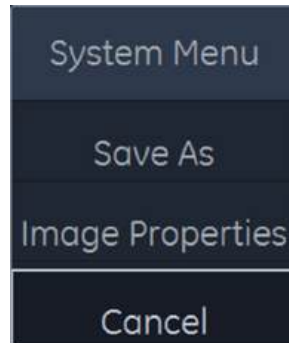


Figure 7-5. Menu > Save As

5. A Save dialog box will be opened. Choose the archive location to save image on the USB Drive or CD/DVD.

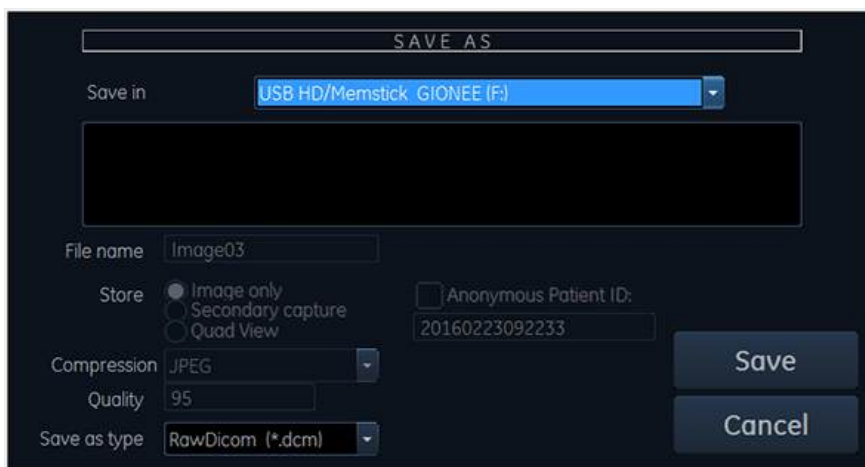


Figure 7-6. Save Dialog Box

NOTE: *It is better to save the image in Jpeg format. Image of this format can be easily reviewed in the computer.*

System Warning

Temperature exceeds threshold

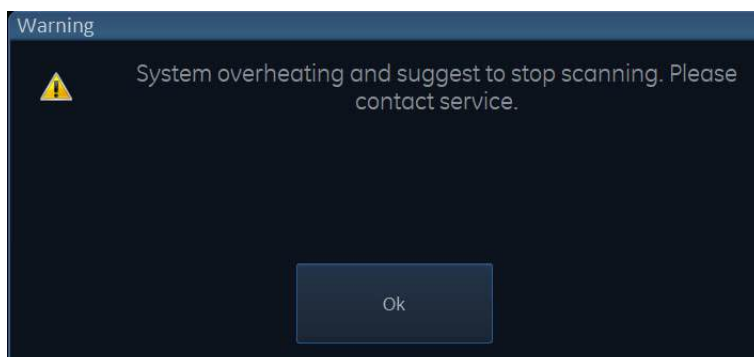


Figure 7-7. System overheating warning

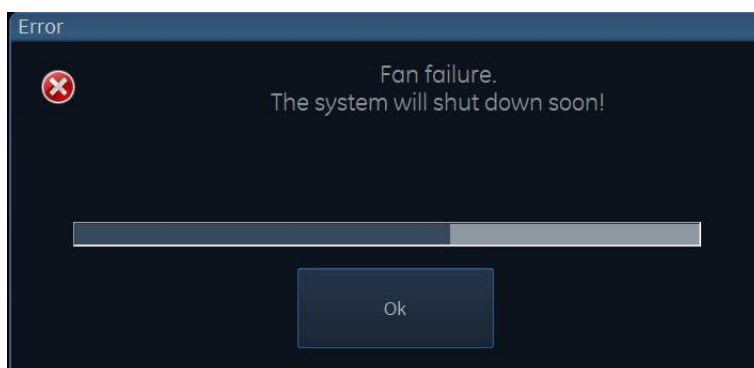


Figure 7-8. Fan failure error

Temperature exceeds threshold(continued)

- **Cause:**

For v203 and above, if CPU temperature exceeds 100 degree or MST board temperature exceeds 85 degree, system will give overheat warning and shut down automatically.

For v204.96.0 and above, if CPU temperature exceeds 90 degree or MST board temperature exceeds 80 degree, system will give overheat warning.

For v204.96.0 and above, if CPU temperature exceeds 90 degree or MST board temperature exceeds 80 degree while at the same time if fan speed is extremely low or fan stops working, system will give warning of fan failure and shut down automatically.

- **What to do:**

Shut down and check air filter and CPU blower.

Service Desktop

Purpose of this section

This section describes the features of the Service desktop.
These are the different levels of access to the Service desktop:

- Service Basic access (Class A) - a user locally logged into the machine with Local Service Access privilege. This level provides limited access to Service desktop widgets and utilities.
- Service Expert, Pro, and Advanced access (Class C) Local - Depending on the purchase level, includes an option string to control access.
- GE Service access (Class M) and an SSA key. For users with local Service Access privileges, this level provides unrestricted access to all Service desktop widgets and utilities.
- Remote access - a user remotely accessing the Vivid *iq*. This level provides unrestricted access to all Service desktop widgets and utilities. Disruptive mode is limited to the user access privileges to Remote Service Access.

Disruptive mode

Disruptive mode is a way to control interruptions to operation of the Vivid *iq*. Disruptive mode is required whenever service performs a function that may disrupt a normal scan. Activating Disruptive mode results in a red message displayed on the task bar. This message indicates that the Vivid *iq* needs to be restarted once the service activity is complete. The message remains until the Vivid *iq* is restarted. This prevents patient scanning while the Vivid *iq* is not operating at an optimal status. For example, running a diagnostic may leave the Vivid *iq* in a state that is not good for imaging.

Specifically, Disruptive mode is required to run diagnostics, clean presets, and reset the patient database, and turn on Virtual Console Observation (VCO).

- When Disruptive mode is On, all service functionality on the Service desktop is allowed but user operation of the Vivid *iq* may be limited.
- When Disruptive mode is Off, some service functionality on the Service desktop is not available and user operation of the Vivid *iq* is normal.

Additionally, the ability to enable Disruptive mode depends on the logged in user.

- Local user - a user locally logged into the machine will be able to set the Vivid *iq* to Disruptive mode or allow a Disruptive mode request from a remote user through the Service desktop. The local user must have Authorize Remote Service Access to allow Disruptive mode. If the local user does not have this right, the remote user's request will be automatically denied
- Remote user - a user remotely accessing the Vivid *iq* will not be able to automatically switch Disruptive mode to On. The logged in user (user actually logged on to the Vivid *iq*) needs to have the ability to grant remote access. The logged in user will be notified through a dialog box and asked to allow Disruptive mode.

NOTE: *Change Password and Disk Defragment are not available for the remote user whether Disruptive mode is On or Off.*

For more information, see: ['Disruptive mode' on page 7-15](#)

Color statuses

Throughout the Service desktop, colors indicate the following:

- Green - Status is normal
- Orange - Status is a warning
- Red - Status is an error

Licenses

With Service Basic Access (Class A), these are the available options:

- HOME
- Utilities
 - Change Password
 - Delete Files
 - Gather Logs
 - Network Capture
 - SSA License
 - Thirty Party Licenses
- Options
- Agent Configuration

With Service Advanced (Class C), these are the available options:

NOTE: *With a Class C license, options display according to these purchased level of access.*

- HOME
- Diags
- DICOM
- Utilities
 - Change Password
 - Checkpoints
 - Delete Files
 - Disk Defragment
 - Disruptive Mode Utility
 - Gather Logs
 - Network Capture
 - SSA License
 - System Shutdown

Licenses(continued)

- Thirty Party Licenses
- Virtual Console Observation
- Options
- Agent Configuration

With Service Advanced plus Service Expert (Class C), the Clean Userdefs, Reset Patient Database, and Software Reload utilities are added to the Service Advanced options listed.

With Service Advanced and Service Expert plus Service PRO (Class C), the probe assessment tool (ePAT) diagnostic is added to the Service Advanced and Service Expert options listed.

With GE Service access (Class M) and an SSA key, these are the available options:

- HOME
- Diags
- DICOM
- Utilities
 - Change Password (not available through a remote connection)
 - Checkpoints
 - Clean Userdefs
 - Delete Files
 - Disk Defragment (not available through a remote connection)
 - Disruptive Mode Utility
 - Gather Logs
 - Network Capture
 - Reset Patient Database
 - Software Reload
 - SSA License
 - SSH
 - System Shutdown
 - Thirty Party Licenses
 - Virtual Console Observation
- Options
- Agent Configuration

Home

Home configurations vary depending upon the purchased service level.

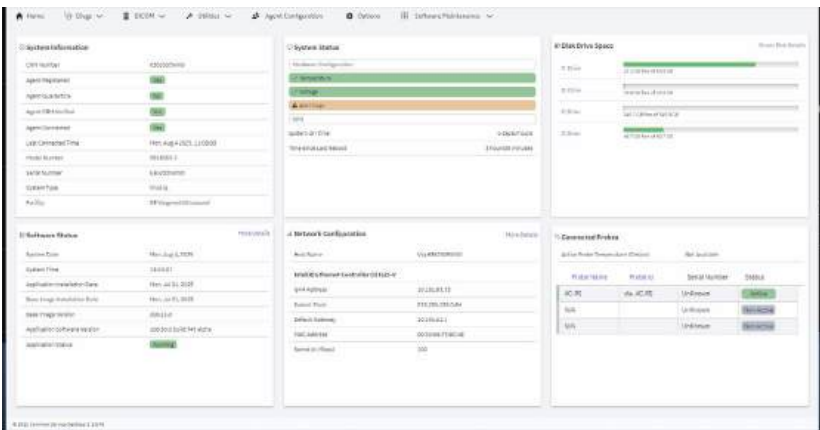


Figure 7-9. Home with Class M Access

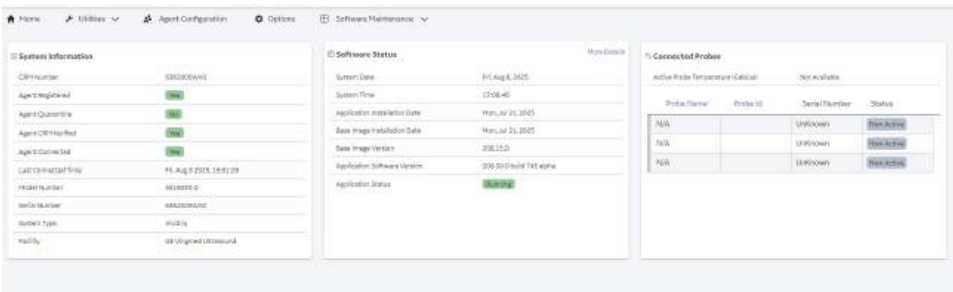


Figure 7-10. Home with Class A Access

For more information, see:

- ‘System Information’ on [page 7-19](#)
- ‘Software Status’ on [page 7-21](#)
- ‘System Status’ on [page 7-23](#)
- ‘Disk Drive Space’ on [page 7-35](#)
- ‘Network Configuration’ on [page 7-37](#)
- ‘Connected Probes’ on [page 7-39](#)

System Information

System Information displays general information about the Vivid iq. When the Vivid iq has been successfully configured with the back office, these elements will have the corresponding values:

- **Agent Registered** will be **Yes**
- **Agent Quarantine** will be **No**
- **Agent CRM Verified** will be **Yes**

The information on **System Information** is available to all service class licenses.

To access **System Information**, navigate to **Service Desktop > Home**.



Figure 7-11. System Information

This table shows all the elements available on **System Information** with descriptions.

Table 7-1: System Information

Element	DESCRIPTION
CRM Number	Customer Relationship Management (CRM) number. System identifier assigned to the customer unit by the service region.
Agent Registered	Registered status of the agent. Valid values are: • Yes - The agent is registered in the back office. • No - The agent is not registered in the back office. • Not Available - The agent is not running or has not been configured.

Table 7-1: System Information

Agent Quarantine	Quarantine status of the agent. Valid values are: • Yes - The agent has more than one device registered with the same CRM Number in the back office. • No - The agent has one device registered with the listed CRM Number in the back office. • Not Available - The agent is not running or has not been configured.
Agent CRM Verified	CRM verified status of the agent. Valid values are: • Yes - The agent is verified in the back office. • No - The agent is not verified in the back office. • Not Available - The agent is not running or has not been configured.
Agent connected	Connected status of the agent. Valid values are: • Yes - The agent is connected in the back office. • No - The agent is not connected in the back office. • Not Available - The agent is not running or has not been configured.
Last Connected time	Indicate the last connected time of agent.
Model Number	GE part number for the Vivid <i>iq</i> . The same number as listed on the rating plate.
Serial Number	Serial number of the Vivid <i>iq</i> . The same number as listed on the rating plate.
System Type	Product name of the Vivid <i>iq</i> .
Facility	Name of the hospital or facility where the Vivid <i>iq</i> is installed

For more information, see: [‘Home’ on page 7-18](#)

Software Status

Use **Software Status** to view general information about the software installed on the Vivid *iq*.

The information on **Software Status** is available to all service class licenses.

To access **Software Status**, navigate to **Service Desktop > Home**.

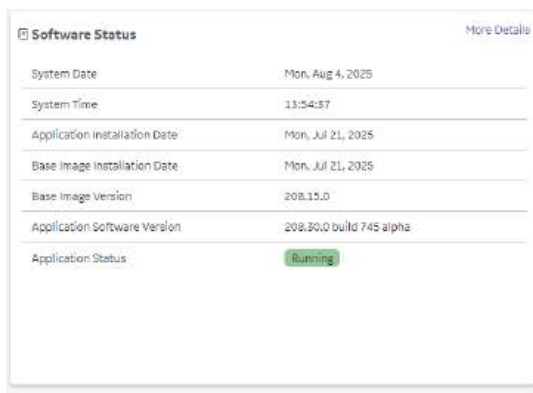


Figure 7-12. Software Status

This table shows all the elements available on **Software Status** with descriptions.

Table 7-2: Software Status

Element	DESCRIPTION
System Date	Current date in the format <day>, <month> <date> <year>.
System Time	Local time based on the last time the system desktop was refreshed in the format <hh:mm:ss>.
Application Installation Date	Date the application software was installed. The application software includes the Vivid <i>iq</i> product-specific software.
Base Image Installation Date	Date the base image software was installed. The base image software includes the Windows operating system and other supporting software.
Base Image Version	Version number of the base image software
Application Software Version	Version number of the application software
Application Status	Status of the application. Valid values are • Running • Stopped

Software Status(continued)

For more information, see:

- 'Home' on *page 7-18*
- 'Software Reload' on *page 7-55*

System Status

Use **System Status** to view status information on the Vivid *iq*. Specifically, do the following:

- View the hardware configuration file
- View temperatures for FRUs, fans, and a graphical representation of the monitored temperatures
- View voltages for FRUs and AC
- View the amount of time the Vivid *iq* has been running
- View the amount of time since the Vivid *iq* has last been rebooted

The information on **System Status** is available to Class C and Class M licenses.

To access System Status, navigate to **Service Desktop > Home**.



Figure 7-13. System Status

This table shows all the elements available on **System Status** with descriptions.

Table 7-3: System Status

Element	DESCRIPTION
Hardware Configuration	Displays the contents of the hardware configuration file.

Table 7-3: System Status

Temperature	Displays the temperature monitoring of the Vivid <i>iq</i> as normal, warning, or error using the standard colors and icons. Includes temperature out-of-spec events including an overall count of event warnings and errors for the last 30 days or the last status checkpoint whichever is sooner. Temperature displays temperature a graph for the configured monitoring points.
Voltage	Displays the voltage monitoring of the Vivid <i>iq</i> as normal, warning or error using the standard colors and icons. Includes voltage out-of-spec events including an overall count of the event warnings and errors for the last 30 days or last status checkpoint whichever is sooner.
Alert logs	Based on the latest occurrence, displays all alerts generated by the ultrasound system for either the past 30 days or the latest check point.
System On Time	Displays the time the Vivid <i>iq</i> was turned on.
Time Since Last Reboot	Displays the time the Vivid <i>iq</i> was last rebooted.

Hardware Configuration

Hardware Configuration displays the contents of the hardware configuration file which includes all the vital product data (VPD).

To access **Hardware Configuration**, navigate to **Service Desktop > Home**, and then under **System Status**, select **Hardware Configuration**.



The screenshot shows a web application titled "Hardware Configuration" with a "Home Page" button. It contains a table with three columns: Component, Item, and Value. The table lists various system parameters such as Date/Time generated, Computer Name, Product name, SW versions, build dates, and hardware identifiers like MAC Address and Target Root.

Component	Item	Value
LOG	Date/Time generated	Monday, August 4, 2025 10:15:27 AM
BEP	COMPUTERNAME	Viq-6362005WX0
SYS	PRODUCT	Cardiology:Sage
SYS	Overall SW version	208.30.0 build 745 alpha
SYS	Overall SW Part Number	5947095-30
SYS	SW Build Version	unknown
SYS	SW Build Date	Tue Jul 22 22:14:39 2025
SYS	Ghost Part Number	NA
SYS	Ghost Date	2025-7-21
SYS	Serial Number	unknown
SYS	String Serial Number	unknown
SYS	MAC Address	00-30-64-75-BC-4E
SYS	TARGET_ROOT	C:\Scanner\Factory\target
SYS	TEST_ROOT	D:\Scanner\10 test\target

Figure 7-14. Hardware Configuration

This table shows all the elements available on **Hardware Configuration** with descriptions.

Table 7-4: Hardware Configuration

Element	DESCRIPTION
Component	Hardware component.
Item	Parameter with the vital product data (VPD).
Value	Actual value of the Item.

For more information, see:

- [‘System Status’ on page 7-23](#)
- [‘Home’ on page 7-18](#)

Temperature

Use **Temperature** to troubleshoot problems with monitored FRUs and the fans. Specifically, use these pages:

- FRU Status
- Graphs
- Fan Status

To access **Temperature**, navigate to **Service Desktop > Home**, and then under **System Status**, select **Temperature**.

For more information, see:

- ‘FRU Status’ on [page 7-26](#)
- ‘Graphs’ on [page 7-28](#)
- ‘System Status’ on [page 7-23](#)
- ‘Home’ on [page 7-18](#)

FRU Status

FRU Status displays a summary of the FRUs being monitored and the details for each FRU.

To access this page, under **System Status**, select **Temperature** and then select **FRU Status**.

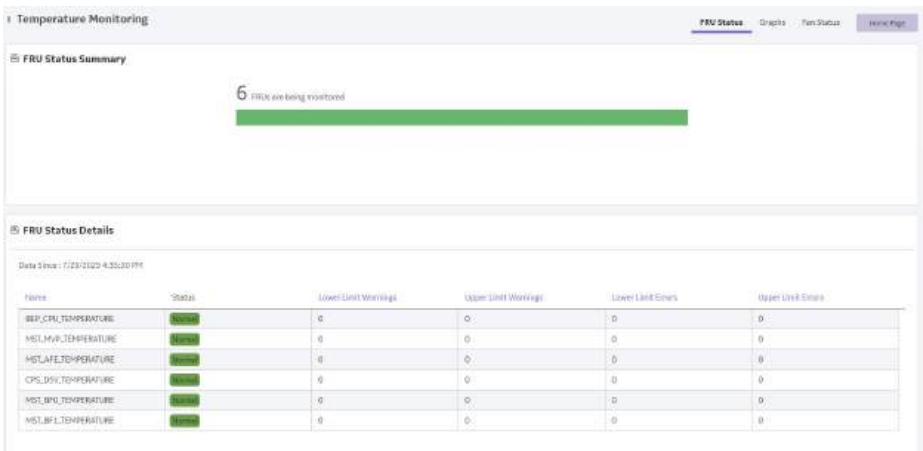


Figure 7-15. FRU Status

This table shows all the elements available on **FRU Status** with descriptions.

Table 7-5: FRU Status

Element	DESCRIPTION
FRU Status Summary	Number of the FRUs being monitored.

Table 7-5: FRU Status

FRU Status Details	
Name	Name of the FRU. • ETX3 - Represents the ETX 64 transmitter board. • ETX4 - Represents the ETX 128 transmitter board.
Status	Status of the FRU. Valid values are: • Normal - Indicates that the FRU is operating within the allowable range. • Warning - Indicates that the FRU is operating close to the limit of the allowable range. • Error - Indicates that the FRU is operating outside the allowable range.
Lower Limit Warnings	Number of low limit temperature warnings.
Upper Limit Warnings	Number of high limit temperature warnings.
Lower Limit Errors	Number of low limit temperature errors.
Upper Limit Errors	Number of high limit temperature errors.

For more information, see:

- [‘Temperature’ on page 7-26](#)
- [‘Home’ on page 7-18](#)

Graphs

Graphs displays trend graphs for selected elements which have been selected as key indicators of overall temperature status inside the card rack.

To access this page, under **System Status**, select **Temperature** and then select **Graphs**.

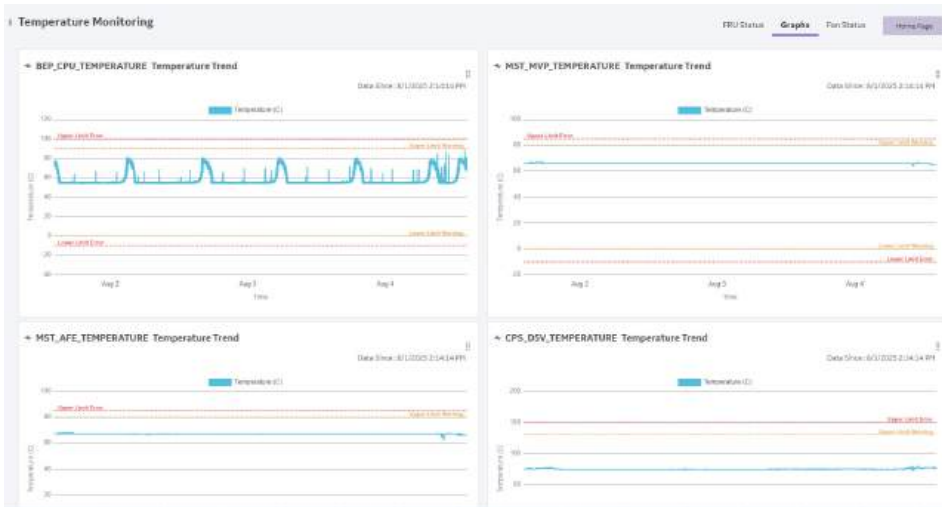


Figure 7-16. Graphs

For more information, see:

- ['Temperature' on page 7-26](#)
- ['Home' on page 7-18](#)

Fan Status

Fan Status displays the details for each fan. The peak level of operation for v208 fan is 8500 RPM and for v206 fan is 16500RPM.

To access this page, under **System Status**, select **Temperature** and then select **Fan Status**.



Figure 7-17. Fan Status

This table shows all the elements available on **Fan Status** with descriptions.

Table 7-6: Fan Status

Element	DESCRIPTION
Monitoring Point	Name of the fan - Fan_control - Indicates the overall control of fan speed. - Rack Fan # - Indicates individual fan on the fan tray.
Device	Device monitoring the parameters.
Status	Status of the fan. Valid values are: - Normal - Indicates that the fan is operating within the allowable range. - Warning - Indicates that the fan is operating close to the limit of the allowable range. - Error - Indicates that the fan is operating outside the allowable range.
Lower Limit Warnings	Number of low limit temperature warnings.
Upper Limit Warnings	Number of high limit temperature warnings.
Lower Limit Errors	Number of low limit temperature errors.
Upper Limit Errors	Number of high limit temperature errors.
Latest Value	Latest fan speed recorded in log.
Latest Check Point	Timestamp to collect the latest value of fan speed.

You can check the fan speed Log in D:\Log\logfile-TempMon.txt file.

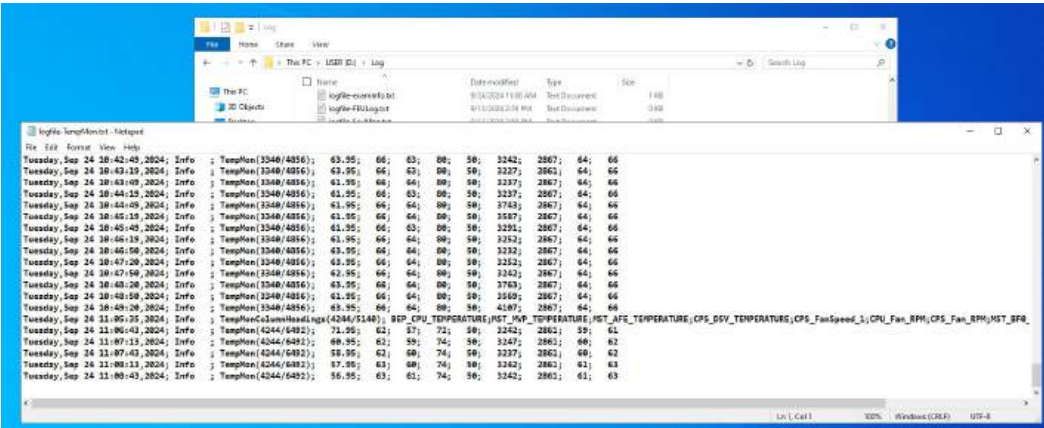


Figure 7-18. Fan Speed Log

This table shows all the attributes available on **Fan Speed Log** with descriptions.

Table 7-7: Fan Speed Log

ATTRIBUTES	DESCRIPTION
BEP_CPU_TEMPERATURE	Temperature of CPU
MST_MVP_TEMPERATURE	Temperature of MVP module for MST board
MST_AFE_TEMPERATURE	Temperature of AFE module for MST board
CPS_D5V_TEMPERATURE	Temperature of 5V DC power
CPS_FanSpeed_1	Fan control pwm duty cycle for CPS
CPU_Fan_RPM	Fan speed of CPU
CPS_Fan_RPM	Fan speed of CPS
MST_BF0_TEMPERATURE	Temperature of BF0 for MST board
MST_BF1_TEMPERATURE	Temperature of BF1 for MST board

For more information, see:

- ‘Temperature’ on [page 7-26](#)
- ‘Home’ on [page 7-18](#)

Voltage

Use **Voltage** to troubleshoot problems with monitored FRUs and the AC voltage of the Vivid *iq*.

Specifically, use these pages:

- FRU Status
- AC Voltage

To access **Voltage**, navigate to **Service Desktop > Home**, and then under **System Status**, select **Voltage**.

For more information, see:

- 'FRU Status' on [page 7-26](#)
- 'AC Voltage' on [page 7-33](#)
- 'System Status' on [page 7-23](#)
- 'Home' on [page 7-18](#)

FRU Status

FRU Status displays a summary of the voltages for the FRUs being monitored and the details for each FRU.

To access this page, under **System Status**, select **Voltage** and then select **FRU Status**.

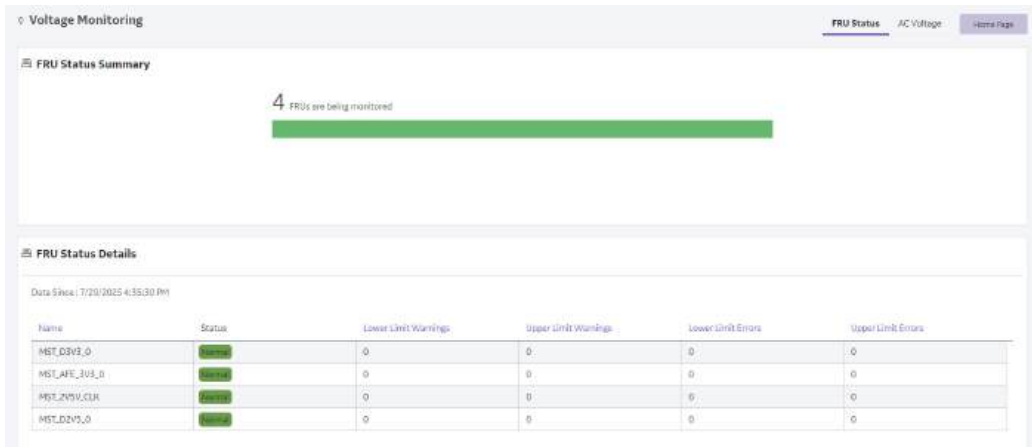


Figure 7-19. FRU Status

This table shows all the elements available on **FRU Status** with descriptions.

Table 7-8: FRU Status

Element	DESCRIPTION
Name	Name of the FRU.
Status	Status of the voltage for the FRU. Valid values are: • Normal - Indicates that the fan is within the allowable range. • Warning - Indicates that the voltage is close to the limit of the allowable range. • Error - Indicates that the voltage is outside the allowable range.
Lower Limit Warnings	Number of low limit voltage warnings.
Upper Limit Warnings	Number of high limit voltage warnings
Lower Limit Errors	Number of low limit voltage errors
Upper Limit Errors	Number of high limit voltage errors

For more information, see:

- [‘Voltage’ on page 7-31](#)
- [‘Home’ on page 7-18](#)

AC Voltage

AC Voltage graphically displays the voltage input over a period of time to help identify instabilities, or fault conditions, over time.

To access this page, under **System Status**, select **Voltage** and then select **AC Voltage**.

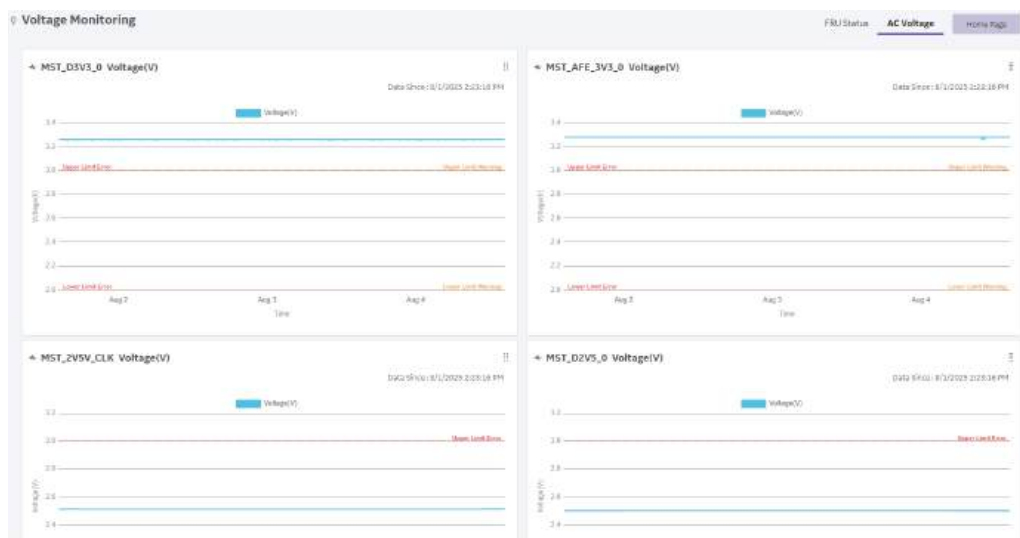


Figure 7-20. AC Voltage

For more information, see:

- [‘Voltage’ on page 7-31](#)
- [‘Home’ on page 7-18](#)

Alert Logs

Alert Logs displays the details for each alert. Alerts are status logs typically reported because of an error. Alerts are sent to the back office to be managed and reported to service.

To access this page, under System Status, select Alert Logs.

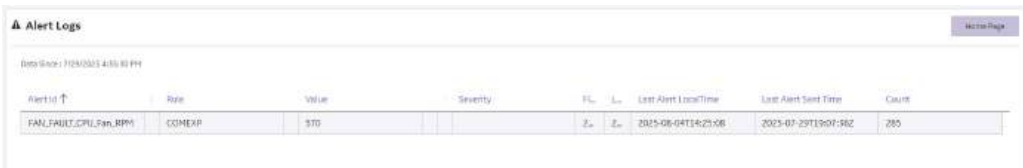


Figure 7-21. Alert Logs

This table shows all the elements available on Alert Logs with descriptions.

Table 7-9: Alert Logs

Element	Description
Alert ID	Identifier for the alert log that has been sent to the back office.
Rule	Code for the alert. Alerts are filtered in the back office using rule codes.
Value	Current value read for the associated hardware component.
Severity	Severity of the alert. These are the valid values: • 1 - Error. Out of specification • 2 - Warning • 3 - Normal
First Alert Time	Time the alert first occurred
Last Alert Time	Time the alert last occurred.
Last Alert Local Time	Time (local) the alert last occurred.
Last Alert Sent Time	Time the alert was last sent to the back office.
Count	Number of times that the alert has occurred.

For more information, see:

- [‘System Status’ on page 7-23](#)
- [‘Home’ on page 7-18](#)

Disk Drive Space

Use **Disk Drive Space** to view the hard drive partitions including total size and available free space in GB. Includes the overall health of the drive in one of these colors:

- Red - Available free space is less than 10% of the total size.
- Orange - Available free space is more than 10% and less than 20% of the total size.
- Green - Available free space is more than 20% of the total size.

Each partition displays these encryption statuses:

- Conversion status
- Percentage encrypted
- Encryption method
- Protection status
- Lock status

The information on **Disk Drive Space** is available to Class C and Class M licenses.

To access **Disk Drive Space**, navigate to **Service Desktop > Home**.

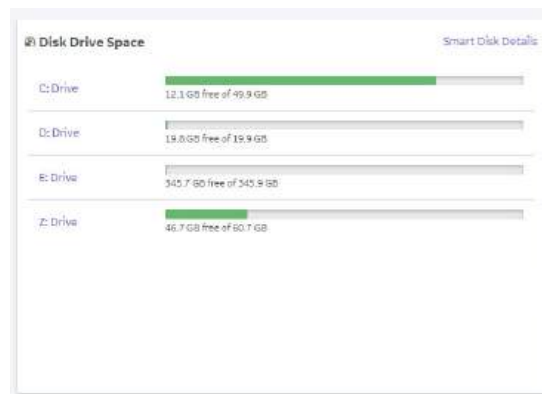


Figure 7-22. Disk Drive Space

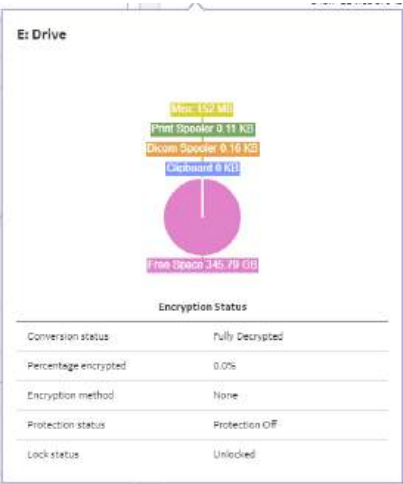


Figure 7-23. Disk Drive Space

This table shows all the elements available on **Disk Drive Space** with descriptions.

Table 7-10: Disk Drive Space

Element	DESCRIPTION
C: Drive	C: partition shows the graphical representation of the following: • Used space in GB • Available free space in GB
D: Drive	D: partition shows the graphical representation of the following: • Service • Logs. • Temp • Export • Service configuration • Misc • Available free space in GB
E: Drive	E: partition shows the graphical representation of the following: • Printer spooler • Clipboard • Dicom spooler • Misc • Available free space in GB
Z: Drive	Z: partition shows the graphical representation of the following: • Package repository • Misc • Available free space in GB

For more information, see:

- [‘Home’ on page 7-18](#)

Network Configuration

Use **Network Configuration** to view network (wired and wireless) information (the full ipconfig details) for the network configured with the Vivid *iq*.

The information on **Network Configuration** is available to Class C and Class M licenses.

To access **Network Configuration**, navigate to **Service Desktop > Home**.

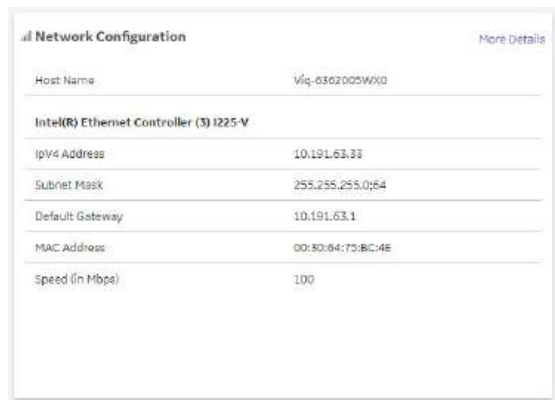


Figure 7-24. Network Configuration



Figure 7-25. Network Configuration with More Details

Network Configuration(continued)

This table shows all the elements available on **Network Configuration** with descriptions.

Table 7-11: Network Configuration

Element	DESCRIPTION
Host Name	Name of the local host for the Vivid <i>iq</i> .
More Details	Displays the ipconfig details
Wired Connection	
IPv4 Address	Local IP address for the wired network connection.
IPv6 Address	Local IP address for the wired network connection.
Subnet Mask	Local subnet mask for the wired network.
Default Gateway	Default gateway for the wired network.
MAC Address	Address for the MAC for the wired network.
Speed (Mbps)	Speed of the wireless connection.
Wireless Connection	
IP Address	IP address for the wireless network connection.
Subnet Mask	Subnet mask for the wireless connection.
Default Gateway	Default gateway for the wireless connection.
MAC Address	Address for the MAC for the wireless connection.
Speed (Mbps)	Speed of the wireless connection
Status	Current status of the wireless connection.

For more information, see:

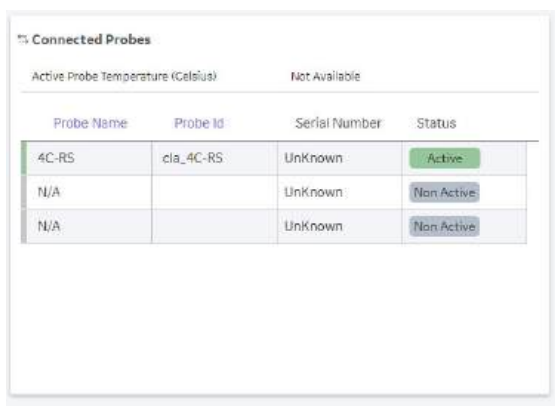
- [‘Home’ on page 7-18](#)

Connected Probes

Connected Probes shows probes connected to the Vivid *iq*. The order on the user interface is top down matching the left-to-right order on the Vivid *iq*.

The information on **Connected Probes** is available to all service class licenses.

To access **Connected Probes**, navigate to **Service Desktop > Home**.



Active Probe Temperature (Celsius)	Not Available	Probe Name	Probe ID	Serial Number	Status
		4C-RS	cla_4C-RS	UnKnown	Active
		N/A		UnKnown	Non Active
		N/A		UnKnown	Non Active

Figure 7-26. Connected Probes

This table shows all the elements available on **Connected Probes** with descriptions.

Table 7-12: Connected Probes

Element	DESCRIPTION
Active Probe Temperature (Celsius)	When available, temperature of the active probe. Not all probes report temperature. The most common probe to report temperature is the TEE probe.
Probe Name	Name of the probe connected to the Vivid <i>iq</i> .
Probe ID	Identifier of the probe connected to the Vivid <i>iq</i> .
Serial Number	Serial number of the probe connected to the Vivid <i>iq</i> . If the serial number of the probe is not available, then N/A displays.
Status	Statuses of the probe connected to the Vivid <i>iq</i> . Valid values are: • Active • Non Active

For more information, see: [‘Home’ on page 7-18](#)

Diags

Use **Diags** to troubleshoot functionality with hardware components. With an active Service PRO license, probe diagnostics will be available. Specifically, use these pages:

- **Run Diags** - Run diagnostics on hardware components.
- **Diag History** - View a history of the diagnostics you have run and the results.

NOTE: Reboot the system after performing any diagnostics before returning the Vivid iq to customer use.

For more information, see:

- ['Diag History' on page 7-41](#)

Diag History

Use **Diag History** to view a history of the diagnostics run on the Vivid *iq* and the results.

The information on **Diag History** is available to Class C and Class M licenses.

To access **Diag History**, navigate to **Service Desktop > Diags > Diag History**.

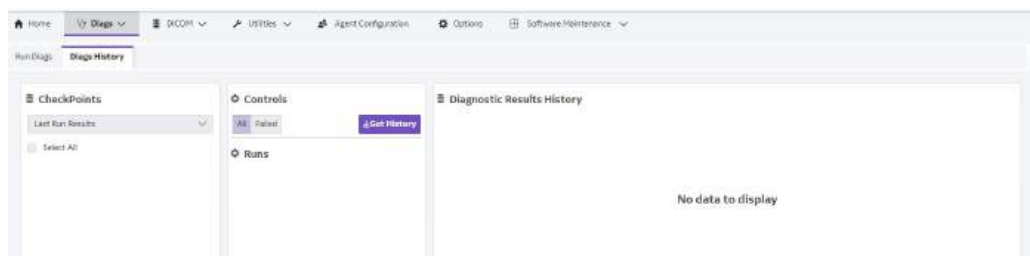


Figure 7-27. Diag History

This table shows all the elements available on **Diag History** with descriptions.

Table 7-13: Diag History Elements

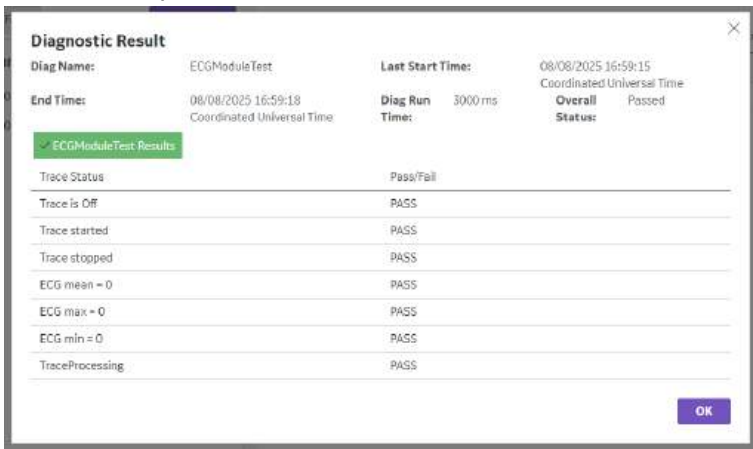
Element	DESCRIPTION
Checkpoints	
Select All	Selects all of the available checkpoints in the list.
Controls	
All	Filters results to show all of the diagnostics.
Failed	Filters results to show failed diagnostics.
Get History	Select to display a history of the run diagnostics.
Runs	
	List of diagnostics run on the Vivid <i>iq</i> .
Diagnostic Results History	
	Details about the diagnostics run.

Diag History(continued)

To view a history of diagnostics:

- Navigate to **Service Desktop > Diags > Diag History**.
- 6. Select the options that you want to view.
- 7. Click **Get History**.

- 8. View the results of your query.
 - To view specific details, click **Details**.



For more information, see:

- ['Diags' on page 7-40](#)
- ['Diag History' on page 7-41](#)

DICOM

Use DICOM to troubleshoot DICOM components and connectivity.

For more information, see:

- ['DICOM Spooler' on page 7-43](#)

DICOM Spooler

DICOM Spooler provides a summary of the current and recent outgoing jobs.

The information on **DICOM Spooler** is available to Class C and Class M licenses.

To access DICOM Spooler, navigate to **Service Desktop > DICOM > DICOM Spooler**.

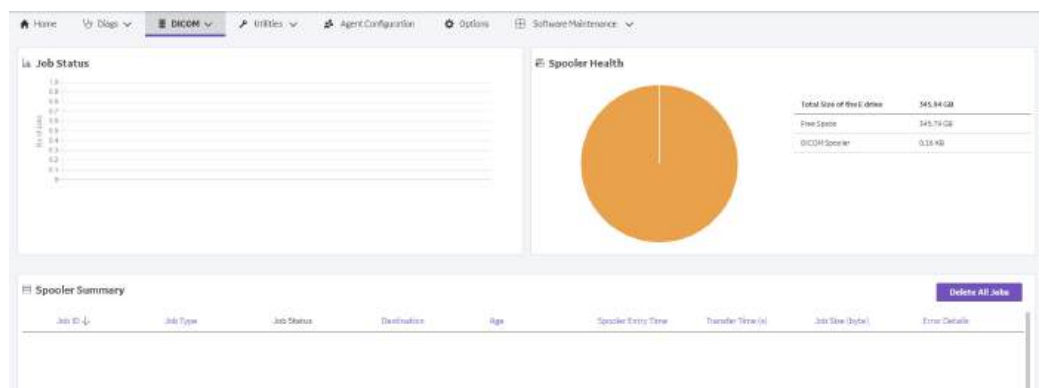


Figure 7-28. DICOM Spooler

This table shows all the elements available on **DICOM Spooler** with descriptions.

Table 7-14: DICOM Spooler

Element	DESCRIPTION
Job Status	Displays the number of jobs for each type by status. For example, Pending
Spooler Health	
DICOM Spooler	Space allotted to DICOM jobs on the E: drive.
Free Space	Available space on the E: drive.
Total Size of the E: Drive	Available space on the E: drive.
Spooler Summary	
Job ID	Number for the job.
Job Status	Current status of the job. These are the valid values: • Done • Hold • Active • Pending • Success • Failed

Table 7-14: DICOM Spooler

Job Type	Type of job. These are the valid values: • Storage - Images • Structured Reports • Key Image Notes • STC - Storage Commitment • MPPS - Modality Performed Procedure Step
Destination	Name of service receiving the objects.
Age	Amount of time the job has been in the spooler.
Spooler Entry time	Time the job entered the spooler.
Transfer time	Time the job was transferred from the spooler.
Job Size	Size of the job.
Error details	If applicable, details for the error.

For more information, see:

- [‘DICOM’ on page 7-42](#)

Utilities

Utilities configurations vary depending upon the service class.

For more information, see:

- 'Change Password' on [page 7-53](#)
- 'Checkpoints' on [page 7-66](#)
- 'Clean Userdefs' on [page 7-59](#)
- 'Delete Files' on [page 7-50](#)
- 'Disk Defragment' on [page 7-46](#)
- 'Disruptive Mode' on [page 7-68](#)
- 'Gather Logs' on [page 7-48](#)
- 'Network Capture' on [page 7-71](#)
- 'Reset Patient Database' on [page 7-57](#)
- 'SSA License' on [page 7-62](#)
- 'SSH' on [page 7-71](#)
- 'Software Reload' on [page 7-55](#)
- 'System Shutdown' on [page 7-64](#)
- 'Third Party Software Licenses' on [page 7-61](#)
- 'Virtual Console Observation' on [page 7-51](#)
- 'Data Transfer' on [page 7-69](#)

Disk Defragment

Disk Defragment provides a way to launch the Windows Disk Defragmenter tool to use to defragment the disks. Disk fragmentation can reduce the amount of disk space available, and slow computing speed. Use the disk defragmenter to restore optimum disk space and speed performance. If Vivid *iq* performance would be significantly reduced when the disk is being defragmented, a warning message displays. It is not possible to analyze the SSH drives.

The information on **Disk Defragment** is available to Class C (Service Advanced and Service Expert) and Class M licenses. **Disk Defragment** is not available through a remote connection.

To access **Disk Defragment**, select **Service Desktop > Utilities > Disk Defragment**.

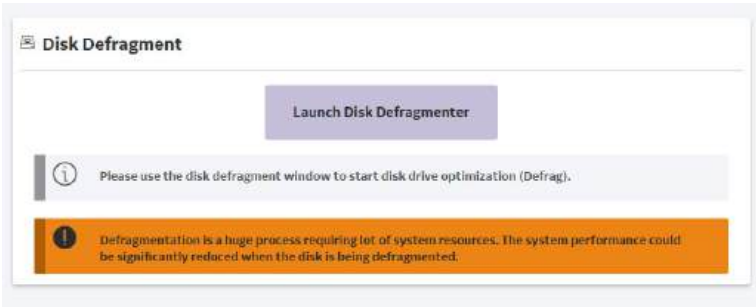
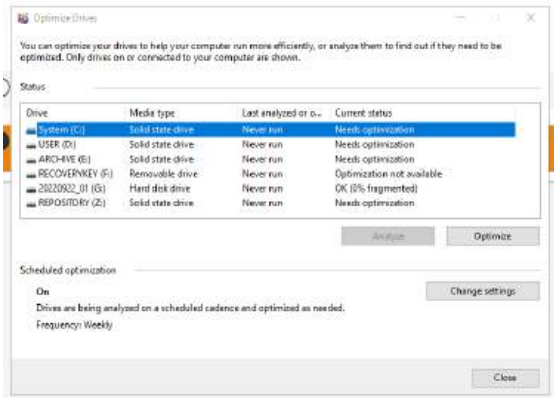


Figure 7-29. Disk Defragment

To analyze, optimize, or schedule optimization for a disk:

- 1. Navigate to **Service Desktop > Utilities > Disk Defragment**.
- 2. Click **Launch Disk Defragmenter**.
- 3. In the **Optimize Drives** dialog box, select the drive.



Disk Defragment(continued)

4. To analyze the selected drive, click **Analyze**.
5. To optimize the selected drive, click **Optimize**.
6. To set up a schedule, click **Change settings** and select the schedule

For more information, see:

- ['Utilities' on page 7-45](#)

Gather Logs

Gather Logs provides a way to collect system logs and place the log files in the D:\Service directory for retrieval by the online center. These log files do not include protected data such as crash dumps and keyboard shadow logs. The customer can collect logs (including protected data) using Alt+D when Protected Data is checked. Log files are compressed into a .zip file and the file path and name display. If the application software is not running, use the **Gather Logs** shortcut on the Windows desktop.

The information on **Gather Logs** is available to all service class licenses.

To access **Gather Logs**, select **Service Desktop > Utilities > Gather Logs**.

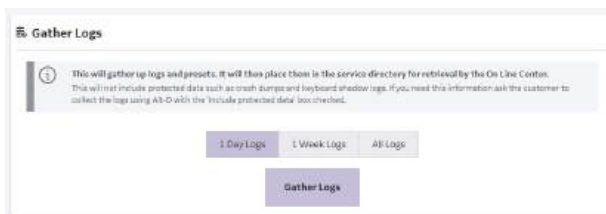


Figure 7-30. Gather Logs

This table shows all the elements available on **Gather Logs** with descriptions.

Table 7-15: Gather Logs

Element	DESCRIPTION
1 Day Logs	When selected, gathers log files for one day.
1 Week Logs	When selected, gathers log files for one week.
All Logs	When selected, gathers all available log files.
Gather Logs	Select to gather the log files for the selected time period.

To gather log files:

1. Navigate to select **Service Desktop > Utilities > Gather Logs**.
2. Select one of the following:
 - 1 Day Logs
 - 1 Week Logs
 - All Logs

Gather Logs(continued)

3. Click **Gather Logs**. In the resulting dialog box, record the location of the log files and click **OK**.
4. When the gather log operation is complete, click the notification icon in the banner to view the location of the log files.



For more information, see:

- ['Utilities' on page 7-45](#)

Delete Files

Delete Files displays all the files and folders present in the D:\Service folder and allows for their deletion. Deleting unneeded files improves performance and reduces the need to defragment the disk drive.

The information on **Delete Files** is available to all service class licenses.

To access Delete Files, select **Service Desktop > Utilities > Delete Files**.

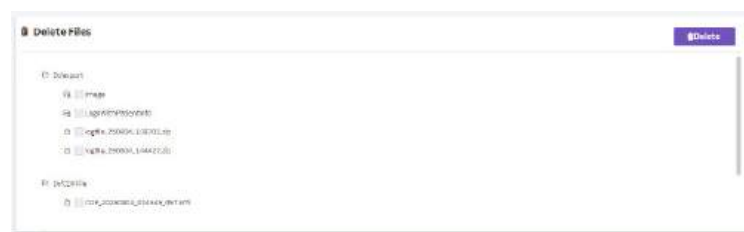


Figure 7-31. Delete Files

This table shows all the elements available on **Delete Files** with descriptions

Table 7-16: Delete Files

Element	DESCRIPTION
Delete Files	Displays the files that are available for deletion.
Delete	Deletes the selected files.

To delete files:

1. Navigate to select **Service Desktop > Utilities > Delete Files**.
2. Under **Delete Files**, select the available folders and files that you want to delete.
3. Click **Delete**.
4. In the resulting dialog box, click **Delete** and then click **OK**.

For more information, see:

- [‘Utilities’ on page 7-45](#)

Virtual Console Observation

Virtual Console Observation displays the status of the VNC server. Virtual console observation (VCO) is normally used to remotely access and modify settings and programs.

The information on **Virtual Console Observation** is available to Class M licenses. **Virtual Console Observation** is not available through a remote connection.

To access **Virtual Console Observation**, select **Service Desktop > Utilities > Virtual Console Observation**.

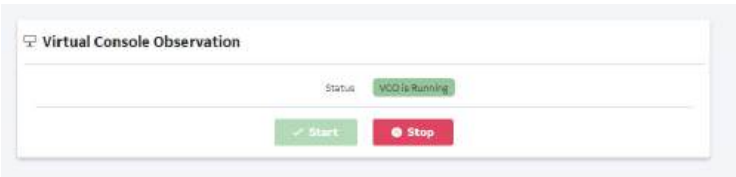


Figure 7-32. Virtual Console Observation

This table shows all the elements available on **Virtual Console Observation** with descriptions.

Table 7-17: Virtual Console Observation

Element	DESCRIPTION
Status	When Disruptive mode is on, displays the status of the VNC server. Valid values are: • VCO is stopped • VCO is running
Start	When Disruptive mode is ON, starts the VNC server.
Stop	When Disruptive mode is ON and the VNC server is running, stops the VNC server.

To start virtual console observation:

1. Navigate to **Service Desktop > Utilities > Disruptive Mode Utility** and set Disruptive mode to On.
2. Navigate to **Service Desktop > Utilities > Virtual Console Observation**.
3. Select **Start**. When VCO starts, the Windows task bar and Windows desktop display.
4. Modify settings and programs as needed.
5. To stop virtual console observation, click **Stop**. When VCO is stopped, the Windows desktop is hidden.
6. Restart the Vivid *iq*.

Virtual Console Observation(continued)

For more information, see:

- 'Utilities' on *page 7-45*

Change Password

Change Password allows you to change the password for a specified user type.

The information on **Change Password** is available to all service class licenses. **Change Password** is not available through a remote connection.

To access **Change Password**, select **Service Desktop > Utilities > Change Password**.

Figure 7-33. Change Password

This table shows all the elements available on **Change Password** with descriptions.

Table 7-18: Change Password

Element	DESCRIPTION
User Type	Type of user for the password reset.
New Password	Password.
Confirm Password	Password.
Update Password	Select to update the password.
Reset	Select to reset the information.

To change the password:



CAUTION

Risk of losing data.

If the password is lost, GE HealthCare will not be able to recover or reset it. Loss of a password may result in the loss of patient data.

Securely record the new password.

Change Password(continued)

1. Navigate to select **Service Desktop > Utilities > Change Password**.
2. Under **User Type**, select the user.

NOTE: *Before changing the GEService password (the default is SvcForward123\$), make sure the Vivid iq is connected to the network and the agent is configured. The GEService password is used to perform portions of remote service. If the password is changed and the system information is not updated, it may slow down remote service. Both file transfer and SSH depend on the GEService password.*

3. In **New Password** and **Confirm Password**, enter the new password.



CAUTION

GE WILL NOT BE ABLE TO RECOVER OR RESET CHANGED PASSWORDS. SECURELY RECORD THE NEW PASSWORD.

4. Click **Update Password**.
5. When a SVCService user password has been changed, reboot the Vivid iq to reflect the password change.

For more information, see:

- [‘Utilities’ on page 7-45](#)

Software Reload

Software Reload displays versions of the base image, application software, base patch, service platform, and documentation packages currently installed on the Vivid iq. **Software Reload** reimages the C:\ drive and installs the base image.

- If the drives are encrypted, **Software Reload** will have a catastrophic effect if the customer does not have the recovery key. All patient data will be lost.
- If the drives are not encrypted, software can be reloaded without a recovery key.

With Disruptive mode set to On, reload these software versions from repository partition on the hard drive. The software reload is automatic without any loss of presets, patient data, or connectivity settings.

The information on **Software Reload** is available to Class C (Service Expert) and Class M licenses.

To access **Software Reload**, select **Service Desktop > Utilities > Software Reload**.

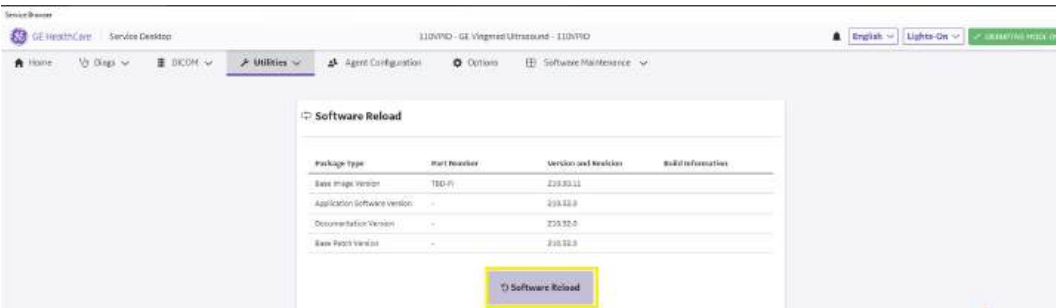


Figure 7-34. Software Reload (Example)

This table shows all the elements available on **Software Reload** with descriptions.

Table 7-19: Software Reload

Element	DESCRIPTION
Base Image Version	Displays the version number of the base image software.
Base Patch Version	Displays the version number of the base patch.
Application Software Version	Displays the version number of the application software.
Service Platform Version	Displays the version number of the service platform.
Documentation Version	Displays the version number for the documentation.

Table 7-19: Software Reload

Software Reload	Reloads the versions listed.

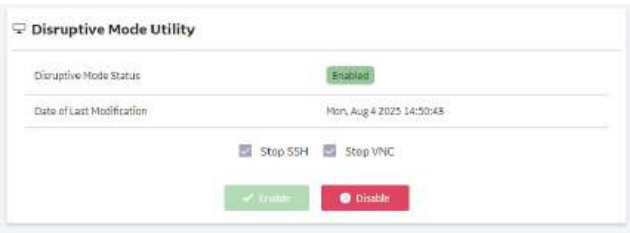


CAUTION

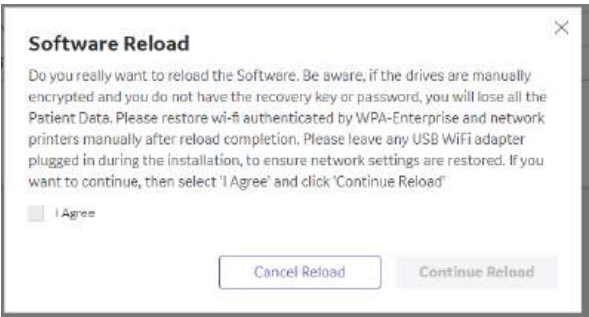
RELOADING SOFTWARE WITHOUT A RECOVERY KEY WILL RESULT IN THE LOSS OF PATIENT DATA.

To reload software:

1. If the drives are encrypted, obtain the recovery key.
2. Navigate to **Service Desktop > Utilities > Disruptive Mode Utility** and set Disruptive mode to On.



3. Navigate to **Service Desktop > Utilities > Software Reload**.
4. View the current version numbers.
5. Click **Software Reload**.
6. If you have a recovery key, select **I Agree** and then click **Continue Reload**.



For more information, see:

- [‘Utilities’ on page 7-45](#)

Reset Patient Database

Reset Patient Database resets the Vivid *iq* patient database. This operation automatically shuts down the application before cleaning the patient database. Once the operation is complete, the Vivid *iq* reboots with an empty database. Disruptive mode must be On to reset the patient database. If Disruptive mode is Off, a warning message displays asking to turn on Disruptive mode.

Reset Patient Database deletes the contents of the following folders:

- E:\Scanner\GEMS_IMG
- E:\Scanner\GEMS_REP

The information on **Reset Patient Database** is available to Class C (Service Expert) and Class M licenses.

To access **Reset Patient Database**, select **Service Desktop > Utilities > Reset Patient Database**.

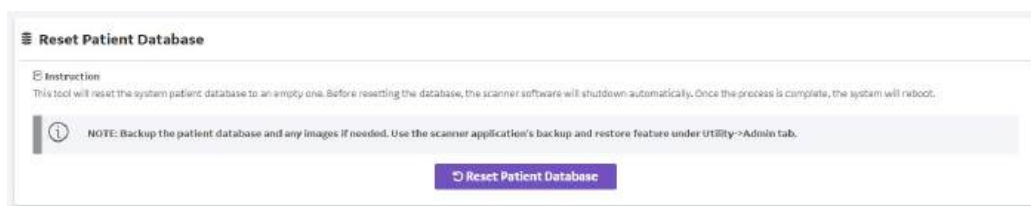


Figure 7-35. Reset Patient Database

This table shows all the elements available on **Reset Patient Database** with descriptions.

Table 7-20: Reset Patient Database

Element	DESCRIPTION
Instruction	Information about the database reset.
Reset Patient Database	When Disruptive mode is ON, resets the Vivid <i>iq</i> patient database.

Reset Patient Database(continued)

To reset the patient database:

1. Back up the patient database.
2. Navigate to **Service Desktop > Utilities > Disruptive Mode Utility** and set Disruptive mode to On.
3. Navigate to **Service Desktop > Utilities > Reset Patient Database**.
4. Click **Reset Patient Database**.
5. Confirm the patient database has been emptied.

For more information, see:

- [‘Utilities’ on page 7-45](#)

Clean Userdefs

Clean Userdefs provides a way to delete user-defined data when user presets may be inhibiting proper operation. User-defined data returns to the user-defined settings to the factory default values. **Clean Userdefs** provides information to backup the current settings if you want to use them later. Disruptive mode must be On to clean user-defined data. If Disruptive mode is Off, a warning message displays asking to turn on Disruptive mode.

Before cleaning user-defined data, the Vivid *iq* application software automatically shuts down. Once the operation is complete, the system reboots.

Clean Userdefs provides a way to selectively delete the following user-defined data:

- Connectivity - Deletes this file:
%TEST_ROOT%\resources\userdefs\connectivity.res
- Imaging - Deletes this folder:
%TEST_ROOT%\resources\userdefs\ImagingPresets\
- Measurement - Delete this folder:
%TEST_ROOT%\resources\userdefs\EchoMeasure\
- Annotation/Bodymark - Deletes the folder:
%TEST_ROOT%\resources\userdefs\EchoAnnotation\
- Scan Assistant - Deletes the folder:
%TEST_ROOT%\resources\userdefs\EchoExamProtocol

The information on **Clean Userdefs** is available to Class C (Service Expert) and Class M licenses.

To access **Clean Userdefs**, select **Service Desktop > Utilities > Clean Userdefs**.

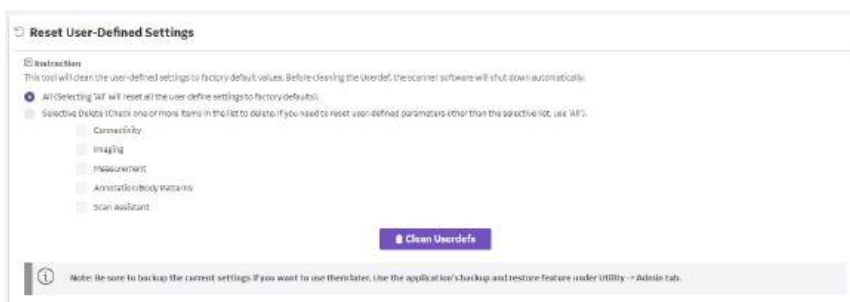


Figure 7-36. Clean Userdefs

Clean Userdefs(continued)

This table shows all the elements available on **Clean Userdefs** with descriptions.

Table 7-21: Clean Userdefs

Element	DESCRIPTION
All	When Disruptive mode is ON, deletes all of the user-defined data and returns the Vivid <i>iq</i> to factory default settings.
Selective Delete	When Disruptive mode is ON, deletes the selected user-defined data.
Connectivity	When Selective Delete is selected, deletes this file: %TEST_ROOT%\resources\userdefs\connectivity.res
Imaging	When Selective Delete is selected, deletes this folder: %TEST_ROOT%\resources\userdefs\ImagingPresets\
Measurement	When Selective Delete is selected, delete this folder: %TEST_ROOT%\resources\userdefs\EchoMeasure\
Annotation/Body Patterns	When Selective Delete is selected, deletes this folder: %TEST_ROOT%\resources\userdefs\EchoAnnotation\
Scan Assistant	When Selective Delete is selected, deletes this folder: %TEST_ROOT%\resources\userdefs\EchoExamProtocol
Clean Userdefs	Restarts the application software with a fresh database.

To clean user-defined data:

1. If you want to use the current settings later, back them up now.
2. Navigate to **Service Desktop > Utilities > Disruptive Mode Utility** and set Disruptive mode to On.
3. Navigate to **Service Desktop > Utilities > Clean Userdefs**.
4. Select the data you want to set to the default settings.
5. Click **Clean Userdefs**.

For more information, see:

- [‘Utilities’ on page 7-45](#)

Third Party Software Licenses

Third Party Software Licenses displays the third-party software licenses used as part of the service platform

The information on **Third Party Software Licenses** is available to all service class licenses.

To access **Third Party Software Licenses**, select **Service Desktop > Utilities > Third Party Software Licenses**.

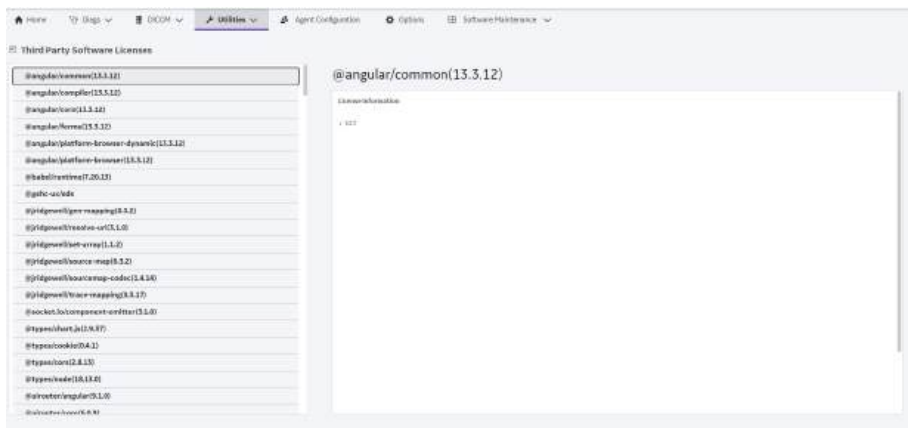


Figure 7-37. Third Party Software Licenses

For more information, see:

- 'Utilities' on *page 7-45*

SSA License

SSA License provides a way to do the following:

- When inserted, view the details of an SSA key.
- View the status of the service class options.
- Restore an SSA license when the SSA key is not validating or when a remote log in shows as a Class A user.

The information on **SSA License** is available to all service class licenses.

To access **SSA License**, select **Service Desktop > Utilities > SSA License**.

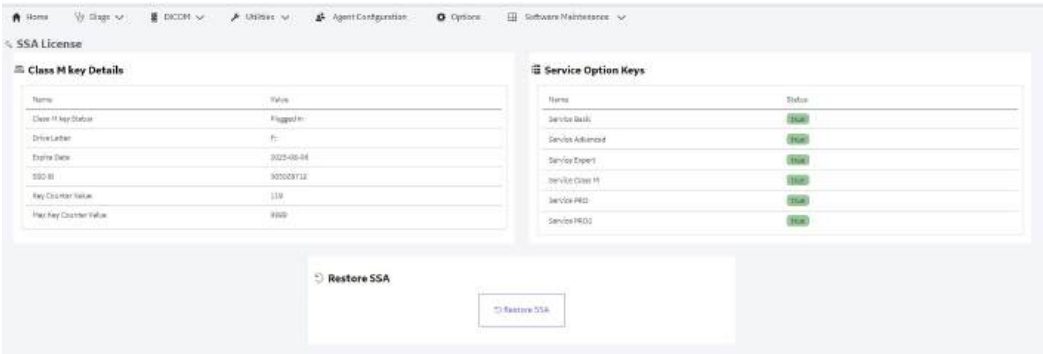


Figure 7-38. SSA License

This table shows all the elements available on **SSA License** with descriptions.

Table 7-22: SSA License

Element	DESCRIPTION
Class M Key Details	
Class M Key Status	Status of the SSA key. Valid values are: • Not Plugged In • Plugged In
Drive Letter	Drive where the SSA key is plugged into the Vivid <i>iq</i>
Expire Date	Date the SSA key is set to expire.
SSO ID	Identifier for the user assigned to the SSA key.
Key Counter Value	Number of times the SSA key has been used.
Max Key Counter Value	Number of remaining times the SSA key can be used.
Service Option Keys	
Name	Name of the service class option.

Table 7-22: SSA License

Status	Status of the access to the associated service class option. Valid values are: • True • False
Restore SSA	Restores the SSA license to the SSA key.

To view the Class M license information:

1. Insert the SSA key.
2. Navigate to **Service Desktop > Utilities > SSA License**.
3. Under **Class M key Details**, view the values. For example, the **SSO ID** for the user assigned to the SSA key.

If **Not Available** displays for all of these values, the SSA key is not validating.

To restore an SSA key that is not validating:

1. Remove the SSA key from the Vivid *iq*.
2. If open, close the Service desktop.
3. Restart the Vivid *iq*.
4. Once the Vivid *iq* has restarted, plug in the SSA key.
5. Navigate to **Service Desktop > Utilities > SSA License**.
6. Click **Restore SSA**.
7. Check to see if the SSA key validates.

For more information, see:

- [‘Utilities’ on page 7-45](#)

System Shutdown

With remote access, **System Shutdown** provides a way to shut down or restart the Vivid *iq*. Disruptive mode must be On to shut down or restart the Vivid *iq*. If Disruptive mode is Off, a warning message displays.

The information on **System Shutdown** is available to Class M licenses.

To access **System Shutdown**, select **Service Desktop > Utilities > System Shutdown**.

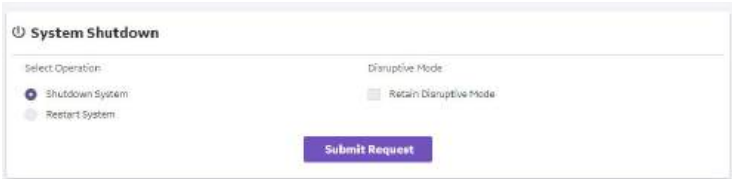


Figure 7-39. System Shutdown

This table shows all the elements available on **System Shutdown** with descriptions.

Table 7-23: System Shutdown

Element	DESCRIPTION
Select Operation	
Shutdown System	When Disruptive mode is On, shuts down the Vivid <i>iq</i> when Submit Request is pressed.
Restart System	When Disruptive mode is On, restarts the Vivid <i>iq</i> when Submit Request is pressed.
Shutdown Application	When Disruptive mode is On, shuts down the application software when Submit Request is pressed.
Disruptive Mode	
Retain Disruptive Mode	Determines whether Disruptive mode is retained after an operation has been performed. Generally used by the remote engineer to regain access to disruptive functions after a reboot without having to request Disruptive mode be enabled again.
Submit Request	Performs the operation selected under Select Operation .

System Shutdown(continued)

To remotely start, restart, or shut down the Vivid *iq*:

1. Navigate to **Service Desktop > Utilities > Disruptive Mode Utility** and set Disruptive mode to On.
2. Navigate to **Service Desktop > Utilities > System Shutdown** and then select an operation:
 - To shut down the Vivid *iq*, select **Shutdown System**.
 - To restart the Vivid *iq*, select **Restart System**.
 - To shut down the application software, select **Shutdown Application**.
3. To retain the current setting for Disruptive mode, select **Retain Disruptive Mode**.
4. Click **Submit Request**.

For more information, see:

- [‘Utilities’ on page 7-45](#)

Checkpoints

Checkpoints allows for the creation of checkpoints and displays the history of those checkpoints. Checkpoints are used to indicate when the Vivid *iq* has been serviced, status has been reset, and information related to the service performed has been added.

The information on **Checkpoints** is available to Class C (Service Advanced and Service Expert) and Class M licenses.

To access **Checkpoints**, select **Service Desktop > Utilities > Checkpoints**.



Figure 7-40. Checkpoints

This table shows all the elements available on **Checkpoints** with descriptions.

Table 7-24: Checkpoints

Element	DESCRIPTION
Checkpoints History	
Checkpoint	Displays the name of the checkpoint.
Service Personnel	Displays the ID for the logged in user.
Action	Displays the service action.
Comment	Displays comment text entered when the checkpoint was created.
Service Checkpoint	Displays whether the checkpoint is a service checkpoint or not.
Create Checkpoint	
Action	Selects the service action. Value values are • Scheduled Maintenance • Unscheduled Maintenance • Upgrade • FMI

Table 7-24: Checkpoints

Service Personnel	ID for the logged in user. Value values are: • SSO ID: When a Class M key is plugged in, the SSO ID for the logged in user. • Remote user ID: If there is a remote connection, the remote user ID. • User ID: If the SSO ID and remote user ID are not available, the user ID for the logged in user. • Unknown: The logged in user ID is not available.
Comment	Enter comments for creating a checkpoint.
Service Checkpoint	Select whether to mark a service checkpoint or not.
Save	Saves the information.

To create a check point:

1. Navigate to **Service Desktop > Utilities > Checkpoints**.
2. Under **Create Checkpoints**, from **Action**, select the action.
3. In **Comment**, enter notes for the checkpoint.
4. If this is a checkpoint for service, select **Service Checkpoint**.
5. Click **Save**.

For more information, see:

- ['Utilities' on page 7-45](#)

Disruptive Mode

Disruptive Mode provides a way to enable and disable Disruptive mode. When enabled, Disruptive mode allows a remote user to access the Vivid *iq* which can disrupt normal operation of the Vivid *iq*. Disruptive mode can be remotely turned on when the logged-in user has Authorize Remote Service Access privilege. If the logged-in user does not have remote service privilege, displays this error message: "You do not have the required permission to perform this operation."

