

Veeam Availability Suite on Cisco UCS S3260



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Introduction

This document describes the installation and configuration steps to deploy Veeam Availability Suite on the Cisco Unified Computing System™ (Cisco UCS®) S3260 Storage Server to build a data-protection solution. This document is not a detailed step-by-step guide, and not every task is documented. It focuses on the steps that are relevant to the specific use case. To finish the deployment, knowledge in the following areas is required:

- Cisco UCS configuration
- Microsoft Windows installation and configuration
- Veeam Availability Suite configuration

Technology Overview

This section introduces the technologies used in the solution described in this document.

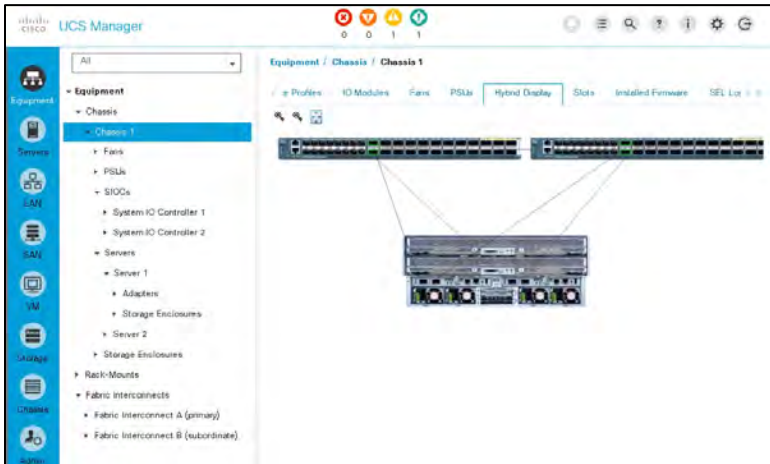
Cisco Unified Computing System

Cisco UCS is a state-of-the-art data center platform that unites computing, network, storage access, and virtualization resources into a single cohesive system.

The main components of Cisco UCS follow:

- **Computing:** The system is based on an entirely new class of computing system that incorporates rack-mount and blade servers using Intel Xeon processor CPUs. The Cisco UCS servers offer the patented Cisco Extended Memory Technology to support applications with large data sets and allow more virtual machines per server.
- **Network:** The system is integrated onto a low-latency, lossless, 10- or 40-Gbps unified network fabric. This network foundation consolidates LANs, SANs, and high-performance computing (HPC) networks, which are separate networks today. The unified fabric lowers costs by reducing the number of network adapters, switches, and cables, and by decreasing the power and cooling requirements.
- **Virtualization:** The system unleashes the full potential of virtualization by enhancing the scalability, performance, and operational control of virtual environments. Cisco security, policy enforcement, and diagnostic features are now extended into virtualized environments to better support changing business and IT requirements.
- **Storage access:** The system provides consolidated access to both SAN storage and network-attached storage (NAS) over the unified fabric. By unifying the storage access layer, Cisco UCS can access storage over Ethernet (with Network File System [NFS] or Small Computer System Interface over IP [iSCSI]), Fibre Channel, and Fibre Channel over Ethernet (FCoE). This approach provides customers with choice for storage access and investment protection. In addition, server administrators can pre-assign storage-access policies for system connectivity to storage resources, simplifying storage connectivity and management for increased productivity.

Figure 1. Cisco UCS Manager



The Cisco UCS consists of the following components:

- [Cisco UCS Manager](#) provides unified, embedded management of all Cisco UCS software and hardware components (Figure 1).
- [Cisco UCS 6000 Series Fabric Interconnects](#) are line-rate, low-latency, lossless, 10-Gbps Ethernet and FCoE interconnect switches that provide the management and communication backbone for Cisco UCS.
- [Cisco UCS 5100 Series Blade Server Chassis](#) supports up to eight blade servers and up to two fabric extenders in a six-rack-unit (6RU) enclosure.
- [Cisco UCS B-Series Blade Servers](#) increase performance, efficiency, versatility, and productivity with Intel-based blade servers.
- [Cisco UCS C-Series Rack Servers](#) deliver unified computing in an industry-standard form factor to reduce TCO and increase agility.
- [Cisco UCS S-Series Storage Servers](#) deliver unified computing in an industry-standard form factor to address data-intensive workloads with reduced TCO and increased agility.
- [Cisco UCS adapters](#), with wire-once architecture, offer a range of options to converge the fabric, optimize virtualization, and simplify management.

Cisco UCS is designed to deliver:

- Reduced TCO and increased business agility
- Increased IT staff productivity through just-in-time provisioning and mobility support
- A cohesive, integrated system that unifies the technology in the data center
- Industry standards supported by a partner ecosystem of industry leaders
- Unified, embedded management for easy-to-scale infrastructure

Cisco UCS S3260 Storage Server

The Cisco UCS S3260 Storage Server (Figure 2) is a modular, high-density, high-availability dual-node rack server well suited for service providers, enterprises, and industry-specific environments. It addresses the need for dense, cost-effective storage for the ever-growing amounts of data. Designed for a new class of cloud-scale applications and data-intensive workloads, it is simple to deploy and excellent for big data, software-defined storage, and data-protection environments.

Figure 2. Cisco UCS S3260 Storage Server



Extending the capabilities of the Cisco UCS C3000 platform, the S3260 helps you achieve the highest levels of data availability. With a dual-node capability that is based on the Intel Xeon processor E5-2600 v4 series, it offers up to 600 terabytes (TB) of local storage in a compact 4-rack-unit (4RU) form factor. Individually hot-swappable, all hard-disk drives (HDDs) can be asymmetrically split between the dual nodes. The drives can be built in an enterprise-class Redundant Array of Independent Disks (RAID) redundant design or used in pass-through mode.

This high-density rack server easily fits in a standard 32-inch-deep rack, such as the Cisco R42610 Rack.

You can deploy Cisco UCS S-Series Storage Servers as standalone servers or as part of a Cisco UCS managed environment to take advantage of Cisco® standards-based unified computing innovations that can help reduce your TCO and increase your business agility.

The S3260 uses a modular server architecture that, using Cisco's blade technology expertise, allows you to upgrade the computing or network nodes in the system without the need to migrate data from one system to another. It delivers:

- Dual server nodes
- Up to 36 computing cores per server node
- Up to 60 drives, mixing a large form factor (LFF) with up to 28 solid-state disk (SSD) drives plus 2 SSD SATA boot drives per server node
- Up to 512 GB of memory per server node (1 TB total)
- Support for 12-Gbps serial-attached SCSI (SAS) drives
- A system I/O controller with a Cisco UCS Virtual Interface Card (VIC) 1300 platform embedded chip supporting dual-port 40-Gbps connectivity

- High reliability, availability, and serviceability (RAS) features with tool-free server nodes, system I/O controller, easy-to-use latching lid, and hot-swappable and hot-pluggable components

Veeam Availability Suite

Veeam is an industry leader within the data-protection market. In the era of digital transformation, Veeam recognizes the new challenges companies across the globe face in enabling the Always-On Enterprise, a business that must operate 24 hours a day. To address this challenge, Veeam has pioneered a new market of availability for the always-on enterprise by helping organizations meet today's service-level objectives, enabling recovery of any IT service and related applications and data within seconds and minutes. Veeam consistently pushes the envelope in bringing sophisticated backup and disaster recovery functions to enterprises and cloud providers.

Solution Design and Suggested Configurations

Data Protection Solution with Veeam Availability Suite on Cisco UCS S3260 is designed to address the data-protection needs of modern data centers. The increasing percentage of virtualized workloads, the dramatic increase in the size and amount of data, and the changes in the ways that companies do business and work with data have had an immense impact on data-protection solutions. With the time requirement for backup operations reduced to minutes and recovery-point-objective (RPO) and recovery-time-objective (RTO) requirements in the range of minutes to 1 hour, technologies such as compression, deduplication, replication, and backup to disk are essential in every design.

The features and functions provided by Veeam Availability Suite, combined with the features and functions provided by the Cisco UCS S3260 Storage Server, create a powerful solution for fast backup and fast restore operations. For long retention periods and for less frequently accessed data tape libraries or cloud object storage, Cisco UCS S3260 Storage Servers can be used.

Consider the following factors when backing up a data set to disk or tape:

- Disks are well suited for short retention periods; tape is better suited for longer retention periods.
- Disks are well suited for staging; tape is good for long-term storage.
- Disks are better suited for low-volume incremental backups.
- Incremental forever backups are well suited for storage on disk.
- Restoration from disk is usually faster than from tape.
- If client backup operations are too slow to keep the tape in motion, send the backups to disk.
- If the backups are small, send the backups to disk.
- Staging or lifecycle policies can later move the backup images to tape.

There is no best position in the infrastructure to install a Veeam Availability Suite server on the Cisco UCS S3260 because many different options are available to lay out a data center regardless of how big it is. One option is to position the Veeam Availability Suite servers in a central place in the physical network so that it is accessible from everywhere with the required bandwidth. With this approach, the number of required Veeam Availability Suite servers will be low, but the amount of network traffic will be high. Another option is to place the Veeam Availability Suite server as close as possible to the data source. With this approach, the number of Veeam Availability Suite servers will be greater, but the amount of network traffic on the core network will be much less.

Implementing the Cisco UCS S3260 with Veeam Availability Suite integrated into a converged infrastructure solution such as FlashStack provides the following benefits:

- **Simplified management:** Data protection is part of the existing infrastructure management framework.
- **Ease of scalability:** Storage capacity and network bandwidth are managed within the converged infrastructure solution. Within Cisco UCS, you can scale from a 10-Gbps network to a 40-Gbps network to reduce the backup window. You do not need to order and pay for a 40-Gbps port on the core network from the network team. You can scale the Veeam Availability Suite system from small to large according to the scale of the tier-1 storage or service-level agreement (SLA) changes from the business for applications running on the converged infrastructure solution.
- **Ease of support:** All components required to run an application and to back up and restore data are part of the same converged infrastructure solution and known by the administrator team onsite, the support team at Cisco, and the implementation partner. This approach simplifies the identification and resolution of problems such as bottlenecks and failed components.

Suggested Hardware Configurations

Based on the sizing rules for the Veeam Server components, Cisco has defined suggested configurations (Table 1) for different scale options.

Table 1. Suggested Cisco UCS Configurations for Veeam Availability Suite Server

	C240 with 4 TB	C240 with 6 TB	S3260 with 6 TB	S3260 with 10 TB
Boot disks	2* 480-GB SSD	2* 480-GB SSD	2* 480-GB SSD	2* 480-GB SSD
Data disks	12* 4-TB SAS	12* 6-TB SAS	14* 6-TB SAS 28* 6-TB SAS 42* 6-TB SAS 56* 6-TB SAS	14* 10-TB SAS 28* 10-TB SAS 42* 10-TB SAS 56* 10-TB SAS
Raw capacity	48 TB	72 TB	84 TB 168 TB 252 TB 336 TB	140TB 280 TB 420 TB 560 TB
Cisco UCS Rack Servers	C240 M5 LFF	C240 M5 LFF	S3260M4	S3260M4
CPU	Intel Xeon processor 5118 (12 cores, 2.3 GHz, and 105W)	Intel Xeon processor 5118 (12 cores, 2.3 GHz, and 105W)	Intel Xeon processor E5-2695 v4 (18 cores, 2.1 GHz, and 120W)	Intel Xeon processor E5-2695 v4 (18 cores, 2.1 GHz, and 120W)
Memory	64 GB	128 GB	256 GB	256 GB
RAID cache	2 GB	2 GB	4 GB	4 GB
RAID	RAID 6	RAID 6	RAID 6 or RAID 60	RAID 6 or RAID 60
FC ports up to:	4* 16 Gbps	4* 16 Gbps	4* 16 Gbps	4* 16 Gbps
Lights-out-management (LOM) ports	2* 40-Gbps ports	2* 40-Gbps ports	2* 40-Gbps ports	2* 40-Gbps ports

The suggested configurations based on the Cisco UCS C240 are “as-is” configurations with no option to scale within the chassis. The design is for small deployments and remote-office and branch-office (ROBO) deployments or for staging units for backup to disk and then to tape or backup to disk and then to cloud.

The suggested configuration based on the S3260 with 6-TB and 10-TB drives provides the option to choose 14, 28, 42, or 56 drives at the time of ordering and scale to 56 drives later. The configuration with 6-TB drives provides better throughput per terabyte, and the configuration with 10-TB drives provides lower cost per terabyte.

Cisco UCS Configuration

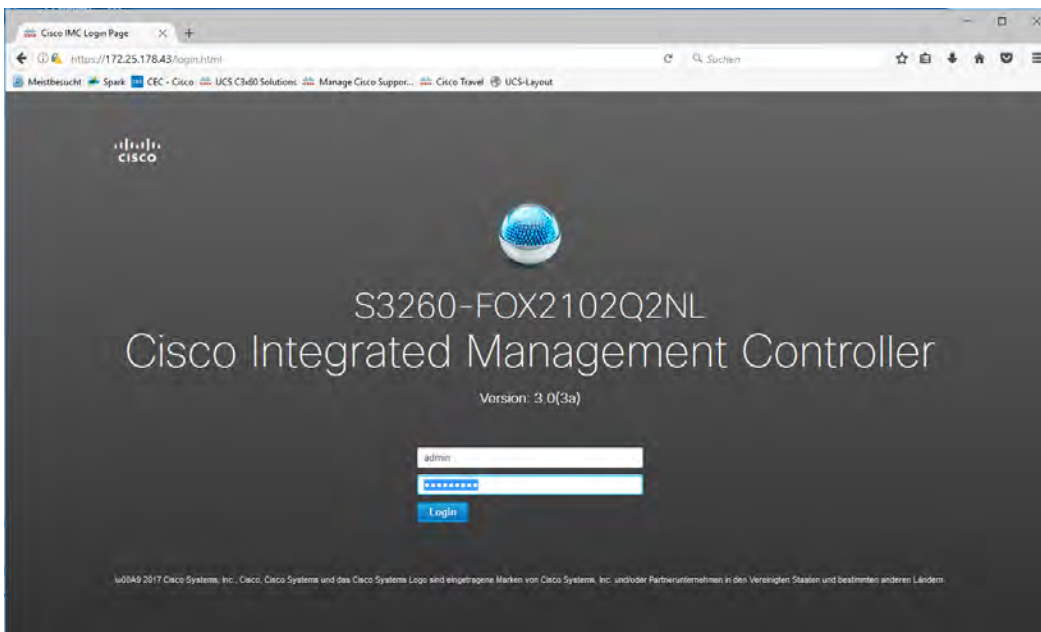
This document discusses the use of a standalone Cisco UCS S32600 Storage Server as well as the use of a Cisco UCS 3260 Storage Server managed by Cisco UCS to install Veeam Availability Suite to cover placement within a Cisco UCS domain or connected to data center switches.

Please use the [Cisco UCS S3260 installation guide](#) to complete the initial configuration (IP addresses, passwords, software versions, etc.). This document assumes that the S3260 is accessible through the Cisco Integrated Management Controller (IMC) or Cisco UCS Manager over the network.

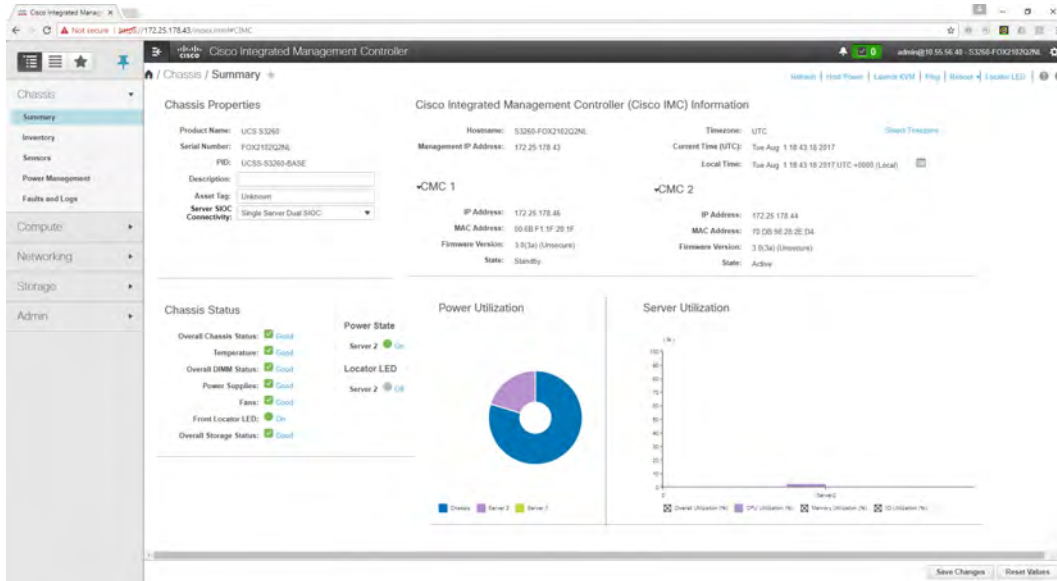
Note: You can use the design and configuration principles for unmanaged installations. Use the Cisco Integrated Management Controller for the storage and network configuration as well as the operating system installation.

Standalone Configuration with Cisco Integrated Management Controller

Log on to the IMC as the admin user.



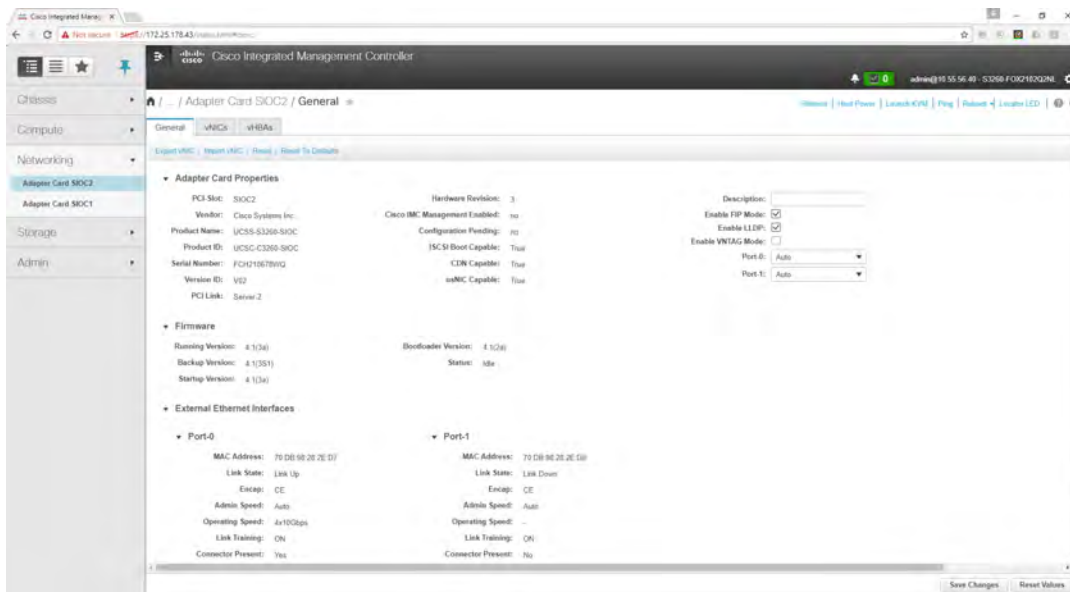
Check the condition of the system and the components required for the deployment on the Chassis > Summary page.



Choose Networking to see the system I/O controller (SIOC) configuration.

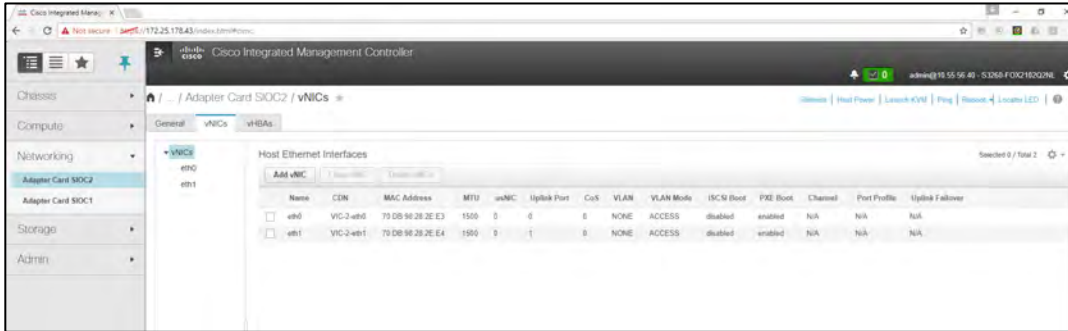
Only one SIOC is required. The second SIOC is optional and is used to achieve better high availability or greater throughput.

The General tab provides an overview of the SIOC and Ethernet ports, including the uplink status and port speeds. The operating speed can be 10 Gbps, 4 x 10 Gbps, or 40 Gbps. You should use 40 Gbps whenever possible.

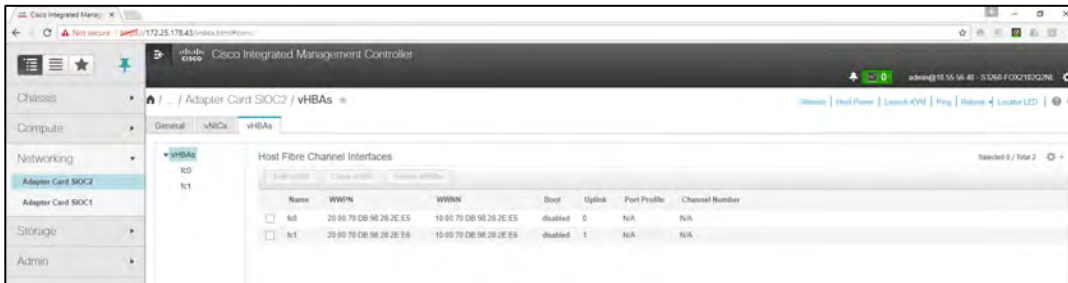


The virtual network interface card (vNIC) tab summarizes the existing host Ethernet interfaces, including the size of the maximum transmission unit (MTU), the uplink port used, and VLAN information. As a best practice, you should create at least one vNIC per uplink port or one vNIC per VLAN ID.

You should use MTU 9000 for the backup network if possible and on all participating devices in the network (clients, switches, and servers).



The virtual host bus adapter (vHBA) tab summarizes the existing host Fibre Channel Interfaces, including the worldwide port name (WWPN) and worldwide node name (WWNN) and information about whether the vHBA is used to boot the system. As a best practice, you should create at least one vHBA per uplink port or one vHBA per VSAN ID. Fibre Channel connectivity is used mainly for backup to Fibre Channel tape or for LAN-free backup directly from SAN storage.



The second SIOC is optional.

The screenshot displays the 'Adapter Card Properties' page for SIOC1 in the Cisco Integrated Management Controller. The page is divided into several sections:

- General:** PCI Slot: SIOC1, Vendor: Cisco Systems Inc, Product Name: UCS-S3268-SIOC, Product ID: UCS-S3268-SIOC, Serial Number: F0Q9517YE, Version ID: V01, PCI Link: Serial 2.
- Hardware Revision:** Hardware Revision: 3, Cisco IMC Management Enabled: no, Configuration Pending: no, iSCSI Boot Capable: True, CDN Capable: True, vNIC Capable: True.
- Firmware:** Running Version: 4.1(3a), Backup Version: 4.1(2f), Startup Version: 4.1(3a), Bootloader Version: 4.1(2f), Status: idle.
- External Ethernet Interfaces:**
 - Port-0:** MAC Address: 00:6B:F1:1F:20:22, Link State: Link Down, Encap: CE, Admin Speed: Auto, Operating Speed: --, Link Training: ON, Connector Present: No.
 - Port-1:** MAC Address: 00:6B:F1:1F:20:23, Link State: Link Down, Encap: CE, Admin Speed: Auto, Operating Speed: --, Link Training: ON, Connector Present: No.

The screenshot displays the 'Host Ethernet Interfaces' page for vNICs. It shows a table of configured vNICs:

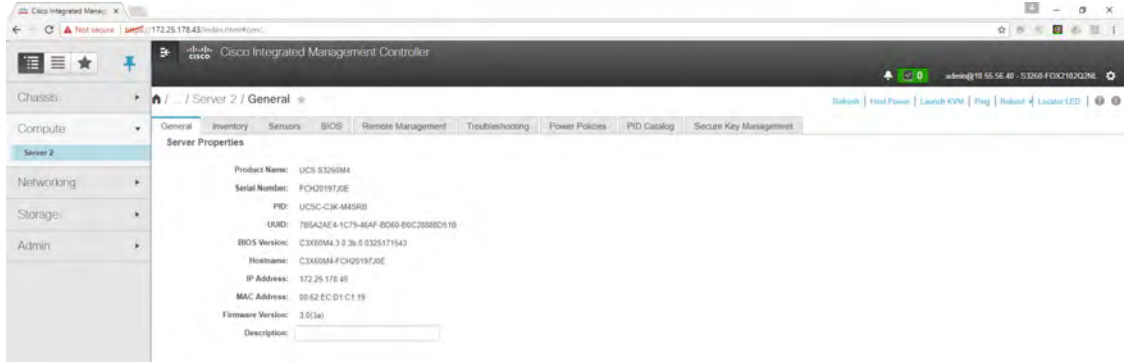
Name	CDN	MAC Address	MTU	vNIC	Uplink Port	CoS	VLAN	VLAN Mode	iSCSI Boot	FXE Boot	Channel	Port Profile	Uplink Follower
eth0	VIC-1-eth0	00:6B:F1:1F:20:2E	1500	0	0	0	NONE	TRUNK	disabled	enabled	N/A	N/A	N/A
eth1	VIC-1-eth1	00:6B:F1:1F:20:2F	1500	0	1	0	NONE	TRUNK	disabled	enabled	N/A	N/A	N/A

The screenshot displays the 'Host Fibre Channel Interfaces' page for vHBAs. It shows a table of configured vHBAs:

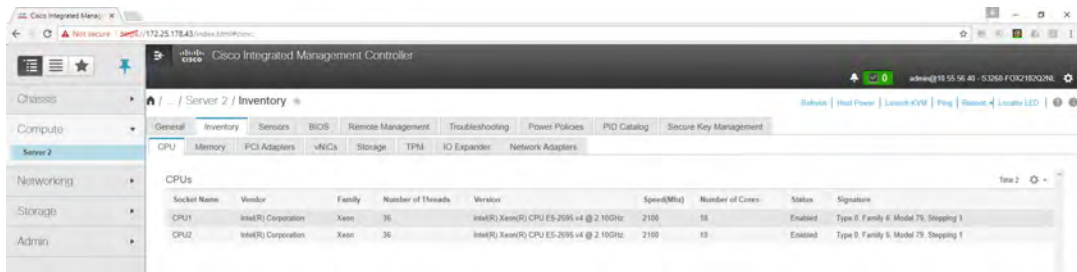
Name	WWPN	WWNN	Boot	Uplink	Port Profile	Channel Number
fc0	20:00:00:6B:F1:1F:20:30	10:00:00:6B:F1:1F:20:30	disabled	0	N/A	N/A
fc1	20:00:00:6B:F1:1F:20:31	10:00:00:6B:F1:1F:20:31	disabled	1	N/A	N/A

Choose Compute.

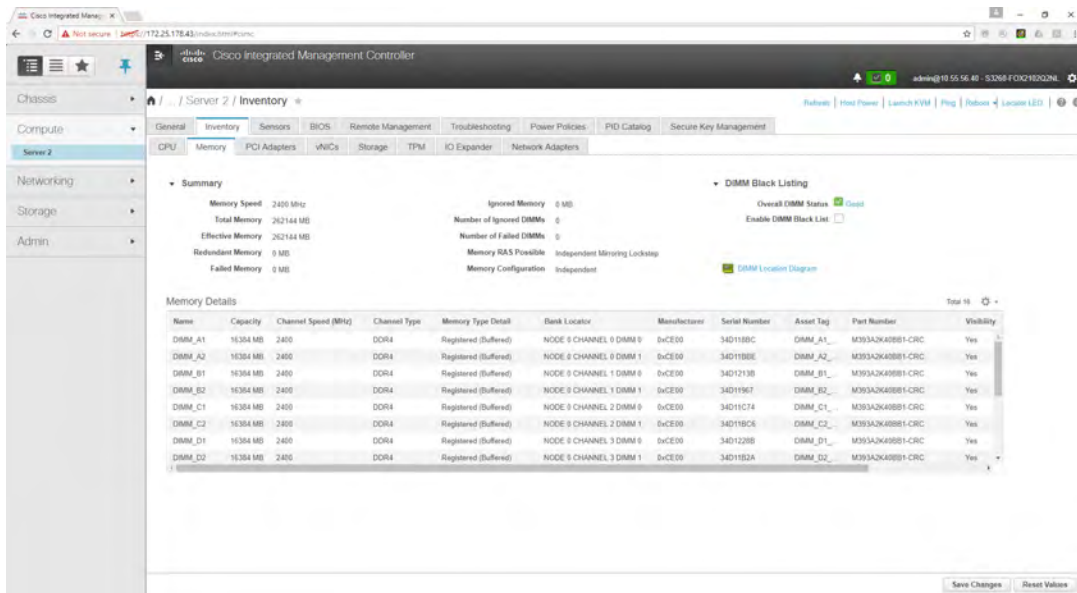
The Compute area summarizes the details of the server node, including information about the CPU, memory, Peripheral Component Interconnect Express (PCIe) cards, and local storage.



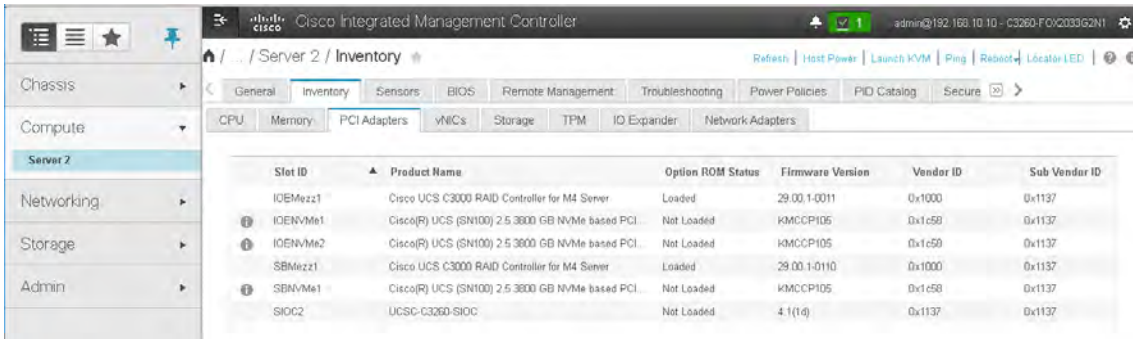
The CPU tab of the Inventory pane shows the CPUs.



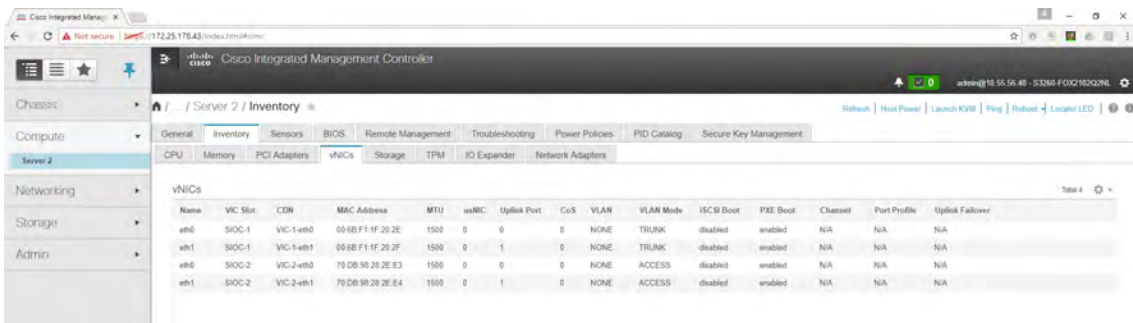
The Memory tab of the Inventory pane presents memory details.



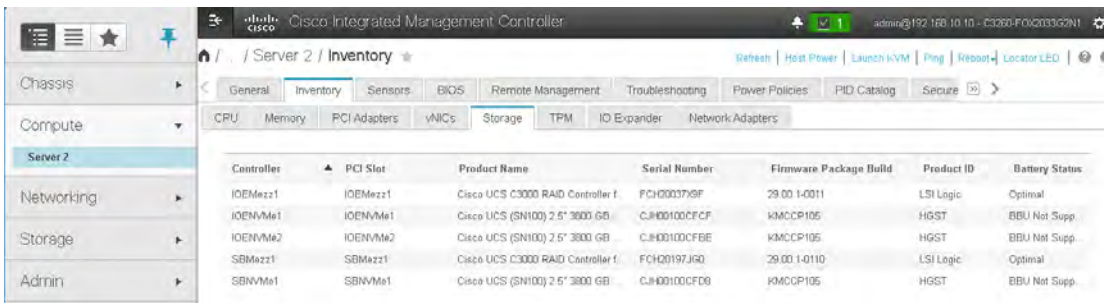
The S3260 SIOC is connected as the PCIe device and shown on the PCI Adapters tab.



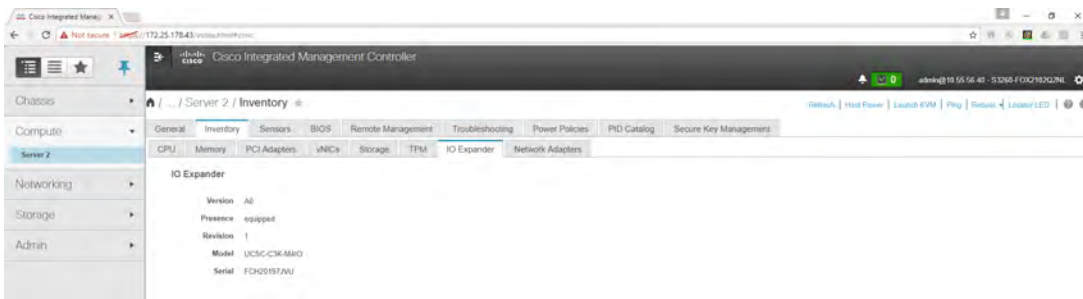
The vNICs tab of the Inventory pane shows the vNICs.



The Storage tab of the Inventory pane shows information about the storage controller.



If the S3260 is equipped with an I/O expander board for installing PCIe cards or additional Nonvolatile Memory Express (NVMe) devices, the details are shown on the IO Expander tab.

