White Paper

VersaStack Solution for Data Protection with IBM Spectrum Protect on Cisco UCS S3260 Storage Server

This document provides details about how to configure the VersaStack Data Protection solution with the Cisco UCS® S3260 Storage Server and IBM Spectrum Protect

Contents

Introduction

This document describes in detail the installation and configuration steps for deploying a VersaStack Data Protection solution based on IBM Spectrum Protect running on the Cisco UCS S3260 Storage Server with the available IBM blueprint automated configuration tools. This document focuses on the storage configuration steps that are relevant to the specific size documented in the IBM blueprint. (The link to the IBM Spectrum Protect blueprint is listed in the section “For more information” at the end of this document.) To complete the deployment, you should be familiar with the following:

- Cisco Unified Computing System™ (Cisco UCS) configuration
- Microsoft Windows and Linux installation and configuration
- IBM Spectrum Protect configuration

Technology overview

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

VersaStack

IBM and Cisco have teamed to offer innovative converged infrastructure solutions collectively named VersaStack™. Cisco and IBM have thoroughly validated and verified the VersaStack solution architecture and its many use cases while creating a portfolio of detailed documentation, information, and references to assist customers in transforming their data centers to this shared infrastructure model. The documentation includes the following items:

- Best practices architectural design
- Workload sizing and scaling guidance
- Implementation and deployment instructions
- Technical specifications (rules for what is, and what is not, a VersaStack configuration)
- Frequently asked questions (FAQs) or questions and answers (Q&A)
- Cisco® Validated Designs and IBM Redbooks focused on a variety of use cases

Converged infrastructure solutions enable enterprises to easily and cost-effectively scale computing, network, and storage capacity as needed to reduce design, deployment, and management overhead; lower total cost of ownership (TCO); and simplify scalability.

As part of their on-going collaboration spanning more than 15 years and tens of thousands of shared customers, IBM and Cisco offer VersaStack converged infrastructure solutions. VersaStack brings together Cisco UCS Integrated Infrastructure (including Cisco UCS servers, Cisco Nexus® switches, and Cisco UCS Director management software) with market-leading IBM FlashSystem and Storwize storage solutions. VersaStack supports a variety of Cisco and IBM component options that enable enterprises to easily build converged infrastructure solutions to address the full range of application workloads and business use cases.

The VersaStack components are connected and configured according to the best practices of both Cisco and IBM and provide an excellent platform for running a variety of enterprise workloads with confidence. The reference architecture discussed in this document uses Cisco Nexus 9000 Series Switches for the switching element. VersaStack can be scaled up for greater performance and capacity (by adding computing, network, and storage resources individually as needed), or it can be scaled out for environments that need multiple consistent deployments (by rolling out additional VersaStack stacks).

One of the main benefits of VersaStack is the capability to maintain consistency at scale. Each of the component families (Cisco UCS, Cisco Nexus, and IBM Storage) offers platform and resource options to scale the infrastructure up or down, while supporting the features and functions that are required by the configuration and connectivity best practices for VersaStack.

The VersaStack Data Protection solution is an excellent addition to the VersaStack infrastructure solutions. It is not limited to this type of deployment, however, but can be deployed in any data center.

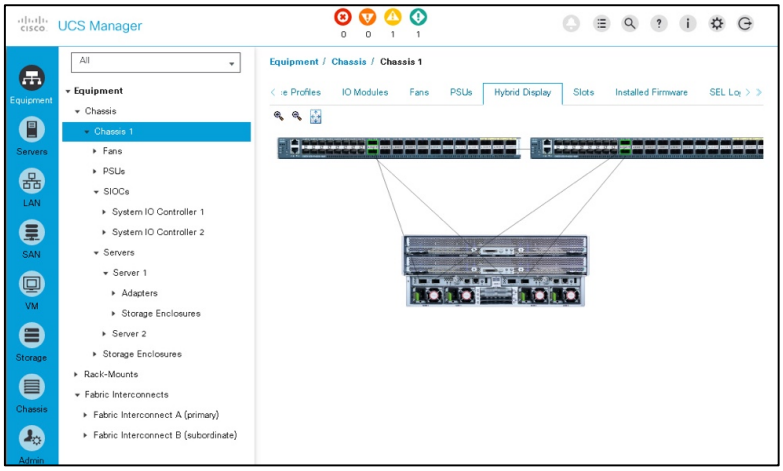
Cisco Unified Computing System

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 are described here:

- **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 providing 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 such as IBM Spectrum Protect and IBM Cloud Object Storage and unstructured data repositories, media streaming, and content distribution.

