Technical specifications for small, medium and large architectures

FlexPod

NetApp
June 03, 2021

Table of Contents

Technical specifications for small, medium and large architectures

This section discusses a sample Bill of Materials for different size storage architectures.

Bill of material for small, medium, and large architectures.

The FlexPod design is a flexible infrastructure that encompasses many different components and software versions. Use TR-4036: FlexPod Technical Specifications as a guide to assembling a valid FlexPod configuration. The configurations in the table below are the minimum requirements for FlexPod, and are just a sample. The configuration can be expanded for each product family as required for different environments and use cases.

For this sizing exercise small corresponds to a Category 3 MEDITECH environment, medium to a Category 5, and large to a Category 6.

	Small	Medium	Large
Platform	One NetApp AFF A220 all-flash storage system HA pair	One NetApp AFF A220 HA pair	One NetApp AFF A300 all-flash storage system HA pair
Disk shelves	9TB x 3.8TB	13TB x 3.8TB	19TB x 3.8TB
MEDITECH database size	3TB-12TB	17TB	>30TB
MEDITECH IOPS	<22,000 IOPs	>25,000 IOPs	>32,000 IOPs
Total IOPS	22000	27000	35000
Raw	34.2TB	49.4TB	68.4TB
Usable capacity	18.53TiB	27.96TiB	33.82TiB
Effective capacity (2:1 storage efficiency)	55.6TiB	83.89TiB	101.47TiB

Some customer environments might have multiple MEDITECH production workloads running simultaneously or might have higher IOPS requirements. In such cases, work with the NetApp account team to size the storage systems according to the required IOPS and capacity. You should be able to determine the right platform to serve the workloads. For example, there are customers successfully running multiple MEDITECH environments on a NetApp AFF A700 all-flash storage system HA pair.

The following table shows the standard software required for MEDITECH configurations.

Software	Product family	Version or release	Details
Storage	ONTAP	ONTAP 9.4 general availability (GA)	

Software	Product family	Version or release	Details
Network	Cisco UCS fabric interconnects	Cisco UCSM 4.x	Current recommended release
	Cisco Nexus Ethernet switches	7.0(3)I7(6)	Current recommended release
	Cisco FC: Cisco MDS 9132T	8.3(2)	Current recommended release
Hypervisor	Hypervisor	VMware vSphere ESXi 6.7	
	Virtual machines (VMs)	Windows 2016	
Management	Hypervisor management system	VMware vCenter Server 6.7 U1 (VCSA)	
	NetApp Virtual Storage Console (VSC)	VSC 7.0P1	
	NetApp SnapCenter	SnapCenter 4.0	
	Cisco UCS Manager	4.x	

The following table shows an small (category 3) example configuration – infrastructure components.

Layer	Product family	Quantity and model	Details
Compute	Cisco UCS 5108 Chassis	1	Supports up to eight half-width or four full-width blades. Add chassis as server requirement grows.
	Cisco Chassis I/O Modules	2 x 2208	8GB x 10GB uplink ports
	Cisco UCS blade servers	4 x B200 M5	Each with 2 x 14 cores, 2.6GHz or higher clock speed, and 384GB BIOS 3.2(3#)
	Cisco UCS Virtual Interface Cards	4 x UCS 1440	VMware ESXi fNIC FC driver: 1.6.0.47 VMware ESXi eNIC Ethernet driver: 1.0.27.0 (See interoperability matrix: https://ucshcltool.cloudapps.cisco.com/public/)
	2 x Cisco UCS Fabric Interconnects (FI)	2 x UCS 6454 FI	4th-generation fabric interconnects supporting 10/25/100GB Ethernet and 32GB FC
Network	Cisco Ethernet switches	2 x Nexus 9336c-FX2	1GB, 10GB, 25GB, 40GB, 100GB

Layer	Product family	Quantity and model	Details
Storage network	IP Network Nexus 9k for BLOB storage		FI and UCS chassis
	FC: Cisco MDS 9132T		Two Cisco 9132T switches
Storage	NetApp AFF A300 all-flash storage system	1 HA Pair	2-node cluster for all MEDITECH workloads (File Server, Image Server, SQL Server, VMware, and so on)
	DS224C disk shelf	1 DS224C disk shelf	
	Solid-state drive (SSD)	9 x 3.8TB	

The following table shows medium (category 5) example configuration – Infrastructure components

Layer	Product family	Quantity and model	Details
Compute	Cisco UCS 5108 chassis	1	Supports up to eight half-width or four full-width blades. Add chassis as server requirement grows.
	Cisco chassis I/O modules	2 x 2208	8GB x 10GB uplink ports
	Cisco UCS blade servers	6 x B200 M5	Each with 2 x 16 cores, 2.5GHz/or higher clock speed, and 384GB or more memory BIOS 3.2(3#)
	Cisco UCS virtual interface card (VIC)	6 x UCS 1440 VICs	VMware ESXi fNIC FC driver: 1.6.0.47 VMware ESXi eNIC Ethernet driver: 1.0.27.0 (See interoperability matrix:)
	2 x Cisco UCS Fabric Interconnects (FI)	2 x UCS 6454 FI	4th-generation fabric interconnects supporting 10GB/25GB/100GB Ethernet and 32GB FC
Network	Cisco Ethernet switches	2 x Nexus 9336c-FX2	1GB, 10GB, 25GB, 40GB, 100GB
Storage network	IP Network Nexus 9k for BLOB storage		
	FC: Cisco MDS 9132T		Two Cisco 9132T switches

Layer	Product family	Quantity and model	Details
Storage	NetApp AFF A220 all-flash storage system	2 HA Pair	2-node cluster for all MEDITECH workloads (File Server, Image Server, SQL Server, VMware, and so on)
	DS224C disk shelf	1 x DS224C disk shelf	
	SSD	13 x 3.8TB	

The following table shows a large (category 6) example configuration – infrastructure components.

Layer	Product family	Quantity and model	Details
Compute	Cisco UCS 5108 chassis	1	
	Cisco chassis I/O modules	2 x 2208	8 x 10GB uplink ports
	Cisco UCS blade servers	8 x B200 M5	Each with 2 x 24 cores, 2.7GHz and 768GB BIOS 3.2(3#)
	Cisco UCS virtual interface card (VIC)	8 x UCS 1440 VICs	VMware ESXi fNIC FC driver: 1.6.0.47 VMware ESXi eNIC Ethernet driver: 1.0.27.0 (review interoperability matrix: https://ucshcltool.cloudapps.cisco.com/public/)
	2 x Cisco UCS fabric interconnects (FI)	2 x UCS 6454 FI	4th-generation fabric interconnects supporting 10GB/25GB/100GB Ethernet and 32GB FC
Network	Cisco Ethernet switches	2 x Nexus 9336c-FX2	2 x Cisco Nexus 9332PQ1, 10GB, 25GB, 40GB, 100GB
Storage network	IP Network N9k for BLOB storage		
	FC: Cisco MDS 9132T		Two Cisco 9132T switches
Storage	AFF A300	1 HA Pair	2-node cluster for all MEDITECH workloads (File Server, Image Server, SQL Server, VMware, and so on)
	DS224C disk shelf	1 x DS224C disk shelves	
	SSD	19 x 3.8TB	

These configurations provide a starting point for sizing guidance. Some customer environments might have multiple MEDITECH production and non-MEDITECH workloads running simultaneously, or they might have higher IOP requirements. You should work with the NetApp account team to size the storage systems based on the required IOPS, workloads, and capacity to determine the right platform to serve the workloads.