When initiating Disruptive mode from a remote location, a message displays on the Vivid *iq* asking whether the user will allow Disruptive mode and notifying them that normal operation might be disturbed.

- If **Yes** is selected, then Disruptive mode is turned on.
- If **No** is selected, then Disruptive mode is not turned on and an error message displays saying that permission to change the mode was denied.

When Disruptive mode is On, the GE icon in the status bar changes to red and displays this message: "Due to Service testing restart needed."

When Disruptive mode is changed to Off, the GE icon turns white and displays this message: "Due to Service testing restart needed." In addition, VCO and SSH stop if running.

The information on **Disruptive Mode** is available to Class C (Service Advanced and Service Expert) and Class M licenses.

To access **Disruptive Mode**, select **Service Desktop > Utilities > Disruptive Mode Utility**.

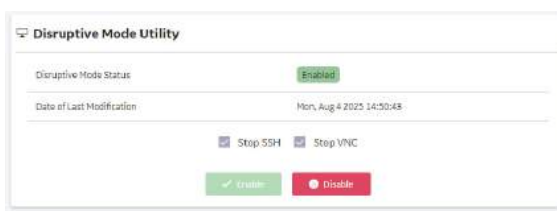


Figure 7-41. Disruptive Mode

For more information, see:

- ['Utilities' on page 7-45](#)

Data Transfer

Data Transfer provides a way to do the following:

- View information about past transfers of (APM) information.
- Set up scheduled transfer of allowed data files from the Ultrasound system to the server.
- Manually transfer data files allowed data files from the Ultrasound system to the server.

The information on **Data Transfer** is available to all service class licenses.

To access **Data Transfer**, select **Service Desktop > Utilities > Data Transfer**.

Data Transfer

Type of Upload	Last Upload Status	Last Upload Attempt	Last Successful Attempt
System Logs	Success	Jul 20, 2025, 3:42:43 PM	Jul 20, 2025, 3:42:43 PM
CDF files			
VITA files			

Type of Upload

☐ All ☐ System Logs ☒ CDF files ☐ VITA files

☐ Scheduler

☐ All Days ☐ Mon ☐ Tue ☐ Wed ☐ Thu ☐ Fri ☐ Sat ☐ Sun

Save Settings

Send All

Figure 7-42. Data Transfer

This table shows all the elements available on **Data Transfer** with descriptions.

Table 7-25: Data Transfer

Element	DESCRIPTION
Type of Upload	Type of log file. For example, System Logs are incrementally transferred when automatic transfer is enabled. To enable automatic transfer, navigate to System Admin and, under Service, check Enable Automatic Request for Service.
Last Upload Status	Whether the last log file upload was successful or not.
Last Upload Attempt	Date and time the last log file upload was attempted.
Last Successful Upload	Date and time the last log file was successfully uploaded.
Scheduler	When selected, enables the related day selections. For example, All Days , Monday , and Tuesday .
Save Settings	Saves the information.

Table 7-25: Data Transfer

Send All	Manually send the selected log files to the server.

SSH

SSH displays the status of the Secure Shell (SSH) server. SSH is a cryptographic network protocol for operating network services securely over an unsecured network. This protocol is used for remote login to the operational system. SSH allows remote login to the Vivid *iq* and remote file transfer from the Vivid *iq*. Remotely log into the Vivid *iq* using the username “GEService” and its password.

The information on **SSH** is available to Class M licenses.

To access **SSH**, select **Service Desktop > Utilities > SSH**.



Figure 7-43. SSH

This table shows all the elements available on **SSH** with descriptions.

Table 7-26: SSH

Element	DESCRIPTION
Status	When Disruptive mode is on, displays the status of the SSH server. Valid values are: • SSH is stopped • SSH is running
Start	When Disruptive mode is ON, start the SSHD service.
Stop	When Disruptive mode is ON and the SSHD service is running, stops the SSHD service.

To start the SSH server:

1. Navigate to **Service Desktop > Utilities > Disruptive Mode Utility** and set Disruptive mode to On.
2. Navigate to **Service Desktop > Utilities > SSH**.
3. Click **Start**.
4. To stop the SSH server, select **Stop**.

For more information, see:

- [‘Utilities’ on page 7-45](#)

Network Capture

Network Capture displays network traffic between the Vivid *iq* and configured devices. A network capture outputs two log files: one for main logging with no protected information and another

including protected information. These log files are useful when debugging connectivity issues. Because these log files can be large, they are only kept for one week.

The information on **Network Capture** is available to all service class licenses.

To access **Network Capture**, select **Service Desktop > Utilities > Network Capture**.

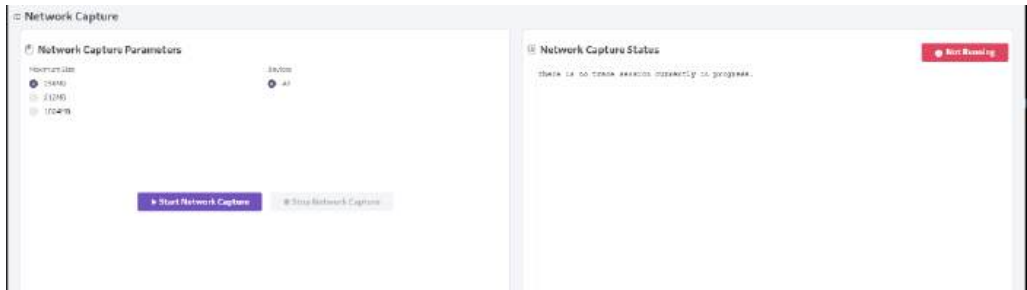


Figure 7-44. Network Capture

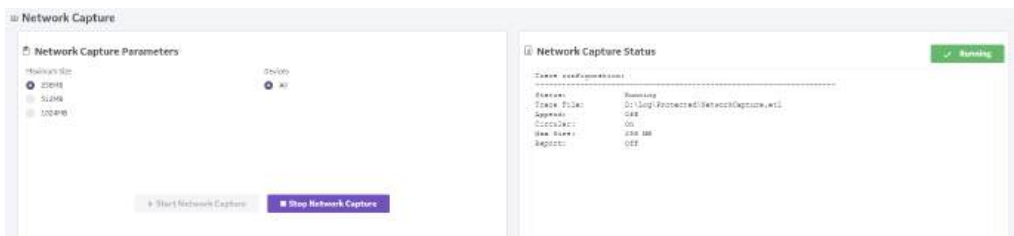
This table shows all the elements available on **Network Capture** with descriptions.

Table 7-27: Network Capture

Element	DESCRIPTION
Network Capture Parameters	
Maximum Size	Allowed size of the generated log file. Valid value are: • 256MB • 512MB • 1024MB
Devices	DICOM-configured devices for which you want to capture information. If no additional devices are configured, only All will be available.
Start Network Capture	Select to start the process. This causes the network capture to start, enables the Stop button, and updates the Network Capture Status pane and changes the Status to Running .
Stop Network Capture	Select to stop the process..
Network Capture Status	
	Displays information about the status of the network capture. The language setting for this information is set in Windows and not through the Service desktop or Vivid <i>iq</i> application software.
	Displays the current status of the network capture. Valid values are: • Not Running • Running

To perform a network capture:

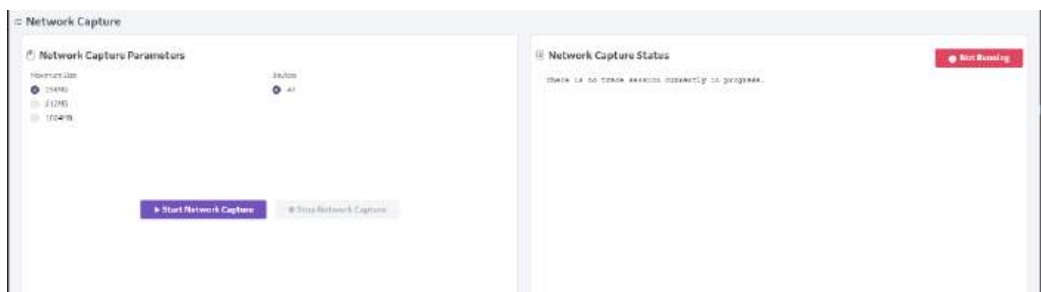
1. Navigate to **Service Desktop > Utilities > Network Capture**.
2. From **Network Capture**, do the following:
 - Under **Maximum Size**, select the allowed size of the generated log file.
 - Under **Devices**, select the DICOM-configured device for which you want to capture information. If no additional devices are configured, only **All** will be available.
3. Select **Start Network Capture** to start the process. This causes the network capture to start, enables the **Stop** button, and updates the **Network Capture Status** panel and changes the **Status** to **Running**.



4. Click the **Stop** button to end data collection. Stopping is a two-step process:

Network Capture(continued)

- Stops the data collection and immediately closes the .etl file.
- Collects additional diagnostic data that may help diagnose network issues. When the file is closed, you see “There is no trace session currently in progress”. When the remaining data is collected and the .cab file is closed, you are notified in the banner.



For more information, see:

- [‘Utilities’ on page 7-45](#)

Options

Use **Options** to:

- View software options
- View software option details.
- Add (or delete) a valid option key, add a duplicate option key, not add an invalid option key, and ask for confirmation before deleting an option key.
- View software option key details. Key details are a list of options that are enabled by a particular key. Under **Available Keys**, highlight the option string, select **Details** and then view the options on the left side of the screen. Press **Show All** to view all of the activated options.

The information on **Options** is available to all service class licenses.

To access **Options**, navigate to **Service Desktop > Options**.

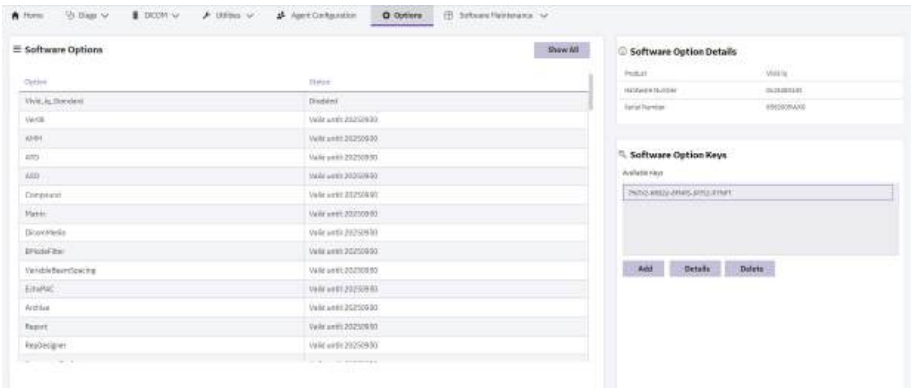


Figure 7-45. Options

This table shows all the elements available on **Options** with descriptions.

Table 7-28: Options

Element	DESCRIPTION
Software Options	
Option	Software options on the Vivid iq.
Status	Status of the options on the Vivid iq.
Software Option Details	
Product	Name of the product.

Table 7-28: Options

Hardware Number	Number for the hardware. The hardware number is the hash of the serial number that is used to generate the option key.
Serial Number	Serial number of the Vivid <i>iq</i> .
Software Option Keys	
Available Keys	List of the option keys installed on the Vivid <i>iq</i> .

Configuration Steps

Use **Agent Configuration** to:

- Edit and configure the following:
 - Enterprise host name in the agent
 - Enterprise port number in the agent
 - Proxy server in the agent
 - Proxy port in the agent
 - CRM number in the agent
 - Display name in the agent
- Set the serial number in the agent
- Enter the username and password for the proxy
- Reset the edited unsaved value
- Update contact details
- Enable Automatic InSite Connection
- If "Automatic InSite Connection" is enabled, AutoConnect Retry details can be checked

The information on **Agent Configuration** is available to all service class licenses.

To access **Agent Configuration**, navigate to **Service Desktop > Agent Configuration**.

The screenshot displays the 'Agent Configuration' page. At the top, there's a navigation bar with 'Home', 'Diags', 'BCHP', 'SERIES', 'Agent Configuration' (selected), 'Options', and 'Software Maintenance'. Below the navigation bar, the 'Agent Configuration' section is active, showing a toggle for 'Enable automatic InSite connection' which is currently turned on. The main area contains several fields: 'Agent Status' (Online), 'Agent Registered' (Yes), 'Agent Quarantine' (No), 'Agent's CRM User Role' (No), 'Agent Host Number' (25, 100, 1000, 1000, 10), 'Serial Number' (123456789), 'CRM Role' (Administrator), 'Display Name' (Agent), 'Agent Connected' (Yes), 'Last Connected Time' (May, Reg 1 00:00, 11:00:00), and 'Agent Version' (4.5). Below these fields, there are expandable sections: 'Contact Details', 'AutoConnect Retry Details', and 'Advanced Configuration'. The 'Advanced Configuration' section is expanded, showing 'Enterprise Configuration' with a warning message: 'Attention: According to target regulations, please check the correct Enterprise access.' Below this, there are fields for 'Server' (127.0.0.1), 'Enterprise Role' (Administrator), 'Enterprise Port' (80), and 'Enterprise Password' (123456). There is also a 'Finance Configuration' section with a field for 'Software Download URL' and a button 'Add Enterprise Configuration'. At the bottom, there is a 'Proxy Configuration' section.

Figure 7-46. Agent Configuration

This table shows all the elements available on **Agent Configuration** with descriptions.

Table 7-29: Agent Configuration

Element	DESCRIPTION
Agent Configuration	
Enable Automatic InSite Connection	This device includes capability to automatically populate and activate a GEHC InSite connection for remote service features. This feature automatically populates the following fields: CRM No, Enterprise Server, Enterprise Host, Enterprise Port and Proxy Configuration fields (if detected). Editing any field in this screen requires de-selecting this option. This will fully disable automatic connection features and will then requires manual entry and submission to activate GEHC InSite connection.
Agent Status	Status for the agent. Valid values are: • Running • Not Running
Agent Version	Version of the agent.
Agent Registered	Registered status of the agent. Valid values are: • Yes - The agent is registered in the back office. • No - The agent is not registered in the back office. • Not Available - The agent is not configured or running.
Agent Quarantine	Quarantine status of the agent. Valid values are: • Yes - The agent has more than one device registered with the same CRM Number in the back office. This scanner cannot send data back to GE or be remotely accessed. • No - The agent has one device registered with the listed CRM Number in the back office. • Not Available - The agent is not configured or running.
Agent CRM Verified	CRM verified status of the agent. Valid values are: • Yes - The agent is verified in the back office. • No - The agent is not verified in the back office. • Not Available - The agent is not configured or running.
Agent Model Number	GE part number for the Vivid <i>iq</i> . The same number as listed on the rating plate.
Serial Number	Serial number of the agent (read-only). If the agent is not registered with a serial number, this field is populated with the serial number of the Vivid <i>iq</i> . The serial number of the agent is tied to the serial number of the Vivid <i>iq</i> .
CRM No	Customer Relationship Management (CRM) number. System identifier assigned to the customer unit by the service region. CRM is pre-populated by adding Vivid <i>iq</i> to the CRM number. The CRM number of the Vivid <i>iq</i> is editable.
Display Name	Displayed name of the agent.
Agent connected	Connected status of the agent. Valid values are: • Yes - The agent is connected in the back office. • No - The agent is not connected in the back office. • Not Available - The agent is not configured or running.
Last connected time	Indicate the last connected time of agent.
Contact Details	Phone number for the person at the customer site a GE remote service engineer would contact. The phone number is entered during installation and reviewed at every service call to make sure the information is correct.

Table 7-29: Agent Configuration

Advanced Configuration	
Enterprise Server	Name of the enterprise server. Please refer to ' Enterprise Configuration ' on page 7-79 for details.
Enterprise Host	Number of the enterprise host.
Enterprise Port	Number of the enterprise port.
Proxy Configuration	
Enable Proxy	Enables the proxy server.
Proxy Server	When Enable Proxy is selected, name of the proxy server IP.
Proxy Port	When Enable Proxy is selected, number of the proxy server port.
Credentials	
Enable Proxy Credentials	Enables the proxy credentials.
Username	When Enable Proxy Credentials is selected, name of the user.
Password	When Enable Proxy Credentials is selected, password for the user.

Enterprise Configuration

Please choose the corresponding server from [Table 7-30: ‘Enterprise server list’ on page 7-79](#), and ensure that ‘Enable automatic Insite Connection’ is selected before complete Agent Configuration setting.

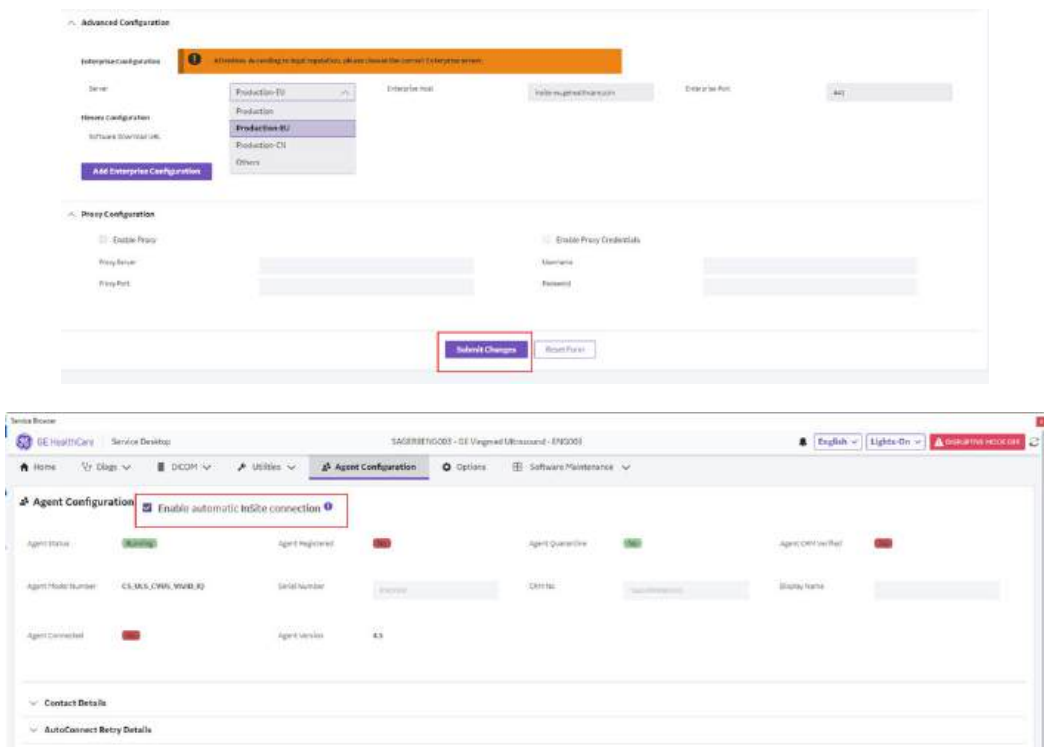


Table 7-30: Enterprise server list

Ship to country	Enterprise Server
(AD) Andorra, (AL) Albania, (AT) Austria, (AX) Åland Islands, (BA) Bosnia and Herzegovina, (BE) Belgium, (BG) Bulgaria, (CH) Switzerland, (CY) Cyprus, (CZ) Czech Republic, (DE) Germany, (DK) Denmark, (EE) Estonia, (ES) Spain, (FI) Finland, (FO) Faroe Islands, (FR) France, (GB) United Kingdom, (GG) Guernsey, (GI) Gibraltar, (GR) Greece, (HR) Croatia, (HU) Hungary, (IE) Ireland, (IM) Isle of Man, (IS) Iceland, (IT) Italy, (JE) Jersey, (LI) Liechtenstein, (LT) Lithuania, (LU) Luxembourg, (LV) Latvia, (MC) Monaco, (MD) Moldova, (ME) Montenegro, (MK) North Macedonia, (MT) Malta, (NL) Netherlands, (NO) Norway, (PL) Poland, (PT) Portugal, (RO) Romania, (RS) Serbia, (SE) Sweden, (SI) Slovenia, (SJ) Svalbard and Jan Mayen, (SK) Slovakia, (SM) San Marino, (VA) Vatican City, (UK) United Kingdom	Production-EU
(CN) China, (HK) Hong Kong, (MO) Macau, (TW) Taiwan	Production-CN
All other countries	Production

Request for Service (RFS)

Create a Request

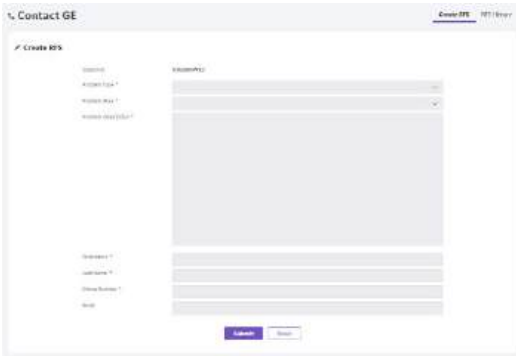
Users can create and submit an error report to GE Healthcare digital service.

NOTE: Submission will only be successful if the agent is already connected.

- 1. Select the Contact GE Icon on the status bar at the bottom of the screen.



- 2. The InSite service menu is displayed. You will see these options:
 - **Service Desktop**
 - **Request for Service**
 - **Connect to GE Healthcare**
 - **Connect to Clinical Lifeline**
 - **Cancel**
- 3. Select **Request for Service**.
- 4. The **Contact GE** screen is displayed.



- 5. Select **Create RFS** from the top right of the screen.
- 6. Fill out the required information and press **Submit**.

Table 7-31: Request for Service - Required Information

Element	Description
System ID	

Table 7-31: Request for Service - Required Information

Problem Type	What type of issue are you experiencing? Valid values are: • Service • Application This is a required field.
Problem Area	In which area are you experiencing an issue? Valid values are: • Hardware Electrical • Hardware Mechanical • Network • Image Quality • Peripherals This is a required field.
Problem Description	Description of the issue in more detail. This is a required field.
First Name	First name of submitter. This is a required field.
Last Name	Last name of submitter. This is a required field.
Phone Number	Phone number of submitter. This is a required field.
Email	Email of submitter.

Selecting **RFS History** on the **Contact GE** screen will display all previously submitted requests and include the information described in table [See Table 7-31: 'Request for Service - Required Information' on page 7-80 for more information.](#)

Asset Performance Management(APM)

Overview

APM enables upload of system usage data for asset performance management purposes. The data contain protected health information.

When connected (APM is active), the Vivid *iq* system has the capability to transmit certain datasets to the General Electric (GE) Back Office. These data sets pertain to system utilization and are accessible via proprietary tools only. Upon request, General Electric can provide a complete listing of data sets gathered.

Data sets will be transmitted during the warranty period and when the Vivid *iq* system is under a maintenance contract with General Electric (GE). The requirement for data transfer is a signed service agreement with valid data transfer clauses.

The Field Engineer has the ability to stop the data transmission. The data transfer needs to be manually enabled by the Field Engineer if there is an active contractual agreement for the data transfer.

APM structure datasets (*.xml) are stored in the D:/CDFFile.

Common Diagnostics

Remote Access

Remote Access is a feature designed to enable OLE's access to customer's desktop remotely, service engineers don't have to be on site to connect the physical dongle to exit to desktop, it's doable remotely by using this feature.

1. In the server side, type the CRM No. of the system which the OLE would remotely connect to, and select **Get Started**.

NOTE: Remote server link: <https://stg-ffa.am.health.ge.com/#/di/home>.

Start Remote Troubleshooting

Workflow Type

☒ Standard (Includes Insite1, Insite2, and RSvP)

Enter System or Service ID

☒ System ID

Devices using RSvP may utilize [Advanced Search](#) for filtering...

CRMNo:

Service Request ID (Optional)

☐ Service Request ID

Country of System

Get Started

Figure 7-47. Input System ID

Remote Access(continued)

- 2. Select **Connect**. Then the **Connect** page is displayed.

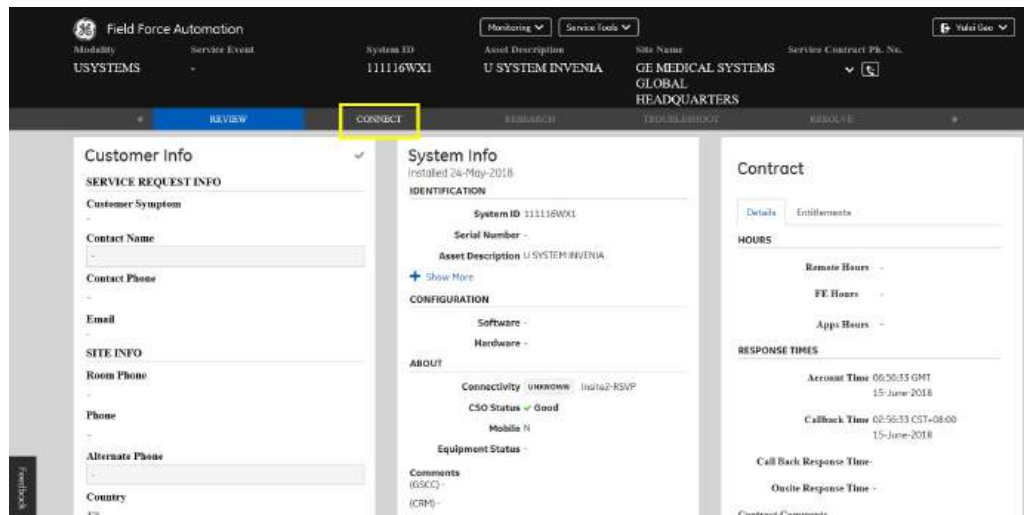


Figure 7-48. Connect Page

- 3. Select HTTPS to **Connect**. Then the OLE is remotely connected to the system.

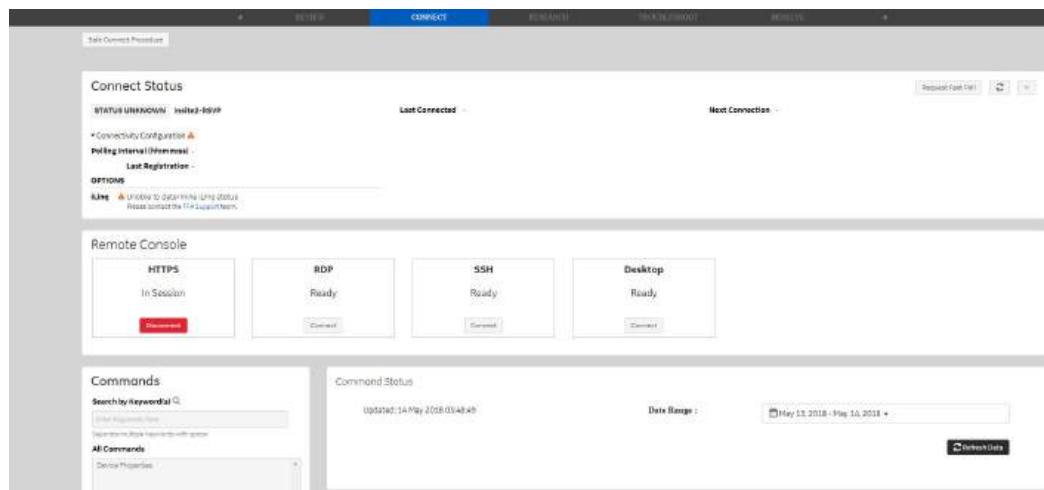


Figure 7-49. Select HTTPS to Connect

Remote Access(continued)

4. Enter **Options** to add service option key.

NOTE: Please delete the added service option key when your service work is done.

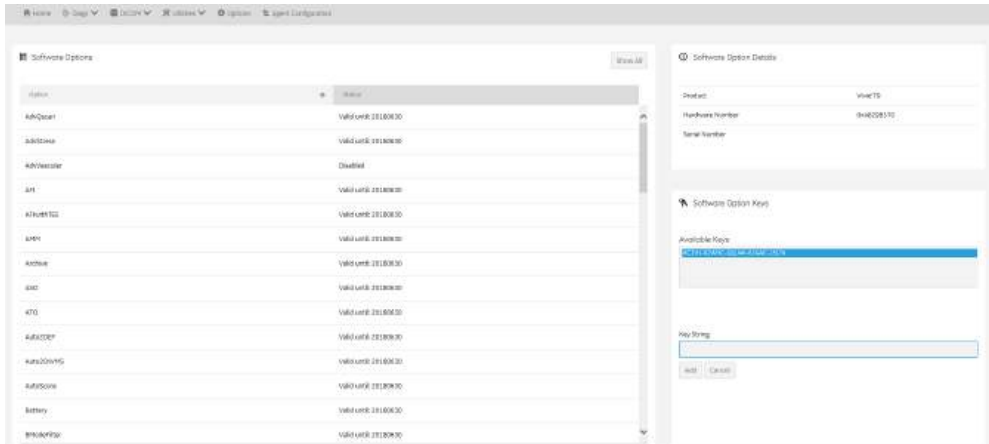


Figure 7-50. Add Service Option Key

5. Enter **Utility-> Disruptive Mode Utility**, select **Enable**.

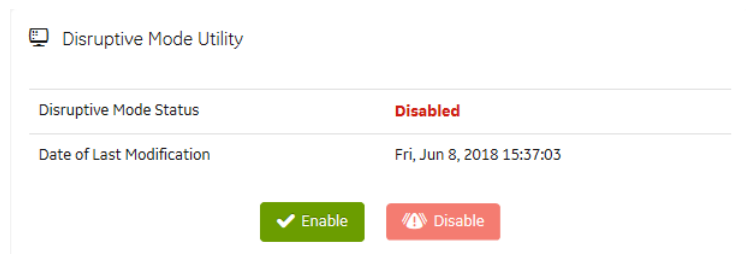


Figure 7-51. Enable Disruptive Mode

6. If we want to see the Scan screen or have control of the unit, we have to go to Virtual Console Observation and start it. Enter **Utility-> Virtual Console Observation**, select **Start**.

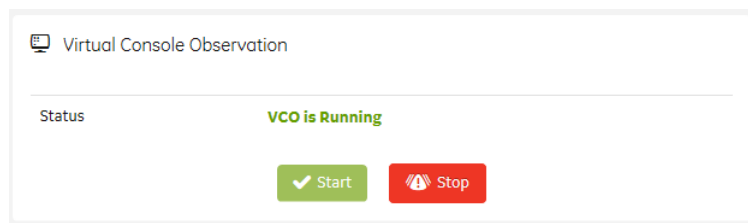


Figure 7-52. Start VCO

Remote Access(continued)

- 7. Select Desktop to Connect. Then the OLE is remotely connected to the system.

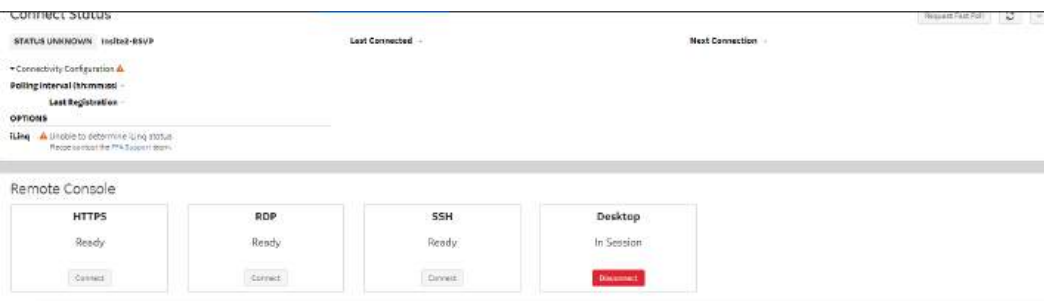


Figure 7-53. Select Desktop to Connect

NOTE: *You need to reboot the system before clinical scanning is resumed.*

Service Diagnostics

This section describes the available diagnostics.

NOTE: *Reboot the Ultrasound system after performing any diagnostics and before returning it to customer use.*

Available diagnostics

To enter service diagnostic mode, use **Service Desktop > Diags > Run Diags**.

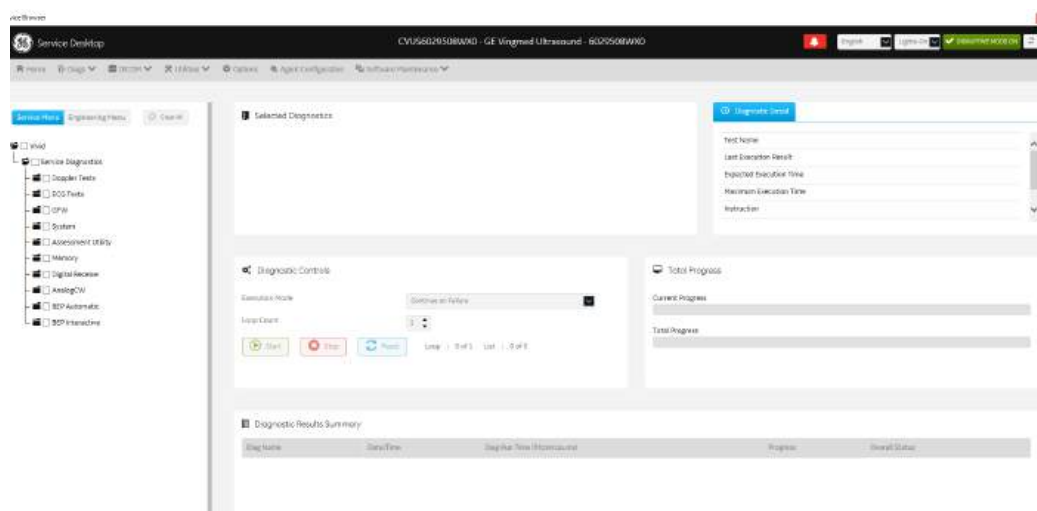


Figure 7-54. Run Diags display

To enter into engineering diagnostic mode, press **ALT+F2** on the external keyboard.

NOTE: *Do not use engineering diagnostic mode unless requested by engineering. Some of the tests require special tools that are not available in the field.*

Available diagnostics(continued)



Figure 7-55. Alt+F2 display

GFS

- GFS Swept Demodulator Test performs a signal path test of the swept demodulator FPGA on the GFS.
- GFS Front-End Interface Test tests that the GFS can access Front-End boards.
- GFS Analog Test.
- GFS Memory Access Test tests that GFS can access to the internal, external, external cache memory spaces.
- Front End Interface FPGA Test reads the version of the GFE FPGA.
- GFS Fixed Demo Test: GFS Fixed Demodulator signal path test.
- DSP Master Clock Test tests DSP Master Clock.
- GFS Swept Demodulator Long Test.

System

- CPU Temperature Test.
- CPS Temperature Test.
- WMST Temperature Test.
- WMST Voltage Test.
- CPS Voltage Test.
- FPGA Version Test.
- HV_STOP Test tests HV-STOP mechanism and checks each board is able to assert HV_STOP using its HV_STOP source.

Memory

- Callisto Memory Test.

NOTE: The Callisto Memory test may fail if it is performed with other tests at the same time.

AnalogReceive

- Noise Floor Test.

AnalogCW

- aCW IQ Symmetry Test

Digital Receive

- AFE IF Test
- Complex Mixer Test
- CE Decoder Test

ECG Tests

- ECG Tests

Doppler Tests

- Doppler Audio Test runs the tests for Doppler.

PC

- Essential Test tests: PCI, PCI Express, CPU, Memory, HD Disk and Video.
- Hard Drive Long tests functionality of the hard drive.
- Hard Drive Short tests functionality of the hard drive.
- Memory tests the memory on the mother board.
- Network Adapter: Network cable must be connected.
- System board tests the real time clock.
- Video tests functionality of video adapters.

PC Interactive

- **AVI playback** tests playing back an AVI file.
 - Click “Play” to run the test. If the test is successful, you will see a brief video clip with audio. For more information about the test, click “More Information”.
 - Click “Pass” if the test successfully reproduces the video clip.
 - Click “Fail” if the test is unable to successfully reproduce the video clip.
 - Click “Cancel” button to quit the test without recording a test result.
- **Keyboard**
 - Press each key on the keyboard and it will be added to the History. Hold down a key to test the repeat of that key. To cancel, click Cancel or press Alt-X.
 - Special purpose keys like volume control or Internet access keys may not be detected. To test the Fn key of a notebook computer, hold down the Fn key while pressing another key.
 - Note: This diagnostic is intended to verify keyboard keys are in good working order. It is not intended to verify that keyboards produce desired characters.
- **Monitor Test Patterns**
 - This test is composed of various elements that verify a monitor functions correctly. To test a monitor feature, click the appropriate button. You can return to this dialog by clicking the mouse button or pressing any key.
 - The Combination Test helps you verify your monitor is properly aligned, and set at the correct color depth and resolution. Use the crosshair pattern in each corner of the screen to visually determine if the monitor aligns correctly. If the crosshairs appear distorted or out of focus, a problem may exist with the monitor alignment. Use the color spectrum array for visually verifying the monitor color depth capacity. If the colors in the color spectrum do not blend smoothly together, a problem may exist with the monitor color depth. Use the graduated horizontal and vertical alignment bars to determine the monitor resolution capabilities. The better you can discern individual lines as they move closer together, the higher the resolution capabilities of the monitor.

PC Interactive(continued)

- The Solid Color Test helps point out malfunctioning or dysfunctional pixels using five basic colors: red, green, blue, black, and white. Fill the screen with an appropriate color by clicking the associated button. If a pixel is malfunctioning, the pixel color will contrast with the color of all other pixels.
- The VESA Test Patterns allow you to test the monitor for proper luminance, geometry and focus. Click the appropriate button to fill the screen with the associated test pattern. You can return to this dialog by clicking the mouse button or pressing any key.
- **Trackpad**
 - The Mouse Status Test verifies the cursor position and mouse button state. When a mouse button is pressed, the corresponding button on the picture will change color. If the mouse is a wheel or scroll mouse, an arrow will indicate the direction the wheel is being rotated. Clicking the wheel will flash the picture of the mouse in the Mouse Status Test area.
 - The Drag and Drop Test verifies a mouse can successfully perform drag and drop operations. Left click the picture of the CD and drag it onto the picture of the drive. If successful, the picture will change.
 - The Double Click Test verifies a mouse can successfully perform double-click operations. Double-click on the picture of the monitor. If successful, the picture will change.
- **Sound Test** generates sounds for testing the speakers.
- **USB Ports Test** lists USB Devices.

Probe diagnostics

e-PAT

e-PAT is a probe assessment tool that evaluates each probe element response scanning on the air. Probes have to be clean, any gel residue will provide incorrect data. This test is an assessment that is intended to be used comparatively during the life of the probe to evaluate possible probe deterioration over time.

NOTE: *Probe diagnostics is available to Class C (Service Pro) license.*

1. Check that the probe to be tested is thoroughly clean and dry. Connect it to the probe port on the scanner, then hold the probe in the air ready for testing.

NOTE: *The probe assessment is only available for the probe connected to the probe port on the right side of console or to the leftmost probe port of 4PP and probe connector.*

NOTE: *Prior to inserting the probe, ensure that the connector locking handle is positioned to the unlock state.*

NOTE: *Ensure the probe is locked to the system before you start the probe diagnostics.*



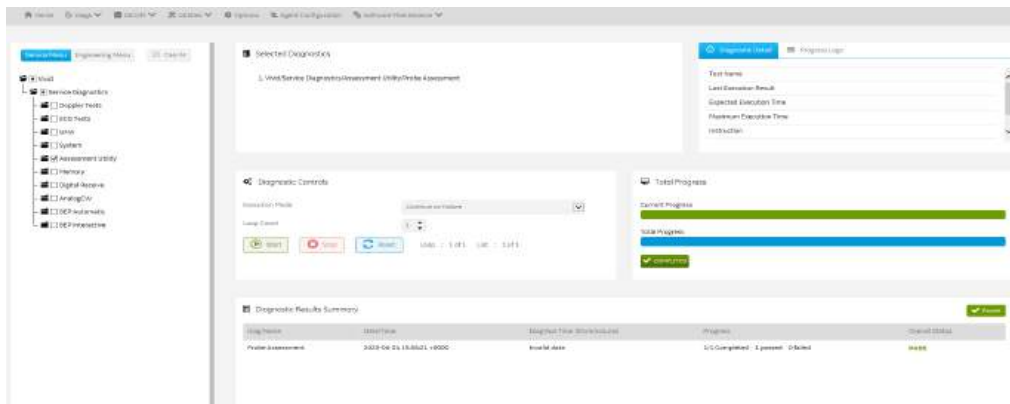
CAUTION

DO NOT allow the probe head to hang free. Impact to the probe head could result in irreparable damage.

2. Insert the SSA key and press the **Service Desktop** button to go to the **Common Service Desktop** page

e-PAT(continued)

- From **Diags > Run Diags**, select **Assessment Utility > Probe Assessment**.



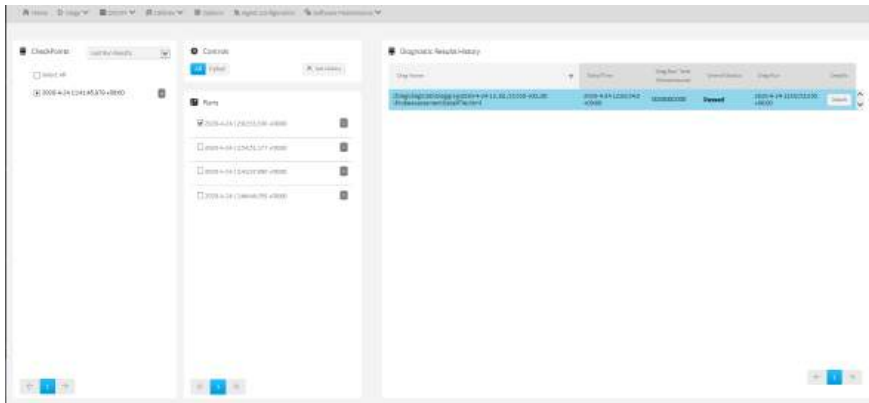
- Select **Start**.

The Probe Diagnostics commence. While the test proceeds, the name of the test currently in progress is displayed in the Selected Diagnostics field. As the testing sequence progresses, the progress bar in the Total Progress field will advance to reflect the test progress.

- At any stage, press **Stop** or **Reset** button , if required.
- When the probe diagnostics is completed, there will be **Pass/Fail** information listed in the Diagnostic Results Summary field to indicate whether the probe diagnostic is completed successfully or not.

e-PAT(continued)

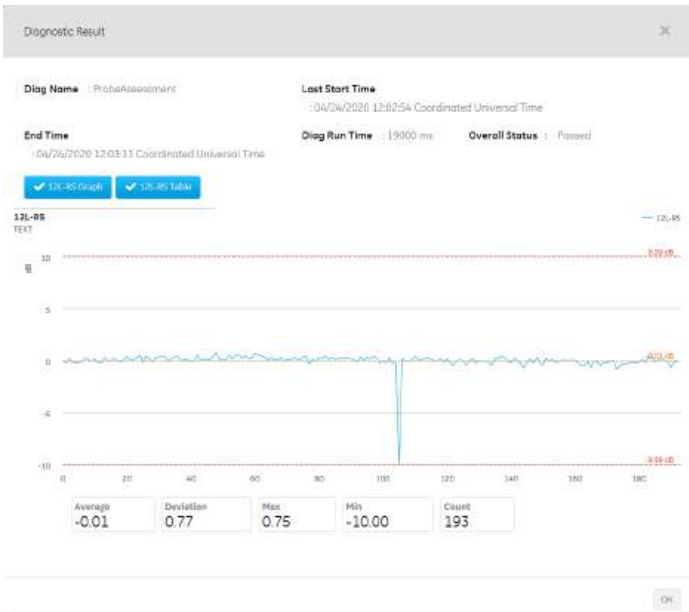
7. If you want to review all Reports to ensure the probe is fully functional and has no damaged elements, go to **Diags > Diags History**.



8. All the probe diagnostics you have run will be displayed in Runs field. Select one and press **Get History** button, the corresponding reports will be shown in the Diagnostic Results History field.

e-PAT(continued)

9. Press **Details** button if you want to see the detailed Reports of the selected diagnostic.



NOTE: *The above detailed information is just for reference and not used to decide probe defect or not.*



CAUTION

Reboot the system after the probe diagnostics.

Supported probes

Table 7-32: Supported probes

Item	Probe Name	HCAT	Part Number
1.	4C-RS	H4000SR	5488477
2.	8C-RS	H40402LS	5499508
3.	L8-18i-RS	H40462LF	5499609
4.	9L-RS	H40442LL	5499511
5.	12L-RS	H40402LY	5499501
6.	3Sc-RS	H45041DL	5863286
7.	6S-RS	H45021RP	5499316
8.	12S-RS	H44901AB	5499321
9.	6Tc-RS	H45551ZE	5729431
10.	9T-RS	H45531YM	5729433
11.	C1-5-RS	H40462LA	5499608
12.	E8Cs-RS	H48062AF	5670375
13.	ML6-15-RS	H45531YM	5499610
14.	M5Sc-RS	H44901AG	5718483
15.	AcuNav8		
16.	AcuNav10		
17.	AcuNav CRYSTAL		
18.	Soundstar CRYSTAL		

NOTE: *AcuNav 8, AcuNav 10, AcuNav CRYSTAL and Soundstar CRYSTAL probes are provided by the 3rd supplier.*

Probe Check(only for v208/v206)

Introduction

Probe Check is a probe assessment tool that evaluates each probe element integrity by transmitting on one channel at the time and recording the lens reflection, while scanning in the air. During the test the probe lens should be clean because any gel residue might affect the test result. This test is intended to be used during the life of the probe to evaluate possible probe deterioration over time.

Activation of the Probe Check can be done manually from the probe/application menu, or run automatically when the probe/application is selected. The interval of the automatic test can be configured in the system configuration.

The Probe Check evaluates the ratio of weak elements to total element count and the overall reflection level from the probe lens. If the Probe Check fails, the user is still allowed to continue using the probe, but should then evaluate if the image quality is adequate for clinical use.

NOTE: *Probe Check checks element integrity. There are other defects that can deteriorate probe performance that the Probe Check cannot detect, so the user should evaluate whether the probe performance is adequate regardless of the outcome of the test.*

NOTE: *GE is NOT responsible for the confirmation regarding the normal function of the ultrasound probe before use.*

Supported probes

Table 7-33: Supported probes

Item	Probe Name
1.	C1-5-RS
2.	4C-RS
3.	8C-RS
4.	E8Cs-RS
5.	9L-RS
6.	12L-RS
7.	L4-20t-RS
8.	L8-18i-RS
9.	ML6-15-RS
10.	M5Sc-RS
11.	3Sc-RS
12.	6S-RS
13.	12S-RS
14.	6Tc-RS
15.	6VT-D
16.	10T-D
17.	9T-RS

The probes that currently have this test available have a button labelled **Test Probe** in the probe/application menu. To activate the test manually one should open the probe menu and select Preset **Config/Test Probe** at the bottom of the application list. The **Test Probe** button is then available in the application menu.

Probe Test Activation

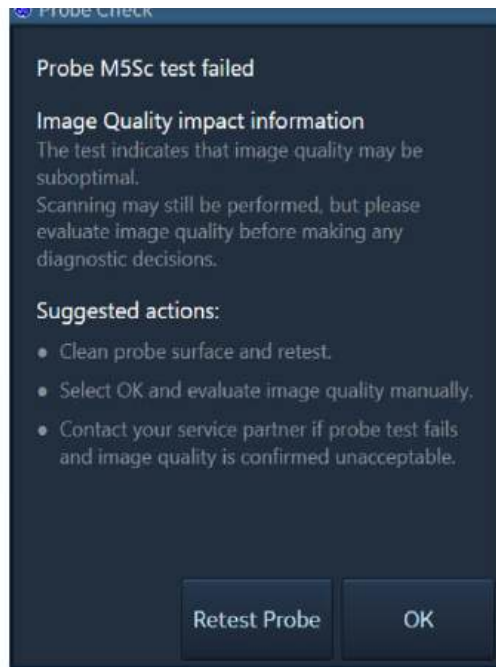
Auto Trigger

When the probe is connected to the scanner, the probe test will run automatically when you select probe/application. The interval between testing can be configured, and the test will run at probe/application selection when the previous test of the chosen probe type is older than the configured interval.

When the probe test is activated during probe/application selection, then “Probe Check: Checking probe, please wait...” is displayed in the info bar at the bottom of the screen, then “Loading Probe/Application, please wait...” and finally “Probe Check: Probe test passed” if the test passed.

Auto Trigger(continued)

However, if the test fails the following user dialog appears:



Probe Check Message:

Probe test did not pass

Image Quality impact information

- The test indicates that image quality may be affected.
- Scanning may still be performed. Please evaluate image quality before making diagnostic decisions.

Suggested actions:

- Clean probe surface and retest.
- Select OK and evaluate image quality manually.
- Contact your service partner if probe test does not pass and image quality is determined to be unacceptable.

Figure 7-56. Failed test user dialog

The dialog informs the user that the probe element integrity check failed, and image quality may be suboptimal.

Auto Trigger(continued)

If the lens is not clean, it should be cleaned, and the test should be repeated by selecting the **Retest Probe** button. Even if the test fails one can resume scanning by selecting the **OK** button. The image quality and the probe sensitivity should in that case be evaluated and judged whether it is acceptable for clinical use and diagnostic decisions.

If image quality is confirmed not acceptable, please contact your Service partner.



CAUTION

DO NOT allow the probe head to hang free. Any possible impacts to the probe head could result in irreparable damages to the probe.

For the failed test result, user should contact the Field Engineer(Hereinafter referred to as FE) immediately to evaluate the test result. FE will collect the below failure information:

- Console Name
- Console Serial Number
- Current SW revision
- Probe name
- Probe port number the probe connected
- The trigger mode of the diagnostic (Auto Trigger / Manual Trigger)
- Trigger interval for auto trigger (only for the auto trigger log)
- Start and end timestamp of the diagnostic activity
- User activity during probe check
- List the integrity of elements or smallest available patches of elements (elements sensitivity)
- Pass/Fail results of each element
- Pass/Fail result
- IQ impact code

Auto Trigger(continued)

With the remote control of the machine plus an authority of Class M or SSA dongle, FE can obtain the information more conveniently by exporting the test logfile. Press ALT+D to export the test report and store to the specific destination, there are 2 methods for exporting the report:

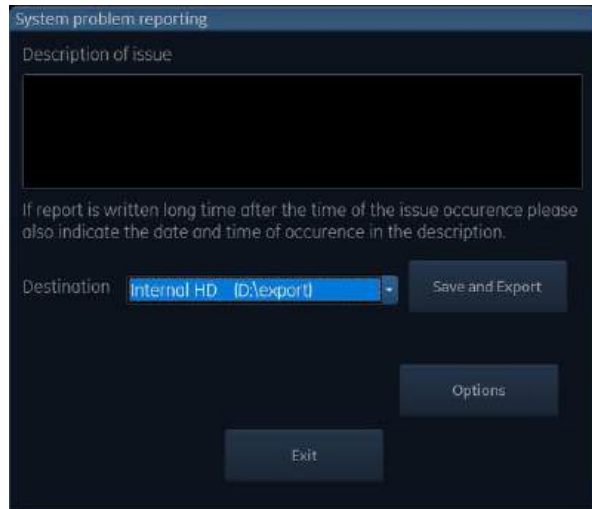


Figure 7-57. Export Reports

Complete Log: export all the files from D:\Log folder in the form of a compressed package.

name	date modified	type	size
logfile-feuMon.txt	5/6/2022 11:07 AM	Text Document	0 KB
logfile-info.txt	5/6/2022 11:07 AM	Text Document	0 KB
logfile-myfile.txt	5/6/2022 11:07 AM	Text Document	0 KB
logfile-PCIMon.txt	5/6/2022 11:07 AM	Text Document	0 KB
logfile-pow.txt	5/6/2022 11:07 AM	Text Document	0 KB
logfile-PreSetUpdate.txt	5/6/2022 11:07 AM	Text Document	0 KB
logfile-probe.txt	5/9/2022 2:34 PM	Text Document	3 KB
☒ logfile-ProbeElementCheck.txt	5/9/2022 2:47 PM	Text Document	83 KB
logfile-replay.txt	5/6/2022 11:07 AM	Text Document	0 KB
logfile-RespSafety.txt	5/6/2022 11:07 AM	Text Document	0 KB
logfile-SSCISStatusMon.txt	5/6/2022 11:07 AM	Text Document	0 KB
logfile-SwDwndVerification.txt	5/6/2022 11:07 AM	Text Document	0 KB
logfile-TestProbeCalibrations.txt	5/6/2022 11:07 AM	Text Document	0 KB
logfile-TempMon.txt	5/9/2022 2:40 PM	Text Document	777 KB
logfile-TempMon-Boundaries.txt	5/9/2022 2:33 PM	Text Document	2 KB
logfile-TempMon-ColNames.txt	5/9/2022 2:33 PM	Text Document	1 KB
logfile-TRXStatusMon.txt	5/6/2022 11:07 AM	Text Document	0 KB
logfile-TdpsMon.txt	5/9/2022 2:40 PM	Text Document	1,001 KB
logfile-TdpsMon-Boundaries.txt	5/9/2022 2:33 PM	Text Document	2 KB
logfile-TdpsMon-ColNames.txt	5/9/2022 2:33 PM	Text Document	1 KB
logfile-USBDevices.txt	5/9/2022 2:33 PM	Text Document	31 KB
logfile-VpdEditRemote.txt	5/6/2022 11:07 AM	Text Document	0 KB
OSPatchInstall.txt	5/6/2022 3:09 PM	Text Document	1 KB
OSPatchInstall-prev.txt	5/6/2022 1:32 PM	Text Document	1 KB
StartLoader.txt	5/9/2022 2:32 PM	Text Document	23 KB

Figure 7-58. Complete Log

Auto Trigger(continued)

The file logfile-ProbeElementCheck record all the necessary probe test information.

```

logfile-ProbeElementCheck.txt - Notepad
File Edit Format View Help
Monday, May 9 13:09:01, 2022; Info ; ProbeElementCheckLog(4220/4316); Running VITA automatically
Monday, May 9 13:09:01, 2022; Info ; ProbeElementCheckLog(4220/4316); Auto-run option: Interval - 7 days
Monday, May 9 13:09:01, 2022; Info ; ProbeElementCheckLog(4220/4316); System: Vivid iq; SWVersion: 206.29.0
Monday, May 9 13:09:01, 2022; Info ; ProbeElementCheckLog(4220/4316); Probe: 35c-R5; Connector: 0
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); paramFile -> C:\Scanner\Factory\target\bin64\VitaConfig\
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); *****
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); VITA version -> 0.33.0
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); *****
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); consoleInfo.name -> Sage
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); *****
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); probeInfo.name -> 35c-R5
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); *****
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); elementData.vectorPerFrame -> 64
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); elementData.vectorIncrement -> 576
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); elementData.frame0 -> [ 152 213 231 219 193 168 147 144
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); elementData.frame1 -> [ 165 217 228 206 169 172 186 174
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); elementData.frame2 -> [ 151 210 222 199 147 165 194 188
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); elementData.frame3 -> [ 90 142 149 119 70 184 129 117 ..
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); elementData.frame4 -> [ 127 180 194 178 149 149 172 171
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); elementData.frame5 -> [ 105 147 171 172 144 126 152 161
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); *****
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); analysisParams.isPhasedArray -> 1
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); analysisParams.startSample -> 4
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); analysisParams.stopSample -> 23
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); analysisParams.startFrame -> 0
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); analysisParams.stopFrame -> 5
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); analysisParams.mainIterNumber -> 10
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); analysisParams.subIterNumber -> 1
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); analysisParams.rankIterNumber -> 1
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); analysisParams.topIterNumber -> 1
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); analysisParams.haltIterNumber -> 1
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); analysisParams.referenceValue -> 42.650002
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); analysisParams.scaleFactor -> 1.000000
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); analysisParams.shiftValue -> -3.430000
Monday, May 9 13:09:03, 2022; Debug ; ProbeElementCheckLog(4220/6588); analysisParams.threshold -> -5.000000

```

Figure 7-59. Logfile Information

After all information collected, FE will remotely instruct the user to cross check the probe to detect if the issue is about probe or about the system itself.

NOTE: Suggest to prepare at least 2 probes to conduct the cross check.

- Clean probe surface and retest, if the test result passed, it shows the probe is OK for diagnose. If the test result failed, please continue with next step.
- Test the probe with other probe port. If the test result passed, it shows the original probe port has error. If the probe tested failed, use another probe test again. If there is no another probe, call service and share the results including no extra probe for testing.

NOTE: For Vivid iq without 4PP, please skip step 2 and use another probe to do cross check.

- If another probe test passed, contact service to replace probe. For both test results failed, check if there have other failure node for probe port and MST board, follow probe port and MST board check steps.

Auto Trigger(continued)

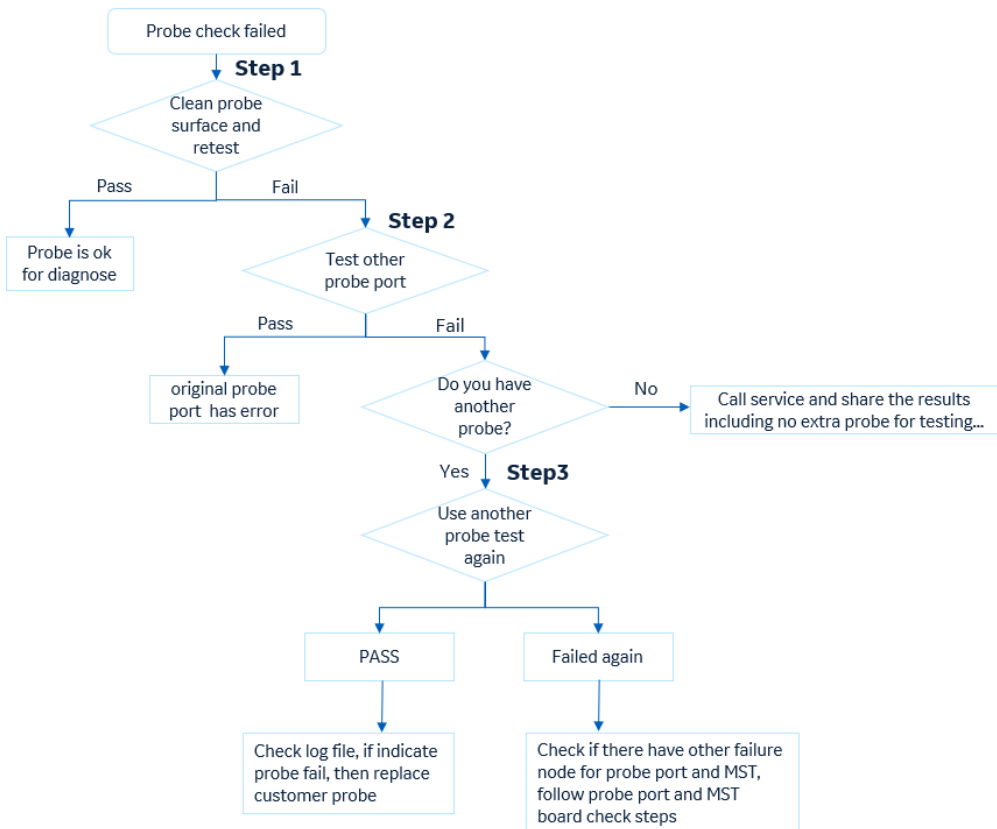


Figure 7-60. Cross check flowchart

NOTE: *Currently probe check logfile doesn't record the probe SN, please remember the probe check time if use two type probe when doing cross check.*

Auto Trigger interval configuration

The Probe Check frequency can be configured by entering **Config > Imaging > Probe Check** where one can select from five intervals:

- **Every exam:** probe check will be activated for each exam.

NOTE: Every exam is selected as default.

- **Once 1 day:** probe check will be activated upon probe/application selection if it is more than one day since last time the check was performed.
- **Once 7 days:** probe check will be activated upon probe/application selection if it is more than seven days since last time the check was performed.
- **Once 30 days:** probe check will be activated upon probe/application selection if it is more than thirty days since last time the check was performed.
- **Never:** probe checking will never execute during probe/application selection. If this choice is configured the user should run the test manually at regular intervals.

Auto Trigger interval configuration(continued)

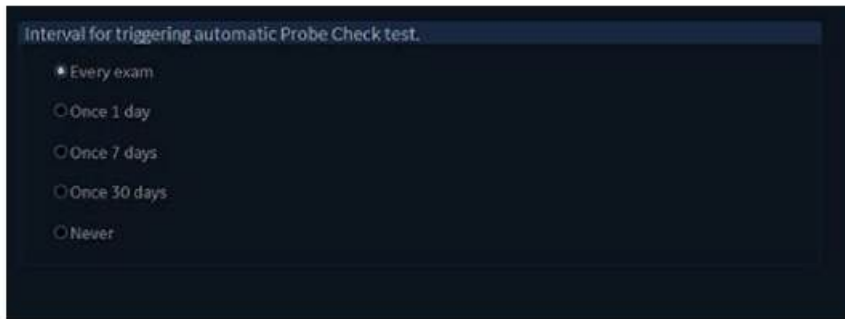


Figure 7-61. Configuration screen for Probe Test interval

If the auto test frequency is set low in the configuration, it is recommended to run Probe Check manually on a regular basis and especially if the probe performance shows sign of image or sensitivity deterioration. For curved and linear probes, compromised probe elements will typically show up as a localized dark area at shallow depths. For phased arrays, all elements are used for all imaging directions, but fewer elements are used at shallow depths, so loss of elements is most likely to give reduced image intensity at shallow depths. The following three images illustrate this.

Auto Trigger interval configuration(continued)

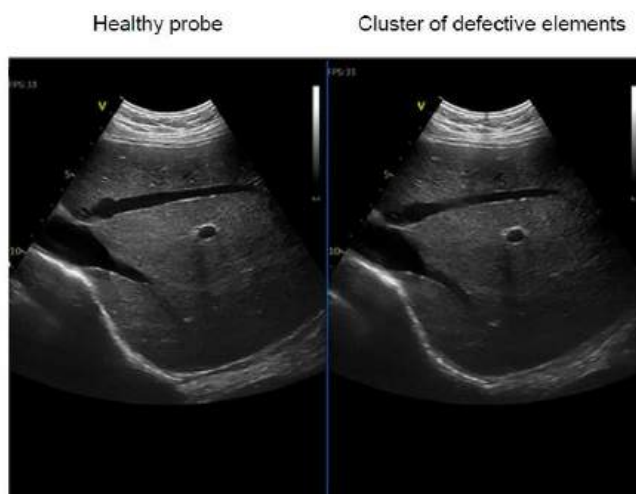


Figure 7-62. Example of image degradation for a curved probe



Figure 7-63. Example of image degradation for a linear probe

Auto Trigger interval configuration(continued)

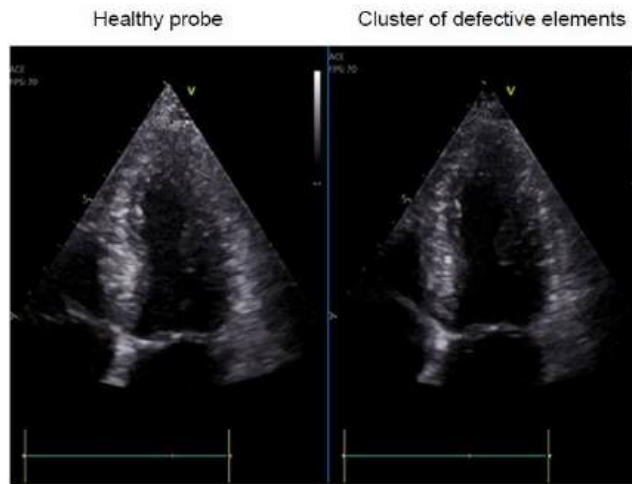


Figure 7-64. Example of image degradation for a phased array probe

Manual Trigger

Users can run the Probe Test manually at any time by entering the probe menu, selecting the probe to be tested, and then selecting the **Preset Config/Test Probe** button at the bottom of the application list. This menu displaying all applications will have a **Test Probe** button at the lower right corner if the Probe Test is available for the probe in question.

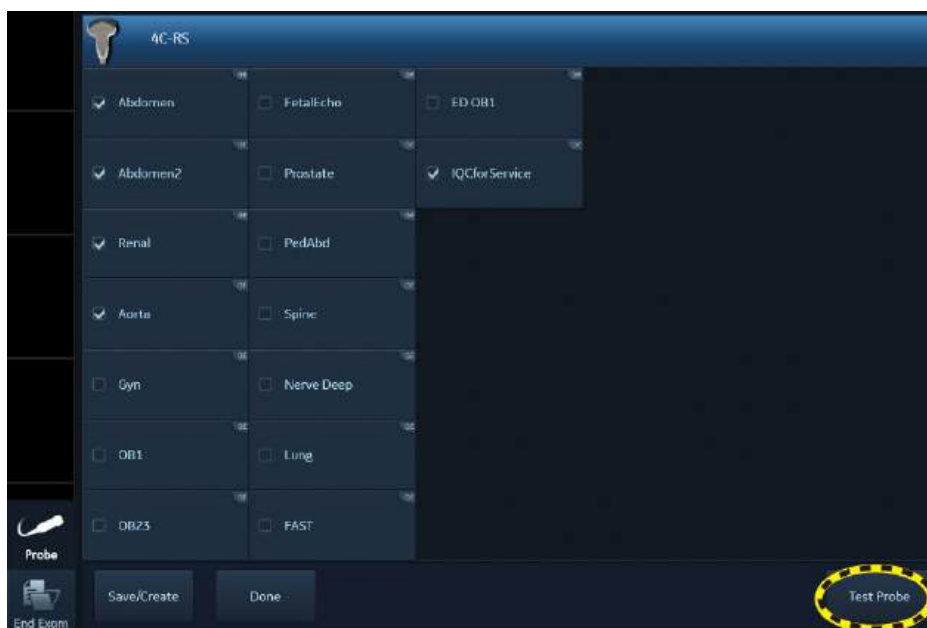
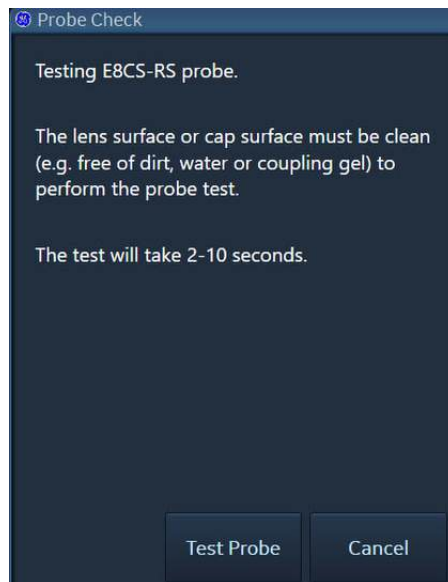


Figure 7-65. Manual Probe Test

Manual Trigger(continued)

After selecting the **Test Probe** button the following user dialog will appear:



Probe Check Message:

Probe test
The lens surface or cap surface must be clean (e.g.free of dirt, water or coupling gel) to perform the probe test.
The test will take 2-10 seconds.

Figure 7-66. Probe Test manual activation user dialog

After selecting **Test Probe** the probe test activates and the user feedback is the same as described for the automatically activated "Probe Test".

Network and Insite II Configuration

Network Configuration

Wire-LAN Network

1. Connect system with network.
2. Select **Config> Connectivity-> TCP/IP**, select **Network Settings**.

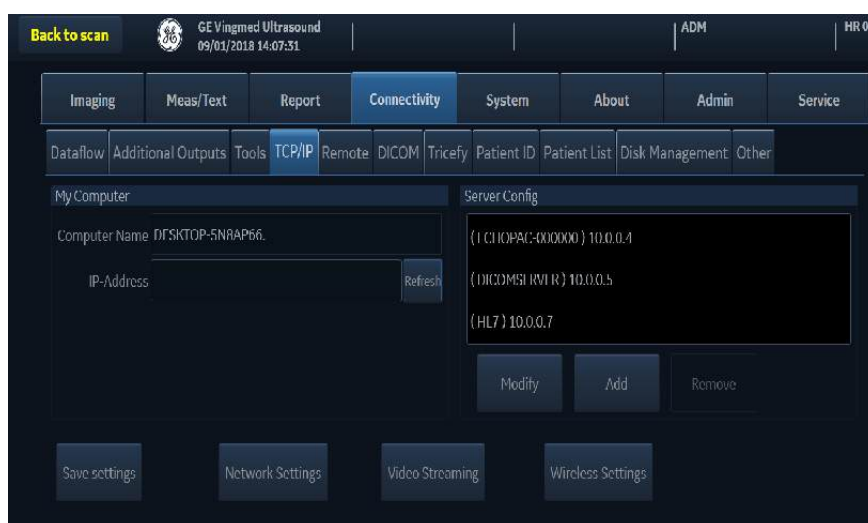


Figure 7-67. Network Settings

Wire-LAN Network(continued)

3. Select **Local Area Connection**.

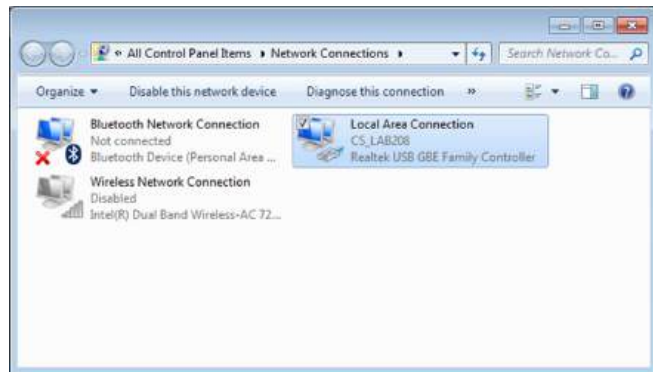


Figure 7-68. Network Connection

4. Select **Properties** in the Local Area Connection Status window.

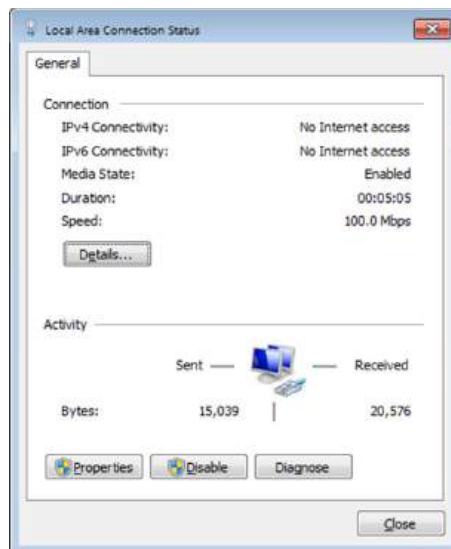


Figure 7-69. Connection Status

Wire-LAN Network(continued)

5. Select **Internet Protocol (TCP/IP)** from the terms, and then select **Properties**.

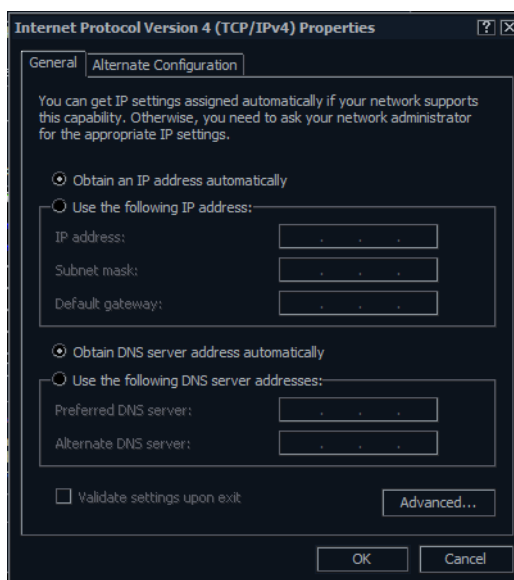


Figure 7-70. TCP/IP Protocol

Wire-LAN Network(continued)

6. Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**, and then select **OK**.

NOTE: *If user wants to setup static IP address, input static address in **IP-Address box**, **Subnet Mask** and **Default Gateway** box.*

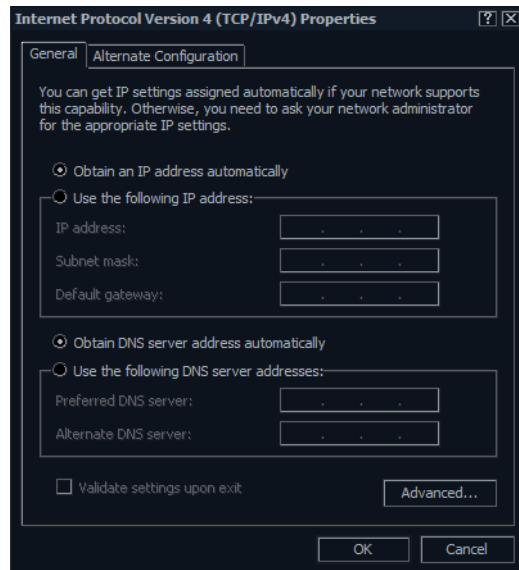


Figure 7-71. IP Address

7. The network icon at the bottom of the the screen displays as connected.

Wireless-LAN Network

NOTE: To configure the Wireless-LAN network, the operator must login as administrator.

1. Connect the wireless adapter in the USB port.
2. Select **Config-> Connectivity-> TCP/IP**, select **Wireless Settings**.