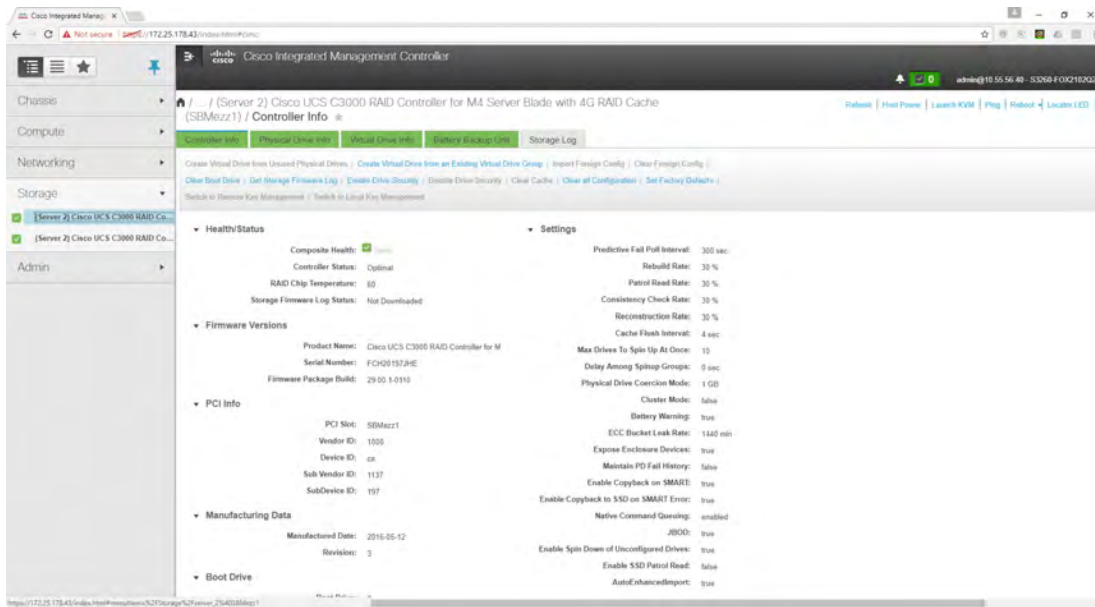


Choose storage.

The storage configuration is the most important part of the Cisco UCS S3260 configuration.

The Storage pane shows the NVMe details, RAID controller information, information about the physical and virtual drives, and RAID settings.



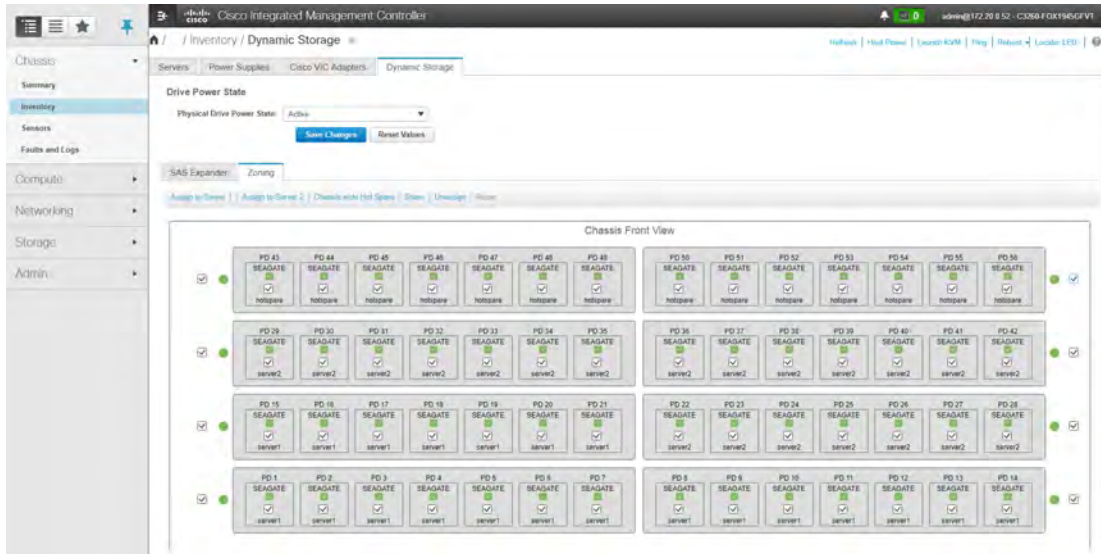


Choose chassis.

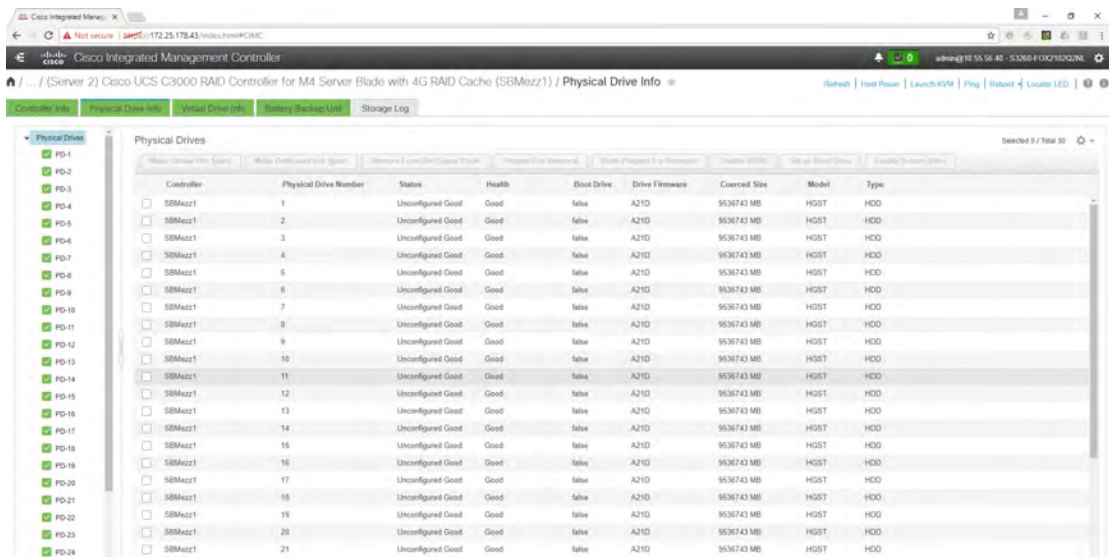
The RAID controller will see only the physical drives that are zoned for it in the Chassis area.

In the Chassis area, choose Inventory > Dynamic Storage. On this screen, click the Zoning tab.

Select all the drives and click Assign to Server 2. Then click Save Changes.



Give the system some time to complete the zoning process. Power on the server node so that the RAID controller discovers physical disk devices before you start creating virtual drive groups and virtual drives in the storage area.



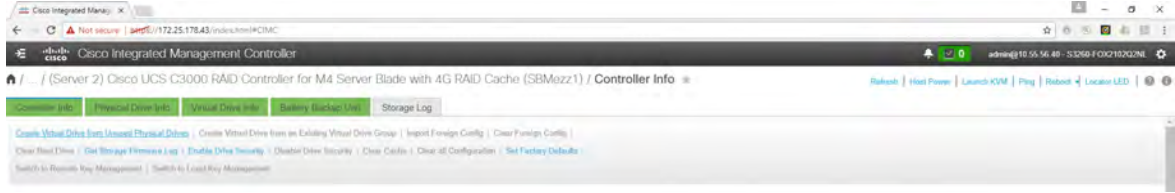
In the Virtual Drive Info pane, no virtual drives should be listed. Remove any virtual drives that appear in this initial configuration.



The Veeam Availability Suite configuration mandates a simple storage setup with just one logical unit number (LUN) used as Backup Repository. The RAID level and LUN size depends on the number of disks installed in the server.

Create virtual disk group 0.

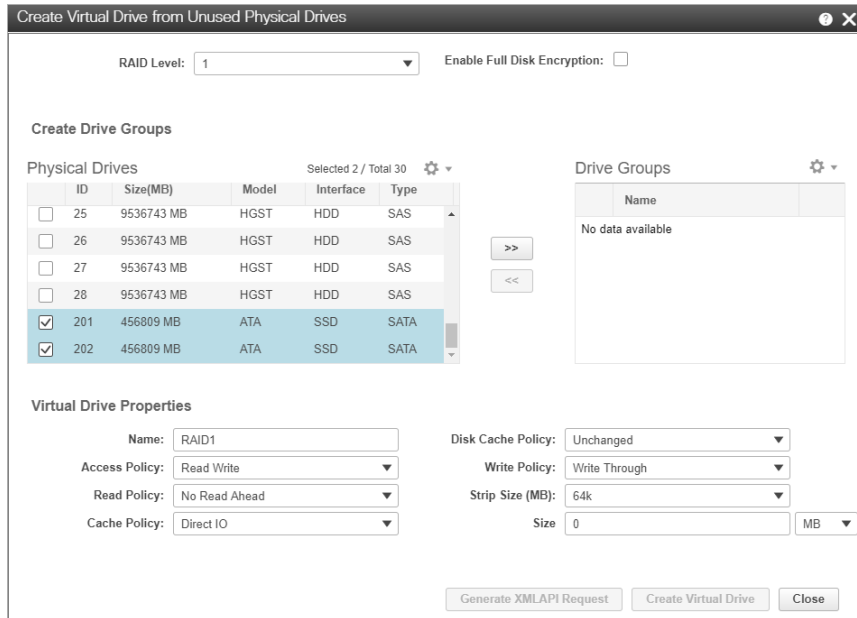
On the Controller Info page, click Create Virtual Drive from Unused Physical Drives.



For the operating system and Veeam Server, you must create a RAID 1 configuration on the two SSDs on the back of the chassis.

Select 1 as the RAID level.

Select physical drives 201 and 202 and add them to the drive group (click >>).

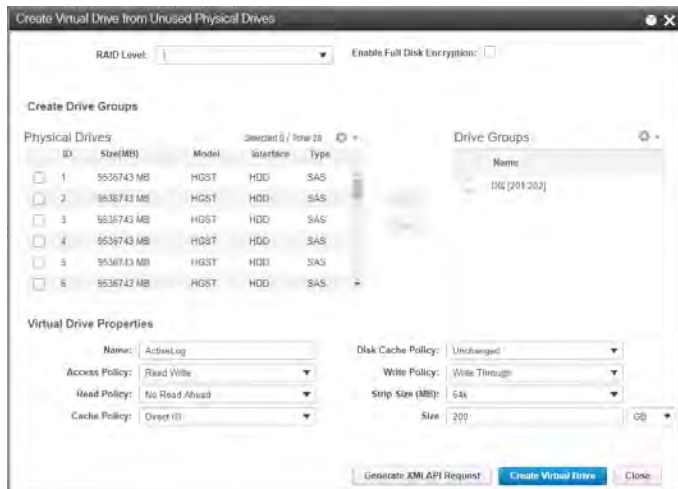


For the name, enter Boot.

Change Cache Policy from Direct IO to Cached IO

Change Write Policy from Write Through to Write Back Good BBU.

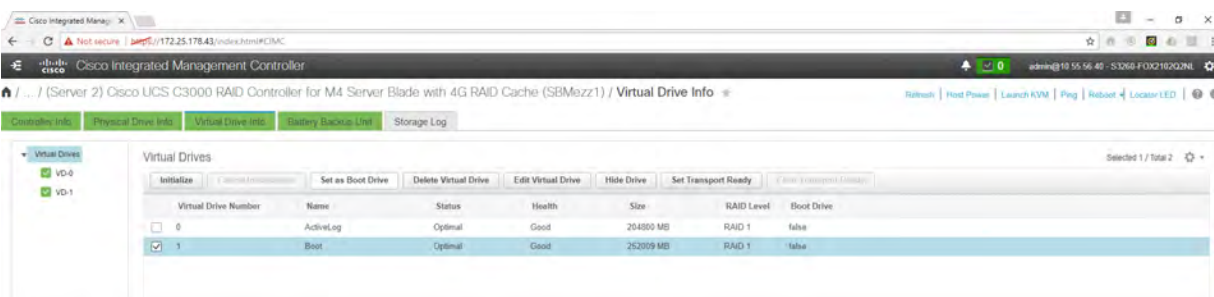
Enter the value shown for Largest Available Space as the size.



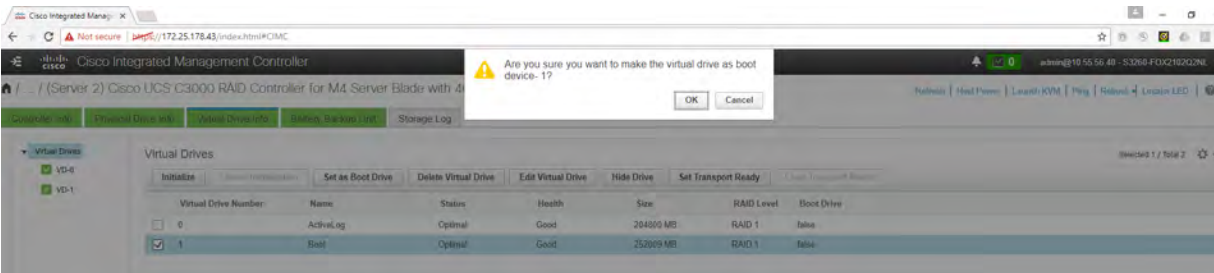
Go to the Virtual Drive Info tab and select the Boot virtual drive.



Click Set as Boot Drive.



Confirm that you want to make the Boot Virtual Drive the Boot Drive.

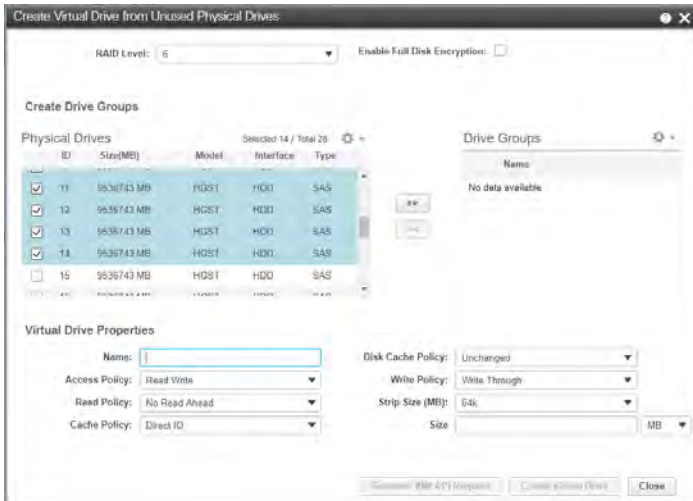


Return to the Controller Info tab to create the additional virtual drive groups and virtual drives.

Click Create Virtual Drive from Unused Physical Drives.

Select 6 as the RAID level for a configuration with 14 disks and 60 for all configurations with 28, 42, or 56 disks.

Select physical drives 1 through XX, where XX is the number of disks 14, 28, 42, or 56, and add them to the drive group (click >>).



Enter **Data1** as the name.

Change Read Policy to Always Read Ahead.

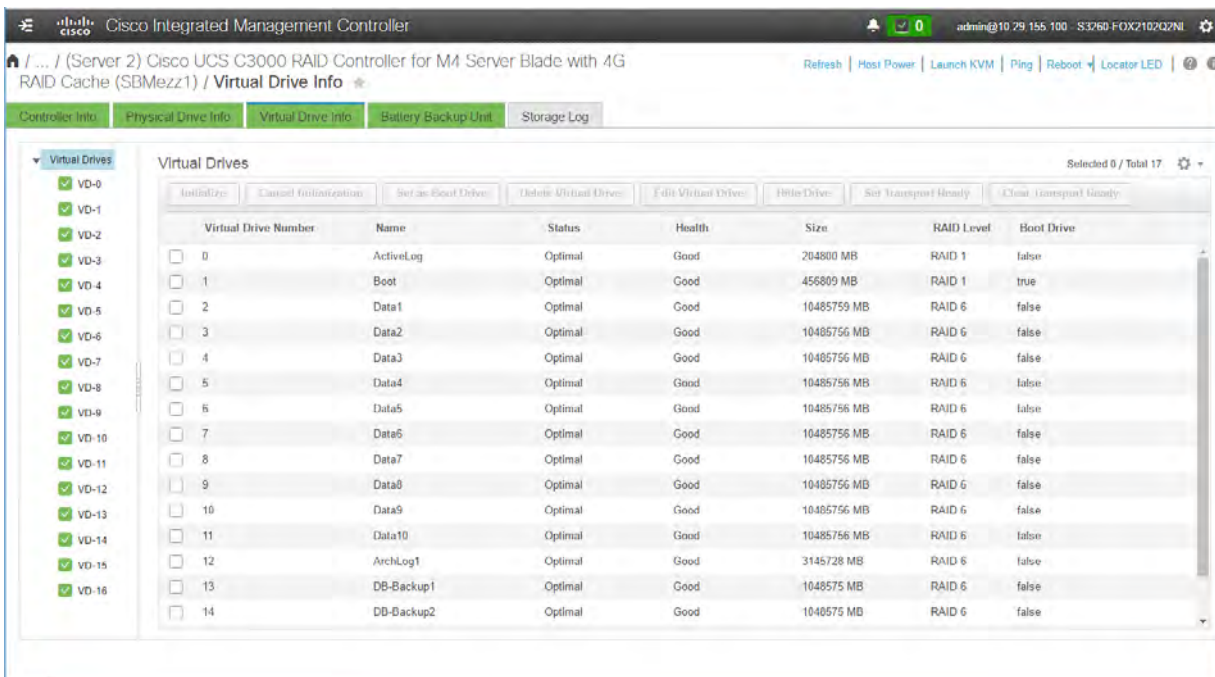
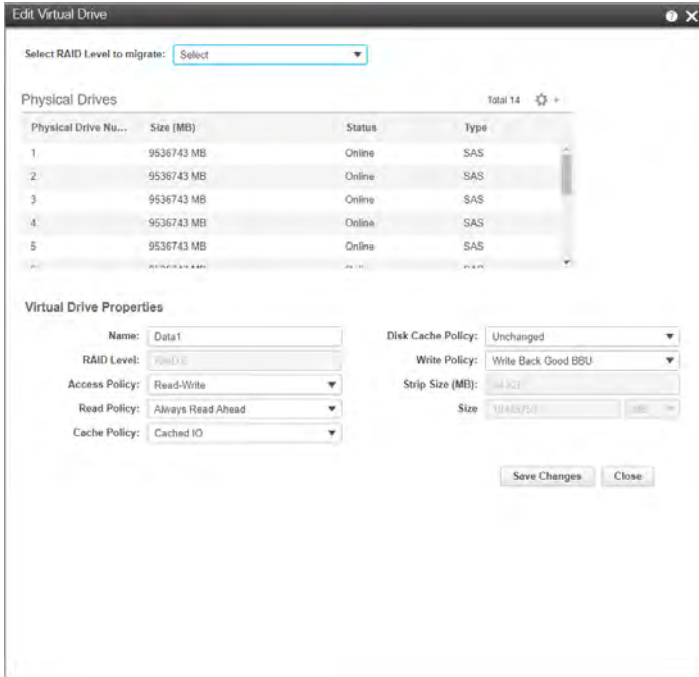
Change Cache Policy to Cached IO.

Change Write Policy to Write Back Good BBU.

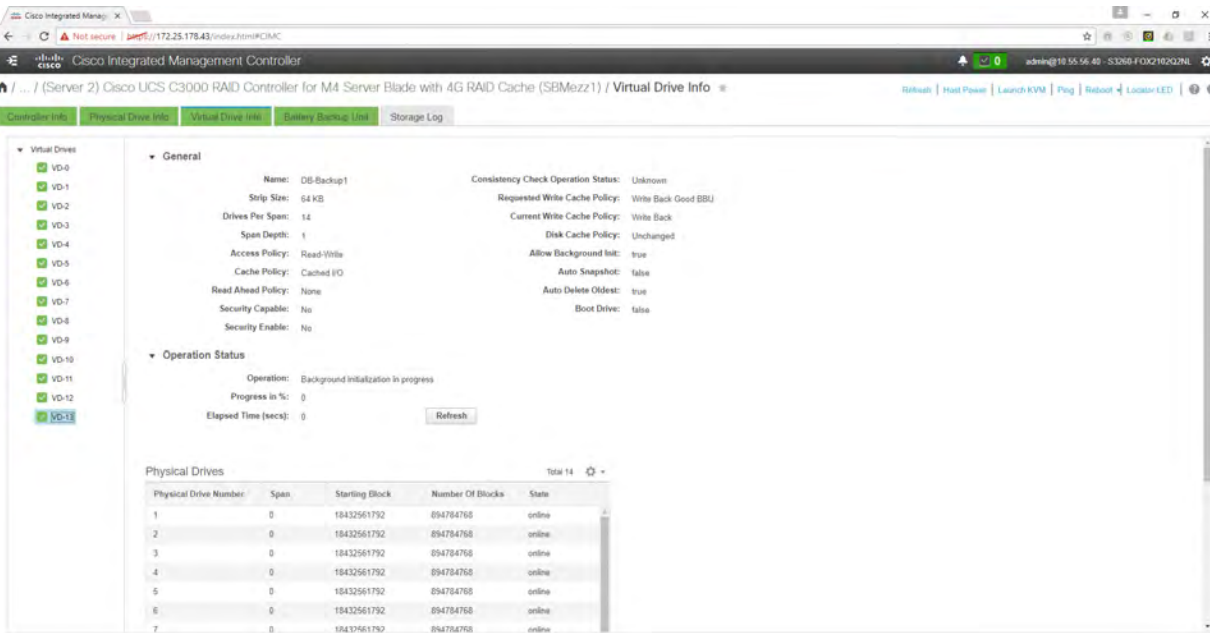
Change Strip Size to 512 KB

Enter 10 as the size and change the unit to TB.

Click Create Virtual Drive.



Be aware that the disk group initialization process is ongoing in the background for several hours, and full performance is available only after the initialization process finishes.



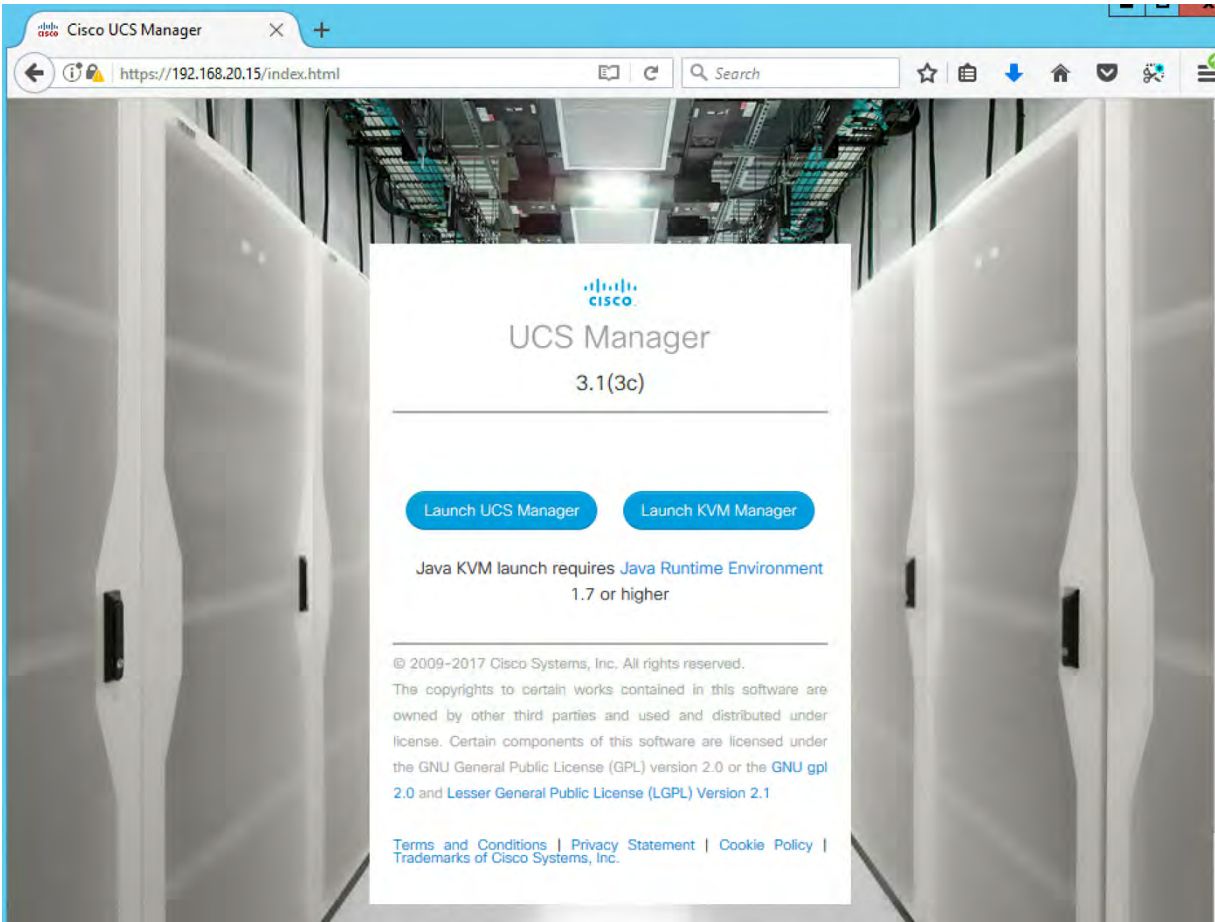
The screenshot shows the Cisco Integrated Management Controller (CIMC) interface for a RAID controller. The main content area is titled "Virtual Drive Info" and is divided into several sections:

- Virtual Drives:** A list of virtual drives (VD-0 to VD-13) with checkboxes. VD-13 is currently selected.
- General:** Configuration details for the selected virtual drive (DB-Backup1).
 - Name: DB-Backup1
 - Strip Size: 64 KB
 - Drives Per Span: 14
 - Span Depth: 1
 - Access Policy: Read-Write
 - Cache Policy: Cached I/O
 - Read Ahead Policy: None
 - Security Capable: No
 - Security Enable: No
 - Consistency Check Operation Status: Unknown
 - Requested Write Cache Policy: Write Back Good EBU
 - Current Write Cache Policy: Write Back
 - Disk Cache Policy: Unchanged
 - Allow Background Init: true
 - Auto Snapshot: false
 - Auto Delete Oldest: true
 - Boot Drive: false
- Operation Status:** Shows the current state of the virtual drive.
 - Operation: Background Initialization in progress
 - Progress in %: 0
 - Elapsed Time (secs): 0
 - A "Refresh" button is present.
- Physical Drives:** A table showing the underlying physical drives.

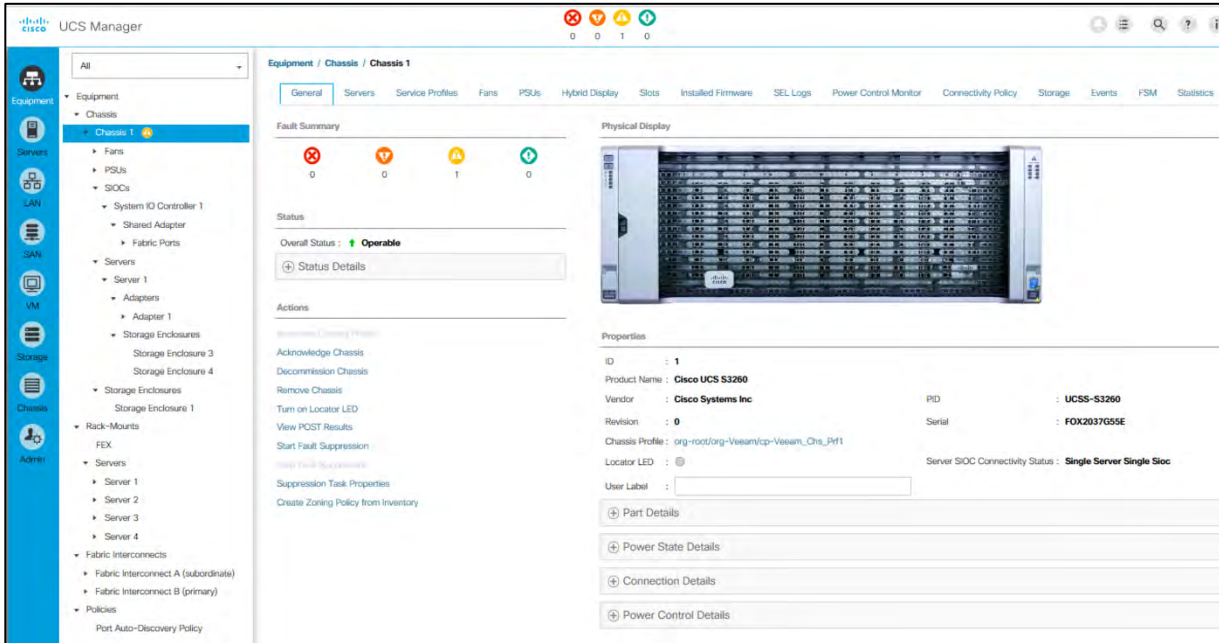
Physical Drive Number	Span	Starting Block	Number Of Blocks	State
1	0	18432561792	894784768	online
2	0	18432561792	894784768	online
3	0	18432561792	894784768	online
4	0	18432561792	894784768	online
5	0	18432561792	894784768	online
6	0	18432561792	894784768	online
7	0	18432561792	894784768	online

Cisco UCS Managed Configuration with Cisco UCS Manager

Log on to Cisco UCS Manager as the admin user or as another user with administrative rights.



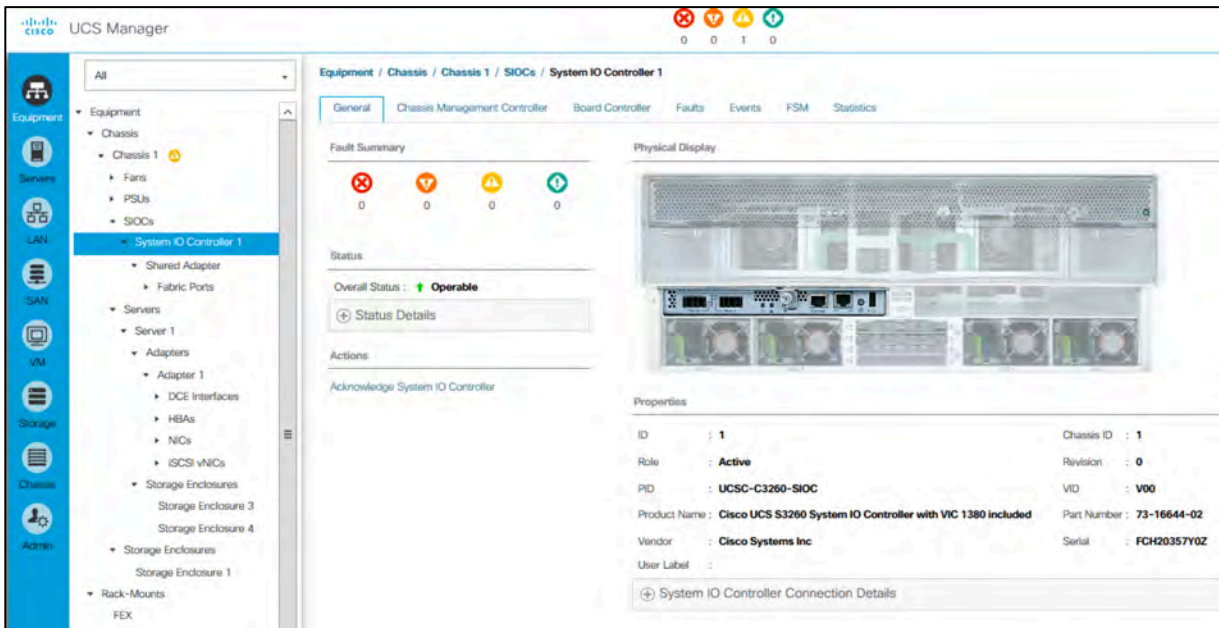
On the Equipment tab, identify the Cisco UCS S3260 chassis and check the condition of the system and the components required for the deployment.



Check the SIOC information.

Only one SIOC is required. The second SIOC is optional and is used for better high availability or greater throughput.

The General tab provides an overview of the SIOC and Ethernet ports, including the uplink status and port speeds. The operating speed can be 10 Gbps, 4 x 10 Gbps, or 40 Gbps. You should use 40 Gbps whenever possible.



The Servers area shows the details of the server node, including information about the CPU, memory, PCIe cards, and local storage.

