



NetApp Solution Technical Report

Manually Designed Solution

Report Generated:

19-Mar-2025

Project ID:

157dd848

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1 Business Requirements

[Use this section to document the customer's high-level business requirements]

2 Solution Summary

2.1 Proposed Solution Summary

This is a summary of what the proposed solution will deliver.

THROUGHPUT	RAW CAPACITY	STORAGE EFFICIENCY***
500,000 IOPS / 7,812.50 MB/s	734.4 TB	2 : 1
AVERAGE UTILIZATION	USABLE CAPACITY	EFFECTIVE CAPACITY***
56%	567.6 TiB (623TB)	1,135.1934 TiB
MAXIMUM THROUGHPUT*	RAW CAPACITY HEADROOM**	USABLE VS EFFECTIVE
774,944 IOPS / 12,108.50 MB/s	0GB	 567.6 TiB 1,135.1934 TiB
*assumes best practice configuration of aggregates and workload to aggregate mapping	**assumes future expansion using drives of same capacity	***assumes use of storage efficiency technologies like compression and deduplication ***Lowest efficiencies have been applied to unused capacity within the cluster.

Note: Usable and effective capacity is calculated and reported in base-2 format which aligns with values reported in ONTAP CLI, Storage Manager, and Unified Manager. It should be noted that ONTAP CLI displays base-2 capacity values, but labels these values using base-10 descriptors (e.g. GB/TB/PB).

CONFIGURATION			ENVIRONMENTAL		
Model:	ASA A90A	Onboard Ethernet Ports:	0	Rack Units:	4 U
Nodes:	2	Onboard UTA2 Ports:	0	System Weight:	118.00 lbs
Total Drives:	48	Onboard SAS Ports:	0	AC Power:	2433.35 W
Drive Type:	15.3 TB NVMe SSD	Expansion Slots:	18	Current Draw:	13.88 A
Cluster Switches:	N/A	Stge Switches:	N/A	BTU/hr:	8304.79

3 Solution Details

3.1 System Details

For rack elevation, please refer to the Storage Solution SVG Diagram

cluster1: netapp1/netapp2

Bill Of Materials			Total	
	Description	Part Number	Qty	
Systems				
	ASA A90A w/ 48x15.3TB NVMe SSD SED	9.16.1 ONTAP	X4028A	1
			Grand Total	1
Storage				
			Grand Total	0
Adapter Cards/ Flash Cache				
			Grand Total	0

3.2 Environmental Details

Line Voltage: 220

System Components	Qty	Rack Units	Current (Amps)		AC Power (Watts)		AC Power (VA)		Thermal Rating (BTU/hr)		Power (kWh/year)	
			Typical	Worst	Typical	Worst	Typical	Worst	Typical	Worst	Typical	Worst
ASA A90A w/ 48x15.3 TB NVMe SSDX4028A(2xControllers, 1xChassis)	1	4	13.88	18.51	2,433.35	3,638.33	2,561.42	3,829.82	8,304.79	12,417.27	21,330.29	31,892.92
Total	1	4	13.88	18.51	2,433.35	3,638.33	2,561.42	3,829.82	8,304.79	12,417.27	21,330.29	31,892.92

Median Power Usage

System Components	Qty	Median Current (Amps)	Median AC Power (Watts)	Median AC Power (VA)	Median Thermal Rating (BTU/hr)	Median Power (kWh/year)
ASA A90A w/ 48x15.3 TB NVMe SSDX4028A(2xControllers, 1xChassis)	1	9.31	1,862.2	1,960.21	6,350.1	16,323.7
Total	1	9.31	1,862.2	1,960.21	6,350.1	16,323.7

Note: Median power is based on actual power numbers reported by install base systems of similar configuration and represent the midpoint where half of the similar configurations consume less power and the other half consume more power. Typical and Worst-case power numbers are calculated based on product specifications and spot checked for accuracy. Typical power values are used when median power values are not available.