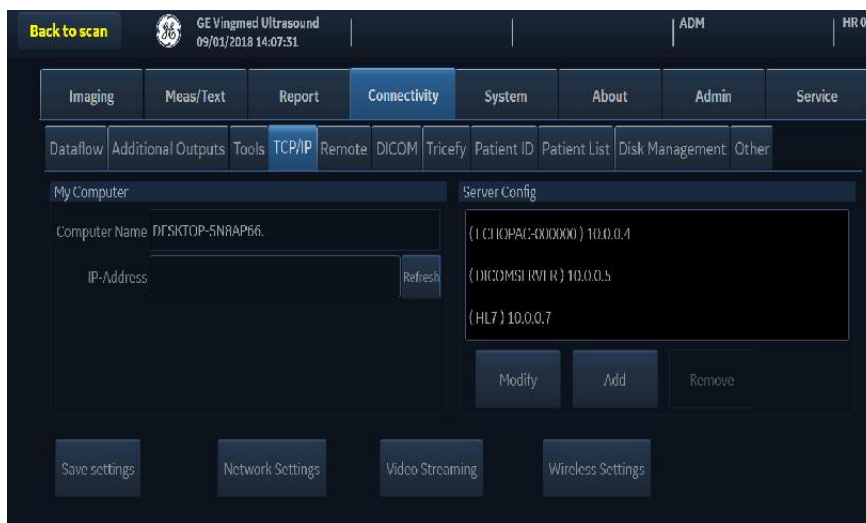


Figure 7-72. Wireless Settings

3. Double click the network you want to connect.

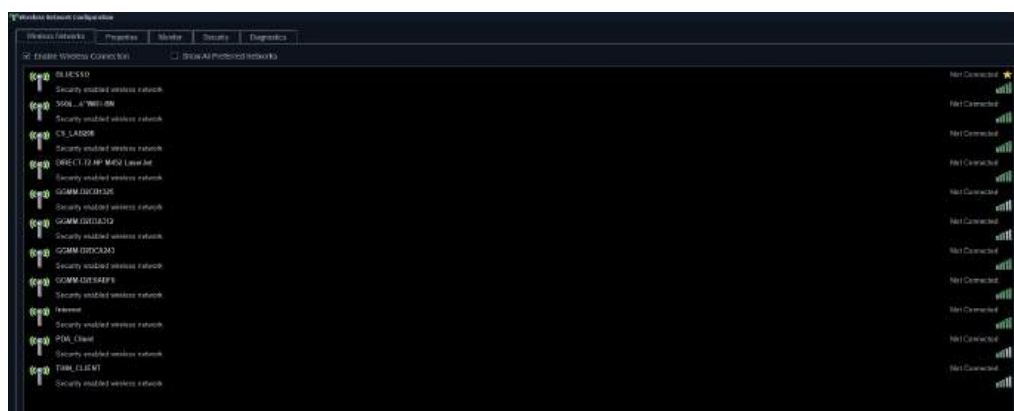


Figure 7-73. Wireless Network Connection

Wireless-LAN Network(continued)

4. Press **OK**.

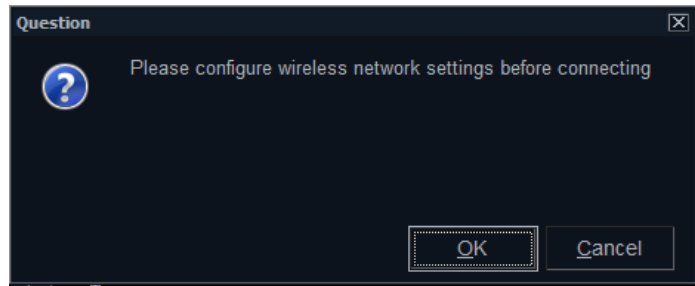


Figure 7-74. Confirmation information

5. Go to the Security page, select the Security type, Encryption type and input the Network security key, and then press **OK**.

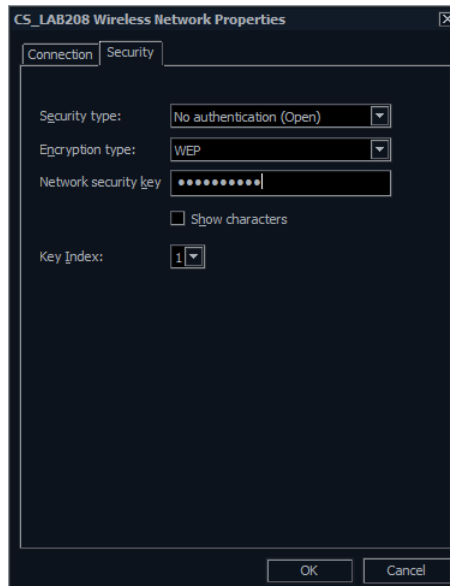
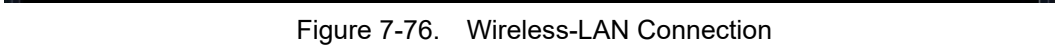


Figure 7-75. Network configuration



Insite II Configuration

1. On the ultrasound system, enter the Service Desktop.
2. On **Agent Configuration** page, choose **Production** as Enterprise Server in **Advanced Configuration** section.

The screenshot displays the 'Agent Configuration' page. The top section shows agent status: 'Agent Status' is 'Waiting', 'Agent Registered' is 'Yes', 'Agent Quarantine' is 'No', and 'Agent CDM Verified' is 'Yes'. Below this, fields for 'Agent Model Number' (CS-MUS-CPUS-AS-801.8), 'Serial Number' (111100001), 'ERP No' (111100001), and 'Display Name' (111100001) are visible. The 'Advanced Configuration' section contains 'Enterprise Server' (Production), 'Enterprise Host' (insite.gemini2.com), and 'Enterprise Port' (845). A 'Proxy Configuration' section has 'Enable Proxy' checked, with 'Proxy Server' (3.33.119.101) and 'Proxy Port' (84). A 'Credentials' section has 'Enable Proxy Credentials' unchecked, with 'Username' and 'Password' fields. At the bottom are 'Submit Changes' and 'Reset Form' buttons. The footer reads '© 2018 General Electric Company. General Service Desktop Configuration v1.0.0.0B'.

Figure 7-77. Server Type Configuration

Insite II Configuration(continued)

- 3. Enter **Proxy Server** and **Proxy Server Port** in **Proxy_Configuration**, then press **Submit Changes**.

The screenshot shows the 'Agent Configuration' page of the Insite II system. The 'Advanced Configuration' section is expanded, showing the 'Proxy Configuration' tab. The 'Proxy Server' field is set to 'SUL118.101' and the 'Proxy Port' is set to '88'. The 'Submit Changes' button is visible at the bottom of the configuration section.

Figure 7-78. Proxy Configuration

- 4. In the server side, type the CRM No. of the system which the OLE would remotely connect to, and select **Get Started**.

NOTE: Remote server link:https://stg-ffa.am.health.ge.com/#/di/home.

The screenshot shows the 'Start Remote Troubleshooting' workflow screen. The 'Workflow Type' is set to 'Standard (Includes insite1, insite2, and RSvP)'. The 'Enter System or Service ID' section is active, with the 'System ID' radio button selected. The 'CRMNo' field is highlighted with a yellow box. The 'Service Request ID (Optional)' field is empty. The 'Country of System' field is also empty. The 'Get Started' button is visible at the bottom right.

Figure 7-79. Input System ID

Insite II Configuration(continued)

5. Select **Connect**. Then the **Connect** page is displayed.

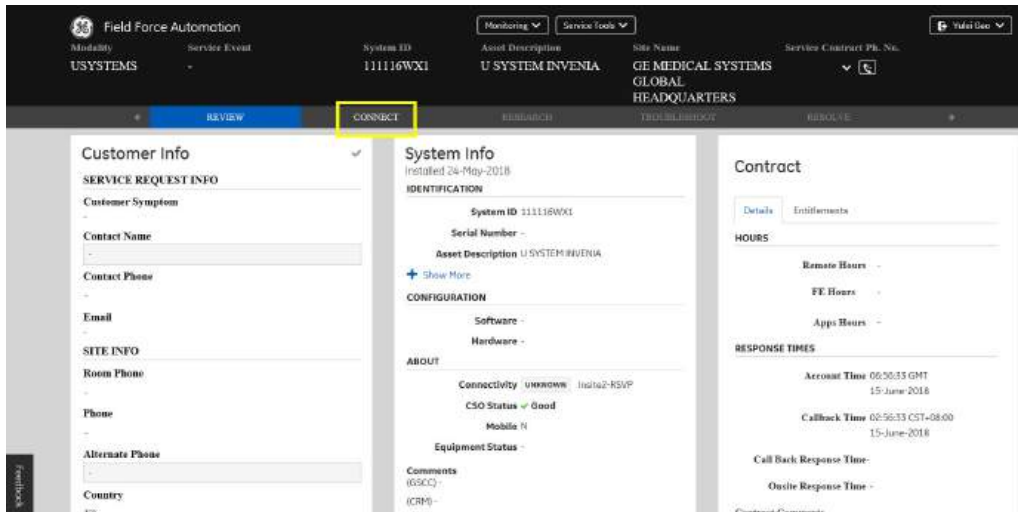


Figure 7-80. Connect Page

6. Select HTTPS to **Connect**. Then the OLE is remotely connected to the system.

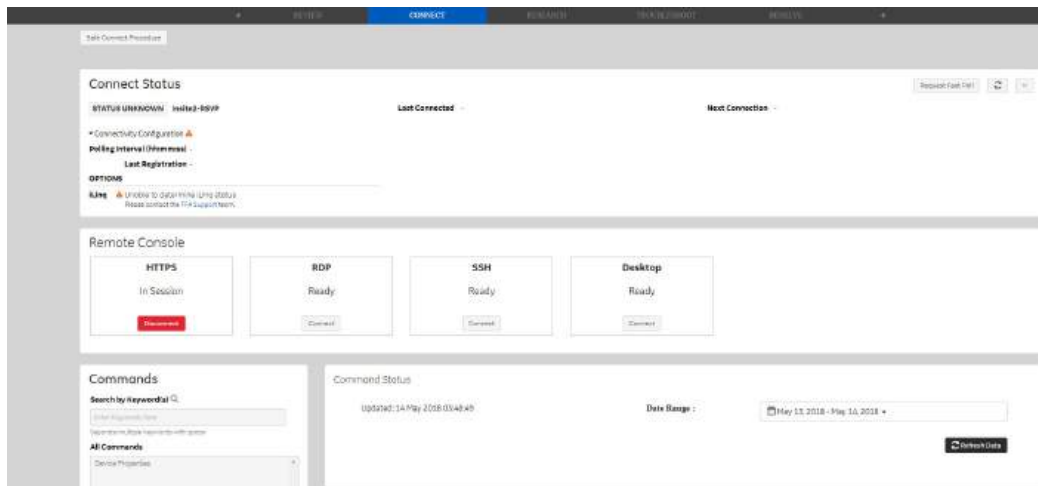
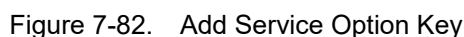
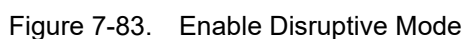


Figure 7-81. Select HTTPS to Connect

- NOTE:** Please delete the added service option key when your service work is done.



8. Enter **Utility-> Disruptive Mode Utility**, select **Enable**.



9. Customer will receive a request of Service side, select Yes to accept.
10. Service can do Remote Diagnostics successfully.
11. Press Power On/Off Switch, and choose **Shutdown** to shutdown the system and then restart the system.

Setup Wizard

Setup Wizard (Installation wizard) is a function to enable the operator to configure some common system settings when turning on the system for the first time after the software installation.

For Vivid iq, you can also enter Setup Wizard by clicking the **Setup Wizard** button on the tray menu.

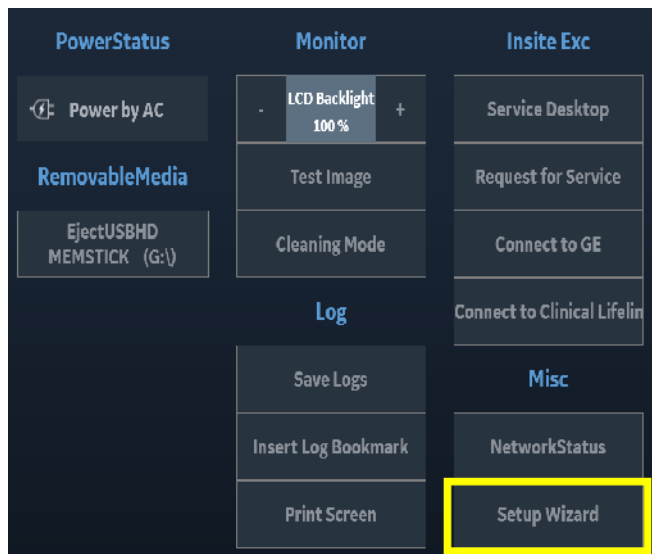


Figure 7-84. Enter Setup Wizard

Setup Wizard(continued)

1. Select the appropriate language for system language, manual language and input language from the drop-down list.

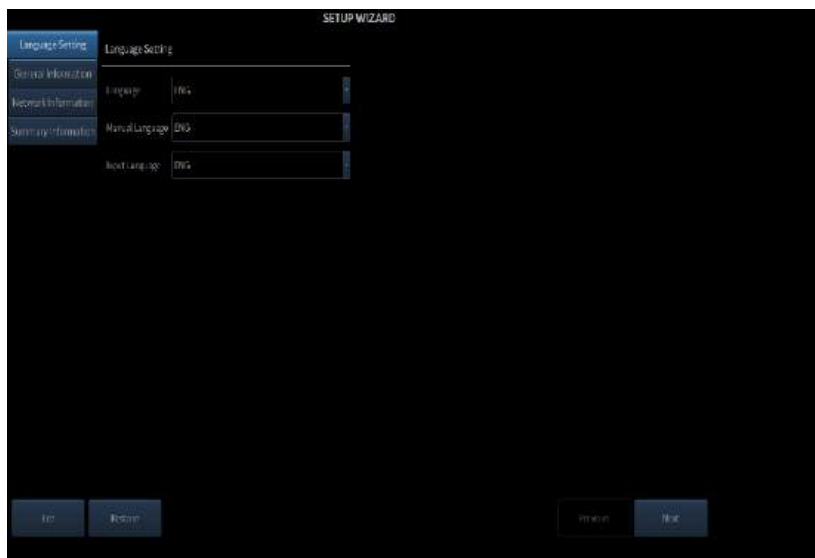


Figure 7-85. Language settings (1)

- If you do not change the language, press **Next** to continue.
- If you change the language setting, press **OK** to restart the system.

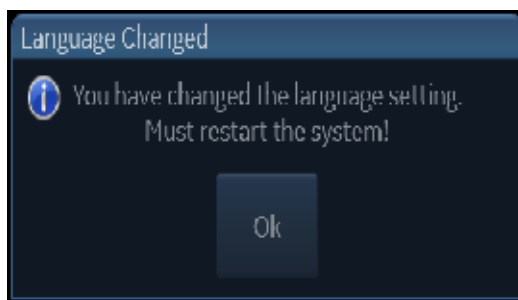


Figure 7-86. Language settings (2)

Setup Wizard(continued)

NOTE: If you press **Previous**, you will go to the previous page.

2. This screen shows the hospital and time information, and you can set the system date and time here.

SETUP WIZARD

Language Setting

General Information

Hospital Information

Hospital: GE Vingmed Ultrasound

Department:

Echolab:

Time Information

System Date: 04/01/2018

System Time: 13:04:02

Time Format: 24

Date Format: EU

Default Gateway: 1900

Sync Time

Other Information

Index: Metric

Exit Restore Previous Next

Figure 7-87. General Information

3. Press **Next** to continue.
4. The **Network Information** screen shows the configuration of wireless and local network:

Setup Wizard(continued)

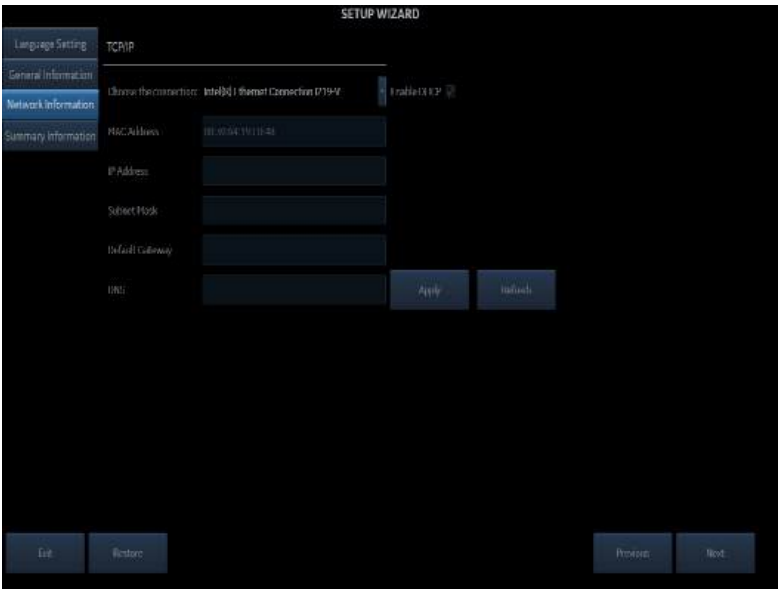


Figure 7-88. Network Information (1)

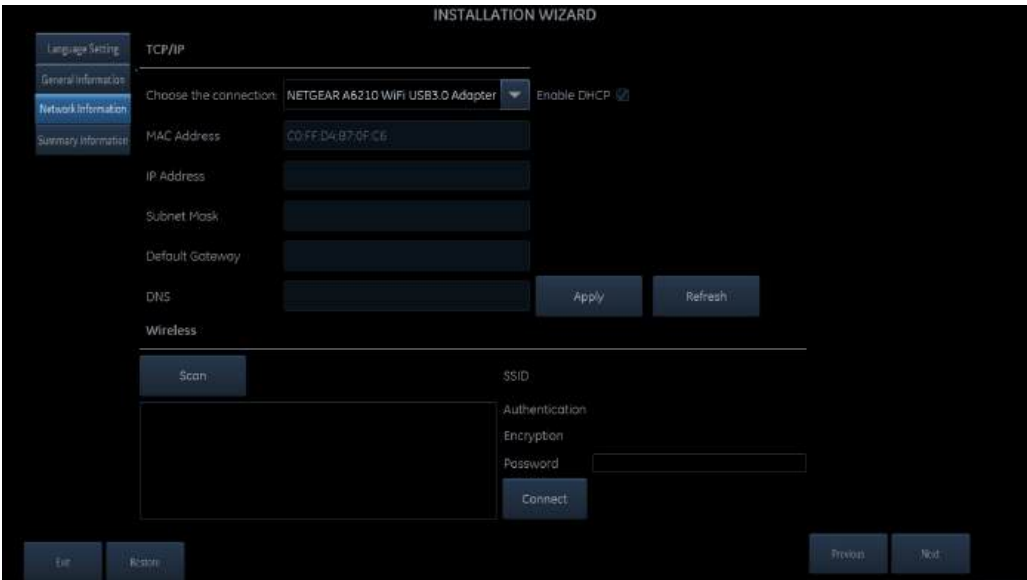


Figure 7-89. Network Information (2)

Setup Wizard(continued)

Table 7-34: Network settings

Preset Parameter	Description
Enable DHCP	Select to enable DHCP.

- Press **Next** to continue.
- This screen shows the report of the previous settings. You can export it to the file.

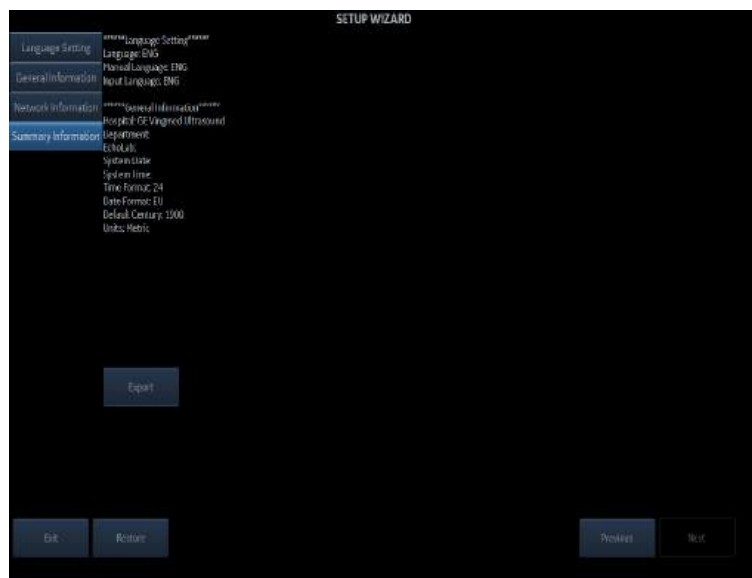


Figure 7-90. Summary Information

Press **Export** to store the report.

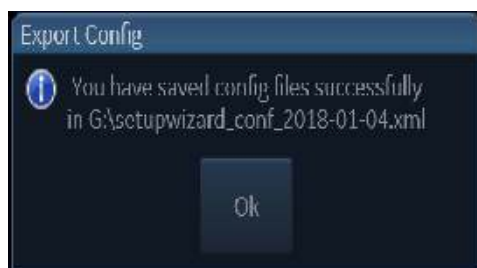


Figure 7-91. Export Summary

- Press **Exit** to exit Setup Wizard.

Troubleshooting

Console Troubleshooting Trees

System Doesn't Boot

This is an overall diagram showing a recommended sequence for troubleshooting a no-boot situation.

NOTE: This troubleshooting tip is for online engineer.

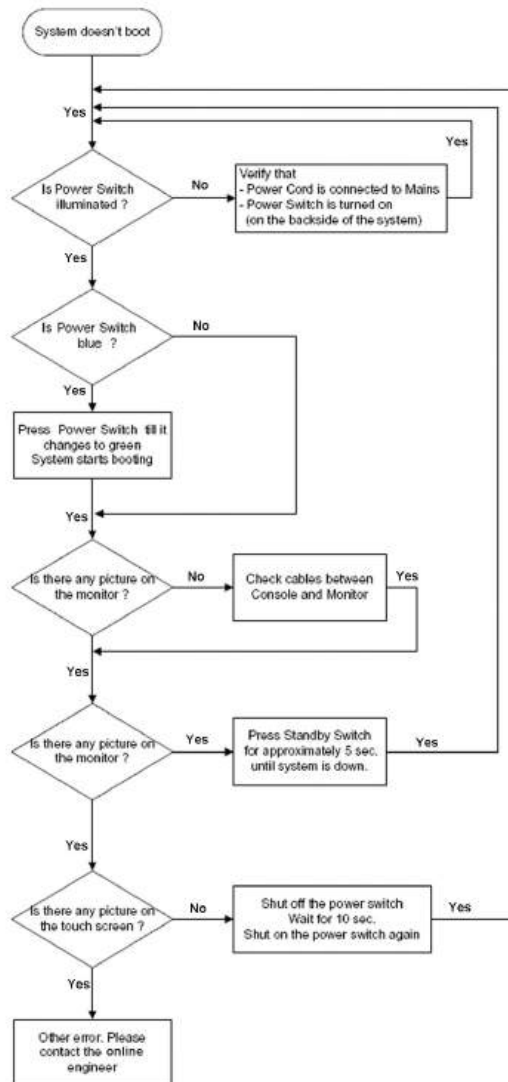


Figure 7-92. System Doesn't Boot

The trackpad is low sensitive

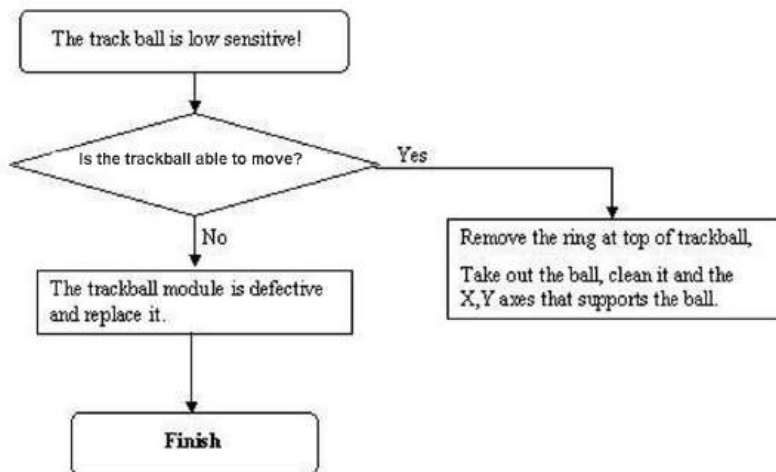


Figure 7-93. Trackpad Low Sensitive

Noise Issue

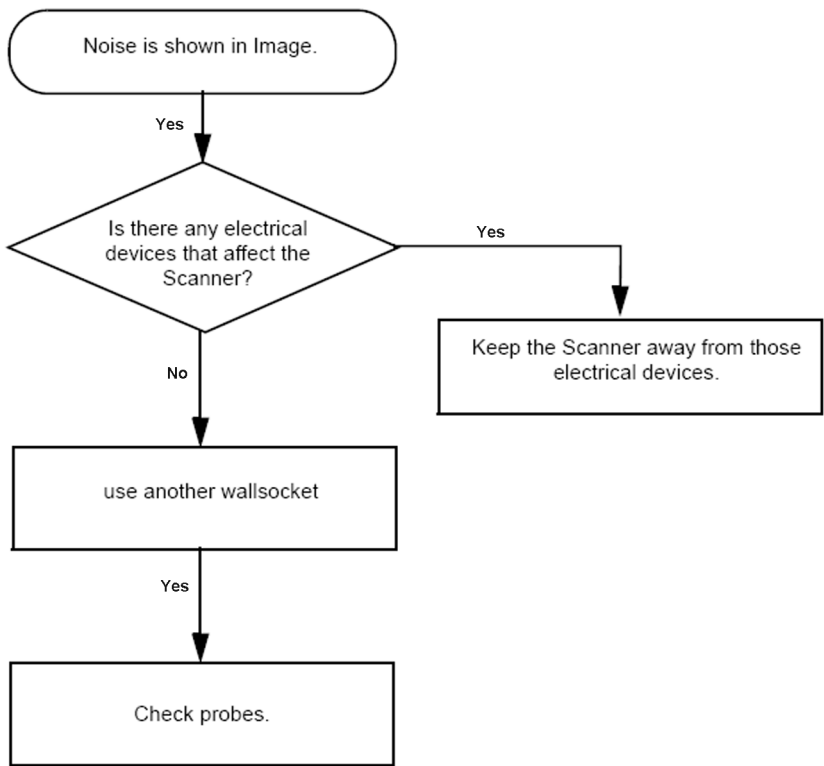


Figure 7-94. Noise Issue

Trackpad - Impaired Sensitivity

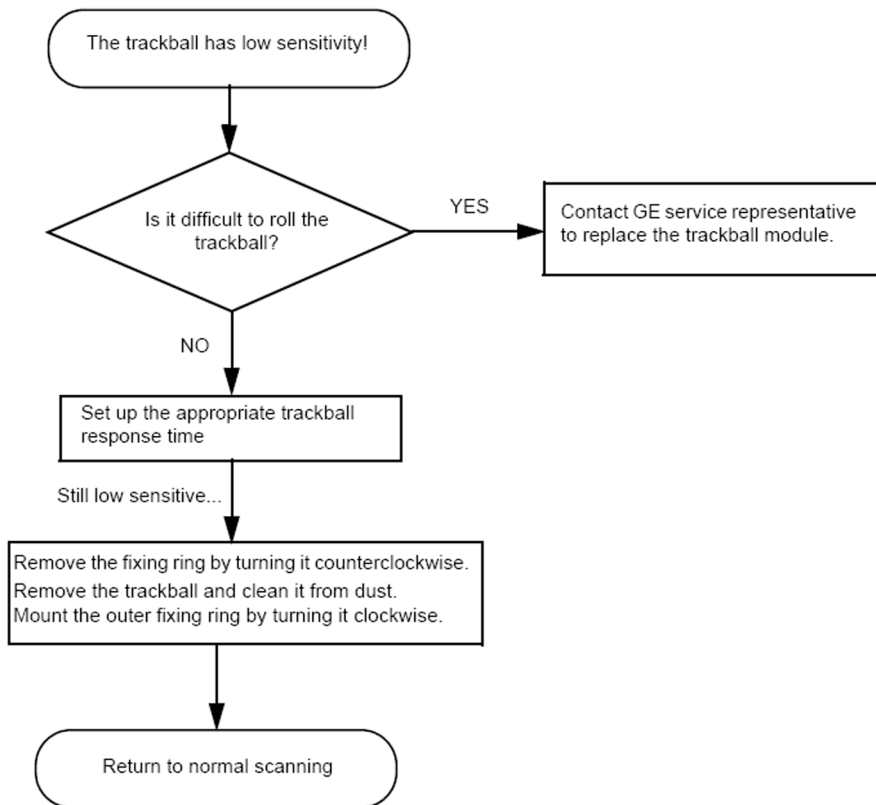


Figure 7-95. Trackpad - Impaired Sensitivity

Printer Malfunction

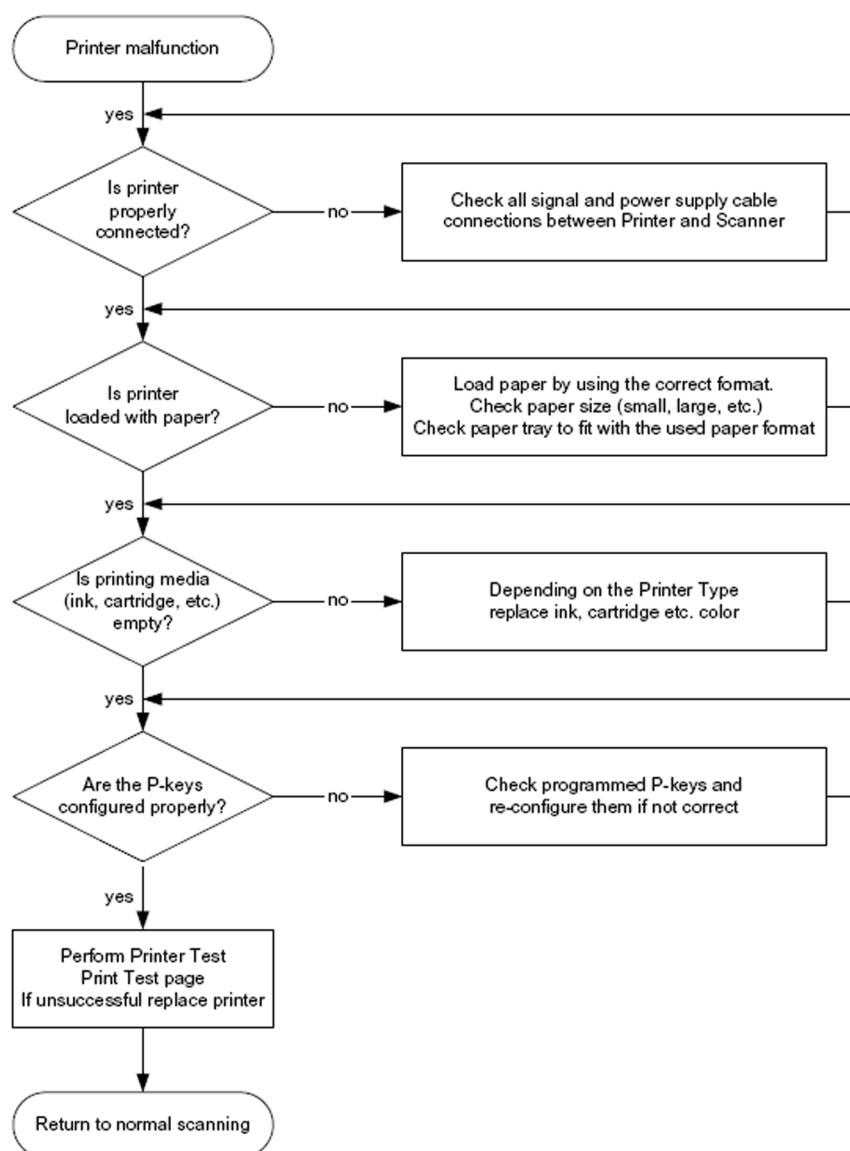


Figure 7-96. Printer Malfunction

Monitor Troubleshooting

Table 7-35: Monitor Troubleshooting

Fault Symptom	Check Item
No image	Check the power cord is properly connected.
	Check the video cable is properly connected.
	Check no pins of the video cable are bent.
	Check if video present on backplane.
	Check if the signal resolution is out of range.
Color is not uniform	Replace the monitor.
Colored streaks appear in image	Check for presence of magnetic sources near the monitor. Eliminate the sources and then degauss the monitor.
Picture is fuzzy	Adjust the picture contrast and picture brightness. Some SVGA cards having an excessive video output level will cause a fuzzy picture at the maximum contrast level.
	Check if the signal resolution is correct.
Video test patterns are not clear, bright, parallel or square	Replace the monitor.

Network Troubleshooting Tress

No Connection to the Network at All

1. Check if the LCD indicates the network connection is working in normal status.
2. Check that the network cable between the scanner and the wall network is connected and well seated in both ends.
3. Try a Ethernet crossover cable that is known to be OK.

NOTE: *A Ethernet crossover Cable must be used instead of a normal network cable here.*

4. Connect a Ethernet crossover cable between the Scanner and your PC. Try to ping from the scanner to the ip address on the PC. If ok, the hardware connection inside the scanner is OK.

Cart Diagnostics/Troubleshooting

Overview

This section describes how to setup and run the tools that help Cart operation. Cart and board level diagnostics are run whenever power is applied. Some Service Tools may be run at the application level.

Troubleshooting

There is a troubleshooting tool available that the customer can use as a first step to investigate failure issues. It gives the current status of failure and provides some relative ways to figure out.

Gathering Trouble Data

There may be a time when it would be advantageous to capture trouble information for acquisition through remote diagnostics or to be sent back to the manufacturer for analysis. There are different options to acquire this data that would give different results.

- Product Name: Cart
- Cart S/N Number:

Troubleshooting Trees

Cannot Charge Console

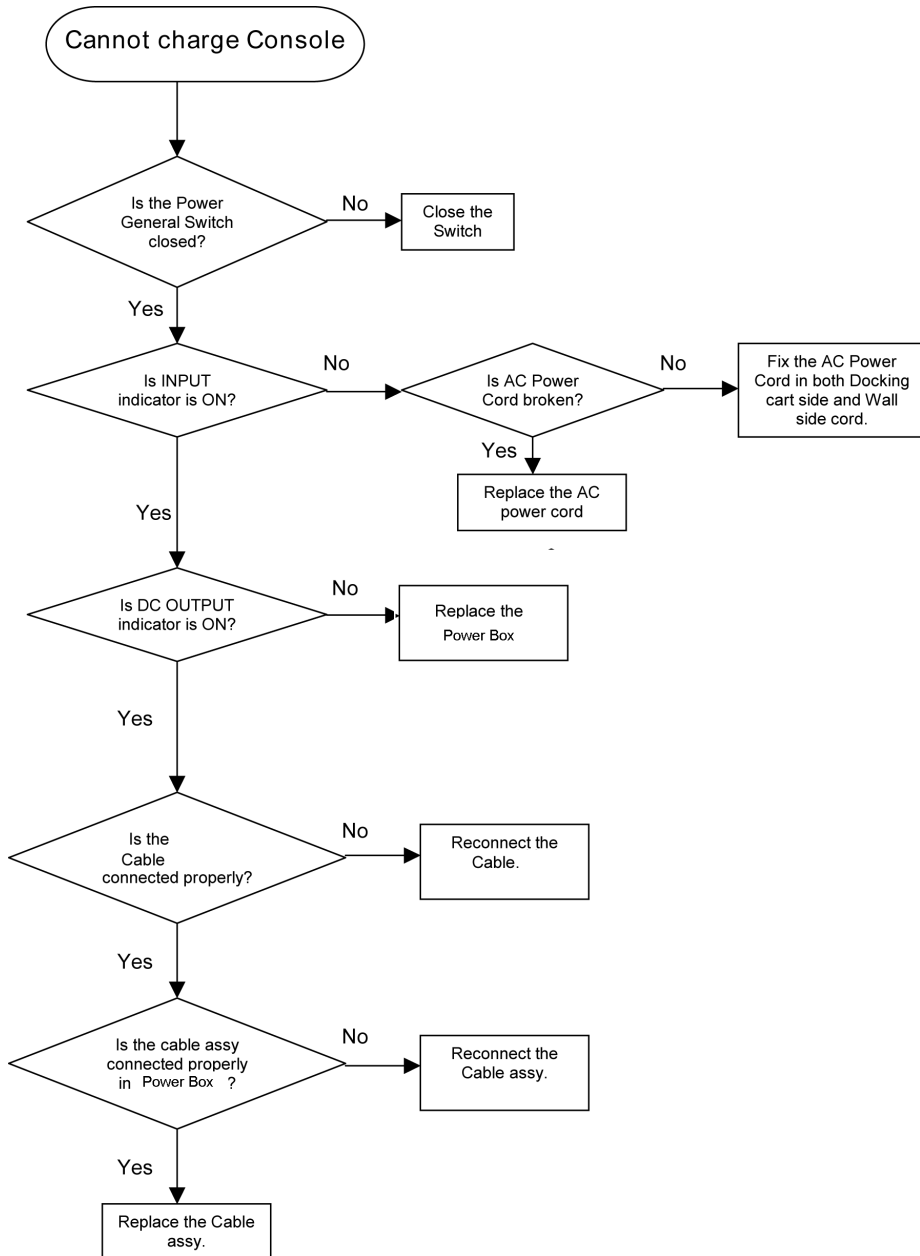


Figure 7-97. Cannot Charge Console Troubleshooting

System Does Not Boot

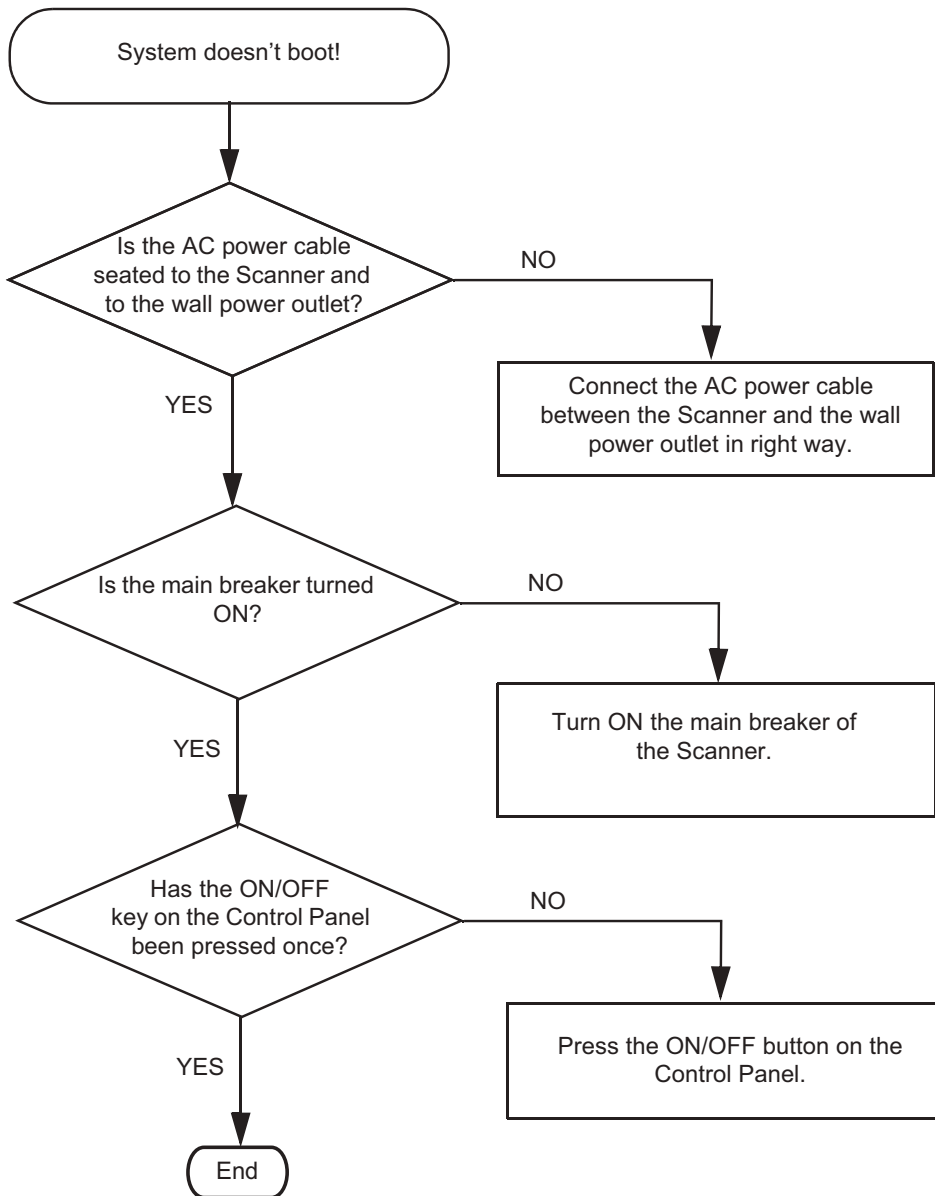


Figure 7-98. System Does Not Boot

Can Not Power on the Peripherals

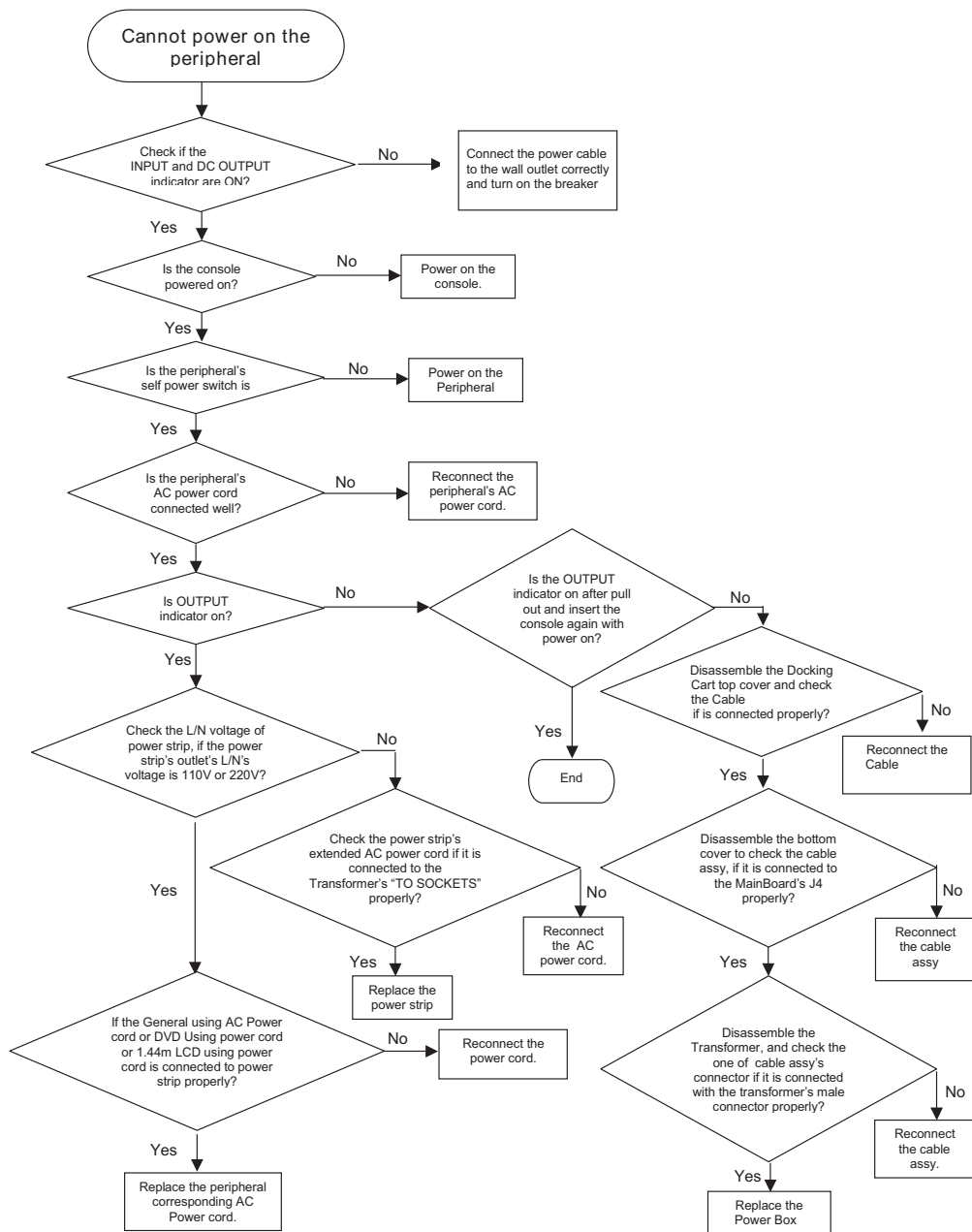


Figure 7-99. Can Not Power on the Peripherals

External Speaker Does Not Work

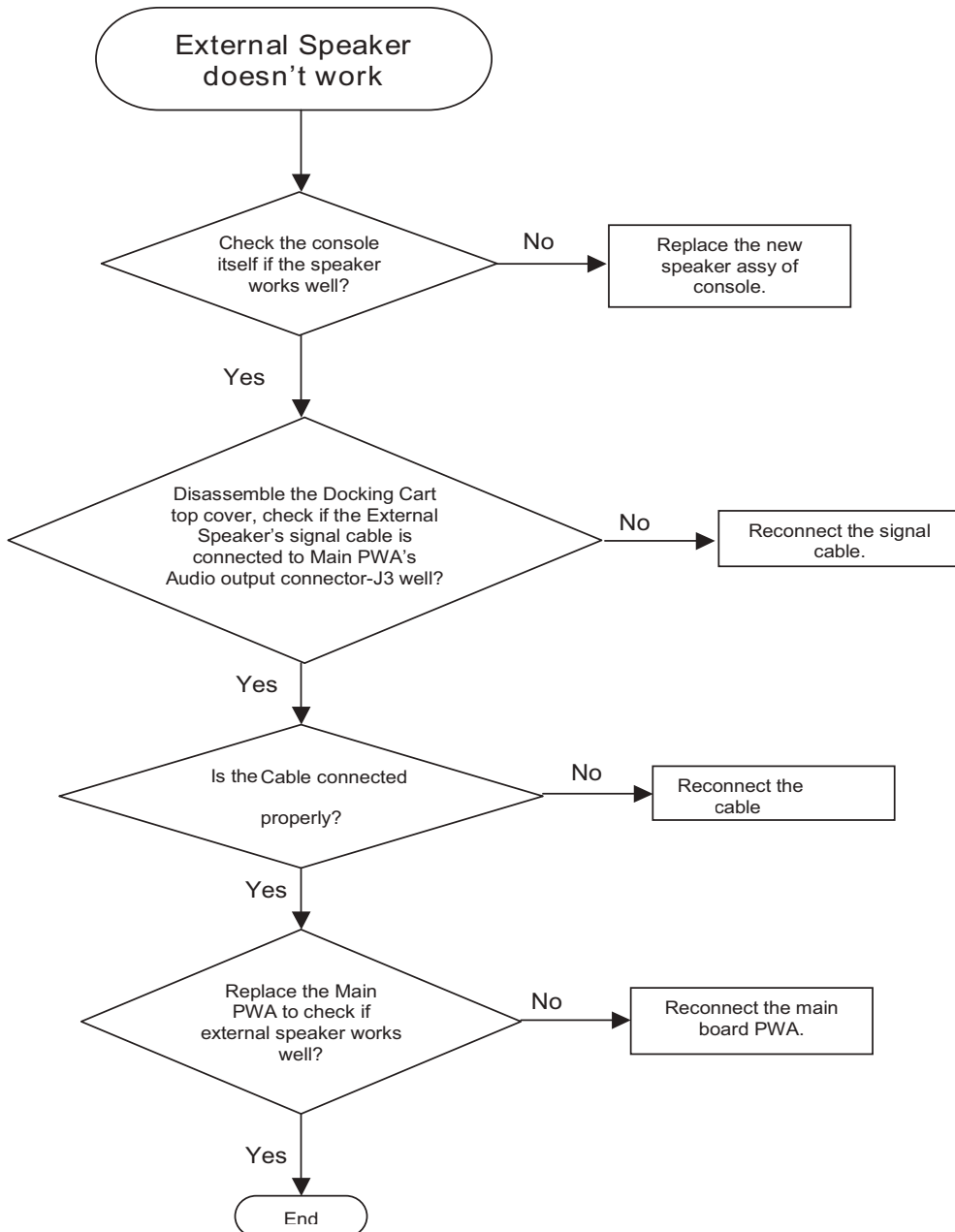


Figure 7-100. External Speaker Does Not Work

USB Peripheral Does Not Work

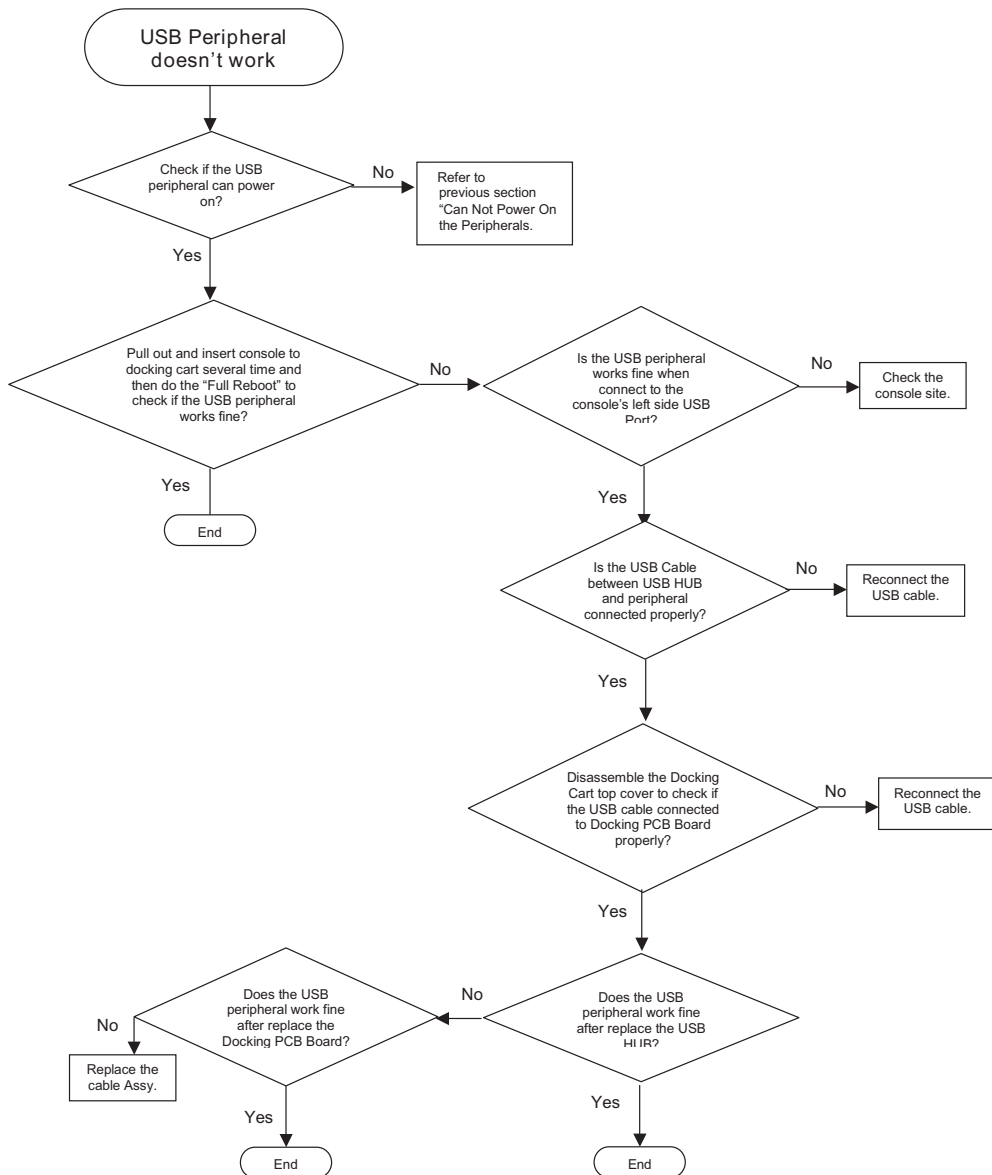


Figure 7-101. USB Peripheral Does Not Work

Can Not Recognize Probe

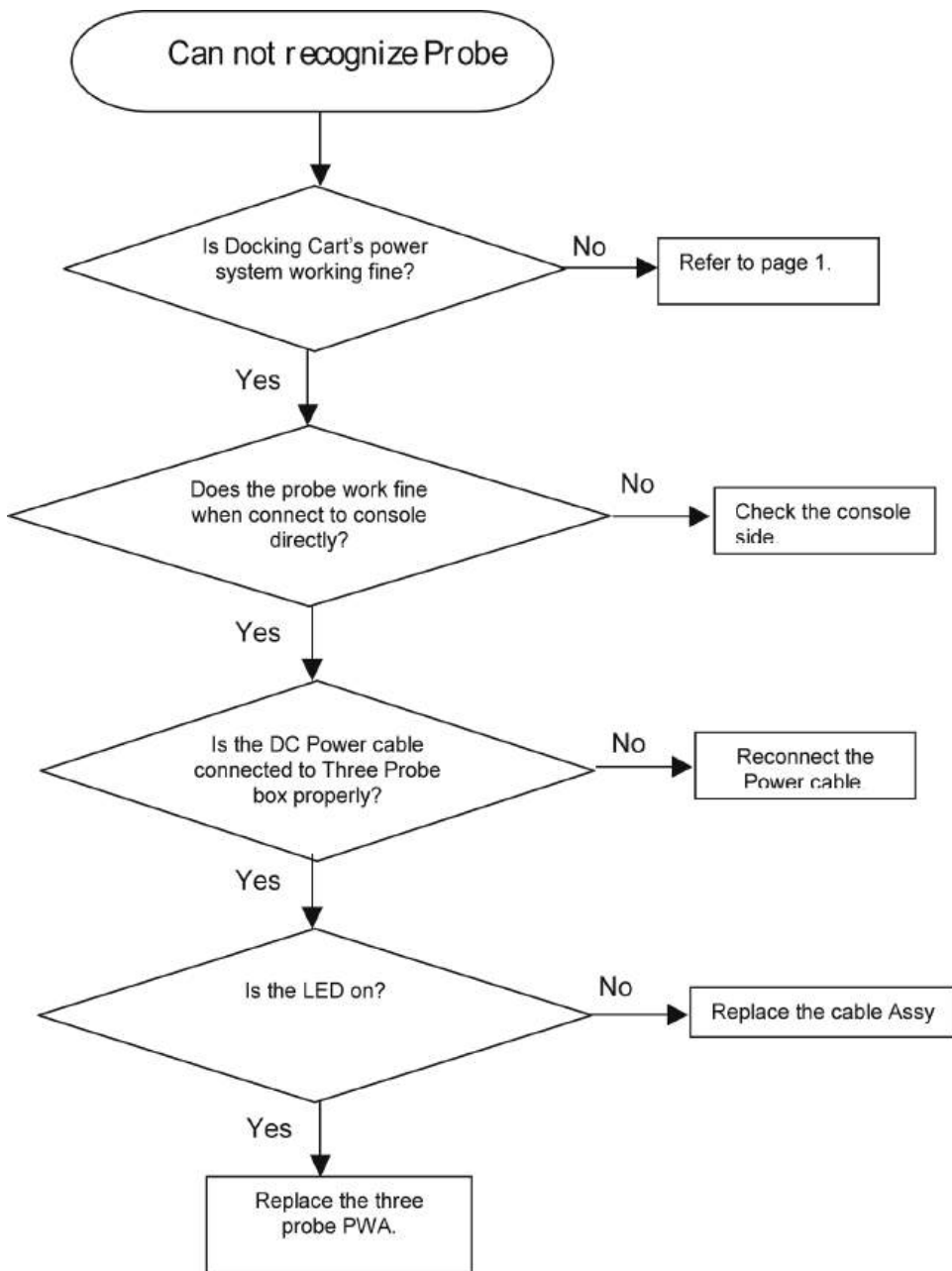


Figure 7-102. Can Not Recognize Probe

Noise on Image with Three Probe

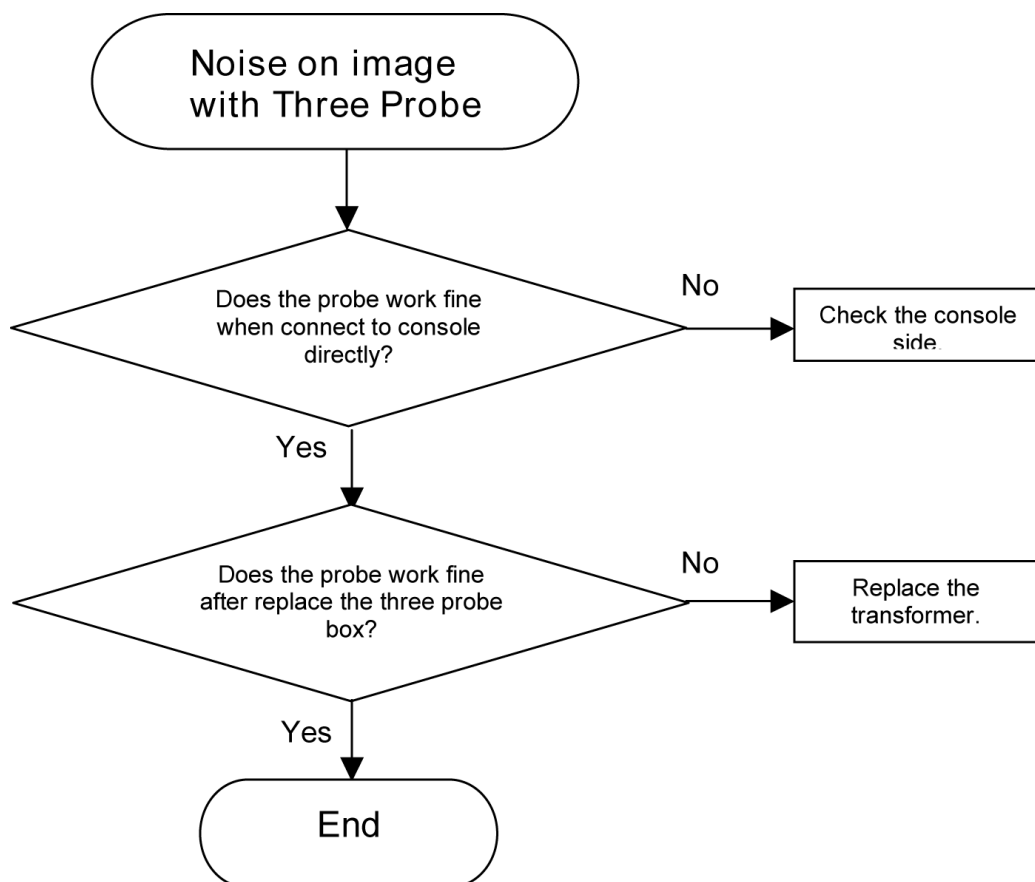


Figure 7-103. Noise on Image with Three Probe

Can Not Charge the Extended Life Battery

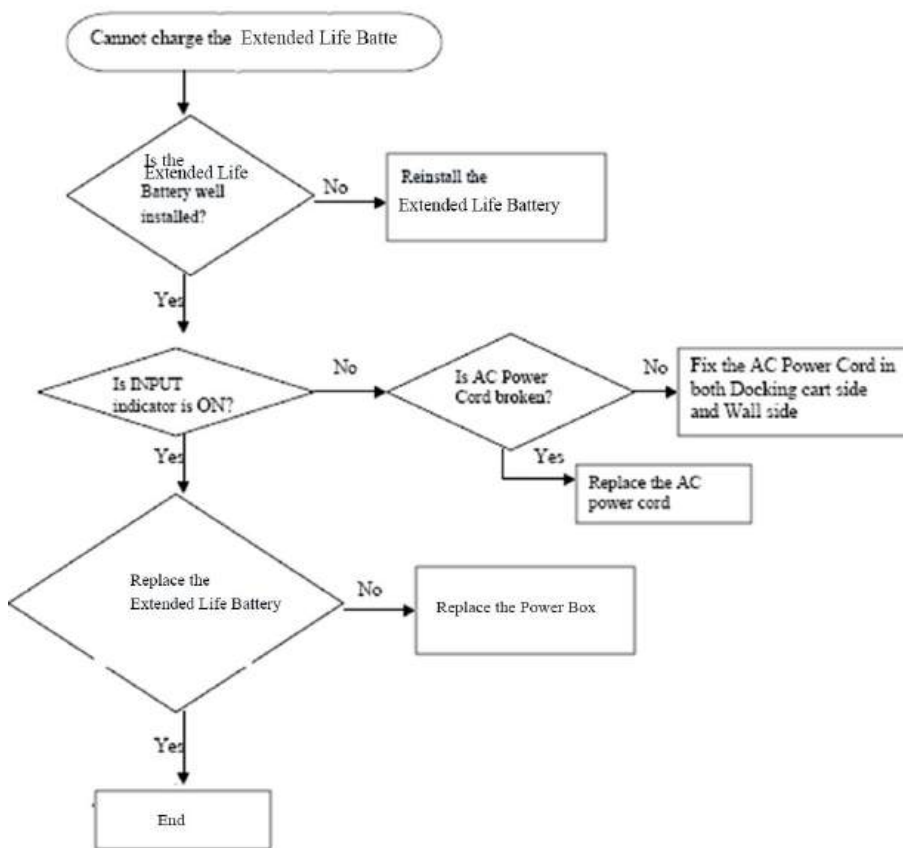


Figure 7-104. Can not Charge the Extended Life Battery

Extended Life Battery Has No OUTPUT

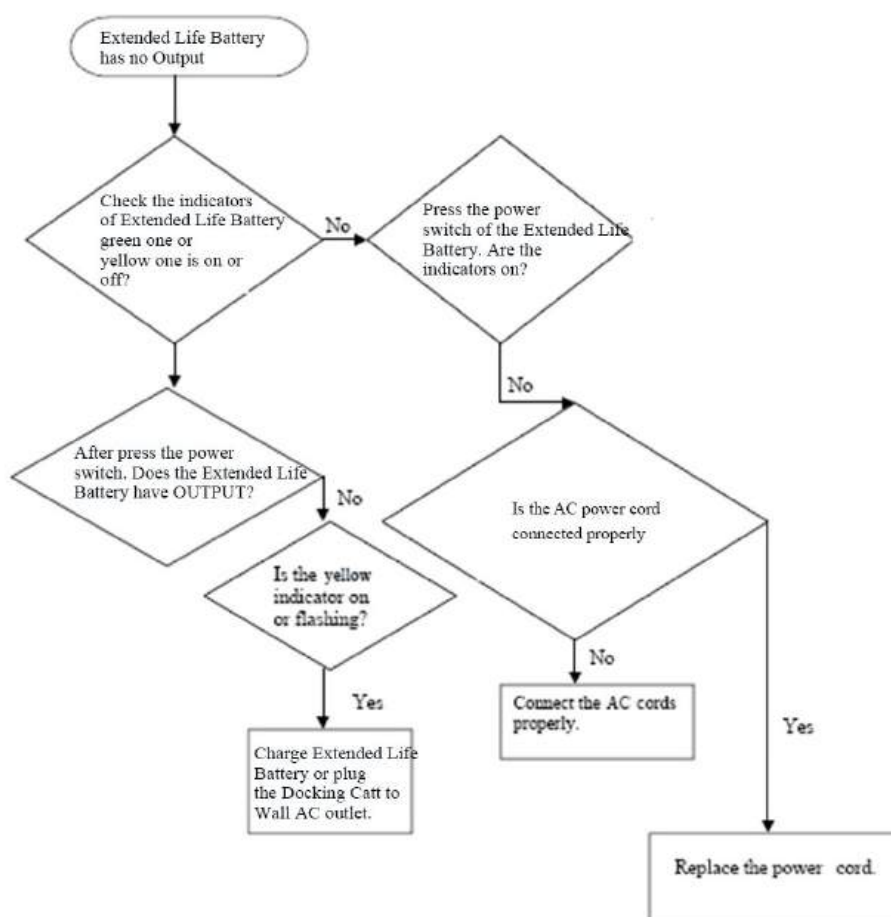


Figure 7-105. Extended Life Battery Has No OUTPUT

How to Diagnose DC Cable from Cart to Console

There are 4 pins inside the connector of the DC cable from cart to the console. Please refer to the following graphic to determine the positive and negative pole of the connector pin. You can also check the positive and negative pole information on the AC adapter label.

Make sure the working voltage of the connector is 22V.

NOTE: *The negative pins are more narrow than the positive pins, you can also recognize the correct pin by its size.*

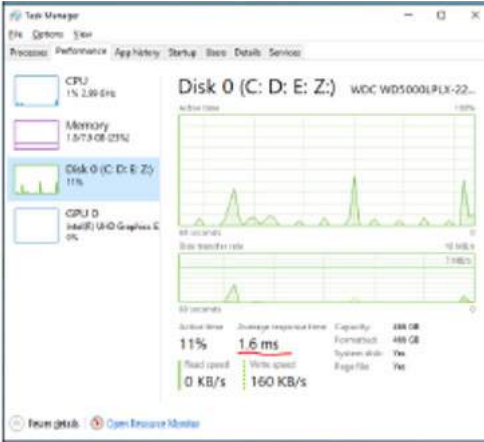


The shielding of the connector is negative and pay attention not to touch the positive “+” pole and the shielding if service person measures the voltage of the pin by multimeter to avoid any short circuit and damage the power box.



Figure 7-106. Positive and Negative Pole of Connector Pin

SSD/HDD Performance Check

Fail Mode	Troubleshooting Recommendations
For some system with slow or no response issue which suspected with SSD/HDD, you can firstly check the SSD/HDD performance by pressing CTRL+ALT+DEL ->Task Manager -> Performance -> Disk 0 to check the Average Response Time.  The screenshot shows the Windows Task Manager Performance tab for Disk 0 (C: D: E: Z:). The left sidebar shows CPU (1%), Memory (1.5/7.3 GB (23%)), Disk 0 (11%), and GPU 0 (0%). The main area displays a graph of active time (0-100%) and a graph of read/write rate (0-10 MB/s). Below the graphs, the average response time is highlighted in red as 1.6 ms. Other metrics shown include capacity (488 GB), format (NTFS), system status (Yes), and page file (Yes). Read and write speeds are shown as 0 KB/s and 160 KB/s respectively.	If the Average Response Time is rising or kept in high value, then the performance drops, we can consider replacing it. For your reference, normally the Average Response Time is around 0ms without any tasks. With a transfer task, the Average Response Time will be around 300ms, and it will be going down with the task completion.

InSite ExC troubleshooting

Fails to sign up the ULS to InSite after SW loading

If connection fails to sign up the ultrasound system to InSite, perform the following steps:

1. Insert the service dongle into the ultrasound system.
2. Enter Windows Desktop.
3. Open Windows Firewall through Start menu or Control Panel.
4. Go to "Turn Windows Firewall on or off".
5. Press both checkboxes to disable the firewall.
6. Reboot the ultrasound system and enter the application.
7. Complete the Insite signup procedure.
8. Verify that after a few minutes in the Home tab, the ultrasound system status now shows **Yes**.
9. Verify with InSite Back Office that you are still able to access the ultrasound system.
10. Go back to the Windows Desktop, open Windows Firewall, and go to **Turn Windows Firewall on or off** again.
11. Press both checkboxes and enable the firewall.
12. Restart the ultrasound system.
13. Verify with InSite back office that you are still able to access the ultrasound system.

Basic Connectivity

Prerequisites:

- Qestra Agent is configured in the Common Service Desktop (CSD).
- No proxy is selected unless supplied by the customer.
- Access is available to Internet Explorer on the desktop of the product.
- Ultrasound system has IP/Gateway/Subnet Mask assigned and active.
- Ultrasound system has been rebooted since configuration changes.

Troubleshooting flowchart

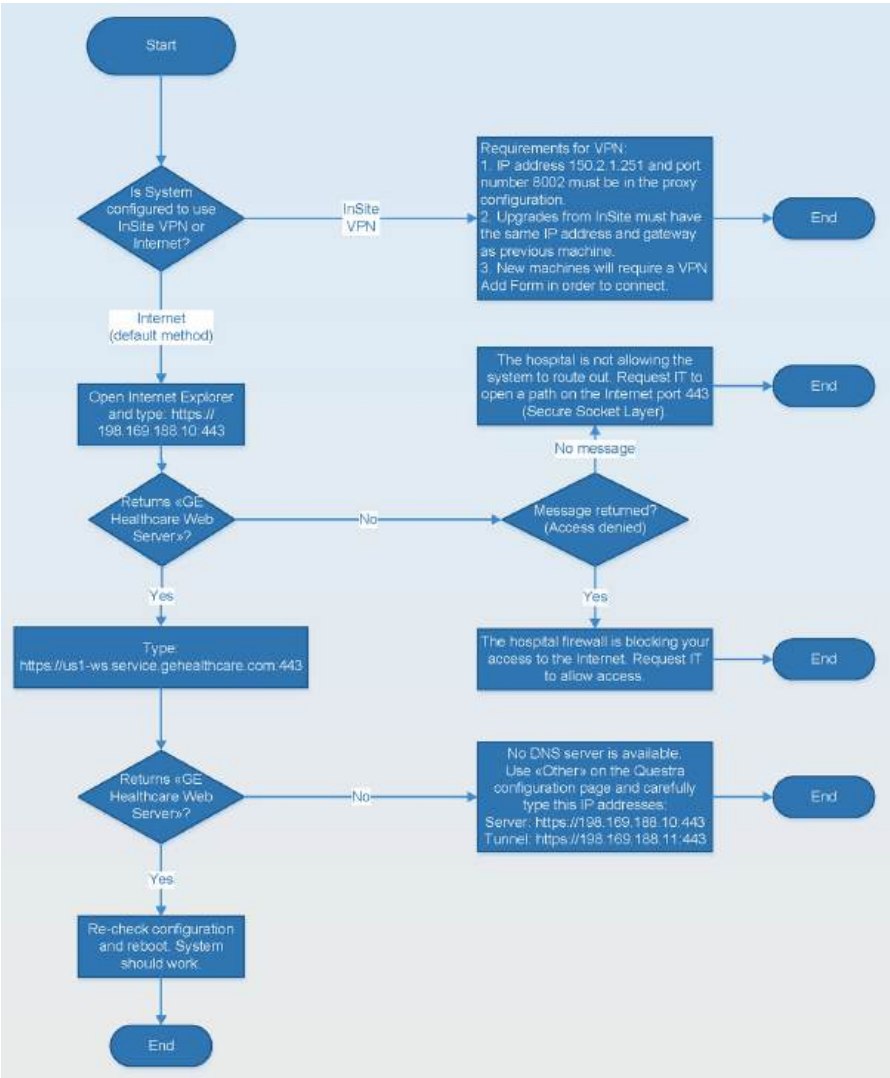


Figure 7-107. Basic Connectivity Troubleshooting Flowchart

Rewrite the Serial Number and GPN/GTIN number

Table 7-36: The scenarios of rewriting the serial number

Scenario	Impact to system serial numbers	Impact to software option keys
Only replace with a new MST board. Keep using the existing HDD without any software reload or re-install.	No serial number in MST. System will ask for serial number when first power on. FE/User needs to enter the correct serial numbers and reboot the system.	System still can recognize the software option keys stored in the HDD. No need to take any action.
Replace with a new MST board. Use existing HDD but have software reload or re-install to C disk only.		
Replace with a new MST board. Replace with a new HDD.	No serial number in MST or HDD. System will ask for serial number when first power on. FE/User needs to enter the correct serial numbers.	All existing software option keys are lost. FE/User needs to re-enter the software option keys.
Replace with a new MST board. Use existing HDD but have software reload or re-install to full disk.		
Replace with another MST board (with SN inside). Keep using the existing HDD. No software reload or re-install.	The system serial number stored in MST board is different with the one in HDD. FE/User need to insert SSA and input the right SN of the system.	No need to take any action
Replace with another MST board. Replace with a new HDD.		Input correct option keys which matches with the serial number in the MST board.
Replace with another MST board. Use existing HDD but have software reload or re-install to full disk.		

Rewrite the Serial Number and GPN/GTIN number(continued)

Table 7-37: The scenarios of rewriting the GPN/GTIN number

System Version	MST board change	HDD/SSD change	SW change	Impact GPN/GTIN
R8	Replace a new MST board	Keep using the existing HDD/SSD	without SW reload/reinstall	No GPN/GTIN in the new MST board.FE/user needs to enter the correct GPN/GTIN
		Keep using the existing HDD/SSD	with SW reload/reinstall	
		Replace a new HDD/SSD	with SW reload/reinstall	
R8	Replace a reused MST board	Keep using the existing HDD/SSD	without SW reload/reinstall	The GPN/GTIN in the MST board does not match. FE/ user needs to enter the correct GPN/GTIN.
		Keep using the existing HDD/SSD	with SW reload/reinstall	
		Replace a new HDD/SSD	with SW reload/reinstall	
R4,R5,R6	Keep original console MST board	Keep using the existing HDD/SSD	SW upgrade from lower version to R8	No GPN/GTIN in the MST board. FE/user needs to enter the correct GPN/GTIN.

Rewrite the Serial Number and GPN/GTIN number(continued)

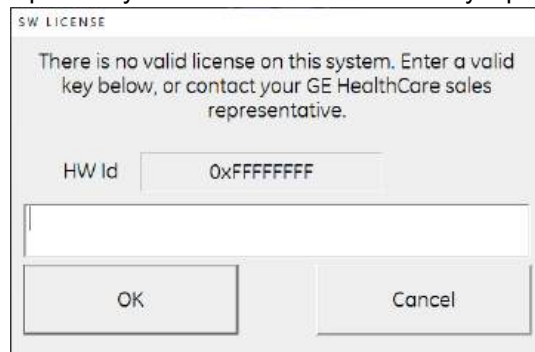
If you replace a used MST board for R8 system, you must follow the following procedures to rewrite the serial number and GPN/GTIN number:



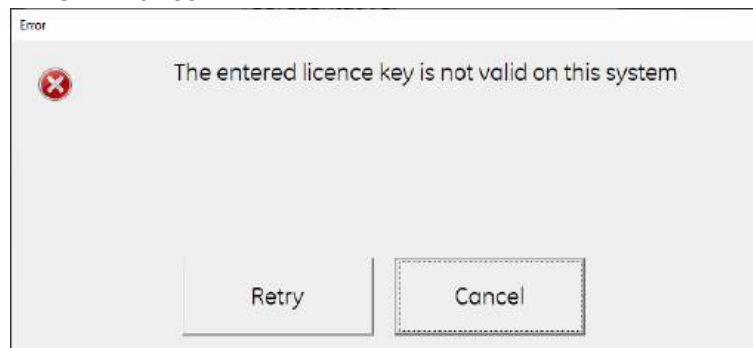
WARNING

Make sure the service dongle is disconnected before powering on the system, or it may cause the problem connecting Local Archive.