UCS Manager

Equipment / Chassis / Chassis 1 / Servers / Server 1

General Inventory Virtual Machines Installed Firmware CIMC Sessions SEL Logs VIF Paths Faults Events FSM Health Diagnostics

Motherboard CIMC **CPUs** Memory Adapters HBAs NICs iSCSI vNICs Storage GPUs Security

Processor 1

Product Name : Intel(R) Xeon(R) E5-2695 v4 Vendor : Intel(R) Corporation
 PID : UCS-CPU-E52695E Revision : 0

Part Details

Processor Architecture : Xeon
 CPU Stepping : 1 Speed (GHz) : 2.1
 Socket Name : CPU1 Number of Threads : 36
 Number of Cores : 18 Number of Cores Enabled : 18

States

Overall Status : Operable
 Operability : Operable Power : N/A
 Thermal : OK Presence : Equipped

Processor 2

Product Name : Intel(R) Xeon(R) E5-2695 v4 Vendor : Intel(R) Corporation
 PID : UCS-CPU-E52695E Revision : 0

Part Details

Processor Architecture : Xeon
 CPU Stepping : 1 Speed (GHz) : 2.1
 Socket Name : CPU2 Number of Threads : 36
 Number of Cores : 18 Number of Cores Enabled : 18

States

Overall Status : Operable
 Operability : Operable Power : N/A

UCS Manager

Equipment / Chassis / Chassis 1 / Servers / Server 1

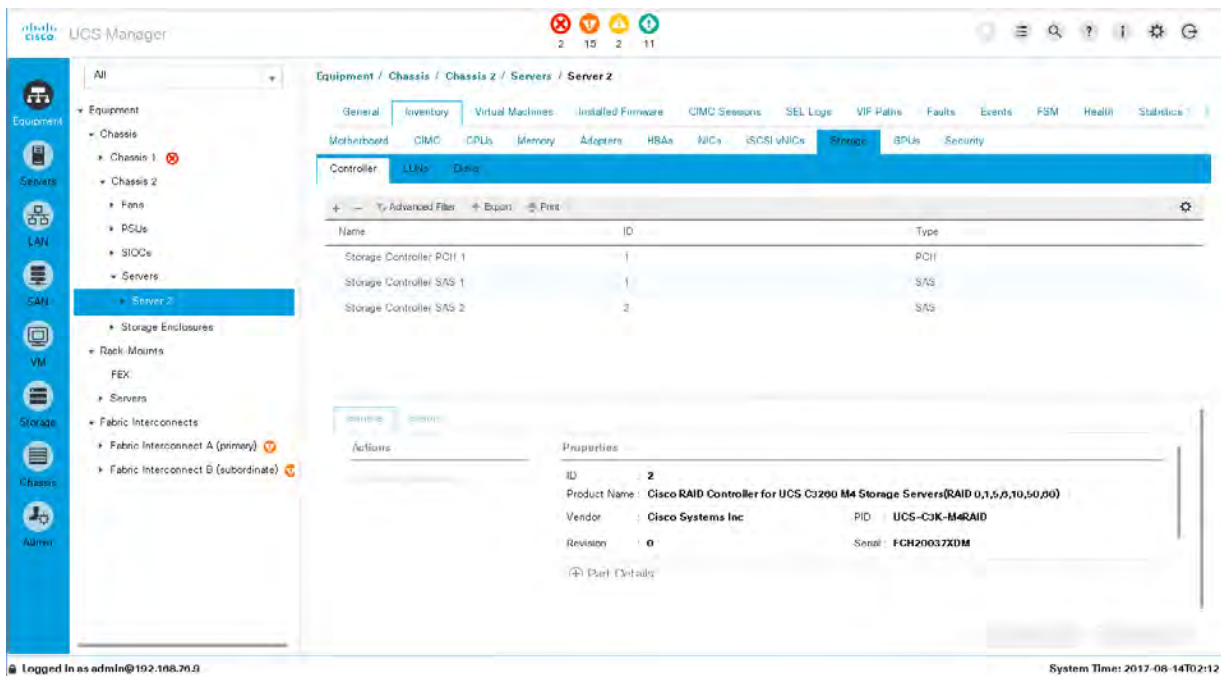
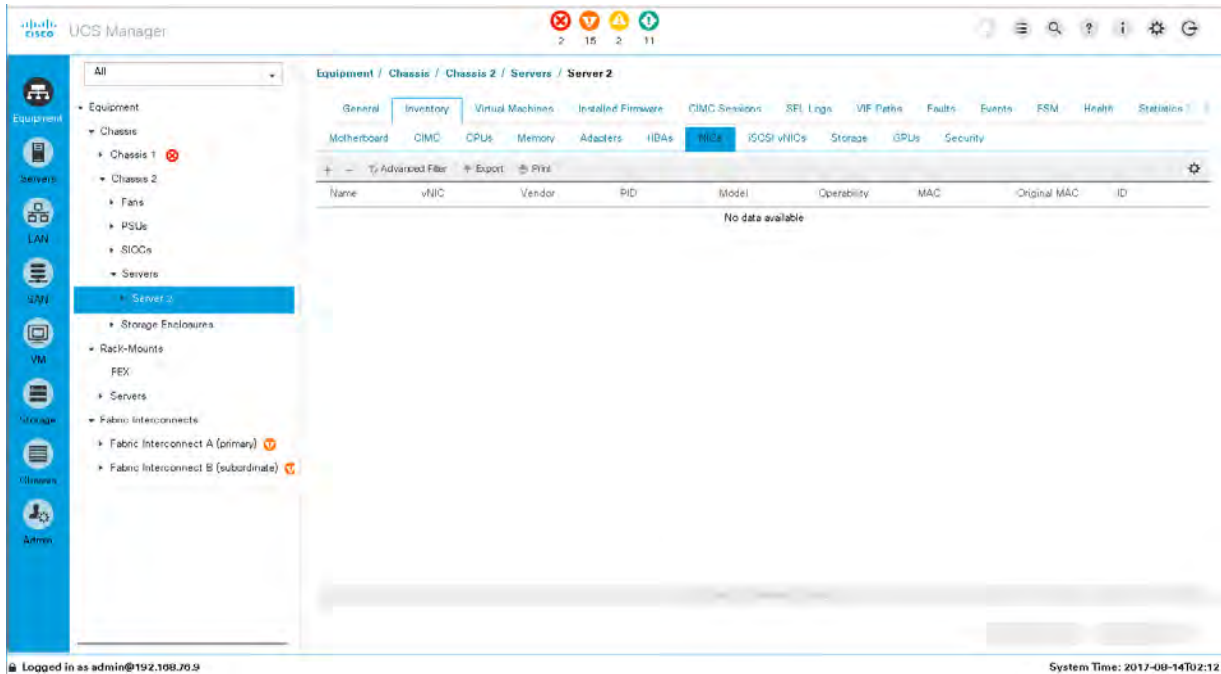
General Inventory Virtual Machines Installed Firmware CIMC Sessions SEL Logs VIF Paths Faults Events FSM Health Diagnostics Statistics

Motherboard CIMC CPUs **Memory** Adapters HBAs NICs iSCSI vNICs Storage GPUs Security

Advanced Filter Export Print

Name	Location	Capacity (GB)	Clock (MHz)
Memory 1	DIMM_A1	16.00	2400
Memory 2	DIMM_A2	16.00	2400
Memory 3	DIMM_B1	16.00	2400
Memory 4	DIMM_B2	16.00	2400
Memory 5	DIMM_C1	16.00	2400
Memory 6	DIMM_C2	16.00	2400

In a standalone configuration, the SIOC includes predefined vNICs and vHBAs. In a configuration managed by Cisco UCS, however, nothing is defined. This definition is part of the service profile configuration. If PCIe cards for networking or Fibre Channel are installed, the information is listed on the NICs and HBAs tabs.



To complete the storage configuration discussed later in this document, you need to identify the physical disks available for the operating system installation. The Cisco UCS S3260 chassis comes with four disk slots on the rear side, with disk numbers 201 through 205. Identify and note the disks that are available. In the example here, the available disks are 201 and 202.

The screenshot shows the UCS Manager interface for 'Server 1'. The left sidebar contains a navigation tree with categories like Equipment, Servers, LAN, SAN, VM, Storage, Chassis, and Admin. The main content area is titled 'Equipment / Chassis / Chassis 1 / Servers / Server 1' and has several tabs: General, Inventory, Virtual Machines, Installed Firmware, CIMC Sessions, SEL Logs, VIF Paths, Faults, Events, FSM, Health, and Diagnostics. Under the 'Inventory' tab, there are sub-tabs for Motherboard, CIMC, CPUs, Memory, Adapters, HBAs, NICs, iSCSI vNICs, Storage, GPUs, and Security. The 'Storage' sub-tab is active, showing a table of disks.

Name	Size (MB)	Serial	Operability	Presence	Technology
Disk 54	5722031	Z4D21FK0000R540VY9	Operable	Equipped	HDD
Disk 55	5722031	Z4D174Z0000W515S1WU	Operable	Equipped	HDD
Disk 56	5722031	Z4D1KQ5000R534NFF5	Operable	Equipped	HDD
Disk 201	456809	PHWA627601U5480FGN	Operable	Equipped	SSD
Disk 202	456809	PHWA627601J480FGN	Operable	Equipped	SSD

Below the table, there is a 'Details' section with tabs for General, P2P, and Settings. The 'General' tab is active, showing 'Actions' and 'Properties' for the selected disk. The 'Part Details' section lists various attributes:

- ID
- Vendor
- Serial
- Product Name
- Product Variant
- Drive State
- Size (MB)
- Number of Blocks
- Power State
- Link Speed
- Logical Block Size
- Number of EPs

On the server node, Storage Enclosure 3 represents the disk slots on the back of the chassis, used for the operating system disks. Storage Enclosure 4 represents the NVMe slot on the server node, and Storage Enclosure 5 represents the two NVMe slots on the I/O expander board (if one is connected). Those storage enclosures are dedicated to the specific server.

The screenshot displays the UCS Manager interface. The breadcrumb navigation path is: Equipment / Chassis / Chassis 1 / Servers / Server 1 / Storage Enclosures / Storage Enclosure 3. The 'Disks' tab is active, showing a table of disks:

Name	Size (MB)	Raw Size (MB)	Model	Serial	Operability	Drive State	Presence	Technol
Disk 201	456809	457862	INTEL SSDSC2BB48...	PHWA627601U548...	Operable	Online	Equipped	SSD
Disk 202	456809	457862	INTEL SSDSC2BB48...	PHWA6276013J480...	Operable	Online	Equipped	SSD

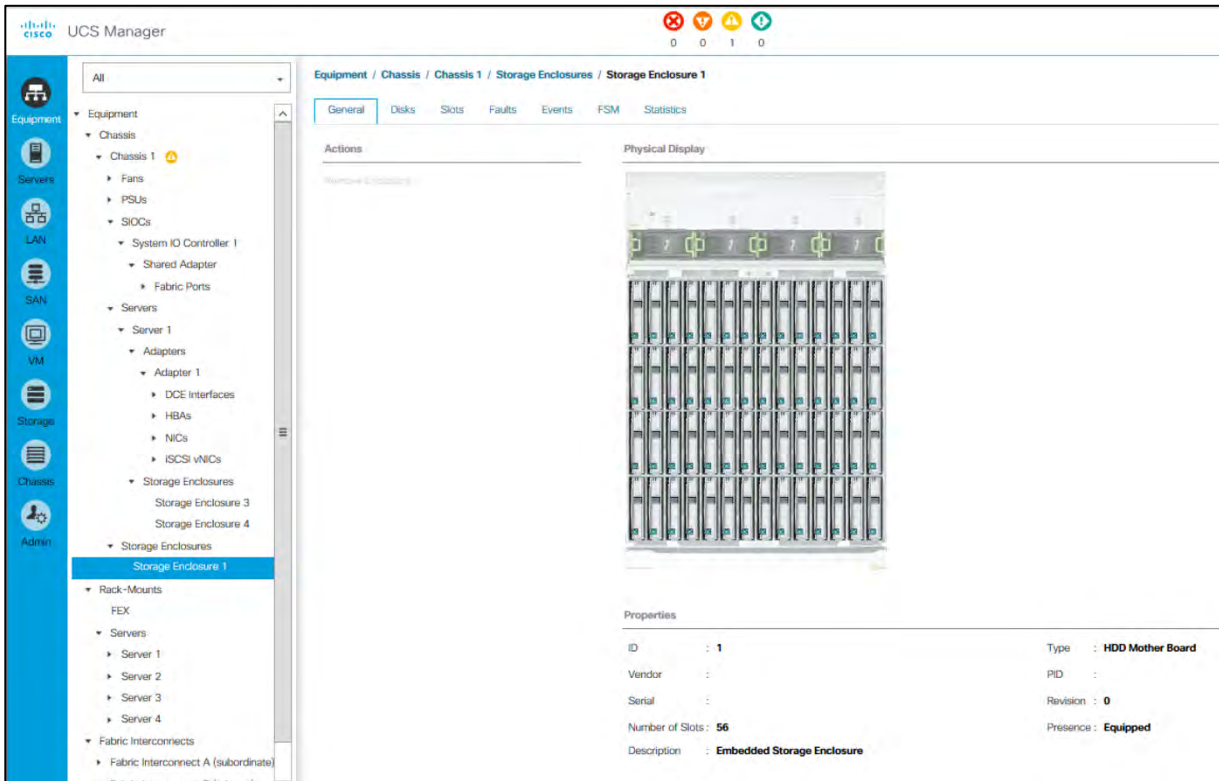
The 'Details' section is open to the 'General' tab, showing the following properties:

Property	Value
ID	: 202
PID	: UCS-C3X60-G2SD48
Vendor	: Intel
VID	: V01
Serial	: PHWA6276013J480FGN
Revision	: 0
Product Name	: UCS S3260 480GB Boot SSD (Gen 2)
Product Variant	: C3000_BOOT

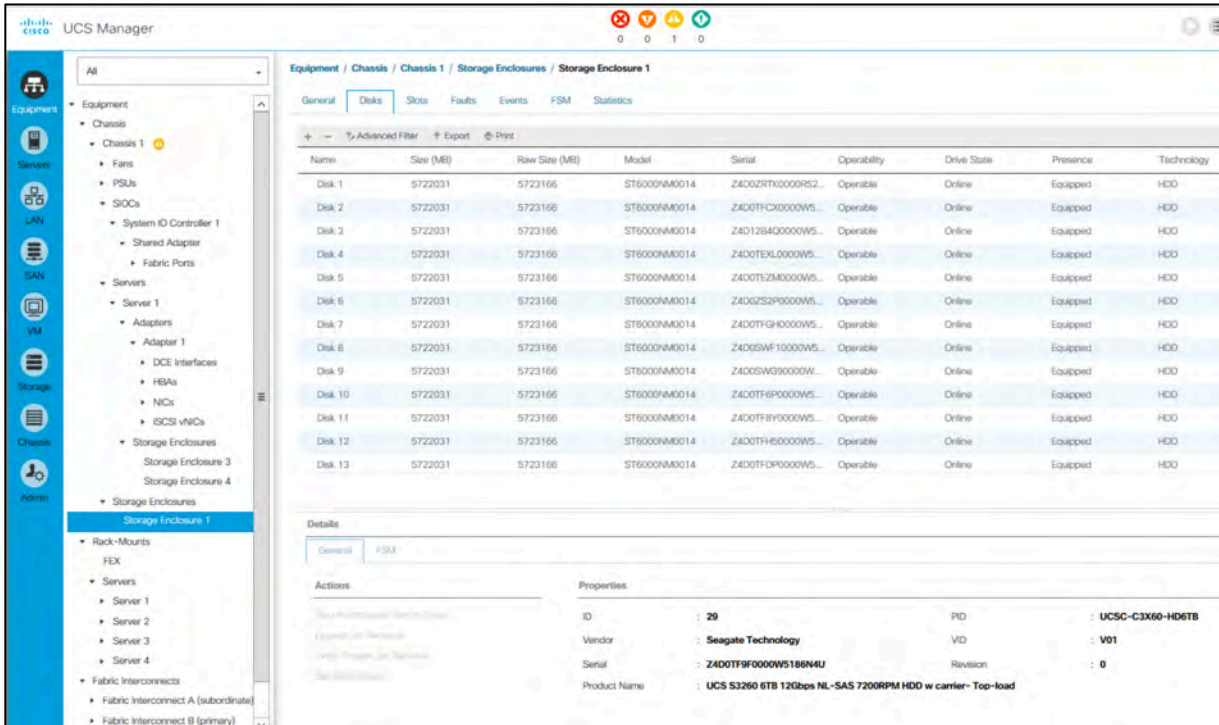
Below the properties, there is a 'Part Details' section with the following information:

Drive State	: Online	Size (MB)	: 456809
Number of Blocks	: 935544832	Logical Block Size	: 512
Physical Block Size	: 4096	Locator LED	: <input type="checkbox"/>
Technology	: SSD	Cache Size	: 1024 MB
Average Seek Time (RW)	: N/A	Track to Track Seek Time (RW)	: N/A

The Storage Enclosures area under Chassis, not under Servers, represents the top-loaded disk slots of the Cisco UCS S3260 chassis.



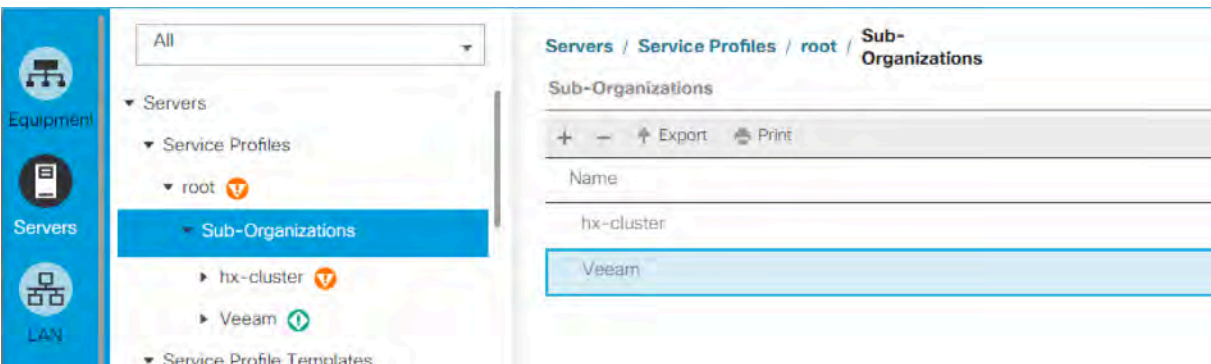
The Disks tab of Storage Enclosure 1 shows all the details about the top-loaded drives.



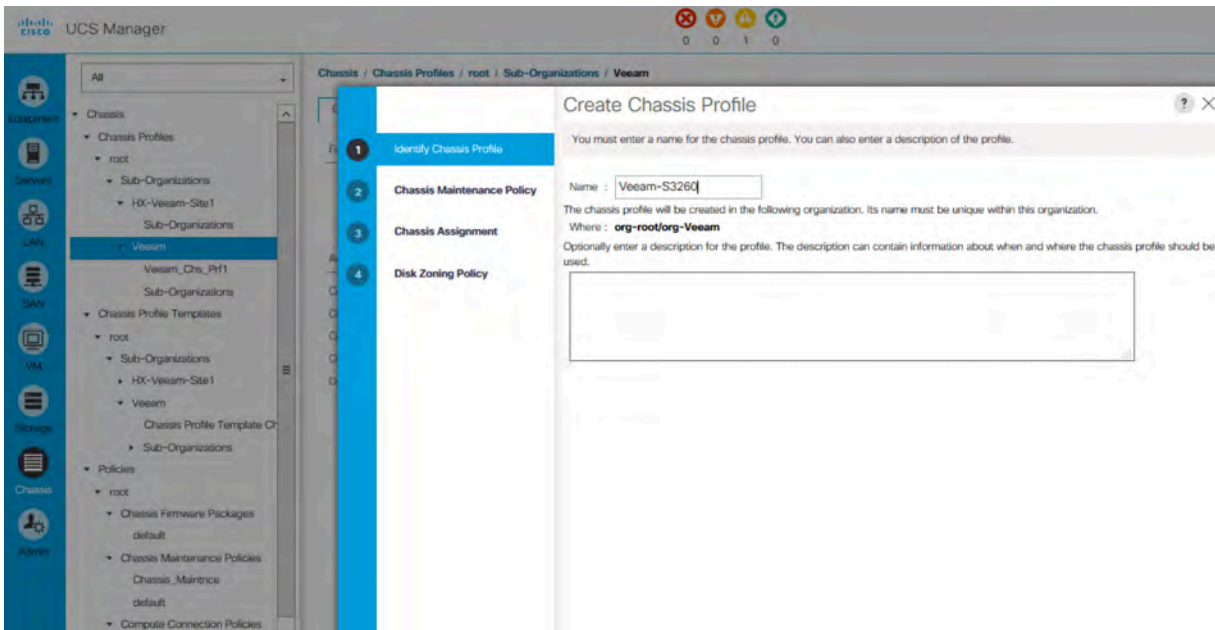
The next step is to specify a chassis profile for the Cisco UCS S3260 to define the disk zoning for the top-loaded drives (Storage Enclosure 1) within the chassis. Without a chassis profile, servers have no access to the top-loaded drives.

The Cisco UCS Manager configuration for Veeam Availability Suite is specific to the use case, so you should define a new sub-organization for Veeam Availability Suite to keep all configurations dedicated to this use case.

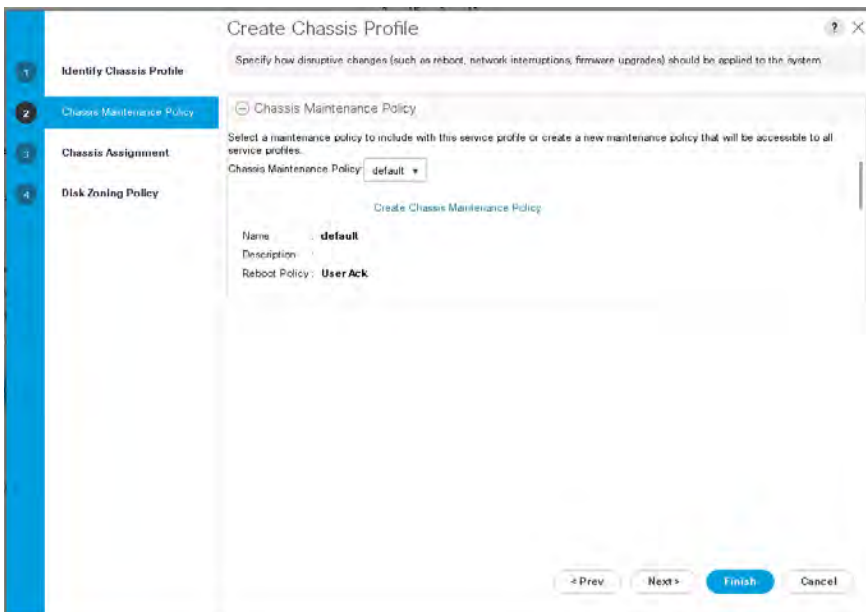
In the Chassis area, choose one of the root options, and choose Sub-Organizations. Right click and choose Create Organization. Enter an obvious name, such as Veeam, enter a description, and click OK.



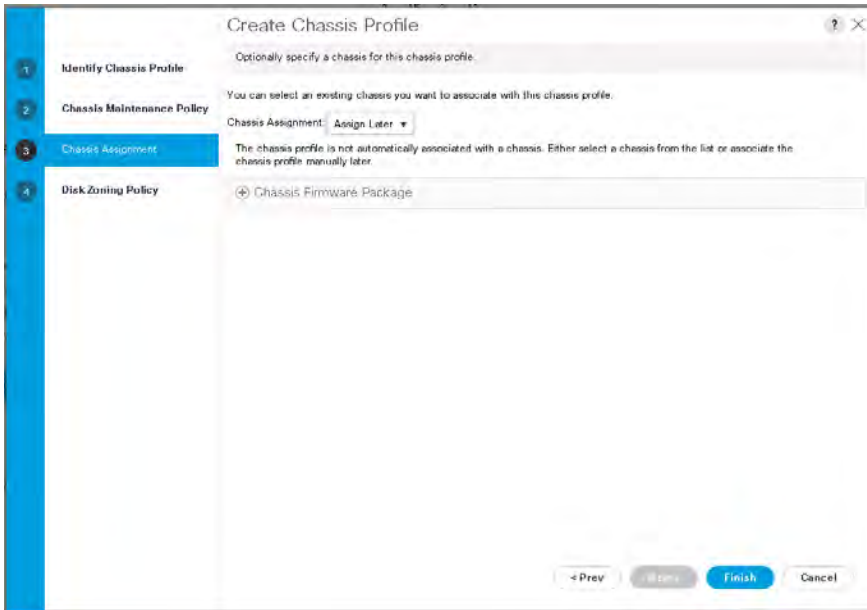
Select the sub-organization you created and click Create Chassis Profile.



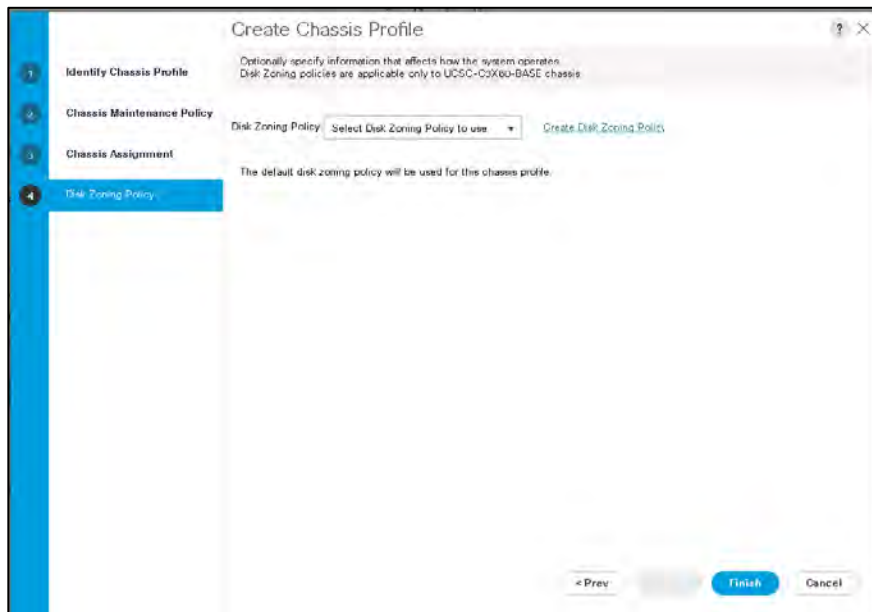
Select a chassis maintenance policy, such as the default policy used in the example here, and click Next.



Keep Assign Later selected and click Next.



Click Create Disk Zoning Policy.

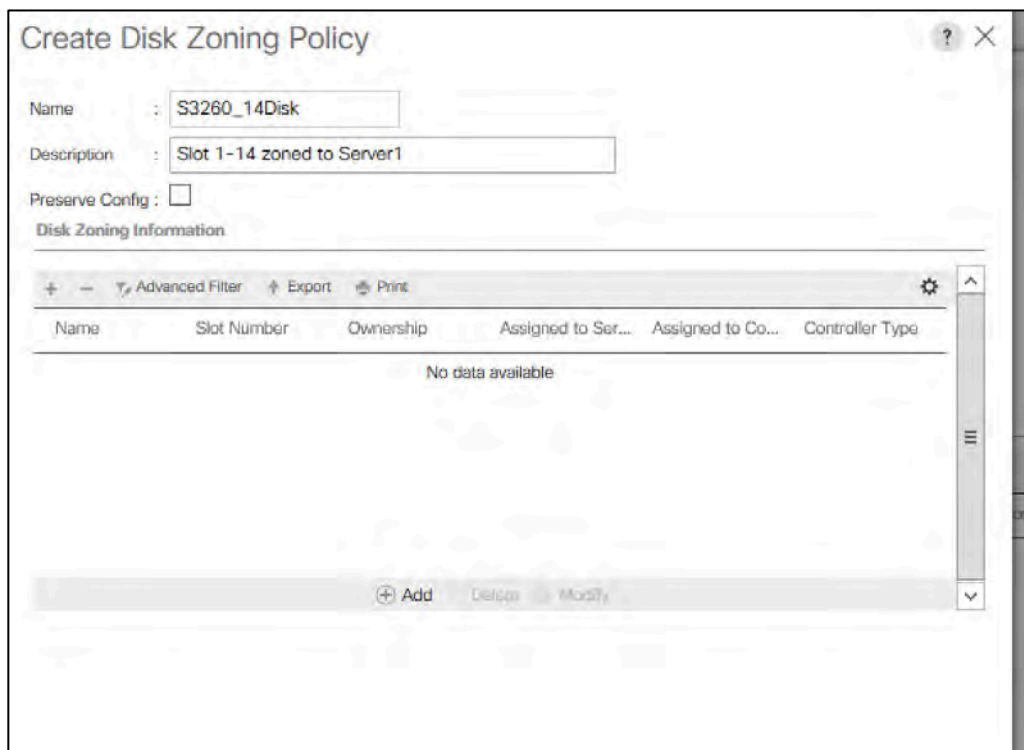


The next steps are dependent on the available disk drives in Disk Enclosure 1 and the number of drives assigned to the Veeam Availability Suite server.

For a configuration with 14 disk drives, use the following steps:

Enter an obvious name, such as **S3260_14**, and click Next.

Enter an obvious name, such as **S3260_14disks**, for the disk zoning policy and click Add.



Create Disk Zoning Policy

Name : S3260_14Disk

Description : Slot 1-14 zoned to Server1

Preserve Config :

Disk Zoning Information

Name	Slot Number	Ownership	Assigned to Ser...	Assigned to Co...	Controller Type
No data available					

+ Add Delete Modify

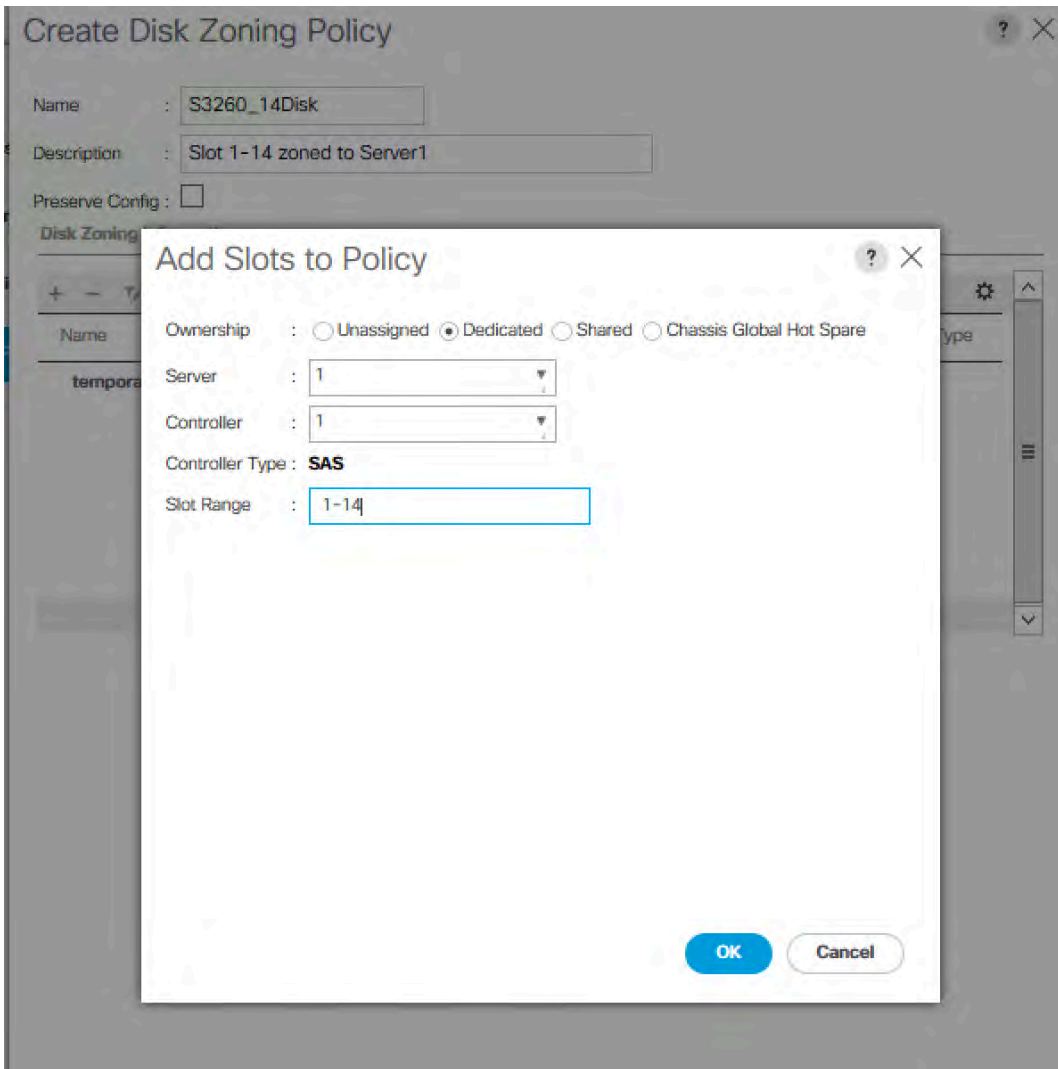
Select Dedicated as the ownership.

Select server 1.

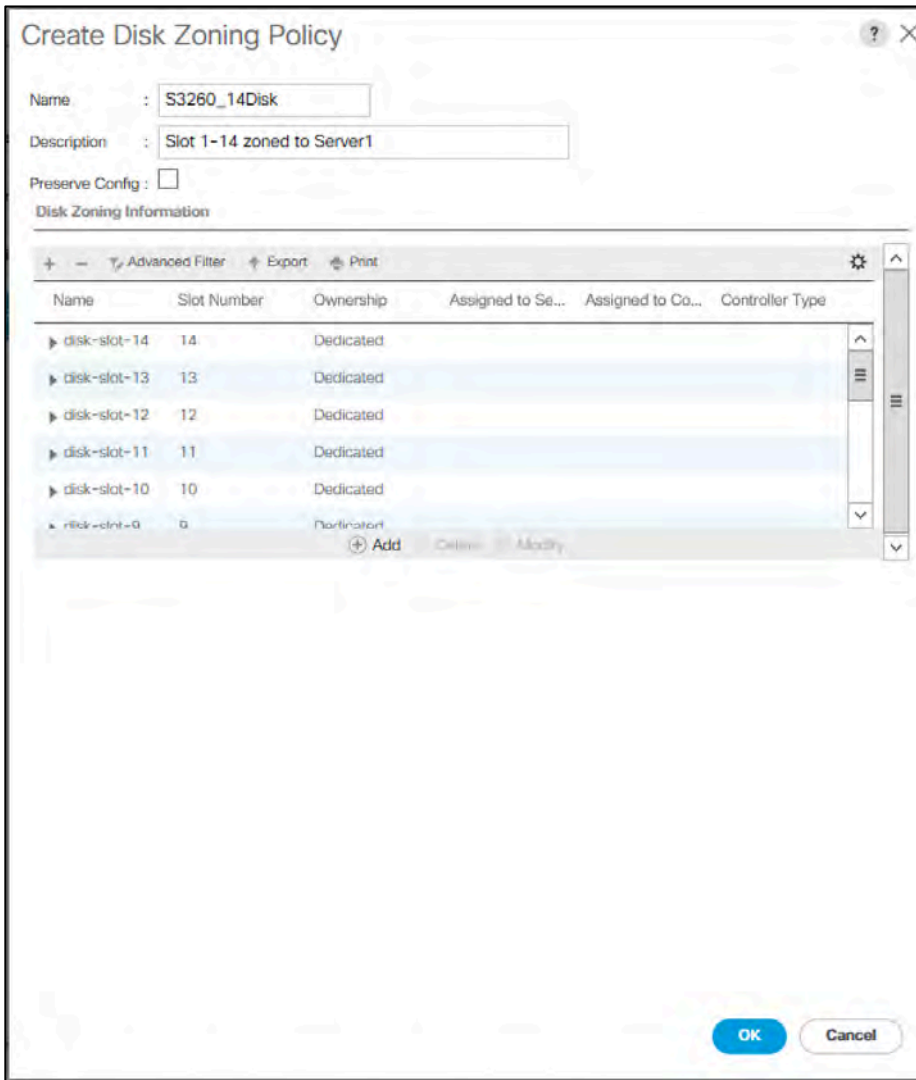
Select storage controller 1 for the RAID controller on the server 1 for the RAID controller on the I/O expander.

Enter **1-14** as the slot range.

Click OK.



Verify that all information is correct and click OK.