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. All hard-disk drives (HDDs) can be asymmetrically split between the dual nodes and are individually hot-swappable. 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-depth rack, such as the Cisco R42610 Rack.

Cisco UCS S-Series Storage Servers can be deployed as standalone servers or as part of a Cisco UCS managed environment to take advantage of Cisco's standards-based unified computing innovations that help reduce customers' TCO and increase their 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

Cisco UCS C240 M5 Rack Server

The Cisco UCS C240 M5 Rack Server (Figure 3) is a 2-socket, 2RU rack server offering industry-leading performance and expandability. It supports a wide range of storage and I/O-intensive infrastructure workloads, including big data and analytics, data protection, and collaboration workloads. Cisco UCS C-Series Rack Servers can be deployed as standalone servers or as part of a Cisco UCS managed environment to take advantage of Cisco's standards-based unified computing innovations that help reduce customers' TCO and increase business agility.

Figure 3. Cisco UCS C240 M5 Rack Server

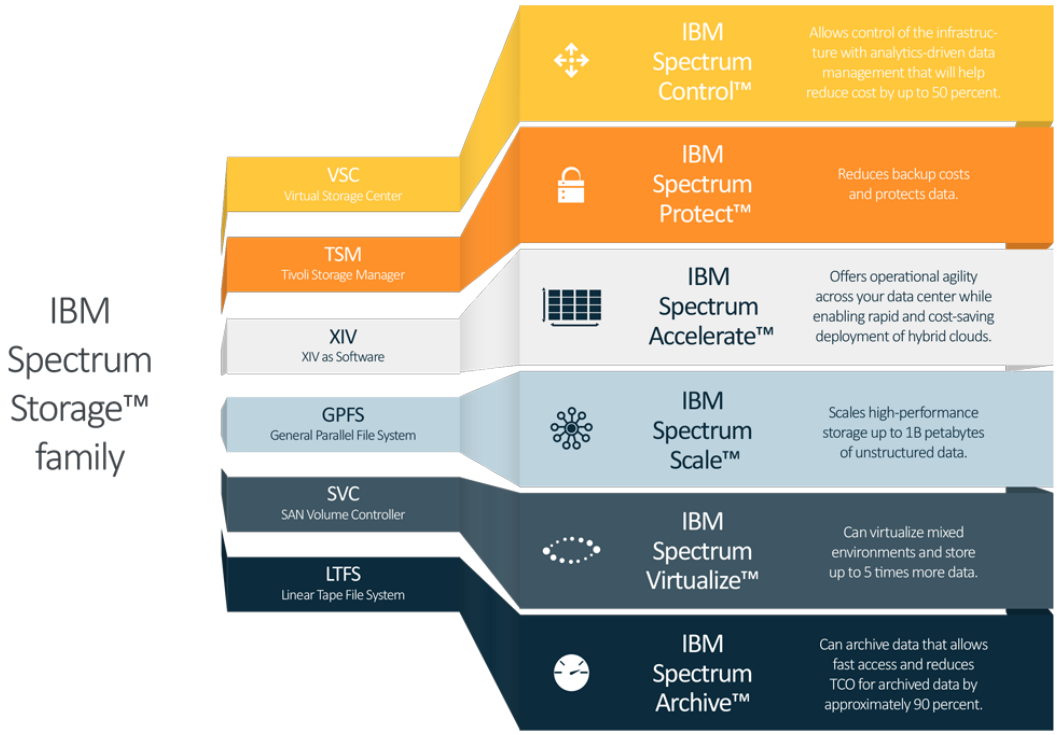
In response to ever-increasing computing and data-intensive real-time workloads, the enterprise-class Cisco UCS C240 M5 server extends the capabilities of the Cisco UCS portfolio in a 2RU form factor. It incorporates the Intel Xeon Scalable processors, supporting up to 20 percent more cores per socket, twice the memory capacity, and five times more Non-Volatile Memory Express (NVMe) PCI Express (PCIe) solid-state disks (SSDs) than the previous generation of servers. These improvements deliver significant performance and efficiency gains that will improve your application performance. The C240 M5 delivers outstanding levels of storage expandability with exceptional performance, with:

- The latest Intel Xeon Scalable CPUs, with up to 28 cores per socket
- Up to 24 DDR4 DIMMs for improved performance
- Intel 3D XPoint-ready support, with built-in support for next-generation nonvolatile memory technology
- Up to 26 hot-swappable small-form-factor (SFF) 2.5-inch drives, including 2 rear hot-swappable SFF drives (up to 10 support NVMe PCIe SSDs on the NVMe-optimized chassis version), or 12 large-form-factor (LFF) 3.5-inch drives plus 2 rear hot-swappable SFF drives
- Support for a 12-Gbps SAS modular RAID controller in a dedicated slot, leaving the remaining PCIe Generation 3.0 slots available for other expansion cards
- Modular LAN-on-motherboard (mLOM) slot that can be used to install a Cisco UCS virtual interface card (VIC) without consuming a PCIe slot, supporting dual 10- or 40-Gbps network connectivity
- Dual embedded Intel x550 10GBASE-T LAN-on-motherboard (LOM) ports
- Modular M.2 or Secure Digital (SD) cards that can be used for boot

IBM Spectrum Protect

IBM Spectrum Protect offers enterprise-class data protection. Long recognized as the market leader for enterprise backup and recovery software, IBM Spectrum Protect is built to protect the largest and most demanding data center environments (Figure 4).

Figure 4. IBM Spectrum Storage family



Solution design and suggested configurations

VersaStack Data Protection with IBM Spectrum Protect 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 one hour, technologies such as compression, deduplication, replication, and backup to disk are essential in every design.

The features and functions provided by IBM Spectrum Protect, 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, IBM tape libraries or IBM cloud object storage on Cisco UCS S3260 Storage Servers can be used to store it. With the combination of IBM and Cisco technology, you can easily scale from tens of terabytes (TB) up to multiple petabytes (PB) of protected data.

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.

Figure 5. VersaStack solution

There is no best position in the infrastructure to install an IBM Spectrum Protect 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 IBM Spectrum Protect servers in a central place in the physical network so that it can be accessed from everywhere with the required bandwidth. With this approach, the number of required IBM Spectrum Protect servers will be low, but the amount of network traffic will be high. The IBM Spectrum Protect client-side deduplication feature in most cases reduces the amount of data transferred over the network. Another option is to place the IBM Spectrum Protect server as close as possible to the data source. With this approach, the number of IBM Spectrum Protect servers will be greater, but the amount of network traffic on the core network will be much less.

Implementing the Cisco UCS S3260 with IBM Spectrum Protect integrated into a converged infrastructure solution like VersaStack (Figure 5) provides benefits such as these:

- **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 IBM Spectrum Protect system from Small (S) to Medium (M) to Large (L) 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 IBM, and the implementation partner. This approach simplifies the identification and resolution of problems such as bottlenecks and failed components.

	Small	Medium	Large
Total managed data	Up to 192 TB	200 to 800 TB	1 to 4 PB
New data per day	Up to 10 TB	10 to 20 TB	20 to 100 TB
CPU, minimum	12 CPU cores at 1.9 GHz	16 CPU cores at 2.0 GHz	44 CPU cores at 2.2 GHz
Memory	64 GB	128 GB	256 GB
Network	2 x 10 Gbps	2 x 10 Gbps	4 x 10 Gbps
Fibre Channel	2 x 8 Gbps	2 x 8 Gbps	4 x 8 Gbps
Disk storage for database	1-TB SSD	2-TB SSD	4- to 6-TB SSD
Number of file systems	4	4	8
Disk storage for active log	140-GB SSD	140-GB SSD	300-GB SSD
Disk storage for archive log	1 TB	3 TB	4 TB
Disk storage for backups	At least 38 TB	At least 180 TB	At least 500 TB
Number of file systems	10	20	40
Disk storage for database backup	3 TB	10 TB	16 TB
Number of file systems	2	2	4

Suggested hardware configurations

Based on the IBM Spectrum Protect blueprint and Server Automated Configuration for Windows document and the requirements listed in Table 1, Cisco and IBM have defined suggested configurations (Table 2) mapping the S, M, and L scale options.

Table 1. IBM Spectrum Protect Blueprint V3.1: Requirements

	Small	Medium	Large
Total managed data	Up to 192 TB	200 to 800 TB	1 to 4 PB
New data per day	Up to 10 TB	10 to 20 TB	20 to 100 TB
CPU, minimum	12 CPU cores at 1.9 GHz	16 CPU cores at 2.0 GHz	44 CPU cores at 2.2 GHz
Memory	64 GB	128 GB	256 GB
Network	2 x 10 Gbps	2 x 10 Gbps	4 x 10 Gbps
Fibre Channel	2 x 8 Gbps	2 x 8 Gbps	4 x 8 Gbps
Disk storage for database	1-TB SSD	2-TB SSD	4- to 6-TB SSD
Number of file systems	4	4	8
Disk storage for active log	140-GB SSD	140-GB SSD	300-GB SSD
Disk storage for archive log	1 TB	3 TB	4 TB
Disk storage for backups	At least 38 TB	At least 180 TB	At least 500 TB
Number of file systems	10	20	40
Disk storage for database backup	3 TB	10 TB	16 TB
Number of file systems	2	2	4