1. Plug in dongle to unlock the system and exit EchoLoader. Return to windows and delete option key files from the link: D:\Scanner\User\target\resources\ldumn\userdefs and C:\SerialNo.txt.
2. Run Echoloader.exe and there will be a window asking to input option key. Click **OK** button without any input.

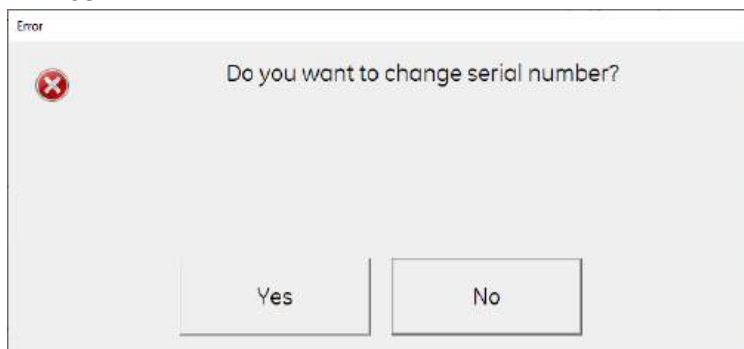


3. Another window will appear to ask for a retry of license key. Click **Cancel** button.

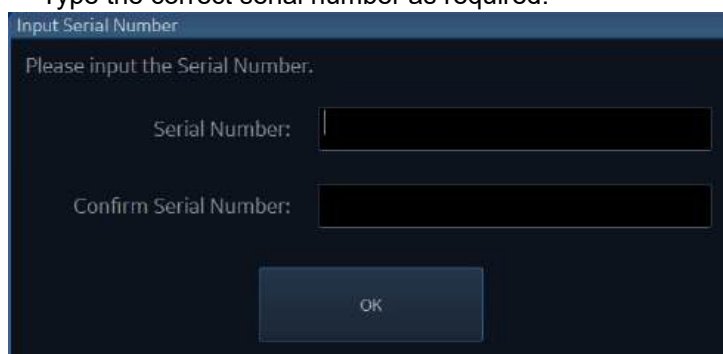


Rewrite the Serial Number and GPN/GTIN number(continued)

4. The 'Change serial number' window will pop up and click **Yes**.



5. Then a window appears asking to input the serial number. Type the correct serial number as required.



NOTE: *The serial number is case sensitivity.*

Rewrite the Serial Number and GPN/GTIN number(continued)



Figure 7-108. Rating Plate

6. Then the window asking to type GPN/GTIN will appear. Input the GPN/GTIN number according to the rating plate.

Input GPN/GTIN Number

Please input the GPN/GTIN Number.

GPN/GTIN Number:

Confirm GPN/GTIN Number:

Rewrite the Serial Number and GPN/GTIN number(continued)

- NOTE:

The serial number and GPN/GTIN number can be found on the rating plate.
- NOTE:

In upgrade kit senario, please type the serial number and GPN/GTIN number of original console system rather than the upgrade kit.



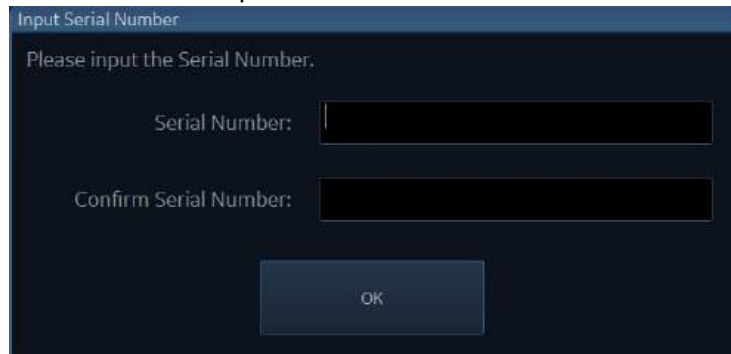
Figure 7-109. Find GPN/GTIN number

7. After rebooting the system, input the correct option key.

Rewrite the Serial Number and GPN/GTIN number(continued)

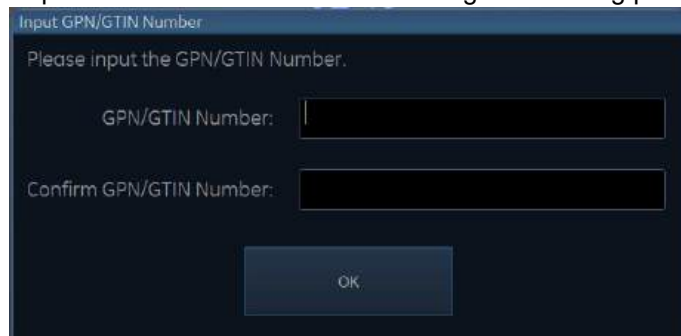
If you replace a new MST board for R8 system, you must follow the following procedures to rewrite the serial number and GPN/GTIN number:

1. Turn on the system and a window will appear to ask input serial number. Input the correct serial number.



The screenshot shows a dark-themed dialog box titled "Input Serial Number". Inside the dialog, the text "Please input the Serial Number." is displayed. Below this text, there are two input fields. The first field is labeled "Serial Number:" and the second field is labeled "Confirm Serial Number:". At the bottom center of the dialog, there is an "OK" button.

2. Then the window asking to type GPN/GTIN will appear. Input the GPN/GTIN number according to the rating plate.



The screenshot shows a dark-themed dialog box titled "Input GPN/GTIN Number". Inside the dialog, the text "Please input the GPN/GTIN Number." is displayed. Below this text, there are two input fields. The first field is labeled "GPN/GTIN Number:" and the second field is labeled "Confirm GPN/GTIN Number:". At the bottom center of the dialog, there is an "OK" button.

Rewrite the Serial Number and GPN/GTIN number(continued)

- NOTE:

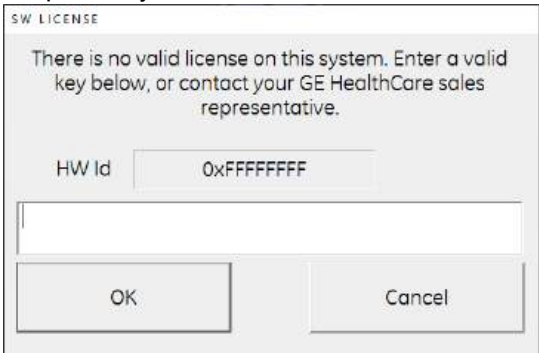
The serial number and GPN/GTIN number can be found on the rating plate.
- NOTE:

In upgrade kit senario, please type the serial number and GPN/GTIN number of original console system rather than the upgrade kit.



Figure 7-110. Find GPN/GTIN number

3. The system will reboot. After the system is restarted, a window asking to input option key will appear. Input the correct option key.



- NOTE:

If HDD is not replaced or SW is not upgraded/reinstalled, you are not required to input option key. For software update only overwriting system partition, option key is also not needed.

View current battery status

Users can check the battery icons to know the battery type, battery capacity, battery working status, battery charging status and battery health on the title bar of the right upper corner.

Battery type

Vivid *iq* can be powered by two different batteries. One is internal battery called scanner battery. The other one is installed inside charge box on cart, called cart battery. We use the following icons representing the battery type (Figure 7-111).



Figure 7-111. Scanner battery icon(left) and cart battery icon (right)

Battery capacity

We use the following icons to indicate the level of battery capacity. Take scanner battery icon as an example to explain.



Figure 7-112. Battery capacity levels

Table 7-38: Battery capacity icons

	This icon means the battery capacity is below 5%.
	This icon means the battery capacity is exceeding 5% and less than 15%.
	This icon means the battery capacity is exceeding 15% and less than 25%.
	This icon means the battery capacity is exceeding 25% and less than 50%.
	This icon means the battery capacity is exceeding 50% and less than 80%.
	This icon means the battery capacity is exceeding 80% and less than 100%.

Battery working status

We use the following icons to indicate the battery working status. Take scanner battery icon as an example to explain.



Figure 7-113. Battery working status icon

Table 7-39: Battery working status icons

	This icon means the battery is absent.
	This icon means the battery is working normally.
	This icon means there is an unknown error on battery.
	This icon means there is a permanent error on battery.

NOTE: If there is an unknown error detected on your battery, please restart the ultrasound system or contact GE HealthCare service representative.

NOTE: If there is a permanent error detected on your battery, it means your battery has reached its end of life or is damaged. Please replace with a new one.

Battery charging status

We use the following icons to indicate the battery charging status. Take scanner battery icon as an example to explain.



Figure 7-114. Battery charging status icon

Table 7-40: Battery charging status icons

	This icon means the battery is discharging.
	This icon means the battery is charging.

Battery health status

If the battery health is below 60%, a yellow exclamation mark will appear on battery icon. Take scanner battery icon as an example to explain.



Figure 7-115. Battery health status icon

NOTE: *If battery health below 60%, it's recommended to replace a new one.*

View current battery status from title bar

When the system is running on cart battery, there is a battery icon in the system title bar.



Figure 7-116. Running on cart battery

When the system is running on scanner battery, there is a battery icon in the system title bar.



Figure 7-117. Running on scanner battery

When the system is running by AC adapter without any battery installed, the AC adapter icon appears in the system title bar.



Figure 7-118. Charged by AC adapter

Battery Information Check

To view detailed information for scanner battery and cart battery, please select the tray menu from the right upper corner and press either of the battery buttons.

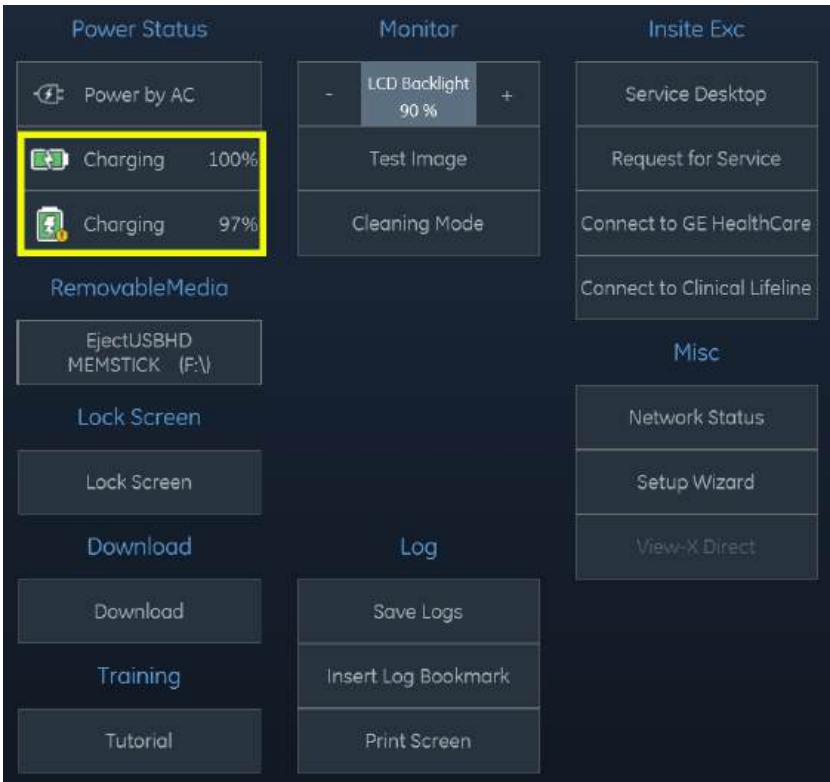


Figure 7-119. Battery Charging Icon

Battery Information Check(continued)

The pop-up window will show detailed battery information, including battery status, battery capacity and battery health for both scanner and cart.

Battery capacity is shown in percentage and battery health is shown by symbols. For cart battery, except the total capacity and total health, user can also check the battery status and battery health for each battery.

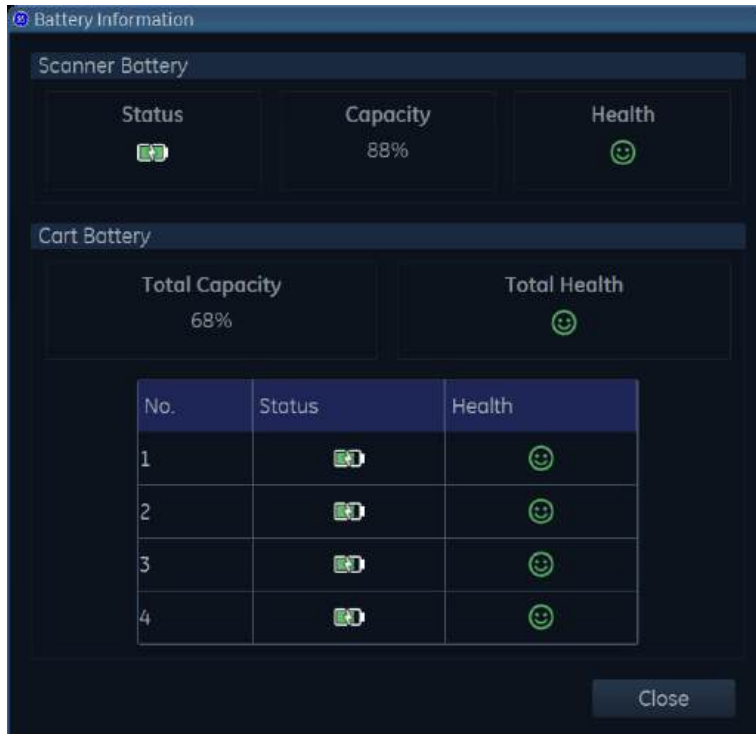


Figure 7-120. Battery Information Window

Battery Information Check(continued)

The following table will explain battery health icons.

Table 7-41: Battery Health Icons

	Green smile icon indicates the battery is in good health.
	Yellow icon indicates the battery health is below 60% and close to end of its life. Recommend to replace a new battery.
	Red sad icon indicates the battery has reached end of its life and can't be used for scanning. Replacement of a new battery is needed.
	This icon indicate state of health is not supported by current battery.

Battery Information Check(continued)

If the battery health is below 60%, there will be a warning message displayed on the lower part of battery information window to remind the user to replace a new battery.



Figure 7-121. Battery Replacement Reminder (1)

If the battery has reached the end of its life and disabled for any further use, a warning message will be displayed on the lower part of battery information window to request the user to organize the replacement.

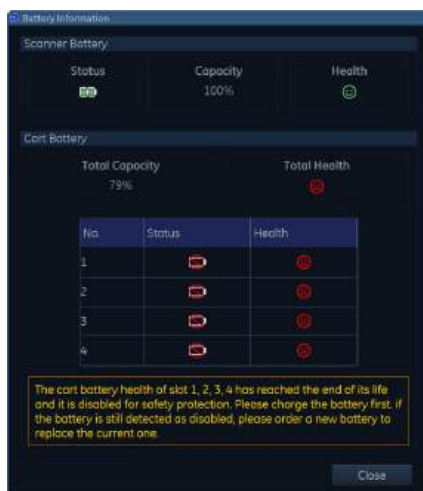


Figure 7-122. Battery Replacement Reminder (2)

Battery Expected Life Time in Regular Use

Table 7-42: Battery Expected Life Time in Regular Use

Scanner Battery	You can expect approximately 1 scanning hour with the fully charged battery in use to supply power to the system, depending on operation modes used and battery status.
Scanner Battery+Generic cart with 3 Batteries	You can expect approximately 4 scanning hour with the fully charged battery in use to supply power to the system, depending on operation modes used and battery status.
Scanner Battery+Standard/Premium cart with 4 Batteries	You can expect approximately 4 scanning hour with the fully charged battery in use to supply power to the system, depending on operation modes used and battery status.

Battery Health Log for Diagnostics

You can check the Battery Log in **D:\Log\logfile-battery.txt** file.

Sage can be powered by both scanner battery and cart battery. You can view scanner battery information by searching for the keyword 'SmallBattery'. You can view cart battery information by searching for the keyword 'BigBattery'.

The battery log provides information, such as battery type, charging status, battery capacity, battery health, etc.

Take the cart battery as an example to introduce log information. Among them, **Operating Status** and **State of Health** are key battery information which will be emphasized.

There are three values for Operating Status. When battery is working normally, the log will record 'Operating normally'; When the battery firmware detects that the battery is permanently failed or damaged, the log will record 'The battery health has reached the end of its life and it is disabled for safety protection. Please charge the battery first. if the battery is still detected as disabled, please order a new battery to replace the current one.'; When an unknown error occurs in the battery, the log will record 'An unknown battery error occurred'.

'Status of Health' records the current battery health after continuous charge and discharge cycles. When $SOH \geq 60$, the log will record the health value. When the $SOH < 60$, the log will additionally record warning 'The battery health is reaching the end of its life and it will be disabled for safety protection. Please order a new battery to replace' to remind the user to replace the battery.

The log also records voltage, current, temperature, cycle count and other information to let you know the battery working status.

Battery Health Log for Diagnostics(continued)

```

99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery: Present
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.PowerBoxType: CommonBox
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.ChargingStatus: Discharging
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.RelativeStateOfCharge: 50%
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.StateOfHealth: 75%
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot1: Present
99:10:16,2024; Error     ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot1-OperatingStatus: The battery health is reaching the end of its life and it will be disabled for safety protection. Please
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot1-RelativeStateOfCharge: 40%
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot1-StateOfHealth: 35%
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot1-Current: -46 mA
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot1-CycleCount: 300 cycle
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot1-Temperature: 28.8 °C
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot1-Voltage: 14366 mV
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot2: Present
99:10:16,2024; Error     ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot2-OperatingStatus: Operating normally
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot2-RelativeStateOfCharge: 41%
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot2-StateOfHealth: 95%
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot2-Current: -132 mA
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot2-CycleCount: 17 cycle
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot2-Temperature: 28.8 °C
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot2-Voltage: 14367 mV
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot3: Present
99:10:16,2024; Error     ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot3-OperatingStatus: The battery health has reached the end of its life and it is disabled for safety protection. Please chan
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot3-RelativeStateOfCharge: 40%
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot3-StateOfHealth: 49%
99:10:16,2024; Info      ; EchoSystem.PowerMgr(5984/3536); BigBattery.Slot3-Current: -372 mA

```

Figure 7-123. Battery Log

Chapter 8

Replacement Procedures

This chapter describes how to remove and install, or replace, modules and subsystems in the Vivid iq. It also includes instructions for installing and re-installing the software.

Overview

Contents in this chapter

- 'Overview' on *page 8-2*
- 'Warnings and important information' on *page 8-3*
- 'Disassembly/Re-assembly' on *page 8-5*
- 'LCD Assy' on *page 8-12*
- 'Keyboard Assy' on *page 8-43*
- 'Body Assy' on *page 8-64*
- 'Cable Kits' on *page 8-113*
- 'Cart Servicing' on *page 8-121*
- 'Loading the Software from USB Flash Drive (UFD)' on *page 8-265*
- 'eDelivery - Software update(v204&v206&v208)' on *page 8-293*
- 'Reload Software' on *page 8-313*
- 'Upgrade kit' on *page 8-324*
- 'Checks after FRU Replacement' on *page 8-328*
- 'Used Media and Used Parts Disposal' on *page 8-332*

Warnings and important information

Warnings



Energy Control and Power Lockout for Vivid *iq*.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:

1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.
6. Remove/disconnect the battery, if present.

Ultrasound System components may be energized.



Because of the limited access to cabinets and equipment in the field, placing people in awkward positions, GE has limited the lifting weight for one person in the field to 16 KG (35 LBS). Anything over 16 KG (35 LBS) requires 2 people.



DO NOT touch any boards with integrated circuits prior to taking the necessary ESD precautions.

Always connect yourself, via an arm-wrist strap, to the advised ESD connection point located on the rear of the Ultrasound system (near the power connector).

Follow general guidelines for handling of electrostatic sensitive equipment.



Warnings(continued)

NOTE: *Use an ESD compatible work space or the ESD-kit during parts replacement.*



The waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately.



Please contact the manufacturer or other authorized disposal company to decommission your equipment.



If the procedure of performing maintenance or replacing parts on the system is wrong, it could result in an unacceptable risk for the patient, user or service technician.

Returning/shipping probes and repair parts

Equipment being returned must be clean and free of blood and other infectious substances.

GE policy states that body fluids must be properly removed from any part or equipment prior to shipment. GE employees, as well as customers, are responsible for ensuring that parts/equipment have been properly decontaminated prior to shipment. Under no circumstance should a part or equipment with visible body fluids be taken or shipped from a clinic or site (for example, body coils or an ultrasound probe). The purpose of the regulation is to protect employees in the transportation industry, as well as the people who will receive or open this package.

NOTE: *The US Department of Transportation (DOT) has ruled that “items that were saturated and/or dripping with human blood that are now caked with dried blood; or which were used or intended for use in patient care” are “regulated medical waste” for transportation purposes and must be transported as a hazardous material.*

Disassembly/Re-assembly

Warning and Caution



WARNING

ONLY QUALIFIED SERVICE PERSONNEL SHOULD REMOVE ANY COVERS OR PANELS. ELECTRICAL HAZARDS EXISTS AT SEVERAL POINTS INSIDE. BECOME THOROUGHLY FAMILIAR WITH ALL HAZARDOUS VOLTAGES AND HIGH CURRENT LEVELS TO AVOID ACCIDENTAL CONTACT



WARNING

Remove/disconnect the battery before disassembling or re-assembling the parts.



CAUTION

Do not wear the ESD wrist strap when you work on live circuits and more than 30V peak is present.

Tools needed for servicing Vivid iq

Table 8-1: Standard tools list for Vivid iq

No	Part Name	Part No.	Screw Description	Screwdriver Description
1.	screw	2327785	D2 SCREW M2x4(NYLOK)	PH#0
2.	screw	5138465	Screw FH M2.5x5(NL)	PH#1
3.	screw	5442136	Screw FH M2.5x14(NL)	
4.	screw	2327793	Screw SJ2836-87 M3x8	PH#2
5.	screw	5447799	Step Screw M3 x 10	
6.	screw	5138468	Screw BN5687 M3x10(NL)	TORX#10
7.	screw	5162727	Screw M3x25(NL)	

NOTE: Please use the correct Screwdrivers listed in [Table 8-1](#).

Overview of Vivid iq



Figure 8-1. System Overview



Figure 8-2. System Overview for v204 and v206

Overview of Vivid iq(continued)



Figure 8-3. System Overview for v208

Overview of Vivid iq(continued)



Figure 8-4. Peripheral/accessory connector panel

1. 2 USB ports (3.0)	6. Port for DC In (for AC Adapter and connecting to cart)
2. ECG connector port	7. Network port
3. E4D connector	8. HDMI port
4. 1 probe connector port	9. Security lock
5. USB port (2.0) (for USB connection and connecting to cart)	10. 2 USB ports (2.0)

When in ICE mode (the dataflow of Patients is set as CartoSound Interface), the external resolution is 800x600, otherwise, the external resolution is 1920x1080.

Part Disassembly List

Table 8-2: LCD Assy Disassembly List

Part Description	Page Number
Rear Shielding Cover Assy	8-13
LCD Assy	8-16
LCD Assy (for v208)	8-19
Arm Assy	8-27
Flexible Arm Assy (for v208)	8-30
LCD Panel Assy	8-34
LCD Cover Assy	8-40

Table 8-3: Keyboard Assy Disassembly List

Part Description	Page Number
KBD Assy	8-44
Power Button with Cable Kit	8-47
ECG Board	8-49
Lock Assy	8-52
Speaker	8-55
Trackpad	8-57
KBD PWA	8-59
Elastomer and Key cap	8-62

Table 8-4: Body Assy Disassembly List

Part Description	Page Number
SSD PWA	8-65
CWD PWA	8-68
Battery	8-71
CPU Assy	8-74
CPU Fan Assy SVC Kit (for v208)	8-77
CPU Fan	8-80
CPU Fan (for v208)	8-83
I/O Board PWA	8-86

Table 8-4: Body Assy Disassembly List

Part Description	Page Number
PS Assy	8-88
Blower kit	8-92
Probe release knob SVC Kit	8-95
Probe connector SVC Kit	8-97
MST board SVC Kit	8-100
CMOS Battery	8-106

Table 8-5: Cable Kit Disassembly List

Part Description	Page Number
LCD and Touch Cable SVC Kit	8-114
Bottom Cable Kit	8-118

LCD Assy

Table 8-6: LCD Assy Disassembly List

Part Description	Page Number
Rear Shielding Cover Assy	8-13
LCD Assy	8-16
LCD Assy (for v208)	8-19
Arm Assy	8-27
Flexible Arm Assy (for v208)	8-30
LCD Panel Assy	8-34
LCD Cover Assy	8-40

Rear Shielding Cover Assy

Purpose: This is a description on how to remove and replace the Rear Shielding Cover Assy.

Tools

- Common Phillips screwdrivers
- 4mm inner Hexangular Set

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 2 minutes + travel

Rear Shielding Cover Assy(continued)

Removal Procedure

Table 8-7: Removal Procedure for Rear Shielding Cover Assy

Step	Description	Corresponding Graphic
1.	Open up the LCD panel like this and raise the 2 screw pads on the Rear Shielding Cover with screw driver.	
2.	Unscrew the 2 screws.	
3.	Raise the rear shielding cover with screw driver covered by a piece of facial tissue.	

Removal Procedure(continued)

Please pay attention to the pinch point in case of any hurt of hand.



Figure 8-5. Pinch Point

Mounting Procedure

- Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in '[Check Rear Shielding Cover Assy](#)' on [page 8-329](#).

LCD Assy

Purpose: This is a description on how to remove and replace the LCD Assy.

Tools

- Common Phillips screwdrivers
- 4mm inner Hexangular Set

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 10 minutes + travel

LCD Assy(continued)

Removal Procedure

Table 8-8: Removal Procedure for LCD Assy

Step	Description	Corresponding Graphic
1.	Remove the Rear Shielding Cover Assy. See 'Rear Shielding Cover Assy' on page 8-13 for more information.	
2.	Unscrew the 8 screws.	
3.	Unscrew 1 screw and remove the small metal plate.	
4.	Remove the IO to Gamma connection cable from the clip.	

Table 8-8: Removal Procedure for LCD Assy

Step	Description	Corresponding Graphic
5.	Disconnect one connector.	
6.	Remove the LCD Assy.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check LCD Assy’](#) on [page 8-329](#).

LCD Assy (for v208)

Purpose: This is a description on how to remove and replace the LCD Assy.

Tools

- Common Phillips screwdrivers
- 4mm inner Hexangular Set

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 10 minutes + travel

LCD Assy (for v208)(continued)

Removal Procedure

Table 8-9: Removal Procedure for LCD Assy

Step	Description	Corresponding Graphic
1.	Remove the Rear Shielding Cover Assy. See 'Rear Shielding Cover Assy' on page 8-13 for more information.	
2.	Disconnect one connector.	
		

Table 8-9: Removal Procedure for LCD Assy

Step	Description	Corresponding Graphic
3.	Unscrew 8 screws.	
4.	Remove the LCD Assy.	
5.	LCD Assy.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check LCD Assy’ on page 8-329](#).

Vivid iq Main Hinge with Rubber

Purpose: This is a description on how to remove and replace the Vivid iq Main Hinge with Rubber.

Tools

- Common Phillips screwdrivers
- Flat-head screwdriver

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 30 minutes + travel

Removal Procedure

Table 8-10: Removal Procedure for Vivid iq Main Hinge with Rubber

Step	Description	Corresponding Graphic
1.	Remove the Rear Shielding Cover Assy. See 'Rear Shielding Cover Assy' on page 8-13 for more information.	
2.	Unscrew the 8 screws to remove the LCD panel.	

Table 8-10: Removal Procedure for Vivid iq Main Hinge with Rubber

Step	Description	Corresponding Graphic
3.	Remove the rubber with hands.	
4.	Remove 4 black caps.	
5.	Unscrew 4 screws to remove the black cover.	

Table 8-10: Removal Procedure for Vivid *iq* Main Hinge with Rubber

Step	Description	Corresponding Graphic
6.	Unscrew 6 screws to remove the hinges.	
7.	Vivid <i>iq</i> Main Hinge with Rubber	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check LCD Assy’ on page 8-329](#).

Arm Assy

Purpose: This is a description on how to remove and replace the Arm Assy.

Tools

- Common Phillips screwdrivers
- 4mm inner Hexangular Set

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 10 minutes + travel

Removal Procedure

Table 8-11: Removal Procedure for Arm Assy

Step	Description	Corresponding Graphic
1.	Remove the LCD Assy. See 'LCD Assy' on page 8-16 for more information.	
2.	Raise the 4 screw pads and unscrew all the screws.	

Table 8-11: Removal Procedure for Arm Assy

Step	Description	Corresponding Graphic
3.	Unscrew the 6 screws in the arm assy.	
4.	Remove the Arm Assy from the LCD Assy.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check Arm Assy’ on page 8-329](#).

Flexible Arm Assy (for v208)

Purpose: This is a description on how to remove and replace the Flexible Arm Assy.

Tools

- Common Phillips screwdrivers
- 4mm inner Hexangular Set

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 10 minutes + travel

Removal Procedure

Table 8-12: Removal Procedure for Arm Assy

Step	Description	Corresponding Graphic
1.	Remove the 4 black caps.	
2.	Unscrew the 4 screws.	
3.	Take away the black cover.	
4.	Unscrew the 12 screws and remove the flexible arm.	

Table 8-12: Removal Procedure for Arm Assy

Step	Description	Corresponding Graphic
5.	Remove the 4 black caps and unscrew the 4 screws to remove the LCD cover.	
6.	Unscrew the 10 screws and take out the 2 LCD hinges.	
		
7.	Flexible arm assy.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check Arm Assy’](#) on [page 8-329](#).

LCD Panel Assy

Purpose: This is a description on how to remove and replace the LCD Panel Assy.

Tools

- Common Phillips screwdrivers
- 4mm inner Hexangular Set

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 10 minutes + travel

Removal Procedure

Table 8-13: Removal Procedure for LCD Panel Assy

Step	Description	Corresponding Graphic
1.	Raise the 2 screw pads.	
2.	Unscrew the 2 screws.	

Table 8-13: Removal Procedure for LCD Panel Assy

Step	Description	Corresponding Graphic
3.	Raise the 2 screw pads.	
4.	Unscrew the 2 screws.	

Table 8-13: Removal Procedure for LCD Panel Assy

Step	Description	Corresponding Graphic
5.	Move the LCD Panel down with both hands and then turn it over. Note: D-view panel and CPC view panel are a little different. There is a shielding cover on the PWA for D-view panel.	
		CPC-View 
		D-View 

Table 8-13: Removal Procedure for LCD Panel Assy

Step	Description	Corresponding Graphic
6.	Unscrew the 6 screws and then remove the 2 plastic sheets.	
		
7.	Unscrew the 2 screws.	
8.	Remove acetic acid tape first if necessary.	

Table 8-13: Removal Procedure for LCD Panel Assy

Step	Description	Corresponding Graphic
9.	Disconnect the connector.	
10.	Remove the LCD Panel Assy from the LCD Assy.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

NOTE: *Don't forget to stick the acetic acid tape included in the service part packaging after connecting the connector.*



Figure 8-6. Stick the acetic acid tape

Functionality checks

Perform the checks listed in ['Check LCD Panel Assy' on page 8-329](#).

LCD Cover Assy

Purpose: This is a description on how to remove and replace the LCD Cover Assy.

Tools

- Common Phillips screwdrivers
- 4mm inner Hexangular Set

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 5 minutes + travel

Removal Procedure

Table 8-14: Removal Procedure for LCD Cover Assy

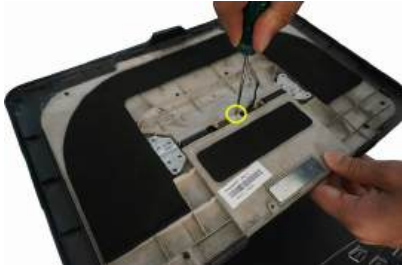
Step	Description	Corresponding Graphic
1.	Remove the Rear Shielding Cover Assy. See 'Rear Shielding Cover Assy' on page 8-13 for more information.	
2.	Remove the LCD Panel Assy. See 'LCD Panel Assy' on page 8-34 for more information.	
3.	Unscrew one screw and then remove the cable.	
4.	Raise the 4 screw pads, unscrew the 4 screws and remove the hinge cover.	
5.	Unscrew the 6 screws.	

Table 8-14: Removal Procedure for LCD Cover Assy

Step	Description	Corresponding Graphic
6.	Take down the LCD Cover Assy.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check LCD Cover Assy’ on page 8-329](#).

Keyboard Assy

Table 8-15: Keyboard Assy Disassembly List

Part Description	Page Number
KBD Assy	8-44
Power Button with Cable Kit	8-47
ECG Board	8-49
Lock Assy	8-52
Speaker	8-55
Trackpad	8-57
KBD PWA	8-59
Elastomer and Key cap	8-62

KBD Assy

Purpose: This is a description on how to remove and replace the KBD Assy.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 10 minutes + travel

Removal Procedure

Table 8-16: Removal Procedure for KBD Assy

No.	Steps	Corresponding Graphic
1.	Remove the LCD Assy. See 'LCD Assy' on page 8-16 for more information.	
2.	Unscrew 1 screw and disconnect the connector.	
3.	Unscrew 12 screws. Note: Let the screws remain on the bottom of the system.	

Table 8-16: Removal Procedure for KBD Assy

No.	Steps	Corresponding Graphic
4.	Remove the KBD Assy from the system.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check KBD Assy’ on page 8-329](#).

Power Button with Cable Kit

Purpose: This is a description on how to remove and replace the Power Button Assy.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 8 minutes + travel

Removal Procedure

Table 8-17: Removal Procedure for Power Button with Cable Kit

No.	Steps	Corresponding Graphic
1.	Remove the KBD Assy, refer to 'KBD Assy' on page 8-44 .	
2.	Unscrew 3 screws and disconnect 1 connector.	
3.	Remove the Power Button Assy from the system.	

Mounting Procedure

- 1. Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in 'Check Power Button with Cable Kit' on [page 8-329](#).

ECG Board

Purpose: This is a description on how to remove and replace the ECG Board.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

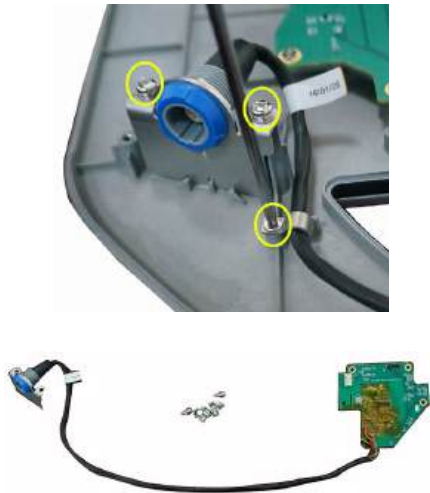
- 1 person, 5 minutes + travel

Removal Procedure

Table 8-18: Removal Procedure for ECG Board

No.	Steps	Corresponding Graphic
1.	Remove the KBD Assy, refer to 'KBD Assy' on page 8-44 .	
2.	Unscrew 2 screws.	
3.	Disconnect 2 connectors.	
4.	Unscrew 2 screws.	

Table 8-18: Removal Procedure for ECG Board

No.	Steps	Corresponding Graphic
5.	Unscrew 3 screws and then remove the ECG board.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check ECG Board’ on page 8-329](#).

Lock Assy

Purpose: This is a description on how to remove and replace the Lock Assy.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 3 minutes + travel

Removal Procedure

Table 8-19: Removal Procedure for Lock Assy

No.	Steps	Corresponding Graphic
1.	Remove the KBD Assy, refer to 'KBD Assy' on page 8-44 .	
2.	Unscrew 2 screws.	
3.	Unscrew 2 screws and then remove the lock assy.	

Table 8-19: Removal Procedure for Lock Assy

No.	Steps	Corresponding Graphic
4.	Lock assy.	

Mounting Procedure

1. Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check Lock Assy’ on page 8-329](#).

Speaker

Purpose: This is a description on how to remove and replace the Speaker.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 4 minutes + travel

Removal Procedure

Table 8-20: Removal Procedure for Speaker

No.	Steps	Corresponding Graphic
1.	Remove the KBD Assy, refer to 'KBD Assy' on page 8-44 .	
2.	Unscrew 4 screws and disconnect 2 connectors.	
3.	Remove the speaker from the KBD Assy.	

Mounting Procedure

- 1. Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in 'Check Speaker' on page 8-329.

Trackpad

Purpose: This is a description on how to remove and replace the Trackpad.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 8 minutes + travel

Removal Procedure

Table 8-21: Removal Procedure for Trackpad

No.	Steps	Corresponding Graphic
1.	Remove the KBD Assy, refer to 'KBD Assy' on page 8-44 .	
2.	Disconnect 1 cable, and unscrew 5 screws.	
3.	Remove the track pad from the KBD assy.	

Mounting Procedure

1. Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in 'Check Trackpad' on page 8-329.

KBD PWA

Purpose: This is a description on how to remove and replace the KBD PWA.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 20 minutes + travel

Removal Procedure

Table 8-22: Removal Procedure for KBD PWA

No.	Steps	Corresponding Graphic
1.	Remove the KBD Assy, refer to ' KBD Assy ' on page 8-44 .	
2.	Unscrew 11 screws.	
3.	Disconnect 6 connectors.	

Table 8-22: Removal Procedure for KBD PWA

No.	Steps	Corresponding Graphic
4.	Remove the Keyboard PWA.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check KBD PWA’ on page 8-329](#).

Elastomer and Key cap

Purpose: This is a description on how to remove and replace the Elastomer and key cap.

Tools

- Common Phillips screwdrivers

Preparation

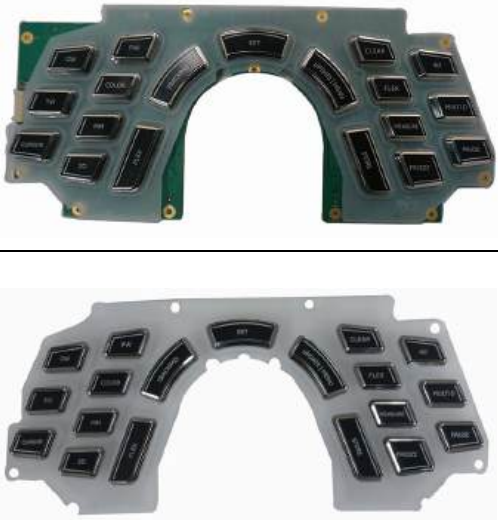
- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 18 minutes + travel

Removal Procedure

Table 8-23: Removal Procedure for Elastomer and key cap

No.	Steps	Corresponding Graphic
1.	Remove the Main Keyboard PWA, refer to ' KBD PWA ' on page 8-59 .	
2.	Remove the Elastomer and key cap from the Main Keyboard PWA.	

Mounting Procedure

1. Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in '[Check Elastomer and Key cap](#)' on [page 8-329](#).

Body Assy

Body Assy Disassembly List

Table 8-24: Body Assy Disassembly List

Part Description	Page Number
SSD PWA	8-65
CWD PWA	8-68
Battery	8-71
CPU Assy	8-74
CPU Fan Assy SVC Kit (for v208)	8-77
CPU Fan	8-80
CPU Fan (for v208)	8-83
I/O Board PWA	8-86
PS Assy	8-88
Blower kit	8-92
Probe release knob SVC Kit	8-95
Probe connector SVC Kit	8-97
MST board SVC Kit	8-100
CMOS Battery	8-106

SSD PWA

Purpose: This is a description on how to remove and replace the SSD PWA.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 2 minutes + travel

Removal Procedure

Table 8-25: Removal Procedure for SSD PWA

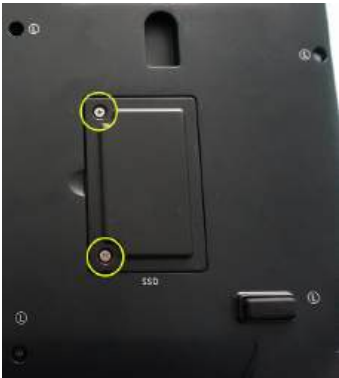
No.	Steps	Corresponding Graphic
1.	Unscrew the 2 screws.	

Table 8-25: Removal Procedure for SSD PWA

No.	Steps	Corresponding Graphic
2.	Unscrew the 2 screws and then remove the SSD.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check SSD PWA’ on page 8-329](#).

CWD PWA

Purpose: This is a description on how to remove and replace the CWD PWA.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 2 minutes + travel

Removal Procedure

Table 8-26: Removal Procedure for CWD PWA

No.	Steps	Corresponding Graphic
1.	Unscrew the 2 screws and remove the cover.	

Table 8-26: Removal Procedure for CWD PWA

No.	Steps	Corresponding Graphic
2.	Unscrew the 2 screws and then remove the CWD.	

Mounting Procedure

1. Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check CWD PWA’ on page 8-329](#).

Battery

Purpose: This is a description on how to remove and replace the Battery

Tools

- NA

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 2 minutes + travel

Removal Procedure

Table 8-27: Removal Procedure for Battery

No.	Steps	Corresponding Graphic
1.	Push up the battery lock to both ends of the slot with both thumbs.	 

Table 8-27: Removal Procedure for Battery

No.	Steps	Corresponding Graphic
2.	Put the finger in the breach of the battery box to dig up it and remove it.	 

Mounting Procedure

1. Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in ['Check Battery' on page 8-329](#).

CPU Assy

Purpose: This is a description on how to remove and replace the CPU Assy.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

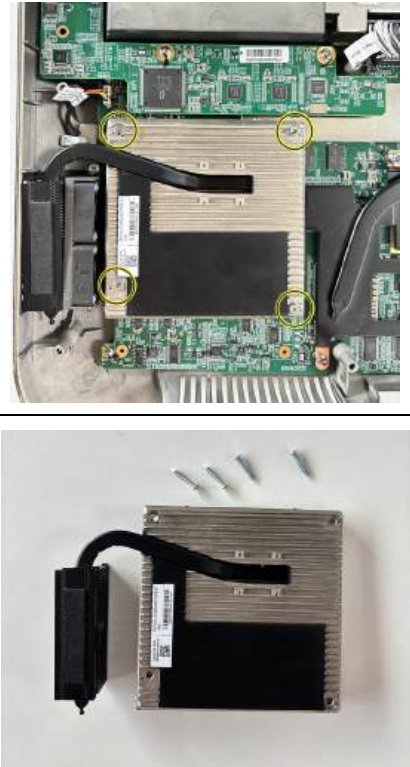
- 1 person, 20 minutes + travel

Removal Procedure

Table 8-28: Removal Procedure for CPU Assy

No.	Steps	Corresponding Graphic
1.	Remove the KBD Assy, refer to 'KBD Assy' on page 8-44 .	

Table 8-28: Removal Procedure for CPU Assy

No.	Steps	Corresponding Graphic
2.	Unscrew 4 screws, and then remove the CPU with both hands.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

NOTE: During installation process, make sure that all the four holes in the CPU are exactly on the top of the nuts, and then press the CPU to connect it with the KBD Assy.

NOTE: After the CPU is reinstalled, please update the BIOS time to the latest, see ['BIOS Setup' on page 8-108](#)

Functionality checks

Perform the checks listed in ['Check CPU Assy' on page 8-331](#).

CPU Assy SVC Kit (for v208)

Purpose: This is a description on how to remove and replace the CPU Assy SVC Kit (for v208).

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 8 minutes + travel

Removal Procedure

Table 8-29: Removal Procedure for CPU Assy SVC Kit (for v208)

No.	Steps	Corresponding Graphic
1.	Remove the KBD Assy, refer to 'KBD Assy' on page 8-44.	
2.	Unscrew 4 screws.	
3.	Remove the CPU fan assy with both hands.	
4.	CPU Assy (with fan).	

Mounting Procedure

1. Install the new parts in the reverse order of removal.

NOTE: *After the CPU is reinstalled, please update the BIOS time to the latest, see ['BIOS Setup' on page 8-108](#)*

Functionality checks

Perform the checks listed in ['Check CPU Fan' on page 8-331](#).

CPU Fan

Purpose: This is a description on how to remove and replace the CPU Fan.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 8 minutes + travel

Removal Procedure

Table 8-30: Removal Procedure for CPU Fan

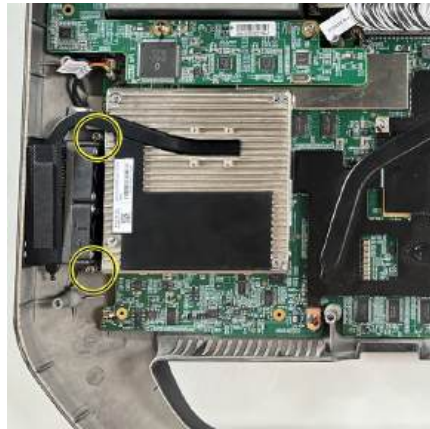
No.	Steps	Corresponding Graphic
1.	Remove the KBD Assy, refer to 'KBD Assy' on page 8-44.	
2.	Disconnect 1 connector.	
3.	Unscrew 2 screws beside the fan.	

Table 8-30: Removal Procedure for CPU Fan

No.	Steps	Corresponding Graphic
4.	Raise the clip with finger and remove the CPU Fan Assy with both hands.	
5.	CPU Fan.	

Mounting Procedure

- 1. Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check CPU Fan’ on page 8-331](#).

CPU Fan (for v208)

Purpose: This is a description on how to remove and replace the CPU Fan (for v208).

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

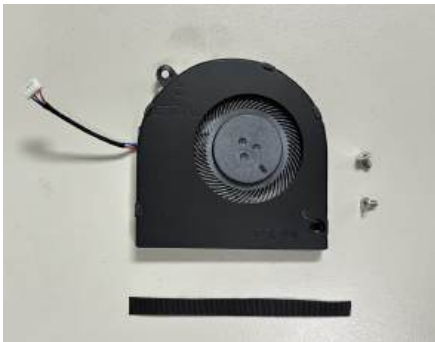
- 1 person, 8 minutes + travel

Removal Procedure

Table 8-31: Removal Procedure for CPU Fan (for v208)

No.	Steps	Corresponding Graphic
1.	Remove the KBD Assy, refer to 'KBD Assy' on page 8-44.	
2.	Unscrew 4 screws to take out the CPU and fan.	
3.	Tear off the black tape.	
4.	Disconnect the connector of the CPU and fan kit.	

Table 8-31: Removal Procedure for CPU Fan (for v208)

No.	Steps	Corresponding Graphic
5.	Unscrew 2 screws to take out the CPU fan.	
6.	CPU fan.	

Mounting Procedure

1. Install the new parts in the reverse order of removal.

NOTE: After the CPU is reinstalled, please update the BIOS time to the latest, see ['BIOS Setup' on page 8-108](#)

NOTE: When mounting the CPU fan, after the screws for the fan is tightened, remember to put the tape back.

Functionality checks

Perform the checks listed in ['Check CPU Fan' on page 8-331](#).

I/O Board PWA

Purpose: This is a description on how to remove and replace the I/O Board PWA.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 20 minutes + travel

Removal Procedure

Table 8-32: Removal Procedure for I/O Board PWA

No.	Steps	Corresponding Graphic
1.	Remove the KBD Assy, refer to ' KBD Assy ' on page 8-44 .	
2.	Unscrew 6 screws and disconnect 1 connector on the I/O Board.	
3.	Remove the I/O Board.	

Mounting Procedure

1. Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in '[Check I/O Board PWA](#)' on [page 8-329](#).

PS Assy

Purpose: This is a description on how to remove and replace the PS Assy.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 10 minutes + travel

Removal Procedure

Table 8-33: Removal Procedure for PS Assy

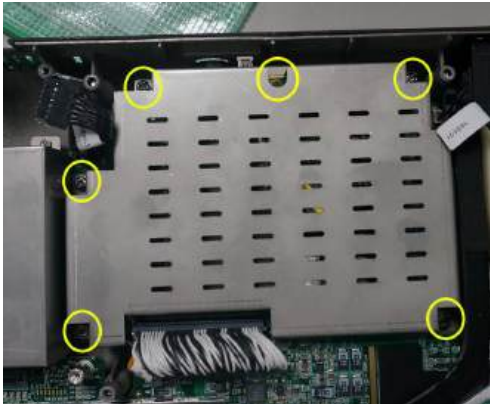
No.	Steps	Corresponding Graphic
1.	Remove the KBD Assy, refer to 'KBD Assy' on page 8-44.	
2.	Unscrew 6 screws.	

Table 8-33: Removal Procedure for PS Assy

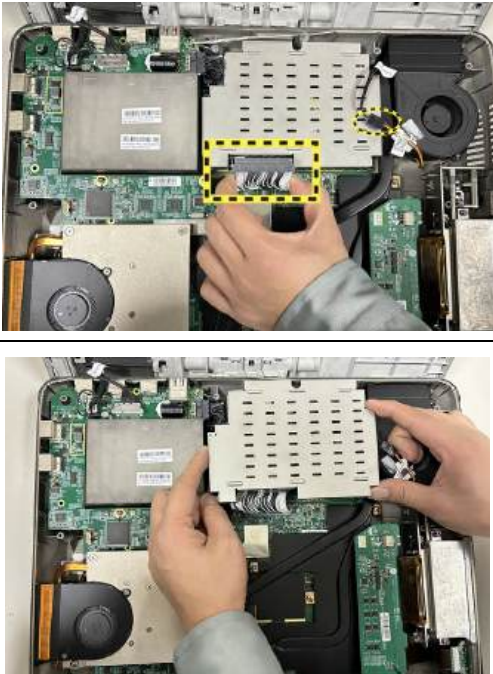
No.	Steps	Corresponding Graphic
3.	Disconnect 2 connectors and remove the shelf.	
4.	Unscrew 1 screw.	

Table 8-33: Removal Procedure for PS Assy

No.	Steps	Corresponding Graphic
5.	Lift up the right side of the board first and then remove it.	

Mounting Procedure

1. Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check PS Assy’ on page 8-329](#).

Rewrite the Serial Number

After the Harddisk is replaced, the serial number on the Harddisk will not match that on the VPD. When powering the system, the system will indicate to rewrite the serial number, refer to [‘Rewrite the Serial Number and GPN/GTIN number’ on page 7-149](#).

Blower kit

Purpose: This is a description on how to remove and replace the Blower kit.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

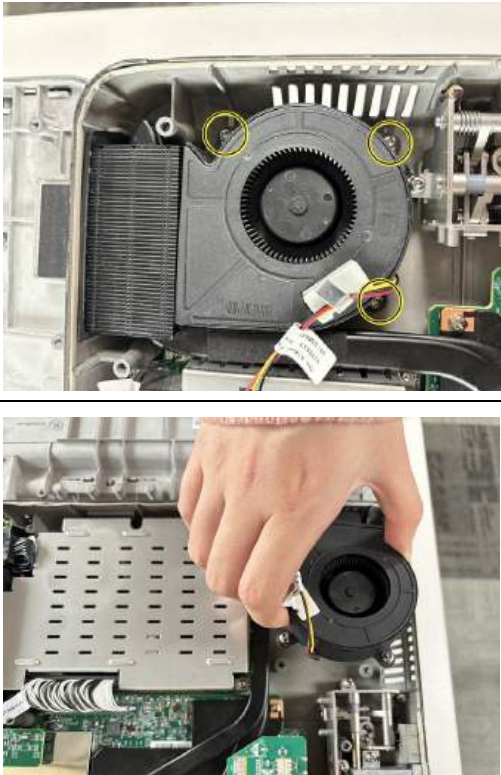
- 1 person, 6 minutes + travel

Removal Procedure

Table 8-34: Removal Procedure for Blower kit

No.	Steps	Corresponding Graphic
1.	Remove the KBD Assy, refer to 'KBD Assy' on page 8-44.	
2.	Disconnect 1 connector.	

Table 8-34: Removal Procedure for Blower kit

No.	Steps	Corresponding Graphic
3.	Unscrew 1 screw and then take out the blower kit.	

Mounting Procedure

1. Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check Blower kit’ on page 8-331](#).

Probe release knob SVC Kit

Purpose: This is a description on how to remove and replace the Probe release knob SVC Kit

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 5 minutes + travel

Removal Procedure

Table 8-35: Removal Procedure for Probe release knob SVC Kit

No.	Steps	Corresponding Graphic
1.	Unscrew 1 screw.	
2.	Lift up the lock and remove it.	

Mounting Procedure

- 1. Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check Probe release knob SVC Kit’ on page 8-329.](#)

Probe connector SVC Kit

Purpose: This is a description on how to remove and replace the Probe connector SVC Kit.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 10 minutes + travel

Removal Procedure

Table 8-36: Removal Procedure for Probe connector SVC Kit

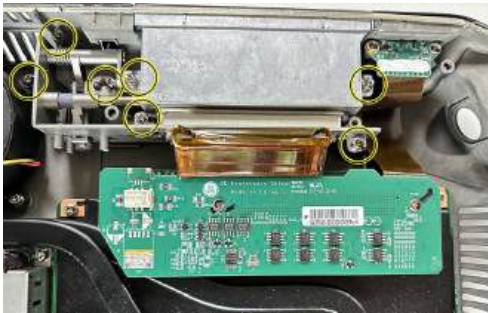
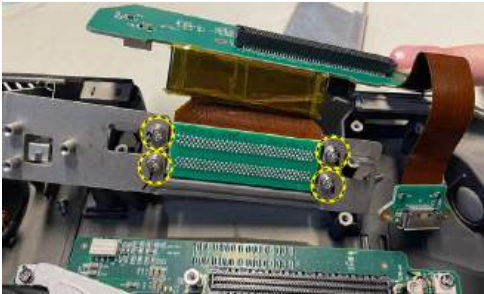
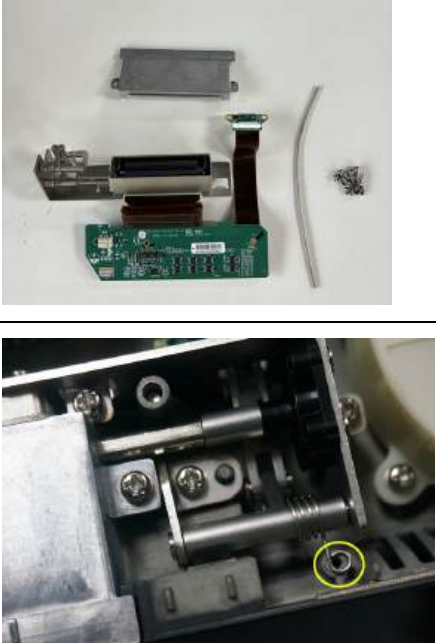
No.	Steps	Corresponding Graphic
1.	Remove the KBD Assy, refer to 'KBD Assy' on page 8-44 .	
2.	Remove the Probe Lock Cap, refer to 'Probe release knob SVC Kit' on page 8-95 .	
3.	Unscrew 4 screws.	
4.	Unscrew 7 screws.	
5.	Turn over the connector and unscrew the 4 screws for easy removal of the probe connector.	

Table 8-36: Removal Procedure for Probe connector SVC Kit

No.	Steps	Corresponding Graphic
6.	Remove the Probe connector. Note: During installation process, make sure that the screw is inserted into the hole.	

Mounting Procedure

1. Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in '[Check Probe connector SVC Kit](#)' on [page 8-330](#).

MST board SVC Kit

Purpose: This is a description on how to remove and replace the MST board SVC Kit.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

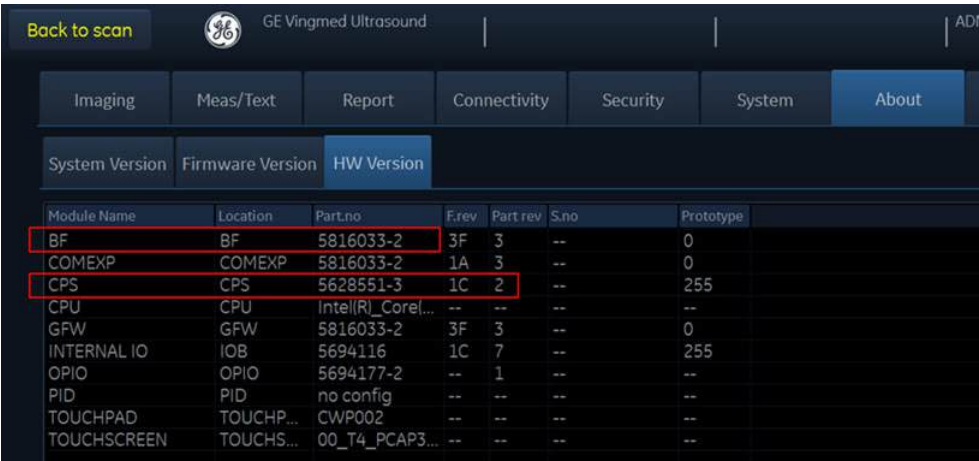
- 1 person, 15 minutes + travel

Removal Procedure

If you replace the MST board type from 5818MST 5771693-S to 5828MST 5816033-2-S, please check the Vivid iq DCDC board version is 5628551-3 Rev.2 and above. If not, please replace the Vivid PS assy to 5726620-3-S.

The MST and PS board No. can be checked through Config->About->HW version.

- BF represent MST board part number
- CPS represent DCDC board part number



The screenshot shows the 'About' tab in the GE Vivid iq Ultrasound software. The 'HW Version' sub-tab is selected, displaying a table of hardware components. The 'BF' (MST board) and 'CPS' (DCDC board) rows are highlighted with red boxes. The table includes columns for Module Name, Location, Part.no, F.rev, Part rev, S.no, and Prototype.

Module Name	Location	Part.no	F.rev	Part rev	S.no	Prototype
BF	BF	5816033-2	3F	3	--	0
COMEXP	COMEXP	5816033-2	1A	3	--	0
CPS	CPS	5628551-3	1C	2	--	255
CPU	CPU	Intel(R)_Corel...	--	--	--	--
GFV	GFV	5816033-2	3F	3	--	0
INTERNAL IO	IOB	5694116	1C	7	--	255
OPIO	OPIO	5694177-2	--	1	--	--
PID	PID	no config	--	--	--	--
TOUCHPAD	TOUCHP...	CWP002	--	--	--	--
TOUCHSCREEN	TOUCHS...	00_T4_PCAP3...	--	--	--	--

Figure 8-7. Check BF and CPS number for Vivid iq v204

Table 8-37: Removal Procedure for MST board SVC Kit

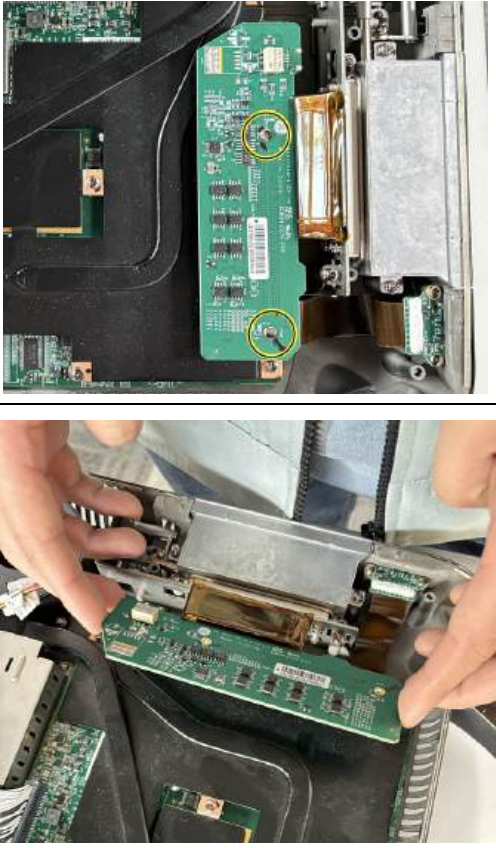
No.	Steps	Corresponding Graphic
1.	Remove the SSD PWA, refer to 'SSD PWA' on page 8-65 .	
2.	Remove the I/O board, refer to 'I/O Board PWA' on page 8-86 .	
3.	Remove the CPU board, refer to 'CPU Assy' on page 8-74 .	
4.	Unscrew 2 screws on Probe connector and remove the FPC board.	

Table 8-37: Removal Procedure for MST board SVC Kit

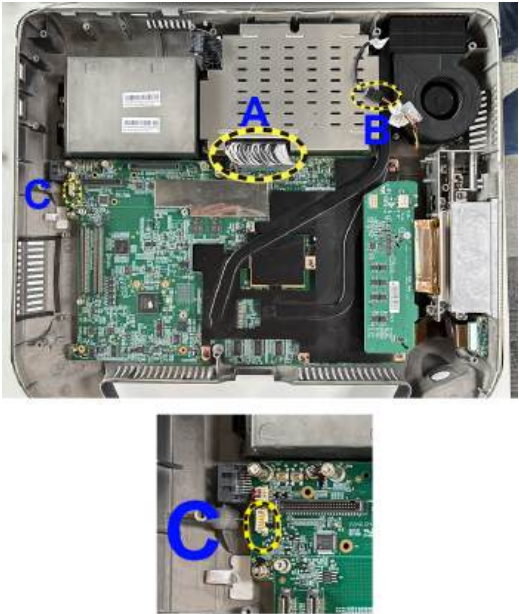
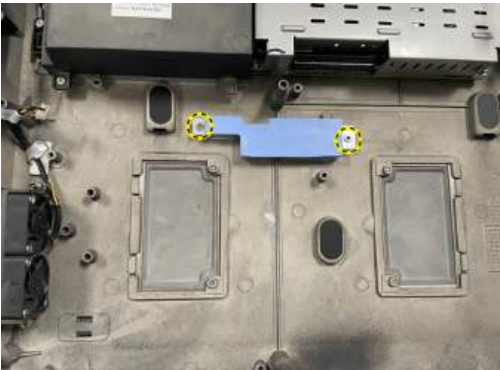
No.	Steps	Corresponding Graphic
5.	Disconnect the connector A,B and C.	
6.	Unscrew the 9 screws. Firstly unscrew screw 1 and 2 to remove the little heat sink, then remove the rest 7 screws to remove the MST PWA board with big heat sink. Note: (1) Do not remove the screw A and B. (2) Pay attention that there are three screw types and ensure correct screws are used when assembly. • Screw 1, 2: M3x14 long screw • Screw 3, 4, 5: Cap screw • Screw 6, 7, 8, 9: M3x8 screw with washer	

Table 8-37: Removal Procedure for MST board SVC Kit

No.	Steps	Corresponding Graphic
7.	MST PWA and heat sink (5771693-S). Note:5771693-S is for Vivid iq v204 5818MST board.	
	MST PWA (5816033-2-S). Note:5816033-2-S is for Vivid iq v204, Vivid iq v206 and Vivid iq v208 5828MST board.	
8.	For MST PWA 5816033-2-S, the heat sink is installed under the MST PWA. You need to unscrew 2 screws to remove the heat sink (see figure on the right). Note: Make sure to remove the protective film on both sides of the heat sink before install it.	

Mounting Procedure

1. Install the new parts in the reverse order of removal.

NOTE: For 5816033-2-S, please firstly install the heat sink before installing MST PWA.

The MST board successfully installed is shown in [Figure 8-8](#).



Figure 8-8. MST board installed

NOTE: For 5816033-2-S, remember screw the following screw to install the MST PWA. (See below picture, and this extra screw is already included in the bom of 5816033-2-S).



Figure 8-9. 5828 MST board

NOTE: After the MST board is replaced, please update the BIOS time to the latest, see [‘BIOS Setup’ on page 8-108](#)

NOTE: After the MST board is reinstalled, please rewrite the serial number and GPN/GTIN number, see [‘Rewrite the Serial Number and GPN/GTIN number’ on page 7-149](#).

Functionality checks

Perform the checks listed in [‘Check MST board SVC Kit’ on page 8-330](#).

CMOS Battery

Purpose: This is a description on how to remove and replace the CMOS Battery

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 8 minutes + travel

Removal Procedure

Table 8-38: Removal Procedure for CMOS Battery

No.	Steps	Corresponding Graphic
1.	Remove the I/O Board PWA, refer to ' I/O Board PWA ' on page 8-86 .	
2.	Disconnect 1 connector.	
3.	Remove the CMOS battery with fingers. Note: The CMOS battery is only fixed with tape. It can be removed with fingers.	

Mounting Procedure

1. Install the new parts in the reverse order of removal.

NOTE: After the CMOS battery is reinstalled, please update the BIOS time to the latest, see '[BIOS Setup](#)' on [page 8-108](#)

Functionality checks

Perform the checks listed in '[Check CMOS Battery](#)' on [page 8-331](#).

BIOS Setup

Update the BIOS Time

NOTE: Please make sure the system BIOS time has been updated to the current time when rebooting the system after the CPU replacement.

Connect the external USB keyboard to the system.

1. Press **Power** button on the Control Panel to power on the system, press **Delete** on the keyboard immediately.
2. Input the BIOS password **Renm@c5** and login the BIOS.



Figure 8-10. Input Password

3. In the BIOS Main page, update the BIOS time to the current time.



Figure 8-11. Update BIOS time

4. Press **F10** on the keyboard and then select **Yes** to save and exit BIOS.



Figure 8-12. Exit BIOS

The default BIOS Setting

Connect the external USB keyboard to the system.

1. Press **Power** button on the Control Panel to power on the system, press **Delete** on the keyboard immediately.
2. Input the BIOS password **Renm@c5** and login the BIOS.



Figure 8-13. Input Password

3. This is the default BIOS main page.



Figure 8-14. BIOS Main Page

4. Select **Advanced** tab to enter the Advanced page.

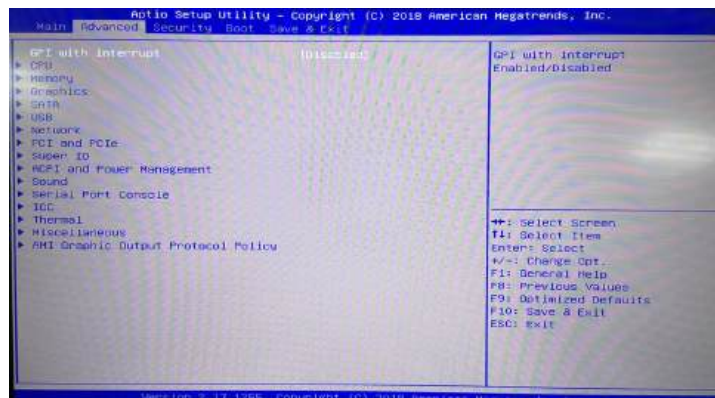


Figure 8-15. BIOS Advanced Page

The default BIOS Setting(continued)

5. Select **Security** tab to enter the security page.

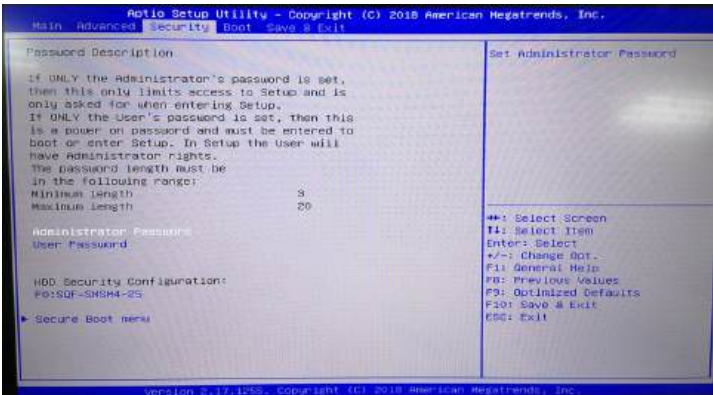


Figure 8-16. BIOS Security Page

6. Select **Boot** tab to enter the Boot page.



Figure 8-17. BIOS Boot Page

The default BIOS Setting(continued)

7. Select **Exit** tab to enter the Exit page.

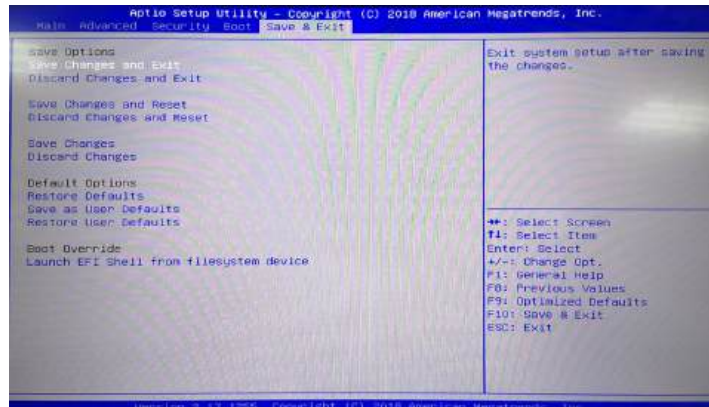


Figure 8-18. BIOS Exit Page

8. Select **Advanced** tab, and then select **CPU** to check the system CPU information.



Figure 8-19. CPU Configuration

The default BIOS Setting(continued)

- 9. Select **Advanced** tab, and then select **Graphics** to check the graphic configuration information.

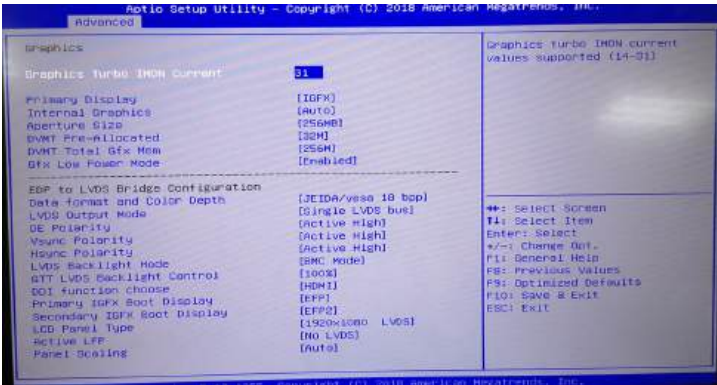


Figure 8-20. Graphic Configuration

- 10. Press **F10** on the keyboard and then select **Yes** to save and exit BIOS.



Figure 8-21. Exit BIOS

Cable Kits

Table 8-39: Cable Kit Disassembly List

Part Description	Page Number
LCD and Touch Cable SVC Kit	8-114
Bottom Cable Kit	8-118

LCD and Touch Cable SVC Kit

Purpose: This is a description on how to remove and replace the LCD and Touch Cable SVC Kit

Tools

- Common Phillips screwdrivers
- 4mm inner Hexangular Set

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 8 minutes + travel

Removal Procedure

Table 8-40: Removal Procedure for LCD and Touch Cable SVC Kit

Step	Description	Corresponding Graphic
1.	Remove the Rear Shielding Cover Assy. See 'Rear Shielding Cover Assy' on page 8-13 for more information.	
2.	Remove the LCD Panel Assy. See 'LCD Panel Assy' on page 8-34 for more information.	
3.	Before disconnect the connectors, remove the acetic acid tape first if necessary.	

Table 8-40: Removal Procedure for LCD and Touch Cable SVC Kit

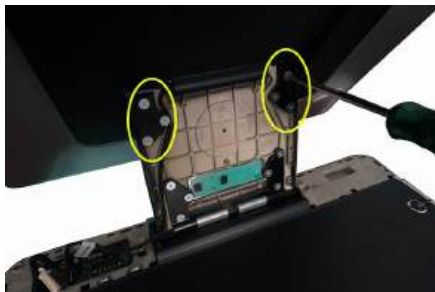
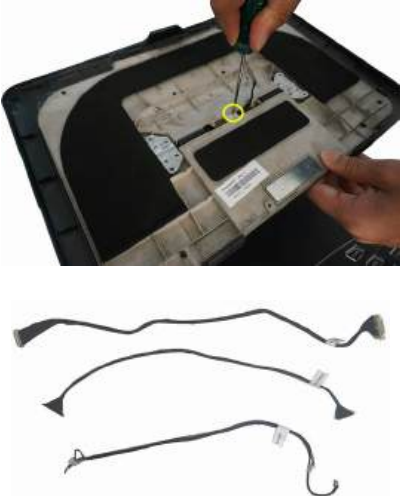
Step	Description	Corresponding Graphic
4.	Disconnect 4 connectors.	
5.	Raise the 4 screw pads, unscrew the 4 screws and remove the hinge cover.	
6.	Unscrew the 6 screws.	
7.	Disconnect one connector.	

Table 8-40: Removal Procedure for LCD and Touch Cable SVC Kit

Step	Description	Corresponding Graphic
8.	Unscrew one screw and remove the cable.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

NOTE: *Don't forget to stick the acetic acid tape included in the service part packaging after connecting the connector.*



Figure 8-22. Stick the acetic acid tape

Functionality checks

Perform the checks listed in ['Check LCD and Touch Cable SVC Kit'](#) on [page 8-331](#).

Bottom Cable Kit

Purpose: This is a description on how to remove and replace the Bottom Cable Kit.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 10 minutes + travel

Removal Procedure

Table 8-41: Removal Procedure for Bottom Cable Kit

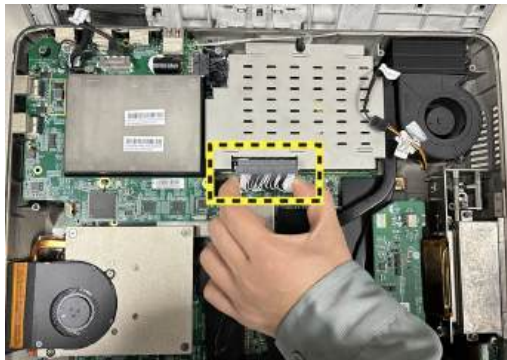
No.	Steps	Corresponding Graphic
1.	Remove the KBD Assy, refer to ' KBD Assy ' on page 8-44 .	
2.	Disconnect the connector and remove the cable.	
3.	Remove the shelf, refer to ' PS Assy ' on page 8-88 .	
4.	Disconnect the 2 connectors to remove the cable.	

