Technical specifications for small, medium, and large architectures

FlexPod

NetApp
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The FlexPod design enables a flexible infrastructure that encompasses many different components and software versions. Use TR-4036: FlexPod Technical Specifications as a guide for building or assembling a valid FlexPod configuration. The configurations that are detailed are only the minimum requirements for FlexPod, and they are just a sample. They can be expanded in the included product families as required for different environments and use cases.

The following table lists the capacity configurations for the Epic production database workload. The total capacity listed accommodates the need for all Epic components.

	Small	Medium	Large
Platform	One AFF A300 HA pair	One AFF A300 HA pair	One AFF A300 HA pair
Disk shelves	24 x 3.8TB	48 x 3.8TB	96 x 3.8TB
Epic database size	3 to 20TB	20TB-40TB	>40TB
Total IOPS	22,000	50,000	125,000
Raw	92.16TB	184.32TB	368.64TB
Usable capacity	65.02TiB	134.36TiB	269.51TiB
Effective capacity (2:1 storage efficiency)	130.04TiB	268.71TiB	539.03TiB

Epic production workloads can be easily satisfied with a single AFF A300 HA pair. An AFF A300 HA pair can push upward of 200k IOPs, which satisfies a large Epic deployment with room for more shared workloads.

Some customer environments might have multiple Epic production workloads running simultaneously, or they might simply have higher IOP requirements. In that case, work with the NetApp account team to size the storage systems according to the required IOPs and capacity and arrive at the right platform to serve the workloads. There are customers running multiple Epic environments on an AFF A700 HA pair.

The following table lists the standard software required for the small, medium, and large configurations.

Software	Product family	Version or release
Storage	Data ONTAP	ONTAP 9.3 GA
Network	Cisco UCS-FI	Cisco UCS Manager 3.2(2f)
	Cisco Ethernet switches	7.0(3)I7(2)
	Cisco FC: Cisco MDS 9132T	8.2(2)
Hypervisor	Hypervisor	VMware vSphere ESXi 6.5 U1
	VMs	RHEL 7.4

Software	Product family	Version or release
Management	Hypervisor management system	VMware vCenter Server 6.5 U1 (VCSA)
	NetApp Virtual Storage Console	VSC 7.0P1
	SnapCenter	SnapCenter 4.0
	Cisco UCS Manager	3.2(2f) or later

The following table lists small configuration infrastructure components.

Layer	Product family	Quantity and model	Details
Compute	Cisco UCS 5108 Chassis	Two	Based on the number of blades required to support the users
	Cisco UCS blade servers	4 x B200 M5	Each with 2 x 18 cores, 2.7GHz, and 384GB BIOS 3.2(2f)
	Cisco UCS VIC	4 x UCS 1340	VMware ESXi fNIC FC driver: 1.6.0.34 VMware ESXi eNIC Ethernet driver: 1.0.6.0 (see the matrix)
	2 x Cisco UCS FI	6332-16UP with Cisco UCS Manager 3.2 (2f)	
Network	Cisco Ethernet switches		2 x Cisco Nexus 93180YC-FX
Storage network	IP network N9k for BLOB storage		FI and UCS chassis
	FC: Cisco MDS 9132T		Two Cisco 9132T switches
Storage	NetApp AFF A300	1 HA pair	1 x 2-node cluster
	DS224C disk shelf	1 DS224C disk shelf (fully populated with 24 drives)	One fully populated disk shelf
	SSD	24 x 3.8TB	

A single disk shelf of 3.8TB SSD drives should suffice for most smaller Epic customer deployments. However, for shared workloads, more disk capacity might be required. You must size for your capacity accordingly.

The following table lists the medium configuration infrastructure components.

Layer	Product family	Quantity and model	Details
Compute	Cisco UCS 5108 Chassis	Four	Based on the number of blades required to support the users
	Cisco UCS blade servers	4 x B200 M5	Each with 2 x 18 cores, 2.7GHz/3.0Ghz, and 384GB 4 sockets for Cache DB BIOS 3.2(2f)
	Cisco UCS VIC	4 x UCS 1340	VMware ESXi fNIC FC driver: 1.6.0.34 VMware ESXi eNIC Ethernet driver: 1.0.6.0 (see the matrix)
	2 x Cisco UCS FI	6332-16UP with Cisco UCS Manager 3.2(2f)	
Network	Cisco Ethernet switches		2 x Cisco Nexus 93180YC-FX
Storage network	IP network: Cisco N9k for BLOB storage		FI and Cisco UCS chassis
	FC: Cisco MDS 9132T		Two Cisco 9132T switches
Storage	NetApp AFF A300	2 HA pairs	2 x 2-node cluster for all Epic workloads (Production, Report, Clarity, VMware, Citrix, CIFS, and so on)
	DS224C disk shelf	2 x DS224C disk shelves	2 fully populated disk shelves
	SSD	48 x 3.8TB	

Four disk shelves of 3.8TB SSD drives should suffice for almost all medium Epic customer deployments. However, assess your disk capacity requirements and size for required capacity accordingly.

The following table lists the large configuration infrastructure components.

Layer	Product family	Quantity and model	Details
Compute	Cisco UCS 5108 Chassis	8	
	Cisco UCS blade servers	4 x B200 M5	Each with 2 x 24 cores, 2.7GHz, and 576GB BIOS 3.2(2f)
	Cisco UCS VIC	4 x UCS 1340	VMware ESXi fNIC FC driver: 1.6.0.34 VMware ESXi eNIC Ethernet driver: 1.0.6.0 (see the matrix)
	2 x Cisco UCS FI	6332-16UP with Cisco UCS Manager 3.2(2f)	
Network	Cisco Ethernet switches		2 x Cisco Nexus 93180YC-FX
Storage network	IP network: Cisco N9k for BLOB storage		
	FC: Cisco MDS 9706		Two Cisco 9706 switches
Storage	NetApp AFF A300	3 HA pairs	3 x 2-node cluster for Epic workloads (Prod, Report, Clarity, VMware, Citrix, CIFS, and so on)
	DS224C disk shelf	4 x DS224C disk shelves	4 fully populated disk shelves
	SSD	96 x 3.8TB	

Some customer environments might have multiple Epic production workloads running simultaneously, or they might simply 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 and determine the right platform to serve the workloads. There are customers running multiple Epic environments on an AFF A700 HA pair.