Table 2. Suggested Cisco UCS configurations for IBM Spectrum Protect servers

	Cisco UCS C240	Cisco UCS S3260	Cisco UCS S3260
Blueprint size	Small	Small	Medium
Boot disks	2 x 960-GB SSDs	2 x 1.6-TB SSDs	2 x 1.6-TB SSDs
Data disks	• 12 x 4-TB SAS • 12 x 6-TB SAS • 12 x 10-TB SAS	• 14 x 6-TB SAS • 28 x 6-TB SAS • 14 x 10-TB SAS	• 42 x 6-TB SAS • 56 x 6-TB SAS • 28 x 10-TB SAS • 42 x 10-TB SAS • 56 x 10-TB SAS
Raw capacity	• 48 TB • 72 TB • 120 TB	• 84 TB • 168 TB • 140TB	• 252 TB • 336 TB • 280 TB • 420 TB • 560 TB
Average usable capacity	• 36 TB • 54 TB • 90 TB	• 66 TB • 132 TB • 110 TB	• 198 TB • 264 TB • 220 TB • 330 TB • 440 TB
Flash storage for database	1 x 3.8-TB TB half-height, half-length NVMe (Optional: 2 x NVMe for RAID 1)	1 x 3.8-TB 2.5-inch NVMe (Optional: 2 x NVMe for RAID 1)	1 x 3.8-TB 2.5-inch NVMe (Optional: 2 x NVMe for RAID 1)
Flash storage for active log	Shared on OS SSDs	Shared on OS SSDs	Shared on OS SSDs
Cisco UCS rack servers	C240 M5 LFF	S3260	S3260
CPU	Intel Xeon processor 5118 (12 cores, 2.3 GHz, and 105W)	Intel Xeon processor E5-2650 v4 (12 cores, 2.2 GHz, and 105W)	Intel Xeon processor E5-2695 v4 (18 cores, 2.1 GHz, and 120W)
Memory	64 GB	128 GB	256 GB
RAID cache	1 GB	4 GB	4 GB
RAID	1 x RAID 6	1 x RAID 6 per 14 disks	1 x RAID 6 per 14 disks
LOM ports	2 x 10 Gbps	2 x 40 Gbps	2 x 40 Gbps
Maximum Fibre Channel ports	4 x 16 Gbps	4 x 16 Gbps	4 x 16 Gbps

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- and 10-TB drives provides the option to choose 14, 28, 42, or 56 drives at the time of ordering and to 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. Because IBM Spectrum Protect works with more than one file system to store the backups, one RAID group per 14 disks and 10 virtual drives makes the most sense in all S3260 configurations. This approach makes the solution easy to scale, because no changes to existing RAID groups are required.