Table 8-41: Removal Procedure for Bottom Cable Kit

No.	Steps	Corresponding Graphic
5.	Disconnect the connector to remove the cable.	

Mounting Procedure

- 1. Install the new parts in the reverse order of removal.

Functionality checks

Perform the checks listed in [‘Check Bottom Cable Kit’ on page 8-331](#).

Cart Servicing

Overview

Contents in this chapter

- 'Overview' on page 8-121
- 'Replacement Procedure' on page 8-123
- 'Disassembly/Re-assembly' on page 8-126
- 'Renewal Parts' on page 9-40
- 'Cart Care & Maintenance' on page 10-42

Introduction

This chapter contains this information:

- Describes replacement procedures for the modules and subsystems of Cart.
- Provide functional checks to confirm the system is operational before returning the system to the customer.
- Provides an overview of Renewal Parts for Cart.
- Describes Care & Maintenance on Cart and peripherals. These procedures intended to maintain the quality of Cart systems performance.

Safety consideration

NOTE: *Please refer to Chapter 1 and Chapter 2 for the safety information and site requirement for the Cart. Chapter 1 and Chapter 2 should be read before conducting any service work on Cart.*



WARNING

If the procedure of performing maintenance or replacing parts on the cart is wrong, it could result in an unacceptable risk for the patient, user or service technician.



WARNING

The mobile cart should be cleaned/disinfected before it is delivered to the service personnel.

List of Abbreviations

- Assy - Assembly
- Ctrl - Control
- Int - Internal
- I/O - Input/Output
- LCD - Liquid Crystal Display
- PAT - Patient
- PC - Personal Computer (Back End Processor)

Replacement Procedure

Introduction

This section describes how to remove and install, or replace, modules and subsystems in the Cart.

Contents in this Section

- 'Overview' on *page 8-121*
- 'Replacement Procedure' on *page 8-123*
- 'Disassembly/Re-assembly' on *page 8-126*
- 'Vivid iq Generic cart (For Vivid iq R1~R6)' on *page 8-128*
- 'Lower Table Assy' on *page 8-128*
- 'Rubber and Cups' on *page 8-131*
- 'Tabletop Cover with lock assy' on *page 8-134*
- 'Main Body Assy' on *page 8-136*
- 'Cart Cable Hook SVC Kit' on *page 8-138*
- 'USB Hub Kit' on *page 8-141*
- 'Upper Column Back Cover SVC Kit' on *page 8-145*
- 'Upper Column Front Cover with logo kit' on *page 8-148*
- 'Lower Column Front Cover SVC Kit' on *page 8-151*
- 'Lower Column Back Cover SVC Kit' on *page 8-154*
- 'Side Cover Kit' on *page 8-157*
- 'Gas Spring Assy' on *page 8-160*
- 'AC and DC cables + 2 springs + 6 cable ties' on *page 8-164*
- 'Charge Box' on *page 8-171*
- 'Batteries in Charge Box' on *page 8-174*
- 'Power Box Assy' on *page 8-177*
- 'Power Box DC Output Connector Kit' on *page 8-179*
- 'Power Box Circuit Breaker Kit' on *page 8-182*
- 'Castor Replacement' on *page 8-187*
- 'Probe release knob SVC Kit for 4PP' on *page 8-190*
- 'Cable Clip SVC Kit for Power Cable' on *page 8-191*

Contents in this Section(continued)

- 'Vivid iq Standard & Premium Cart (For Vivid iq R6 and R8)' on *page 8-194*
- 'Table Top with Lock Assy SVC Kit (Part No. 5954866-S)' on *page 8-194*
- 'Front Handle with Button Assy SVC Kit (Part No. 5954867-S/5955827-S)' on *page 8-197*
- 'Rubber and Cups Kit (Part No. 5954874)' on *page 8-200*
- 'Column Hook SVC Kit (Part No. 5953164-S)' on *page 8-203*
- 'Back Basket (Part No. 5951369-S)' on *page 8-206*
- 'Front Basket (Part No. 5954737-S)' on *page 8-208*
- 'Probe Holder SVC Kit (Part No. 5954876)' on *page 8-209*
- 'Cable Hook SVC Kit (Part No. 5955766)' on *page 8-214*
- 'Power Box Assy SVC (Part No. 5947499-S)' on *page 8-217*
- '10A Fuse (Part No. 5938974-S)' on *page 8-221*
- 'Charge Box Assy (Part No. 5947849-S)' on *page 8-223*
- 'Printer Shelf (Part No. 5936564-S)' on *page 8-236*
- '4PP SVC Kit (Part No. 5947732-S)' on *page 8-238*
- '4PP Bracket with Rear Handle SVC Kit (Part No. 5947738-S)' on *page 8-241*
- 'USB Hub Kit (Part No. 5620723-S)' on *page 8-244*
- 'Castor SVC kit (Part No. 5955299-S)' on *page 8-248*
- 'Vivid iq Cart WIFI Bracket assy SVC kit' on *page 8-253*
- 'Batteries in Charge Box' on *page 8-255*
- 'Function Check' on *page 8-257*
- 'Check Matrix' on *page 8-260*

Functionality checks

When finished the replacement procedures for 4-Probe Port Assy, 4-Probe Port Supporter Bracket Assy, Top Cover Assy, Gas Spring Service Kit, USB HUB Assy, Charge Box, Power Box for Cart, Castor Replacement, perform the checks listed in *Table 8-94 on page 8-260*.

Disassembly/Re-assembly

Warning and Caution



WARNING

DO NOT service or disassemble parts under FRU unit level at any circumstances.



CAUTION

DO NOT wear the ESD wrist strap when you remove a part of power supply unit. Turn OFF power and unplug the power cord before removing a part of power supply unit. However be sure to turn off power and wear the strap before you remove a circuit boards.



WARNING

Only Qualified service personnel should remove any covers or panels. Electrical hazards exists at several points inside. Before thoroughly familiar with all hazardous voltages and high current levels to avoid accidental contact.



WARNING

Because of the limited access to cabinets and equipment in the field, placing people in awkward positions, GE has limited the lifting weight for one person in the field to 16 KG (35 LBS). Anything over 16 KG (35 LBS) requires 2 people.



WARNING

DO NOT touch any boards with integrated circuits prior to taking the necessary ESD precautions.

Always connect yourself, via an arm-wrist strap, to the advised ESD connection point located on the rear of the Ultrasound system (near the power connector).

Follow general guidelines for handling of electrostatic sensitive equipment.



WARNING

The waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately.

Please contact the manufacturer or other authorized disposal company to decommission your equipment.

Standard Tools List for Cart

Table 8-42: Standard Tool List for Cart

No	Part Name	Part No.	Description	Screwdriver Description
1.	Screw	2327766	D2 SCREW M3X5 NYLOK	PH #1
2.	Screw	5730493	Screw M3X6 CSK BZ	
3.	Screw	5447799	Step Screw M3 x 10	PH #2
4.	Screw	5191335	Screw GB 9074.4-88 M3X6	
5.	Screw	5191051	Screw GB 9074.4-88 M3X10	
6.	Screw	2327793	D2 SCREW SJ2836-87 M3X8	
7.	Screw	5176890	Screw DIN 965A M4x8	
8.	Screw	5495592	Captive Screw M4X16	
9.	Screw	5721656	Machine screw M4x6	
10.	Screw	5191190	Screw with washers GB 9074.4-88 M4X8	
11.	Screw	5477414	Screw DIN 965A M4X10	
12.	Screw	5439265	Screw-M4X10	
13.	Screw	5177225	Screw M5x16	Hex Key 4mm
14.	Screw	5748324	Socket head cap screw M5x20	
15.	Screw	5477579	Screw GB T70.1-2000 with spring M6X20	Hex Key 5mm
16.	Screw	5237571	Screw with washers M6X15	
17.	Screw	5178403	Screw with washer M8x28	Hex Key 6mm

Vivid iq Generic cart (For Vivid iq R1~R6)

Lower Table Assy

Purpose: This is a description on how to remove and replace the Cart lower table assy.

Tools

- Common Phillips screwdrivers
- Allen/Unbraco/Torx wrench

Needed Manpower

- 1 person, 5 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-43: Removal Procedure for Lower Table Assy

No.	Steps	Corresponding Graphic
18.	Remove the 3 screw pads and unscrew the screws that fix the table.	

Table 8-43: Removal Procedure for Lower Table Assy

No.	Steps	Corresponding Graphic
19.	Pull out the lower table assy with both hands along its axis.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Rubber and Cups

Purpose: This is a description on how to remove and replace the Cart Rubber and Cups.

Tools

- NA

Needed Manpower

- 1 person, 2 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-44: Removal Procedure for Rubber and Cups

No.	Steps	Corresponding Graphic
1.	Remove the rubbers on both sides of the cart with hands.	 
2.	Raise the screw pad with the screw driver on the gel holder.	

Table 8-44: Removal Procedure for Rubber and Cups

No.	Steps	Corresponding Graphic
3.	Unscrew the screw.	
4.	Remove the small part of the gel holder.	
5.	Remove the gel holder out of the lower table assy.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Tabletop Cover with lock assy

Purpose: This is a description on how to remove and replace the Tabletop Cover with lock assy.

Tools

- Common Phillips screwdrivers
- Allen/Unbraco/Torx wrench

Needed Manpower

- 1 person, 5 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-45: Removal Procedure for Tabletop Cover with lock assy

No.	Steps	Corresponding Graphic
1.	Unscrew 5 screws.	
2.	Unscrew 3 screws. Note: Let the middle screw remain on the top base assy.	
3.	Remove the main body assy from the cart.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Main Body Assy

Purpose: This is a description on how to remove and replace the Cart Cable Hook SVC Kit.

Tools

- Common Phillips screwdrivers
- Allen/Unbraco/Torx wrench

Needed Manpower

- 1 person, 8 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-46: Removal Procedure for Main Body Assy

No.	Steps	Corresponding Graphic
1.	Remove the Lower Table Assy. See 'Lower Table Assy' on page 8-128 for more information.	
2.	Remove the Top Cover Assy. See 'Tabletop Cover with lock assy' on page 8-134 for more information.	
3.	Unscrew screw 1 using the screwdriver and unscrew screw 2 ~ 7 using the wrench.	
4.	Remove the cable out of the hole and remove the main body assy.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Cart Cable Hook SVC Kit

Purpose: This is a description on how to remove and replace the Cart Cable Hook SVC Kit.

Tools

- Common Phillips screwdrivers
- Allen/Unbraco/Torx wrench

Needed Manpower

- 1 person, 8 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-47: Removal Procedure for Cart Cable Hook SVC Kit

No.	Steps	Corresponding Graphic
1.	Lift up the hook to remove it from the cart.	
2.	Unscrew 2 screws on the hook.	

Table 8-47: Removal Procedure for Cart Cable Hook SVC Kit

No.	Steps	Corresponding Graphic
3.	Repeat step 4 to remove other 3 hooks.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

USB Hub Kit

Purpose: This is a description on how to remove and replace the Cart USB Hub Kit.

Tools

- Common Phillips screwdrivers
- Allen/Unbraco/Torx wrench

Needed Manpower

- 1 person, 4 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-48: Removal Procedure for USB Hub Kit

No.	Steps	Corresponding Graphic
1.	Raise the screw pad with the screw driver.	
2.	Unscrew the screw.	

Table 8-48: Removal Procedure for USB Hub Kit

No.	Steps	Corresponding Graphic
3.	Remove the hub cover.	
4.	Unscrew 4 screws.	

Table 8-48: Removal Procedure for USB Hub Kit

No.	Steps	Corresponding Graphic
5.	Disconnect 2 connectors and remove the USB Hub.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Upper Column Back Cover SVC Kit

Purpose: This is a description on how to remove and replace the Upper Column Back Cover SVC Kit.

Tools

- Common Phillips screwdrivers
- Allen/Unbraco/Torx wrench

Needed Manpower

- 1 person, 5 minutes + travel

Preparation

- NA

Removal Procedure

Table 8-49: Removal Procedure for Upper Column Back Cover SVC Kit

No.	Steps	Corresponding Graphic
1.	Raise 2 screw pads with the screw driver.	
2.	Unscrew the 2 screws.	

Table 8-49: Removal Procedure for Upper Column Back Cover SVC Kit

No.	Steps	Corresponding Graphic
3.	Move the back cover vertically down with both hands and take it out.	  

Mounting Procedure

- Install the new parts in the reverse order of removal.

Upper Column Front Cover with logo kit

Purpose: This is a description on how to remove and replace the Upper Front Cover with logo kit.

Tools

- No special tools

Needed Manpower

- 1 person, 5 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-50: Removal Procedure for Upper Column Front Cover with logo kit

No.	Steps	Corresponding Graphic
1.	Remove Back Cover. See 'Upper Column Back Cover SVC Kit' on page 8-145 for more information.	
2.	Remove the 4 screws from the back of the cart.	
3.	Remove the front cover.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Lower Column Front Cover SVC Kit

Purpose: This is a description on how to remove and replace the Lower Column Front Cover SVC Kit.

Tools

- Common Phillips screwdrivers
- Allen/Unbraco/Torx wrench

Needed Manpower

- 1 person, 5 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-51: Removal Procedure for Lower Column Front Cover SVC Kit

No.	Steps	Corresponding Graphic
1.	Remove Front Cover. See 'Upper Column Front Cover with logo kit' on page 8-148 for more information.	
2.	Raise 2 screw pads on the lower front cover.	
3.	Unscrew the 2 screws.	

Table 8-51: Removal Procedure for Lower Column Front Cover SVC Kit

No.	Steps	Corresponding Graphic
4.	Remove the lower front cover.	

Mounting Procedure

1. Install the new parts in the reverse order of removal.

Lower Column Back Cover SVC Kit

Purpose: This is a description on how to remove and replace the Lower Column Back Cover SVC Kit.

Tools

- Common Phillips screwdrivers
- Allen/Unbraco/Torx wrench

Needed Manpower

- 1 person, 5 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-52: Removal Procedure for Lower Column Back Cover SVC Kit

No.	Steps	Corresponding Graphic
1.	Remove Lower Front Cover. See 'Lower Column Front Cover SVC Kit' on page 8-151 for more information.	
2.	Unscrew 4 screws from the back side of the cart.	

Table 8-52: Removal Procedure for Lower Column Back Cover SVC Kit

No.	Steps	Corresponding Graphic
3.	Remove the lower back cover with both hands.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Side Cover Kit

Purpose: This is a description on how to remove and replace the Side Cover Kit.

Tools

- Common Phillips screwdrivers
- Allen/Unbraco/Torx wrench

Needed Manpower

- 1 person, 8 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-53: Removal Procedure for Side Cover Kit

No.	Steps	Corresponding Graphic
1.	Remove USB Hub. See 'USB Hub Kit' on page 8-141 for more information.	
2.	Remove Front Cover. See 'Upper Column Front Cover with logo kit' on page 8-148 for more information.	
3.	Remove the side covers on both sides.	
		
4.	Remove Lower Front Cover. See 'Lower Column Front Cover SVC Kit' on page 8-151 for more information.	

Table 8-53: Removal Procedure for Side Cover Kit

No.	Steps	Corresponding Graphic
5.	Remove the side covers on both sides.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Gas Spring Assy

Purpose: This is a description on how to remove and replace the Cart Gas Spring Assy.

Tools

- Common Phillips screwdrivers
- Allen/Unbraco/Torx wrench

Needed Manpower

- 1 person, 10 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-54: Removal Procedure for Gas Spring Assy

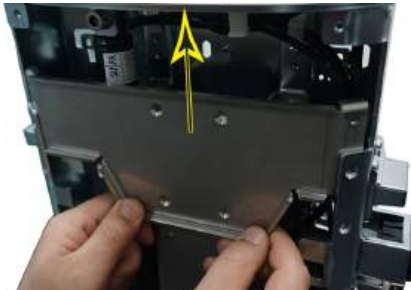
No.	Steps	Corresponding Graphic
1.	Remove Top Base Assy. See 'Cart Cable Hook SVC Kit' on page 8-138 for more information.	
2.	Remove the Front Cover. See 'Upper Column Front Cover with logo kit' on page 8-148 for more information.	
3.	Remove the Lower Front Cover. See 'Lower Column Front Cover SVC Kit' on page 8-151 for more information.	
4.	Unscrew the 8 screws. Caution: Gas Spring must be in the highest height during the disassembly work.	
5.	Lift up the connection bracket to the specific place and remove it from the cart.	 

Table 8-54: Removal Procedure for Gas Spring Assy

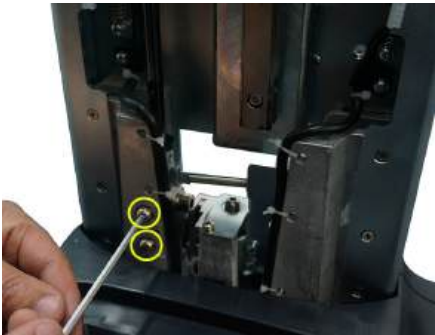
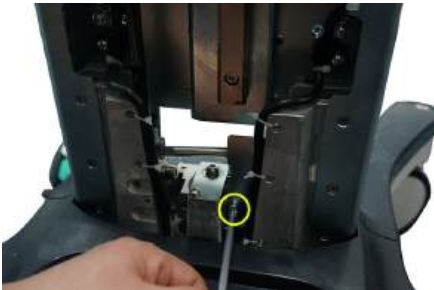
No.	Steps	Corresponding Graphic
6.	Unscrew the 2 screws.	
7.	Unscrew 1 screw.	
8.	Unscrew 1 screw and remove the metal plate.	
9.	Unscrew 1 screw.	

Table 8-54: Removal Procedure for Gas Spring Assy

No.	Steps	Corresponding Graphic
10.	Lift up the board to remove the top of the gas spring.	
11.	Move the gas spring to this position to remove it from the cart.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

AC and DC cables + 2 springs + 6 cable ties

Purpose: This is a description on how to remove and replace the Cart AC and DC cables + 2 springs + 6 cable ties.

Tools

- Common Phillips screwdrivers
- Allen/Unbraco/Torx wrench

Needed Manpower

- 1 person, 15 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-55: Removal Procedure for AC and DC cables + 2 springs + 6 cable ties

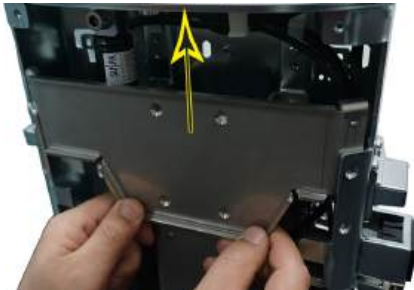
No.	Steps	Corresponding Graphic
1.	Remove Top Base Assy. See 'Cart Cable Hook SVC Kit' on page 8-138 for more information.	
2.	Remove the Front Cover. See 'Upper Column Front Cover with logo kit' on page 8-148 for more information.	
3.	Remove the Lower Front Cover. See 'Lower Column Front Cover SVC Kit' on page 8-151 for more information.	
4.	Unscrew the 8 screws. Caution: Gas Spring must be in the highest height during the disassembly work.	
5.	Lift up the connection bracket to the specific place and remove it from the cart.	 

Table 8-55: Removal Procedure for AC and DC cables + 2 springs + 6 cable ties

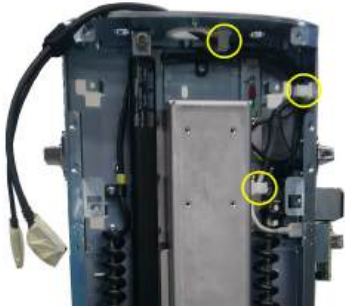
No.	Steps	Corresponding Graphic
6.	Disassemble the 3 cable ties.	
7.	Let the cables go through the hole.	
8.	Unscrew 4 screws.	

Table 8-55: Removal Procedure for AC and DC cables + 2 springs + 6 cable ties

No.	Steps	Corresponding Graphic
9.	Disconnect the 2 connectors.	
10.	Unscrew 1 screw.	
11.	Unscrew 1 screw.	

Table 8-55: Removal Procedure for AC and DC cables + 2 springs + 6 cable ties

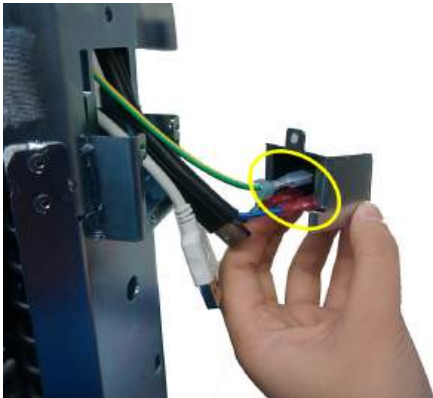
No.	Steps	Corresponding Graphic
12.	Disconnect 3 connectors.	
13.	Unscrew 2 screws.	

Table 8-55: Removal Procedure for AC and DC cables + 2 springs + 6 cable ties

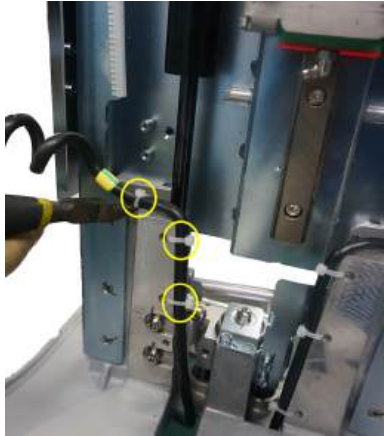
No.	Steps	Corresponding Graphic
14.	Disassemble the 3 cable ties.	
15.	Turn over the cart to show the bottom. Disassemble the 2 cable ties to remove the AC cable and the spring.	

Table 8-55: Removal Procedure for AC and DC cables + 2 springs + 6 cable ties

No.	Steps	Corresponding Graphic
16.	Unscrew the 4 screws to remove the DC cable and the spring.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Charge Box

Purpose: This is a description on how to remove and replace the Charge Box.

Tools

- No special tools.

Needed Manpower

- 1 person, 2 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-56: Removal Procedure for Charge Box

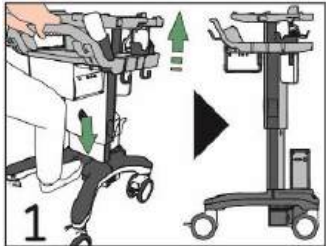
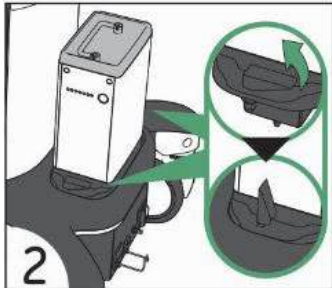
No.	Steps	Corresponding Graphic
1.	To adjust the height of the cart, hold the handle with both hands, step on the pedal and raise the height.	
2.	Flip up the 2 swell laths.	
3.	Carry the folding handle of the Charge Box to remove it from the cart.	

Table 8-56: Removal Procedure for Charge Box

No.	Steps	Corresponding Graphic
4.	Install the base back basket to the cart with both hands.	

Mounting Procedure

- Install the new parts in the reverse order of removal.



CAUTION

Use caution to avoid injuring hands when installing the Extended Life Battery.

Batteries in Charge Box

Purpose: This is a description on how to remove and replace the batteries in Charge Box.

Tools

- No special tools.

Needed Manpower

- 1 person, 2 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-57: Removal Procedure for batteries in Charge Box

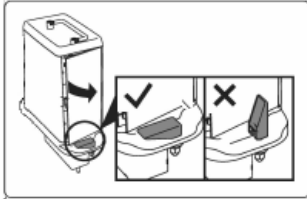
No.	Steps	Corresponding Graphic
1.	Remove the Charge Box. See 'Charge Box' on page 8-171 for more information.	
2.	Flip down the 2 swell laths.	
3.	Open the charge box door.	
4.	Loose the 2 screws with hand and take out the battery pack latch.	
		

Table 8-57: Removal Procedure for batteries in Charge Box

No.	Steps	Corresponding Graphic
5.	Take out the battery.	 A photograph showing a hand pulling a black battery out of a white charge box. The box is open, and the battery is being lifted from the bottom compartment.

Mounting Procedure

- Install the new parts in the reverse order of removal.

Power Box Assy

Purpose: This is a description on how to remove and replace the Cart Power Box Assy.

Tools

- Common Phillips screwdrivers
- Allen/Unbraco/Torx wrench

Needed Manpower

- 1 person, 1 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-58: Removal Procedure for Power Box Assy

No.	Steps	Corresponding Graphic
1.	Remove the power cable and remove the charge box assy. See Table 8-56: 'Removal Procedure for Charge Box' on page 8-171 for more information. <i>Note: When removing the power cable, grab the handle and pull out the cable connector from the AC power port.</i>	
2.	Disconnect 2 connectors.	
3.	Rotate and loose the 2 fasteners, and then pull out the power box.	
4.	Take down the power box with both hands.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Power Box DC Output Connector Kit

Purpose: This is a description on how to remove and replace the Cart Power Box DC Output Connector kit.

Tools

- Common Phillips screwdrivers
- Allen/Unbraco/Torx wrench

Needed Manpower

- 1 person, 1 minutes + travel

Preparation

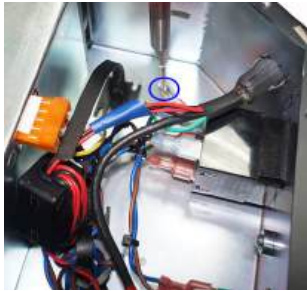
- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-59: Removal Procedure for Power Box DC Output Connector kit

No.	Steps	Corresponding Graphic
1.	Remove the Power Box Assy. See 'Power Box Assy' on page 8-177 for more information.	
2.	Unscrew 6 screws.	
3.	Unscrew the 2 screws on each side.	
4.	Disconnect 2 connectors.	
5.	Open the cable clip and take out the magnet core.	

Table 8-59: Removal Procedure for Power Box DC Output Connector kit

No.	Steps	Corresponding Graphic
6.	Unscrew 1 screw.	
7.	Disconnect 1 connector.	
8.	Take out the DC connector.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Power Box Circuit Breaker Kit

Purpose: This is a description on how to remove and replace the Cart Power Box Circuit Breaker kit.

Tools

- Common Phillips screwdrivers
- Allen/Unbraco/Torx wrench

Needed Manpower

- 1 person, 1 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-60: Removal Procedure for Power Box Circuit Breaker kit

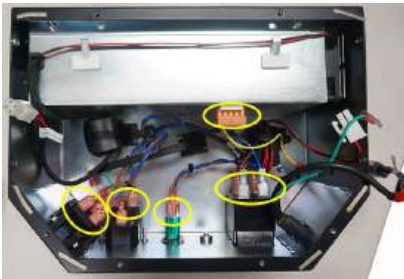
No.	Steps	Corresponding Graphic
1.	Remove the Power Box Assy. See 'Power Box Assy' on page 8-177 for more information.	
2.	Disconnect all the cables from the 5 connectors.	
3.	Open the cable clip and take out the 2 magnet cores.	
4.	Unscrew 2 screws.	

Table 8-60: Removal Procedure for Power Box Circuit Breaker kit

No.	Steps	Corresponding Graphic
5.	Take out the circuit breaker kit.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Failure Mode

If the charge box battery does not work, it is recommended that check the light status on the power box. If the light is off, please check the power cord cable and switch first, If they are ok without any issues, please order 5719207-S SAGE cart Power Box Circuit Breaker kit to replace AC input.



Table 8-61: Removal Procedure for Power Box AC Input

No.	Steps	Corresponding Graphic
1.	Remove the Power Box Assy. See 'Power Box Assy' on page 8-177 for more information.	
2.	Disconnect all the 3 cables from the connector.	

Table 8-61: Removal Procedure for Power Box AC Input

No.	Steps	Corresponding Graphic
3.	Remove the cable clip.	
4.	Unscrew 2 screws.	
5.	Take out the AC input.	

Castor Replacement

Purpose: This is a description on how to remove and replace the Cart Front and Rear Castors.

Tools

- Common Hex driver
- Spanner
- Wooden Wedge

NOTE: Wooden Wedge should be ordered by the user.

Needed Manpower

- 1 person, 6 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.

Removal Procedure

Table 8-62: Removal Procedure for Castors

No.	Steps	Corresponding Graphic
1.	Remove the screw cover.	
2.	Unscrew the screw.	
3.	Lift up the Cart and remove the castor.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Probe release knob SVC Kit for 4PP

Purpose: This is a description on how to remove and replace the Probe release knob SVC Kit for 4PP.

Tools

- Common Phillips screwdrivers

Preparation

- Shut down the system and disconnect the power cord.

Needed Manpower

- 1 person, 5 minutes + travel

Removal Procedure

Table 8-63: Removal Procedure for 4PP Probe release knob SVC Kit

No.	Steps	Corresponding Graphic
1.	Unscrew 1 screw.	
2.	Lift up the lock and remove it.	

Mounting Procedure

1. Install the new parts in the reverse order of removal.

Cable Clip SVC Kit for Power Cable

Purpose: This is a description on how to remove and replace the cable clip SVC kit for power cable.

Needed Manpower

- 1 person, 5 minutes + travel

Tools

- Common Phillips screwdrivers

Preparation

- No need

Removal Procedure

Table 8-64: Removal Procedure for cable clip SVC kit for power cable

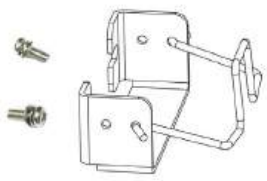
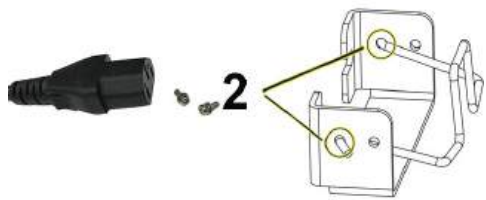
Step	Description	Corresponding Graphic
1.	Unscrew the 2 screws to remove the cable clip from the system.	

Mounting Procedure



CAUTION

Ensure that the retaining clamp for the power plug is fixed firmly.

1.	Prepare the new cable clip SVC kit for power cable.	
2.	For the C13M power cable, please insert the pin into the No1 hole.	
	For the Volex power cable, please insert the pin into the No2 hole.	
3.	Screw 2 screws to fix the new cable clip on the system.	

Vivid iq Standard & Premium Cart (For Vivid iq R6 and R8)

Table Top with Lock Assy SVC Kit (Part No. 5954866-S)

Purpose: This is a description on how to remove and replace the Cart table top with lock assy svc kit.

Tools

- Common Phillips screwdrivers

Needed Manpower

- 1 person, 10 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the Cart.

Removal Procedure

Table 8-65: Removal Procedure for Table Top with Lock Assy

No.	Steps	Corresponding Graphic
1.	Unscrew the 14 screws that fix the table.	

Table 8-65: Removal Procedure for Table Top with Lock Assy

No.	Steps	Corresponding Graphic
2.	Unscrew the screw which connected to the table.	

Mounting Procedure

- Tighten 2 screws on release button first and then continue tighten remaining screws.

Front Handle with Button Assy SVC Kit (Part No. 5954867-S/5955827-S)

Purpose: This is a description on how to remove and replace the Cart front handle with button assy svc kit.

Tools

- Allen wrench

Needed Manpower

- 1 person, 5 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the Cart.

Removal Procedure

Table 8-66: Removal Procedure for Front Handle with Button Assy

No.	Steps	Corresponding Graphic
1.	Remove the Table Top with Lock Assy. See 'Table Top with Lock Assy SVC Kit (Part No. 5954866-S)' on page 8-194 for more information.	
2.	Remove Bowden Cable from lever.	
3.	Unscrew 6 screws.	

Table 8-66: Removal Procedure for Front Handle with Button Assy

No.	Steps	Corresponding Graphic
4.	Remove the front handle from the table botton.	
5.	Take out the front handle.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Rubber and Cups Kit (Part No. 5954874)

Purpose: This is a description on how to remove and replace the Cart Rubber and Cups.

Tools

- NA

Needed Manpower

- 1 person, 2 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure

Table 8-67: Removal Procedure for Rubber and Cups

No.	Steps	Corresponding Graphic
1.	Remove the rubbers on both sides of the cart with hands.	

Table 8-67: Removal Procedure for Rubber and Cups

No.	Steps	Corresponding Graphic
2.	Remove the gel holder with hand.	 

Mounting Procedure

- Install the new parts in the reverse order of removal.

Column Hook SVC Kit (Part No. 5953164-S)

Purpose: This is a description on how to remove and replace the Column Hook SVC Kit.

Tools

- Common Phillips screwdrivers

Needed Manpower

- 1 person, 5 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure

Table 8-68: Removal Procedure for Column Hook SVC Kit

No.	Steps	Corresponding Graphic
1.	Remove the screw pads.	
2.	Unscrew 2 screws on both sides of the column.	

Table 8-68: Removal Procedure for Column Hook SVC Kit

No.	Steps	Corresponding Graphic
3.	Move down the hook to take it from the cart.	
4.	Take out the column hooks.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Back Basket (Part No. 5951369-S)

Purpose: This is a description on how to remove and replace the Cart Back Basket.

Tools

- NA

Needed Manpower

- 1 person, 2 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure

Table 8-69: Removal Procedure for Back Basket

No.	Steps	Corresponding Graphic
1.	Lift up the back basket to remove it from the cart.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Replacement Procedures

Front Basket (Part No. 5954737-S)

Purpose: This is a description on how to remove and replace the Front Basket.

Tools

- NA

Needed Manpower

- 1 person, 2 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure

Table 8-70: Removal Procedure for Front Basket

No.	Steps	Corresponding Graphic
1.	Lift up the front basket to remove it from the cart.	 

Mounting Procedure

- Install the new parts in the reverse order of removal.

Probe Holder SVC Kit (Part No. 5954876)

Purpose: This is a description on how to remove and replace the Cart probe holder svc kit.

Tools

- Common Phillips screwdrivers

Needed Manpower

- 1 person, 5 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure

Table 8-71: Removal Procedure for Probe Holder

No.	Steps	Corresponding Graphic
1.	Unscrew 6 screws under the probe holders on the left and right sides.	

Table 8-71: Removal Procedure for Probe Holder

No.	Steps	Corresponding Graphic
2.	Remove probe holder from table base and unscrew four screws on the probe holder to disconnect the cable hook on it.	

Table 8-71: Removal Procedure for Probe Holder

No.	Steps	Corresponding Graphic
3.	Take out the Probe Holders.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Ergonomic P2D Probe Holder (Part No. 5974261-S)

Purpose: This is a description on how to remove and replace the Ergonomic P2D Probe Holder.

Tools

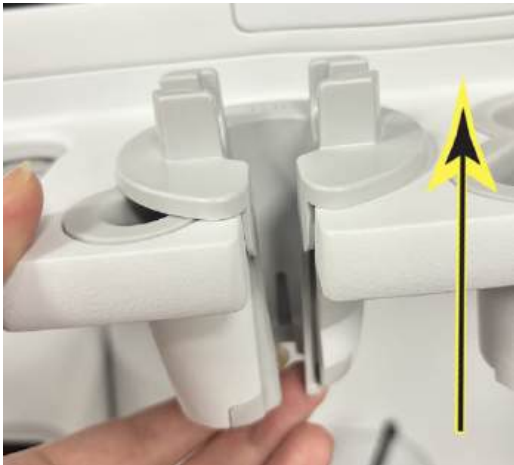
- NA

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure

Table 8-72: Removal Procedure for Ergonomic P2D Probe Holder

No.	Steps	Corresponding Graphic
1.	Use fingers to hold the lower end of the P2D probe holder and push it upward to separate it from the rubber of the probe holder.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Cable Hook SVC Kit (Part No. 5955766)

Purpose: This is a description on how to remove and replace the Cable Hook svc kit.

Tools

- Common Phillips screwdrivers

Needed Manpower

- 1 person, 5 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart

Removal Procedure

Table 8-73: Removal Procedure for Cable Hook

No.	Steps	Corresponding Graphic
1.	Unscrew 4 screws on both sides of the cart.	
2.	Remove the cable hook.	 

Mounting Procedure

- Install the new parts in the reverse order of removal.

Power Box Assy SVC (Part No. 5947499-S)

Purpose: This is a description on how to remove and replace the Power Box Assy SVC kit.

Tools

- Common Phillips screwdrivers

Needed Manpower

- 1 person, 10 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure



WARNING

Please cut off power supply immediately in case exposure to smoke.

Table 8-74: Removal Procedure for Power Box Assy

No.	Steps	Corresponding Graphic
1.	Remove the power cable and remove the charge box assy. See Table 8-76: 'Removal Procedure for Charge Box Assy' on page 8-224 for more information. <i>Note: When removing the power cable, grab the handle and pull out the cable connector from the AC power port.</i>	
2.	Unscrew 2 screws and pull the power box out a little.	 

Table 8-74: Removal Procedure for Power Box Assy

No.	Steps	Corresponding Graphic
3.	Disconnect the USB cable.	
4.	Pull the power box more out and disconnect AC cable.	
5.	Disconnect DC cable.	

Table 8-74: Removal Procedure for Power Box Assy

No.	Steps	Corresponding Graphic
6.	Unscrew 1 screw on the ground cables.	
7.	Unscrew 1 screw to disconnect the cable clamp.	
8.	Take down the Power Box carefully.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

10A Fuse (Part No. 5938974-S)

Purpose: This is a description on how to remove and replace the 10A Fuse.

NOTE: Only use this fuse for replacement, do not use other parts in this kit (5938974-S) for safety protection reasons.

Tools

- Tweezers

Needed Manpower

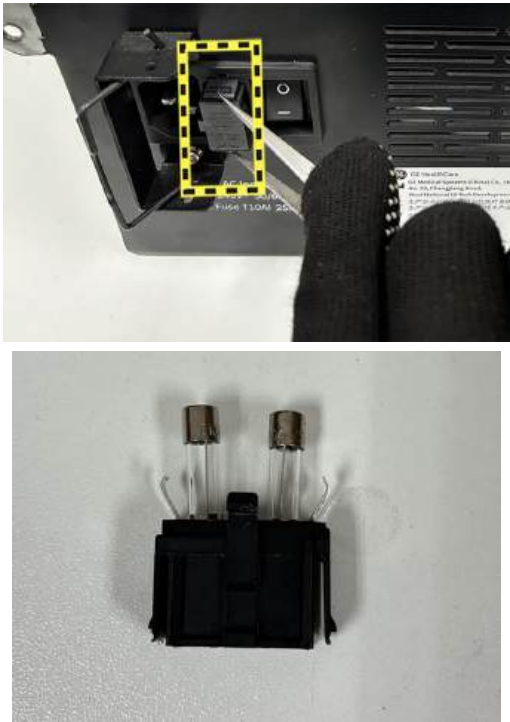
- 1 person, 10 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure

Table 8-75: Removal Procedure for 10A Fuse

No.	Steps	Corresponding Graphic
1.	Using tweezers pull out the Fuse box.	
2.	Disconnect 10 A Fuse from Fuse box and replace it.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Charge Box Assy (Part No. 5947849-S)

Purpose: This is a description on how to remove and replace the Charge Box Assy.

Tools

- NA

Needed Manpower

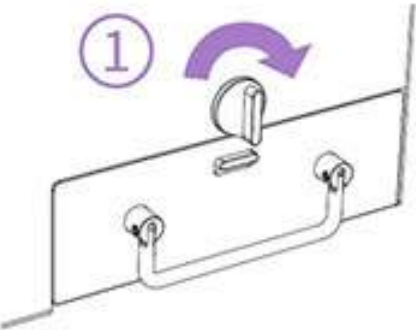
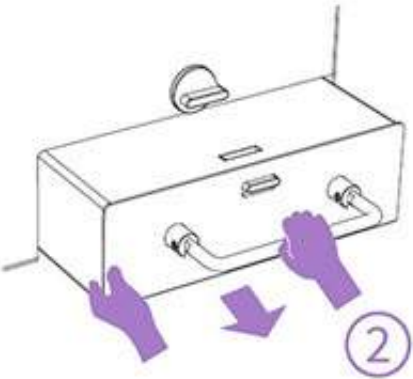
- 1 person, 2 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure

Table 8-76: Removal Procedure for Charge Box Assy

No.	Steps	Corresponding Graphic
1.	Rotate the handle by 90 degrees to release.	
2.	Carry the folding handle with both hands and take out the Charge Box carefully.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Install Printer on the Standard Cart/Premium Cart

Purpose: This is a description on how to install the printer on the Standard Cart/Premium Cart.

Tools

- Common Phillips screwdrivers

Needed Manpower

- 1 person, 10 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Install Procedure

Table 8-77: Install Procedure for Printer

No.	Steps	Corresponding Graphic
1.	Prepare a Printer Shelf.	

Table 8-77: Install Procedure for Printer

No.	Steps	Corresponding Graphic
2.	Install the two screws and Rear Bracket to the printer.	
		
		

Table 8-77: Install Procedure for Printer

No.	Steps	Corresponding Graphic
3.	Place the Printer in the Printer Shelf and completely push the Printer into the shelf. <i>Note: When pushing, you need to align the rear bracket with the slot in the printer shelf.</i>	
		
4.	Tighten two screws on the shelf.	

Table 8-77: Install Procedure for Printer

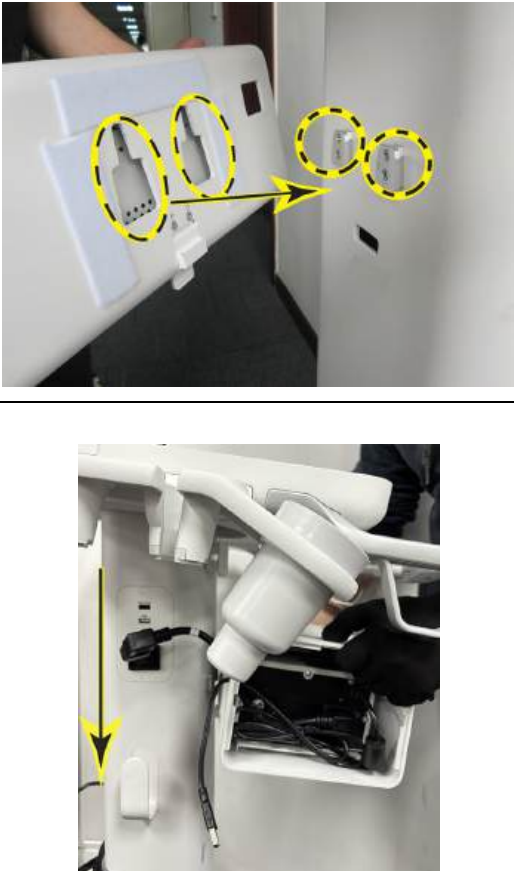
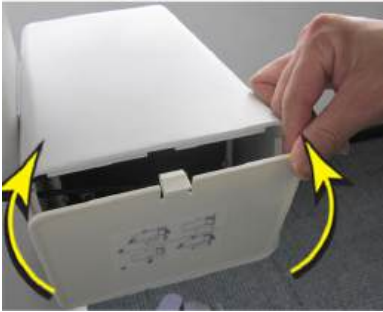
No.	Steps	Corresponding Graphic
5.	Connect the printer USB cable (a) and power cord (b) to the printer, manage the cables through the hole on the printer shelf. <i>Note: Please manage the printer USB cable and put it in the printer shelf.</i>	
6.	Align the 2 hooks on the upper column to the 2 holes on the shelf and press down the shelf until it mounts on column.	

Table 8-77: Install Procedure for Printer

No.	Steps	Corresponding Graphic
7.	Connect the printer USB cable (a), power cord (b) to the USB ports on the cart. <i>Note: Please connect the printer USB cable (a) to the printer dedicated USB port as shown in the picture.</i>	 

Table 8-77: Install Procedure for Printer

No.	Steps	Corresponding Graphic
8.	Install the Printer Shelf front cover and back cover.	
		
		
		

Install DVD-RW on the Standard Cart/Premium Cart

Purpose: This is a description on how to install the DVD-RW on the Standard Cart/Premium Cart.

Tools

- Common Phillips screwdrivers

Needed Manpower

- 1 person, 5 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Install Procedure

Table 8-78: Install Procedure for DVD-RW

No.	Steps	Corresponding Graphic
1.	Prepare a Printer Shelf.	
2.	Connect the USB cable to the DVD-RW.	

Table 8-78: Install Procedure for DVD-RW

No.	Steps	Corresponding Graphic
3.	Route the DVD-RW cable through the hole on the Printer/DVD-RW Shelf and push the DVD-RW to the end.	
		

Table 8-78: Install Procedure for DVD-RW

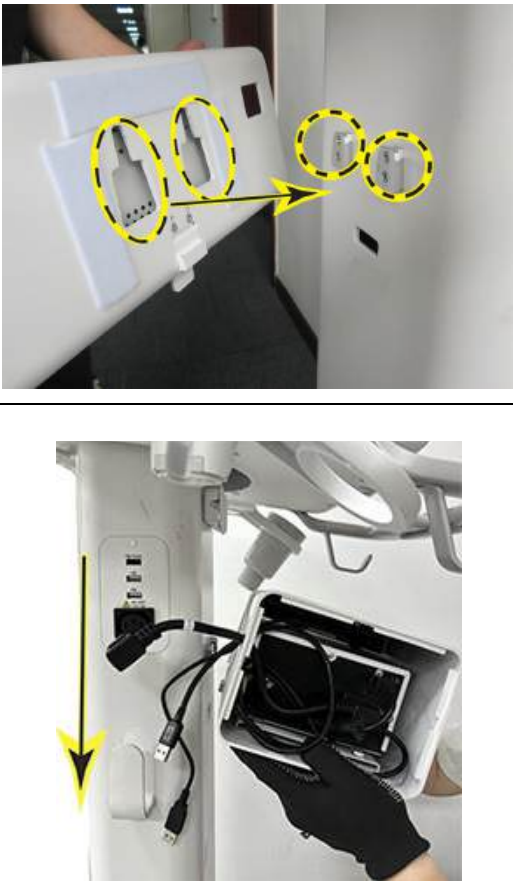
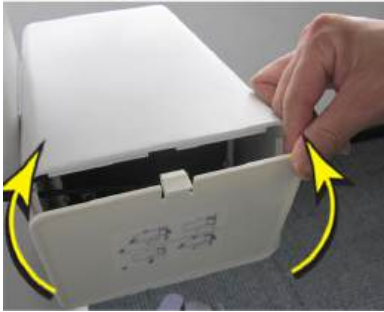
No.	Steps	Corresponding Graphic
4.	Align the 2 hooks on the upper column to the 2 holes on the shelf and press down the shelf until it mounts on column.	
5.	Connect the DVD-RW cable (c) to the USB ports on the cart. <i>Note: Please connect the DVD-RW cable (c) to any two USB ports as shown in the picture. Do not connect the DVD-RW cable to the USB port only for printer on the cart.</i>	

Table 8-78: Install Procedure for DVD-RW

No.	Steps	Corresponding Graphic
		

Table 8-78: Install Procedure for DVD-RW

No.	Steps	Corresponding Graphic
6.	Install the Printer Shelf front cover and back cover.	
		
		
		

Printer Shelf (Part No. 5936564-S)

Purpose: This is a description on how to remove and replace the Printer Shelf.

Tools

- NA

Needed Manpower

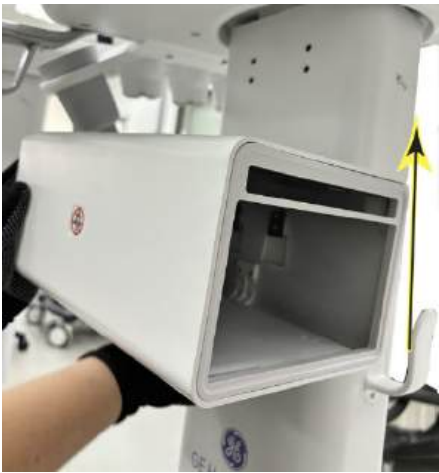
- 1 person, 5 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure

Table 8-79: Removal Procedure for Printer Shelf

No.	Steps	Corresponding Graphic
1.	Grab the quick release lever and pull it out.	
2.	Lift up the Printer Shelf with both hands and remove it.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

4PP SVC Kit (Part No. 5947732-S)

Purpose: This is a description on how to remove and replace the 4PP SVC Kit.

Tools

- NA

Needed Manpower

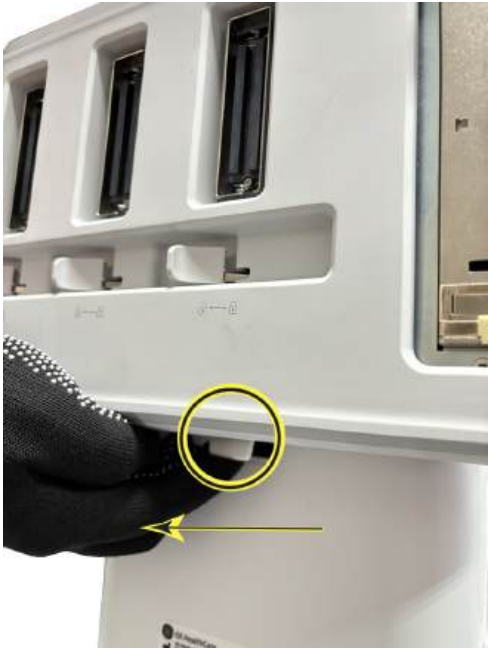
- 1 person, 5 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure for 4pp SVC Kit in Standard Cart

Table 8-80: Removal Procedure for 4pp SVC Kit in Standard Cart

No.	Steps	Corresponding Graphic
1.	Grab the quick release lever and pull it out.	
2.	Lift up the 4pp with both hands and remove it from Standard Cart.	

Removal Procedure for 4pp SVC Kit in Premium Cart

Table 8-81: Removal Procedure for 4pp SVC Kit in Premium Cart

No.	Steps	Corresponding Graphic
1.	Grab the quick release lever and pull it out.	
2.	Lift up the 4pp with both hands and remove it from the 4pp bracket.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

4PP Bracket with Rear Handle SVC Kit (Part No. 5947738-S)

Purpose: This is a description on how to remove and replace the 4PP Bracket with Rear Handle SVC Kit.

Tools

- L-shaped Phillips screwdriver

Needed Manpower

- 1 person, 10 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure for 4pp Bracket with Rear Handle

Table 8-82: Removal Procedure for 4pp Bracket with Rear Handle

No.	Steps	Corresponding Graphic
1.	Remove 4pp from Bracket. See 'Removal Procedure for 4pp SVC Kit in Premium Cart' on page 8-240 for more information.	
2.	Under the handle, there are two panel fasteners on the both sides. Using L-shaped Phillips screwdriver to loosen the two panel fasteners.	
3.	Pull Spring-Loaded Plungers and rotate by 90 degrees to unlock it.	

Table 8-82: Removal Procedure for 4pp Bracket with Rear Handle

No.	Steps	Corresponding Graphic
4.	Pull out the handle with both hands.	
5.	Take out the 4pp Bracket with Rear Handle.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

USB Hub Kit (Part No. 5620723-S)

Purpose: This is a description on how to remove and replace the USB Hub Kit.

Tools

- Common Phillips screwdrivers

Needed Manpower

- 1 person, 4 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure

Table 8-83: Removal Procedure for USB Hub Kit

No.	Steps	Corresponding Graphic
1.	Raise the screw pads with the screw driver, then unscrew the screw.	

Table 8-83: Removal Procedure for USB Hub Kit

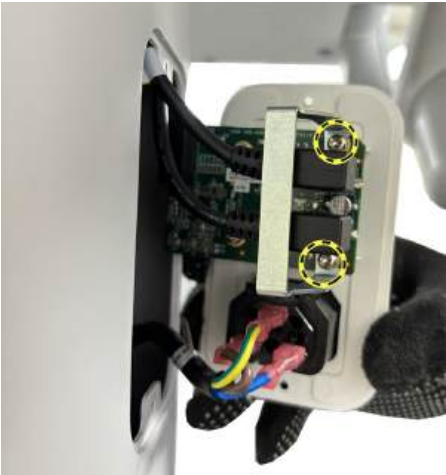
No.	Steps	Corresponding Graphic
2.	Open the USB Hub cover. Unscrew the two screws to remove the frame.	
3.	Disconnect two USB cables.	

Table 8-83: Removal Procedure for USB Hub Kit

No.	Steps	Corresponding Graphic
4.	Take out the USB Hub.	
		

Mounting Procedure

- Install the new parts in the reverse order of removal.

No.	Steps	Corresponding Graphic
1.	During the installation process, please connect the 5954467 USB cable to the USB port as shown in the picture.	

Castor SVC kit (Part No. 5955299-S)

Purpose: This is a description on how to remove and replace the Castor SVC Kit.

Tools

- Allen/Unbraco/Torx wrench

Needed Manpower

- 1 person, 5 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure

Table 8-84: Removal Procedure for Castor SVC Kit

No.	Steps	Corresponding Graphic
1.	Lay the cart flat. Then using the castor wrench to unscrew the castor.	
	Remove the castor.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Install Wireless Adapter A8000 on the Standard Cart/Premium Cart

Purpose: This is a description on how to install the Wireless Adapter A8000 on the Standard Cart/Premium Cart.

Tools

- NA

Needed Manpower

- 1 person, 2 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Install Procedure

Table 8-85: Install Procedure for Wireless Adapter

No.	Steps	Corresponding Graphic
1.	Prepare the USB cable.	
2.	Connect the USB cable to the Wireless Adapter.	

Table 8-85: Install Procedure for Wireless Adapter

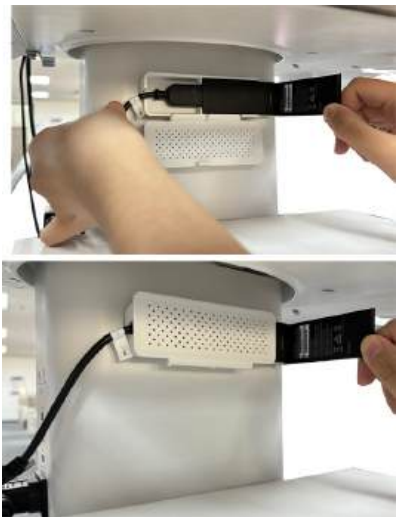
No.	Steps	Corresponding Graphic
3.	Put the Wireless Adapter into the WIFI bracket and close the bracket door.	
4.	Connect the USB cable to the USB port on the cart. <i>Note: Please connect the USB cable to any two USB ports as shown in the picture. Do not connect the to the USB port only for printer on the cart.</i>	

Table 8-85: Install Procedure for Wireless Adapter

No.	Steps	Corresponding Graphic
		 A photograph of the back of a white electronic device, likely a power supply unit or a similar component. The device has a black power input port at the bottom. Above it, there are two USB ports, which are highlighted by a blue rectangular box. Above the USB ports, there is a label that reads "Printer" with a small icon. Below the USB ports, there is a label that reads "100-240V~" and "0.8-1.5A".

Vivid iq Cart WIFI Bracket assy SVC kit

Purpose: This is a description on how to remove and replace the WIFI Bracket SVC Kit.

Tools

- NA

Needed Manpower

- 1 person, 2 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure

Table 8-86: Removal Procedure for WIFI Bracket assy SVC Kit

No.	Steps	Corresponding Graphic
1.	Pull out the WIFI Bracket assy and remove it.	
2.	Disconnect the USB cable from Cart.	 

Mounting Procedure

- Install the new parts in the reverse order of removal.

Batteries in Charge Box

Purpose: This is a description on how to remove and replace the batteries in Charge Box.

Tools

- No special tools.

Needed Manpower

- 1 person, 2 minutes + travel

Preparation

- Shut down the system and switch off the main breaker.
Remove the system from the cart.

Removal Procedure

Table 8-87: Removal Procedure for batteries in Charge Box

No.	Steps	Corresponding Graphic
1.	Push down the door hook on the charge box.	
2.	Open the charge box door.	
3.	Take out the battery.	

Mounting Procedure

- Install the new parts in the reverse order of removal.

Function Check

Perform the following functional checks to confirm the system is operational before returning the system to the customer.

- If all are successful, include the following debrief script:
Vivid *iq* Proprietary Service Manual, Direction
5822851-100 English, Rev. 16. Equipment passed all
required checks and is ready for use.

General Check Procedure

Table 8-88: Power On the System (for generic cart)

Item	Check Procedure	Criteria
1.	Mount the system into the Cart.	
2.	Switch on the power box.	1.Optional: if have charge box, the system's capacity LED light is illuminated. 2.The AC indicator light on the power box is illuminated.
3.	Power on the system.	Check on UI the battery status and ensure the battery is connected and can be charged.
4.	Power off the system and switch off the power box.	The system's capacity LED light is off and the power box AC indicator light is off.

Table 8-89: Power On the System (for premium/standard cart)

Item	Check Procedure	Criteria
1.	Mount the system into the Cart.	
2.	Switch on the power box.	1.Optional: if have charge box, the system's capacity LED light is illuminated. 2.The DC indicator light on the power box is illuminated.
3.	Power on the system.	Check on UI the battery status and ensure the battery is connected and can be charged.
4.	Power off the system and switch off the power box.	The system's capacity LED light is still on and the power box DC indicator light is off.

Table 8-90: USB HUB

Item	Check Procedure	Criteria
1.	Mount the system into Cart.	The connected USB Device does work properly.
2.	Power on the Cart.	
3.	Power on the system.	
4.	Connect any of type USB Device to USB HUB.	

Table 8-91: Four-Probe Port

Item	Check Procedure	Criteria
1.	Mount the system into Cart.	
2.	Power on the Cart.	
3.	Power on the system.	
4.	Connect the Cart four-probe connector to the system.	
5.	If it is possible, connect four different probes which are supported by the system to the 4-Probe Port.	
6.	Press Exam key.	All probes' name should be shown on the corresponding position of probe information menu.
7.	Select any of the probe to check	The corresponding probe does work properly.

Table 8-92: Power Box (for generic cart)

Item	Check Procedure	Criteria
1.	Mount the system into the Cart.	
2.	Switch on the power box.	1.Optional: if have charge box, the system's capacity LED light is illuminated. 2.The AC indicator light on the power box is illuminated.
3.	Power on the system.	Check on UI the battery status and ensure the battery is connected and can be charged.
4.	Power off the system and switch off the power box.	The system's capacity LED light is off and the power box AC indicator light is off.

Table 8-93: Power Box (for premium/standard cart)

Item	Check Procedure	Criteria
1.	Mount the system into the Cart.	

Table 8-93: Power Box (for premium/standard cart)

Item	Check Procedure	Criteria
2.	Switch on the power box.	1.Optional: if have charge box, the system's capacity LED light is illuminated. 2.The DC indicator light on the power box is illuminated.
3.	Power on the system.	Check on UI the battery status and ensure the battery is connected and can be charged.
4.	Power off the system and switch off the power box.	The system's capacity LED light is still on and the power box DC indicator light is off.

Check Matrix

Table 8-94: Check Matrix of Cart

Part No.	Description	Verification	Functional Checks
	4-Probe Port Assy	Perform the following steps to verify that the product is functioning as intended after this replacement. • Connect cables and probes removed earlier. • If finished, confirm the 4-Probe Port is fixed and not movable. • Power up the system to verify that it operates as intended.	4-Probe Port check, refer to Table 8-91 on page 8-258
	4-Probe Port Supporter Bracket Assy	Perform the following steps to verify that the product is functioning as intended after this replacement. • Verify that all screws removed earlier have been installed. • If finished, install and confirm the 4-Probe Port is fixed and not movable. • Power up the system to verify that it operates as intended.	
	Top Cover Assy	Perform the following functional checks to confirm the system is operational before returning the system to the customer. • Verify if the top cover assy is tightly fixed with the system.	
	Gas Spring Service Kit	Perform the following steps to verify that the product is functioning as intended after this replacement. • Verify that the cart can be lifted up and down.	
	USB HUB Assy	Perform the following steps to verify that the product is functioning as intended after this replacement. • Verify that all screws removed earlier have been installed.	USB HUB check, refer to Table 8-90 on page 8-258
	Charge Box	Perform the following steps to verify that the product is functioning as intended after this replacement. • For generic cart, ensure the bolts are in 'locked' status. • For premimun/standard cart, ensure the knob is rotated to 'locked' status.	Charge Box check for generic cart, See 'Mounting Procedure' on page 8-173 for more information. Charge Box check for premimun/standard cart, See 'Charge Box Assy (Part No. 5947849-S)' on page 8-223 for more information.

Table 8-94: Check Matrix of Cart

Part No.	Description	Verification	Functional Checks
	Power Box for Cart	Perform the following steps to verify that the product is functioning as intended after this replacement. • Verify that all screws removed earlier have been installed. • If finished, connect cables and probes removed earlier. • Power up the system to verify that it operates as intended.	• Power Box Check, refer to Table 8-88 on page 8-257 and Table 8-89 on page 8-257
	Castor Replacement	Perform the following steps to verify that the product is functioning as intended after this replacement. • Verify that all screws removed earlier have been installed. • If finished, confirm the castors operate as intended.	

TEE Probe Storage Rack

Introduction

The Storage rack is an accessory developed to provide secure storage of the TEE probes. It can be used as a probe stand in the operation room or echo-lab, or as an extension to the TEE Cleaning and Storing System in the cleaning room.

Overview

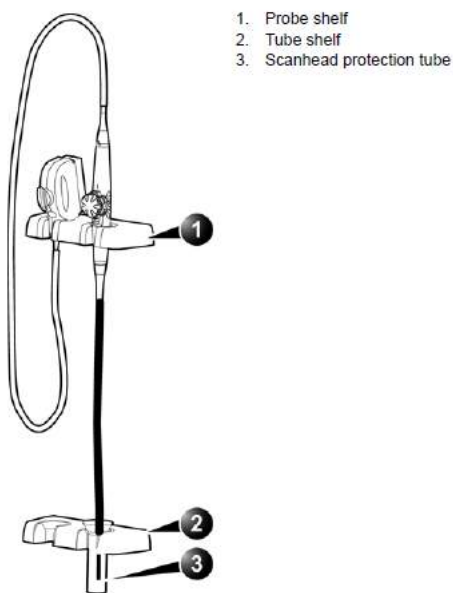


Figure 8-23. Storage Rack

Installation

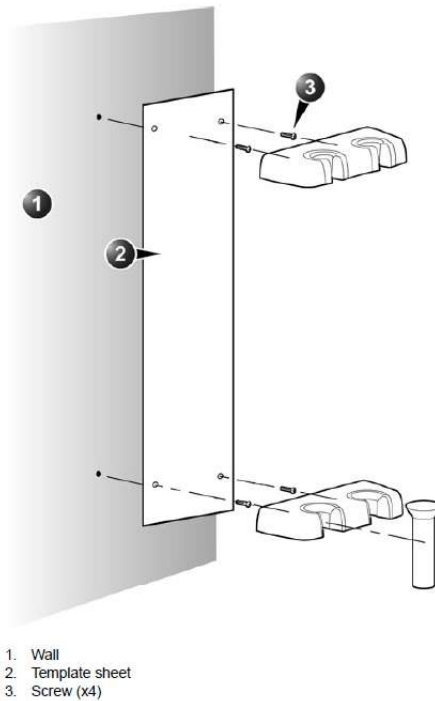


Figure 8-24. Installation Diagram

The unit is mounted on the wall using four screws. Two types of screws are provided; for wooden/gypsum or concrete wall.

The unit must be mounted on a solid wall (not a free-standing wall).

Wall Type	Minimum Thickness
Wooden	10 mm
Gypsum board	13 mm

Installation(continued)

- Unpack the Storage rack and read the installation manual.
- Using tape, mount the template sheet vertically onto the wall. Make sure that there is enough clearance from the floor for the scanhead protection tube.
- Mark the position of the four mounting holes on the wall and remove the template sheet.
- Drill the holes with an appropriate gauge.
- Enter the screws into the wall.
- Mount the Storage rack elements onto the protruding screws.
- Mount the tube into the tube shelf.

Loading the Software from USB Flash Drive (UFD)

Purpose of this section

This section describes how to loading the software from USB Flash Drive (UFD) on Vivid *iq*.

Customer provided prerequisite

- Formatted and labelled media for Images storage.
- Formatted and labelled media for Patient Archive and Presets (User Defined Settings).
- Password for the user ADM.

Overview

When loading the software from USB Flash Drive (UFD), you get the choice to either replace all the contents on the Hard Disk Drive, or only install the software on the C: partition. If you chose to replace all the contents on the Hard Disk Drive, all stored data, including all set-up data will be lost. It is considered to be the best practice to always move images away from the Hard Disk Drive, do backup of databases etc. and record important configuration data on paper before starting a software load or reload. For instructions, please see 'Data Backup and Restore' in the User Manual.

The software is delivered on one Thumb Drive with the Base Load Image and Vivid *iq* Application Software. In some cases, a second Thumb Drive with a software patch, may also be included. A software patch is used when a few new files should be installed or changed, but the changes do not require a complete software load.

When installing the software, start with the system software, then the application software and if included, install the patch software at the end. This is described in detail over the next pages.

NOTE: *System Software may also be referred to as the Base Image or Ghost.*

Overview(continued)

Before the System Software Load, you must perform the following steps:

- contact the customer to allow enough lead time to back up the system.
- be sure no images are in the clipboard or opened exams.
- review troubleshooting section to collect information for future analysis if you are troubleshooting loss of image or patient data.
- disconnect the system from the network and remove all transducers from the system.
- save all Service Presets to restore remote connectivity after software installation is completed.
- save all User Presets.

NOTE: After a full or partial system software load, need to confirm whether the time setting is correct. And if not, manually reset the time setting (Utility->System->Settings->Date and Time), be sure the system and DVR date, time and time zone are set correctly.

NOTE: System and Application software disables the Run window normally accessed from Start -> Run, and the mouse right-click (left set key) feature.

Data Backup and Restore

Introduction

The Backup/Restore function enables the user to:

- Copy/Restore the patient archive.
- Copy/Restore the system configuration. The Copy/Restore system configuration feature enables the user to configure several units with identical presets, providing that the units have the same software version.

To minimize accidental loss of data, perform backup of the patient archive stored on the local harddrive at least **once a week**.



GE Healthcare is not responsible for lost data if the suggested backup procedures are not followed and will not aid in the recovery of lost data.

There is no backup function for the images or reports (no creation of a safety copy). For long-term storage, images and reports should be moved to a USB HD or to a network shared folder using the Disk management procedure.



DO NOT use the local harddrive for long-term image storage.

Only users with administration rights have access to the backup/Restore function.

Backup procedure

1. Press **Patient**.
2. In the *Archive* screen, select the dataflow **Local Archive - Int. HD**.
3. Press **Config**.
4. Select the category **Admin**.
5. Select the **Backup** sheet.

Data to backup	Result	Last successful backup
☐ Patient Archive		No record
☐ Validate Patient Archive		
☐ System Configuration		No record

Destination Device: Internal HD (D:\export\backup)

Local Path: D:\export\backup

Remote Path: Use to Remote Path (add to set up credentials if needed)

Start backup

Figure 8-25. The Backup sheet

6. In the *Backup* sheet select as needed:
 - **Patient archive** to backup the patient records.
 - **System configuration** to copy system settings and user presets.
7. Select a removable media or a shared network folder as destination.

NOTE: To be able to select a network share folder, the path (of type: \\server-name\share-name) must have been entered in the *Remote path* field.

Backup procedure(continued)

8. If the backup is done to a removable media, insert a dedicated media in the drive.
9. Select **Start backup**.

The following situations may occur:

- The system is checking that the removable media is inserted. If not, a dialogue window is displayed indicating media failure.

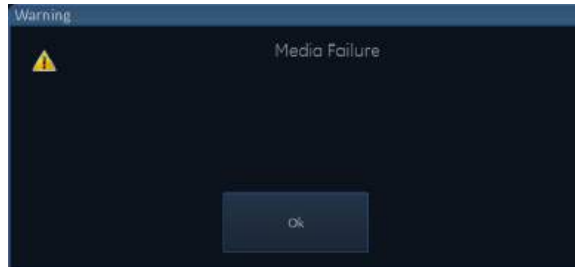


Figure 8-26. The Media Failure window

Insert the media and select **OK**.

Backup procedure(continued)

- If using a CD/DVD, the system is checking if the media needs to be formatted. If yes, a dialogue window is displayed prompting the user to enter a media label.

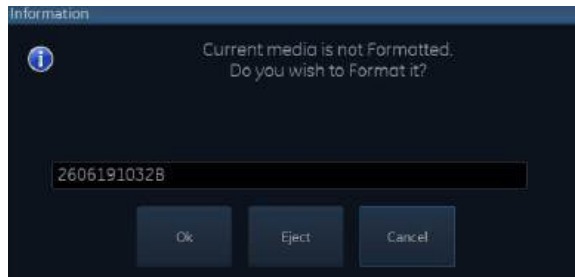


Figure 8-27. The Enter media label window

Type in a label for the media and select **OK**.

NOTE: *Only the following characters and signs can be used when labelling a media: A - Z, a - z, 0 - 9, “_” and “-”. Do not use more than 11 characters or signs. Do not use space.*

NOTE: *If you select **Eject** you can perform the backup using another removable media. If you select **Cancel** the backup operation is stopped.*

Backup procedure(continued)

- The system is checking if there is already a backup or a Disk management copy on the media. If the following error message is displayed, the disk is ejected and the user is asked to use a new media that does not contain any backup or Disk management data.

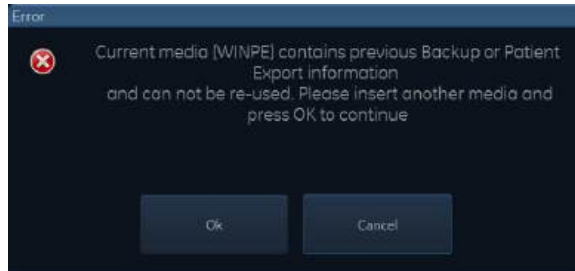


Figure 8-28. The Replace current media window

Insert a new media and select **OK**.

NOTE:

To reuse a Backup CD/DVD when performing a new archive backup, the media has to be re-formatted first.

10. During backup, progress windows are displayed showing the current operation being performed.

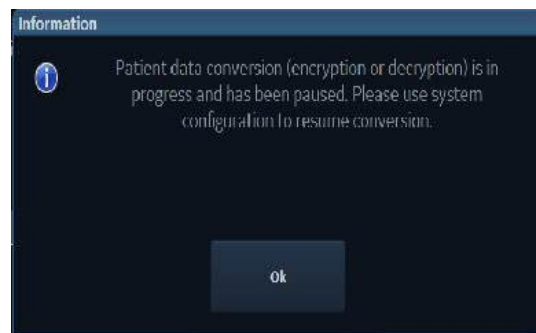


Figure 8-29. The Backup progress window

Backup procedure(continued)

11. At the end of the process, the *Backup completed* window is displayed.

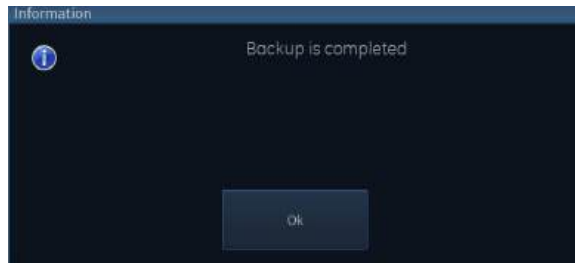


Figure 8-30. The Backup completed window

Select **OK**.

The Backup result is displayed on the *Backup* sheet.

12. Make sure to physically label the media. An identification of the system should also be noted on the media and a backup log should be kept.

File the media in a safe place.

Restore procedure

1. Press **Config**.
2. Select the category **Admin**.
3. Select the **Restore** sheet.

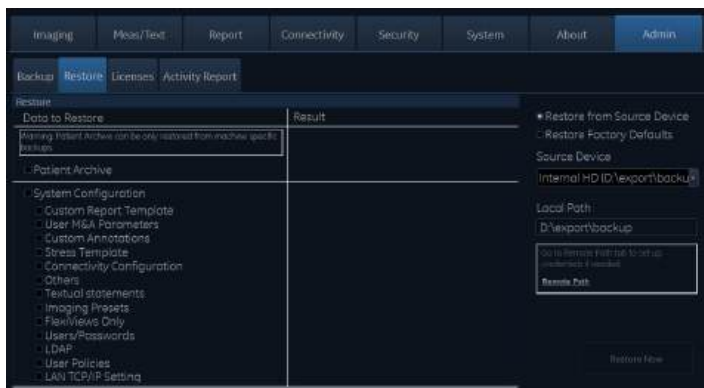


Figure 8-31. The Restore sheet

4. In the *Restore* sheet select as needed:
 - **Patient archive** to restore the patient archive.
 - **System configuration** to restore all system settings and user presets.OR
 - One or several **system configuration items** to restore parts of the system settings and user presets (see [Figure 8-31](#)).
5. If restore is done from a backup on a removable media, insert the media in the drive. Make sure that **Restore from Source Device** is selected.
6. Select the appropriate **Source device**.



CAUTION

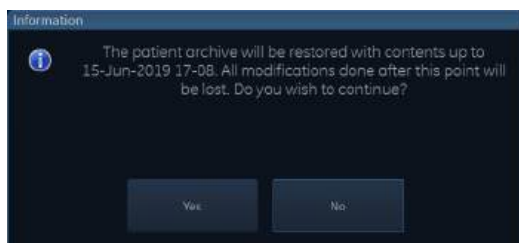
The Restore procedure will **OVERWRITE** the existing data on the local harddrive. Make sure to insert the correct media and select the correct source device.

Restore procedure(continued)

7. Select **Restore now**.

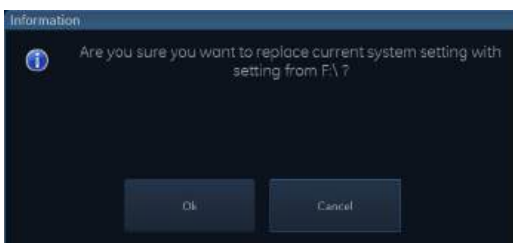
Depending on the selection of items to be restored, one or two restore confirmation windows are displayed:

A



- a. Displayed if the patient archive is to be restored.