Create Disk Zoning Policy

Name : S3260_14Disk

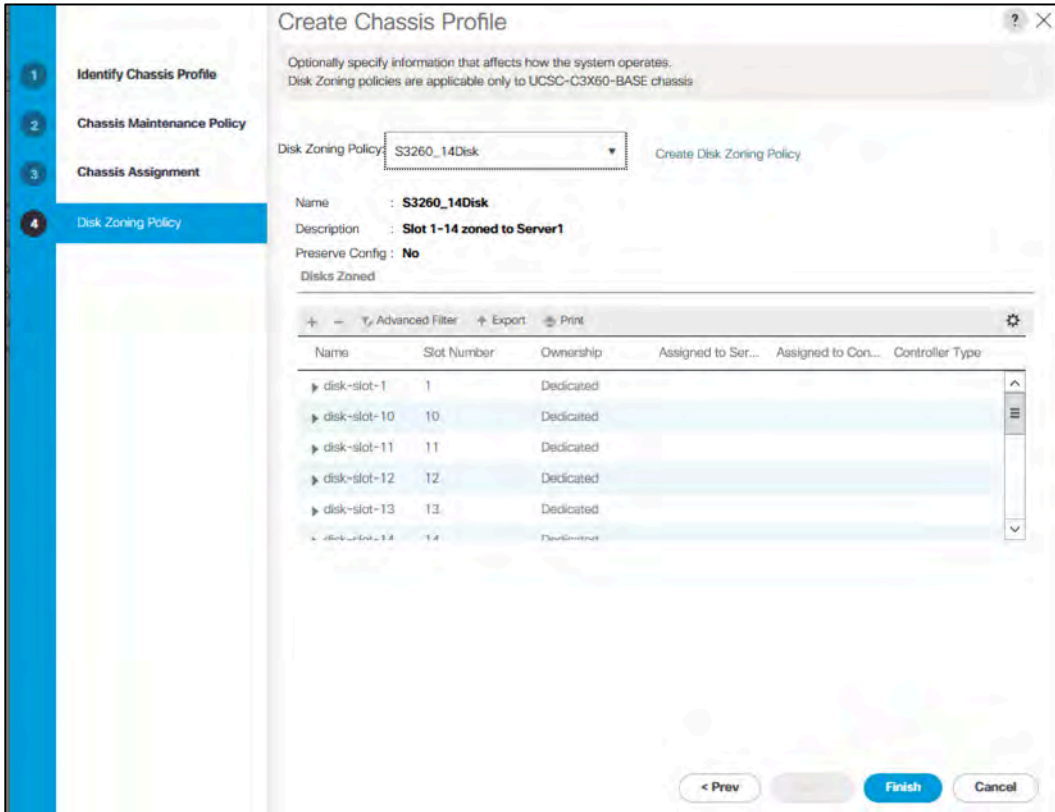
Description : Slot 1-14 zoned to Server1

Preserve Config :

Disk Zoning Information

Name	Slot Number	Ownership	Assigned to Se...	Assigned to Co...	Controller Type
▶ disk-slot-14	14	Dedicated			
▶ disk-slot-13	13	Dedicated			
▶ disk-slot-12	12	Dedicated			
▶ disk-slot-11	11	Dedicated			
▶ disk-slot-10	10	Dedicated			
▲ disk-slot-9	9	Nonfunctional			

Verify that all information is correct and click Finish.



1 Identify Chassis Profile

2 Chassis Maintenance Policy

3 Chassis Assignment

4 Disk Zoning Policy

Create Chassis Profile

Optionally specify information that affects how the system operates.
Disk Zoning policies are applicable only to UCSC-C3X60-BASE chassis

Disk Zoning Policy: S3260_14Disk Create Disk Zoning Policy

Name : S3260_14Disk

Description : Slot 1-14 zoned to Server1

Preserve Config : No

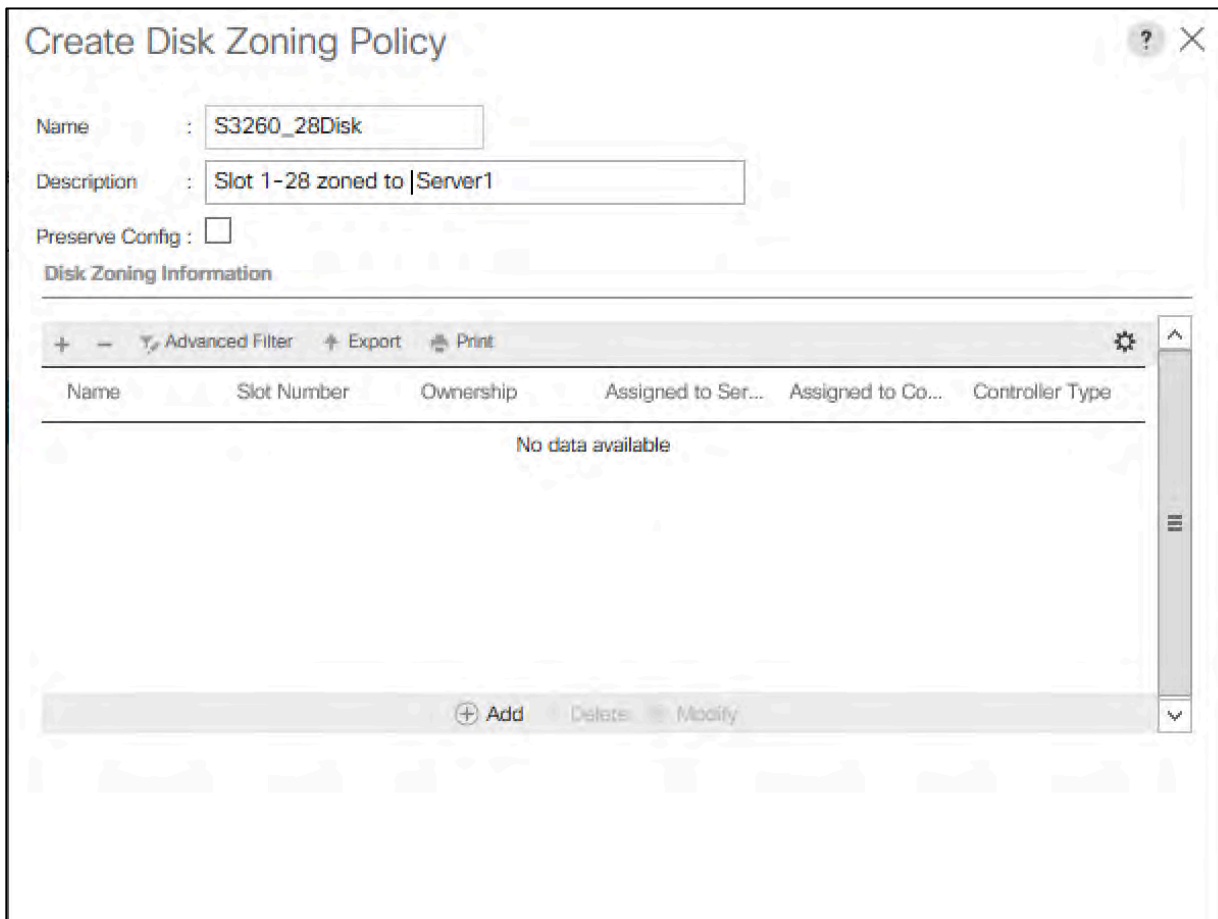
Disks Zoned

Name	Slot Number	Ownership	Assigned to Ser...	Assigned to Con...	Controller Type
▶ disk-slot-1	1	Dedicated			
▶ disk-slot-10	10	Dedicated			
▶ disk-slot-11	11	Dedicated			
▶ disk-slot-12	12	Dedicated			
▶ disk-slot-13	13	Dedicated			
▶ disk-slot-14	14	Dedicated			

< Prev **Finish** Cancel

For a configuration with 28 disk drives, use the following steps:

Enter an obvious name, such as **S3260_28disks**, for the disk zoning policy and click Add.



Create Disk Zoning Policy [?] [X]

Name :

Description :

Preserve Config :

Disk Zoning Information

Name	Slot Number	Ownership	Assigned to Ser...	Assigned to Co...	Controller Type
No data available					

[+] Add [Delete] [Modify]

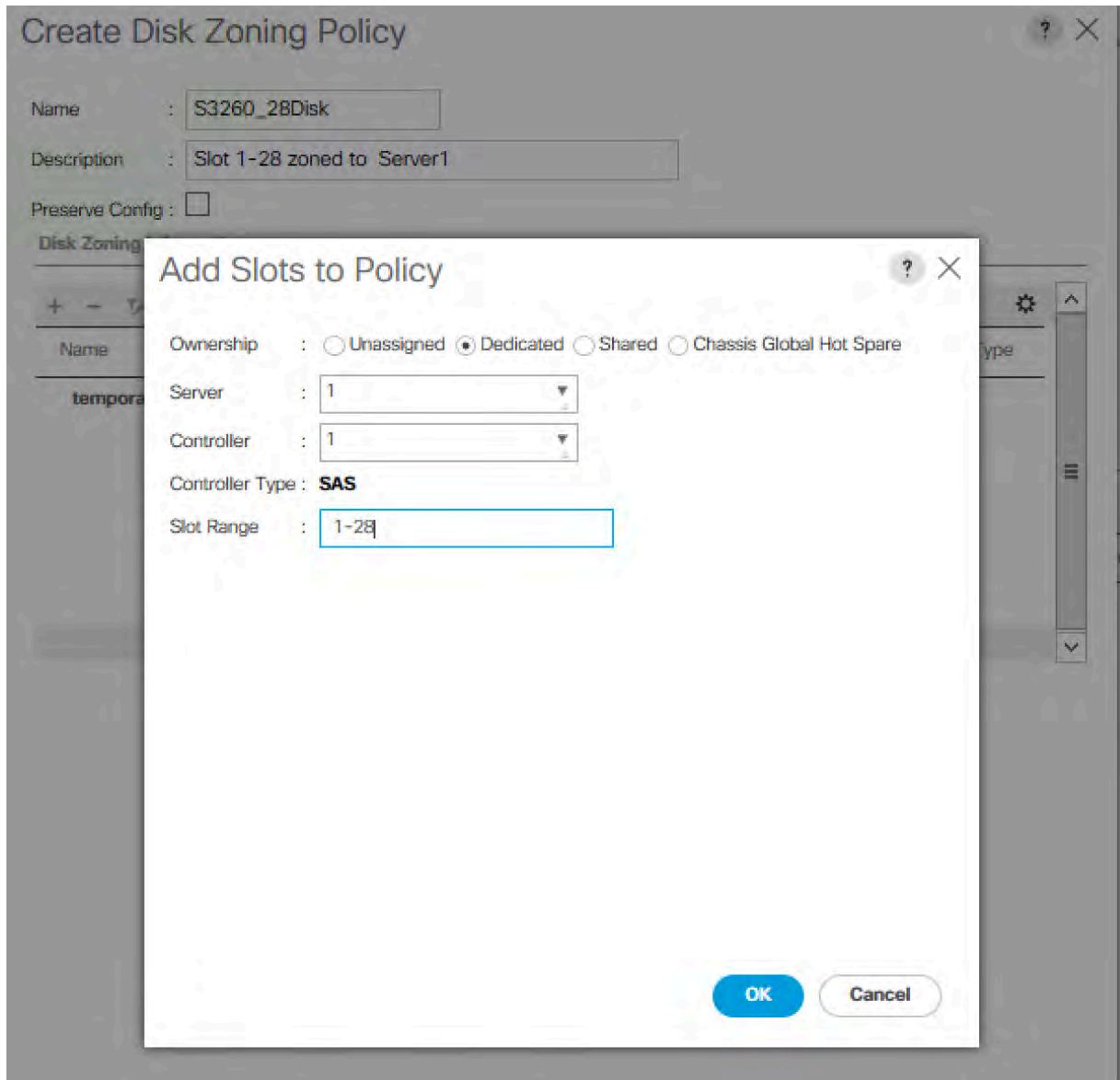
Select Dedicated as the ownership.

Select server 1.

Select storage controller 1 for the RAID controller on the server 1 and 2 for the RAID controller on the I/O expander.

Enter **1-28** as the slot range.

Click OK.



Verify that all information is correct and click OK.

Create Disk Zoning Policy

Name : S3260_28Disk

Description : Slot 1-28 zoned to Server1

Preserve Config :

Disk Zoning Information

Name	Slot Number	Ownership	Assigned to Se...	Assigned to Co...	Controller Type
▶ disk-slot-28	28	Dedicated			
▶ disk-slot-27	27	Dedicated			
▶ disk-slot-26	26	Dedicated			
▶ disk-slot-25	25	Dedicated			
▶ disk-slot-24	24	Dedicated			
◀ disk-slot-23	23	Partitioned			

Verify that all information is correct and click Finish.

Create Chassis Profile
? X

Optionally specify information that affects how the system operates.
Disk Zoning policies are applicable only to UCSC-C3X60-BASE chassis

Disk Zoning Policy: S3260_28Disk

[Create Disk Zoning Policy](#)

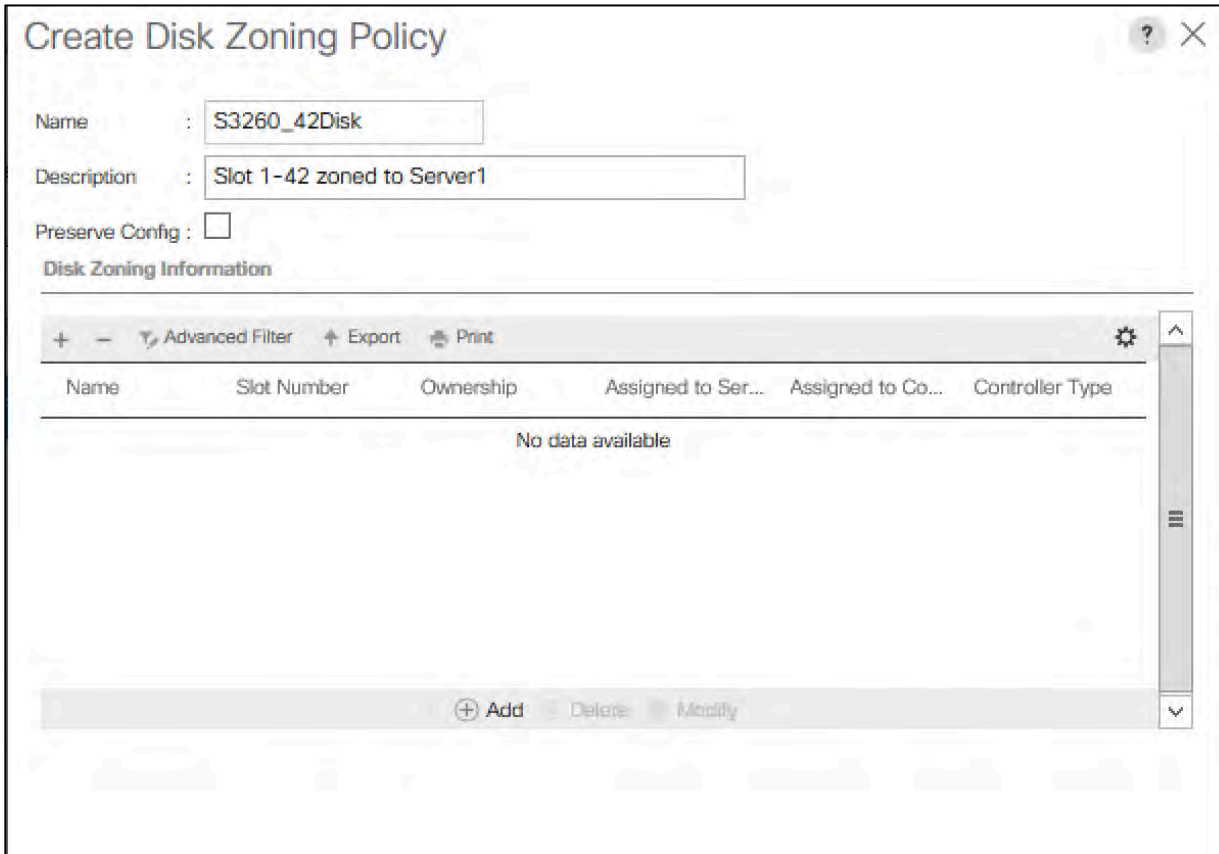
Name : **S3260_28Disk**
 Description : **Slot 1-28 zoned to Server1**
 Preserve Config : **No**
 Disks Zoned

+ - Advanced Filter Export Print ⚙️					
Name	Slot Number	Ownership	Assigned to Ser...	Assigned to Con...	Controller Type
▶ disk-slot-1	1	Dedicated			
▶ disk-slot-10	10	Dedicated			
▶ disk-slot-11	11	Dedicated			
▶ disk-slot-12	12	Dedicated			
▶ disk-slot-13	13	Dedicated			
▶ disk-slot-14	14	Dedicated			

< Prev Next > Finish Cancel

For a configuration with 42 disk drives, use the following steps:

Enter an obvious name, such as **S3260_42Disks**, for the disk zoning policy and click Add.



Create Disk Zoning Policy

Name : S3260_42Disk

Description : Slot 1-42 zoned to Server1

Preserve Config :

Disk Zoning Information

Name	Slot Number	Ownership	Assigned to Ser...	Assigned to Co...	Controller Type
No data available					

+ Add - Delete - Modify

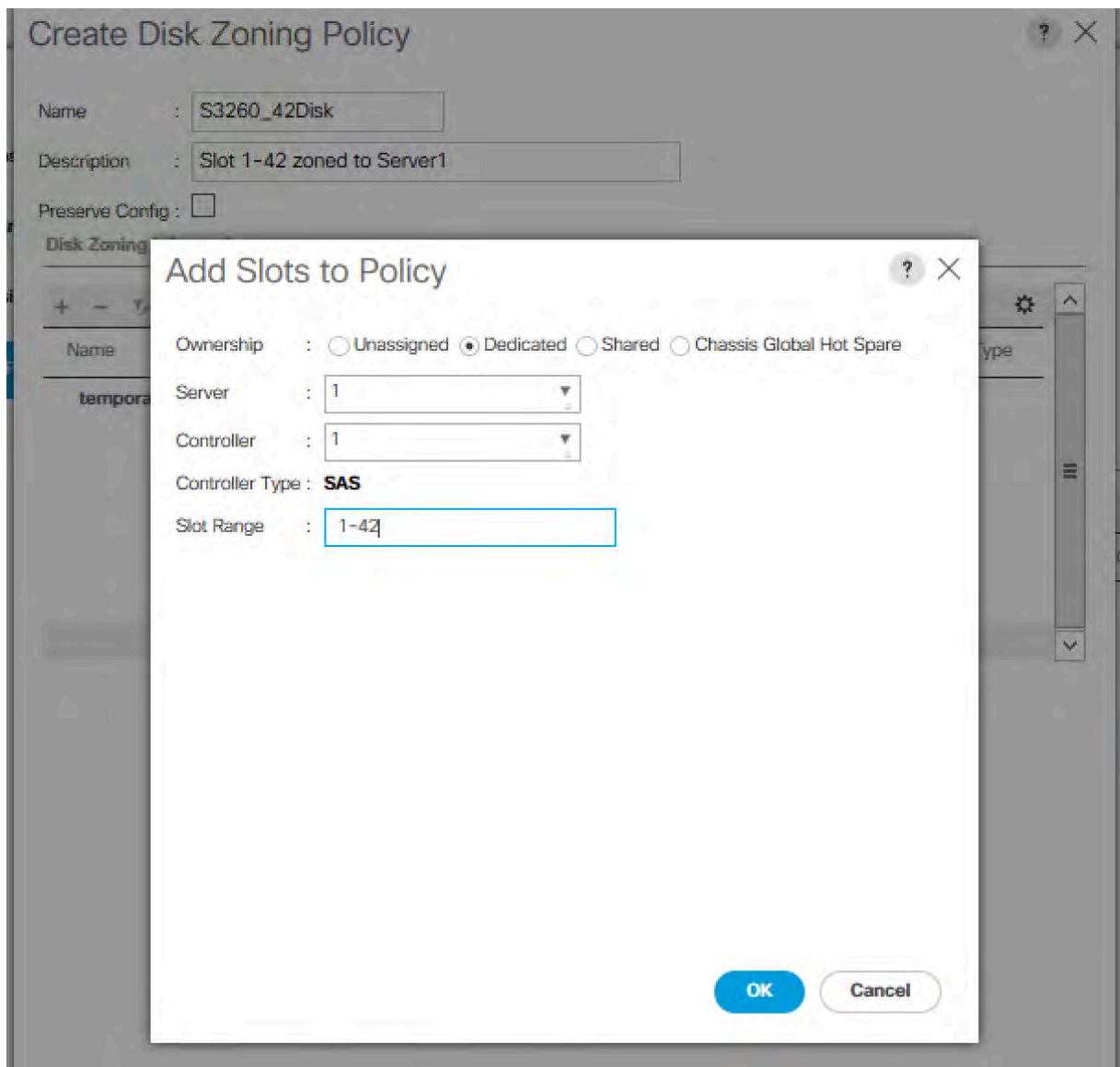
Select Dedicated as the ownership.

Select server 1 or 2.

Select storage controller 1 for the RAID controller on the server 1 and 2 for the RAID controller on the I/O expander.

Enter **1-42** as the slot range.

Click OK.



The screenshot shows a 'Create Disk Zoning Policy' dialog box with the following fields:

- Name : S3260_42Disk
- Description : Slot 1-42 zoned to Server1
- Preserve Config :

The 'Disk Zoning' section is partially visible. An 'Add Slots to Policy' sub-dialog box is open, showing the following configuration:

- Ownership : Unassigned Dedicated Shared Chassis Global Hot Spare
- Server : 1
- Controller : 1
- Controller Type : SAS
- Slot Range : 1-42

Buttons for 'OK' and 'Cancel' are visible at the bottom of the sub-dialog box.

Verify that all information is correct and click OK.

Create Disk Zoning Policy

Name : S3260_42Disk

Description : Slot 1-42 zoned to Server1

Preserve Config :

Disk Zoning Information

Name	Slot Number	Ownership	Assigned to Se...	Assigned to Co...	Controller Type
▶ disk-slot-42	42	Dedicated			
▶ disk-slot-41	41	Dedicated			
▶ disk-slot-40	40	Dedicated			
▶ disk-slot-39	39	Dedicated			
▶ disk-slot-38	38	Dedicated			
▶ disk-slot-37	37	Dedicated			

Verify that all information is correct and click Finish.

1 Identify Chassis Profile

2 Chassis Maintenance Policy

3 Chassis Assignment

4 Disk Zoning Policy

Create Chassis Profile

Optionally specify information that affects how the system operates.
Disk Zoning policies are applicable only to UCSC-C3X60-BASE chassis

Disk Zoning Policy: S3260_42Disk [Create Disk Zoning Policy](#)

Name : S3260_42Disk

Description : Slot 1-42 zoned to Server1

Preserve Config : No

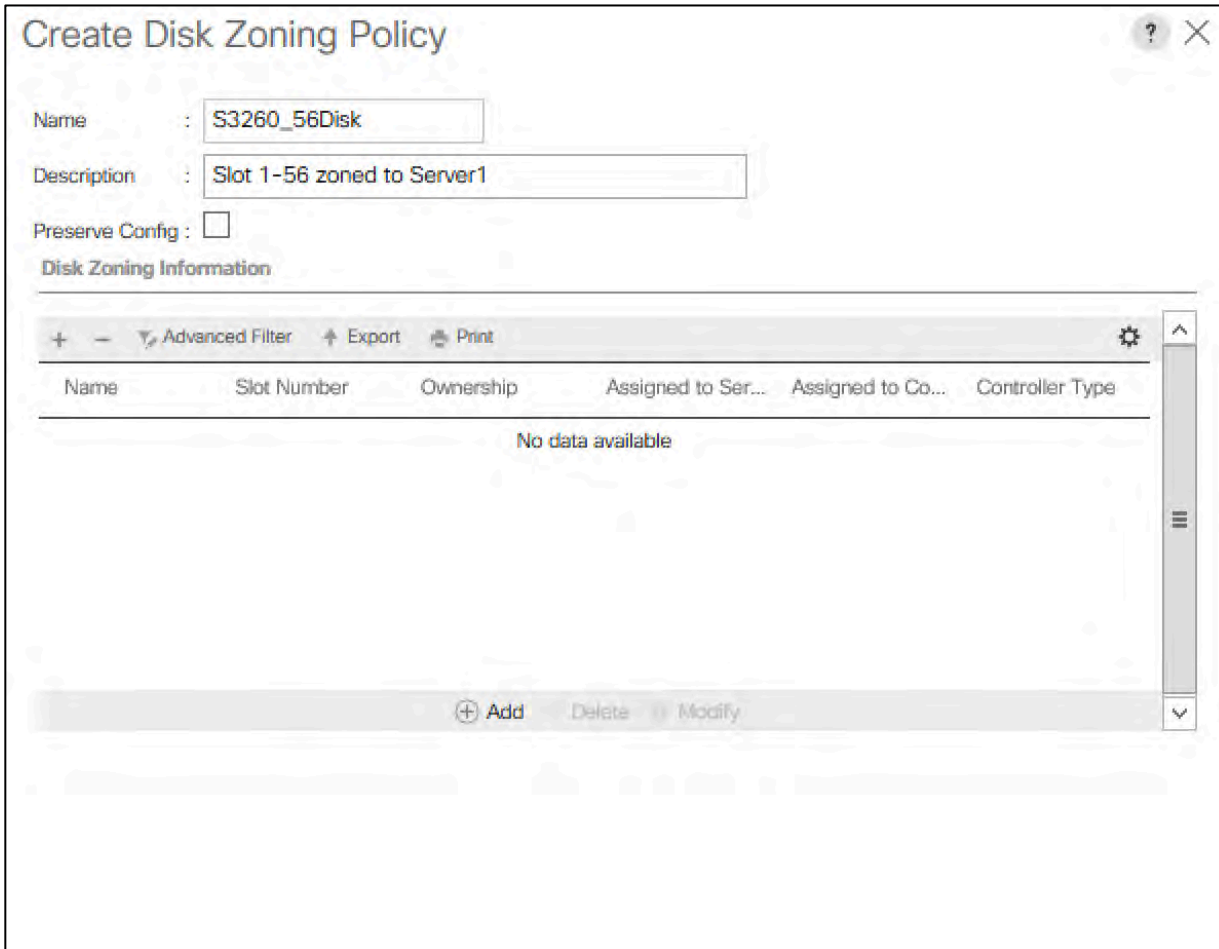
Disks Zoned

Name	Slot Number	Ownership	Assigned to Ser...	Assigned to Con...	Controller Type
▶ disk-slot-39	39	Dedicated			
▶ disk-slot-4	4	Dedicated			
▶ disk-slot-40	40	Dedicated			
▶ disk-slot-41	41	Dedicated			
▶ disk-slot-42	42	Dedicated			
▶ disk-slot-E	E	Dedicated			

< Prev Finish Cancel

For a configuration with 56 disk drives, use the following steps:

Enter an obvious name, such as S3260_56Disks, for the disk zoning policy and click Add.



Create Disk Zoning Policy [?] [X]

Name :

Description :

Preserve Config :

Disk Zoning Information

Name	Slot Number	Ownership	Assigned to Ser...	Assigned to Co...	Controller Type
No data available					

[+] Add Delete Modify

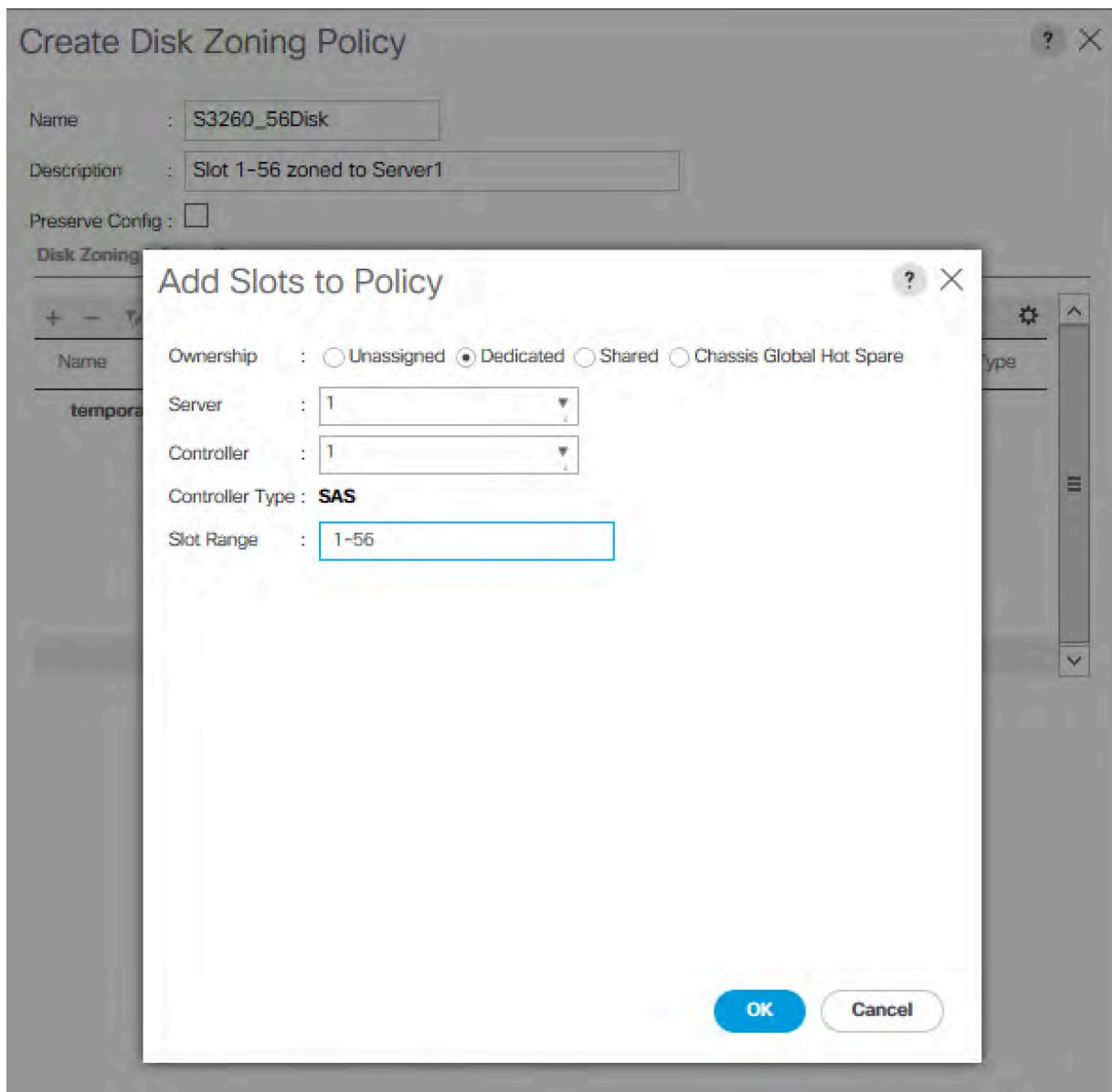
Select Dedicated as the ownership.

Select server 1 or 2.

Select storage controller 1 for the RAID controller on the server 1 and 2 for the RAID controller on the I/O expander.

Enter **1-56** as the slot range.

Click OK.



Verify that all information is correct and click OK.

Create Disk Zoning Policy

Name : S3260_56Disk

Description : Slot 1-56 zoned to Server1

Preserve Config :

Disk Zoning Information

Name	Slot Number	Ownership	Assigned to Se...	Assigned to Co...	Controller Type
▶ disk-slot-56	56	Dedicated			
▶ disk-slot-55	55	Dedicated			
▶ disk-slot-54	54	Dedicated			
▶ disk-slot-53	53	Dedicated			
▶ disk-slot-52	52	Dedicated			
▶ disk-slot-51	51	Partitioned			

+ Add - Delete ⚙ Modify

OK Cancel

Verify that all information is correct and click Finish.

Create Chassis Profile
?
✕

Optionally specify information that affects how the system operates.
Disk Zoning policies are applicable only to UCSC-C3X60-BASE chassis

Disk Zoning Policy: S3260_56Disk

[Create Disk Zoning Policy](#)

Name : **S3260_56Disk**

Description : **Slot 1-56 zoned to Server1**

Preserve Config : **No**

Disks Zoned

Name	Slot Number	Ownership	Assigned to Ser...	Assigned to Con...	Controller Type
▶ disk-slot-1	1	Dedicated			
▶ disk-slot-10	10	Dedicated			
▶ disk-slot-11	11	Dedicated			
▶ disk-slot-12	12	Dedicated			
▶ disk-slot-13	13	Dedicated			
▶ disk-slot-14	14	Dedicated			

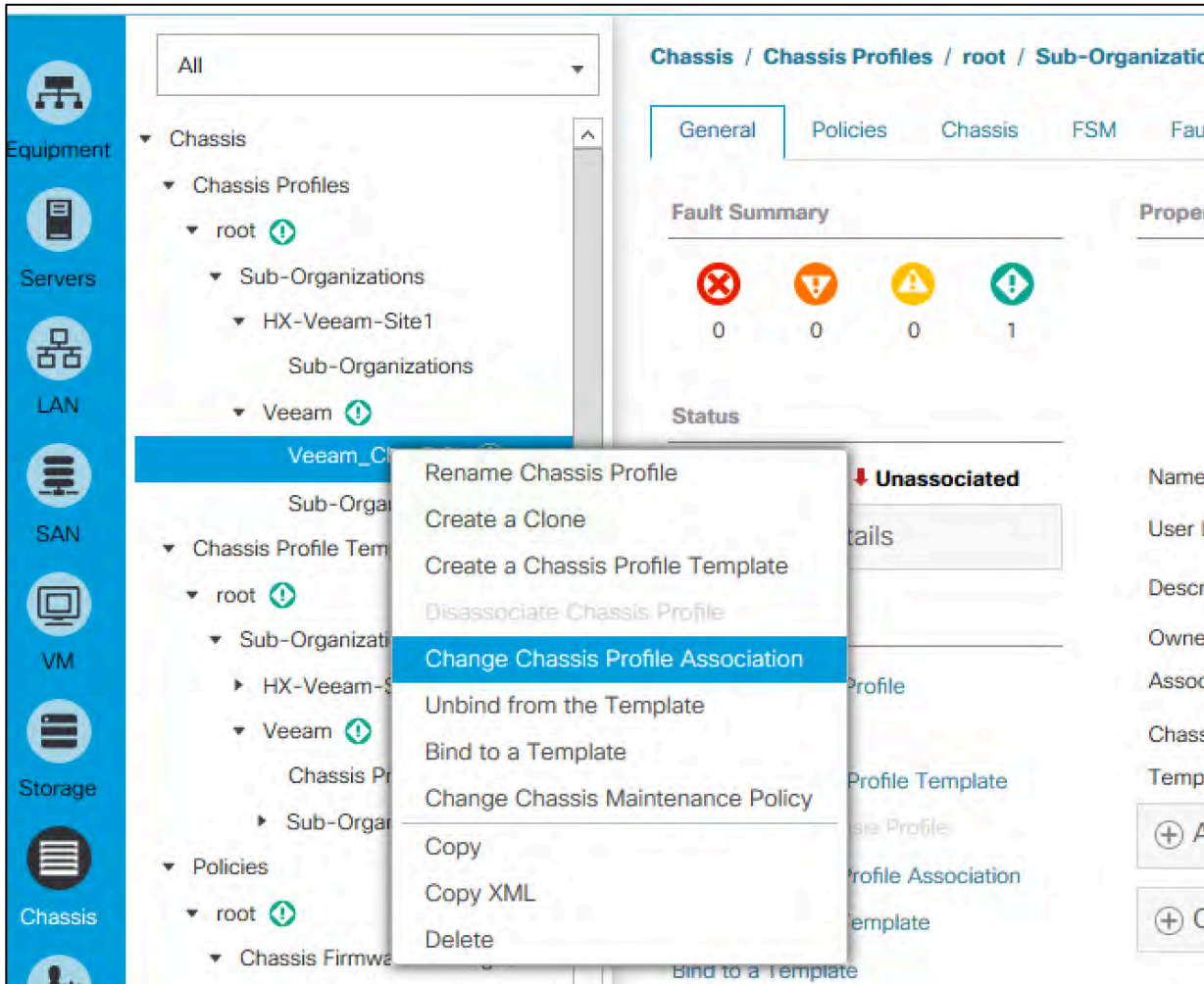
< Prev
Finish
Cancel

The screenshot displays the UCS Manager web interface. The breadcrumb path is: Chassis / Chassis Profiles / root / Sub-Organizations / Veeam / Chassis Profile Veeam-S3260. The interface is divided into several sections:

- Navigation Panel (Left):** Shows a tree view of the UCS Manager hierarchy. The selected path is: Chassis Profiles > root > Sub-Organizations > Veeam > Veeam-S3260.
- General Tab (Top):** The active tab, showing the profile's configuration.
- Fault Summary (Top Left):** Displays four status indicators: Critical (0), Major (0), Minor (0), and OK (1).
- Status (Middle Left):** Shows the overall status as **Unassociated**. Below this is a **Status Details** expandable section.
- Actions (Bottom Left):** A list of available actions for the profile, including: Rename Chassis Profile, Create a Clone, Create a Chassis Profile Template, Dissociate Chassis Profile, Change Chassis Profile Association, Bind to a Template, and Change Chassis Maintenance Policy.
- Properties (Right):** A form for configuring the profile's attributes:
 - Name: **Veeam-S3260**
 - User Label:
 - Description:
 - Owner: **Local**
 - Associated Chassis:
 - Chassis Profile Template:
 - Template Instance:
 - Assigned Chassis:
 - Chassis Maintenance Policy:

Now assign a chassis profile.