3.3 Storage Availability Zone: netapp1/netapp2

The information below provides details on the layout of the physical storage of proposed systema and allocation of capacity.

RAID Group	Devices	Total	Data	Parity	Spare
raidgroup1	15.36TB NVMe SSD	24	22	2	0
raidgroup2	15.36TB NVMe SSD	23	21	2	0
Spare	15.36TB NVMe SSD	1	0	0	1
		48	43	4	1

	Capacity (TiB) ¹	Capacity (TB) ²	Percentage (%)
Usable	567.60	624.08	84.99%
Root	0.75	0.82	0.11%
WAFL	29.92	32.90	4.48%
Parity	55.66	61.20	8.33%
Spare	13.92	15.31	2.08%
Total	667.85	734.31	100.0%

- Capacity values reported in this column are in base-2 format which aligns with values reported in ONTAP command line and System Manager.
- Capacity values reported in this column are in base-10 format and will not match any values reported by ONTAP. Those are provided for convenience only.

3.4 Storage Availability Zone

Zone	Workloads	Workload Type	Ratio	Storage Availability Usage	Usable (TiB)	Effective (TiB)
Zone 1	workload 1 - 100k IOPS	custom	2:1	0.00%	1.00	2.00
Zone 1	workload 2 - 100k IOPS	custom	2:1	0.00%	1.00	2.00
Zone 1	workload 3 - 100k IOPS	custom	2:1	0.00%	1.00	2.00
Zone 1	workload 4 - 100k IOPS	custom	2:1	0.00%	1.00	2.00
Zone 1	workload 5 - 100k IOPS	custom	2:1	0.00%	1.00	2.00

3.5 Workload Descriptions

Workload Name	Type	TPut IOPS	Effective Capacity (TiB)	Cold Data %	Protocol	Read Latency (MS)	IO Percentages				IO Block Sizes (KB)				Working Set%
							Rand Read	Rand Write	Seq Read	Seq write	Rand Read	Rand Write	Seq Read	Seq Write	
workload 1 - 100k IOPS	Custom	100,000.00 IOPS	2.00	N/A	FC_NVMe	1	70	30	0	0	16	16	64	64	5
workload 2 - 100k IOPS	Custom	100,000.00 IOPS	2.00	N/A	FC_NVMe	1	70	30	0	0	16	16	64	64	5
workload 3 - 100k IOPS	Custom	100,000.00 IOPS	2.00	N/A	FC_NVMe	1	70	30	0	0	16	16	64	64	5
workload 4 - 100k IOPS	Custom	100,000.00 IOPS	2.00	N/A	FC_NVMe	1	70	30	0	0	16	16	64	64	5
workload 5 - 100k IOPS	Custom	100,000.00 IOPS	2.00	N/A	FC_NVMe	1	70	30	0	0	16	16	64	64	5

4 Environmental Certifications

4.1 Statements & Certifications

- [Environmental Policy and Certifications](#)
- [US TSCA PBT Substances Declaration](#)
- [China and Taiwan Toxic and Hazardous Substances or Elements Table](#)
- [European Union WEEE and Battery Statement](#)
- [E-waste Program](#)
- [ISO 14001:2015 Certificate](#)
- [European Union REACH Article Notifications - Cords and Cables](#)
- [China RoHS Compliance Statement](#)
- [European Union RoHS Compliance Statement](#)
- [European Union REACH Compliance Statement](#)

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AVERAGE UTILIZATION	USABLE CAPACITY	EFFECTIVE CAPACITY***
73%	567.6 TiB (623TB)	1,135.1934 TiB
MAXIMUM THROUGHPUT*	RAW CAPACITY HEADROOM**	USABLE VS EFFECTIVE
586,697 IOPS / 18,334.29 MB/s	0GB	 567.6 TiB 1,135.1934 TiB
*assumes best practice configuration of aggregates and workload to aggregate mapping	**assumes future expansion using drives of same capacity	***assumes use of storage efficiency technologies like compression and deduplication ***Lowest efficiencies have been applied to unused capacity within the cluster.

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