B



- b. Displayed if any of the system settings are to be restored.

Figure 8-32. The Restore confirmation window

8. Ensure that the correct source is selected and select **OK**.
The selected items are copied to the systems.
9. If connectivity configuration settings are restored the following information window is displayed.

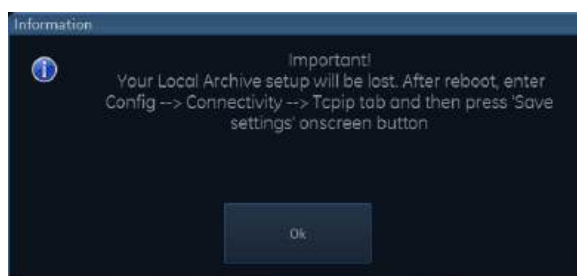


Figure 8-33. Information window

Restore procedure(continued)

10. Select **OK**.

The *System shutdown* window is displayed.

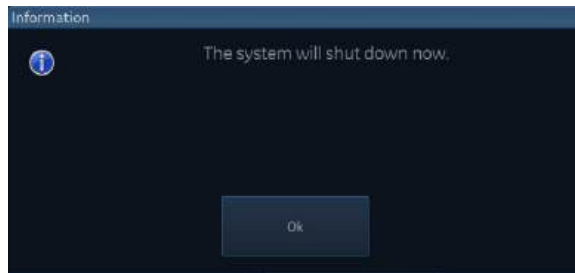


Figure 8-34. The System shutdown window

11. Select **OK** to shut down the system.
12. Restart the system.

If connectivity configuration settings have been restored, make sure to save the TCP/IP settings: select **Config/Connectivity/TCPIP** and select **Save settings**. The system needs to be restarted again.

NOTE: *The system is able to recover the database when corrupt.*

Data Management - moving all images



CAUTION

An error, or a power loss may occur.

Always backup the Patient Archive and the Presets (System Configurations) before loading the software from USB Flash Drive (UFD).

In order to complete a successful restore of the Patient Database, as needed after a hard disk replacement, or if all the content on the hard disk has been erased, the images must be moved to the remote server or to the removable media before loading the software from USB Flash Drive (UFD).

Depending on the location set-up, either move the images to a remote server or to removable media like USB, DVD or CD discs.

- Move the images to a remote server or to removable media.

For instructions, please see “Disk management” in the User Manual.

NOTE: *The system is able to back up the presets remotely.*

Recording important settings and parameters

Overview



CAUTION

An error, or a power loss may occur.

It is considered to be best practice to always keep a record on paper of the settings for the Vivid *iq* and please verify that the settings on Vivid *iq* are up to date before starting loading software from USB Flash Drive (UFD).

Always keep a record of the settings for the Vivid *iq* on paper and please verify that the settings on Vivid *iq* are up to date before starting loading software from USB Flash Drive (UFD).

Loading the System and Application Software from USB Flash Drive (UFD)

Introduction

If the hard disk drive (HDD) has been replaced, both the System Software and the Application Software must be installed on the new HDD. Start with the System Software, then install the Application Software.

For most software updates, or if the software settings or configuration have been corrupted, only the Application Software needs to be installed.



WARNING

While the software install procedure is designed to preserve data, you should save any patient data, images, system setups and customer presets to CD, DVD, USB Flash Drive, or USB Hard Disk before doing a software upgrade.

NOTE: *Please disconnect all the peripherals, probes and problem connectors from the system before loading the software.*

NOTE: *Before loading the software, please ensure that the power can be continuously supplied and there is no risk of power cut off during loading procedure.*

NOTE: *While it is believed to be unnecessary, it would not hurt to disconnect the system from the network and remove all transducer.*

NOTE: *Please ensure AC adapter is connected during system upgrade!*

NOTE: *Option key is needed to be input after loading the complete disk. The option key **MUST** be the same as the one before installation. Please record the option key before installation.*

1. Power down the ultrasound system and disconnect all external USB devices.
2. Plug in the Software UFD in one of the USB ports on the ultrasound system.
3. Press and hold **F7** on the external keyboard when the ultrasound system starts.

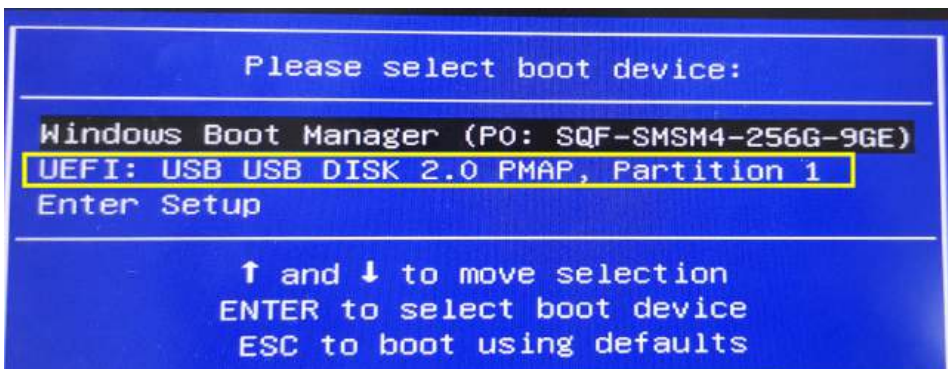
NOTE: *Please connect with an external keyboard every time you configure the BIOS setting on Vivid iq system.*

Introduction(continued)

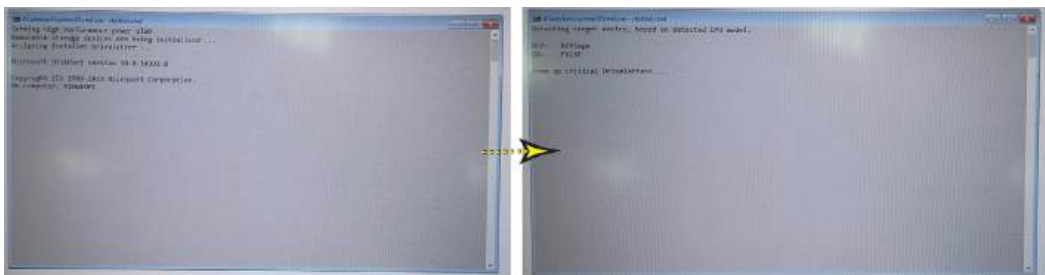
4. Input the BIOS password **Renm@c5**.



5. From the page appearing, select UFD as the boot device and press **Enter** key to finish the setting and reboot the ultrasound system.

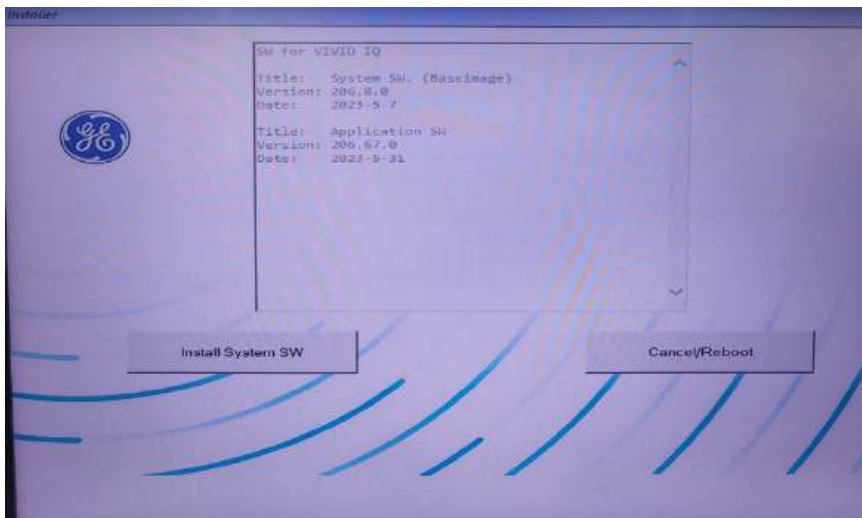


6. The system will detect the USB automatically and boot-up from the Software Installation Media.

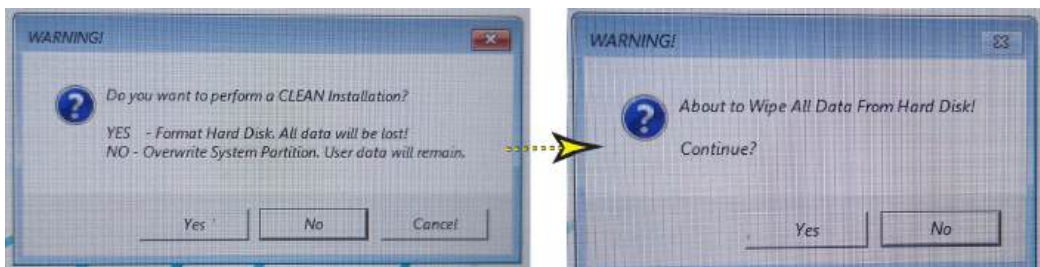


Introduction(continued)

7. After initialization, the following window will appear. Select **Install System SW**.



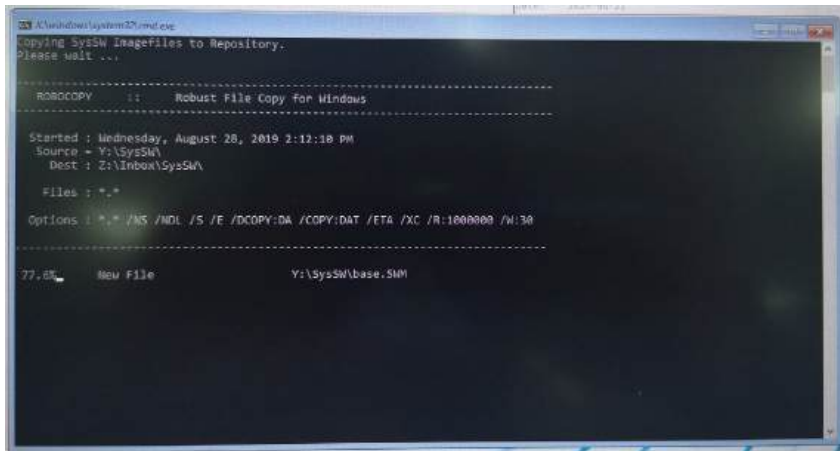
8. A warning is displayed: **Do you want to perform a CLEAN installation?** If select **Yes**, then a new warning is displayed so you can select **Yes** to confirm that you want to wipe the HDD. If you only want to overwrite System Partition, please select **No**.



Introduction(continued)

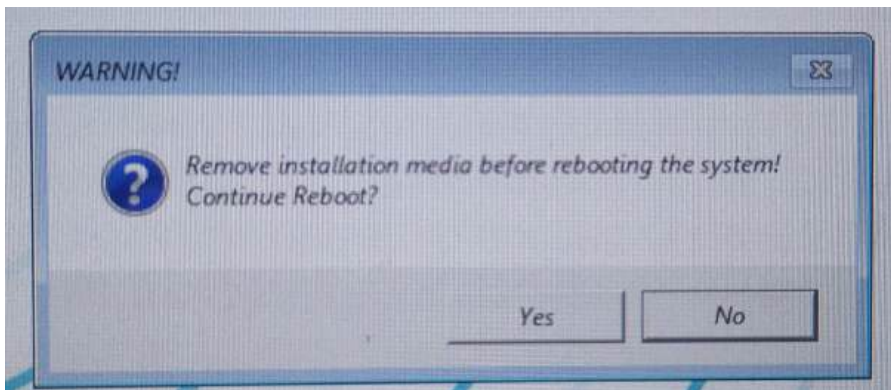
9. There may be several dialogs before the formatting and setup of the HDD starts.

When the new partitions have been set up, the System Software installation will start.



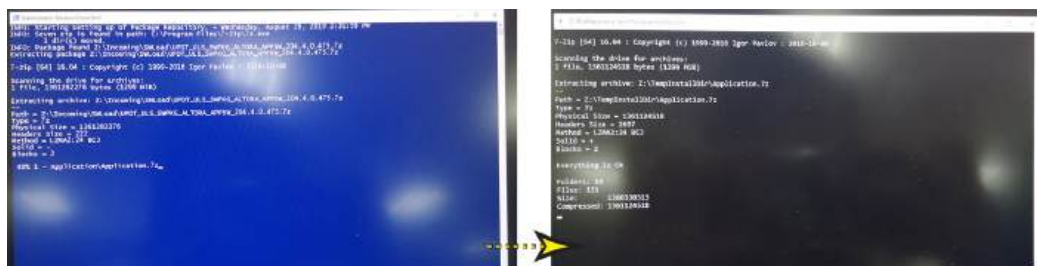
NOTE: This may take approximately 15 minutes.

10. When the System Software has finished loading from the UFD, you will be prompted to remove the UFD. Remove the UFD and select **Yes**.

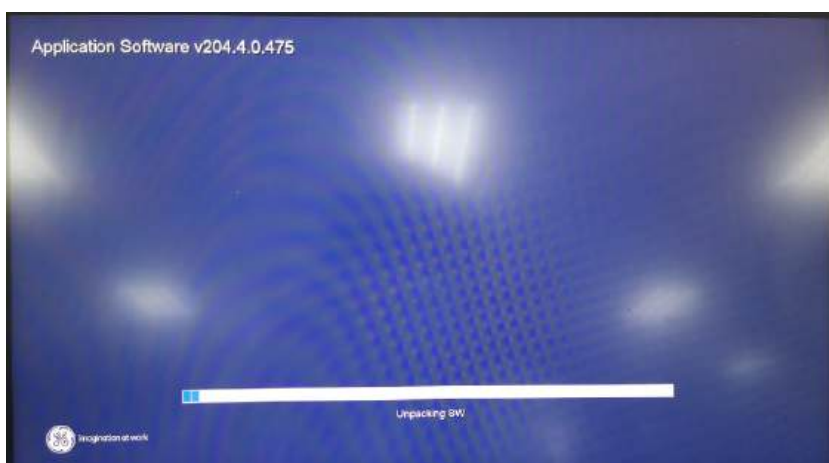


Introduction(continued)

11. The ultrasound system will reboot. After reboot, a series of screens and status indicators are displayed showing that the system is unpacking the compressed packages.



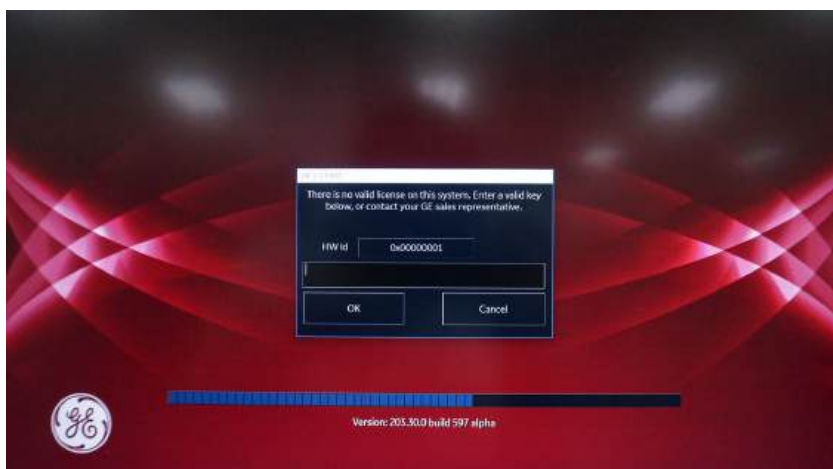
12. On completion, the new application software installation begins.



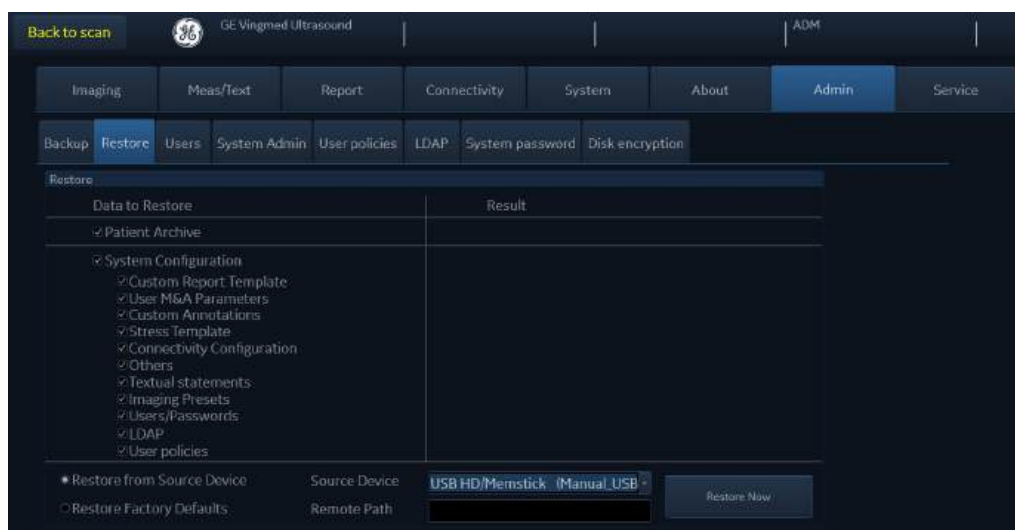
13. After the software installation is complete, the system will restart automatically.
14. When the ultrasound system is restarted, the **Setup Wizard** page will appear. You can configure it or exit. For detailed setup wizard configuration, please refer to User Manual or Service Manual.

Introduction(continued)

15. If you exit the **Setup Wizard** page, the system will be restarted. Once started, enter the option key.



16. After the ultrasound system start-up, remember to restore the **Patient Archive** information.



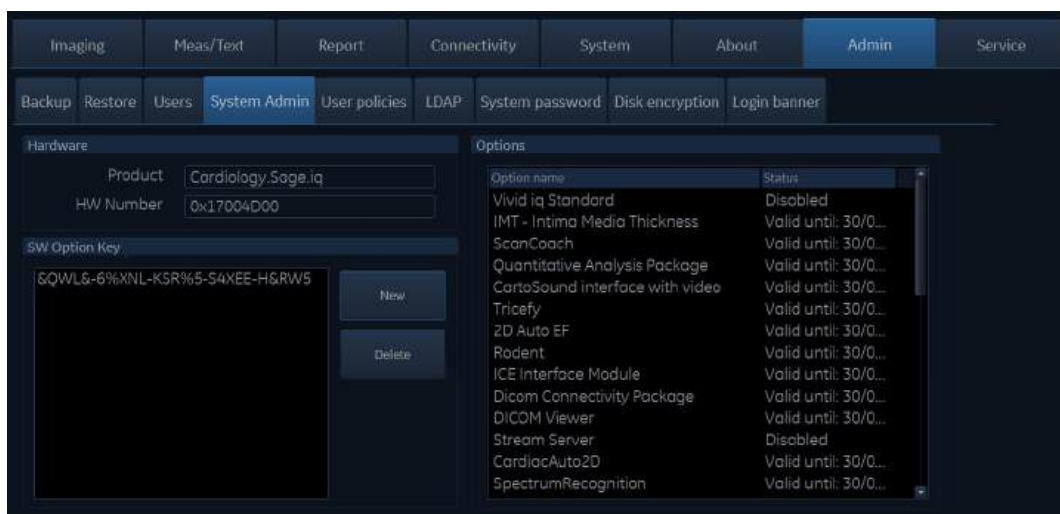
Verifying the Software Versions

1. Press **Config** on the shortcut bar and select **About -> System version**.
2. If updating the Software, verify software version matches the version in the software used during installation.

Verifying the Software Option Key Settings

NOTE: After the system software loading is complete, please check the option strings to ensure that the options are activated and working.

1. Reboot the system.
2. Press **Config** on the shortcut bar.
3. Select **Admin** -> **System Admin**.
4. Ensure that all the installed option keys are displayed and the status of Options are valid.
 - The status “Valid” means the option keys are activated and working.
 - The status “disabled” means the option keys are not activated and not working. Check if the option is installed and if the serial number and option key are correct.



Verify the TCP/IP settings

1. Select **Config -> Connectivity -> TCP/IP.**
2. Verify TCP/IP settings
3. Select **“Save settings.”**
4. Select **OK** to continue.
5. Reboot system.

Verify the AE title and Port settings

1. Select **Config -> Connectivity -> DICOM.**
2. Verify Device settings and Port No.

Restoring Patient Archive

Restore the Patient Archive using the Config -> Admin -> Restore Function or import the Patient Data if previously exported. If the patient archive is encrypted, you will need the Encryption Key or password to unlock.

Restoring System Configurations

1. From the shortcut bar, select **Config -> Admin -> Restore**.
2. On the Restore screen, select System configuration to restore System settings/User Defined Configuration.
3. Select the appropriate Source Device.



CAUTION

The Restore procedure will **OVERWRITE** the existing data on the local harddrive. Make sure to select the correct source device.

4. If restore is done from a backup on a removable media, insert the media in the drive.
5. Select **Restore Now**.
Depending on the selection, one or two Restore confirmation windows are displayed.
6. Ensure that the correct source is selected, and select **OK**.
The selected items are copied to the Vivid *iq*. If items from the System Configuration are restored, the Vivid *iq* needs to be rebooted. The Reboot system window is displayed.
7. Select **OK** to reboot the system, and verify the Customer Presets are working properly.

Functional Checks

Perform the following functional tests to confirm the Ultrasound system is operational before returning the Ultrasound system to the customer.

- 'Power ON/Boot Up' on *page 4-5*
- 'Probe/Connectors Check' on *page 4-44*
- '2D Mode (B mode) Checks' on *page 4-30*
- 'M Mode Checks' on *page 4-32*
- 'Color Mode Checks' on *page 4-34*
- 'Tissue Velocity Imaging (TVI) Checks' on *page 4-40*
- 'Peripheral checks' on *page 4-50*
- 'Power shut down' on *page 4-9*

Loading the Application Software Only

Loading the Application Software Only

NOTE: *Lockout/Tagout (LOTO) is not required during this procedure.*

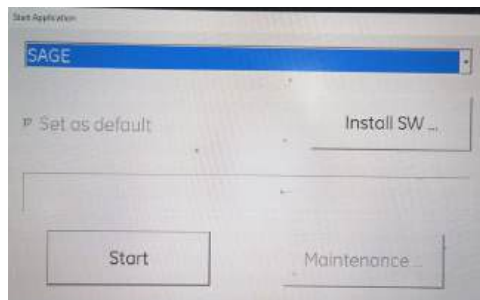
Use this procedure to update application software only.

NOTE: *A Service Key is not required to run this procedure.*

1. Power down the Vivid *iq* and insert the System and Application Software Installation USB Flash Drive into the USB port.

NOTE: *Ensure that the system is USB Device Enabled (check Config -> Service page).*

2. Power on the Vivid *iq* and the system will automatically detect the Application Software Installation USB Flash Drive. The Application only installation will start.
3. At the Start Application dialog, select '**Install SW...**'.

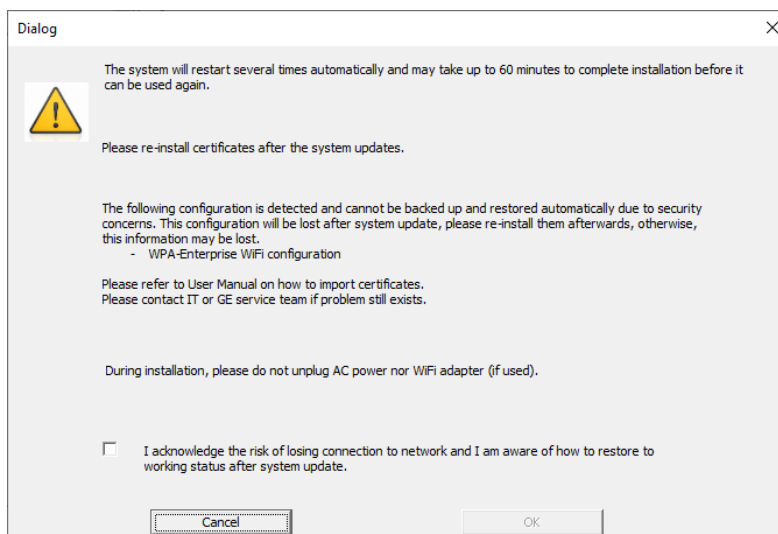


NOTE: *If by accident you try to load a software that is not compatible with the software on the Vivid *iq*, error messages will indicate "The package present in media is not compatible. Please contact GE Service" and "Software installation is not started".*

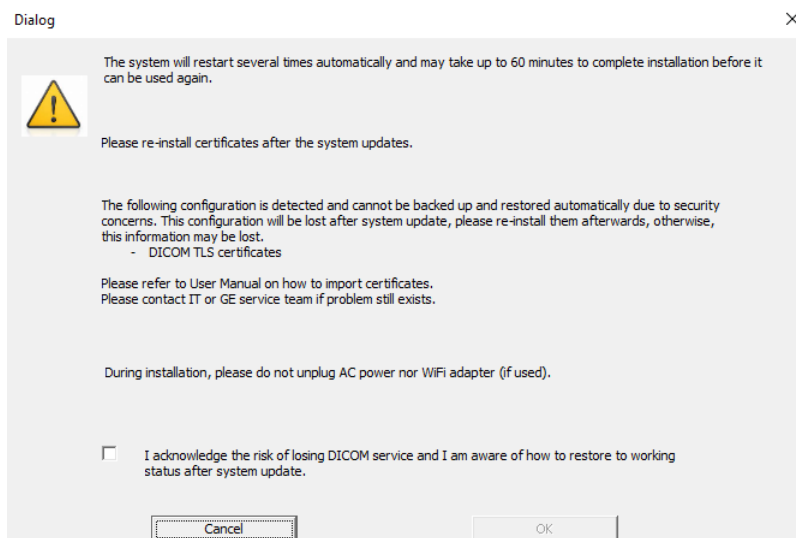
Loading the Application Software Only(continued)

4. At the Reminding dialog, select '**OK**'.

- If WPA is enabled:

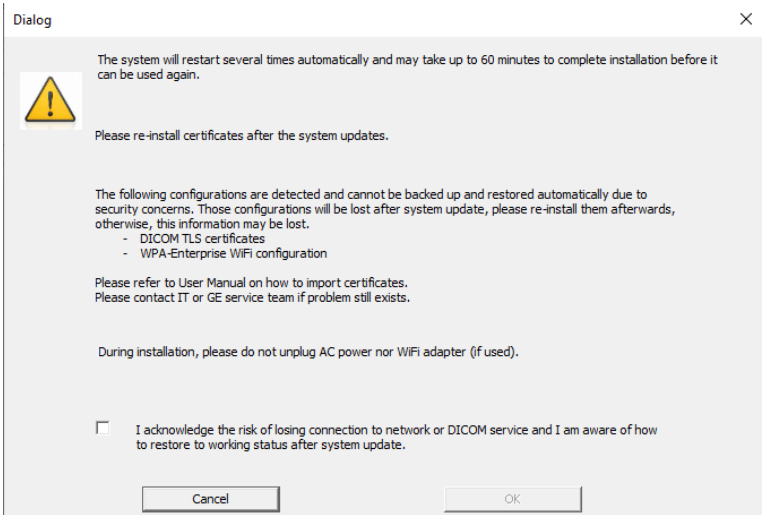


- If DICOM TLS is enabled:

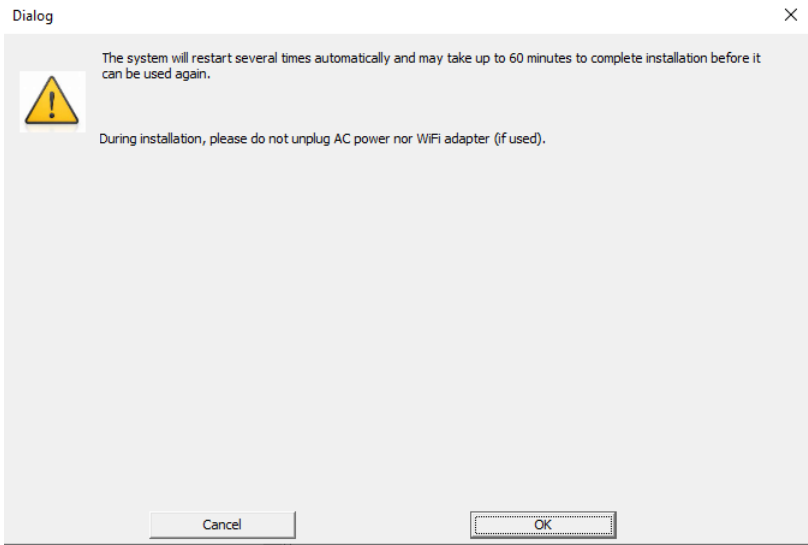


Loading the Application Software Only(continued)

- If DICOM TLS and WPA are enabled:

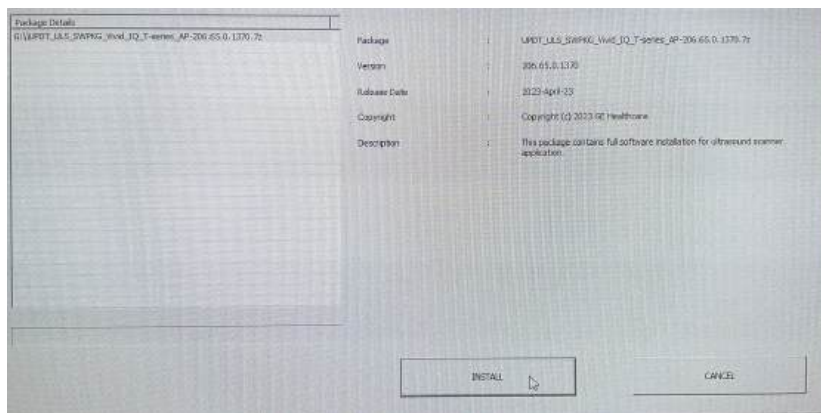


- If DICOM TLS and WPA are not enabled:

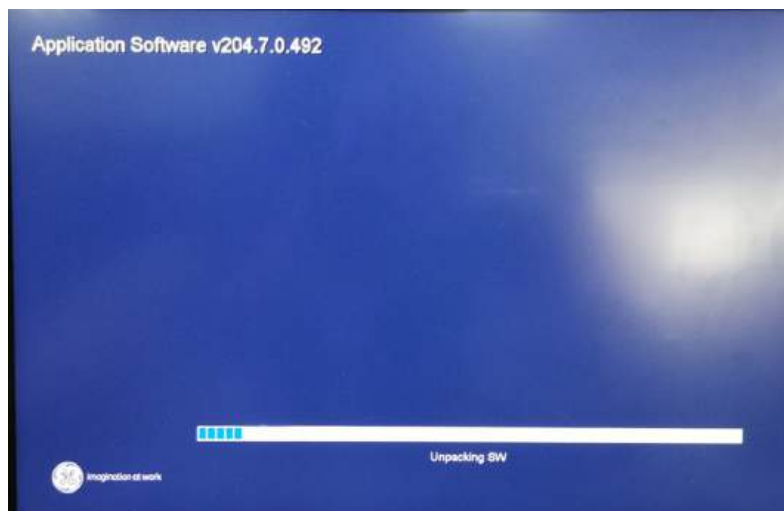


Loading the Application Software Only(continued)

5. Select **Install** on the third StartLoader screen where the new application software installation will start.



6. Multiple screens appear during the software re-imaging installation process. **DO NOT** interrupt this process **AND** follow instructions as they appear on the display.



7. When ready, the device will reboot automatically. Before the system is restarted, remove the USB stick from the ultrasound device.



Loading the Application Software Only(continued)

8. When the software installation is complete and the system is rebooted, a *Reminder after Installation* window is displayed.

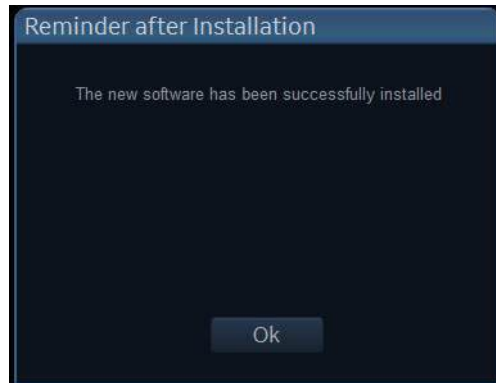


Figure 8-35. Reminder after Installation Window

Verifying the Software Versions

1. Select **Config -> System -> About**.
2. If updating the Software, verify software version matches the version in the software used during installation.

eDelivery - Software update(v204&v206&v208)

Introduction

As part of the product lifecycle management, GE regularly analyzes and integrates software updates from our third party vendors into our products. These are typically released as part of regular updates or software releases.

The user can update to the latest software in either of two ways:

- Through the GE service platform on the ultrasound system. This requires Insite RSvP connectivity. See '[Software update via Insite Remote Service Platform \(RSvP\)](#)' on [page 8-294](#).
- Download the latest software from an end-user portal to a local storage location and install it on the ultrasound system. See '[Software update via End-User Portal](#)' on [page 8-305](#).

Software update via Insite Remote Service Platform (RSvP)

Software update for the system may become available for download and installation through the GE Service platform.

All Users have the right to perform download. But Installation is only available to those with administrator rights.



CAUTION

Please backup presets and database before installation of the software (For instruction, please see 'Data Backup and Restore' in the User Manual).

Remote software download should not change user presets or affect customer database; however, it is always best practice to ensure patient data and preset are backed up before proceeding with any software installation.

NOTE: *Please allow approximately one hour for complete software download (the download time may vary due to network connection speed). Please allow approximately one hour for complete installation.*

NOTE: *Software update through the GE service platform may not be available in all markets.*

Software download and installation

1. Log on as **ADM**.
2. Ensure the Agent Configuration is correctly configured.

NOTE:

Refer to Service Manual or contact your Service Representative for Agent Configuration information.

The icon  indicates the Agent Configuration is not configured.

The icon  indicates the Agent Configuration is correctly configured.

3. Press the **Download** button from the tray menu (Figure 8-36) or go to **Configure > About** page to press **Check updates** button (Figure 8-37).

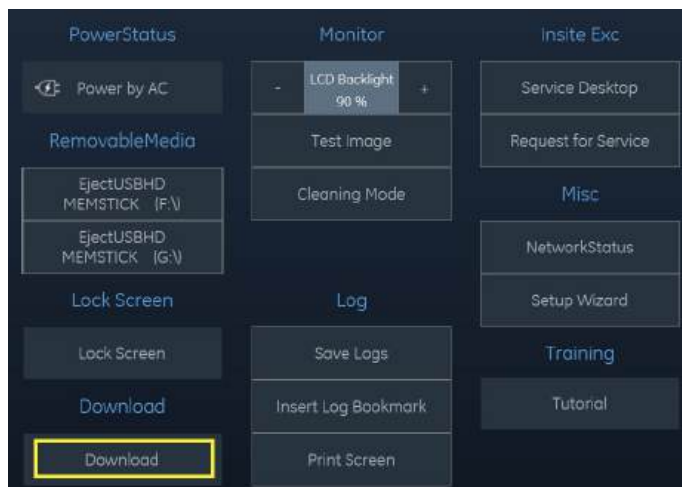


Figure 8-36. Press Download Button

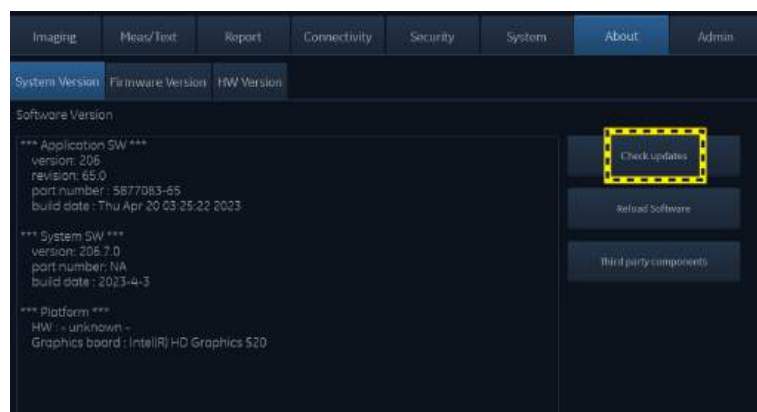


Figure 8-37. Press 'Check Updates' Button

Software download and installation(continued)

4. If there is no update package available, a message will be shown to inform the user. You can press the **Close** button and try it again until the arrow  turns green .

NOTE: *There is an icon on the right corner of the tray menu to illustrate the download connection status.*



Figure 8-38. Download Available Button

The icon  indicates the last query was unavailable. You may press it to initiate another query.

The icon  indicates that new software is available for download.

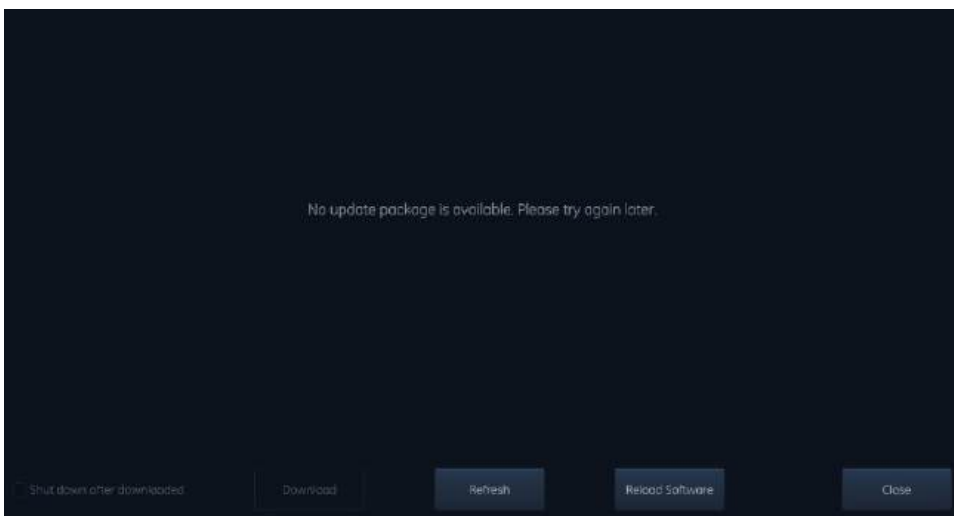


Figure 8-39. No update package is available

5. Available software updates are displayed in the list. If you want to refresh the query for available updates, press **Refresh**.

Software download and installation(continued)

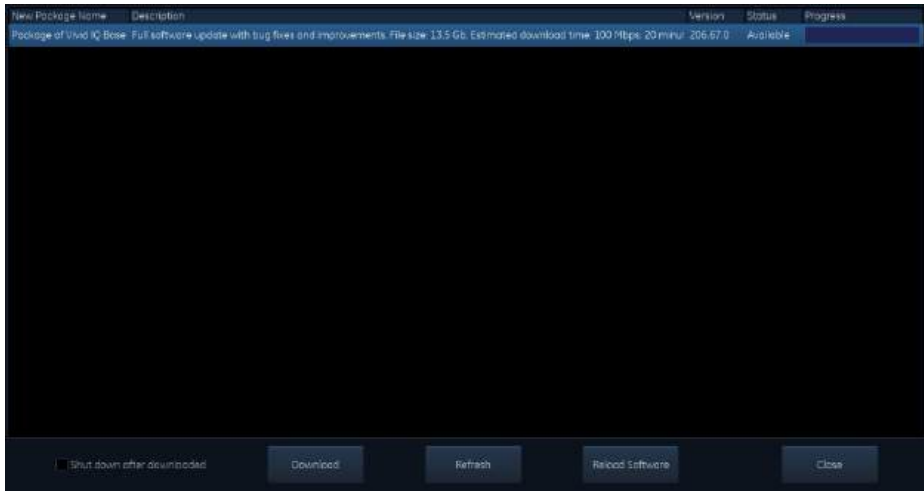


Figure 8-40. Software Available in the List

6. A window will pop up and ask for confirmation of refresh. Press **Yes**.

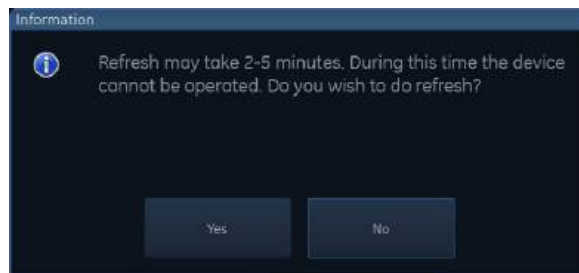


Figure 8-41. Refresh Confirmation

7. A dialogue informs that the refreshed list of available updates is being queried.

Software download and installation(continued)

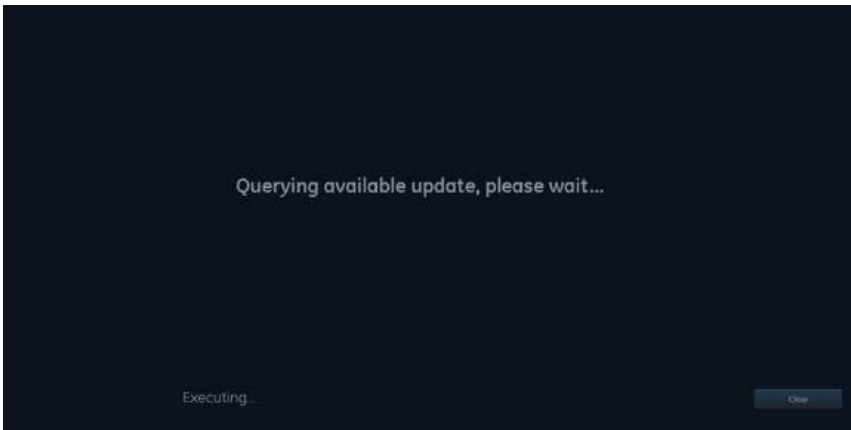


Figure 8-42. Querying Available Update

- 8. Select the desired software and press **Download** to download the software, or press **Close** to exit the window.

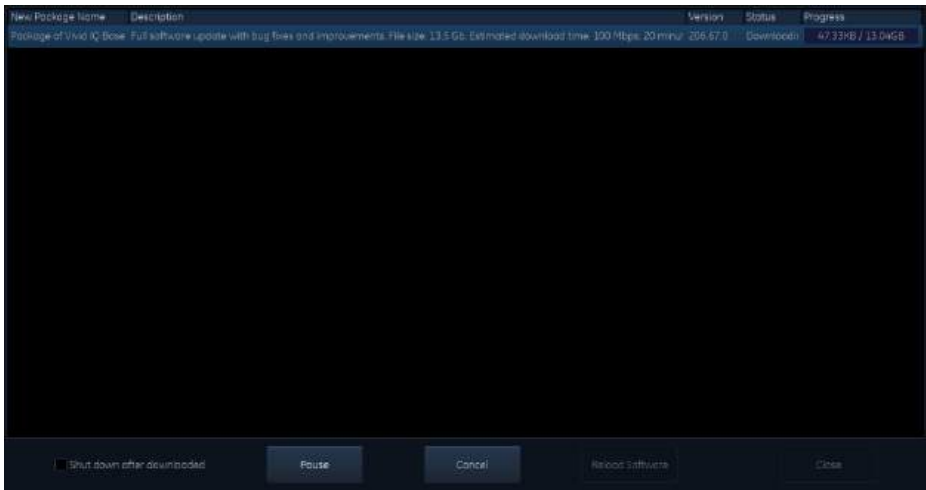


Figure 8-43. Software is Downloading

Software download and installation(continued)

NOTE: *If the system doesn't have enough space for download and installation, please contact GE service representative. It is suggested that service engineer clear the disk space first.*

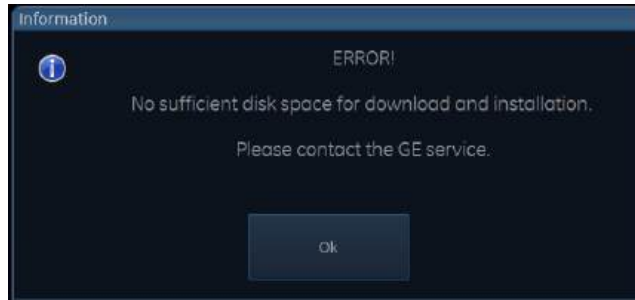


Figure 8-44. No Space Error

9. During the software download process, the status will be displayed as "Downloading". You can press **Pause** to suspend the download or press **Cancel** to exit the download.

NOTE: *During the software download, the 'Close' button is disabled. If you want to go back to scanning page, please press **Pause** to stop the download process first and then press the 'Close' button.*

- Once the download process is suspended, press the **Resume** button to recover the download process from the point where it is stopped.
- If there is an error during the downloading process, press the **Retry** button to recover the download process from the beginning.

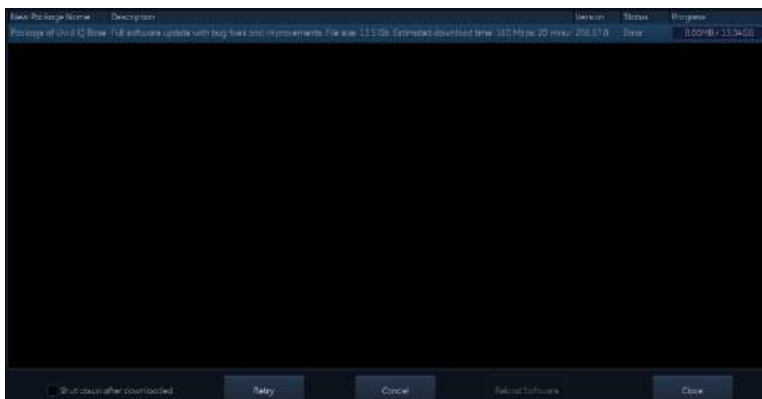


Figure 8-45. Press Retry Button

Software download and installation(continued)

10. When the download process finishes, the software is ready to be installed in the ultrasound system. Press **Install** to start the installation or press **Cancel** to remove downloaded software packages.

NOTE: Please wait for some time (around three times or less) to let the device reboot automatically if you are installing the software package.

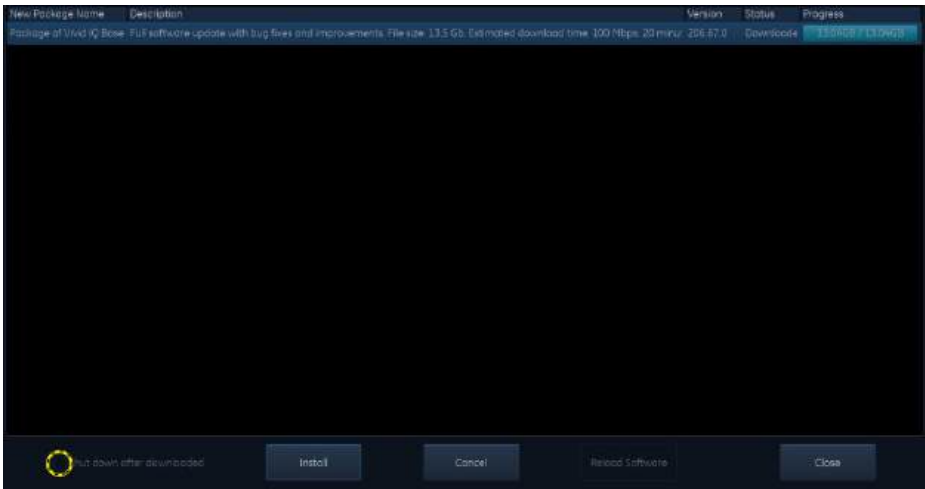
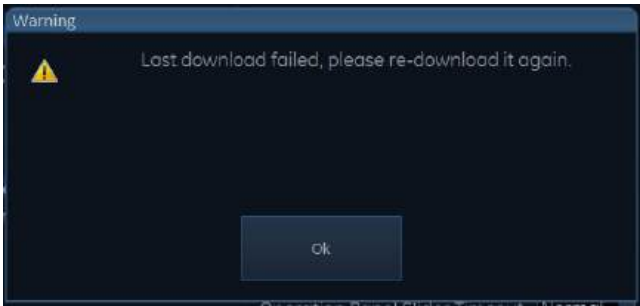


Figure 8-46. Press the Install or Cancel Button

NOTE: If **Shut down after downloaded** option is enabled, the system will shut down automatically in the following two situations: (1) the software download is complete; (2) an error occurs during the software download process. After restart the system, press the **Download** button from the tray menu, a warning message will pop-up to remind user to recover the downloading process.



Software download and installation(continued)

11. A warning will appear during installation process.

NOTE: Power cut-off or system shutdown during the download may lead to data loss.

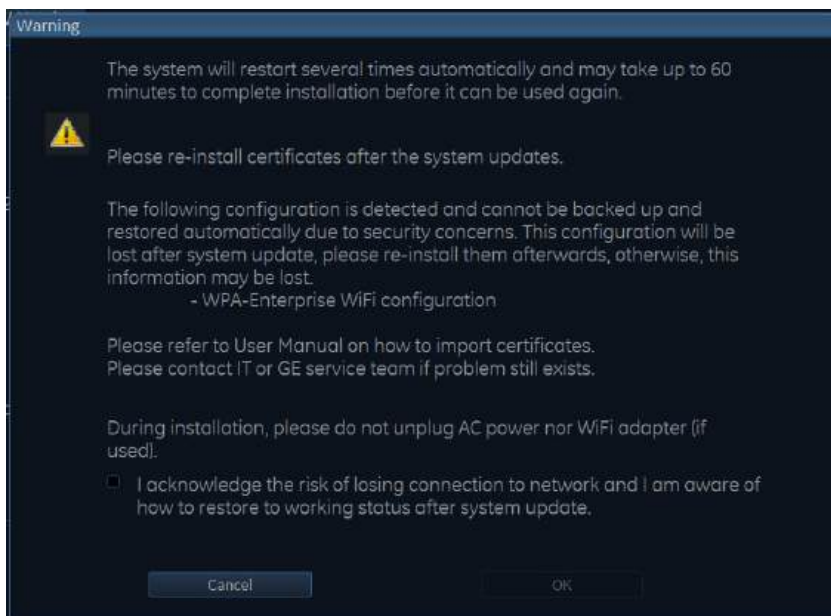


Figure 8-47. Warning During Installation

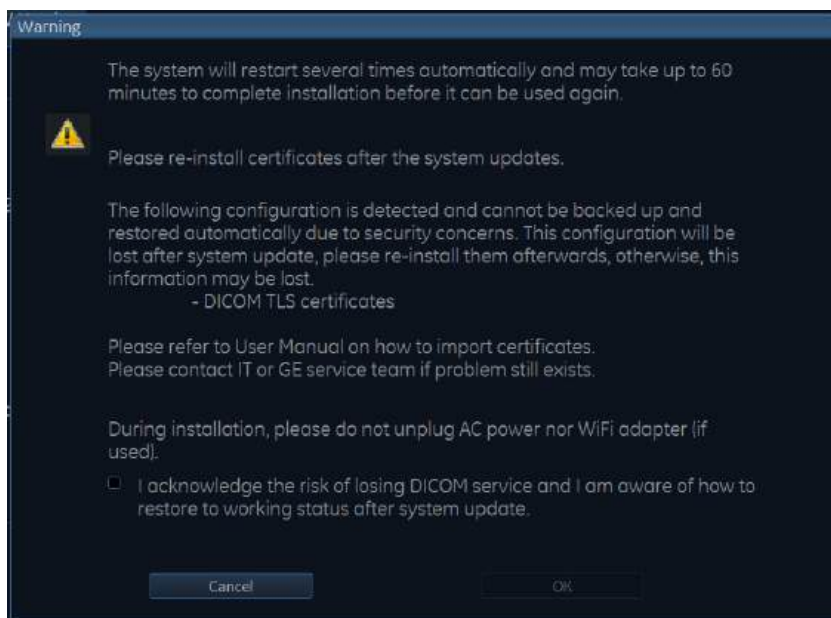
Software download and installation(continued)

NOTE: *A typical full installation may take up to 60 minutes.*

- If WPA is enabled:

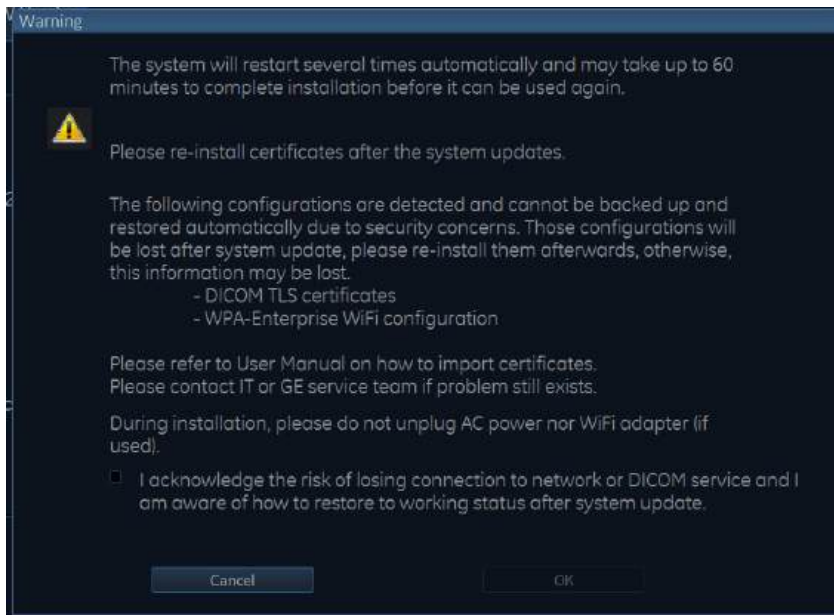


- If DICOM TLS is enabled:

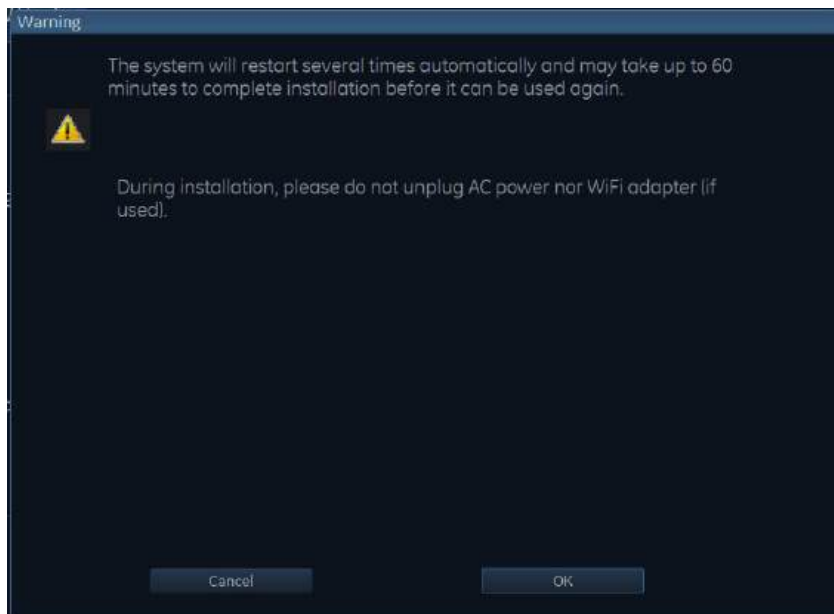


Software download and installation(continued)

- If DICOM TLS and WPA are enabled:



- If DICOM TLS and WPA are not enabled:



Software download and installation(continued)

12. When the software installation is complete and the system is rebooted, a *Reminder after Installation* window is displayed.

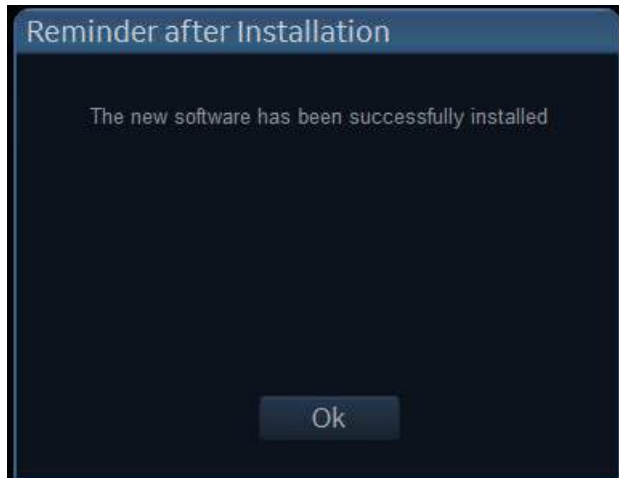


Figure 8-48. Reminder after Installation Window

Software update via End-User Portal

Software download via End-User Portal

Customers entitled to eDelivery updates get a customer account to download software within the End-User Portal.

User account is created based on e-mail addresses provided by the customer at the point of sale. These e-mail addresses are the log-in credential for the End-User Portal along with a temporary password provided to the user through e-mail. When logging in to the End-User Portal the first time, the user is prompted to change the password and enter a secret question and answer for password retrieval.

Follow the below instructions to download software from the portal:

1. Log on to the portal website which is provided to end user via a welcome email:
<https://gehealthcare.flexnetoperations.com/flexnetoperationsportal>
2. Log in using the user name (e-mail) and password.

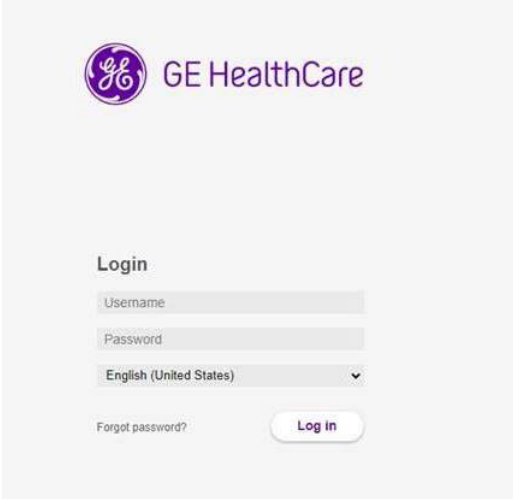
The image shows a web browser window displaying the GE HealthCare login portal. At the top, there is the GE logo (a purple circle with a white 'G' and 'E') followed by the text 'GE HealthCare' in a purple serif font. Below this, the word 'Login' is centered in a bold, dark grey sans-serif font. Underneath 'Login', there are three input fields: 'Username' (a light grey rectangular box), 'Password' (a light grey rectangular box), and a language selection dropdown menu currently set to 'English (United States)' with a small downward arrow. Below the password field, there is a link that says 'Forgot password?' in a small, light grey font. To the right of the 'Forgot password?' link is a rounded rectangular button with the text 'Log in' in a purple font.

Figure 8-49. Login Window

Software download via End-User Portal(continued)

- 3. The Software and License Delivery dashboard is displayed. Downloads can be found by browsing the products under “Your Downloads”.

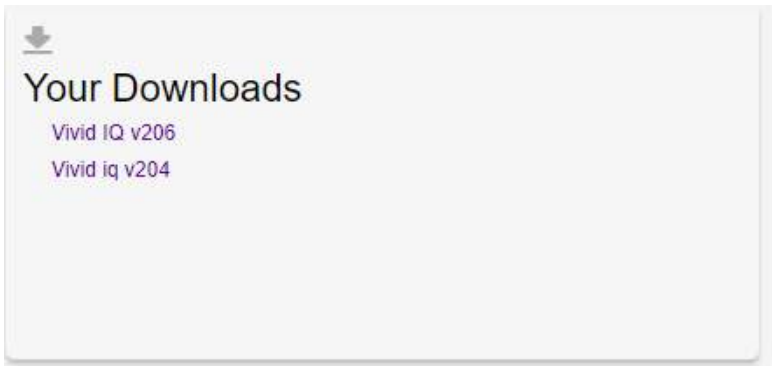


Figure 8-50. Software and License Delivery Page

- 4. Select the desired software to enter the Downloads page.

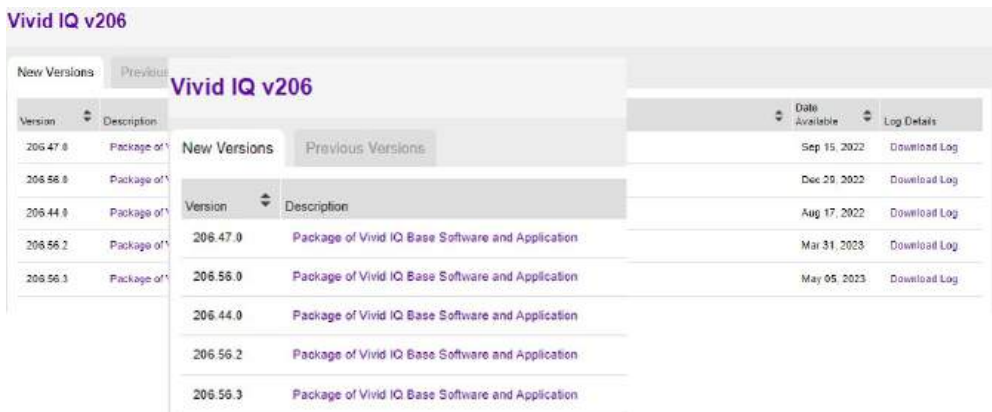


Figure 8-51. Downloads Page

Software download via End-User Portal(continued)

5. Check the box in front of the file you want to download and click the *Download Selected Files* button. Save the file in a local storage location (i.e. USB flash drive).

NOTE: *If you are unable to download using the 'Download Selected Files' button, you can directly click the '.7z' file.*

NOTE: *Ensure that the USB is formatted as NTFS format so that the eDelivery package can be successfully copied into it.*

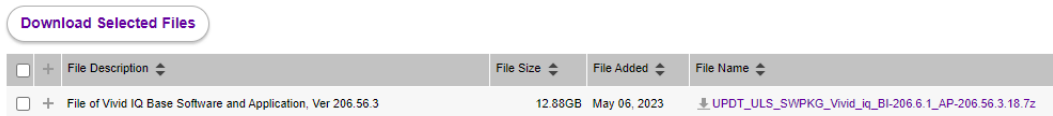


Figure 8-52. Downloads Page

6. Load the software on the ultrasound system from the selected storage location. For instructions, please refer ['Loading the Base Image and Application Software' on page 8-308](#).

Loading the Base Image and Application Software

To load a software onto the Vivid iq,

1. Power off the Vivid iq and insert the USB Flash Drive into any USB port.

NOTE: *Ensure that the system is USB Device Enabled (check Config->Service page).*

2. Power on the Vivid iq. The software program files will be loaded onto the Vivid iq automatically, following several screen prompts:

- c. Select **Install SW...** on the Start Application screen.

NOTE: *If by accident you try to load a software that is not compatible with the software on the Vivid iq, error messages will indicate "The package present in media is not compatible. Please contact GE Service" and "Software installation is not started".*

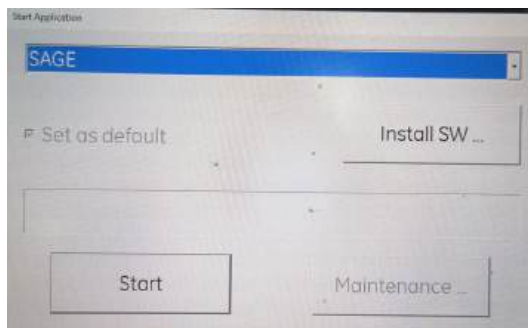
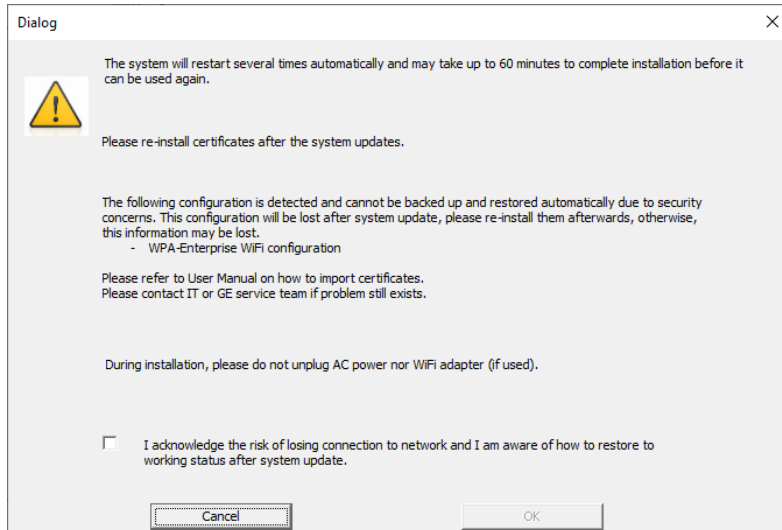


Figure 8-53. Select Install SW...

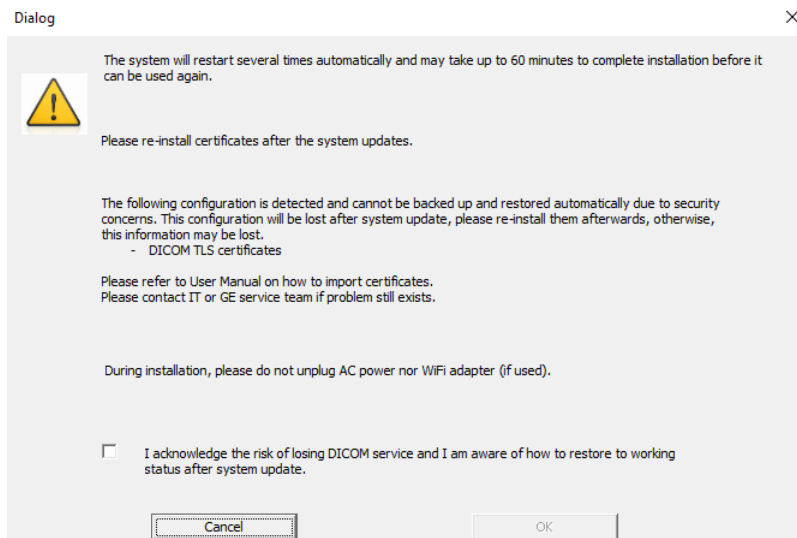
Loading the Base Image and Application Software(continued)

d. At the Reminding dialog, select 'OK'.

- If WPA is enabled:

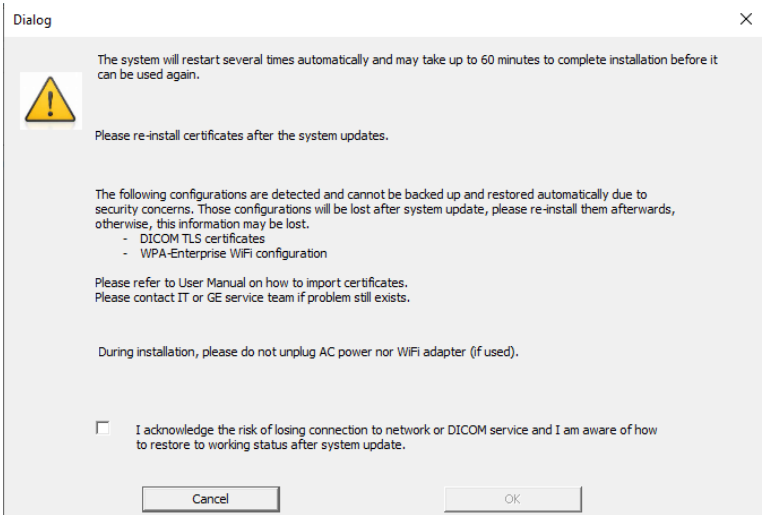


- If DICOM TLS is enabled:

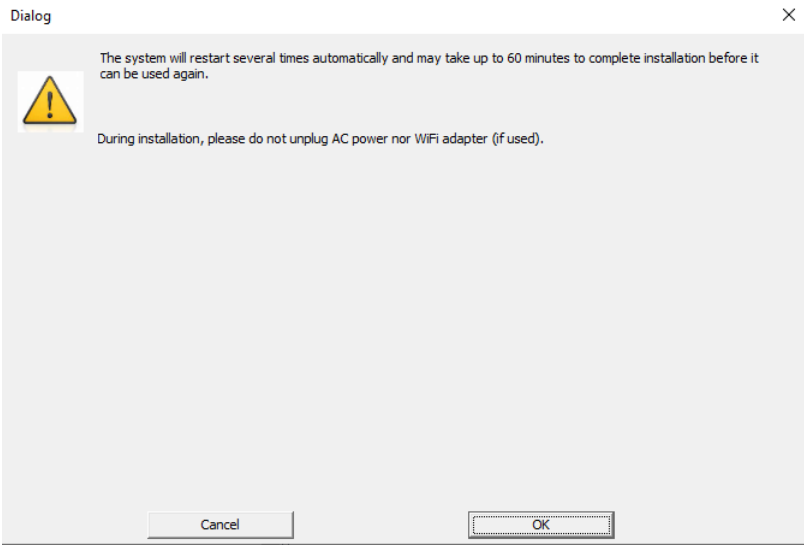


Loading the Base Image and Application Software(continued)

- If DICOM TLS and WPA are enabled:

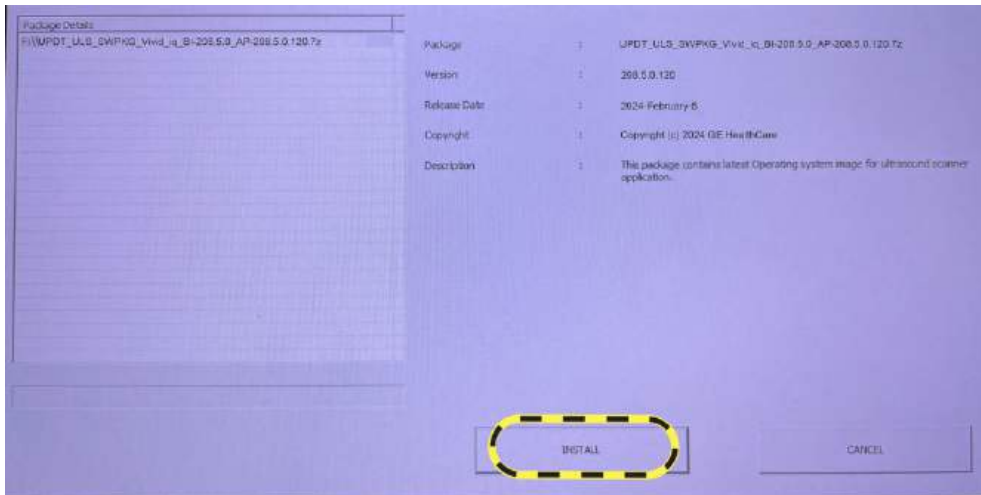


- If DICOM TLS and WPA are not enabled:



Loading the Base Image and Application Software(continued)

- e. Select **Install** on the third screen where the latest software updates for ultrasound scanner application installation will start.



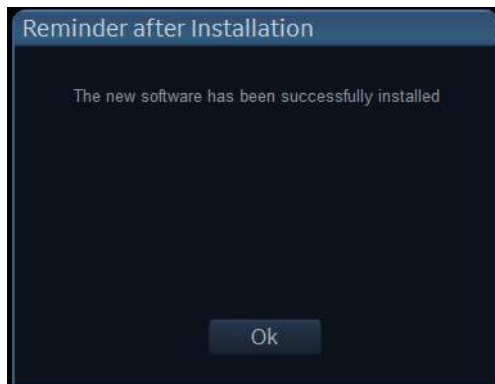
- f. When ready, the device will reboot automatically. Before the system is restarted, remove the USB stick from the ultrasound device.



- NOTE:** Depending on the content of the update, for the full software which contains the operating system, patches and application software, the operating system will be installed first, then patches, and finally followed by the application software.
- NOTE:** The ultrasound device may restart multiple times during update.
- NOTE:** Installation time depends on the type of update. A complete update with full software and application will take approximately 1 hour. No action is needed until the installation is complete.

Loading the Base Image and Application Software(continued)

- g. When the installation is complete, a *Reminder after Installation* window is displayed.



Verifying the Software Versions

1. Select **Config -> System -> About**.
2. If updating the Software, verify software version matches the version in the software used during installation.

Reload Software

Confirm Backups for Patient Data and Presets

The system can format C Disk (system data disk)and reinstall the system automatically. Although remote software does not delete any presets or settings on the system since it reloads the C:\partition only and application, it is recommended to follow these steps:

- Contact the customer to allow enough lead time to back up the system. Be sure no images are on the clipboard or in opened exams.
- Be sure that the DICOM spooler is empty.
- Review the troubleshooting section to collect information for future analysis (if you are troubleshooting loss of image or patient data.)
- Remove all USB Hard Disk Drives and Flash Drives. Failure to do so may result in a failure of the reload software process and damage to the data on the USB device.
- Be sure the Customer has saved all Presets, both User Defined and Service. This is precautionary in case the presets need to be restored manually.
- Note any window's type configurations, such as regional settings, keyboards, and localization settings.

Reload Software Procedure

Reload Software displays versions of the base image, application software currently installed on the Vivid *iq*. Software Reload provides specific software versions for users to reload.

To reload the software onto the Vivid *iq*:

1. Press **Config** on the shortcut bar and log on as administrator if required.
2. Press the **Download** button at the top right of the display screen (Figure 8-54), or go to **About** page to press **Reload Software** button (Figure 8-56).