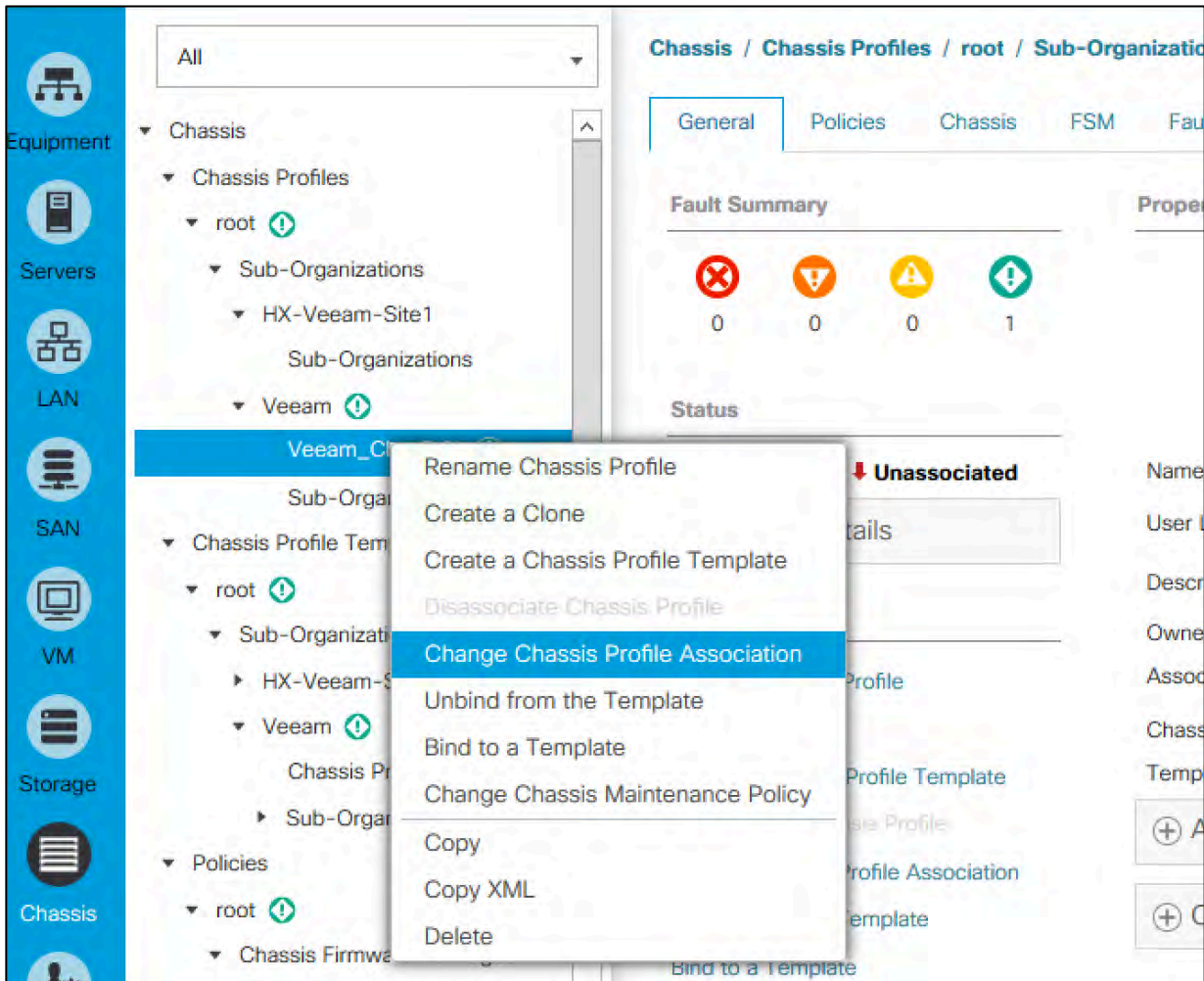
To assign one of the chassis profiles to a S3260 chassis, double-click the chassis profile you want to assign. Then click Change Chassis Profile Association.



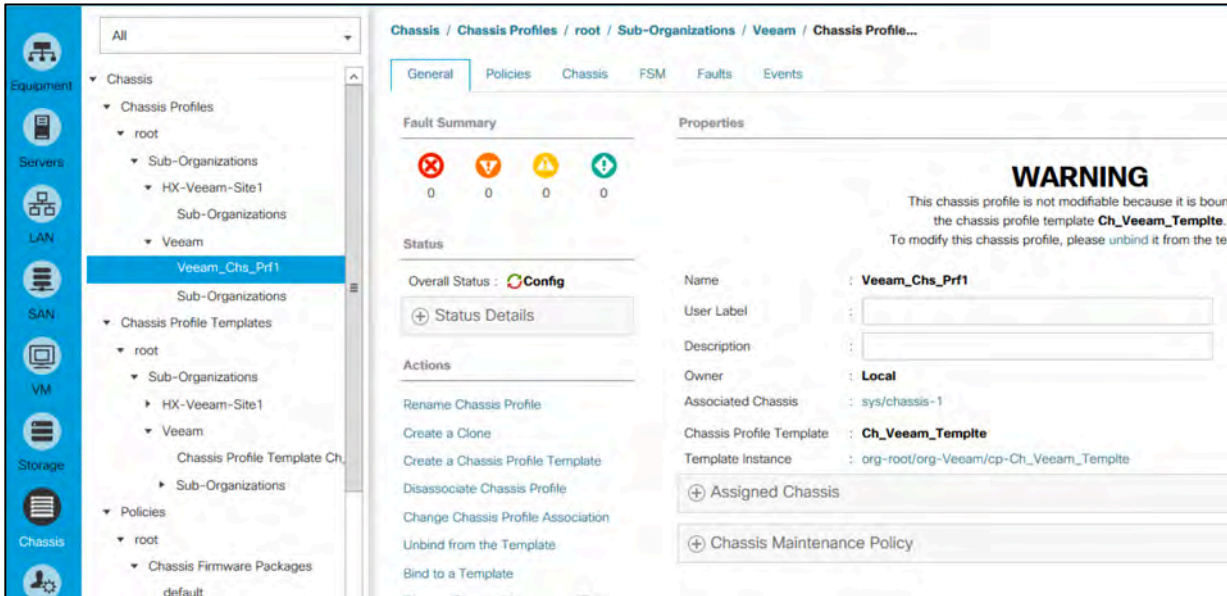
In the Chassis Assignment drop-down menu, choose Select existing Chassis.

Select the available chassis.

Click OK.

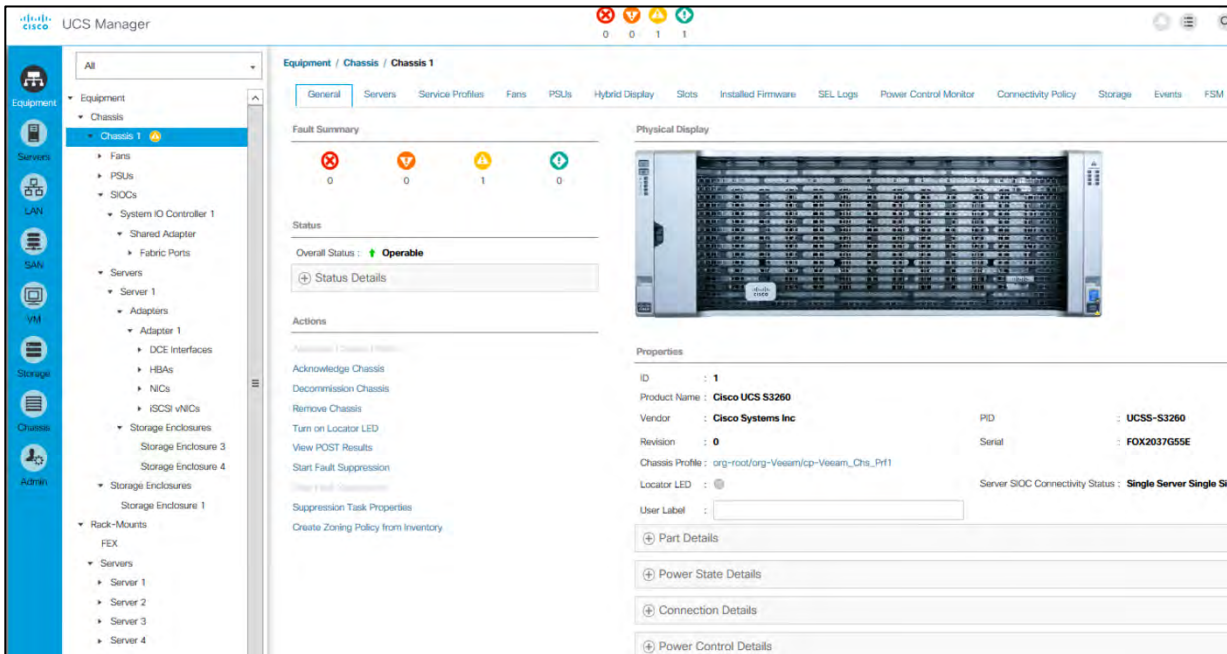


Click OK again.



Under Equipment > Chassis > Chassis X on the General tab (where X is the chassis number), the chassis profile is now listed.

The overall status is shown for a short time for the configuration.



Under Storage Enclosure 1, on the Slots tab, the status is now shown as dedicated to server X.

The screenshot displays the UCS Manager interface for 'Storage Enclosure 1' under the 'Slots' tab. The breadcrumb path is 'Equipment / Chassis / Chassis 1 / Storage Enclosures / Storage Enclosure 1'. The 'Slots' sub-tab is active, showing a table of enclosure slots. Enclosure Slot 2 is highlighted, indicating it is dedicated to 'server-1-controller-SAS-1'. The table columns include Name, Ownership, Operability, Presence, Server ID, and Controller ID.

Name	Ownership	Operability	Presence	Server ID	Controller ID
Enclosure Slot 1	Dedicated	Operable	Equipped		
Enclosure Slot 2	Dedicated	Operable	Equipped		
server-1-controller-SAS-1					
Enclosure Slot 3	Dedicated	Operable	Equipped	1	1
Enclosure Slot 4	Dedicated	Operable	Equipped		

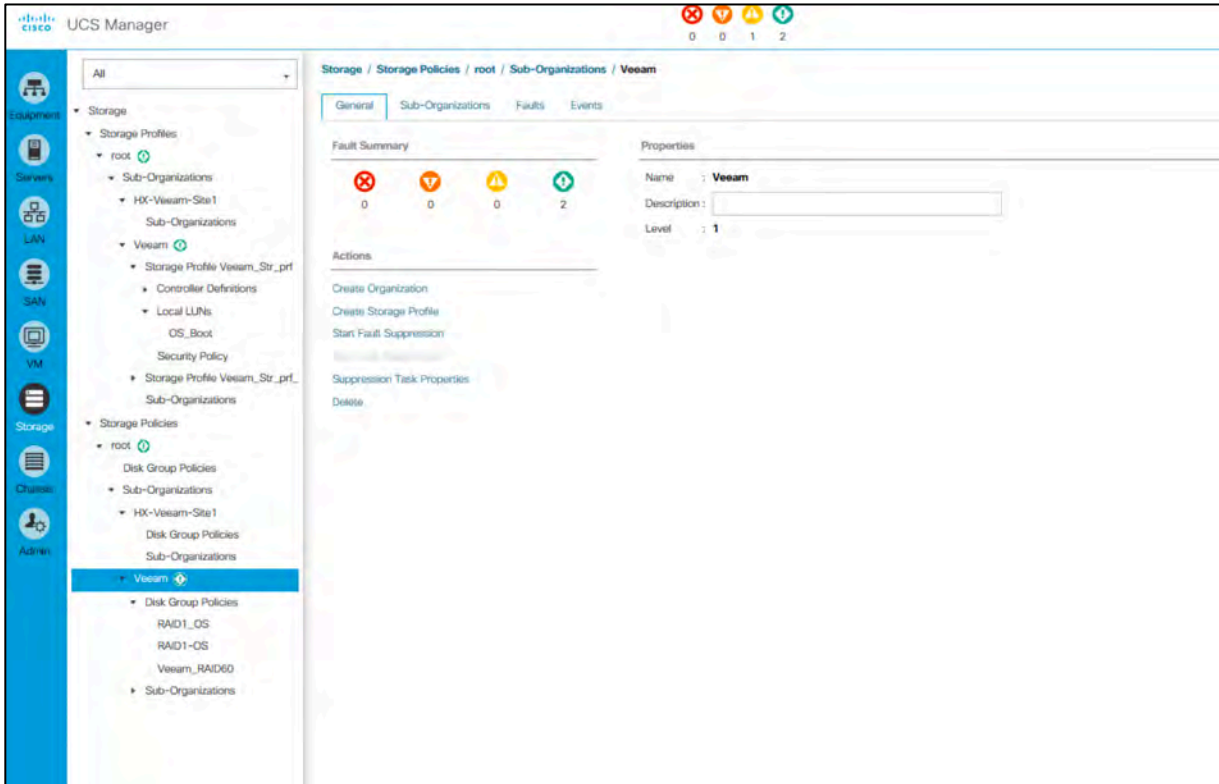
Below the table, the 'Details' section for Enclosure Slot 2 shows:

- Presence: **Equipped**
- Operability: **Operable**
- Oper Qualifier Reason: **OK**
- Ownership: **Dedicated**
- Peer: sys/chassis-1/enc-1/disk-2

The next step is to define the disk groups and LUNs in the storage area of Cisco UCS Manager.

This step is the most important part of the Cisco UCS S3260 configuration for the Veeam Availability Suite configuration.

Choose Storage > Storage Policies > root > Sub-Organizations > Veeam > Disk Group Policies and click Add.

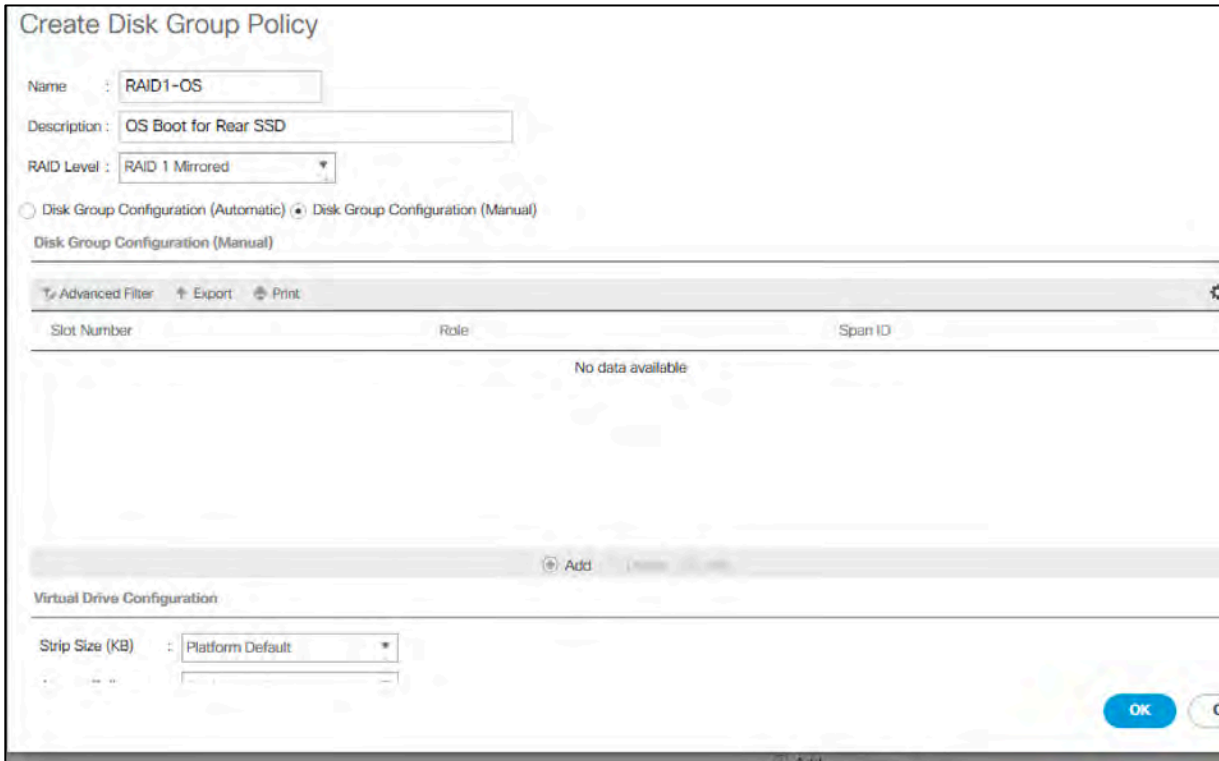


The first disk group policy is for the two disks in the back of the chassis.

Enter an obvious name and a description.

For the RAID level, select RAID 1 Mirrored.

Select Disk Group Configuration (Manual) and click Add.



Create Disk Group Policy

Name :

Description :

RAID Level :

Disk Group Configuration (Automatic) Disk Group Configuration (Manual)

Disk Group Configuration (Manual)

Advanced Filter Export Print

Slot Number	Role	Span ID
No data available		

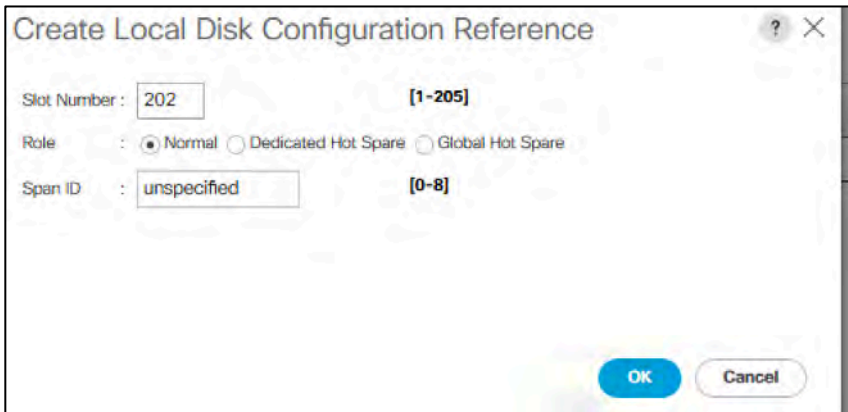
Add

Virtual Drive Configuration

Strip Size (KB) :

OK Cancel

Enter a slot number in the range 201 through 205 available to the server (see the equipment information) and click OK.



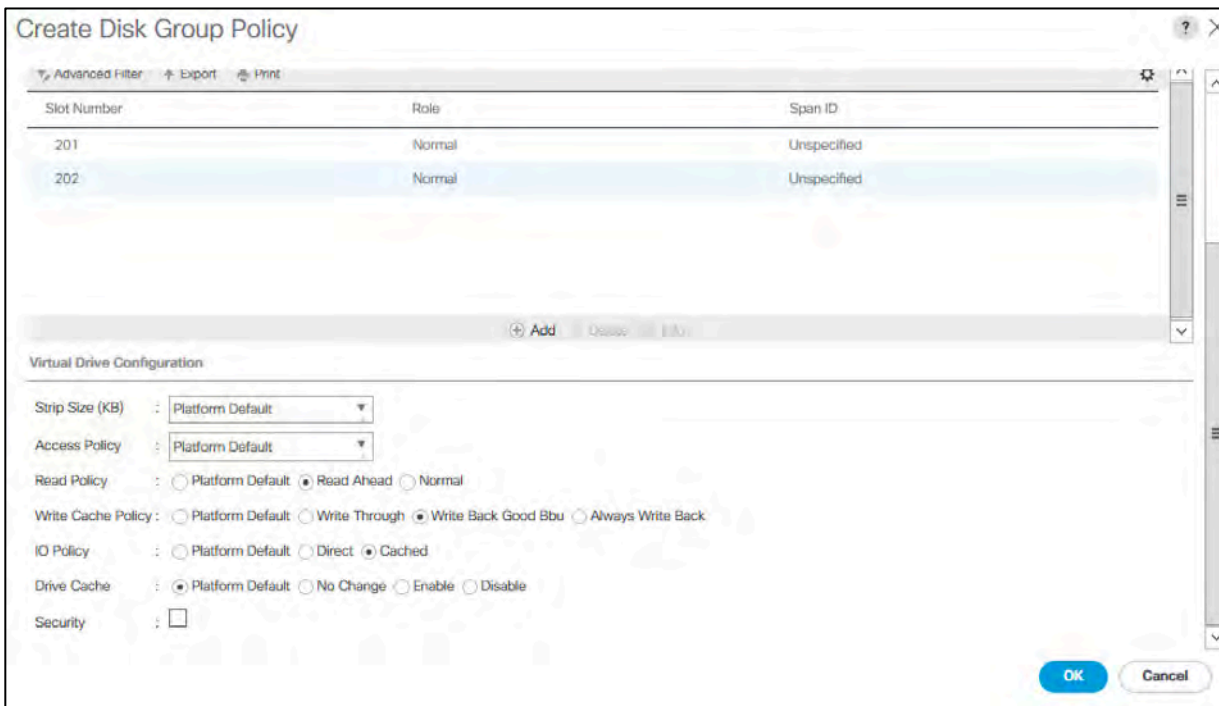
Create Local Disk Configuration Reference

Slot Number : [1-205]

Role : Normal Dedicated Hot Spare Global Hot Spare

Span ID : [0-8]

Repeat for slot 201. Enter another slot number in the range 201 through 205 available to the server (refer to the equipment information) and click OK.



Create Disk Group Policy

Advanced Filter Export Print

Slot Number	Role	Span ID
201	Normal	Unspecified
202	Normal	Unspecified

+ Add Delete Info

Virtual Drive Configuration

Strip Size (KB) : Platform Default

Access Policy : Platform Default

Read Policy : Platform Default Read Ahead Normal

Write Cache Policy : Platform Default Write Through Write Back Good Bbu Always Write Back

IO Policy : Platform Default Direct Cached

Drive Cache : Platform Default No Change Enable Disable

Security :

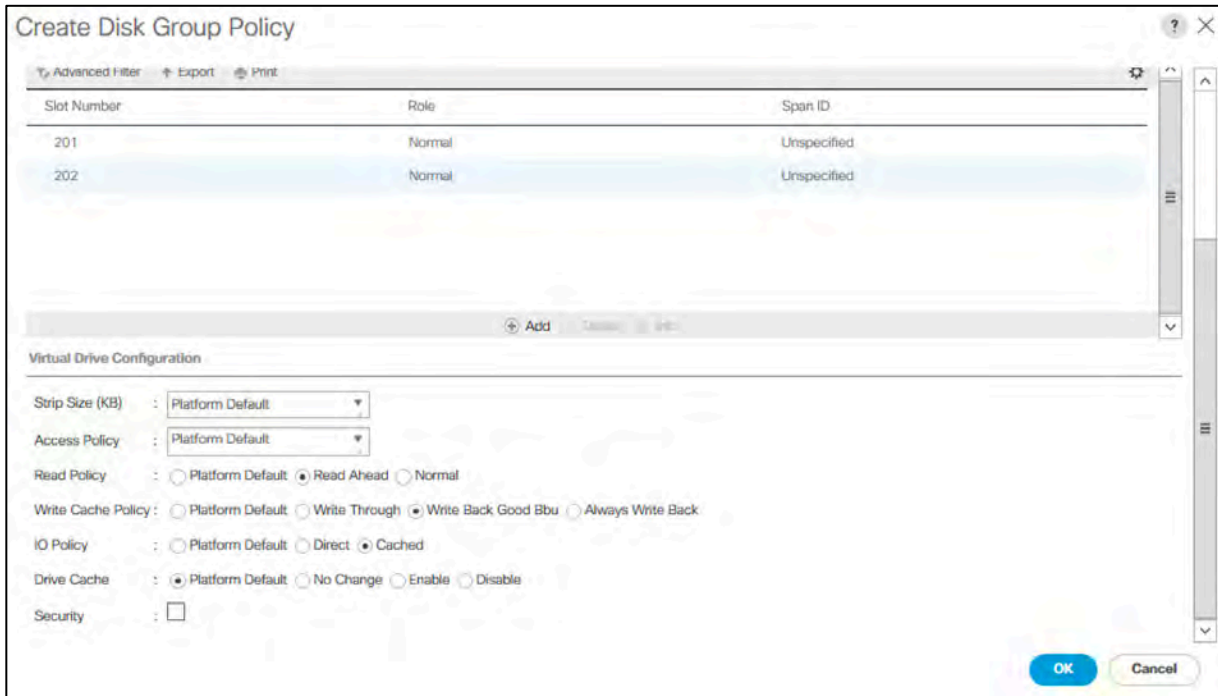
Select Read Ahead for Read Policy.

Select Write Back Good BBU for Write Cache Policy.

Select Cached for IO Policy.

Select Platform Default for Drive Cache (any other option will cause a failure because the drive cache on SSDs cannot be changed).

Click OK.



Create Disk Group Policy

Advanced Filter Export Print

Slot Number	Role	Span ID
201	Normal	Unspecified
202	Normal	Unspecified

Add Cancel

Virtual Drive Configuration

Strip Size (KB) : Platform Default

Access Policy : Platform Default

Read Policy : Platform Default Read Ahead Normal

Write Cache Policy : Platform Default Write Through Write Back Good Bbu Always Write Back

IO Policy : Platform Default Direct Cached

Drive Cache : Platform Default No Change Enable Disable

Security :

OK Cancel

There are many options for configuring disk groups on top-loaded drives for Veeam Availability Suite. In this document, we configure one disk group for all top-loaded disk drives and use RAID 6 with dual parity as the RAID level for 14 disk drives and RAID 60 as the RAID level for 28, 42, and 56 disk drives. With this configuration, two drives per RAID 6 stripe can fail before data is lost. In the lab installation described here, no additional hot-spare drives were defined. If one hot spare per disk group is used, the overall capacity will be lower, and the size of the data LUNs will be aligned accordingly.

You should configure all disk groups now regardless of the number of drives used in the setup. This approach will prevent misconfigurations later.

Click Add for the configuration with 14 disk drives.

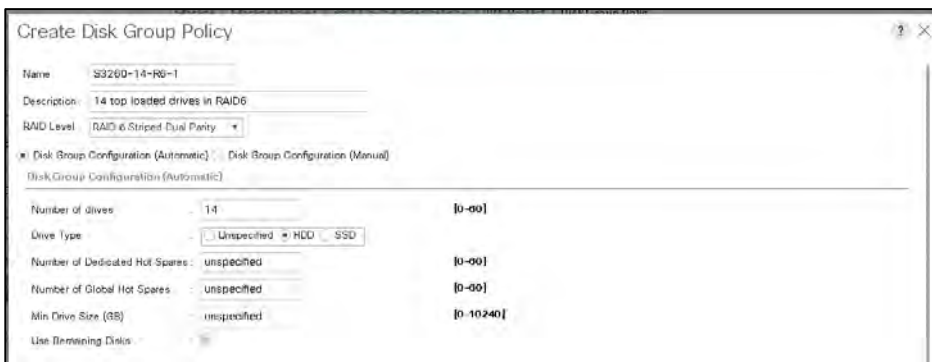
Enter an obvious name and a description.

For the RAID level, select RAID 6 Striped Dual Parity.

Select Disk Group Configuration (Automatic).

Enter **14** as number of drives.

Select HDD as the drive type and scroll down.



Field	Value	Range
Name	S3260-14-R6-1	
Description	14 top loaded drives in RAID6	
RAID Level	RAID 6 Striped Dual Parity	
Configuration	Disk Group Configuration (Automatic)	
Number of drives	14	[0-99]
Drive Type	HDD	[0-99]
Number of Dedicated Hot Spares	unspecified	[0-99]
Number of Global Hot Spares	unspecified	[0-99]
Min Drive Size (GB)	unspecified	[0-10240]
Use Remaining Disks	<input checked="" type="checkbox"/>	

Select 64 KB for the stripe size.

Select Access Policy as Read Write.

Select Read Ahead for Read Policy.

Select Write Back Good BBU for Write Cache Policy.

Select Cached for IO Policy.

Select Disable for Drive Cache.

Click OK.



Create Disk Group Policy

Number of drives : 14 [0-60]

Drive Type : Unspecified HDD SSD

Number of Dedicated Hot Spares : unspecified [0-60]

Number of Global Hot Spares : unspecified [0-60]

Min Drive Size (GB) : unspecified [0-10240]

Use Remaining Disks :

Use JBOD Disks : Yes No

Virtual Drive Configuration

Strip Size (KB) : 64KB

Access Policy : Read Write

Read Policy : Platform Default Read Ahead Normal

Write Cache Policy : Platform Default Write Through Write Back Good Bbu Always Write Back

IO Policy : Platform Default Direct Cached

Drive Cache : Platform Default No Change Enable Disable

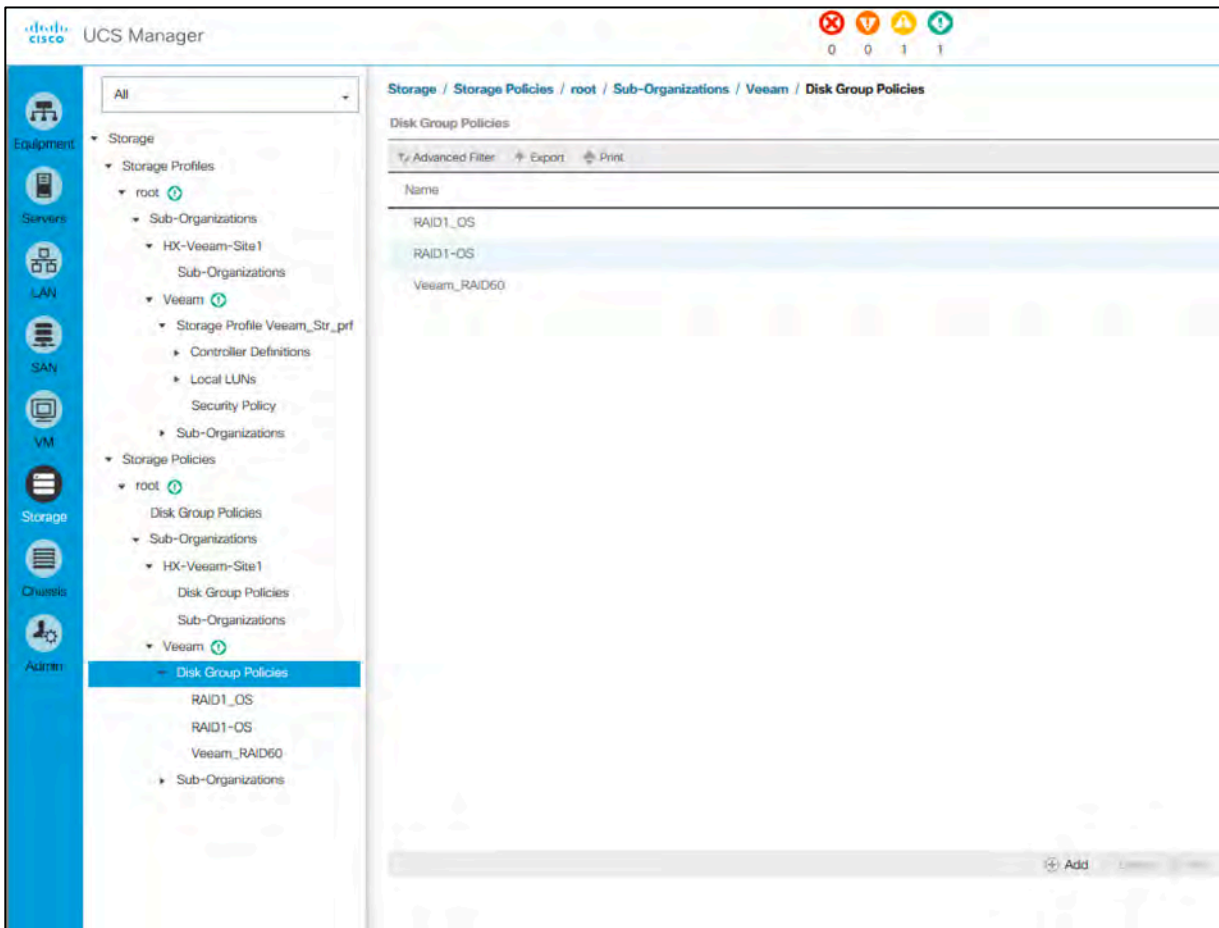
Security :

OK Cancel

The screenshot displays the Cisco UCS Manager web interface. The breadcrumb navigation at the top reads: Storage / Storage Policies / root / Sub-Organizations / IBM-Protect / Disk Group Policies. The left-hand navigation pane shows a tree structure with 'Disk Group Policies' selected under the 'IBM-Protect' sub-organization. The main content area, titled 'Disk Group Policies', features a search bar with 'Advanced Filter', 'Export', and 'Print' options. Below this is a table with the following data:

Name
S3260-14-R0-1
S3260-14-R0-2
S3260-14-R0-3
S3260-52-Boot
S3260-14-R0-4

At the bottom of the table area, there is an 'Add' button. The status bar at the bottom left indicates 'Logged in as admin@192.108.20.5' and the bottom right shows 'System Time: 2017-08-14T04:39'.



The LUNs are created for the disk groups. Tables 2 and 3 summarize the required LUNs and the sizes for every disk group created.

Table 2. Disk Group S3260-S2-Boot with disks 201 and 202 (SSDs in the back of the chassis)

Disk Group	Size	Name
S3260-S2-Boot	Fill to maximum	Boot

Table 3. Disk Group S3260-14-R6-1 with Top-Loaded Disks 1 Through 14

Disk Group	Size	Name
S3260-14-R6-1	Fill to maximum	Veeam_Rep

Go to Storage > Storage Profiles > root > Sub-Organizations > Veeam and click Create Storage Profile.

Create Storage Profile ? ×

Name :

Description :

LUNs

Local LUNs Controller Definitions Security Policy

Advanced Filter Export Print ⚙️

Name	Size (GB)	Order	Fractional Size (MB)
No data available			

+ Add ⌵ Delete ℹ️ Info

OK **Cancel**

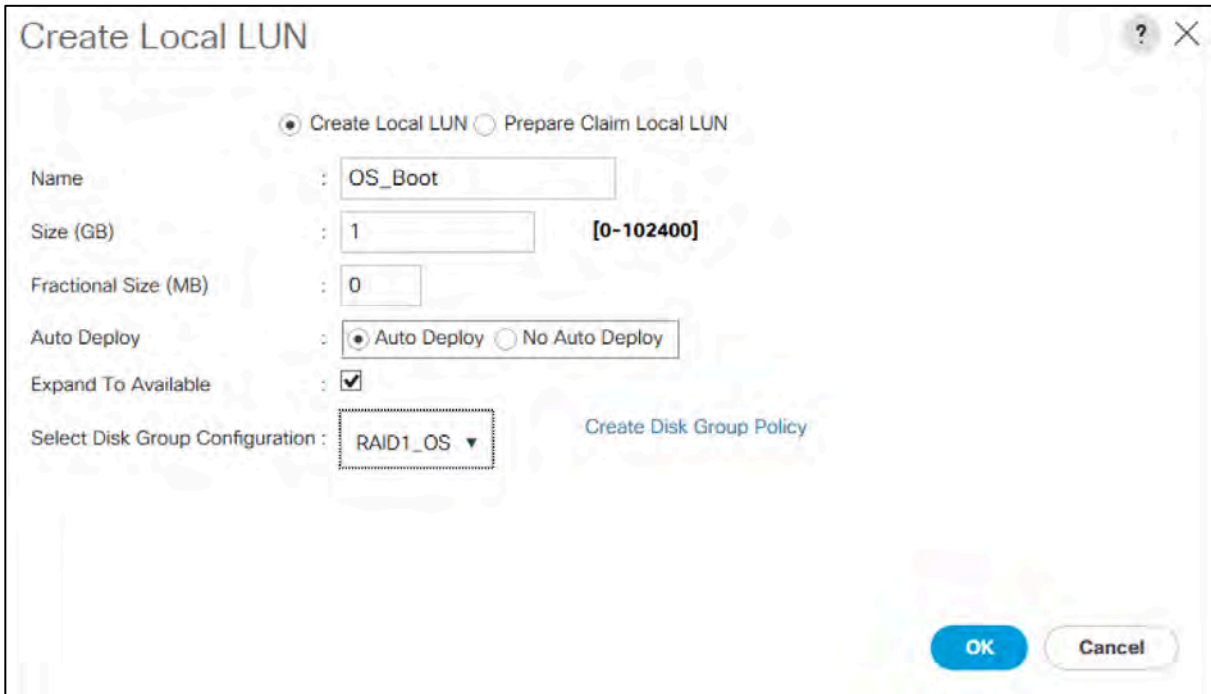
Click Add to create LUNs.

Select Create Local LUN.

Enter Name as OS_Boot.

Select Expand to Available to allow the maximum possible size of LUN created through the selected Disk Group Configuration.

Select RAID1_OS as the Disk Group Policy. This policy was created through a pair-back SSD (slots 201 and 202) dedicated to node1 on the S3260.



Create Local LUN ? X

Create Local LUN Prepare Claim Local LUN

Name : OS_Boot

Size (GB) : 1 [0-102400]

Fractional Size (MB) : 0

Auto Deploy : Auto Deploy No Auto Deploy

Expand To Available :

Select Disk Group Configuration : RAID1_OS [Create Disk Group Policy](#)

OK Cancel

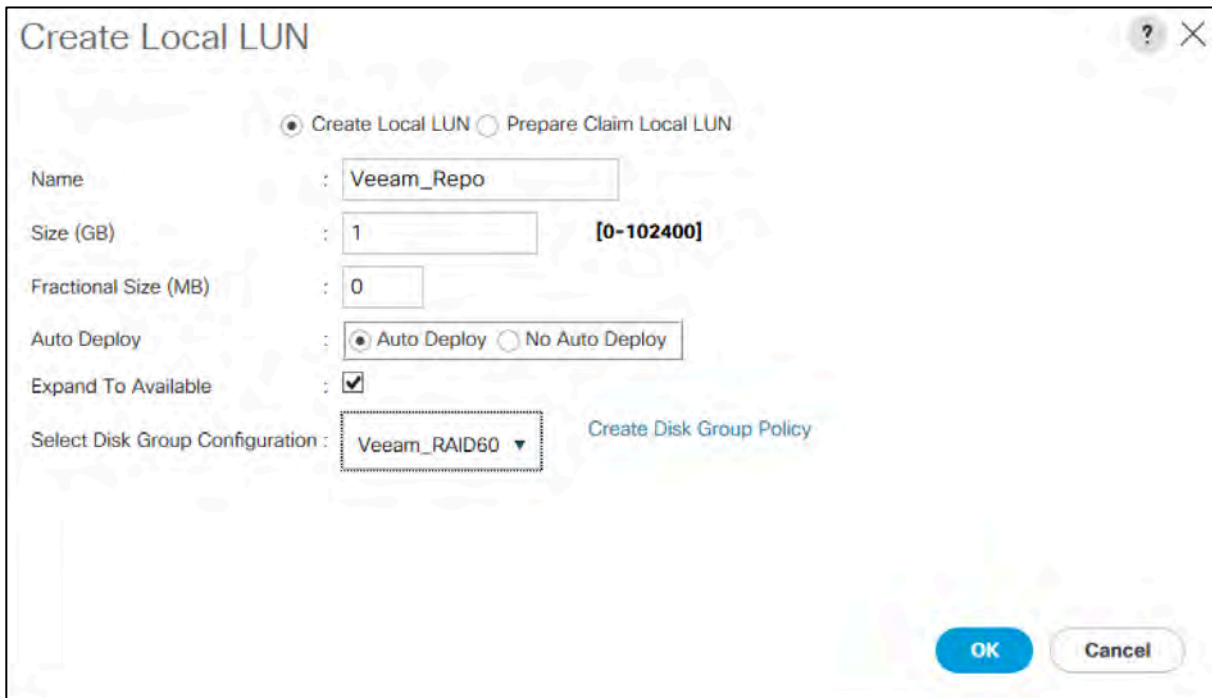
Click Add again to create a LUN for Veeam Repository mapped to the top-load HDD.

Select Create Local LUN.

Enter the Name as Veeam_Rep.

Select Expand to Available to allow the maximum possible size of LUN created through the selected Disk Group Configuration.

Select Veeam_RAID60 as the Disk Group Policy. This policy was created for the top-load HDD on the S3260.



Create Local LUN ? X

Create Local LUN Prepare Claim Local LUN

Name : Veeam_Repo

Size (GB) : 1 [0-102400]

Fractional Size (MB) : 0

Auto Deploy : Auto Deploy No Auto Deploy

Expand To Available :

Select Disk Group Configuration : Veeam_RAID60 [Create Disk Group Policy](#)

OK Cancel

Click OK.

Create Storage Profile

Name :

Description :

LUNs

Local LUNs | Controller Definitions | Security Policy

Advanced Filter | Export | Print

Name	Size (GB)	Order	Fractional Size (MB)
Veeam_Repo	1	Not Applicable	0
OS_Boot	1	Not Applicable	0

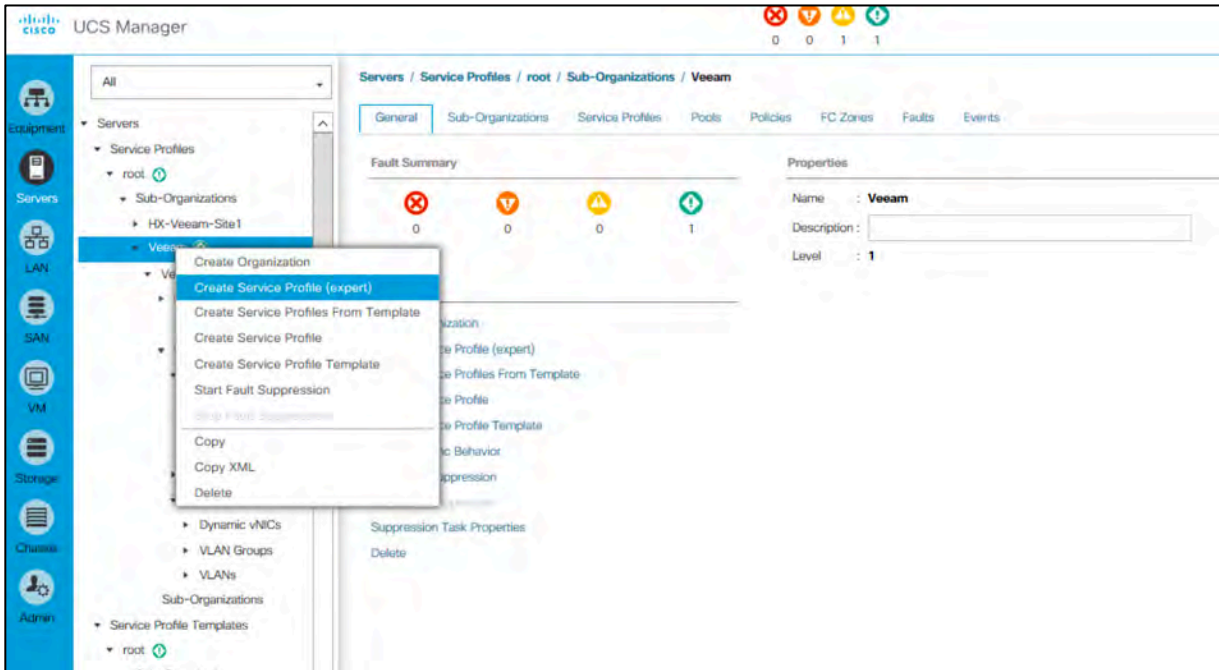
+ Add | Delete | Info

OK Cancel

Click OK to finalize the Storage Profile.

The final configuration step in Cisco UCS Manager is creating a service profile.

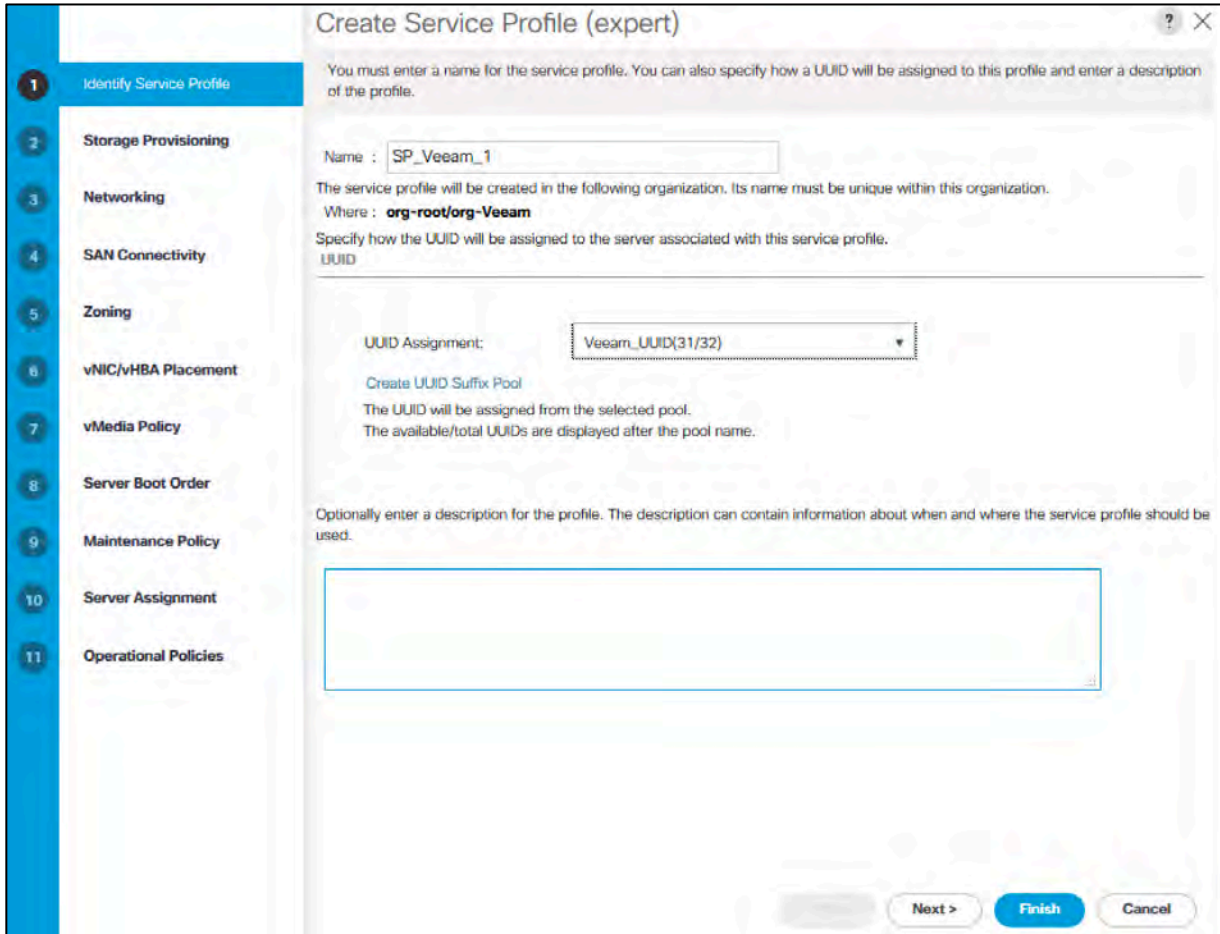
Go to Servers > root > Sub-Organizations > Veeam and click Create Service Profile (expert).



Enter an obvious name.

Select a universal user ID (UUID) pool with free IDs for UUID Assignment.

Click Next.



Create Service Profile (expert)

You must enter a name for the service profile. You can also specify how a UUID will be assigned to this profile and enter a description of the profile.

Name :

The service profile will be created in the following organization. Its name must be unique within this organization.
Where : **org-root/org-Veeam**

Specify how the UUID will be assigned to the server associated with this service profile.
UUID

UUID Assignment:

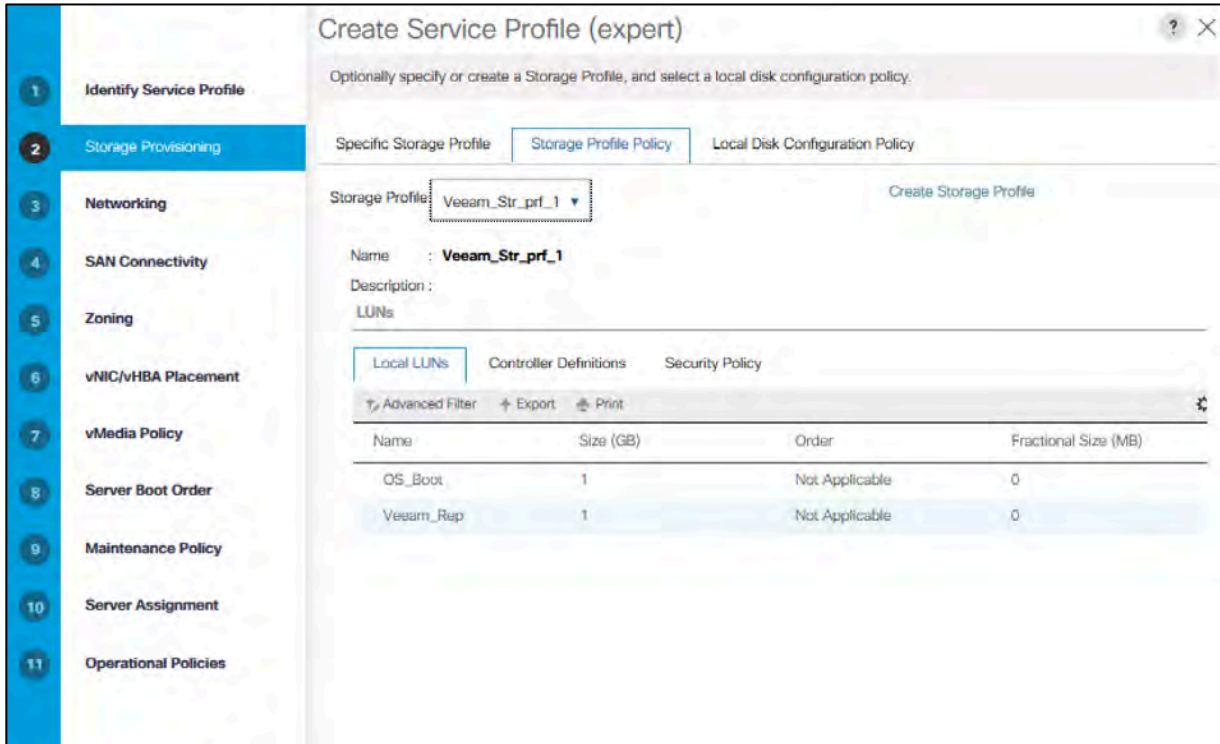
Create UUID Suffix Pool
The UUID will be assigned from the selected pool.
The available/total UUIDs are displayed after the pool name.

Optionally enter a description for the profile. The description can contain information about when and where the service profile should be used.

In the Storage Provisioning section, click the Storage Profile Policy tab.

Select the storage profile that you want (in the example here, Veeam_Str_Prpf_1 is used).

Click Next.

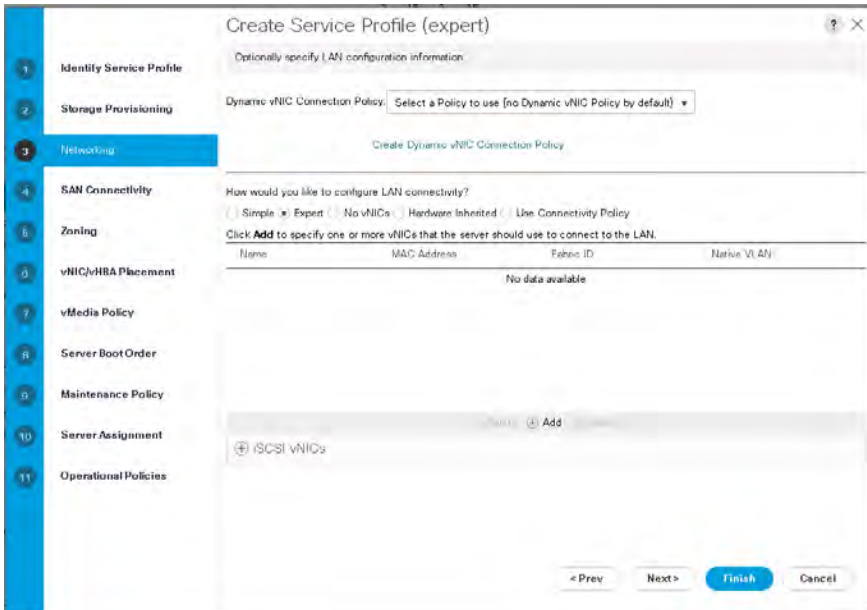


The screenshot shows the 'Create Service Profile (expert)' wizard in the Storage Provisioning section. The 'Storage Profile Policy' tab is selected. The 'Storage Profile' dropdown is set to 'Veeam_Str_prf_1'. The 'Name' field is 'Veeam_Str_prf_1'. The 'Description' field is 'LUNs'. The 'Local LUNs' tab is active, showing a table with two entries: 'OS_Boot' and 'Veeam_Rep', both with a size of 1 GB and a fractional size of 0 MB.

Name	Size (GB)	Order	Fractional Size (MB)
OS_Boot	1	Not Applicable	0
Veeam_Rep	1	Not Applicable	0

In the Networking section, select the Expert button.

Click Add.



Enter eth0 as the name.

Select a MAC address pool with free addresses.

Select Fabric A as the fabric ID and select the Enable Failover checkbox.

Select your backup network (the example here uses hx-inband-mgmt) and select the Native VLAN button.

Create vNIC

Name :

MAC Address

MAC Address Assignment: ▼

[Create MAC Pool](#)

The MAC address will be automatically assigned from the selected pool.

Use vNIC Template :

Fabric ID : Fabric A Fabric B Enable Failover

VLAN in LAN cloud will take the precedence over the Appliance Cloud when there is a name clash.

VLANs VLAN Groups

Advanced Filter Export Print

Select	Name	Native VLAN
<input type="checkbox"/>	Backup_VLAN	<input type="radio"/>
<input type="checkbox"/>	default	<input type="radio"/>
<input checked="" type="checkbox"/>	hx-inband-mgmt	<input checked="" type="radio"/>
<input type="checkbox"/>	hx-storage-data	<input type="radio"/>

CDN Source : vNIC Name User Defined

MTU :

Pin Group : [Create LAN Pin Group](#)

[Operational Parameters](#)

Enter 1500 or 9000 for the MTU value. MTU 9000 works only if all network components and the server are configured with MTU 9000. Check with your network administrator and server administrator to determine which value to use.

Select a Windows or Linux for Adapter Policy.

Set QoS Policy and Network Control Policy as defined by your local network administrator.

Click OK.

Create vNIC

Fabric ID : Fabric A Fabric B Enable Failover

VLAN in LAN cloud will take the precedence over the Appliance Cloud when there is a name clash.

VLANs | VLAN Groups

Advanced Filter | Export | Print

Select	Name	Native VLAN
<input type="checkbox"/>	Backup_VLAN	<input type="radio"/>
<input type="checkbox"/>	default	<input type="radio"/>
<input checked="" type="checkbox"/>	hx-inband-mgmt	<input checked="" type="radio"/>
<input type="checkbox"/>	hx-storage-data	<input type="radio"/>

CDN Source : vNIC Name User Defined

MTU :

Warning

Make sure that the MTU has the same value in the QoS System Class corresponding to the Egress priority of the selected QoS Policy.

Pin Group : [Create LAN Pin Group](#)

Operational Parameters

Adapter Performance Profile

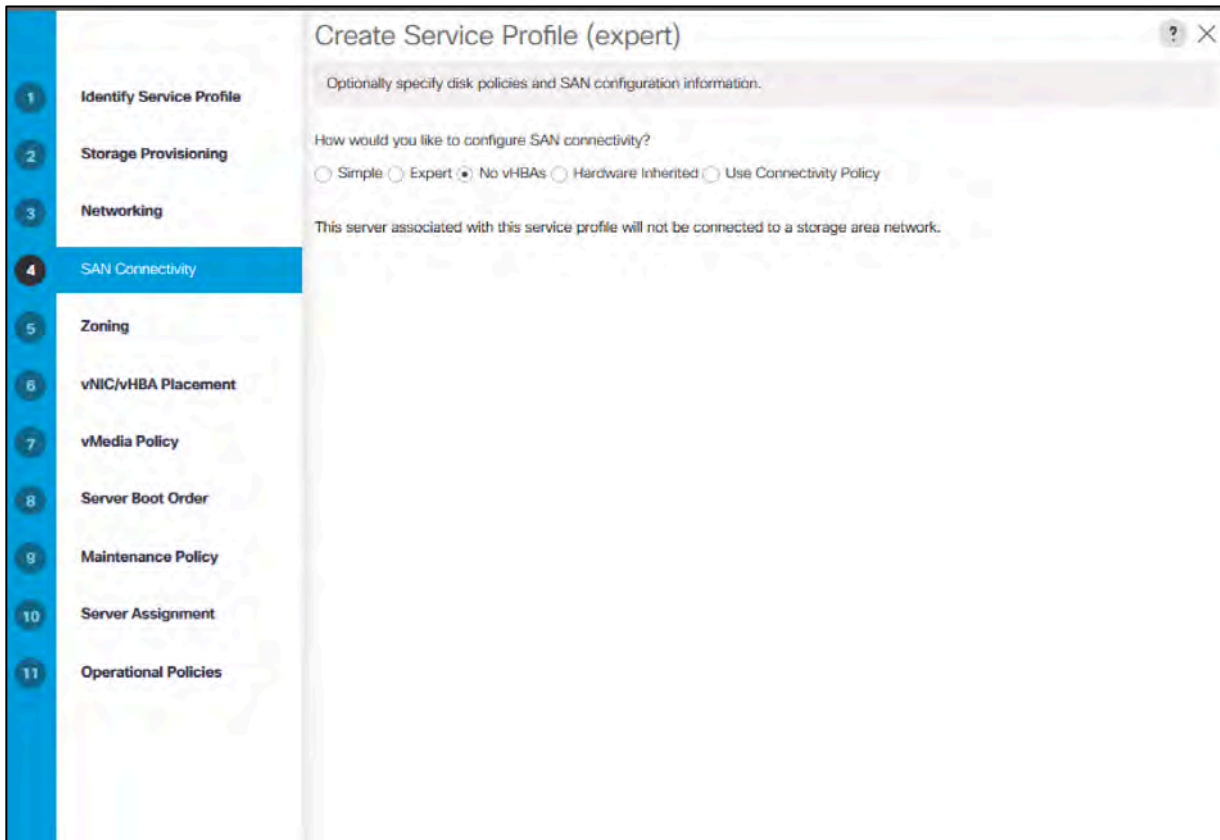
Adapter Policy : [Create Ethernet Adapter Policy](#)

QoS Policy : [Create QoS Policy](#)

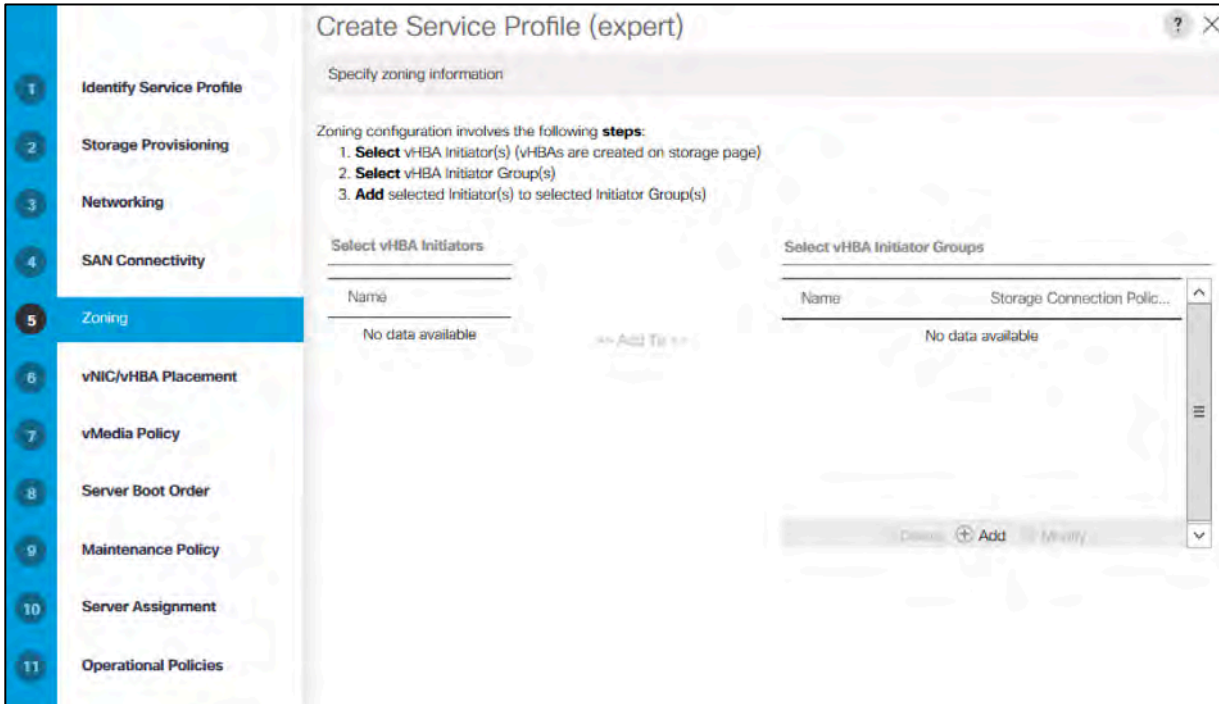
Network Control Policy : [Create Network Control Policy](#)

Connection Policies

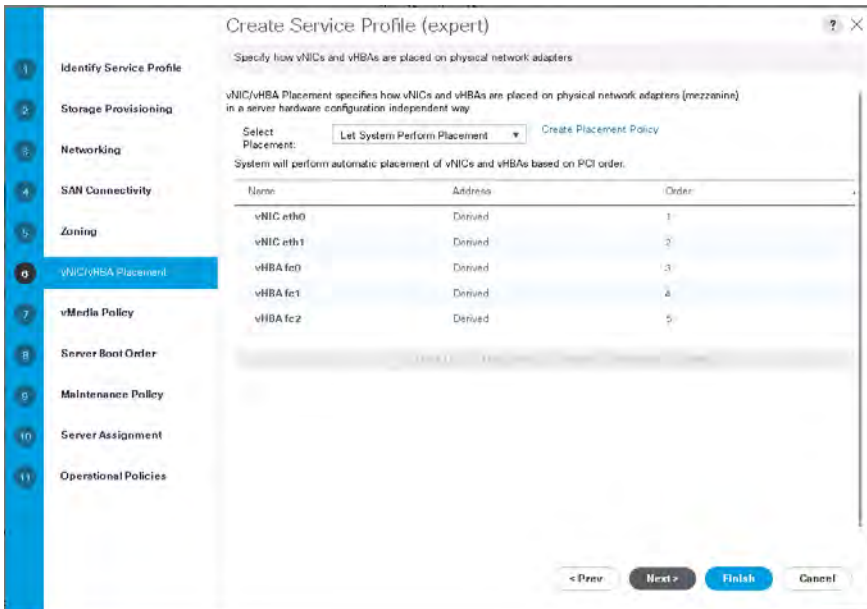
Click Select no vHBAs in the SAN Connectivity section, and then click Next.



In the Zoning area, click Next.



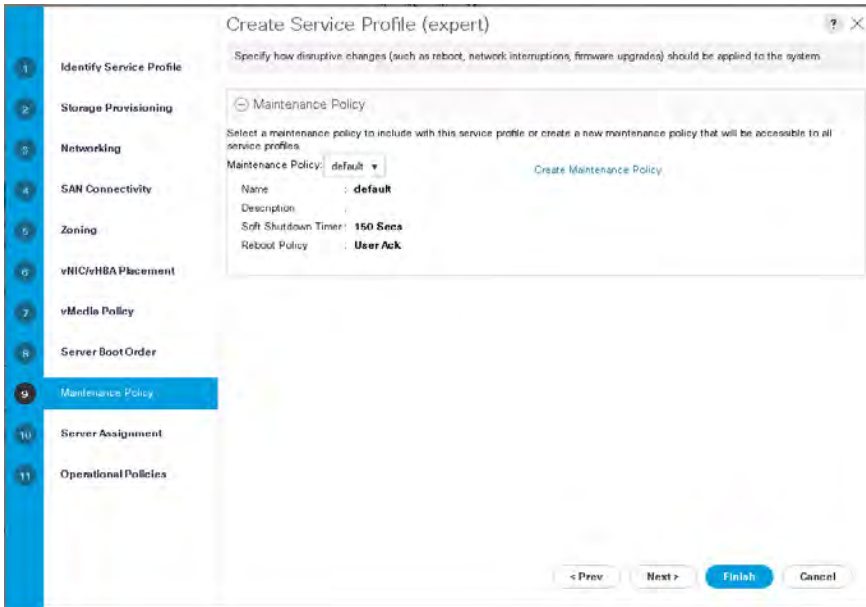
In the vMedia Policy section, click Next.



In the Server Boot Order section, select default to allow local Boot.

In the Maintenance section, select default for Maintenance Policy.

Click Next.



The screenshot shows the 'Create Service Profile (expert)' wizard. The left sidebar lists 11 steps, with step 9, 'Maintenance Policy', highlighted in blue. The main content area is titled 'Maintenance Policy' and contains the following text: 'Specify how disruptive changes (such as reboot, network interruptions, firmware upgrades) should be applied to the system'. Below this, it says 'Select a maintenance policy to include with this service profile or create a new maintenance policy that will be accessible to all service profiles'. A dropdown menu for 'Maintenance Policy' is set to 'default', with a 'Create Maintenance Policy' link to its right. Below the dropdown, the following details are listed: 'Name : default', 'Description', 'Soft Shutdown Timer: 150 Secs', and 'Reboot Policy : User Ack'. At the bottom of the wizard, there are four buttons: '< Prev', 'Next >', 'Finish', and 'Cancel'.

In the Server Assignment section, select Assign Later and then click Next.

Create Service Profile (expert)

Optionally specify a server or server pool for this service profile.

You can select an existing server or server pool, or specify the physical location of the server you want to associate with this service profile.

Server Assignment: Assign Later ▾ Create Server Pool

Select the power state to be applied when this profile is associated with the server.
 Up Down

The service profile is not automatically associated with a server. Either select a server from the list or associate the service profile manually later.

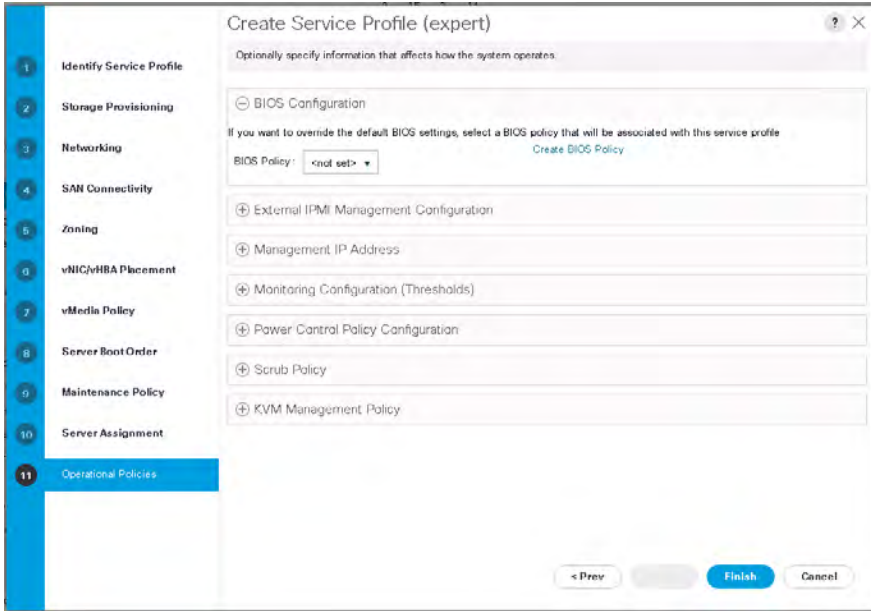
+ Firmware Management (BIOS, Disk Controller, Adapter)

< Prev Next > Finish Cancel

In the Operational Policies section, select the policies required for your installation.