NOTE: *If there is any software downloading/downloaded, the Reload Software button will be hidden in download page.*

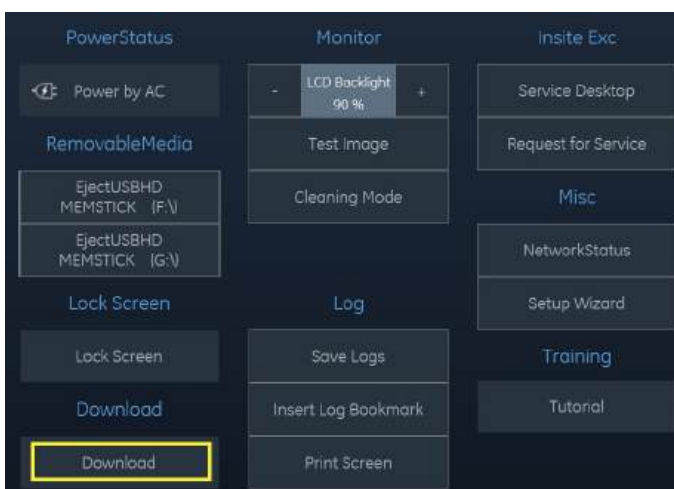


Figure 8-54. Press Download Button

Reload Software Procedure(continued)

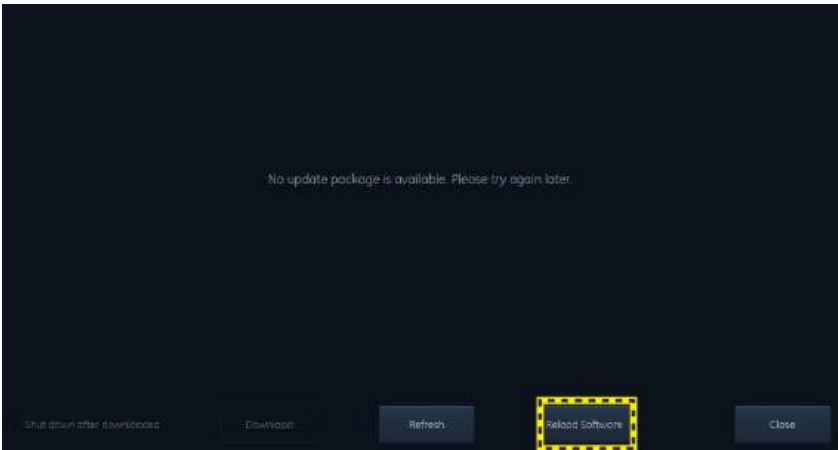


Figure 8-55. Reload Software Button

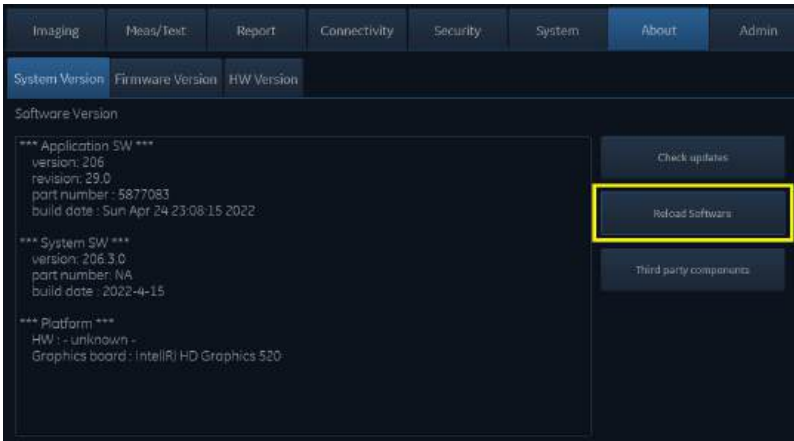
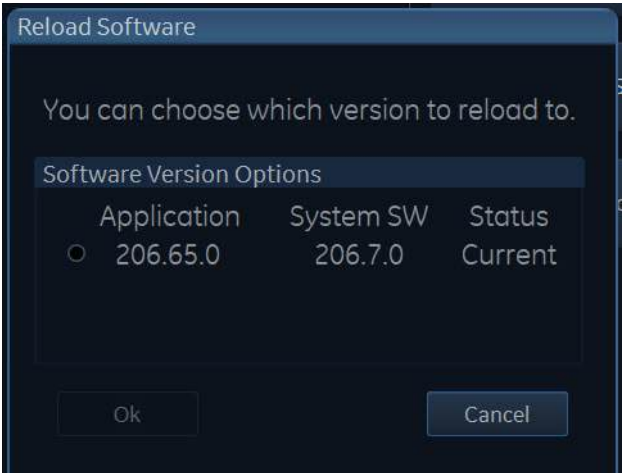


Figure 8-56. System Version Sheet

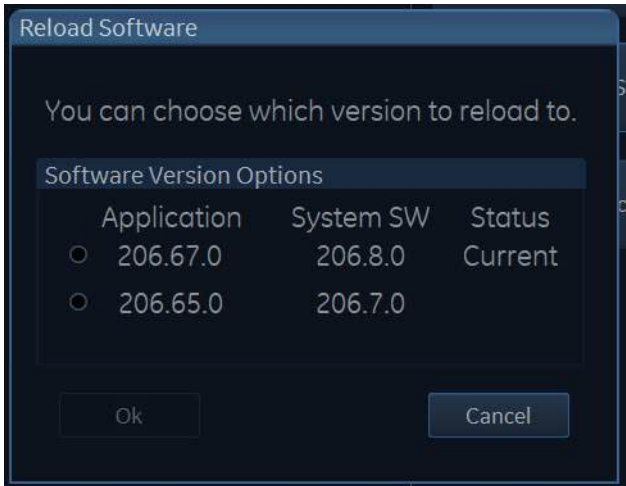
Reload Software Procedure(continued)

- 3. Select **Reload Software** to enter the operation page. In the pop-up window, select the software version needed, then click **OK**.

By default, current installed software version will be displayed, user can reload current software version to rollback software changes to the initial installed state.

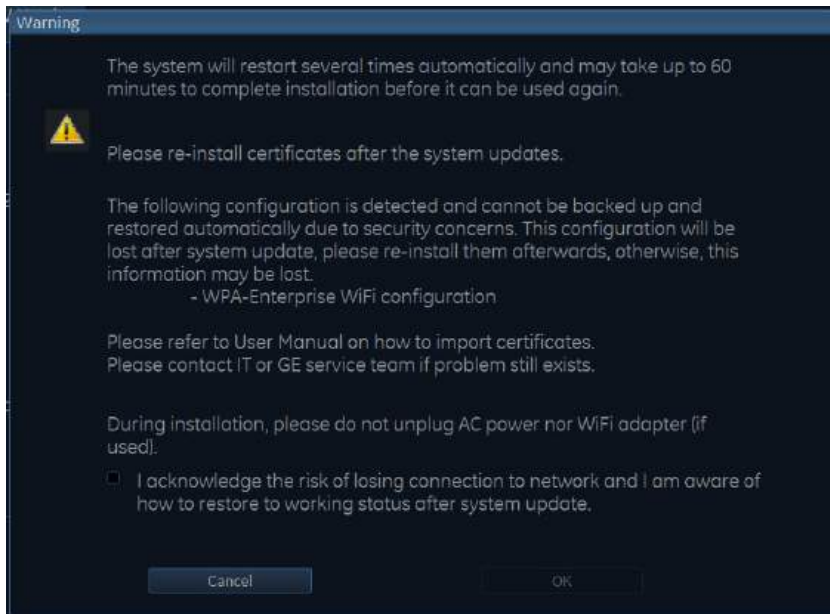


- 4. After a new full software package is installed, a new software version will be displayed as current version, user can select to reload current version or previous version, only the using version will be marked as “current” version. No matter which version being selected to reload, a warning window will pop-up to remind user to backup some configuration manually.

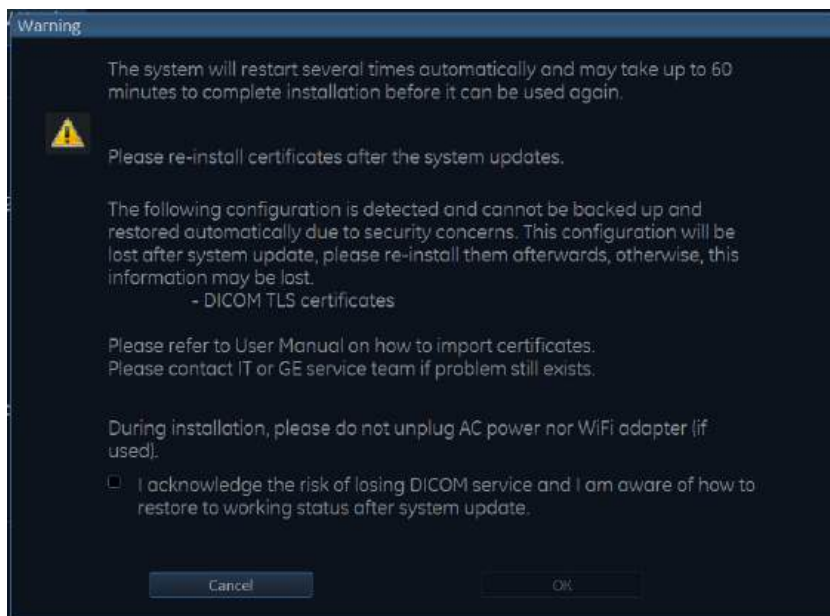


Reload Software Procedure(continued)

- If WPA is enabled:

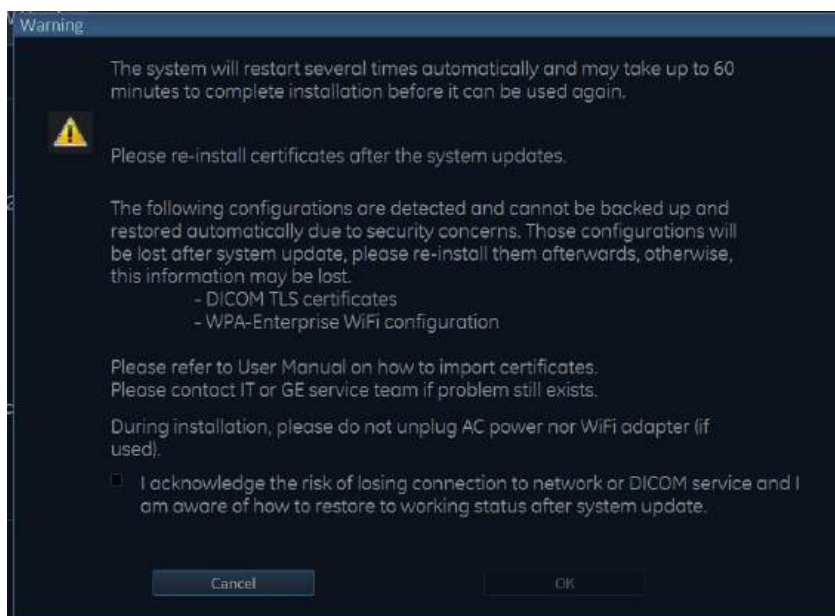


- If DICOM TLS is enabled:

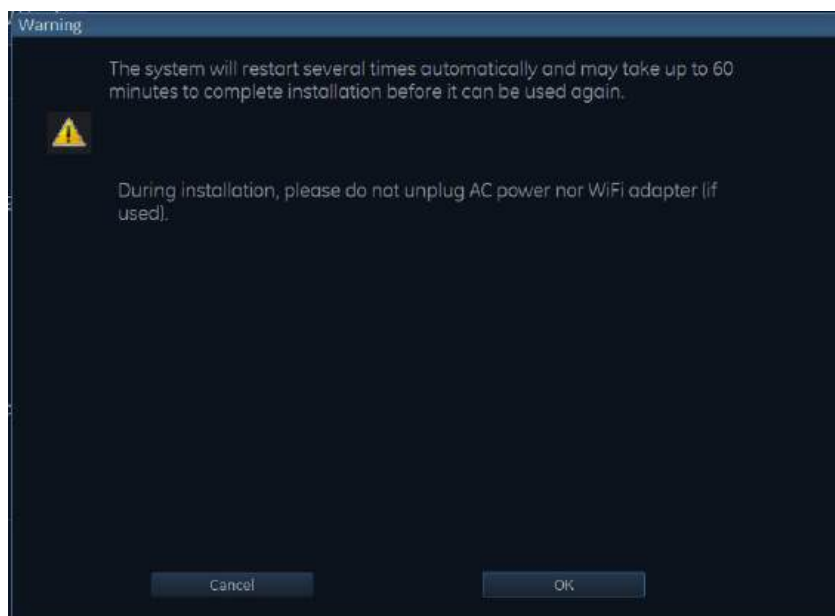


Reload Software Procedure(continued)

- If DICOM TLS and WPA are enabled:



- If DICOM TLS and WPA are not enabled:



Reload Software Procedure(continued)

5. Then, the system will restart automatically.

NOTE: The system keeps at most 2 versions of software for reload. When a newer version is installed, the earliest version will be removed permanently.

Verifying the Software Versions

1. Select **Config -> System -> About**.
2. If updating the Software, verify software version matches the version in the software used during installation.

Reload / Rollback Software at System Start Up (v208, v206)

Manpower: One person, 120 minutes.

Tools: No special tools required.

Introduction

This method to reload the software may be useful if the software has been corrupted or booting fails.

Start the Software Reload

NOTE: Ensure that AC power remains connected during the software loading.

NOTE: If used, keep the WiFi adapter plugged in.

Follow these steps to reload the software at the system start:

1. Power down the system.
2. Power up the system.
3. After approximately eight seconds, when the loading screen is displayed (see figure below), start to press either the **Up** or **Down arrow buttons** with a frequency faster than one push per second.

(The reason is that the system will only have a one second 'listening' period for key strokes.)



Figure 8-57. Loading screen

When the key stroke is registered, the normal booting process is interrupted, and the Windows Boot Manager (below) will be displayed:

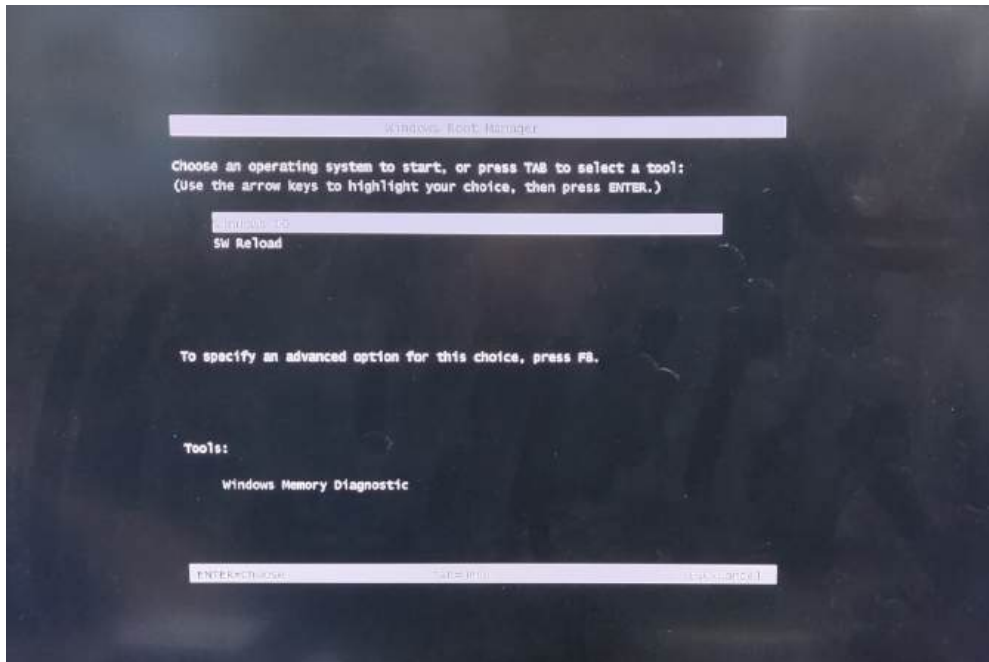
Reload / Rollback Software at System Start Up (v208, v206)(continued)

Figure 8-58. Windows Boot Manager

4. Use the Arrow keys to highlight SW Reload, then press Enter. Several screens are displayed:

Reload / Rollback Software at System Start Up (v208, v206)(continued)

When the screen below is displayed, you must choose which software to install:

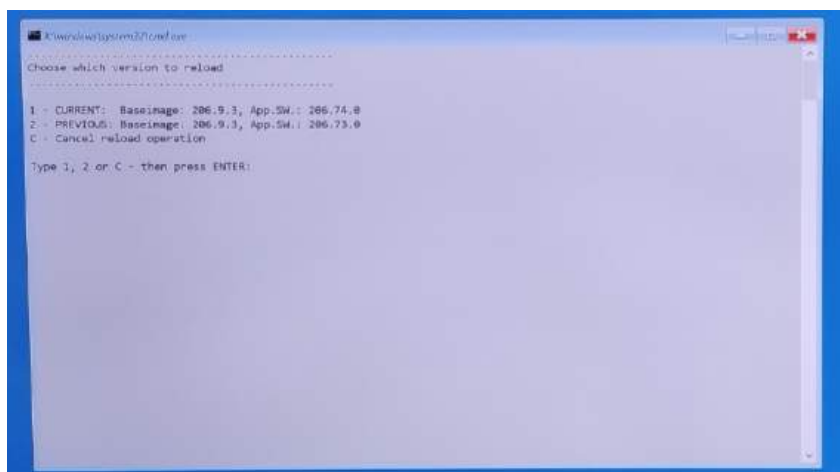


Figure 8-59. Select software to install

5. Select the software you want to install.

In this example, we selected **1**.

After selecting the software (**1** or **2**), press **Enter**.

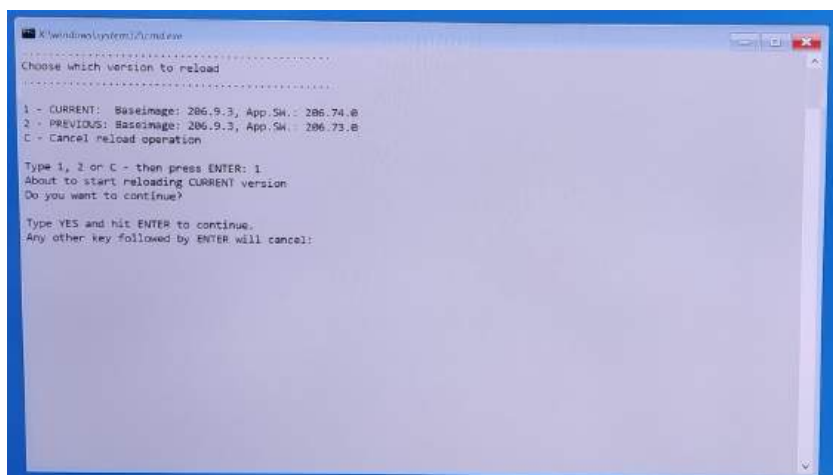


Figure 8-60. Do you want to continue?

Reload / Rollback Software at System Start Up (v208, v206)(continued)

6. Type **YES** and press **Enter** to start the software installation.
The preparation of the C: drive and the software installation starts.
The system will restart several times during the installation process without any user actions, and the complete software loading will complete in 50 - 60 minutes.

Upgrade kit

How to select proper upgrade kits

We offer different upgrade kits for users to upgrade between systems of each generation. Before you select the proper kit, you need to firstly determine what MST board and CPU type your system has.

The following tables list part number of MST board types and CPU types as well as what products these parts applied to.

Table 8-95: MST Board Type

MST Board Type	Part Number	Vivid iq v203	Vivid iq v204	Vivid iq v206	Vivid iq v208
5818MST	5771693	Y	Y	N	N
5828MST	5816033-2	N	Y	Y	Y

Table 8-96: CPU Type

CPU Type	Part Number	Vivid iq v203	Vivid iq v204	Vivid iq v206	Vivid iq v208
Intel 6 th generation: Intel® Core™ i5-6300U	5802285-5-S	N	Y	Y	Y
Intel 11 th generation: Intel® Core™ i5-1145G7E	5946611-S	N	N	N	Y

To find out which MST board version and CPU type is used in the customer system, check under **Config. ->About-> HW** version.

BF stands for MST board version and you can check BF to get the correct MST board version.

How to select proper upgrade kits(continued)

Imaging	Meas/Test	Report	Connectivity	System	About	
System Version	HW Version					
Module Name	Location	Part no.	Firm.	Part no.	Size	Priority
BF	BF	5772593	3F	5	—	0
COMEXP	COMEXP	5772593	1A	5	—	0
CPS	CPS	5628551	1C	12	—	255
GPW	GPW	5772593	3D	5	—	0
INTERNAL ID	IOB	5694116	1C	5	—	255
PID	PID	no config	—	—	—	—

Imaging	Meas/Test	Report	Connectivity	System	About	
System Version	SW Version	HW Version				
Module Name	Location	Part no.	Firm.	Part no.	Size	Priority
BF	BF	5816033-2	3F	2	—	0
COMEXP	COMEXP	5816033-2	1A	2	—	0
CPS	CPS	5628551	1C	12	—	255
GPW	GPW	5816033-2	3F	1	—	0
INTERNAL ID	IOB	5694116	1C	5	—	255
PID	PID	no config	—	—	—	—

Figure 8-61. Check HW version

Imaging	Meas/Test	Report	Connectivity	Security	System	Imaging	Meas/Test	Report	Connectivity	Security	System	About
System Version	Firmware Version	HW Version				System Version	Firmware Version	HW Version				
Module Name	Location	Part no.	Firm.	Part no.	Size	Module Name	Location	Part no.	Firm.	Part no.	Size	Priority
BF	BF	5816033-2	3F	6	—	BF	BF	5816033-2	3F	6	—	0
COMEXP	COMEXP	5816033-2	1A	6	—	COMEXP	COMEXP	5816033-2	1A	6	—	0
CPS	CPS	5628551-3	1C	4	—	CPS	CPS	5628551-3	1C	5	—	255
CPU	CPU	Intel(R) Core(TM) i5-6300U_CPU_B...	—	—	—	CPU	CPU	11th_gen_Intel(R) Core(TM) i5-1145G7...	—	—	—	—
GPW	GPW	5816033-2	3F	6	—	GPW	GPW	5816033-2	3F	6	—	0
INTERNAL IO	IOB	5694116	1C	10	—	INTERNAL IO	IOB	5694116	1C	10	—	255
OPIO	OPIO	[IIIIII]	—	255	—	OPIO	OPIO	[IIIIII]	—	255	—	—
PID	PID	no config	—	—	—	PID	PID	no config	—	—	—	—
TOUCHPAD	TOUCHP...	CWP015	—	—	—	TOUCHPAD	TOUCHP...	CWP015	—	—	—	—
TOUCHSCREEN	TOUCHS...	00_T4_PCAP3189UI_Series	—	—	—	TOUCHSCREEN	TOUCHS...	00_T4_PCAP3189UI_Series	—	—	—	—

Figure 8-62. Check CPU type

How to select proper upgrade kits(continued)

After you have checked the MST board and CPU type, please refer to the 'Upgrade Kit Path' (Figure 8-63) to select the proper upgrade kit you desired.

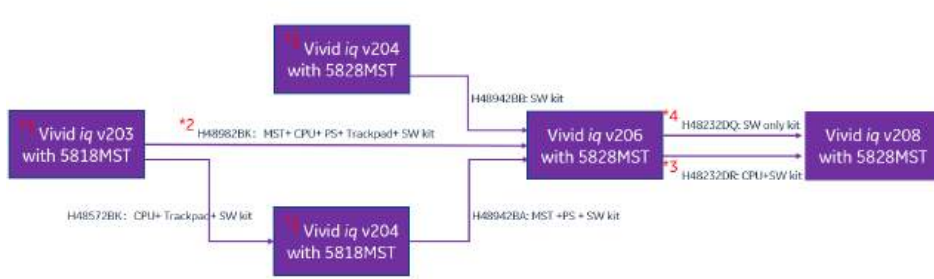


Figure 8-63. Upgrade Kit Path

*1:Only system born as v203 or v204 version can be upgraded to v206 and v208. v203 and v204 versions upgraded from lower level cannot be upgraded to v206 and v208.

*2:Direct upgrade from v203 to v206 is only available for BWI system.

*3 *4:When upgrade from v206 to v208, if the Advanced SRI or Digital Expert features or more powerful CPU are needed, you should order CPU+SW upgrade kit (H48232DR). If you already did software only upgrade and want Advanced SRI or Digital Expert features or more powerful CPU for better performance, you can also purchase Clarity+ Enabler (CPU board) (H48242DN) to replace a new powerful CPU with blower kit to support.

If you want to know more details about the upgrade kit, you can refer to corresponding upgrade kit instructions listed in [Table 8-97](#).

How to select proper upgrade kits(continued)

Table 8-97: Table of Upgrade Instruction

HCAT#	Manual Part Number	Description
H48242DC	5953424-1EN	Vivid <i>iq</i> Vet v206 to Vet v208 Upgrade Instruction
H48232DQ/ H48232DR	5951430-1EN	Vivid <i>iq</i> v206 to v208 Upgrade Instruction
H48972AB	5945139-1EN	Vivid <i>iq</i> v204 Vet to Vet v206 Upgrade Instruction
H48942BB/ H48942BA	5881787-1EN	Vivid <i>iq</i> v204 to v206 Upgrade Instruction EN
H48982BK	5904461-1EN	Vivid <i>iq</i> v203 to v206 Upgrade Instruction EN
H48572BK	5835667-100	Vivid <i>iq</i> v203 to V204 Upgrade Instruction

NOTE: If you order Clarity+ Enabler (CPU board) H48242DN, please refer to 5971454-1EN Vivid *iq* v208 CPU Replacement Instruction for details.

Checks after FRU Replacement

Overview

This section provides the information for check after FRU replacement.

- Perform required Functional and/or Leakage Current tests based upon the FRU being replaced.

Equipment passed all required tests and is ready for use.

- Clarify the scripts to debrief a Service Dispatch using your pole's dispatch tool. Use this script in the Service Comments when debriefing a Service Dispatch.

Leakage Current meets allowable limits. Equipment passed all required tests and is ready for use.

Submitting a Replacement Procedure Report

After performing a Vivid *iq* Replacement Procedure, if all required Functions Checks passed successfully, proceed as follows to submit a Debrief Script to the GE Service System:

- Using your pole's Dispatch Tool, enter the following script in the Service Comments when debriefing a Service Dispatch.

Vivid *iq* Proprietary Service Manual, Direction 5822851-100 English, Rev. 16 - per [Table on page 8-329](#). Equipment passed all required tests/checks and is ready for use.

Functional Test Matrix

Table 8-98: Functional Test of Vivid iq

Description	Diagnostics	Functional and/or Leakage Current Tests
Basic Functional Checks	Check SSD PWA Check CWD PWA Check Battery Check Probe release knob SVC Kit Check I/O Board PWA Check Probe connector SVC Kit Check CMOS Battery Submitting a Replacement Procedure Report	• 'Mechanical Functions Checks' on page 4-51 • 'Power ON/Boot Up' on page 4-5 • 'Power shut down' on page 4-9 • 'Probe/Connectors Check' on page 4-44 • '2D Mode (B mode) Checks' on page 4-30 • 'M Mode Checks' on page 4-32 • 'Color Mode Checks' on page 4-34 • 'PW/CW Doppler Mode Checks' on page 4-38 • 'Tissue Velocity Imaging (TVI) Checks' on page 4-40 • 'Basic Measurements' on page 4-42 • 'Cineloop Check' on page 4-47
LCD Assy	Check Rear Shielding Cover Assy Check LCD Assy Check Arm Assy Check LCD Panel Assy Check LCD Cover Assy Submitting a Replacement Procedure Report	• 'Mechanical Functions Checks' on page 4-51 • 'Power ON/Boot Up' on page 4-5 • 'Power shut down' on page 4-9 • 'Probe/Connectors Check' on page 4-44 • 'LCD Monitor position adjustment' on page 4-25 • Check from CSD->Diags->Service Menu->BEP Interactive->Monitor.(Ensure the disruptive mode is ON, please Navigate to Service Desktop > Utilities > Disruptive Mode Utility and set Disruptive mode to On).
Keyboard Assy	Check KBD Assy Check Power Button with Cable Kit Check ECG Board Check Lock Assy Check Speaker Check KBD PWA Check Elastomer and Key cap Check PS Assy Check Probe release knob SVC Kit Submitting a Replacement Procedure Report	• 'Power ON/Boot Up' on page 4-5 • 'Power shut down' on page 4-9 • '2D Mode (B mode) Checks' on page 4-30 • 'M Mode Checks' on page 4-32 • 'Color Mode Checks' on page 4-34 • 'PW/CW Doppler Mode Checks' on page 4-38 • 'Tissue Velocity Imaging (TVI) Checks' on page 4-40 • 'Basic Measurements' on page 4-42 • 'Cineloop Check' on page 4-47 • Check operational panel.
Trackpad	Check Trackpad Submitting a Replacement Procedure Report	• 'Power ON/Boot Up' on page 4-5 • 'Power shut down' on page 4-9 • Move the cursor to see if it moves smoothly • Check the trackpad gesture and see 'Tutorial' on page 4-52

Table 8-98: Functional Test of Vivid *iq*

Description	Diagnostics	Functional and/or Leakage Current Tests
MST Assy	Check MST board SVC Kit Check I/O Board PWA Check PS Assy Check ECG Board Check USB Ports Check HDMI Check Network port Touch the screen to check if the touch screen works properly Submitting a Replacement Procedure Report	• ‘Power ON/Boot Up’ on page 4-5 • ‘Power shut down’ on page 4-9 • Connect one probe to the probe port to check • ‘2D Mode (B mode) Checks’ on page 4-30 • ‘M Mode Checks’ on page 4-32 • ‘Color Mode Checks’ on page 4-34 • ‘PW/CW Doppler Mode Checks’ on page 4-38 • ‘Tissue Velocity Imaging (TVI) Checks’ on page 4-40 • ‘Basic Measurements’ on page 4-42 • ‘Cineloop Check’ on page 4-47
PS Assy	Check MST board SVC Kit Check PS Assy Check ECG Board Check USB Ports Check HDMI Check Network port Touch the screen to check if the touch screen works properly Check battery Submitting a Replacement Procedure Report	• ‘Power ON/Boot Up’ on page 4-5 • ‘Power shut down’ on page 4-9 • Connect one probe to the probe port to check • ‘2D Mode (B mode) Checks’ on page 4-30 • ‘M Mode Checks’ on page 4-32 • ‘Color Mode Checks’ on page 4-34 • ‘PW/CW Doppler Mode Checks’ on page 4-38 • ‘Tissue Velocity Imaging (TVI) Checks’ on page 4-40 • ‘Basic Measurements’ on page 4-42 • ‘Cineloop Check’ on page 4-47 • Check the battery charging status (console battery and big battery) from the drop-down menu of right upper corner
I/O Board PWA	Check I/O Board PWA Check USB Ports Check HDMI Check Network port Touch the screen to check if the touch screen works properly Check operation panel Submitting a Replacement Procedure Report	• ‘Power ON/Boot Up’ on page 4-5 • ‘Power shut down’ on page 4-9 • Insert USB to each USB port to see whether the system can detect the device • Connect a network cable to network port to see if the network connection can be built • Connect a display screen to the HDMI port to see if the connection can be successful
Probe Connector	Check Probe connector SVC Kit Submitting a Replacement Procedure Report	• ‘Power ON/Boot Up’ on page 4-5 • ‘Power shut down’ on page 4-9 • Connect a 6VT-D probe to check the 4PP port. • ‘2D Mode (B mode) Checks’ on page 4-30 • ‘M Mode Checks’ on page 4-32 • ‘Color Mode Checks’ on page 4-34 • ‘PW/CW Doppler Mode Checks’ on page 4-38 • ‘Tissue Velocity Imaging (TVI) Checks’ on page 4-40 • ‘Basic Measurements’ on page 4-42 • ‘Cineloop Check’ on page 4-47

Table 8-98: Functional Test of Vivid iq

Description	Diagnostics	Functional and/or Leakage Current Tests
Cables	Check LCD and Touch Cable SVC Kit Check Bottom Cable Kit Submitting a Replacement Procedure Report	• Check if the touch screen can be touched smoothly • 'Power ON/Boot Up' on page 4-5 • 'Power shut down' on page 4-9 • Check if the MST blower and CPU fan can work properly (by ear)
CMOS Battery	Check CMOS Battery Submitting a Replacement Procedure Report	• Power on the system. Check that the current date and time is later than the date and time of last bootup.
CPU Module	Check CPU Assy Submitting a Replacement Procedure Report	• 'Power ON/Boot Up' on page 4-5 • 'Power shut down' on page 4-9 • '2D Mode (B mode) Checks' on page 4-30 • 'M Mode Checks' on page 4-32 • 'Color Mode Checks' on page 4-34 • 'PW/CW Doppler Mode Checks' on page 4-38 • 'Tissue Velocity Imaging (TVI) Checks' on page 4-40 • 'Basic Measurements' on page 4-42 • 'Cineloop Check' on page 4-47 • 'Software Configuration Checks' on page 4-58
Fan Assy	Check Blower kit Check CPU Fan Submitting a Replacement Procedure Report	• 'Power ON/Boot Up' on page 4-5 • 'Power shut down' on page 4-9 • Check if the MST blower and CPU fan can work properly (by ear)
Loading Base Image Software	Submitting a Replacement Procedure Report	• 'Power ON/Boot Up' on page 4-5 • 'Power shut down' on page 4-9 • '2D Mode (B mode) Checks' on page 4-30 • 'M Mode Checks' on page 4-32 • 'Color Mode Checks' on page 4-34 • 'PW/CW Doppler Mode Checks' on page 4-38 • 'Tissue Velocity Imaging (TVI) Checks' on page 4-40 • 'Basic Measurements' on page 4-42 • 'Cineloop Check' on page 4-47 • 'Software Configuration Checks' on page 4-58 • Press Patient key on touch screen to enter patient page and build a new patient to see if it works.

Used Media and Used Parts

Disposal



The waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately.

Please contact the manufacturer or other authorized disposal company to decommission your equipment.



1. Properly dispose of all old or used parts and media according to current policies and procedures. Never keep old software or leave old software at the customer site.
2. Ensure that no Proprietary Material, such as this installation manual and the Vivid *iq* Proprietary Manual, are left at the customer.

Chapter 9

Renewal Parts

This chapter lists the renewal parts available for the Vivid iq.

Overview

Contents in this chapter

- 'List of Abbreviations' on *page 9-3*
- 'Renewal Parts (Spare Parts) Lists' on *page 9-4*

List of Abbreviations

Table 9-1: List of Abbreviations

ABBREVIATION	DESCRIPTION
3D	THREE DIMENSIONAL
Assy	ASSEMBLY
FRU 1	Replacement part available in part hub
FRU 2	Replacement part available from the manufacturer (lead time involved)
KBD	Keyboard
LCD	Liquid Crystal Display
BnV	Brightness and Volume
TMST	Master Board

Renewal Parts (Spare Parts) Lists

AC Power Cord

Table 9-2: AC Power Cord

Item	HCAT#	Part Number	Part Name	Quantity	FRU
1.	H48502AT	6736103-2	PWR SPLY CRD BRAZIL 10A 250V STRAIGHT 2.5M	1	1
2.	H48502AW	6736105-2	PWR SPLY CRD EUROPE KOREA 10A 250V STRAIGHT 2.5M	1	1
3.	H48532AY	6736115-2	PWR SPLY CRD DENMARK HOSPITAL GRADE 10A 250V STRAIGHT 2.5M	1	1
4.	H48502AZ	6736109-2	PWR SPLY CRD ISRAEL 10A 250V STRAIGHT 2.5M	1	1
5.	H48512AA	6736111-2	PWR SPLY CRD JAPAN AND TAIWAN 15A 125V STRAIGHT 2.5M	1	1
6.	H48482AB	5177126-2	JAPAN CLASS AC POWERCORD FOR CART	1	1
7.	H48512AC	6736101-2	PWR SPLY CRD ARGENTINA 10A 250V STRAIGHT 2.5M	1	1
8.	H48512AD	6736102-2	PWR SPLY CRD ANZ 10A 250V STRAIGHT 2.5M	1	1
9.	H48512AE	6736104-2	PWR SPLY CRD CHINA 10A 250V STRAIGHT 2.5M	1	1
10.	H48512AF	6736107-2	PWR SPLY CRD UK IRELAND 10A 250V STRAIGHT 2.5M	1	1
11.	H48512AG	6736108-2	PWR SPLY CRD INDIA 6A 250V STRAIGHT 2.5M	1	1
12.	H48512AJ	6736113-2	PWR SPLY CRD SWITZERLAND 10A 250V STRAIGHT 2.5M	1	1
13.	H48512AK	6736114-2	PWR SPLY CRD UNITED STATES - CANADA 15A 125V STRAIGHT 4M	1	1
14.	H46712LW	6736114-3	PWR SPLY CRD UNITED STATES - CANADA 15A 125V STRAIGHT 4M	1	1

Table 9-2: AC Power Cord

Item	HCAT#	Part Number	Part Name	Quantity	FRU
15.	H48482AH	5176773-2	INDIA CLASS AC POWERCORD-CRU Note: This power cord is also applicable for South Africa.	1	1

Operator Console Assy

The following figure is the overview of the system.



Figure 9-1. Operator Console Assy

Table 9-3: Renewal Parts list

Item	Section	Page Number
1	LCD Assy	9-7
2	Keyboard Assy	9-7
3	Body Assy	9-8
5	Accessories and Cable Kits	9-20
6	Probe	9-23
7	Peripherals	9-27
8	AC Power Cord	9-4
9	Manuals	9-31

LCD Assy

LCD Back Cover Assy
Rear Shielding Cover



Figure 9-2. LCD Assy

Keyboard Assy

LCD TOUCH CABLE SVC
Kit
LCD lock release SVC Kit
SAGE SPEAKER KIT
Track pad
Sage Elastomer and Key
Cap



Figure 9-3. Keyboard Assy (1)

Body Assy



Figure 9-4. Body Assy

LCD Assy

Table 9-4: LCD Assy

Item	Part Number	Description	Corresponding graphic	RP	Compatible					
					R1	R2	R3	R4	R6	R8
1.	5721715-S	Rear Shielding Cover		RP	Y	Y	Y	Y	Y	Y
2.	5721377-3-S	Vivid iq LCD Assy SVC Kit		RP	Y	Y	Y	Y	Y	N
	5931615-S	Vivid iq LCD Assy SVC Kit from D-VIEW		RP	Y	Y	Y	Y	Y	N
	5931615-3-S			RP	Y	Y	Y	Y	Y	N
	5721377-R8-S	Vivid iq v208 LCD Service Kit from CPC		RP	N	N	N	N	N	Y
	5931615-R8-S	Vivid iq v208 LCD Service Kit from D-view		RP	N	N	N	N	N	Y

Table 9-4: LCD Assy

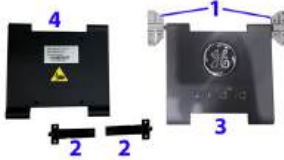
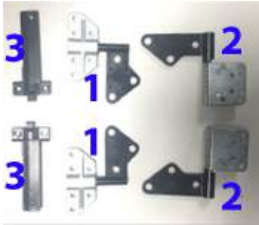
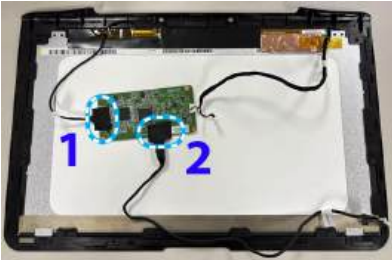
Item	Part Number	Description	Corresponding graphic	RP	Compatible					
					R1	R2	R3	R4	R6	R8
3.	5721390-2-S	Sage Flexible Arm SVC Assy		RP	Y	Y	Y	Y	Y	N
	5721390-3-S	Vivid iq Arm with small hinge SVC kit	 The following parts are included: • Ref1#: Sage LCD Hinge -- 2pcs • Ref2#: Sage LCD Hinge Cover (Left&right) -- 2pcs • Ref3#: Sage Flexible Arm -- 1pc (with 1 pc of ViVid Big Name Plate and 1 pc of Nezha GE LOGO) • Ref4#: Sage Arm Cover Assy -- 1pc	RP	Y	Y	Y	Y	Y	N
	5721390-R8-S	Vivid iq v208 Flexible Arm Service Kit	 The following parts are included: • Ref1#: Sage LCD Hinge -- 2pcs • Ref2#: Sage LCD Hinge Cover (Left&right) -- 2pcs • Ref3#: Sage R8 Flexible Arm Assy -- 1pc • Ref4#: Sage Arm Cover Assy -- 1pc	RP	N	N	N	N	N	Y

Table 9-4: LCD Assy

Item	Part Number	Description	Corresponding graphic	RP	Compatible					
					R1	R2	R3	R4	R6	R8
4.	5721396-2-S	Vivid iq LCD Hinge SVC kit	 The following parts are included: • Ref1#: Sage LCD Hinge -- 2pcs • Ref2#: Sage Main Hinge (Left&right) -- 2pcs • Ref3#: Sage LCD Hinge Cover (Left&right) -- 2pcs	RP	Y	Y	Y	Y	Y	Y
	5721397-3-S	Vivid iq Main Hinge with Rubber SVC kit	 The following parts are included: • Ref1#: Sage Main Hinge (Left&right) -- 2pcs • Ref2#: Sage Hinge Back Rubber -- 2pcs	RP	Y	Y	Y	Y	Y	Y
5.	5721378-2-S	Vivid iq LCD Panel Assy SVC Kit	 Note: LCD Panel assy may contain 2 pcs of aceate tape. If present, one attached to connect 1 and the other attached to connect 2.	RP	Y	Y	Y	Y	Y	Y
	5721378-3-S			RP	Y	Y	Y	Y	Y	Y
	5931613-S	Vivid iq LCD Panel Assy		RP	Y	Y	Y	Y	Y	Y
	5931613-3-S	Vivid iq LCD Panel Assy SVC Kit from D-VIEW		RP	Y	Y	Y	Y	Y	Y
6.	5721384-S	LCD Back Cover Assy		RP	Y	Y	Y	Y	Y	Y

Keyboard Assy

Table 9-5: Keyboard Assy

Item	Part Number	Description	Corresponding graphic	RP	Compatible					
					R1	R2	R3	R4	R6	R8
1.	5721713-2-S	Sage KBD Assy SVC Kit	 Note: Sage KBD Assy SVC kit is not compatible with R4 as the clickable trackpad is supported since R4. Please order the disassembly subpart for specific part issue. Refer to Table 8-14 for detailed subpart.	RP	Y	Y	Y	N	N	N
2.	5694179-S	Sage Power PWA SVC Kit		RP	Y	Y	Y	Y	Y	Y
3.	5725718-S	LCD lock release SVC Kit		RP	Y	Y	Y	Y	Y	Y
4.	5725616-S	SAGE SPEAKER KIT		RP	Y	Y	Y	Y	Y	Y

Table 9-5: Keyboard Assy

Item	Part Number	Description	Corresponding graphic	RP	Compatible					
					R1	R2	R3	R4	R6	R8
5.	5717815-S	Track pad		RP	Y	Y	Y	N	N	N
	5835562-S	Clickable trackpad SVC Kit		RP	N	N	N	Y	Y	Y
6.	5694177-2-S	SAGE KBD PWA SVC Kit		RP	Y	Y	Y	Y	Y	Y
7.	5721729-S	Sage Elastomer and Key Cap		RP	Y	Y	Y	Y	Y	Y
8.	5694465-S	SAGE KBD CABLE KIT			Y	Y	Y	Y	Y	Y
9.	5726046-S	Sage KBD Cover SVC Kit			Y	Y	Y	Y	Y	Y

Body Assy

Table 9-6: Body Assy

Item	Part Number	Description	Corresponding graphic	RP	Compatible					
					R1	R2	R3	R4	R6	R8
1.	5725969-S	SAGE SSD SVC Kit		RP	Y	Y	Y	Y	Y	N
	5919781-S	MSATA 256G SSD			Y	Y	Y	Y	Y	N
	5874231-S	Transcend 512G SSD	Apply for R206.74.0 and above		N	N	N	N	Y	Y
2.	5537639-S	CWD PWA		RP	Y	Y	Y	Y	Y	Y

Table 9-6: Body Assy

Item	Part Number	Description	Corresponding graphic	RP	Compatible					
					R1	R2	R3	R4	R6	R8
3.	5777459-S	CPU Assy (For Windows 7)	 Apply for R1.2.4 and above	RP	N	Y	N	N	N	N
	5777459K-S	CPU Assy (For Windows 7)	Apply for R1.2.4 Below	RP	Y	Y	N	N	N	N
	5802285-S	CPU Assy (For Windows 10)		RP	N	N	Y	N	N	N
	5802285-4-S	CPU_Vivid IQ AD 2DD_Service Kit		RP	N	N	N	Y	Y	Y
	5802285-5-S	CPU_Vivid IQ Adlink 2DD_Service Kit	Note:Updating CPU BIOS version to improve quality, aiming to solve the issue "ask for BIOS password when bootup",can find detail description in DOC2440568 Vivid iq and Vivid T troubleshooting.		N	N	N	Y	Y	Y
	5946611-S	Vivid iq v208 CPU Service Kit		RP	N	N	N	N	N	Y
3.	5694116-2-S	SAGE_IO_P WA SVC Kit		RP	Y	Y	Y	Y	Y	Y

Table 9-6: Body Assy

Item	Part Number	Description	Corresponding graphic	RP	Compatible					
					R1	R2	R3	R4	R6	R8
4.	5726620-3-S (Can be replaced by 5726620-2-S)	Vivid iq PS Assy SVC kit		RP	Y	Y	Y	Y	Y	Y
5.	5725617-S	SAGE Blower kit		RP	Y	Y	Y	Y	Y	Y
	5948245-S	Vivid iq v208 CPU fan SVC kit		RP	N	N	N	N	N	Y
6.	5721554-S	SAGE Probe release knob SVC Kit		RP	Y	Y	Y	Y	Y	Y
7.	5721484-2-S	Sage Probe Connector SVC Kit	 Note:5721484-2-S and 5721484-S are compatible.	RP	Y	Y	Y	Y	Y	Y

Table 9-6: Body Assy

Item	Part Number	Description	Corresponding graphic	RP	Compatible					
					R1	R2	R3	R4	R6	R8
8.	5716886-S	MST board SVC Kit			Y	Y	N	N	N	N
	5771693-S	MST_Vivid IQ AFE5818_SVC Kit		RP	N	R1.2.6 and above	Y	Y	N	N
	5771693K-S	Vivid iq MST Board with AFE5818 SVC Kit with Software			Y	R1.2.6 below	N	N	N	N
	5771693-4-S	MST Vivid IQ PQ AFE5818 SVC Kit		RP	N	N	v203.91.1 and above	N	N	N
	5816033-2-S	MST Vivid IQ 5828 SVC Kit	 Note: need order 5829265-63-3 and above if SW <R204.63.3 If you have replace the MST board type from 5818MST 5771693-S to 5828MST 5816033-2-S, please also check the SAGE DCDC board version is 5628551-3 Rev2 and above.	RP	N	N	N	v204.102.0 and above	Y	Y
	5725646-S	Vivid iq Small heatsink SVC kit	 Note: Only used in 5828MST and to replace MST heatsink separately.	RP	N	N	N	Y	Y	Y

Table 9-6: Body Assy

Item	Part Number	Description	Corresponding graphic	RP	Compatible					
					R1	R2	R3	R4	R6	R8
9.	5145407	CMOS Battery		RP	Y	Y	Y	Y	Y	Y
10.	5721481-S	SAGE CPU FAN ASSY SVC Kit		RP	Y	Y	Y	204.102.0 and above	206.56.0 and above	N
	5721481-2-S									N
11.	5721474-S	Sage Battery Lock Assy			Y	Y	Y	Y	Y	Y
12.	5721461-S	Sage Bottom Cover Assy			Y	Y	Y	Y	Y	Y
13.	5794927-S	Video BOX for CVUS SVC KIT			Y	Y	Y	Y	Y	Y

Table 9-6: Body Assy

Item	Part Number	Description	Corresponding graphic	RP	Compatible					
					R1	R2	R3	R4	R6	R8
14.	5820689-2-S	SAGE ECG Kit SVC		RP	Y	R1.2.7 and above	Y	Y	Y	Y
15.	5786704-S	Sage Rubber foot			Y	Y	Y	Y	Y	Y

Accessories and Cable Kits

Table 9-7: Accessories and Cable Kits

Item	Part Number	Description	Corresponding graphic	RP	Compatible					
					R1	R2	R3	R4	R6	R8
1.	5725615-S	LCD TOUCH CABLE SVC Kit		RP	Y	Y	Y	Y	Y	Y
2.	5725618-S	SAGE BOTTOM CABLE KIT		RP	Y	Y	Y	Y	Y	Y
3.	5748229	Sage Console Screws Kit			Y	Y	Y	Y	Y	Y
4.	5748490	Sage LOGO Kit			Y	Y	Y	Y	Y	N
5.	5834536	Kit for ferriter cores			Y	Y	Y	Y	Y	Y
6.	5810766	2 Ferrite cores + Envelope Bag			Y	Y	Y	Y	Y	Y
7.	KX200272	TEE Storage rack		RP	Y	Y	Y	Y	Y	Y

View-X, Epiphan VGADVI Broadcaster

Table 9-8: View-X, Epiphan VGADVI Broadcaster

Item	Part Number	Description	Corresponding graphic	RP	Compatible					
					R1	R2	R3	R4	R6	R8
1.	066E8948	Epiphan Pearl Nano Broadcaster, HDMI 12G SDI For Installation Instruction, see: GD294142-1EN			N	N	Y	Y	Y	Y
2.	070D2950	CABLE ETHERNET PATCH 5,00M			N	N	Y	Y	Y	Y
3.	5788613-40	Ethernet Cable CAT6 26AWG Stranded Conductor Foil Braid CMP 20m			N	N	Y	Y	Y	Y

CRU List

Table 9-9: CRU List

Item	Part Number	Description	Corresponding graphic	RP	Compatible					
					R1	R2	R3	R4	R6	R8
1.	5717315-2-S	Internal Battery		RP	Y	Y	Y	Y	Y	Y
2.	5693770-2S	Vivid iq ACDC adapter for SVC			Y	Y	Y	Y	Y	Y
3.	5848545	ECG adapter cable kit		RP	Y	Y	Y	Y	Y	Y
4.	5863421	Ethernet protection cable			N	N	Y	Y	Y	Y
5.	5434317-4	1TB mobile HDD			Y	Y	Y	Y	Y	Y
6.	5786704-S	Sage Rubber foot			Y	Y	Y	Y	Y	Y

Probe

Table 9-10: Probes for Vivid *iq*

Item	Part Name	HCAT Number	FRU Part Number	Center Image Frequency (MHz)	Qty	FRU
1.	4C-RS	H4000SR	5488477	1.5 - 5.0	1	1
2.	3Sc-RS	H45041DL	5863286	1.3 - 4.0	1	1
3.	M5Sc-RS	H44901AG	5718482	1.5 - 4.6	1	1
4.	6S-RS	H45021RP	5499316	3.0 - 7.0	1	1
5.	12S-RS	H44901AB	5499321	4.5 - 12.0	1	1
6.	9L-RS	H40442LL	5499511	3.0 - 9.0	1	1
7.	12L-RS	H40402LY	5499501	4.0 - 13.0	1	1
8.	ML6-15-RS	H40462LM	5499610	5.0 - 15.0	1	1
9.	8C-RS	H40402LS	5499508	4.0 - 8.0	1	1
10.	C1-5-RS	H40462LA	5499608	1.5 - 5.0	1	1
11.	6Tc-RS	H45551ZE	5729431	3.0 - 8.0	1	1
12.	6VT-D	H45581BJ	5729428	3.0 - 8.0	1	1
13.	E8Cs-RS	H48062AF	5670375	3.5 - 10.0	1	1
14.	P2D (RS type connector)	H45551CA	5729436	1.9	1	1
15.	L8-18i-RS	H40462LF	5499609	4.5 - 18.0	1	1
16.	9T-RS	H45531YM	5729433	3.0 - 10.0	1	1
17.	L4-20t-RS (Only for v206 and v208)	H48062AJ	5843289	4.0 - 20.0	1	1
18.	10T-D (Only for v206 and v208)	H44901AH	5765881	5.0 - 10.0	1	1
19.	ICE cord for service	H48952AR	S2423364-1	NA	1	1
20.	Crystal ICECord-RS service kit	H48232DT	5877427-S	NA	1	1

ECG Cables

Table 9-11: ECG Cables

Applicable IB	Cate.	FRU to Order	Description
R1&R2	AHA(USA)-Adult	S2424549	TRUNK CABLE FOR USA-SERVICE KIT
		S2424557	LEAD WIRE KIT USA BLACK RED WHITE
	IEC(Europe)-Adult	S2424553	TRUNK CABLE FOR EUROPE
		S2424558	LEAD WIRE KIT EURO YELLOW, RED, GREEN

Table 9-11: ECG Cables

Applicable IB	Cate.	FRU to Order	Description
R1&R2&R3& R4&R6&R8	AHA(USA)-Adult	(H48552BR) 5848545	ECG adapter cable kit
		(H45601SB) 2106305-001-S or 2106305-001*	ecg trunk cable, aha 
		(H45601SC) 2106390-001-S or 2106390-001*	ecg leadwire set, aha 
	AHA(USA)-Neo	5848545	ECG adapter cable kit
		(H45601SF) 2106306-001-S or 2106306-001*	ecg trunk cable, neonatal din 3-lead, aha
	IEC(Europe)-Adult	5848545	ECG adapter cable kit
		(H45601SD) 2106305-003-S or 2106305-003*	ecg trunk cable, iec 
		(H45601SE) 2106390-003-S or 2106390-003*	ecg leadwire set, iec 
	IEC(Europe)-Neo	5848545	ECG adapter cable kit
		(H45601SG) 2106306-003-S or 2106306-003*	ecg trunk cable, neonatal din 3-lead, iec

Table 9-11: ECG Cables

Applicable IB	Cate.	FRU to Order	Description
All	NA	S2413451 or 5498097	ECG EXTERNAL CABLE

NOTE: *“*”: The part with ‘-s’ and the part without ‘-s’ are identical, just from a different supplier.*

Peripherals

Table 9-12: Accessories

Item	FRU Part Number	Catalog Number	Description	Qty	Compatible				
					R1	R3	R4	R6	R8
1.	5824239	H48072BM	Vivid iq Inclined Supporter SVC part 	1	Y	Y	Y	Y	Y
2.	5534825	H48572AB	HDMI to S-video adaptor	1	Y	Y	Y	Y	N
3.	5794927-S	H48982AN	Video BOX for CVUS SVC KIT 	1	Y	Y	Y	Y	Y
4.	5863937	H48532BH	USB3.0 stick for Storage	1	Y	Y	Y	Y	Y
5.	5151236	H41642LS	FOOT SWITCH -MED GP26	1	Y	Y	Y	Y	Y
6.	5653589	H48532LJ	LITEON eBAU108 DVDRW Kit *Note:Support generic cart	1	Y	Y	Y	Y	N
7.	5962058-S	H48392DT	Transcend TS8XDVDS-K with original cable and without gasket *Note:Support both generic cart and standard &premium cart	1	N	N	N	N	Y*
8.	5449275-4	H48962CB	Transcend TS8XDVDS-K Note:Only Support standard &premium cart	1	N	N	N	N	Y*
9.	5728576	H48392AW	NetGear Wireless USB Adapter A6210 Kit	1	Y	Y	Y	Y	N
10.	5933000-S	H48392DE	Wireless USB Adapter A8000 *Note:For R6, Only support SW 206.74.0 and above. For R4, Only support SW 204.117.0 and above. For R3, Only support SW 203.109.0 and above.	1	N	Y*	Y*	Y*	Y

Table 9-12: Accessories

Item	FRU Part Number	Catalog Number	Description	Qty	Compatible				
					R1	R3	R4	R6	R8
11.	5434317-4	H48492AB	1TB mobile USB HDD	1	Y	Y	Y	Y	Y
12.	S2423364-1+5747780-S	H48952AR	ICE cord for service+EMC filter for ICE probe	1	Y	Y	Y	Y	Y
13.	5834536	H48072BT	EP Lab Accessory Kit for Vivid iq	1	Y	Y	Y	Y	Y
14.	5693770-2S	H48982AW	Vivid iq new Adapter	1	Y	Y	Y	Y	Y
15.	5717315-2-S	H48942AT	Vivid Compact Battery *Note: For sage console and charge box of generic cart	1	Y*	Y*	Y*	Y*	Y*
16.	5945123-S	H48942CP	LOGIQ e R9 Battery Pack_CRU *Note: For charge box of standard & premium cart	1	N	N	N	Y*	Y*
17.	5863421	H43272LJ	Ethernet protection cable	1	N	Y	Y	Y	Y
18.	066E8948	H45611YA	View-X	1	N	Y	Y	Y	Y
	5788613-40								
	070D2950								
19.	5877427-S	H48232DT	Crystal ICECord-RS service kit	1	N	N	N	N	Y
20.	5721308	H48722AR	Charge box w. 3 batteries *Note: for generic cart	1	Y	Y	Y	Y	N
21.	5947849-S	H48392DR	Vivid iq Standard/Premium Charge Box with Batteries *Note: for standard & premium cart	1	N	N	N	Y	Y
		H48422DZ	Vivid iq Standard/Premium Charge Box with Batteries_VBP *Note: for standard & premium cart	1	N	N	N	N	Y

Table 9-13: Printer

Item	FRU Part Number	Catalog Number	Description	Qty	R1	R3	R4	R6	R8
1.	5389822	H48532AM	SONY UPD25 Color Printer kit	1	Y	Y	Y	Y	Y
2.	5133107-2	H48542LZ	SONY UPD25 Color Printer USA kit	1	Y	Y	Y	Y	Y
3.	5133108-2	H48552LA	SONY UPD25 Color Printer EUP kit	1	Y	Y	Y	Y	Y
4.	5133109-2	H48552LB	SONY UPD25 Color Printer JPN kit	1	Y	Y	Y	Y	Y
5.	5491253	H48312AN	SONY UPD25 Color Printer Brazil kit	1	Y	Y	Y	Y	Y
6.	NA	H48532AL	SONY UP-D898MD BW Printer Kit	1	Y	Y	Y	Y	Y

Table 9-13: Printer

Item	FRU Part Number	Catalog Number	Description	Qty	R1	R3	R4	R6	R8
7.	5151259-2	H48492AF	SONY UP-D898MD Printer USA Kit	1	Y	Y	Y	Y	Y
8.	5151261-2	H48492AG	SONY UP-D898MD Printer EU Kit	1	Y	Y	Y	Y	Y
9.	5151262-2	H48492AH	SONY UP-D898MD Printer CHN Kit	1	Y	Y	Y	Y	Y
10.	5151263-2	H48492AJ	SONY UP-D898MD Printer JPN Kit	1	Y	Y	Y	Y	Y
11.	5495509-2	H48492AK	SONY UP-D898MD Printer BRA Kit	1	Y	Y	Y	Y	Y
12.	NA	H45541MJ	COLOR LASER PRINTER 220V	1	N	N	Y	Y	Y
13.	NA	H45541MH	COLOR LASER PRINTER 110V	1	N	N	Y	Y	Y

NOTE: Please refer to service note DOC2447505 Printer Compatibility Matrix for Vivid T and Vivid IQ, which recorded Non-GE purchase printer overall matrix.

Table 9-14: Biopsy Kit

Item	Catalog Number	Description	Qty
1.	E8385NA	4C-RS Biopsy Kit	1
2.	H4906BK	9L-RS Biopsy kit	1
3.	H40432LC	12L-RS Biopsy kit	1
4.	H46222LC	3Sc-RS Biopsy kit	1
5.	H40432LE	C1-5-RS Biopsy kit	1
6.	H40432LJ	ML6-15 Biopsy Kit	1
7.	H45561FC	M5S Biopsy Kit	1
8.	E8385MJ	E721 Starter Kit	1
9.	H45201BL (For v206 and v208)	L4-20t Verza biopsy starter kit	1

Table 9-15: System and Application USB for v204

Item	Part Number	Description	Qty
1.	5829265-120	Vivid iq 204.107 System and Application Software USB	1

Table 9-16: System and Application USB for v206

Item	Part Number	Description	Qty
1.	5881794-85	Vivid IQ 206 System and Application Software USB	1

Table 9-17: System and Application USB for v208

Item	Part Number	Description	Qty
1.	5947100	Vivid IQ 208 System and Application Software USB	1

NOTE: Please refer to service note *DOC2155753 Software Version List of AQUA and SAGE*, which recorded latest System and Application Software USB.

Manuals

The User Manuals and Release Notes in the supported languages, Advanced Reference Manuals (English and French), and the Basic Service Manual (English) are all included on a removable media.

The translated online versions of the User Manuals are included on the software UFD. These manuals are used for installation if the customer want to have other versions than the English version available on the Vivid *iq*.

Table 9-18: Manuals for Vivid *iq* v204

Item	Part Number	Description	Qty	FRU
1.	5822849-100	Vivid iq v204 User Manual - English	1	N
2.	5822849-101	Vivid iq v204 User Manual - French	1	N
3.	5822849-106	Vivid iq v204 User Manual - Spanish	1	N
4.	5822849-108	Vivid iq v204 User Manual - German	1	N
5.	5822849-111	Vivid iq v204 User Manual - Italian	1	N
6.	5822849-121	Vivid iq v204 User Manual - Dutch	1	N
7.	5822849-127	Vivid iq v204 User Manual - Brazilian Portuguese	1	N
8.	5822849-129	Vivid iq v204 User Manual - Estonian	1	N
9.	5822849-131	Vivid iq v204 User Manual - Slovenian	1	N
10.	5822849-140	Vivid iq v204 User Manual - Japanese	1	N
11.	5822849-141	Vivid iq v204 User Manual - Simplified Chinese	1	N
12.	5822849-142	Vivid iq v204 User Manual - Swedish	1	N
13.	5822849-144	Vivid iq v204 User Manual - Korean	1	N
14.	5822849-145	Vivid iq v204 User Manual - Russian	1	N
15.	5822849-150	Vivid iq v204 User Manual - Polish	1	N
16.	5822849-151	Vivid iq v204 User Manual - Greek	1	N
17.	5822849-153	Vivid iq v204 User Manual - Hungarian	1	N
18.	5822849-154	Vivid iq v204 User Manual - Slovakian	1	N
19.	5822849-155	Vivid iq v204 User Manual - Czech	1	N
20.	5822849-159	Vivid iq v204 User Manual - Turkish	1	N
21.	5822849-160	Vivid iq v204 User Manual - Danish	1	N
22.	5822849-161	Vivid iq v204 User Manual - Norwegian	1	N

Table 9-18: Manuals for Vivid iq v204

Item	Part Number	Description	Qty	FRU
23.	5822849-162	Vivid iq v204 User Manual - Finnish	1	N
24.	5822849-165	Vivid iq v204 User Manual - Bulgarian	1	N
25.	5822849-167	Vivid iq v204 User Manual - Romanian	1	N
26.	5822849-168	Vivid iq v204 User Manual - Croatian	1	N
27.	5822849-174	Vivid iq v204 User Manual - Lithuanian	1	N
28.	5822849-175	Vivid iq v204 User Manual - Latvian	1	N
29.	5822849-176	Vivid iq v204 User Manual - Serbian	1	N
30.	5822849-177	Vivid iq v204 User Manual - European Portuguese	1	N
31.	5822849-180	Vivid iq v204 User Manual - Ukrainian	1	N
32.	5822849-181	Vivid iq v204 User Manual - Indonesian	1	N
33.	5822849-183	Vivid iq v204 User Manual - Vietnamese	1	N
34.	5822849-184	Vivid iq v204 User Manual - Kazakh	1	N
35.	5822853-100	Vivid iq v204 Advanced Reference Manual - English	1	N
36.	5822853-101	Vivid iq v204 Advanced Reference Manual - French	1	N
37.	5822852-100	Vivid iq v204q Basic Service Manual - English	1	N
38.	5824054	Vivid iq v204 eIFU pamphlet	1	N
39.	5835667-100	Vivid iq v204 v203 to v204 Upgrade Manual	1	N
40.	5836022	Vivid iq v204 UDOC Media	1	N

Table 9-19: Manuals for Vivid iq v206

Item	Part Number	Description	Qty	FRU
1.	5872801-1EN	Vivid iq v206 User Manual - English	1	N
2.	5872801-1FR	Vivid iq v206 User Manual - French	1	N
3.	5872801-1ES	Vivid iq v206 User Manual - Spanish	1	N
4.	5872801-1DE	Vivid iq v206 User Manual - German	1	N
5.	5872801-1IT	Vivid iq v206 User Manual - Italian	1	N
6.	5872801-1NL	Vivid iq v206 User Manual - Dutch	1	N
7.	5872801-1PT-BR	Vivid iq v206 User Manual - Brazilian Portuguese	1	N
8.	5872801-1ET	Vivid iq v206 User Manual - Estonian	1	N
9.	5872801-1SL	Vivid iq v206 User Manual - Slovenian	1	N

Table 9-19: Manuals for Vivid iq v206

Item	Part Number	Description	Qty	FRU
10.	5872801-1JA	Vivid iq v206 User Manual - Japanese	1	N
11.	5872801-1ZH-CN	Vivid iq v206 User Manual - Simplified Chinese	1	N
12.	5872801-1SV	Vivid iq v206 User Manual - Swedish	1	N
13.	5872801-1KO	Vivid iq v206 User Manual - Korean	1	N
14.	5872801-1RU	Vivid iq v206 User Manual - Russian	1	N
15.	5872801-1PL	Vivid iq v206 User Manual - Polish	1	N
16.	5872801-1EL	Vivid iq v206 User Manual - Greek	1	N
17.	5872801-1HU	Vivid iq v206 User Manual - Hungarian	1	N
18.	5872801-1SK	Vivid iq v206 User Manual - Slovakian	1	N
19.	5872801-1CS	Vivid iq v206 User Manual - Czech	1	N
20.	5872801-1TR	Vivid iq v206 User Manual - Turkish	1	N
21.	5872801-1DA	Vivid iq v206 User Manual - Danish	1	N
22.	5872801-1NO	Vivid iq v206 User Manual - Norwegian	1	N
23.	5872801-1FI	Vivid iq v206 User Manual - Finnish	1	N
24.	5872801-1BG	Vivid iq v206 User Manual - Bulgarian	1	N
25.	5872801-1RO	Vivid iq v206 User Manual - Romanian	1	N
26.	5872801-1HR	Vivid iq v206 User Manual - Croatian	1	N
27.	5872801-1LT	Vivid iq v206 User Manual - Lithuanian	1	N
28.	5872801-1LV	Vivid iq v206 User Manual - Latvian	1	N
29.	5872801-1SR	Vivid iq v206 User Manual - Serbian	1	N
30.	5872801-1PT-PT	Vivid iq v206 User Manual - European Portuguese	1	N
31.	5872801-1UK	Vivid iq v206 User Manual - Ukrainian	1	N
32.	5872801-1ID	Vivid iq v206 User Manual - Indonesian	1	N
33.	5872801-1VI	Vivid iq v206 User Manual - Vietnamese	1	N
34.	5872801-1KK	Vivid iq v206 User Manual - Kazakh	1	N
35.	5872804-1EN	Vivid iq v206 Advanced Reference Manual - English	1	N
36.	5872804-1FR	Vivid iq v206 Advanced Reference Manual - French	1	N
37.	5873028-1EN	Vivid iq v206 Basic Service Manual - English	1	N
38.	5882026	Vivid iq v206 eIFU pamphlet	1	N
39.	5904461-1EN	Vivid iq v203 to v206 Upgrade Manual	1	N

Table 9-19: Manuals for Vivid *iq* v206

Item	Part Number	Description	Qty	FRU
40.	5881787-1EN	Vivid iq v204 to v206 Upgrade Manual	1	N
41.	5882015	Vivid iq v206 UDOC Media	1	N

Table 9-20: Manuals for Vivid *iq* Vet v206

Item	Part Number	Description	Qty	FRU
1.	5945134-1EN	Vivid iq Vet v206 User Manual - English	1	N
2.	5945134-1FR	Vivid iq Vet v206 User Manual - French	1	N
3.	5945134-1ES	Vivid iq Vet v206 User Manual - Spanish	1	N
4.	5945134-1DE	Vivid iq Vet v206 User Manual - German	1	N
5.	5945134-1IT	Vivid iq Vet v206 User Manual - Italian	1	N
6.	5945134-1NL	Vivid iq Vet v206 User Manual - Dutch	1	N
7.	5945134-1PT-BR	Vivid iq Vet v206 User Manual - Brazilian Portuguese	1	N
8.	5945134-1ET	Vivid iq Vet v206 User Manual - Estonian	1	N
9.	5945134-1SL	Vivid iq Vet v206 User Manual - Slovenian	1	N
10.	5945134-1JA	Vivid iq Vet v206 User Manual - Japanese	1	N
11.	5945134-1ZH-CN	Vivid iq Vet v206 User Manual - Simplified Chinese	1	N
12.	5945134-1SV	Vivid iq Vet v206 User Manual - Swedish	1	N
13.	5945134-1KO	Vivid iq Vet v206 User Manual - Korean	1	N
14.	5945134-1RU	Vivid iq Vet v206 User Manual - Russian	1	N
15.	5945134-1PL	Vivid iq Vet v206 User Manual - Polish	1	N
16.	5945134-1EL	Vivid iq Vet v206 User Manual - Greek	1	N
17.	5945134-1HU	Vivid iq Vet v206 User Manual - Hungarian	1	N
18.	5945134-1SK	Vivid iq Vet v206 User Manual - Slovakian	1	N
19.	5945134-1CZ	Vivid iq Vet v206 User Manual - Czech	1	N
20.	5945134-1TR	Vivid iq Vet v206 User Manual - Turkish	1	N
21.	5945134-1DA	Vivid iq Vet v206 User Manual - Danish	1	N
22.	5945134-1NO	Vivid iq Vet v206 User Manual - Norwegian	1	N
23.	5945134-1FI	Vivid iq Vet v206 User Manual - Finnish	1	N
24.	5945134-1BG	Vivid iq Vet v206 User Manual - Bulgarian	1	N
25.	5945134-1RO	Vivid iq Vet v206 User Manual - Romanian	1	N

Table 9-20: Manuals for Vivid *iq* Vet v206

Item	Part Number	Description	Qty	FRU
26.	5945134-1HR	Vivid iq Vet v206 User Manual - Croatian	1	N
27.	5945134-1LT	Vivid iq Vet v206 User Manual - Lithuanian	1	N
28.	5945134-1LV	Vivid iq Vet v206 User Manual - Latvian	1	N
29.	5945134-1SR	Vivid iq Vet v206 User Manual - Serbian	1	N
30.	5945134-1PT-PT	Vivid iq Vet v206 User Manual - European Portuguese	1	N
31.	5945134-1UK	Vivid iq Vet v206 User Manual - Ukrainian	1	N
32.	5945134-1ID	Vivid iq Vet v206 User Manual - Indonesian	1	N
33.	5945134-1VI	Vivid iq Vet v206 User Manual - Vietnamese	1	N
34.	5945134-1KK	Vivid iq Vet v206 User Manual - Kazakh	1	N
35.	5945134-1ZH-CW	Vivid iq Vet v206 User Manual - Traditional Chinese	1	N
36.	5945136-1EN	Vivid iq Vet v206 Advanced Reference Manual - English	1	N
37.	5945136-1FR	Vivid iq Vet v206 Advanced Reference Manual - French	1	N
38.	5945138-1EN	Vivid iq Vet v206 Basic Service Manual - English	1	N
39.	5945141	Vivid iq Vet v206 eIFU pamphlet	1	N
40.	5945139-1EN	Vivid iq Vet v204 to v206 Upgrade Instruction	1	N
41.	5945140	Vivid iq Vet v206 UDOC Media	1	N

Table 9-21: Manuals for Vivid *iq* v208

Item	Part Number	Description	Qty	FRU
1.	5936513-1EN	Vivid iq v208 User Manual - English	1	N
2.	5936513-1FR	Vivid iq v208 User Manual - French	1	N
3.	5936513-1ES	Vivid iq v208 User Manual - Spanish	1	N
4.	5936513-1DE	Vivid iq v208 User Manual - German	1	N
5.	5936513-1IT	Vivid iq v208 User Manual - Italian	1	N
6.	5936513-1NL	Vivid iq v208 User Manual - Dutch	1	N
7.	5936513-1PT-BR	Vivid iq v208 User Manual - Brazilian Portuguese	1	N
8.	5936513-1ET	Vivid iq v208 User Manual - Estonian	1	N
9.	5936513-1SL	Vivid iq v208 User Manual - Slovenian	1	N
10.	5936513-1JA	Vivid iq v208 User Manual - Japanese	1	N
11.	5936513-1SV	Vivid iq v208 User Manual - Swedish	1	N

Table 9-21: Manuals for Vivid iq v208

Item	Part Number	Description	Qty	FRU
12.	5936513-1KO	Vivid iq v208 User Manual - Korean	1	N
13.	5936513-1RU	Vivid iq v208 User Manual - Russian	1	N
14.	5936513-1PL	Vivid iq v208 User Manual - Polish	1	N
15.	5936513-1EL	Vivid iq v208 User Manual - Greek	1	N
16.	5936513-1HU	Vivid iq v208 User Manual - Hungarian	1	N
17.	5936513-1SK	Vivid iq v208 User Manual - Slovakian	1	N
18.	5936513-1CS	Vivid iq v208 User Manual - Czech	1	N
19.	5936513-1TR	Vivid iq v208 User Manual - Turkish	1	N
20.	5936513-1DA	Vivid iq v208 User Manual - Danish	1	N
21.	5936513-1NO	Vivid iq v208 User Manual - Norwegian	1	N
22.	5936513-1FI	Vivid iq v208 User Manual - Finnish	1	N
23.	5936513-1BG	Vivid iq v208 User Manual - Bulgarian	1	N
24.	5936513-1RO	Vivid iq v208 User Manual - Romanian	1	N
25.	5936513-1HR	Vivid iq v208 User Manual - Croatian	1	N
26.	5936513-1LT	Vivid iq v208 User Manual - Lithuanian	1	N
27.	5936513-1LV	Vivid iq v208 User Manual - Latvian	1	N
28.	5936513-1SR	Vivid iq v208 User Manual - Serbian	1	N
29.	5936513-1PT-PT	Vivid iq v208 User Manual - European Portuguese	1	N
30.	5936513-1UK	Vivid iq v208 User Manual - Ukrainian	1	N
31.	5936513-1ID	Vivid iq v208 User Manual - Indonesian	1	N
32.	5936513-1VI	Vivid iq v208 User Manual - Vietnamese	1	N
33.	5936513-1KK	Vivid iq v208 User Manual - Kazakh	1	N
34.	5951375-1EN	Vivid iq v208 Release Notes-English	1	N
35.	5951375-1FR	Vivid iq v208 Release Notes-French	1	N
36.	5951375-1ES	Vivid iq v208 Release Notes-Spanish	1	N
37.	5951375-1DE	Vivid iq v208 Release Notes-German	1	N
38.	5951375-1IT	Vivid iq v208 Release Notes-Italian	1	N
39.	5951375-1NL	Vivid iq v208 Release Notes-Dutch	1	N
40.	5951375-1PT-BR	Vivid iq v208 Release Notes-Brazilian Portuguese	1	N
41.	5951375-1ET	Vivid iq v208 Release Notes-Estonian	1	N

Table 9-21: Manuals for Vivid *iq* v208

Item	Part Number	Description	Qty	FRU
42.	5951375-1SL	Vivid iq v208 Release Notes-Slovenian	1	N
43.	5951375-1JA	Vivid iq v208 Release Notes-Japanese	1	N
44.	5951375-1SV	Vivid iq v208 Release Notes-Swedish	1	N
45.	5951375-1KO	Vivid iq v208 Release Notes-Korean	1	N
46.	5951375-1RU	Vivid iq v208 Release Notes-Russian	1	N
47.	5951375-1PL	Vivid iq v208 Release Notes-Polish	1	N
48.	5951375-1EL	Vivid iq v208 Release Notes-Greek	1	N
49.	5951375-1HU	Vivid iq v208 Release Notes-Hungarian	1	N
50.	5951375-1SK	Vivid iq v208 Release Notes-Slovakian	1	N
51.	5951375-1CS	Vivid iq v208 Release Notes-Czech	1	N
52.	5951375-1TR	Vivid iq v208 Release Notes-Turkish	1	N
53.	5951375-1DA	Vivid iq v208 Release Notes-Danish	1	N
54.	5951375-1NO	Vivid iq v208 Release Notes-Norwegian	1	N
55.	5951375-1FI	Vivid iq v208 Release Notes-Finnish	1	N
56.	5951375-1BG	Vivid iq v208 Release Notes-Bulgarian	1	N
57.	5951375-1RO	Vivid iq v208 Release Notes-Romanian	1	N
58.	5951375-1HR	Vivid iq v208 Release Notes-Croatian	1	N
59.	5951375-1LT	Vivid iq v208 Release Notes-Lithuanian	1	N
60.	5951375-1LV	Vivid iq v208 Release Notes-Latvian	1	N
61.	5951375-1SR	Vivid iq v208 Release Notes-Serbian	1	N
62.	5951375-1PT-PT	Vivid iq v208 Release Notes-European Portuguese	1	N
63.	5951375-1UK	Vivid iq v208 Release Notes-Ukrainian	1	N
64.	5951375-1ID	Vivid iq v208 Release Notes-Indonesian	1	N
65.	5951375-1VI	Vivid iq v208 Release Notes-Vietnamese	1	N
66.	5951375-1KK	Vivid iq v208 Release Notes-Kazakh	1	N
67.	5951376-1EN	Vivid iq v208 Advanced Reference Manual - English	1	N
68.	5951376-1FR	Vivid iq v208 Advanced Reference Manual - French	1	N
69.	5951381-1EN	Vivid iq v208 Basic Service Manual - English	1	N
70.	5951382	Vivid iq v208 eIFU pamphlet	1	N
71.	5951430-1EN	Vivid iq v206 to v208 Upgrade Instruction	1	N

Table 9-21: Manuals for Vivid *iq* v208

Item	Part Number	Description	Qty	FRU
72.	5951383	Vivid iq v208 UDOC Media	1	N

Table 9-22: Manuals for Vivid *iq* Vet v208

Item	Part Number	Description	Qty	FRU
1.	5953495-1EN	Vivid iq Vet v208 User Manual - English	1	N
2.	5953495-1CS	Vivid iq Vet v208 User Manual - Czech	1	N
3.	5953495-1DA	Vivid iq Vet v208 User Manual - Danish	1	N
4.	5953495-1DE	Vivid iq Vet v208 User Manual - German	1	N
5.	5953495-1EL	Vivid iq Vet v208 User Manual - Greek	1	N
6.	5953495-1ES	Vivid iq Vet v208 User Manual - Spanish	1	N
7.	5953495-1FR	Vivid iq Vet v208 User Manual - French	1	N
8.	5953495-1IT	Vivid iq Vet v208 User Manual - Italian	1	N
9.	5953495-1KO	Vivid iq Vet v208 User Manual - Korean	1	N
10.	5953495-1NL	Vivid iq Vet v208 User Manual - Dutch	1	N
11.	5953495-1PL	Vivid iq Vet v208 User Manual - Polish	1	N
12.	5953495-1PT-PT	Vivid iq Vet v208 User Manual - European Portuguese	1	N
13.	5953495-1SK	Vivid iq Vet v208 User Manual - Slovakian	1	N
14.	5953495-1SV	Vivid iq Vet v208 User Manual - Swedish	1	N
15.	5953495-1ZH-CN	Vivid iq Vet v208 User Manual - Simplified Chinese	1	N
16.	5959489-1EN	Vivid iq Vet v208 Release Notes-English	1	N
17.	5959489-1CS	Vivid iq Vet v208 Release Notes-Czech	1	N
18.	5959489-1DA	Vivid iq Vet v208 Release Notes-Danish	1	N
19.	5959489-1DE	Vivid iq Vet v208 Release Notes-German	1	N
20.	5959489-1EL	Vivid iq Vet v208 Release Notes-Greek	1	N
21.	5959489-1ES	Vivid iq Vet v208 Release Notes-Spanish	1	N
22.	5959489-1FR	Vivid iq Vet v208 Release Notes-French	1	N
23.	5959489-1IT	Vivid iq Vet v208 Release Notes-Italian	1	N
24.	5959489-1KO	Vivid iq Vet v208 Release Notes-Korean	1	N
25.	5959489-1NL	Vivid iq Vet v208 Release Notes-Dutch	1	N
26.	5959489-1PL	Vivid iq Vet v208 Release Notes-Polish	1	N

Table 9-22: Manuals for Vivid *iq* Vet v208

Item	Part Number	Description	Qty	FRU
27.	5959489-1PT-PT	Vivid <i>iq</i> Vet v208 Release Notes-European Portuguese	1	N
28.	5959489-1SK	Vivid <i>iq</i> Vet v208 Release Notes-Slovakian	1	N
29.	5959489-1SV	Vivid <i>iq</i> Vet v208 Release Notes-Swedish	1	N
30.	5959489-1ZH-CN	Vivid <i>iq</i> Vet v208 Release Notes-Simplified Chinese	1	N
31.	5954682-1EN	Vivid <i>iq</i> Vet v208 Advanced Reference Manual - English	1	N
32.	5954682-1FR	Vivid <i>iq</i> Vet v208 Advanced Reference Manual - French	1	N
33.	5954721-1EN	Vivid <i>iq</i> Vet v208 Basic Service Manual - English	1	N
34.	5954722	Vivid <i>iq</i> Vet v208 eIFU pamphlet	1	N
35.	5953424-1EN	Vivid <i>iq</i> Vet v206 to Vet v208 Upgrade Instruction	1	N
36.	5954723	Vivid <i>iq</i> Vet v208 UDOC Media	1	N

Cart

Renewal Parts

Contents in This Section

- [‘Introduction’ on page 9-40](#)
- [‘Cart Power Cord’ on page 9-40](#)
- [‘Generic Cart’ on page 9-41](#)
- [‘Standard & Premium Cart’ on page 9-45](#)

Introduction

This chapter lists the renewal parts available for Cart.