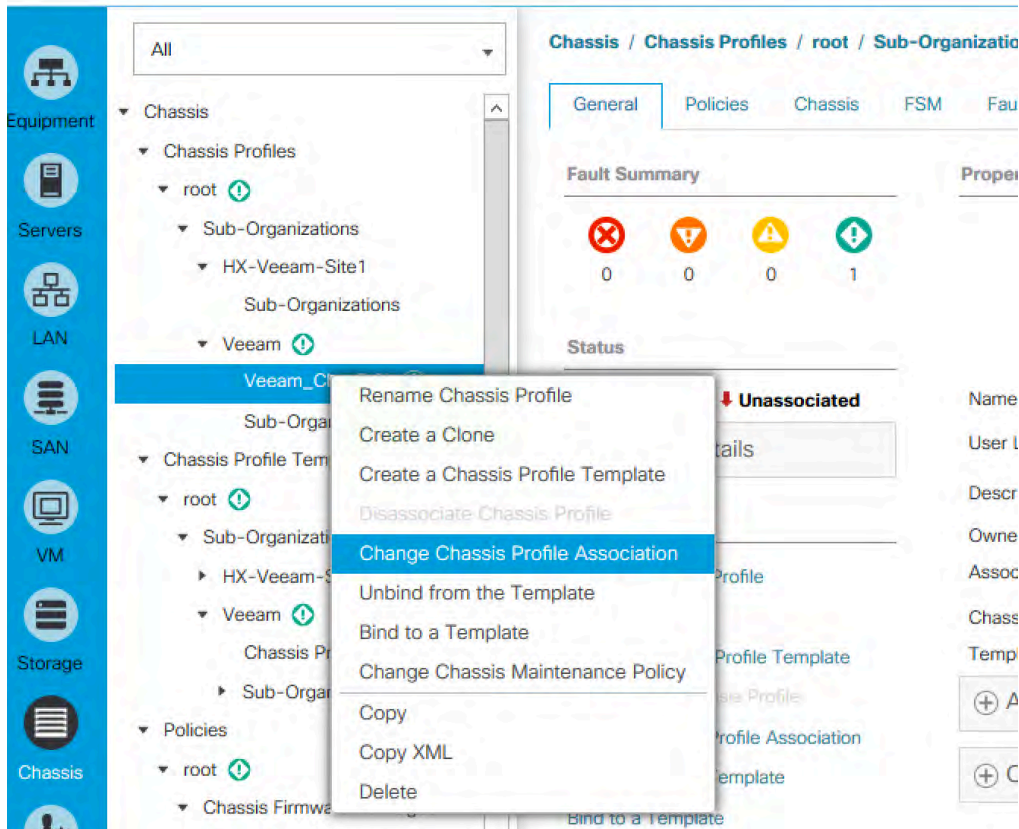
Veeam does not require you to select any particular options.

Click Finish.



Now we can assign the Chassis Profile to the available S3260 chassis, and then we can assign a chassis server node to the previously created Service Profile.

Right click on the previously created Chassis Profile and select Change Chassis Profile Association.



Select the available S3260 chassis.

Associate Chassis Profile ? X

Select a previously-discovered chassis by name, or manually specify a custom chassis by entering its chassis ID. If no chassis currently exists at that location, the system waits until one is discovered.

You can select an existing chassis you want to associate with this chassis profile.

Chassis Assignment:

Available Chassis All Chassis

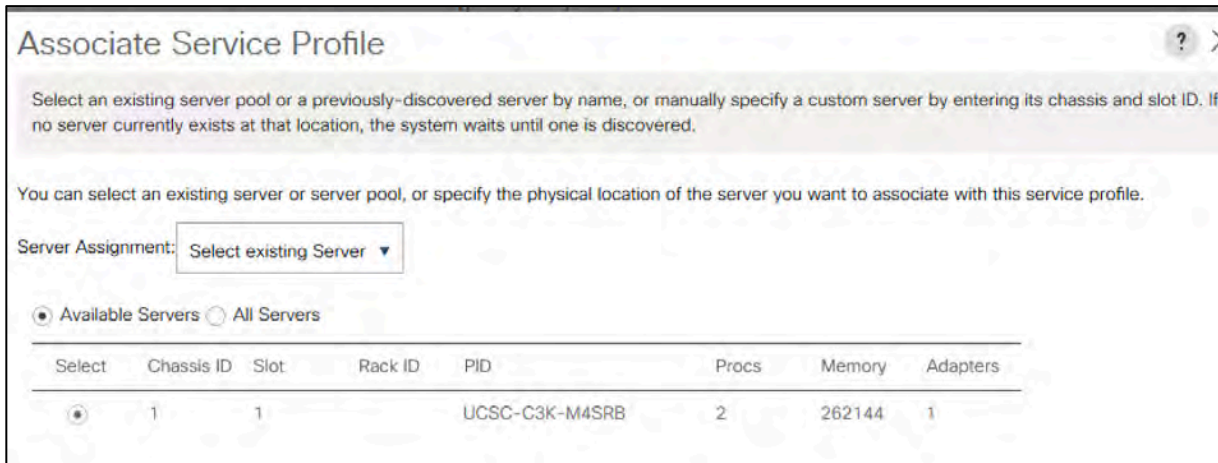
Select	ID
<input checked="" type="radio"/>	1

Restrict Migration

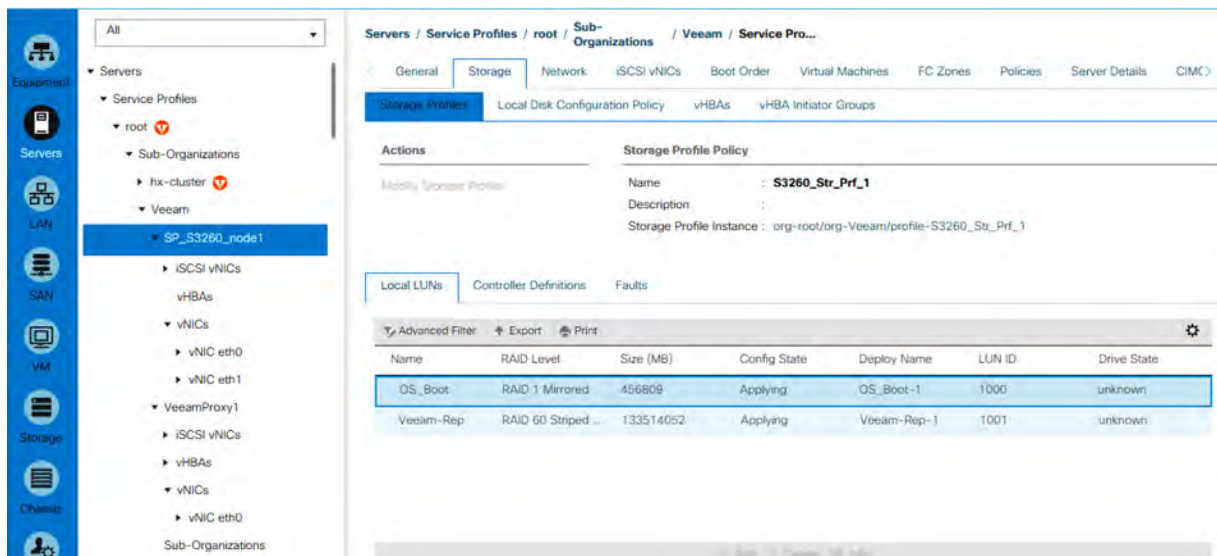
Monitor the chassis profile association on the FSM tab.

When the Chassis Association succeeds, we can associate the Service Profile the S3260 server node.

Right click Service Profile and associate it with the available S3260 server node.



Monitor Service Profile association in the FSM tab. Once Service Profile is associated, verify the boot LUN and Veeam Repository LUN created under the Service Profile Storage tab.

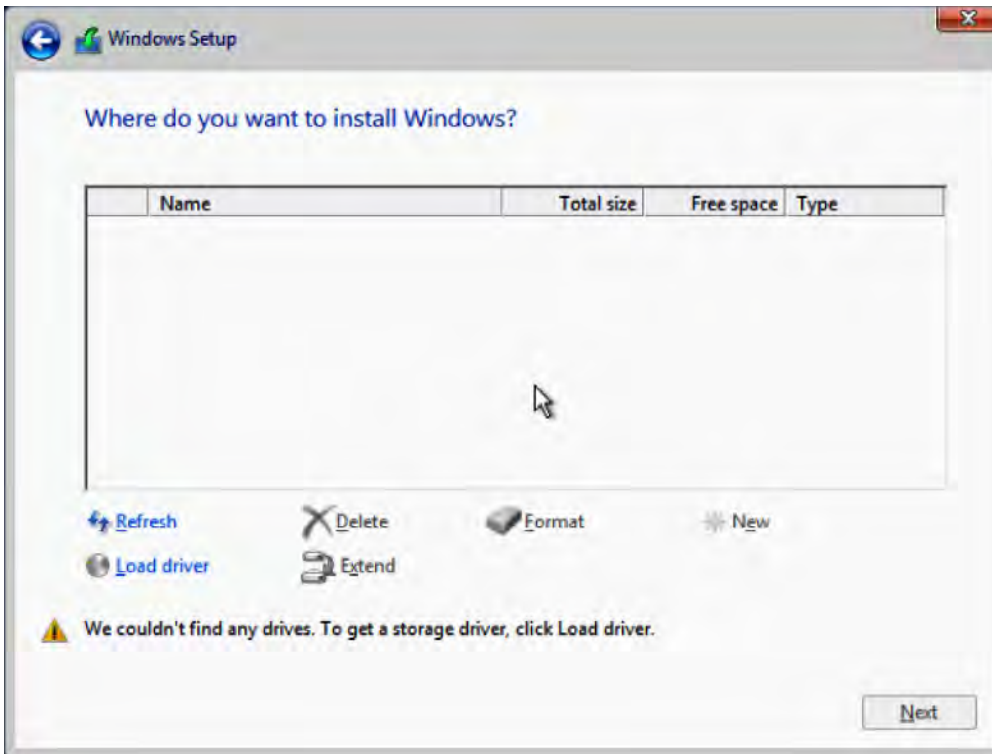


After you verify the boot LUN and Veeam Repository, you can proceed to installation of Windows 2016 on the S3260 server node.

For Windows 2016, we required a valid S3260 RAID controller driver to allow installation of the OS on Boot LUN.

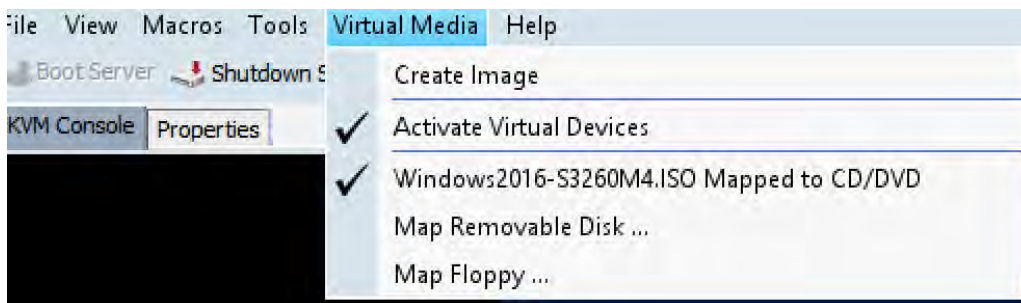
To install and load the RAID controller driver S3260 successfully, complete the following steps:

On the Where do you want to install Windows? screen, click Load Driver.

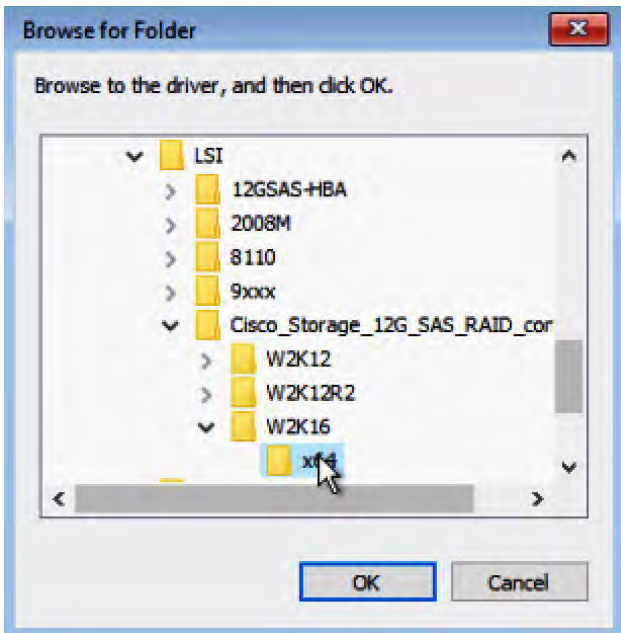


In Cisco UCS Manager, click the LAN tab in the navigation pane.

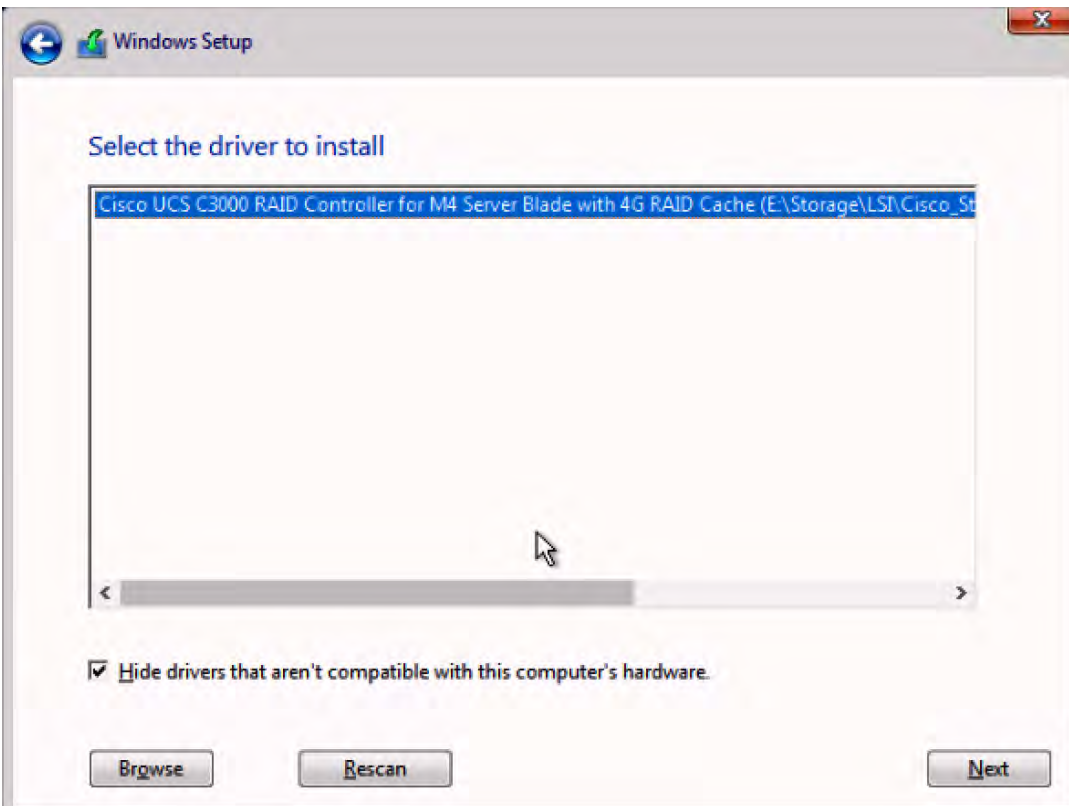
In Virtual Media, un-map the Windows installer ISO and map the S3260 drivers ISO. The drivers for S3260 can be downloaded from www.cisco.com at location > Downloads Home Products Servers > Unified Computing > UCS C-Series Rack-Mount UCS-Managed Server Software > Unified Computing System (UCS) Drivers-3.0(1a).



Click Browse and navigate to the location of the driver as shown here:



Click Rescan and view the correct RAID controller driver in the Select the driver to install window.



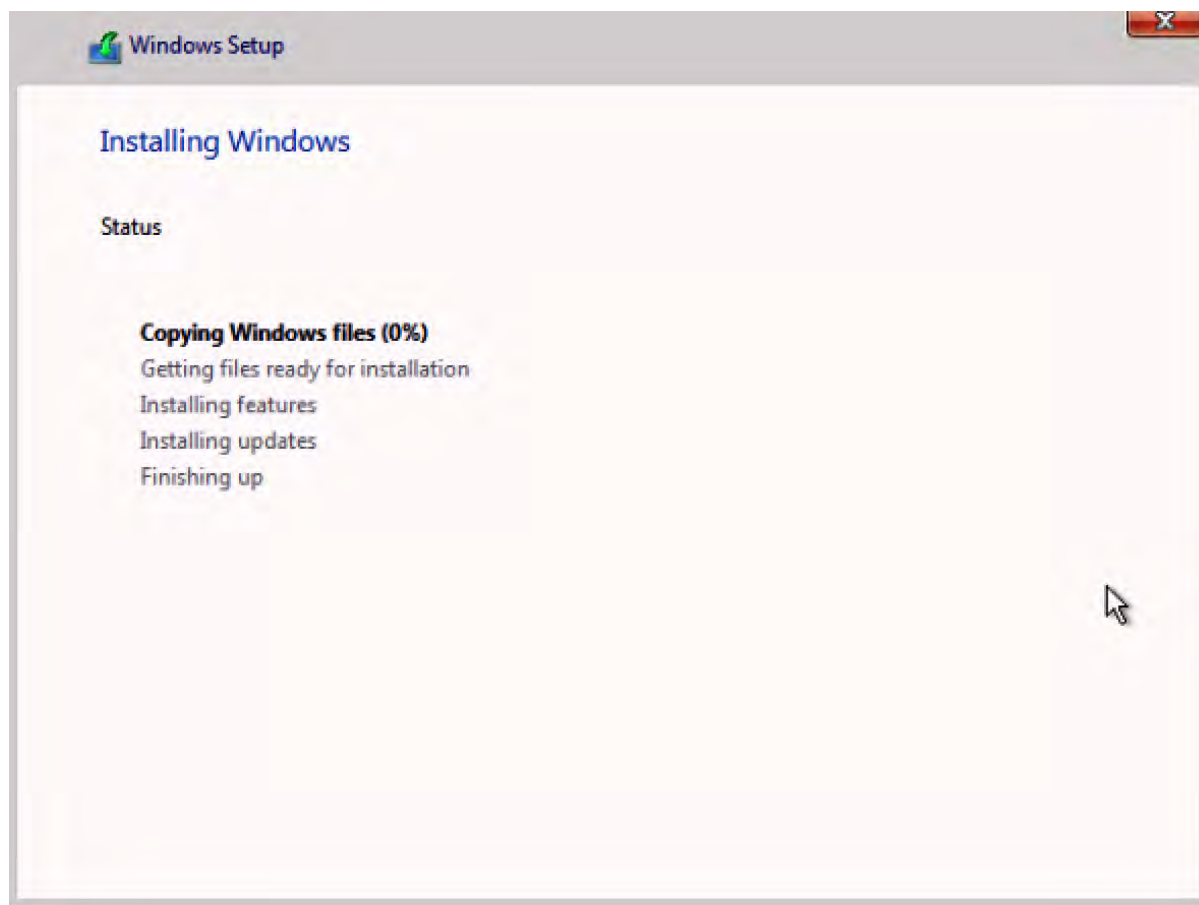
Click Next to install the driver.

Return to the Where do you want to install Windows? screen, uncheck the driver ISO image, and re-map the Windows Installer Image.

Click Refresh.

Select the Drive2. This drive is aRAID1 configuration created from the two SSDs in the rear of the S3260 chassis for OS installation through the Storage Profile in the Cisco UCS Service Profile. Drive3 is the RAID6 configuration created from the top-load SAS drives for Veeam Repository.

Click Next.



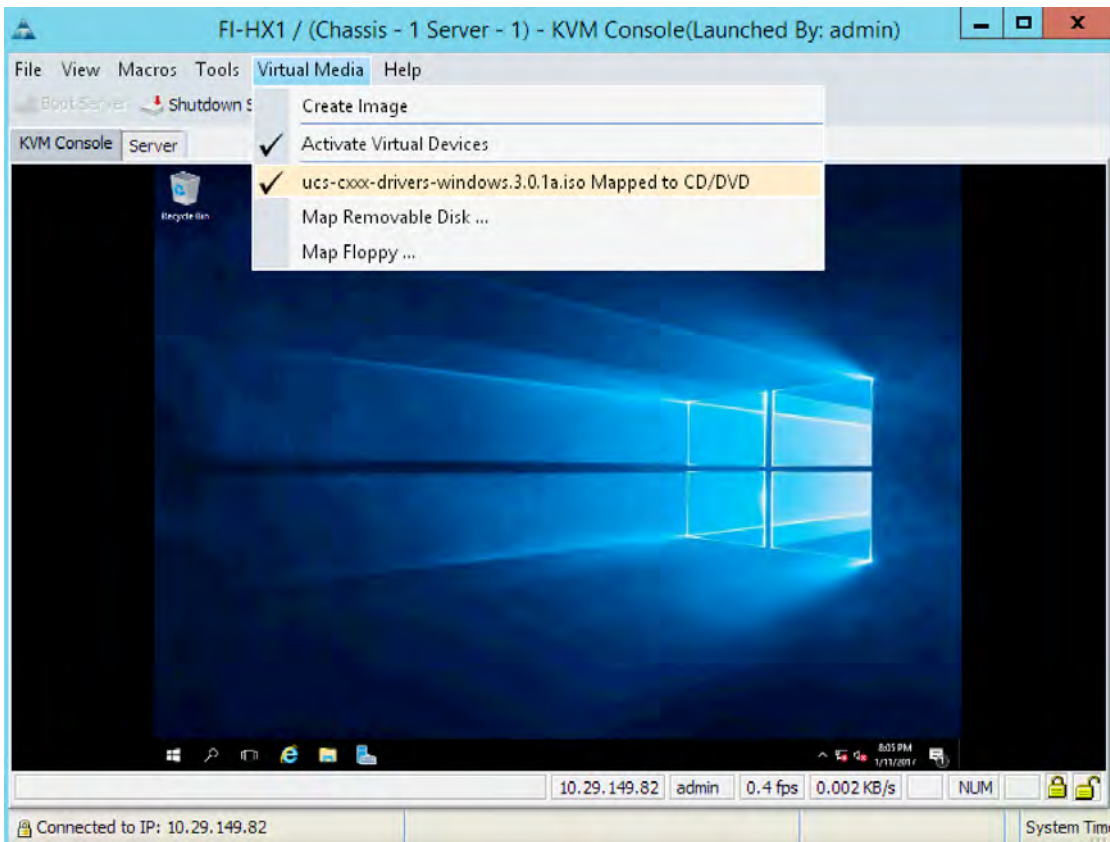
When the installation completes, update the Cisco VIC Driver for Windows 2016.

To update the Cisco VIC driver for Windows 2016, complete the following steps:

Open the Cisco UCS KVM Console and log in to Windows 2016 installed on the S3260 Storage Server.

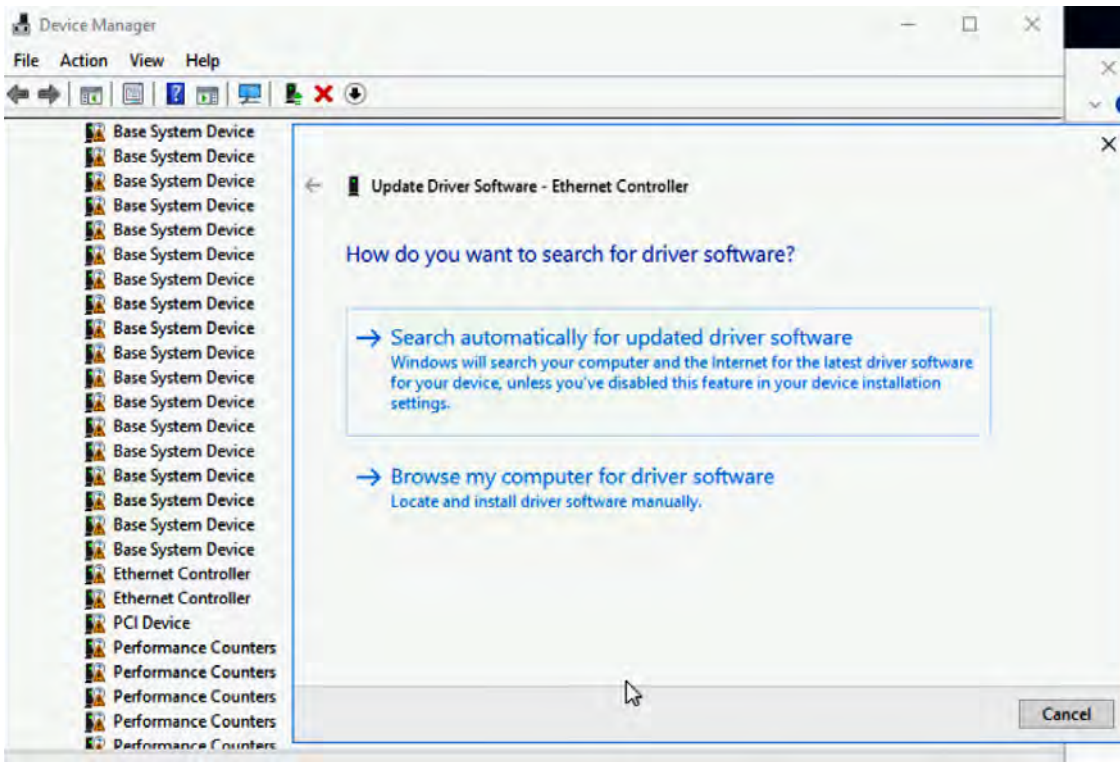
Map the S3260 drivers through the Map CD/DVD option under the Virtual Media tab in the KVM Console.

The S3260 drivers are located in the section Load Drivers for S3260 RAID Controller.



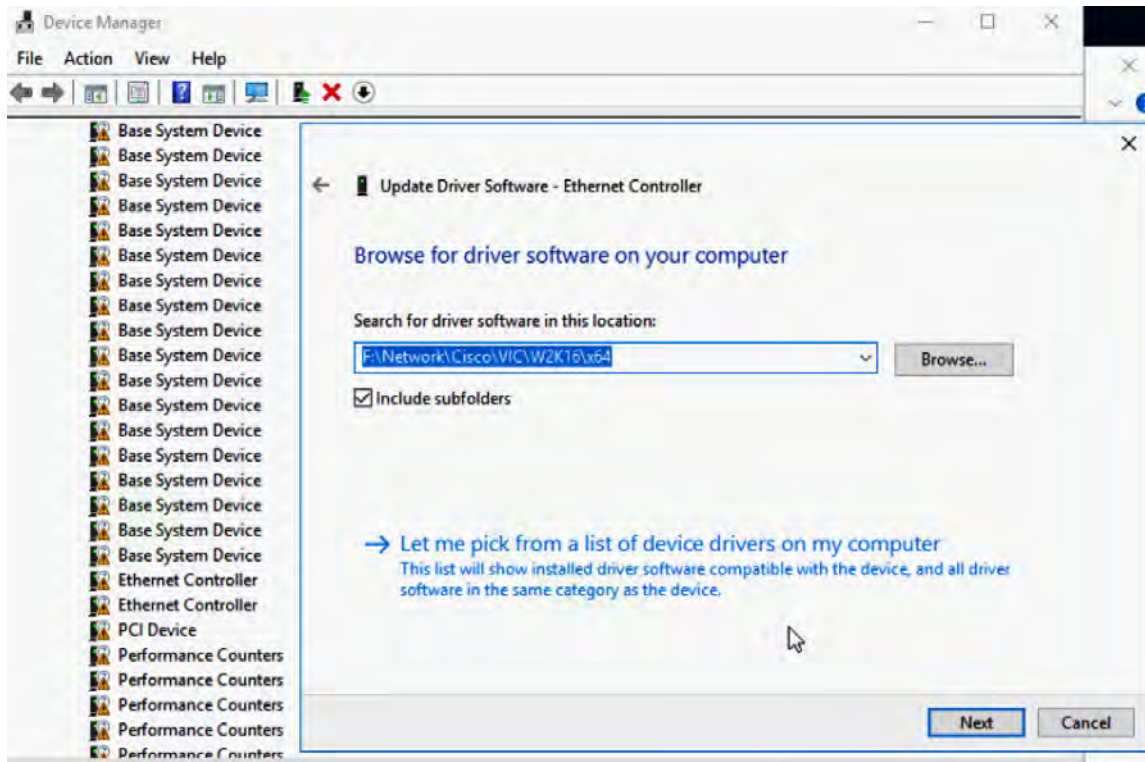
In Windows 2016, go to Control Panel > Device Manager.

Select Ethernet Controller and then select Update Driver.

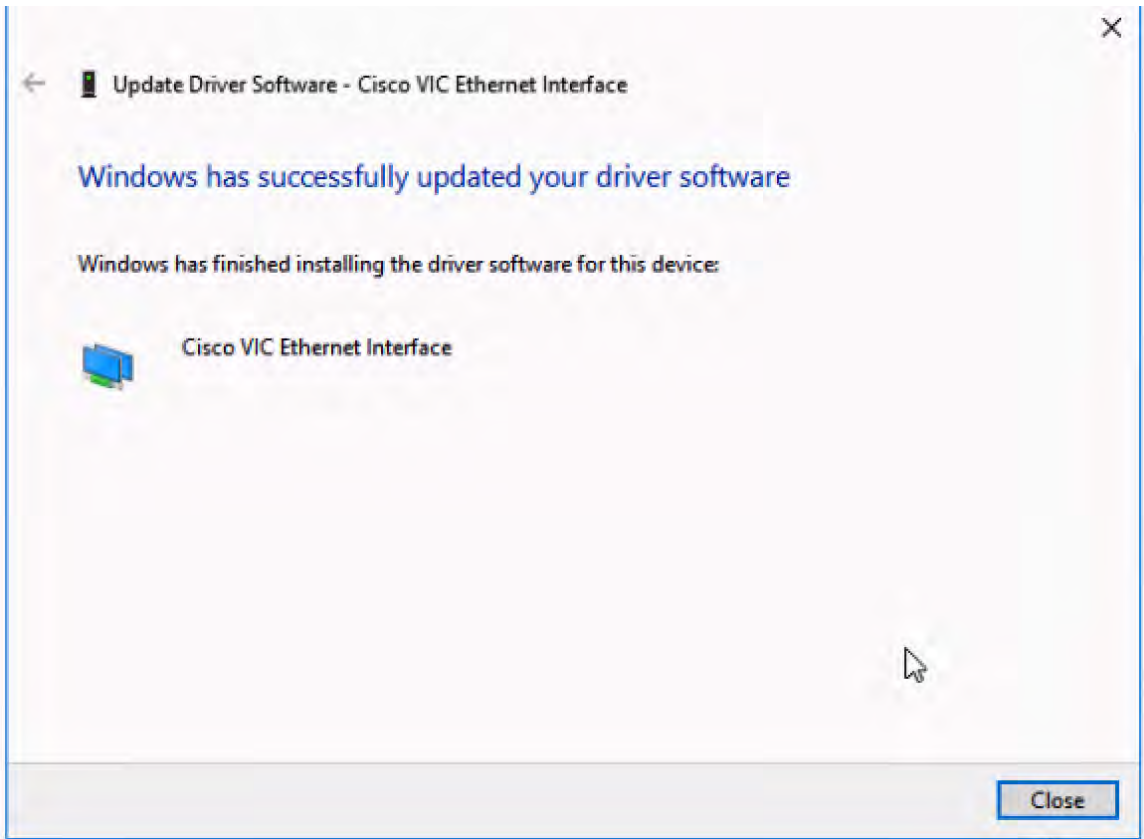


Select Browse for Driver in My Computer.

Select DVD Driver as mapped through Virtual Media in the KVM Console and browse to \\Network\Cisco\VIC\W2K16\x64.



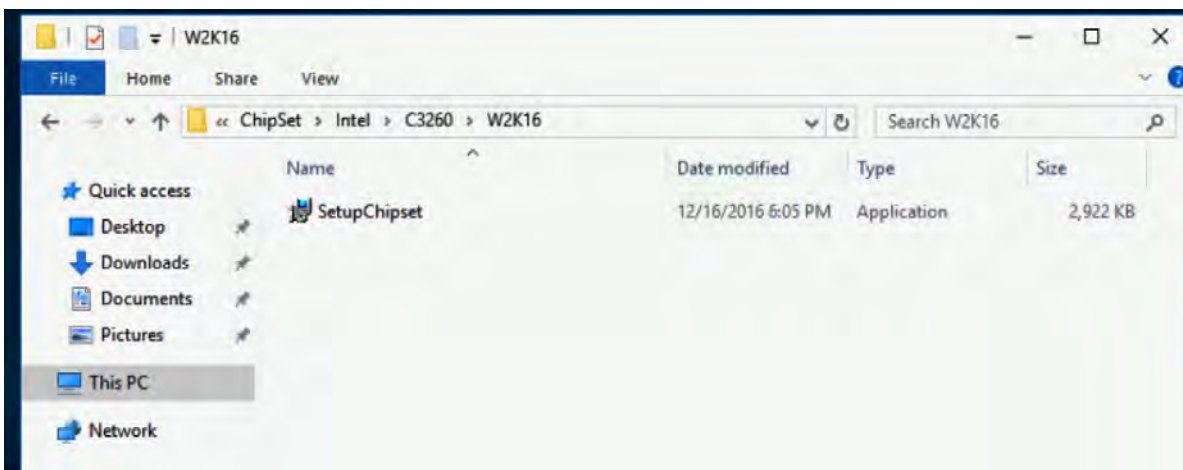
Click Next to install the Cisco VIC Ethernet Interface driver.



To update Intel Chipset driver for Windows 2016, complete the following steps:

Update the driver for the S3260 Intel Chip Set.

Under the S3260 Driver ISO mounted through the Virtual Media of KVM console, browse to \ChipSet\Intel\C3260\W2K16.



Execute SetupChipset.exe. When it is installed, restart the system.



Now we can proceed to creation of ReFS Disk Volume for Veeam Repository.

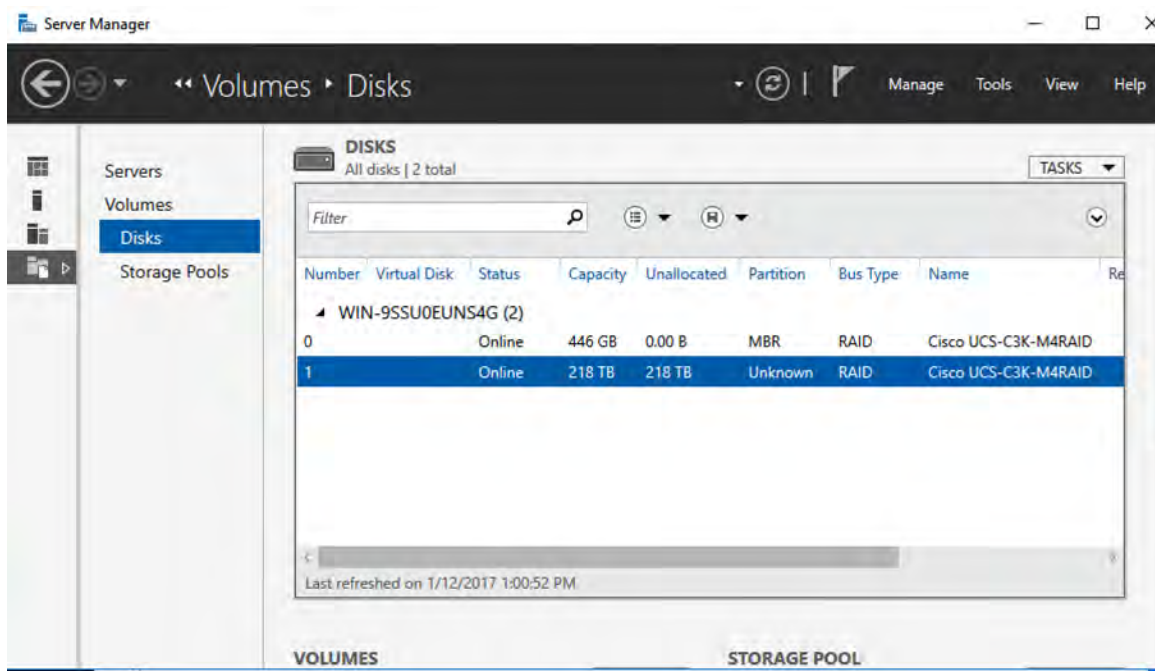
ReFS volumes provide significantly faster synthetic full backup creation and transformation performance, as well as reducing storage requirements and improving reliability. Even more importantly, this function improves availability of backup storage by significantly reducing its load, resulting in improved backup and restored performance and the ability for customers to do much more with virtual labs.

To create disk volume for Veeam Repository, complete the following steps:

Go to Server Manager > File and Storage Services.

Navigate to Volumes > Disks and select the volume with Partition type as Unknown.

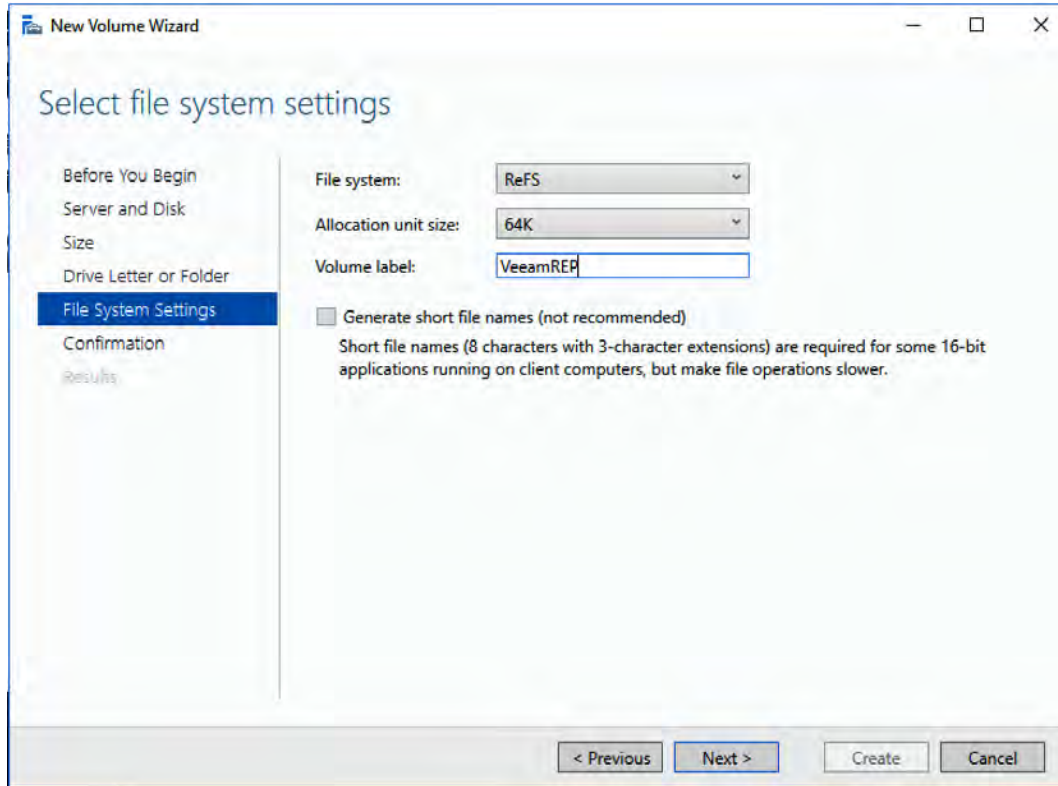
Create a New Volume.



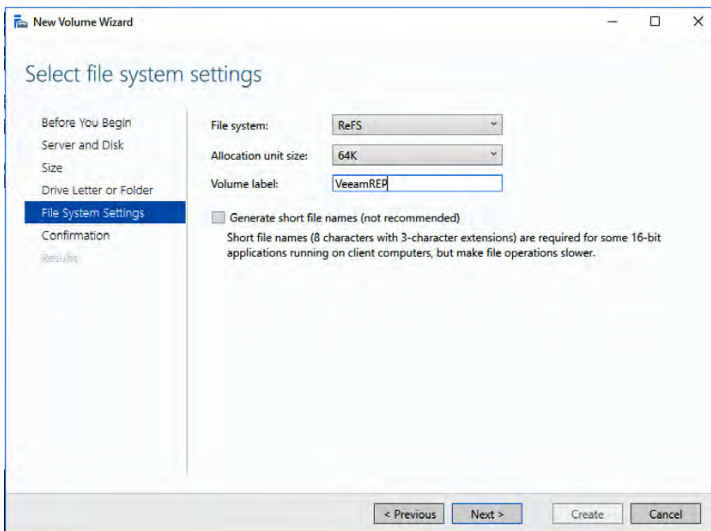
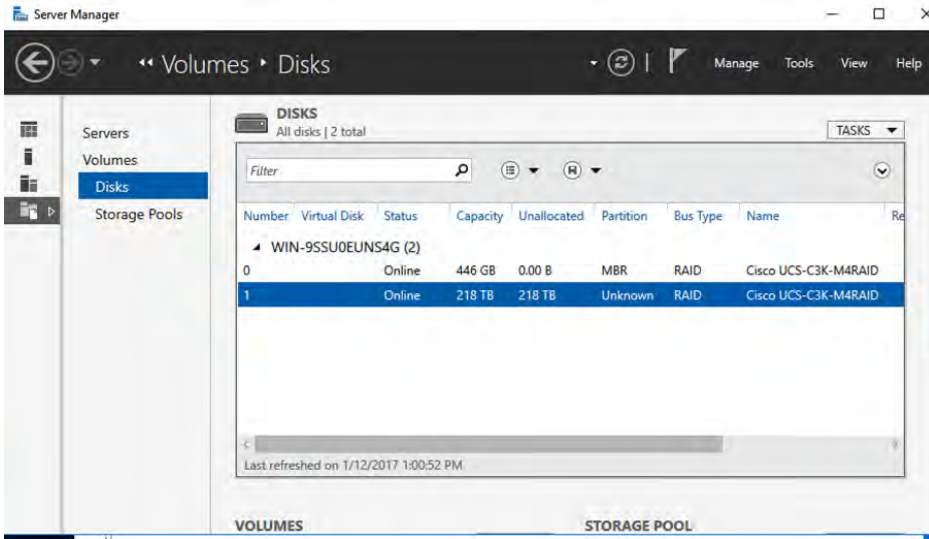
Click Next until you reach the Select File System settings window.

Create a Volume Label, select File system ReFS, the allocation unit size 64k, and the volume label VeeamRep.

Click Next.



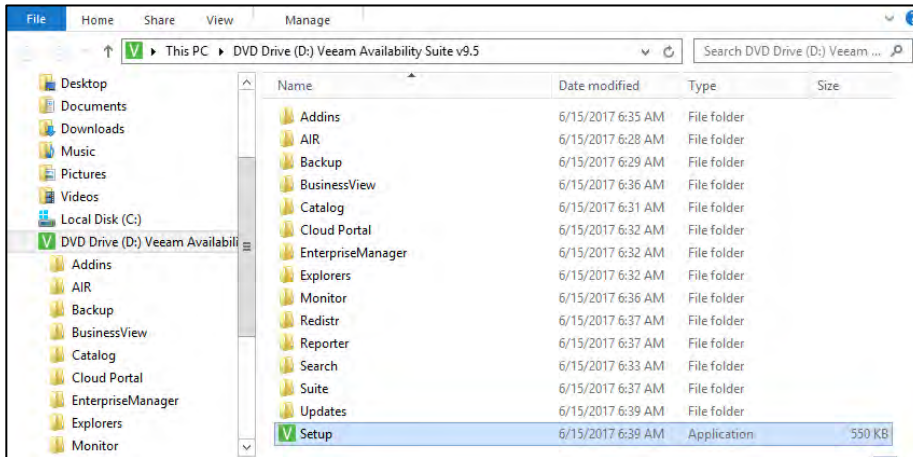
Confirm the File System Settings and click Create.



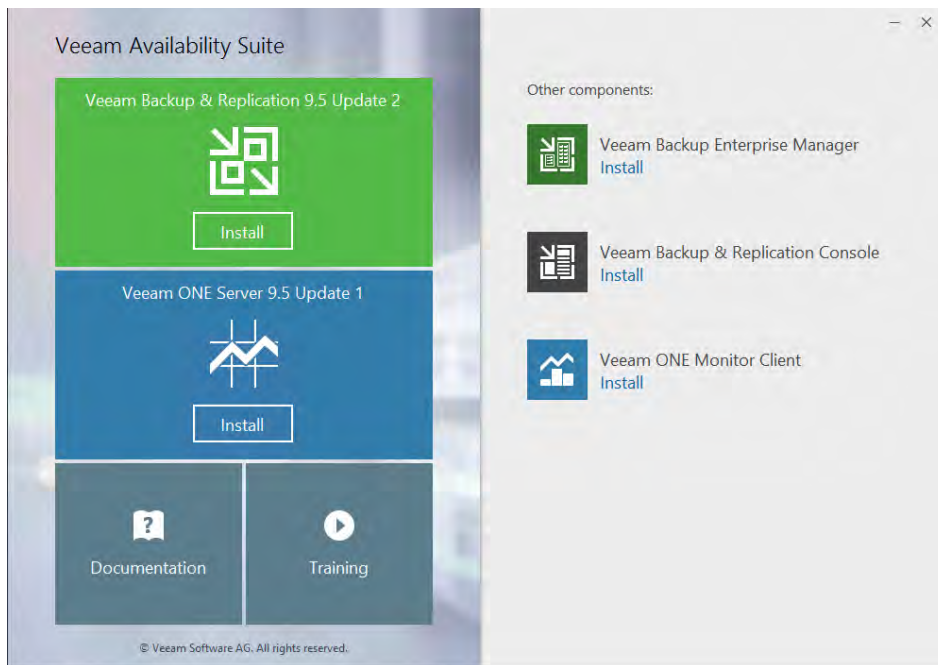
Veeam Availability Suite Installation

Download the Veeam software from <https://www.veeam.com/data-center-availability-suite-vcp-download.html>. Download a free 30-day trial license key or obtain a license key from Veeam.

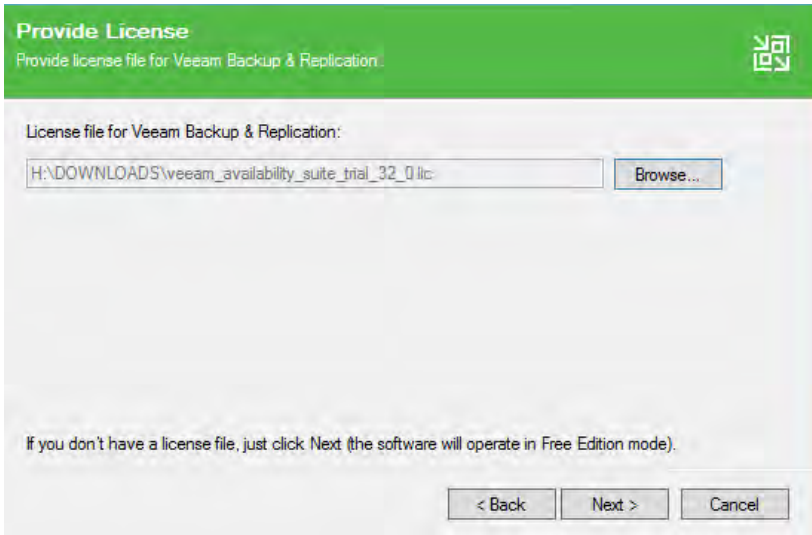
Start the Veeam installation with Setup.exe.



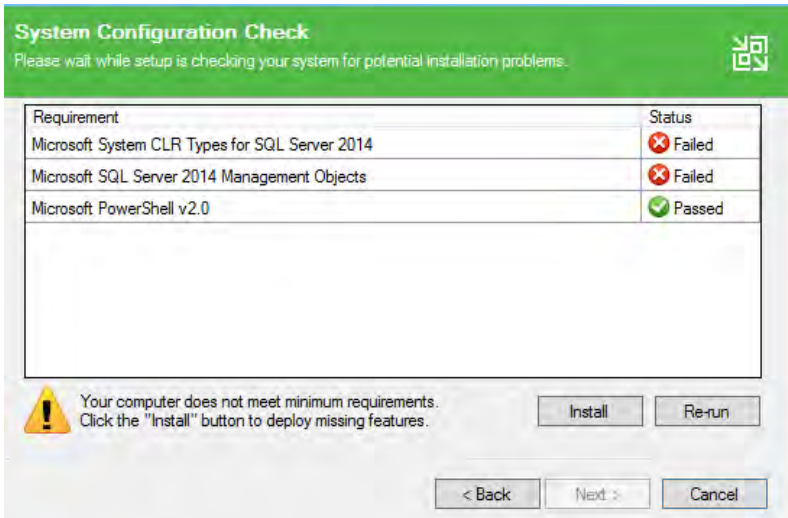
Click Install under Veeam Backup & Replication 9.5 Update 2.



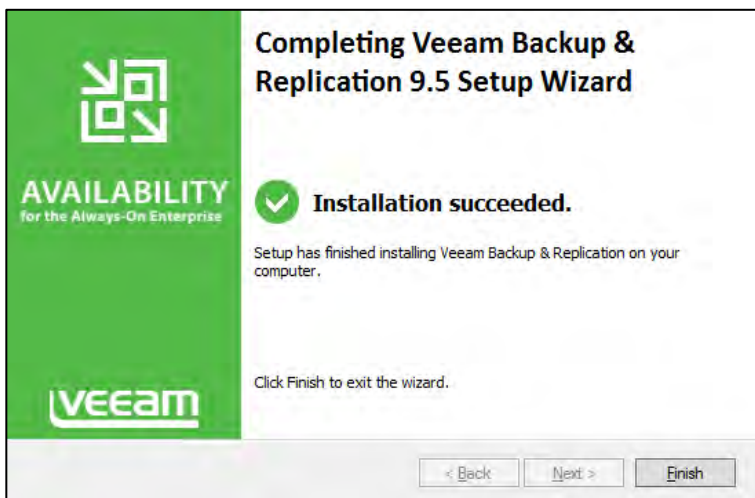
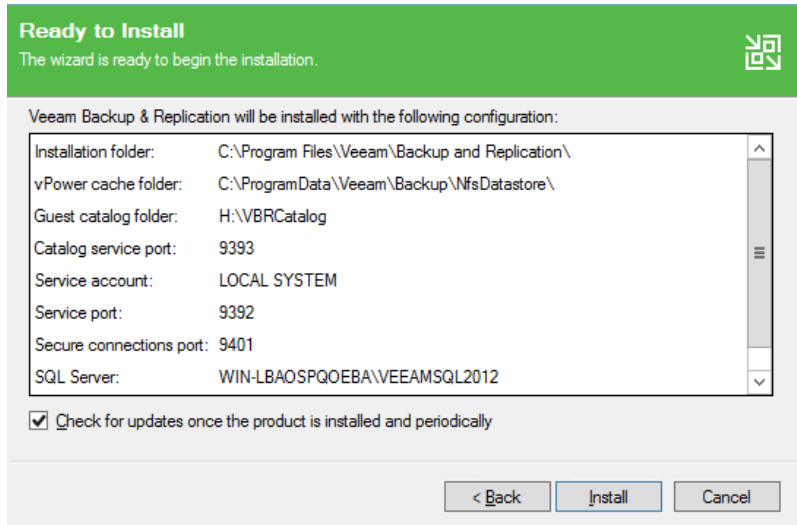
Enter the location of a valid Veeam License File.



During System Check, Veeam verifies the SQL Server Installation and prerequisite software components. When the process finishes, click Install.



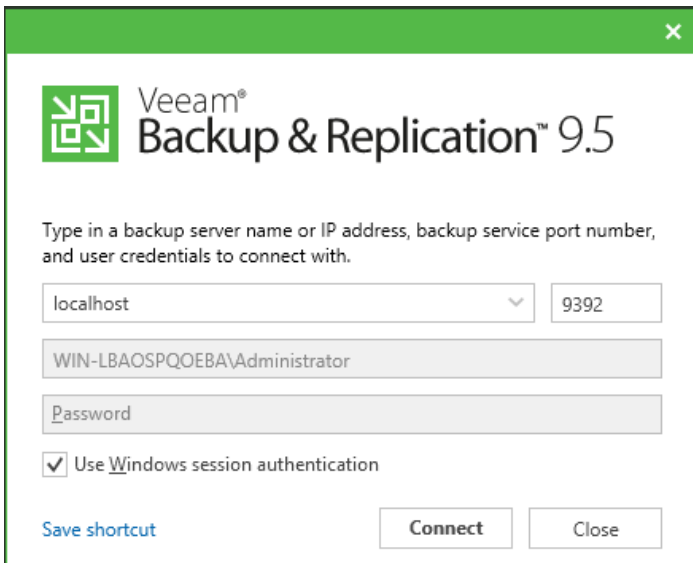
Accept the default Installer locations and click Install.



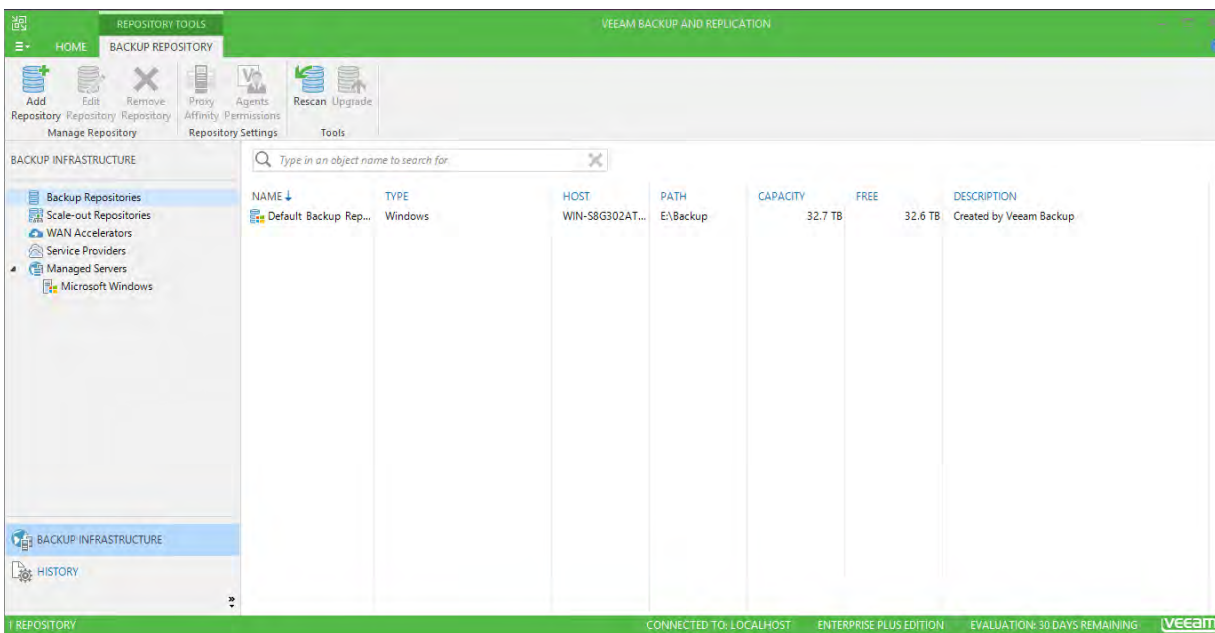
The core installation is finished.

Veeam Availability Suite Configuration

Open the Veeam Backup & Replication console.

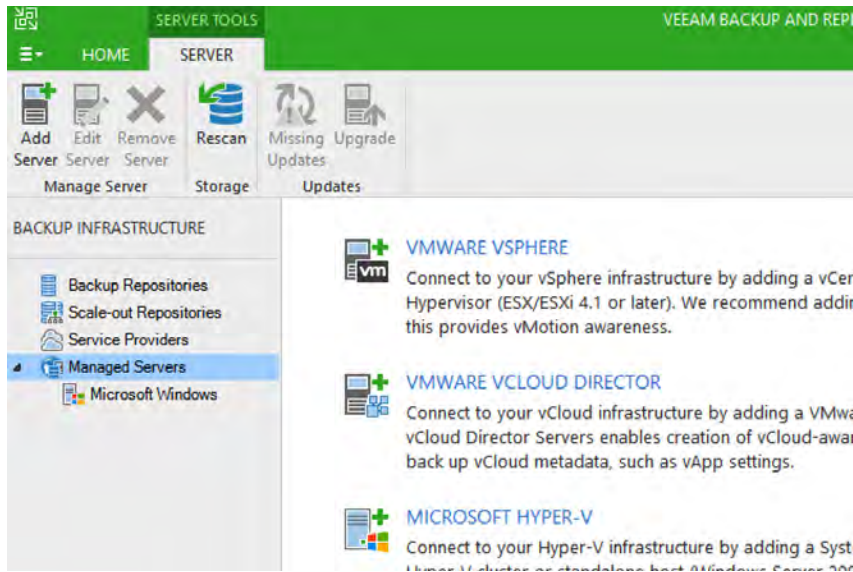


By default, Veeam uses the drive with the most capacity as the Veeam Repository. This repository is the one created through Disk Volume.

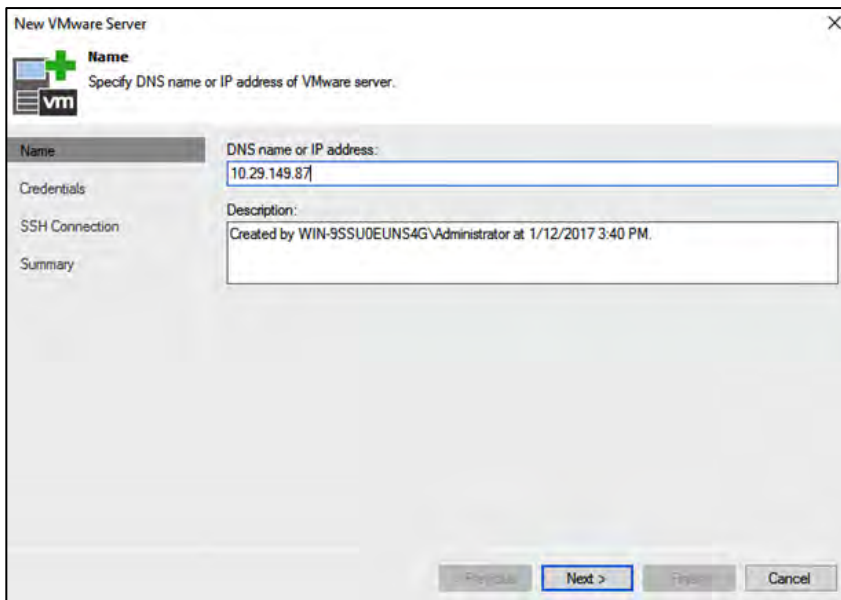


Right click Managed Server and click Add Server.

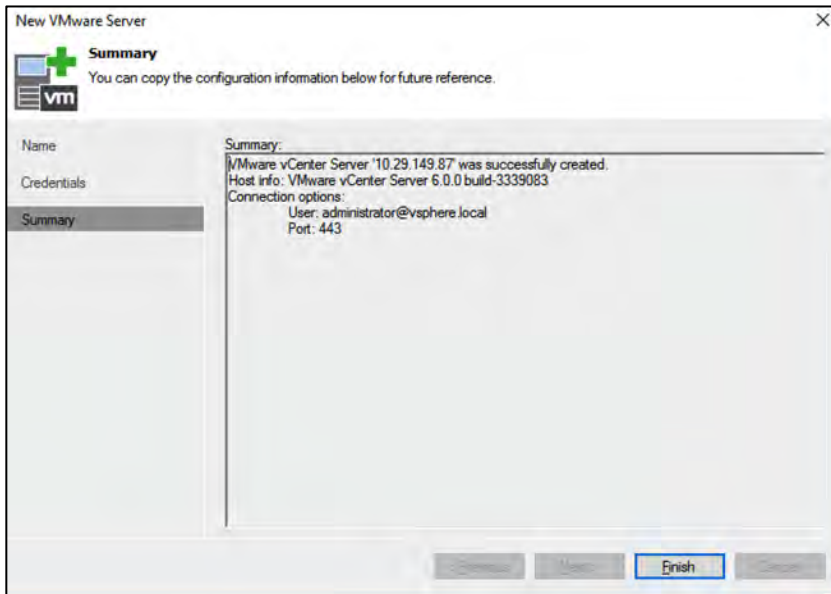
Select VMWare VSphere and add the vCenter URL, and then click Next.



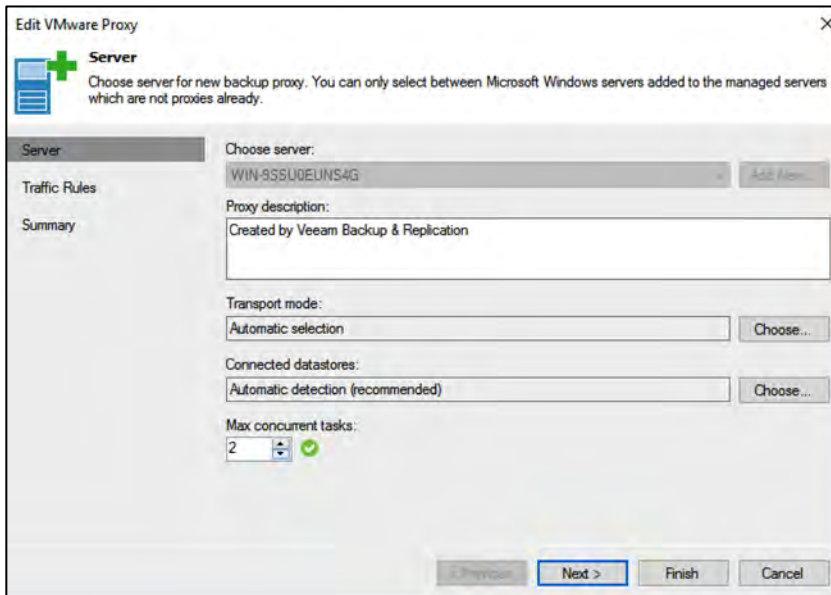
Enter the vCenter credentials and click Next.



When Veeam Console collects all the deployment details from vCenter, click Finish.

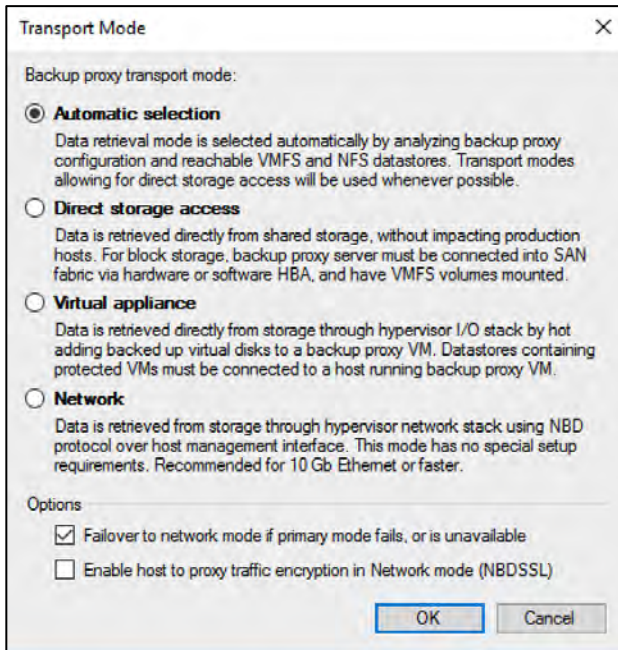


Click Backup Proxies in the right navigation windows, and choose VMware Backup Proxy and edit Properties.



Edit Max Concurrent Task to be equal to the Number of physical cores minus 2. In the present deployment, there is a dual 12-core Intel processor, so you can increase the Max Concurrent Task to 22.

Under Transport Mode, click Choose and make sure that failover to network mode, if primary mode fails, or is unavailable is checked. This option is checked by default.



The screenshot shows a dialog box titled "Transport Mode" with a close button (X) in the top right corner. The dialog contains the following text and controls:

Backup proxy transport mode:

- Automatic selection**
Data retrieval mode is selected automatically by analyzing backup proxy configuration and reachable VMFS and NFS datastores. Transport modes allowing for direct storage access will be used whenever possible.
- Direct storage access**
Data is retrieved directly from shared storage, without impacting production hosts. For block storage, backup proxy server must be connected into SAN fabric via hardware or software HBA, and have VMFS volumes mounted.
- Virtual appliance**
Data is retrieved directly from storage through hypervisor I/O stack by hot adding backed up virtual disks to a backup proxy VM. Datastores containing protected VMs must be connected to a host running backup proxy VM.
- Network**
Data is retrieved from storage through hypervisor network stack using NBD protocol over host management interface. This mode has no special setup requirements. Recommended for 10 Gb Ethernet or faster.

Options

- Failover to network mode if primary mode fails, or is unavailable
- Enable host to proxy traffic encryption in Network mode (NBDSSL)

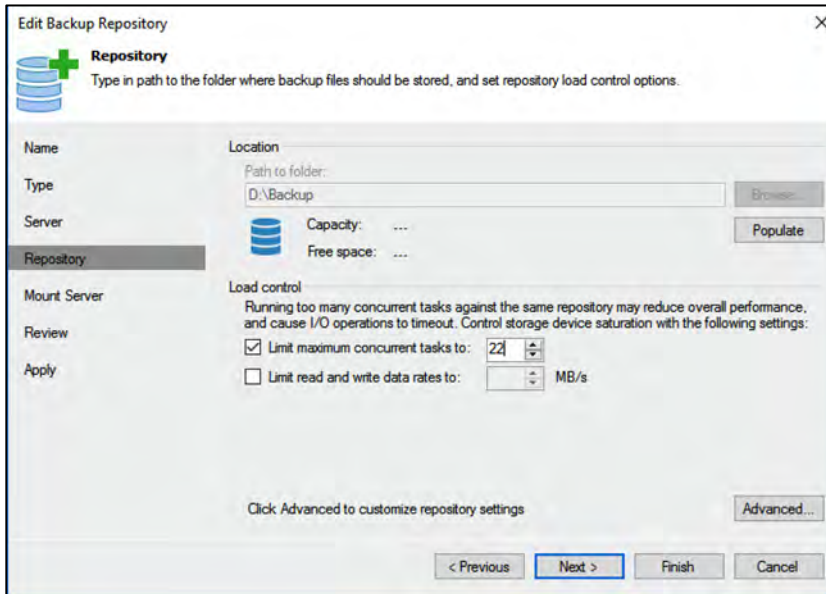
At the bottom of the dialog are two buttons: "OK" and "Cancel".

Click Finish.

Click Backup Repository in the right navigation window, and then select the Default Backup Repository and edit Properties.

Click Next until you reach the Repository window.

Increase the Limit Max Concurrent Task to be 22 (Number of physical cores minus 2).



Edit Backup Repository

Repository
Type in path to the folder where backup files should be stored, and set repository load control options.

Name **Location**

Type Path to folder: D:\Backup **Browse...**

Server **Capacity:** ... **Populate**

Repository **Free space:** ...

Mount Server **Load control**

Running too many concurrent tasks against the same repository may reduce overall performance, and cause I/O operations to timeout. Control storage device saturation with the following settings:

Limit maximum concurrent tasks to: 22

Limit read and write data rates to: MB/s

Click Advanced to customize repository settings **Advanced...**

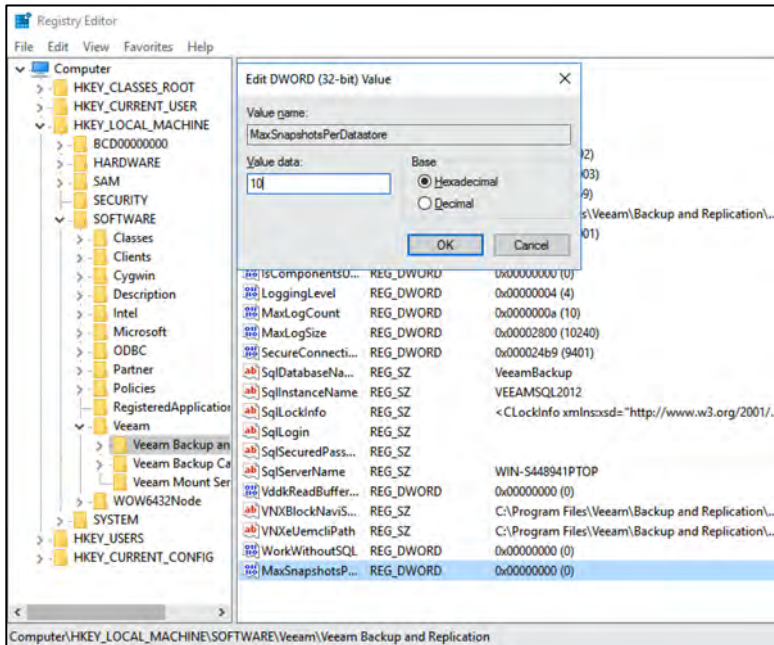
< Previous **Next >** Finish Cancel

Click Finish.

Add the MaxSnapshotsPerDatastore parameter in Registry.

The default Number of Snapshots per datastore is 4. You may alter concurrent snapshots executed by Veeam on VMware datastore, as per the intensity of the IO workload on the vSphere Cluster during backup jobs. For instance, if the vSphere Cluster is not under heavy I/O-intensive transactions during Veeam backup jobs, then you can increase the Max Snapshots per Data store.

Using the Registry key Editor, go to HKEY_LOCAL_MACHINE\SOFTWARE\Veeam\Veeam Backup and Replication\; add a RegDWord with the name MaxSnapshotsPerDatastore value greater than 4.



Restart the Windows 2016 Server for Registry Settings to be applied.

The deployment of Veeam Availability Suite 9.5 on Cisco UCS S3260 Storage server is now complete.

For More Information

For additional information, please visit:

- [Cisco UCS S3260 Storage Server](#)
- [Cisco UCS 6000 Series Fabric Interconnects](#)
- [Cisco UCS Manager](#)
- [Cisco white paper—Achieve Optimal Network Throughput on the Cisco UCS S3260 Storage Server](#)
- [Veeam Availability Suite v9 Installation and Deployment guide](#)

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