Cart Power Cord

Cart uses the same power cord as the ultrasound console system and please refer to [‘AC Power Cord’ on page 9-4](#) for detailed information.

Generic Cart

Table 9-23: FRU List for Generic Cart (for Vivid iq R1~R6)

Item	Part Number	Description	Corresponding graphic	RP
1.	5720881-S	SAGE Cart lower table SVC Kit		RP
2.	5720864-S	Cart Top Table Main Body SVC Kit For System Serial number from 5720863 S1631001 to 5720863 S1649001 Use 5720864-2 + 5748242-2 to replace 5720864		RP
	5720864-2	Cart Top Table Main Body SVC Kit For System Serial number is not between 5720863 S1631001 and 5720863 S1649001		
3.	5620723-S	SAGE Cart USBHUB SVC kit		RP
4.	5721764-S	SAGE Cart Upper Column Back Cover SVC Kit		RP

Table 9-23: FRU List for Generic Cart (for Vivid iq R1~R6)

Item	Part Number	Description	Corresponding graphic	RP
5.	5721736-S	SAGE Cart upper column front cover with logo SVC kit		RP
6.	5721753-S	SAGE Cart lower column front cover SVC Kit		RP
7.	5721763-S	SAGE Cart lower column back cover SVC Kit		RP
8.	5748238	Side Cover Kit For System Serial number is between 5720863 S1631001 and 5720863 S1652024 Use 5748238-2 to replace 5748238		RP
9.	5748238-2	Upper column left cover For System Serial number is not between 5720863 S1631001 and 5720863 S1652024		RP
10.	5721725-S	SAGE Cart Gas Spring SVC Kit		RP
11.	5719211-S	Sage cart Power Box DC Output Connector Kit		RP

Table 9-23: FRU List for Generic Cart (for Vivid iq R1~R6)

Item	Part Number	Description	Corresponding graphic	RP
12.	5719207-S	SAGE cart Power Box Circuit Breaker kit		RP
13.	5748243	SAGE Cart 4PP Probe Management Tool Kit		
14.	5748230	Sage cart Screw SVC Kit		
15.	5748490	Sage LOGO Kit		
16.	5748242-2	Sage Cart AC and DC Spring Cable SVC Kit		RP
17.	5720867-S	SAGE Cart Tabletop Cover with Lock SVC Kit		

Table 9-23: FRU List for Generic Cart (for Vivid iq R1~R6)

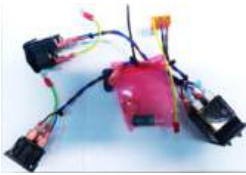
Item	Part Number	Description	Corresponding graphic	RP
18.	5863054-S	Sage 4pp release knob SVC kit		RP
19.	5719211-S	Sage cart Power Box DC Output Connector Kit		RP
20.	5719207-S	SAGE cart Power Box Circuit Breaker kit		RP
21.	5790989-S	Cable clip SVC kit for Power code		RP
22.	5809956-S	Black pull out protection for power cord <i>Note:</i> 5809956-S is latest version and much stronger than 5790989-S, please order 5809956-S for service activities.		
23.	5748246	SAGE Cart Steering Castor 1 pcs Kit		RP

Table 9-23: FRU List for Generic Cart (for Vivid iq R1~R6)

Item	Part Number	Description	Corresponding graphic	RP
24.	5748247	SAGE Cart Castor 1 pcs Kit		RP

Standard & Premium Cart

Table 9-24: FRU List for Standard & Premium Cart (for Vivid iq R6 and R8))

Item	Part Number	Part Name	Corresponding graphic	RP
1.	5954866-S	Vivid iq Cart table top with lock assy SVC kit		RP
2.	5954867-S	Vivid iq Premium Cart front handle assy SVC kit		RP
3.	5955827-S	Vivid iq standard cart front handle assy SVC kit		RP
4.	5953164-S	Vivid iq Cart column hook SVC kit		RP

Table 9-24: FRU List for Standard & Premium Cart (for Vivid iq R6 and R8))

Item	Part Number	Part Name	Corresponding graphic	RP
5.	5954876	Vivid iq Premium Cart Probe holder SVC kit		RP
6.	5955766	Vivid iq standard Cart cable hook SVC kit		RP
7.	5947499-S	Vivid iq Premium Cart Power Box Assy SVC kit		RP
8.	5938974-S	LOGIQ e R9 Cart AC Inlet with 10A Fuse <i>Note: Only use this fuse for replacement, do not use other parts in this kit for safety protection reasons.</i>		RP

Table 9-24: FRU List for Standard & Premium Cart (for Vivid iq R6 and R8))

Item	Part Number	Part Name	Corresponding graphic	RP
9.	5620723-S	SAGE Cart USBHUB SVC kit		RP
10.	5955299-S	Vivid iq cart castor SVC kit		RP

CRU List

Table 9-25: CRU List for Generic Cart

Item	Part Number	Part Name	Corresponding graphic	RP
1.	5748237	Rubber and Cups		RP
2.	5748236	Cart Cable Hook SVC Kit		RP
3.	5721308	Charge Box Note:When replacing a new charge box, please record the serial number of this new charge box in SR record for further track.		RP
4.	5721299-S	Power Box Assy		RP

Table 9-25: CRU List for Generic Cart

Item	Part Number	Part Name	Corresponding graphic	RP
5.	5721368-S	Cart Front basket SVC Kit		
6.	5721363-S	Cart Back basket SVC Kit		
7.	5721296-S	Cart base basket SVC Kit		
8.	5748241	SAGE Cart Power Box Filter SVC Kit		
9.	5721342 -2-S	Vivid iq Cart 4PP Assy		
10.	5721453	Cart Printer Shelf Assy Note:installed in generic cart and support 5653589 LITEON eBAU108 DVDRW kit		

Table 9-25: CRU List for Generic Cart

Item	Part Number	Part Name	Corresponding graphic	RP
11.	5946770-S	Printer shelf with package kit for Vivid iq Note: installed in generic cart and support 5449275-4 Transcend DVDRW kit and 5653589 LITEON eBAN 108 DVDRW kit		

Table 9-26: CRU List for Standard & Premium Cart

Item	Part Number	Part Name	Corresponding graphic	RP
1.	5941039-S	Vivid iq Premium Cart Assy_CRU <i>Note: Before replacing 5941039-S, first remove the option parts from the cart, then install these option parts back after replacing 5941039-S. Specific option parts are listed here for reference:</i> • Charge box with 4 battery packs • 4-probe Box and bracket • DVD/Printer shelf for DC/AC 898 • Rubbers and Cups • Column hook • Cable hook • WIFI Bracket		
2.	5941037-S	Vivid iq Standard Cart Assy_CRU <i>Note: Before replacing 5941037-S, first remove the option parts from the cart, then install these option parts back after replacing 5941037-S. Specific option parts are listed here for reference:</i> • Charge box with 4 battery packs • 4-probe Box • DVD/Printer shelf for DC/AC 898 • Rubbers and Cups • Column hook • Cable hook • WIFI Bracket		

Table 9-26: CRU List for Standard & Premium Cart

Item	Part Number	Part Name	Corresponding graphic	RP
3.	5954874	Vivid iq Cart Rubber and Cups Kit_CRU		RP
4.	5951369-S	Vivid iq Cart back basket_CRU		RP
5.	5954737-S	Vivid iq Cart Front Basket assy_CRU		RP
6.	5947849-S	Vivid iq Standard/Premium Charge Box Assy_CRU <i>Note: the new battery UI apply for SW 206.94.0 and above.</i>		RP

Table 9-26: CRU List for Standard & Premium Cart

Item	Part Number	Part Name	Corresponding graphic	RP
7.	5936564-S	LOGIQ e R9 Cart Printer & Printer Shelf_CRU Note: installed in standard & premium cart and support 5449275-4 Transcend DVDRW kit.		RP
8.	5947852-S	Vivid iq Cart WIFI Bracket assy SVC kit		RP
9.	5945123-S	LOGIQ e R9 Battery Pack_CRU <i>Note: the new battery UI apply for SW 206.94.0 and above.</i>		RP

Table 9-26: CRU List for Standard & Premium Cart

Item	Part Number	Part Name	Corresponding graphic	RP
10.	5947732-S	Vivid iq cart 4PP SVC Kit		RP
11.	5947738-S	4PP bracket with rear handle SVC Kit		RP
12.	5974261-S	Ergonomic P2D Probe Holder		RP

Chapter 10

Care and Maintenance

*This chapter describes **Care and Maintenance** on the Ultrasound system and peripherals. These procedures are intended to **maintain the quality** of the Ultrasound **system's performance**. Read this chapter completely and familiarize yourself with the procedures before performing a task.*

Overview

Contents in this chapter

- 'Overview' on *page 10-2*
- 'Warnings' on *page 10-3*
- 'Why do maintenance' on *page 10-4*
- 'Maintenance task schedule' on *page 10-6*
- 'Tools required' on *page 10-8*
- 'System maintenance' on *page 10-12*
- 'Electrical safety tests' on *page 10-24*
- 'When there's too much leakage current ...' on *page 10-36*
- 'Inspection Paperwork' on *page 10-38*
- 'Electrical Safety Tests Log' on *page 10-40*

Warnings



DANGER

BE SURE TO DISCONNECT THE ULTRASOUND SYSTEM POWER PLUG AND OPEN THE MAIN CIRCUIT BREAKER BEFORE YOU REMOVE ANY PARTS. BE CAUTIOUS WHENEVER POWER IS STILL ON AND COVERS ARE REMOVED.



WARNING

If the procedure of performing maintenance or replacing parts on the system is wrong, it could result in an unacceptable risk for the patient, user or service technician.



CAUTION

Practice good ESD prevention. Wear an anti-static strap when handling electronic parts and even when disconnecting/connecting cables.



CAUTION

Do not pull out or insert circuit boards while power is on.



CAUTION

Do not operate this Ultrasound system unless all board covers and frame panels are securely in place. System performance and cooling require this.

Why do maintenance

Periodic maintenance inspections

It has been determined by engineering that your Vivid *iq* does not have any high wear components that fail with use, therefore no Periodic Maintenance inspections are mandatory.

However, some customers' Quality Assurance Programs may require additional tasks and or inspections at a different frequency than listed in this manual.

Keeping records

It is good business practice that ultrasound facilities maintain records of periodic and corrective maintenance. The Ultrasound Periodic Maintenance Inspection Certificate provides the customer with documentation that the Ultrasound system is maintained on a periodic basis.

A copy of the *Ultrasound Periodic Maintenance Inspection Certificate* should be kept in the same room or near the Ultrasound system.

Quality assurance

In order to gain accreditation from organizations such as the American College of Radiology (USA), it is the customer's responsibility to have a quality assurance program in place for each Ultrasound system. The program must be directed by a medical physicist, the supervising radiologist/physician or appropriate designee.

Routine quality control testing must occur regularly. The same tests are performed during each period so that changes can be monitored over time and effective corrective action can be taken.

Testing results, corrective action and the effects of corrective action must be documented and maintained on the site.

Your GE service representative can help you with establishing, performing and maintaining records for a quality assurance program. Contact GE for coverage and/or price for service.

Maintenance task schedule

How often should maintenance tasks be performed?

The Care and Maintenance task schedule (provided in [Table 10-1 on page 10-6](#)) specifies how often your Vivid iq should be serviced and outlines items requiring special attention.

NOTE: *It is the customer’s responsibility to ensure the Vivid iq care and maintenance is performed as scheduled in order to retain its high level of safety, dependability and performance.*

Your GE Service Representative has an in-depth knowledge of your Vivid iq and can best provide competent, efficient service. Contact GE for coverage information and/or price for service.

The service procedures and recommended intervals shown in the Care and Maintenance Task Schedule assumes that you use your Vivid iq for an average patient load (10-12 per day) and not use it as a primary mobile Ultrasound system which is transported between diagnostic facilities.

NOTE: *If conditions exist which exceed typical usage and patient load, then it is recommended to increase the periodic maintenance frequencies.*

Table 10-1: Customer Care Schedule

Service at Indicated Time	Daily	Weekly	Monthly	Per Facilities QA Program	Notes
Clean Probes	•*				* or before each use
Inspect AC Mains Cable			•		Mobile Ultrasound system: Check Weekly
Inspect Cables and Connectors			•		
Clean Console			•		
Clean LCD			•		

Table 10-1: Customer Care Schedule (Continued)

Service at Indicated Time	Daily	Weekly	Monthly	Per Facilities QA Program	Notes
Console Leakage Current Checks				See Notes	Twice Annually
Peripheral Leakage Current Checks				See Notes	Twice Annually
Surface Probe Leakage Current Checks				See Notes	Twice Annually
Endocavity Probe Leakage Current Checks				See Notes	Quarterly Annually
Surgical Probe Leakage Current Checks				See Notes	Quarterly Annually
Measurement Accuracy Checks				See Notes	Twice Annually
Functional Checks				See Notes	also after corrective maintenance

NOTE: *The maintenance may require specialized equipment to complete.*

NOTE: *The periodic maintenances are not mandatory. The table above is for reference only.*

Tools required

NOTE: For a list of required tools for servicing the Vivid iq, refer to chapter 8.

Standard GE tool kit

The following is a description of the “Standard” GE tool kit in the USA. Not all tools are required.

Table 10-2: Overview of GE-1 tool kit contents

Tool ID	Description	Tool ID	Description
9-45358	Pliers Retaining Ring	9-XL9971MM	Xcelite-hex Blade 1.27mm
9-4078	Scribe	9-XL9972MM	Xcelite-hex Blade 1.5mm
9-44572	Wrench Open End 3/8 - 7/16	9-XL9973MM	Xcelite-hex Blade 2 mm
9-44579	Wrench Open End 1/2 - 9/16	9-XL9974MM	Xcelite-hex Blade 2.5mm
9-44579	Wrench Open End 1/2 - 9/16	9-XL9975MM	Xcelite-hex Blade 3mm
9-45385	Pliers, Arc Joint 7 inch	9-XL9976MM	Xcelite-hex Blade 4mm
9-45378	Pliers, Slip Joint	9-XL9977MM	Xcelite-hex Blade 5mm
9-4518	Pliers, Long Nose, Miniature	9-XL991CM	Handle
9-4518	Pliers, Long Nose, Miniature	C2356E	Screw starter - Kedman Quick Wedge
9-44776	Ignition Wrench Set, 10 pc.	BLBO	Box - 18 Compartment
9-44601	Wrench, Adj., 4 inch	DWL4283T	Box - 5 Compartment
9-4151	Screwdriver, Blade, Stubby	9-41322	Pickup Tool, Claw type
9-41421	Screwdriver, Blade, Pocket clip	9-6757	6 pc Needle File Set
9-41594	Screwdriver, Blade 1/8 in. × 4 in.	9-9487	Utility Knife
9-41581	Screwdriver, Blade 3/16 in. × 4 in.	9-45341	Pliers Vice Grip 10 inch
9-39451	20' Steel Tape, locking Spring load	9-3001	Xacto Pen Knife

Table 10-2: Overview of GE-1 tool kit contents (Continued)

Tool ID	Description	Tool ID	Description
9-GH807	Ratchet, Offset, Slotted	9-HT62002	Solder Aid, Fork and Hook
68-412	Ratchet, Offset, Phillips	9-4099	Mirror, Round, Telescoping
9-GH130	Tapered Reamer	9-GH3001	Steel Rule Decimal 6 inch
9-41584	Screwdriver, slotted 1/4 in. × 6 in.	9-GH300ME	Steel Rule Metric 6 inch
9-4118	Screwdriver, Phillips #2, Stubby	9-XL9920	Xcelite-hex Blade .050 inch
9-41293	Screwdriver, Phillips #0	9-XL9921	Xcelite-hex Blade 1/16 inch
9-41294	Screwdriver, Phillips #1	9-XL9922	Xcelite-hex Blade 5/16 inch
9-41295	Screwdriver, Phillips #2	9-XL9923	Xcelite-hex Blade 3/32 inch
9-46677	Hex Keys, 20 pc., Metric	9-XL9924	Xcelite-hex Blade 1/8 inch
9-34701	1/4 in. Standard Socket set (19 pc)	9-XL9925	Xcelite-hex Blade 5/32 inch
9-43499	1/2 inch Socket 1/4 inch drive	9-XL9926	Xcelite-hex Blade 3/16 inch
9-4355	Flex Spinner	9-XL99764	Xcelite-hex Blade 7/64
9-43523	Breaker	9-XL99964	Xcelite-hex Blade 9/64
9-43531	6 inch Ext.	9-XLM60	Mini-screwdriver kit
9-65283	Case 8.5 in. × 4.5 in. × 2 in. Deep	9-45072	Pliers 6 inch Diagonal
9-46696	Hex Keys	9-XL100X	Wire Stripper/Cutter 5 inch - 100X
9-39829	Torpedo Level, Magnetic	9-XL87CG	Pliers - very fine needle nose-87CG
9-38461	Hammer, Ball Peen, 4 oz.	9-WEWDT-07	Weller-Soldering-Replacement Tip(1)
9-4280	Universal Joint 1/4 inch	9-WS175-E	Wiss - Surgical Scissors
9-WEW60P3	Weller - Soldering Iron, 3 wire	KH174	Hemostat 5 inch Straight
9-WECT5B6	Weller - Soldering Iron Tip	KH175	Hemostat 5 inch curved
9-WEWDP12	Weller - Desoldering Pump	9-Z9480121	Alignment tool (red)
93383	Flashlight Mini-Mag Lite (AAA Bat.)		
9-GH408	Tweezers		
21576	Brush - Bristle		

Table 10-2: Overview of GE-1 tool kit contents (Continued)

Tool ID	Description	Tool ID	Description
9-4516	Pliers 4 1/4 inch Diagonal		

GE-2 tool kit

Table 10-3: Overview of GE-2 tool kit contents

GE-2 Sears Kit (#99034)			
Tool ID	Description	Tool ID	Description
9-45381	Pliers, Arc Joint 9 1/2 inch	9-44067	Socket 1 1/16 in. for 1/2 in. drive
9-45092	Pliers, Linesman 8 1/2 inch	9-42679	Socket 10MM Hex for 1/2 in. drive (2273333)
9-42882	Punch, Pin 3/32 inch	9-44262	Extension 10 inch for 1/2 in. drive (2273405)
9-42884	Punch, Pin 5/32 inch	9-4258	3/8 inch to 1/2 inch Adapter
9-42886	Punch, Pin 1/4 inch	9-34374	3/8 inch Metric Socket Set - 12 PT
9-42973	Cold Chisel 1/2 inch	9-44311	16mm Socket 12 pt.
9-GH77	Center Punch Automatic	9-33485	Metal Socket Tray
9-GH890	File Handle, Adj.	9-33484	Metal Socket Tray
9-31276	File, Round, Bastard 8 inch	9-33484	Metal Socket Tray
9-31277	File, Half Round, Bastard 8 inch	9-52068	Tap and Drill Set
9-31263	File, Flat Mill 8 inch	9-52722	#6 Tap
21045C	Close Quarter Saw	9-52723	#8 Tap
9-44604	Wrench, Adj. 10 inch		High Speed Drill Set
9-41587	Screwdriver 5/16 inch × 8 inch		#36 Drill
9-41586	Screwdriver, Stubby 5/16 inch		#29 Drill
9-GH19512	Countersink 1/2 inch	9-44046	3/8 inch Socket Set
9-44741	12 PC Combination Wrench Set		

Special tools, supplies and equipment used for maintenance

NOTE: *Electrical leakage testing may be accomplished with any calibrated electrical safety analyzer tool compliant with AAMI/ ESI 1993 or IEC 60601 or AS/NZS 3551 or IEC 62353 or other relevant national regulation.*

Table 10-4: Overview of tool requirements for periodic maintenance

Tool / kit	Comments
Safety Analyzer	
B/W Printer Cleaning Sheet	See printer user manual for requirements
Color Printer Cleaning Sheet	See printer user manual for requirements
Disposable Gloves	

System maintenance

Preliminary checks

The preliminary checks take about 15 minutes to perform. Refer to the Ultrasound system user documentation whenever necessary.

Table 10-5: System preliminary checks

Step	Item	Description
1.	Ask and Listen	Ask the customer if they have any problems or questions about the equipment.
2.	Paperwork	Fill in the top of Ultrasound Inspection Certificate (see Figure 10-5 on page 10-38). Record all probes and Ultrasound system options.
3.	Power up	• Turn the Ultrasound system power on and verify that all fans and peripherals turn on. • Watch the displays during power up to verify that no warning or error messages are displayed. • Where applicable, confirm that the battery is charged. If no AC Input present, use the internal battery.
4.	Probes	Verify that the Ultrasound system properly recognizes all probes.
5.	Displays	Verify proper display on the monitor.
6.	InSite	Where applicable, for Warranty and Contract Customers only: • Verify that InSite is functioning properly. • Ensure two-way remote communications.
7.	Review Error Logs	Where applicable, Error Logs can be reviewed via system diagnostics.
8.	Diagnostics	Optional.
9.	Presets	Backup all Customer Presets to an appropriate media.
10.	Image Archive	Back up the Image Archive onto appropriate media.

Functional checks

NOTE: See also Chapter 4

The functional checks take about 60 minutes to perform. Refer to the Ultrasound system user documentation whenever necessary.

System checks

Table 10-6: System functional checks

Step	Item	Description
1.	B-Mode	Verify basic B-Mode (2D) operation. Check the basic Ultrasound system controls that affect this mode of operation.
2.	CF-Mode	Verify basic CF-Mode (Color Flow Mode) operation. Check the basic Ultrasound system controls that affect this mode of operation.
3.	Doppler Modes	Verify basic Doppler operation (PW and CW if available). Check the basic Ultrasound system controls that affect this mode of operation.
4.	M-Mode	Verify basic M-Mode operation. Check the basic Ultrasound system controls that affect this mode of operation.
5.	Probe Elements	Perform an Element Test on each probe to verify that all the probe elements and system channels are functional.
6.	Applicable Software Options	Verify the basic operation of all optional modes such as Contrast. Check the basic Ultrasound system controls that affect each options operation.
7.	Xmit/Recv Elements	Use the Visual Channel Utility on the loop connect to verify that all system xmit/recv channels are functional.
8.	Operator Panel test	Perform the Operator Panel Test Procedure.
9.	Keyboard	Do the interactive keyboard test.
10.	LCD	Verify basic LCD display functions. Refer to Chapter 3 of the User Manual.
11.	Software Menu check	Verify Software Menu display functions. Refer to Chapter 3 of the User Manual.
12.	Peripherals	See: 'Peripheral checks' on page 4-50.
13.	Measurements	In measurement mode, make distance measurement, get result in result window. Verify the distance by graduate rule. Distance Accuracy should be within $\pm 5\%$. (Name result from result window Result A, result from graduate rule Result B; Distance Accuracy = (Result B-Result A)/Result A)

Peripheral/option checks

If any peripherals or options are not part of the system configuration, the check can be omitted.

Refer to the User Manual for a list of approved peripherals/options.

Table 10-7: GE approved peripheral/hardware option functional checks

Step	Item	Description
1.	Media	Verify media drive(s) read/write properly. Clean if necessary.
2.	B/W Printer	Verify hardcopy output of the B/W video page printer. Clean heads and covers if necessary.
3.	Color Printer	Verify hardcopy output of the Color video page printer. Clean heads and covers if necessary.
4.	DICOM	Verify that DICOM is functioning properly. Send an image to a DICOM device.
5.	ECG	Verify basic operation with customer
6.	Footswitch	Verify that the footswitch is functioning as programmed. Clean as necessary.
7.	DVD	Verify that the DVD is functioning properly. Clean heads and covers if necessary.

Mains cable inspection

Table 10-8: Mains Cable Inspection, As Appropriate

Step	Item	Description
1.	Unplug Cord	Disconnect the mains cable from the wall and Ultrasound system.
2.	Inspect	Inspect it and its connectors for damage of any kinds.
3.	Verify	Verify that the LINE, NEUTRAL and GROUND wires are properly attached to the terminals, and that no strands may cause a short circuit.

Cleaning the unit



WARNING

To avoid electrical shock, before cleaning, disconnect the system from the power supply and remove all the peripherals from the system.

Frequent and diligent cleaning of the Vivid *iq* ultrasound unit reduces the risk of spreading infection from person to person, and also helps to maintain a clean working environment.

The ultrasound unit requires regular care and maintenance to function safely and properly. The system requires weekly maintenance.



CAUTION

After cleaning, please inspect the system including functionality by live scan. If any defects are observed or malfunctions occur, do not operate the equipment but inform a qualified service person. Contact a Service Representative for information.

Cleaning the unit(continued)



CAUTION

When performing cleaning procedures, to prevent the risk of system damage, always observe the following precautions:

- Use only cleaning materials and solutions as recommended in the procedures described below.
- Do not spray any liquid directly onto the Vivid *iq* covers, LCD Display or control panel. In case of an accidental spill, please wipe immediately and clean the surface and around keys.
- Do not allow any liquid to drip or seep into the system.
- Use only recommended cleaners or disinfectants on system surfaces. Immersion-type disinfectants are not approved for use on system surfaces.
- DO NOT scratch or press on the panel with any sharp objects, such as pencils or pens, as this may result in damage to the panel.
- Prior to cleaning, turn OFF power to the system and disconnect the mains cable. Remove all the peripherals from the system.
- Do not clean any ports of the system, such as USB ports, ECG connector port, probe ports, Ethernet Network port, HDMI port, etc.

Appropriate cleaning agents

For general cleaning of the system, we recommend to use non-abrasive soap and water solution.

No.	Cleaning agent	Manufacturer	Type
1	Cidex OPA	Advanced Sterilization Products	Solution
2	PDI Sani-Cloth Plus Germicidal Disposable Cloth (low Alcohol)	PDI Healthcare	Wipe
3	PDI Super Sani-Cloth Plus Germicidal Disposable Cloth (high Alcohol)	PDI Healthcare	Wipe
4	PDI Sani-Cloth HB (Germicidal, Alcohol free)	PDI Healthcare	Wipe
5	Sporicidin (Phenol)	Sporicidin International	Solution
6	DisCide - Recommended for clarity (63% ISOPROPYL)	Palmero healthcare	Solution
7	Asepti-Wipe II	ECOLAB INC	Wipe
8	Cavicide Surface Cleaner/Disinfectant	Metrex Research, Inc.	Solution
9	Clorox Disinfecting Wipes	Clorox	Wipe
10	Metrex Caviwipes	Metrex Research, Inc.	Wipe
11	PI-Spray Antibacterial Solution	Pharmaceutical Innovations Inc.	Spray
12	PI-Spray II Antibacterial Solution	Pharmaceutical Innovations Inc.	Spray
13	Sekusept	ECOLAB INC.	Solution
14	Revital-ox RESERT	STERIS	Solution
15	Tristel trio wipes	Tristel	Wipe
16	70% isopropyl alcohol		Solution

Cleaning procedures

Prior to cleaning any part of the system:

Turn off the system power, disconnect the power cord and all the peripherals.

Cleaning procedure with solution

1. Moisten a soft, non-abrasive folded cloth with a mild, general purpose solution. The cloth should be damp, not dripping wet.
2. Wipe the location where you want to clean. Do not spray any liquid directly onto the system. In case of an accidental spill, please wipe immediately and clean the surface and around keys.
3. Wipe off excess cleaning agents.
4. If necessary, stubborn stains can be removed by moistening part of a cloth with water that does not contain impurities. Do not let any liquid drip into the system.

Be sure to dry the system before closing the cover.

Cleaning procedure with spray

1. Make sure to sprinkle the spray onto a soft, non-abrasive folded cloth. The cloth should be damp, not dripping wet. Do not sprinkle the spray directly onto the system.
2. Repeat the steps 2 - 4 in '[Cleaning procedure with solution](#)' on [page 10-18](#) to clean the system.

Cleaning procedure with wipe

1. Open the package and take out the wipe.
2. Repeat the steps 2 - 4 in '[Cleaning procedure with solution](#)' on [page 10-18](#) to clean the system.

To clean the physical keys and power button

NOTE: *Diligent cleaning of the physical keys and button will reduce the risk of spreading infection from person to person, and also helps to maintain a clean working environment.*

1. Use a cotton swab to clean around the physical keys. Use a toothpick to remove solids between the physical key and the cabinet surface.

When cleaning the operator control panel, make sure not to spill or spray any liquid on the physical keys, into the system cabinet, or in the probe connection receptacle. In case of an accidental spill, please wipe immediately and clean the surface and around keys.

2. In the event that disinfection is required or any stubborn stains remain, absorb a small quantity of isopropyl rubbing alcohol on a soft, dust-free cloth. Wipe the surface of the console. Please ensure that no residue of liquid drips or remains on the keys to ensure proper cleaning and function. Allow to dry.

Physical inspection

NOTE: *These features may not be present on all Ultrasound systems.*

Table 10-9: Physical checks

Step	Item	Description
1.	Labeling	Verify that all Ultrasound system labeling is present and in readable condition.
2.	Scratches & Dents	Inspect the exterior for dents, scratches or cracks. .
3.	Input Power	Refer to: 'Mains cable inspection' on page 10-14.
4.	Cables & Connectors	Check all internal cable harnesses and connectors for wear and secure connector seating. Pay special attention to footswitch assembly and probe strain or bend reliefs.
5.	Shielding & Covers	Check to ensure that all EMI shielding, internal covers, air flow panels and screws are in place. Missing covers and hardware could cause EMI/RFI problems while scanning.
6.	Control Panel	Inspect keyboard and control panel. Note any damaged or missing items.
7.	Control Panel Lighting	Check for proper operation of all operator panel and Freeze Key light.

Table 10-9: Physical checks (Continued)

Step	Item	Description
8.	LCD	Inspect the LCD Display for scratches and bad pixels. Verify proper operation of Contrast and Brightness controls. Where applicable, confirm that the LCD arm allows: • swivelling the screen to the left and to the right • folding the screen to the locked position • release and adjustment backwards and forwards • can be adjusted in the up/down positions. Note: LCD Arm movement may vary and is not applicable to all Ultrasound systems.
9.	External I/O	Check all connectors for damage.
10.	Power and System Status Indicators	Check for proper operation of all Power and System Status Indicators.
11.	Battery	Where applicable, check that the battery is not damaged, does not leak, does not emit an odor, and is not deformed or discolored. Observe all warnings and cautions for battery handling, recharging, storing, and/or disposal.

Optional Diagnostic Checks

Optionally you can access the diagnostic software as described in Chapter 5 or 7. View the error logs and run desired diagnostics.

View the Log

1. Review the system error log for any problems.
2. Check the temperature log to see if there are any trends that could cause problems in the future.
3. Check the Configuration Log; update if needed.

Probe maintenance

Probe related checks

Table 10-10: System preliminary checks

Step	Item	Description
1.	Probe Holder	Clean probe holders. (they may need to be soaked to remove excess gel).
2.	Probes	Thoroughly check the Ultrasound system probe connectors and remove dust from inside the connector sockets if necessary. Visually check for bent, damaged or missing pins.
3.	Probes	Verify that the Ultrasound system properly recognizes all probes.

Basic probe care

The Ultrasound system user manuals and various probe handling cards provide a complete description of probe care, maintenance, cleaning and disinfection. Ensure that you are completely familiar with the proper care of GE probes.

Ultrasound probes can be easily damaged by improper handling. See the User Manual and probe care cards for more details. Failure to follow these precautions can result in serious injury and equipment damage. Failure to properly handle or maintain a probe may also void its warranty.

Any evidence of wear indicates the probe cannot be used.

Do a visual check of the probe pins and Ultrasound system sockets before plugging in a probe.

The Interoperative probes often have special considerations and individual probe user manuals. For Interoperative probes also refer to their separate user manuals.

Basic probe cleaning

Refer to the User's Manual for details on probe cleaning.



To help protect yourself from blood borne diseases, wear approved disposable gloves. These are made of nitrile derived from vegetable starch to prevent allergic latex reactions.



Failure to follow the prescribed cleaning or disinfection procedures will void the probe's warranty.

DO NOT soak or wipe the lens with any product not listed in the User Manual. Doing so could result in irreparable damage to the probe.

Follow care instructions that came with the probe.



Disinfect a defective probe before you return it. Be sure to tag the probe as being disinfected.

Battery Replacement and Disposition

Battery replacement every three years is recommended.

Contact a local Service Representative for the replacement of the battery. Used batteries will be discarded appropriately by GE.

NOTE: Disposing of the battery should meet local law and regulatory requirements.

NOTE: Dispose of the system according to local law and regulatory requirements.

Electrical safety tests

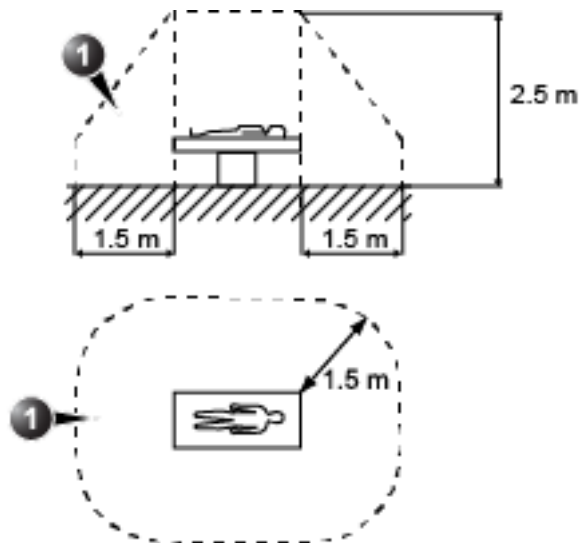
Overview

NOTE: For all instructions in the “Electrical safety tests” section in case of using a UPS (uninterruptible power supply) the terms outlet, wall outlet, AC wall outlet and power outlet refer to the AC power outlet of the UPS. In case of further available AC (or DC) power outlets at the same used UPS, these must remain unused i.e. not connected to any other devices.



CAUTION

Please observe that some Uninterruptible Power Supplies (UPS) may not be medical devices! If the UPS is no medical device, it has to be located outside of the patient environment (according to IEC 60601-1 / UL 60601-1).



1. Patient environment

Safety test overview

The electrical safety tests in this section are based on and conform to IEC 60601-1 Medical Equipment Safety Standards. They are intended for the electrical safety evaluation of cord-connected, electrically operated, patient care equipment. If additional information is needed, refer to the IEC 60601-1 documents



WARNING

THE USER MUST ENSURE THAT THE SAFETY INSPECTIONS ARE PERFORMED AT LEAST EVERY 12 MONTHS ACCORDING TO HISTORICAL DATA. ONLY TRAINED PERSONS ARE ALLOWED TO PERFORM THE SAFETY INSPECTIONS MENTIONED ABOVE.



DANGER

TO MINIMIZE RISK OF ELECTRICAL SHOCK, ONLY TRAINED PERSONS ARE ALLOWED TO PERFORM THE ELECTRICAL SAFETY INSPECTIONS AND TESTS.



DANGER

TO AVOID ELECTRICAL SHOCK, THE ULTRASOUND SYSTEM UNDER TEST **MUST NOT** BE CONNECTED TO OTHER ELECTRICAL EQUIPMENT. REMOVE ALL INTERCONNECTING CABLES AND WIRES. THE ULTRASOUND SYSTEM UNDER TEST MUST NOT BE CONTACTED BY USERS OR PATIENTS WHILE PERFORMING THESE TESTS.



CAUTION

Possible risk of infection. Do not handle soiled or contaminated probes and other components that have been in patient contact. Follow appropriate cleaning and disinfecting procedures before handling the equipment.

Safety test overview(continued)

Prior to initiating any electrical test, the Ultrasound system must be visually inspected. Perform the following visual checks:

- Check for missing or loose enclosure covers that could allow access to internal live parts.
- Examine the mains cord, mains plug and appliance inlet for damaged insulation and adequacy of strain relief and cable clamps.
- Locate and examine all associated transducers. Inspect the cables and strain relief at each end. Inspect the transducer enclosure and lens for cracks, holes and similar defects.

Test the system, peripherals and probes for leakage current. Excessive leakage current can cause injury or death in sensitive patients. High leakage current can also indicate degradation of insulation and a potential for electrical failure. Do not use probes or equipment having excessive leakage current.

To minimize the risk that a probe may shock someone the customer should:

- Not use a probe that is cracked or damaged in any way.
- Check probe leakage current:
 - Based on your facilities QA program for surface probes.
 - Based on your facilities QA program for endocavitary probes.
 - whenever probe damage is suspected.

Leakage current limits



WARNING

Energy Control and Power Lockout for Vivid *iq*.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:



1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.
6. Remove/disconnect the battery, if present.

Ultrasound System components may be energized.



CAUTION

Compare all safety-test results with safety-test results of previously performed safety tests (e.g. last year etc). In case of unexplainable abrupt changes of safety-test results consult experienced authorized service personnel or GE for further analysis.

The following limits are summarized for IEC 60601-1 Medical Equipment Safety Standards. These limits are GEMS standards and in some cases are lower than the above standards listed.

Table 10-11: Chassis Leakage Current Limits - Accessible Metal Surface

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral
All (Except USA & Canada)	0.1 mA	0.5 mA	0.5 mA	0.5 mA
USA & Canada	0.1 mA	0.3 mA	0.3 mA	0.3 mA

Table 10-12: Type BF Applied Part Leakage Current Limits - Probes Surface

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral	*Mains Applied
All	0.1 mA	0.5 mA	0.5 mA	0.5 mA	5.0 mA

Leakage current limits(continued)

Table 10-13: Type CF Applied Part Leakage Current Limits - ECG Connections

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral	*Mains Applied
All	0.1 mA	0.5 mA	0.5 mA	0.5 mA	5.0 mA

NOTE: **Mains Applied refers to the sink leakage test where mains (supply) voltage is applied to the part to determine the amount of current that will pass (or sink) to ground if a patient contacted mains voltage.*

The following tests are performed at the factory and should be performed at the site. These tests are: chassis leakage current, and probe leakage current.

NOTE: *Electrical leakage testing may be accomplished with any calibrated electrical safety analyzer tool compliant with AAMI/ ESI 1993 or IEC 60601 or AS/NZS 3551 or IEC 62353 or other relevant national regulation.*

Table 10-14: Equipment Type and Test Definitions

Applied Parts (AP)	Parts or accessories that contact the patient to perform their function. For ultrasound equipment, this includes transducers and ECG leads.	
Type BF	Body Floating or non-conductive ultrasound probes which are marked with the 'man in box' BF symbol. this includes all transducers.	
Type CF	Cardiac Floating or non-conductive intraoperative probes for direct cardiac contact and isolated ECG connections so marked with the 'heart in box' CF symbol.	
Sink Leakage	The current resulting from the application of mains voltage to the applied part. This test is required test for Type CF applied parts.	

Outlet test - wiring arrangement

Test all outlets in the area for proper grounding and wiring arrangement by plugging in the neon outlet tester and noting the combination of lights that are illuminated. Any problems found should be reported to the hospital immediately and the receptacle should not be used.

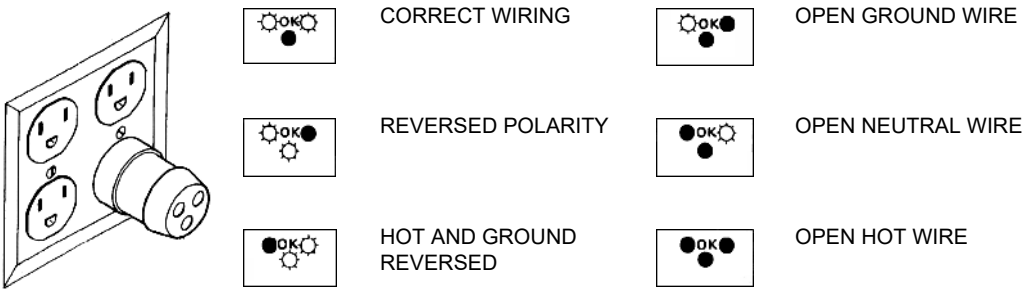


Figure 10-1. Typical alternate outlet tester

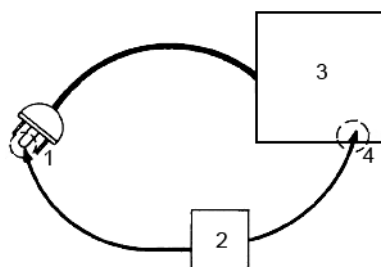
NOTE: No outlet tester can detect the condition where the Neutral (grounded supply) conductor and the Grounding (protective earth) conductor are reversed. If later tests indicate high leakage currents, this should be suspected as a possible cause and the outlet wiring should be visually inspected.

Grounding continuity



DANGER ELECTRIC SHOCK HAZARD. THE PATIENT MUST NOT BE CONTACTED TO THE EQUIPMENT DURING THIS TEST.

Measure the resistance from the third pin of the attachment plug to the exposed metal parts of the case. The ground wire resistance should be less than **0.2 ohms**. Reference the procedure in the IEC60601-1.



1. GROUND PIN
2. OHMMETER
3. Vivid *iq*
4. ACCESSIBLE METAL PART:
 - MONITOR HOUSING
 - PEAR PANEL CONNECTOR
 - ANY CASTER/WHEEL SUPPORT

Figure 10-2. Ground continuity test

Chassis leakage current test



DANGER ELECTRIC SHOCK HAZARD. WHEN THE METER'S GROUND SWITCH IS OPEN, DON'T TOUCH THE ULTRASOUND SYSTEM!.



CAUTION

Equipment damage possibility. Never switch the Polarity and the status of Neutral when the Ultrasound system is powered ON. Be sure to turn the Ultrasound system power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the Ultrasound system may be damaged.

Generic procedure

The test verifies the isolation of the power line from the chassis. The testing meter is connected from accessible metal parts of the case to ground. Measurements should be made with the unit ON and OFF, with the power line polarity Normal and Reversed. Record the highest reading of current.

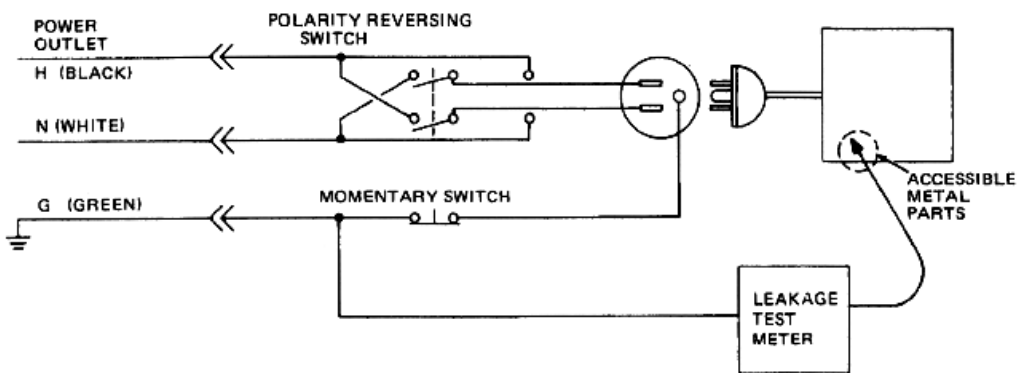


Figure 10-3. Set Up for Chassis Source Leakage Current, IEC 601-1 Clause 19 - Continuous Leakage Currents and Patient, Auxiliary Currents

When using the Microguard or a similar test instrument, its power plug may be inserted into the wall outlet and the equipment under test is plugged into the receptacle on the panel of the meter. This places the meter in the grounding conductor and the current flowing from the case to ground will be indicated in any of the current ranges. The maximum allowable limit for chassis source leakage is shown in [Table 10-11 on page 10-27](#).

Data Sheet for enclosure Source Leakage Current

The test passes when all readings measure less than the value shown in [Table 10-11 on page 10-27](#). Record all data on the PM Inspection Certificate.

Table 10-15: Typical Data Sheet for enclosure Source Leakage Current

Unit Power	Tester Polarity Switch	Tester Neutral or Ground Switch	Test 1 Speaker Cover	Test 2 Real Panel Metal Parts	Optional Test 3	Optional Test 4
Enter Name of tested peripheral here:						
ON	NORM	OPEN				
ON	NORM	CLOSED				
ON	REV	OPEN				
ON	REV	CLOSED				
OFF	NORM	OPEN				
OFF	NORM	CLOSED				
OFF	REV	OPEN				
OFF	REV	CLOSED				

Probe leakage current test



DO NOT USE THE PROBE IF THE INSULATING MATERIAL HAS BEEN PUNCTURED OR OTHERWISE COMPROMISED. INTEGRITY OF THE INSULATION MATERIAL AND PATIENT SAFETY CAN BE VERIFIED BY SAFETY TESTING ACCORDING TO IEC60601-1.



Equipment damage possibility. Never switch the Polarity and the status of Neutral when the Ultrasound system is powered ON. Be sure to turn the Ultrasound system power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the Ultrasound system may be damaged.

Definition

This test measures the current that would flow to ground from any of the probes through a patient who is being scanned and becomes grounded by touching some other grounded surface.

NOTE: *Some leakage current is expected on each probe, depending on its design. Small variations in probe leakage currents are normal from probe to probe. Other variations will result from differences in line voltage and test lead placement. It is abnormal if no leakage current is measured. If no leakage current is detected, check the configuration of the test equipment.*

Tools

For needed tools, see: [‘Tools required’ on page 10-8.](#)

Generic procedure on probe leakage current

Measurements should be made with the ground open and closed, with power line polarity normal and reversed, and with the unit Off and On. For each combination, the probe must be active to find the worst case condition.

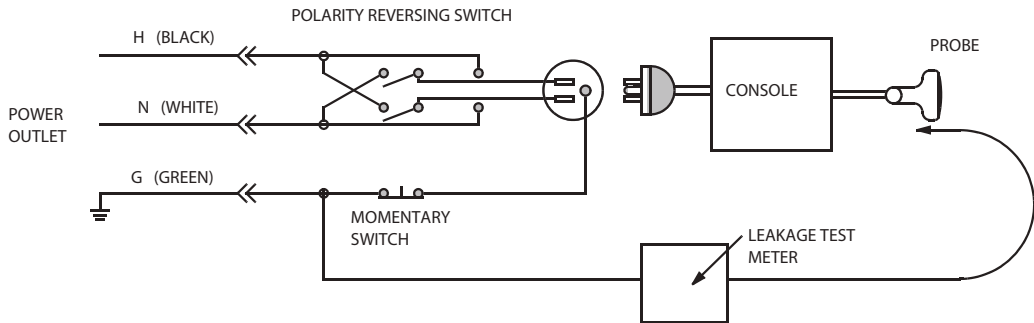


Figure 10-4. Set up for probe leakage current

NOTE: *Each probe will have some amount of leakage current, dependent on its design. Small variations in probe leakage currents are normal from probe to probe. Other variations will result from differences in line voltage and test lead placement.*



DANGER TO AVOID PROBE DAMAGE AND POSSIBLE ELECTRIC SHOCK, DO NOT IMMERSE PROBES INTO ANY LIQUID BEYOND THE LEVEL INDICATED IN THE PROBE USERS MANUAL. **DO NOT TOUCH THE PROBE, CONDUCTIVE LIQUID OR ANY PART OF THE UNIT UNDER TEST WHILE DOING THE TEST.**

Meter Procedure Using Probe Adapter

Follow the Safety Analyzer tool instruction to test each transducer for leakage current.

NOTE: *Electrical leakage testing may be accomplished with any calibrated electrical safety analyzer tool compliant with AAMI/ ESI 1993 or IEC 60601 or AS/NZS 3551 or IEC 62353 or other relevant national regulation.*

No Meter Procedure Using Probe Adapter

Follow the Safety Analyzer tool instruction to test each transducer for leakage current.

NOTE: *Electrical leakage testing may be accomplished with any calibrated electrical safety analyzer tool compliant with AAMI/ ESI 1993 or IEC 60601 or AS/NZS 3551 or IEC 62353 or other relevant national regulation.*

Data Sheet for Transducer Source Leakage Current

The test passes when all readings measure less than the values shown in [Table 10-12 on page 10-27](#). Record all data on the PM Inspection Certificate.

Table 10-16: Typical Data Sheet For Transducer Source Leakage Current

Transducer Tested:			
Unit Power	Tester Power Polarity Switch	Tester GROUND or NUETRAL Switch	Measurement
ON	NORM	OPEN	
ON	NORM	CLOSED	
ON	REV	OPEN	
ON	REV	CLOSED	
OFF	NORM	OPEN	
OFF	NORM	CLOSED	
OFF	REV	OPEN	
OFF	REV	CLOSED	

When there's too much leakage current ...

AC/DC Fails

Where applicable, check the AC/DC adapter and its cable.
Replace a new one if any portion is defective.

Chassis Fails

Check the ground on the power cord and plug for continuity.
Ensure the ground is not broken, frayed, or intermittent. Replace
any defective part.

Where applicable, tighten all grounds. Ensure star washers are
under all ground studs.

Inspect wiring for bad crimps, poor connections, or damage.

Test the wall outlet; verify it is grounded and is free of other
wiring abnormalities. Notify the user or owner to correct any
deviations. As a work around, check the other outlets to see if
they could be used instead.

NOTE: *No outlet tester can detect the condition where the white neutral
wire and the green grounding wire are reversed. If later tests
indicate high leakage currents, this should be suspected as a
possible cause and the outlet wiring should be visually
inspected.*

Probe Fails

Test the probe in another connector to isolate if the fault lies with the probe or the Ultrasound system. Or Change another probe to confirm if the fail is caused by console.

NOTE: Each probe will have some amount of leakage, dependent on its design. Small variations in probe leakage currents are normal from probe to probe. Other variations will result from differences in line voltage and test lead placement. The maximum allowable leakage current for body surface contact probe differs from inter-cavity probe. Be sure to enter the correct probe type in the appropriate space on the check list.

If excessive leakage current is slot dependent, inspect the system connector for bent pins, poor connections, and ground continuity.

If the problem remains with the probe, replace the probe.

Peripheral Fails

Tighten all grounds. Ensure star washers are under all ground studs.

Inspect wiring for bad crimps, poor connections, or damage.

Still Fails

If all else fails, begin isolation by removing the probes, external peripherals, then the on board ones, one at a time while monitoring the leakage current measurement.

New Unit

If the leakage current measurement tests fail on a new Ultrasound system and if situation can not be corrected, submit a Safety Failure Report to document the Ultrasound system problem. Remove Ultrasound system from operation.

ECG Fails

Inspect cables for damage or poor connections.

Inspection Paperwork

Ultrasound Inspection Forms

ULTRASOUND INSPECTION CERTIFICATE

Customer Name:		System ID:		Dispatch Number / Date Performed:		Warranty/Contract/HBS	
System Type		Model Number:		Serial Number:		Manufacture Date:	
Probe 1:	Frequency:	Scan Format*:		Model Number:		Serial Number:	
Probe 2:	Frequency:	Scan Format*:		Model Number:		Serial Number:	
Probe 3:	Frequency:	Scan Format*:		Model Number:		Serial Number:	
Probe 4:	Frequency:	Scan Format*:		Model Number:		Serial Number:	
Probe 5:	Frequency:	Scan Format*:		Model Number:		Serial Number:	

* Scan Format: Phased Array, Linear Array, Curved Array, Mechanical Array or Other

Figure 10-5. Ultrasound Inspection Certificate

* Scan Format: Phased Array, Linear Array, Curved Array, Mechanical Array or Other

Ultrasound Inspection Forms(continued)

FUNCTIONAL CHECKS

Functional Check (if applicable)	OK? or N/A
B-Mode Function	
Doppler Modes Function	
CF-Mode Function	
M-Mode Function	
Applicable Software Options	
Applicable Hardware Options	
Control Panel	
LCD	
Measurement Accuracy	
GE Approved Peripherals	

PHYSICAL INSPECTION AND CLEANING

Physical Inspection and Cleaning (if applicable)	Inspect	Clean
Console		
LCD		
External I/O		
Cables and Connectors		
GE Approved Peripherals (DVD-RW, Printer)		
Labeling (see User Manual for Labeling)		

COMMENTS:

Figure 10-6. Functional Checks

ELECTRICAL SAFETY

Electrical Test Performed	Max Value Allowed	Value Measured	OK?	Comments
Outlet (correct ground & wiring config.)				
Type BF Applied Part Leakage Current Limits- Probe				
enclosure Source Leakage Current - Chassis Leakage Current Limits				
Peripheral 1 Leakage Current				
Peripheral 2 Leakage Current				

PROBES

Probe Number (from previous page)	Max Value Allowed	Max Value Measured	OK?	Comments
Probe 1:				
Probe 2:				
Probe 3:				

Final Check. All system covers are in place. System scans with all probes as expected.

Accepted by: _____

Figure 10-7. Electrical Safety

Electrical Safety Tests Log

Table 10-17: Electrical safety tests log

Electrical test performed	Max value allowed	Value measured	OK?	Comments
Outlet (correct ground and wiring config.)				
System ground continuity				
Chassis source leakage current - probe				
Chassis source leakage current - wheel				
Chassis source leakage current - monitor				
Patient lead source leakage (lead to ground)				
Patient lead source leakage (lead to lead)				
Patient lead source leakage (isolation)				
Peripheral 1 leakage current				
Peripheral 1 ground continuity				
Peripheral 2 leakage current				

Table 10-17: Electrical safety tests log (Continued)

Electrical test performed	Max value allowed	Value measured	OK?	Comments
Peripheral 2 ground continuity				
Peripheral 3 leakage current				
Peripheral 3 ground continuity				

Table 10-18: Electrical safety tests (probes) log

Probe	Max value allowed	Max value measured	OK?	Comments

Cart Care & Maintenance

Contents in This Section

- 'Overview' on *page 10-42*
- 'Purpose' on *page 10-42*
- 'Periodic Maintenance Inspections' on *page 10-43*
- 'Why do Maintenance' on *page 10-45*
- 'Maintenance Task Schedule' on *page 10-46*
- 'Tools Required' on *page 10-48*
- 'Safety Test' on *page 10-49*
- 'Inspection Paper Work' on *page 10-56*

Overview

Purpose

This section describes **Care & Maintenance** on Cart. These procedures are intended to **maintain the quality** of Cart. Read this chapter completely and familiarize yourself with the procedures before performing a task.

Periodic Maintenance Inspections

It has been determined by engineering that your Cart system does not have any high wear components that fail with use, therefore no Periodic Maintenance Inspections are mandatory. Some Customers Quality Assurance Programs may require additional tasks and or inspections at a different frequency than listed in this manual.



Practice good ESD prevention. Wear an anti-static strap when handling electronic parts and even when disconnecting/connecting cables.



THERE ARE SEVERAL PLACES ON THE BACKPLANE, THE AC DISTRIBUTION, AND DC DISTRIBUTION THAT ARE DANGEROUS. BE SURE TO DISCONNECT THE SYSTEM POWER PLUG AND OPEN THE MAIN CIRCUIT BREAKER BEFORE YOU REMOVE ANY PARTS. BE CAUTIOUS WHENEVER POWER IS STILL ON AND COVERS ARE REMOVED.

Periodic Maintenance Inspections(continued)



CAUTION

Do not pull out or insert circuit boards while power is ON.



CAUTION

Do not operate this unit unless all board covers and frame panels are securely in place. System performance and cooling require this.

Why do Maintenance

Keeping Records

It is good business practice that ultrasound facilities maintain records of quality checks and corrective maintenance. The Ultrasound Inspection Certificate (provided on [‘Inspection Paper Work’ on page 10-56](#)) provides the customer with documentation that the ultrasound scanner is maintained on a periodic basis.

A copy of the Ultrasound Periodic Maintenance Inspection Certificate should be kept in the same room or near the scanner.

Quality Assurance

In order to gain accreditation from organizations such as the American College of Radiology (USA), it is the customer’s responsibility to have a quality assurance program in place for each scanner. The program must be directed by a medical physicist, the supervising radiologist/physician or appropriate designee.

Routine quality control testing must occur regularly. The same tests are performed during each period so that changes can be monitored over time and effective corrective action can be taken.

Testing results, corrective action and the effects of corrective action must be documented and maintained on the site.

Your GE service representative can help you with establishing, performing and maintaining records for a quality assurance program. Please contact us for coverage information and/or price for service.

Maintenance Task Schedule

How often should care & maintenance tasks be performed?

The Care & Maintenance Task Schedule (provided on [Table 10-19 on page 10-46](#)) specifies how often your Cart should be serviced and outlines items requiring special attention.

NOTE: *It is the customer's responsibility to ensure the Cart care & maintenance is performed as scheduled in order to retain its high level of safety, dependability and performance.*

Your GE Service Representative has an in-depth knowledge of your Vivid *iq* ultrasound scanning system and can best provide competent, efficient service. Please contact us for coverage information and/or price for service.

Your GE Service Representative has an in-depth knowledge of your Vivid *iq* ultrasound scanning system and can best provide competent, efficient service. Please contact us for coverage information and/or price for service.

NOTE: *If conditions exist which exceed typical usage and patient load, then it is recommended to increase the maintenance frequencies.*

Table 10-19: Customer Care Schedule

Service at Indicated Time	Daily	Weekly	Monthly	Per Facilities QA Program	Notes
Clean Probe Holders	X				
Inspect AC Mains Cable			X		Mobile Unit Check Weekly
Inspect Cables and Connectors			X		
Clean Console			X		
Inspect Wheels, Casters, brakes and Swivel Locks			X		Mobile Unit Check Daily
Check Control Panel Movement			X		Mobile Unit Check Daily
Console Leakage Current Checks				X	also after corrective maintenance
Peripheral Leakage Current Checks				X	also after corrective maintenance

Table 10-19: Customer Care Schedule

Service at Indicated Time	Daily	Weekly	Monthly	Per Facilities QA Program	Notes
Surface Probe Leakage Current Checks				X	also after corrective maintenance
Endocavity Probe Leakage Current Checks				X	also after corrective maintenance
Transesophageal Probe Leakage Current Checks				X	also after corrective maintenance
Surgical Probe Leakage Current Checks				X	also after corrective maintenance
Functional Checks				X	also after corrective maintenance

Tools Required

Standard GE Tool Kit

The following is a description of the “Standard” GE tool kit in the USA. Not all tools are required for PMs.

Please refer to ‘[Standard GE tool kit](#)’ on [page 10-8](#) for the information.

Special Tools, Supplies and Equipment

NOTE: *Electrical leakage testing may be accomplished with any calibrated electrical safety analyzer tool compliant with AAMI/ ESI 1993 or IEC 60601 or AS/NZS 3551 or IEC 62353 or other relevant national regulation.*

Table 10-20: Overview of Requirement for Care & Maintenance

Tool	Part Number	Comments
Digital Volt Meter (DVM)		
Leakage Current Ultrasound Kit	2113015	For 120V and 220V Units
Anti Static Kit	46–194427P231 46–194427P279 46–194427P369 46–194427P373 46–194427P370	Kit includes anti–static mat, wrist strap and cables for 200 to 240 V system 3M #2204 Large adjustable wrist strap 3M #2214 Small adjustable wrist strap 3M #3051 conductive ground cord
Anti Static Vacuum Cleaner	46–194427P278 46–194427P279	120V 230V
Safety Analyzer		
CD-RW Media		For Vivid <i>iq</i>
B/W Printer Cleaning Sheet		See printer user manual for requirements
Color Printer Cleaning Sheet		See printer user manual for requirements
Disposable Gloves		

Safety Test

Input Power

Table 10-21: Main Cable Inspection

Step	Item	Description
1	Unplug Cord	Disconnect the mains cable from the wall and system.
2	Inspect	Inspect it and its connectors for damage of any kind.
3	Verify	Verify that the LINE, NEUTRAL and GROUND wires are properly attached to the terminals, and that no strands may cause a short circuit.
4	Verify	Inlet connector retainer is functional.

Cleaning

Table 10-22: General Cleaning

Step	Item	Description
1	Console	Use a fluid detergent in warm water on a soft, damp cloth to carefully wipe the entire console. Be careful not to get the cloth too wet so that moisture does not enter the console.
2	Probe Holder	Clean probe holders (they may need to be soaked to remove excess gel).

Safety Test(continued)

Physical Inspection

Table 10-23: Physical Checks

Step	Item	Description
1	Labeling	Verify that all system labeling is present and in readable condition. refer to the Vivid <i>iq</i> User Manual for details.
2	Scratches & Dents	Inspect the console for dents, scratches or cracks.
3	Wheels & Brakes	Check all wheels and casters for wear and verify operation of foot brake, to stop the unit from moving, and release mechanism. Check all caster locks and caster swivel locks for proper operation.
4	Cables & Connectors	Check all internal cable harnesses and connectors for wear and secure connector seating. Pay special attention to footswitch assembly and probe strain or bend reliefs.
5	Shielding & Covers	Check to ensure that all EMI shielding, internal covers, air flow panels and screws are in place. Missing covers and hardware could cause EMI/RFI problems while scanning.
6	External I/O	Check all connectors for damage and verify that the labeling is good.
7	Op Panel Lights	Check for proper operation of all operator panel and TGC lights.
8	Monitor Light	Check for proper operation of any monitor lights if available.
9	External Microphone	Check for proper operation of any external microphones by recording an audio test.

Outlet Test - Wiring Arrangement - USA & Canada

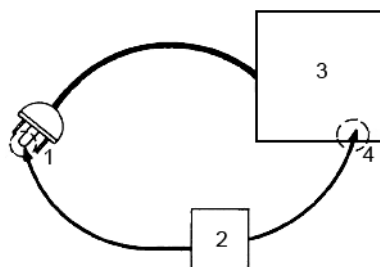
Please refer to 'Outlet test - wiring arrangement' on page 10-29 for the information.

Grounding continuity

DANGER

ELECTRIC SHOCK HAZARD. THE PATIENT MUST NOT BE CONTACTED TO THE EQUIPMENT DURING THIS TEST.

Measure the resistance from the third pin of the attachment plug to the exposed metal parts of the case. The ground wire resistance should be less than **0.2 ohms**. Reference the procedure in the IEC60601-1.



1. GROUND PIN
2. OHMMETER
3. Vivid iq
4. ACCESSIBLE METAL PART:
 - MONITOR HOUSING
 - PEAR PANEL CONNECTOR
 - ANY CASTER/WHEEL SUPPORT

Figure 10-8. Ground continuity test

Meter Procedure

Follow these steps to test the ground wire resistance.

- Turn the Vivid *iq* unit OFF.
- Plug the unit into the meter, and the meter into the tested AC wall outlet.
- Plug the black chassis cable into the meter's "CHASSIS" connector and attach the black chassis cable clamp to an exposed metal part of the Vivid *iq* unit.
- Set the meter's "FUNCTION" switch to the RESISTANCE position.
- Set the meter's "POLARITY" switch to the OFF (center) position.
- Measure and record the ground wire resistance.

Chassis Leakage Current Test

Please refer to '[Chassis leakage current test](#)' on [page 10-31](#) for the information.

Isolated Patient Lead (Source) Leakage - Lead to Lead

Refer to the procedure in the IEC 60601-1.

Isolated Patient Lead (Sink) Leakage-Isolation Test

Refer to the procedure in the IEC 60601-1.



CAUTION

Line voltage is applied to the ECG leads during this test. To avoid possible electric shock hazard, the system being tested must not be touched by patients, users or anyone while the ISO TEST switch is depressed.

NOTE: *It is not necessary to test each lead individually or power condition combinations as required in previous tests.*

Data Sheet for ECG Leakage Current:

The test passes when all readings measure less than the value shown in the table below. Record all data on the PM Inspection Certificate.

Table 10-24: Maximum Allowance Limit for ECG Leakage Current

	AC Power Source	Maximum Allowance Limit	
		Ground Open	Ground Closed
Patient Lead to Ground Leakage Current Test and Patient Lead to Lead Leakage Current Test	115V	10uA	10uA
	220/240V	500uA	10uA

Table 10-25: Maximum Allowance Limit for ECG Leakage Current

	AC Power Source	Maximum Allowance Limit
Patient Lead Isolation Current Test	115V	20uA
	220/240V	5mA

Isolated Patient Lead (Sink) Leakage-Isolation Test(continued)

Table 10-26:

ECG Power	Tester Polarity Switch	Tester Ground Switch	Tester Lead Selector				
			RL	RA	LA	LL	C
ON	NORM	CLOSED					
ON	REVERSE	CLOSED					
ON	NORM	OPEN					
ON	REVERSE	OPEN					
OFF	NORM	CLOSED					
OFF	REVERSE	CLOSED					
OFF	NORM	OPEN					
OFF	REVERSE	OPEN					

Probe Leakage Current Test

Please refer to [‘Probe leakage current test’ on page 10-33](#) for the information.

When There's Too Much Leakage Current...

Please refer to '[When there's too much leakage current ...](#)' on [page 10-36](#) for the information.

Inspection Paper Work

ULTRASOUND INSPECTION CERTIFICATE

Customer Name:		System ID:	Dispatch Number / Date Performed:	Warranty/Contract/HBS
System Type		Model Number:	Serial Number:	Manufacture Date:
Probe 1:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 2:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 3:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 4:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 5:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 6:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 7:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 8:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 9:	Frequency:	Scan Format*:	Model Number:	Serial Number:

*Scan Format: Phased Array, Linear Array, Curved Array,
Mechanical Array or Other

Inspection Paper Work(continued)

FUNCTIONAL CHECKS

PHYSICAL INSPECTION AND CLEANING

Functional Check (if applicable)	OK? or N/A	Physical Inspection and Cleaning (if applicable)	Inspect	Clean
B-Mode Function		Console		
Doppler Modes Function		Monitor		
CF-Mode Function		Touch Panel		
M-Mode Function		GE Approved Peripherals (CD-RW, MOD, Printers)		
Applicable Software Options		Probe Holders		
Applicable Hardware Options		External I/O		
Control Panel		Wheels, Brakes & Swivel Locks		
Measurement Accuracy		Cables and Connectors		
GE Approved Peripherals				

COMMENTS:

Inspection Paper Work(continued)

ELECTRICAL SAFETY

Electrical Test Performed	Max Value Allowed	Value Measured	OK?	Comments
Outlet (correct ground & wiring config.)				
System Ground Continuity				
Chassis Source Leakage Current - Probe				
Chassis Source Leakage Current - Caster				
Chassis Source Leakage Current - CRT				
Patient Lead Source Leakage (Lead to Ground)				
Patient Lead Source Leakage (Lead to Lead)				
Patient Lead Source Leakage (Isolation)				
Peripheral 1 Leakage Current				
Peripheral 1 Ground Continuity				
Peripheral 2 Leakage Current				
Peripheral 2 Ground Continuity				
Peripheral 3 Leakage Current				
Peripheral 3 Ground Continuity				

PROBES

Probe Number (from previous page)	Max Value Allowed	Max Value Measured	OK?	Comments
Probe 1:				
Probe 2:				
Probe 3:				
Probe 4:				
Probe 5:				
Probe 6:				

Probe 7:				
Probe 8:				
Probe 9:				

Final Check. All system covers are in place. System scans with all probes as expected.

Accepted by: _____

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