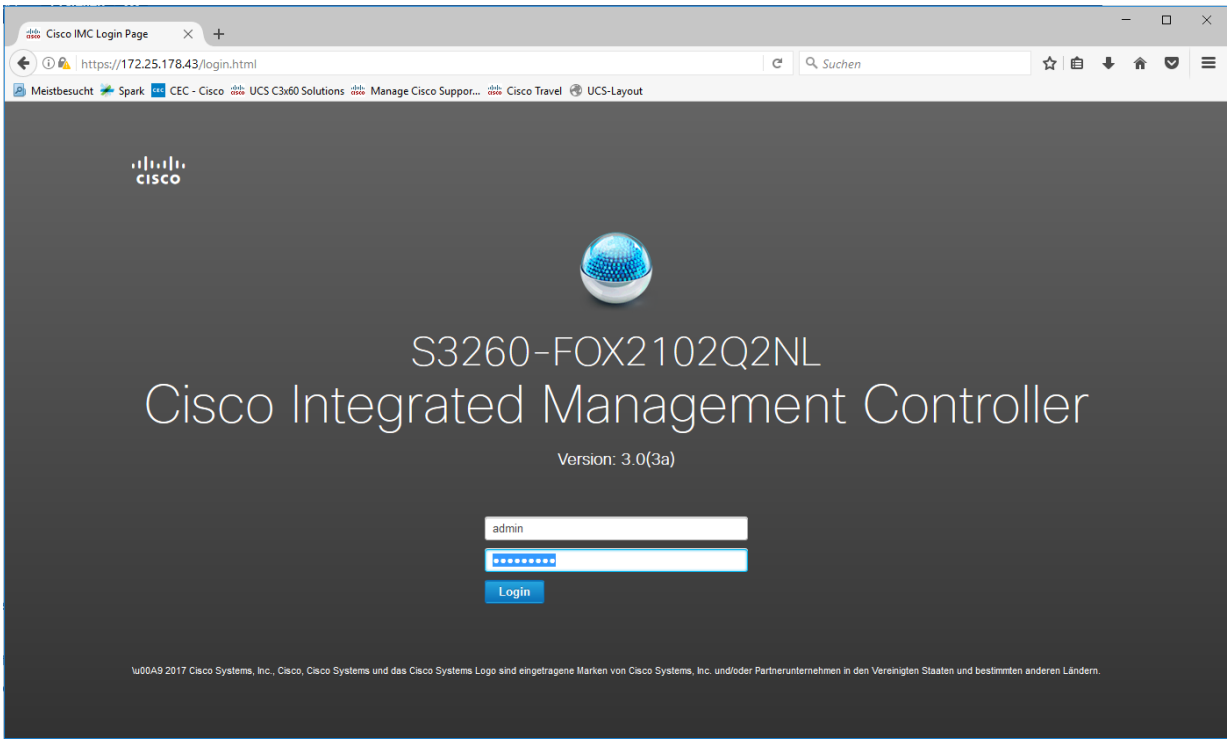
Cisco UCS S3260 configuration

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 IBM Spectrum Protect to cover placement within a Cisco UCS domain—that is, in a VersaStack solution—or connected to data center switches.

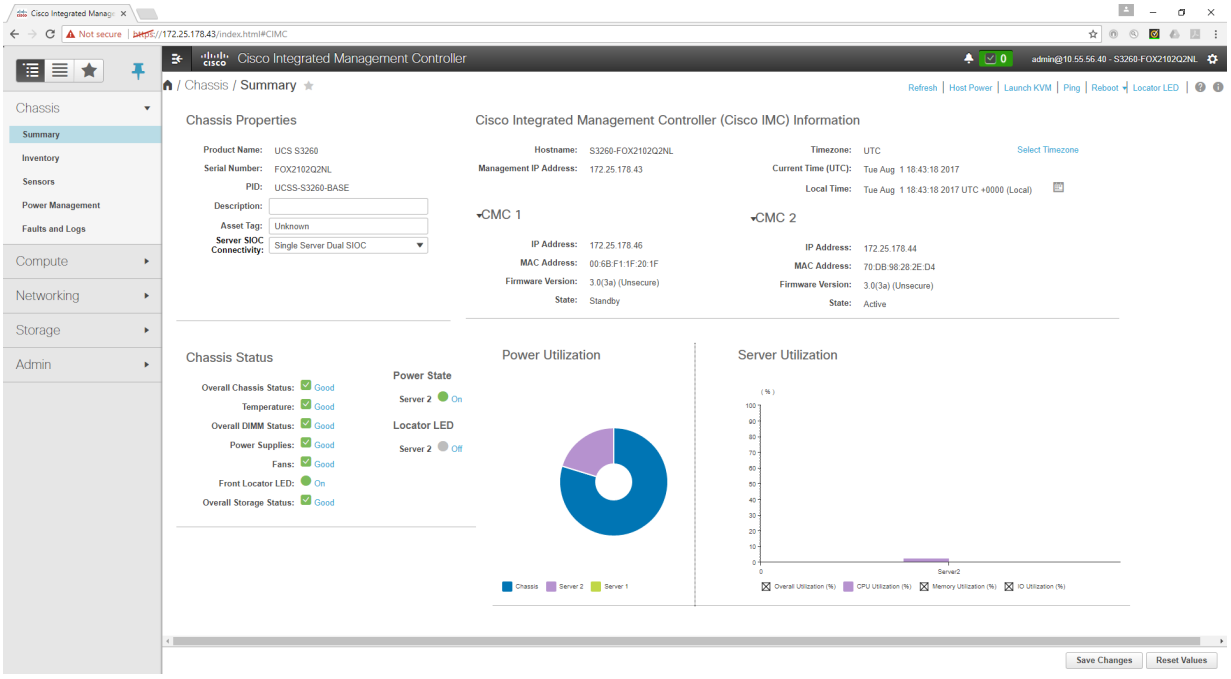
Please use the Cisco UCS S3260 installation guide to complete the initial configuration (IP addresses, passwords, software versions, etc.). This document assumes that the S3260 is accessible through the Cisco Integrated Management Controller (IMC) or Cisco UCS Manager over the network.

Standalone configuration with Cisco Integrated Management Controller

Log on to the IMC as the admin user.



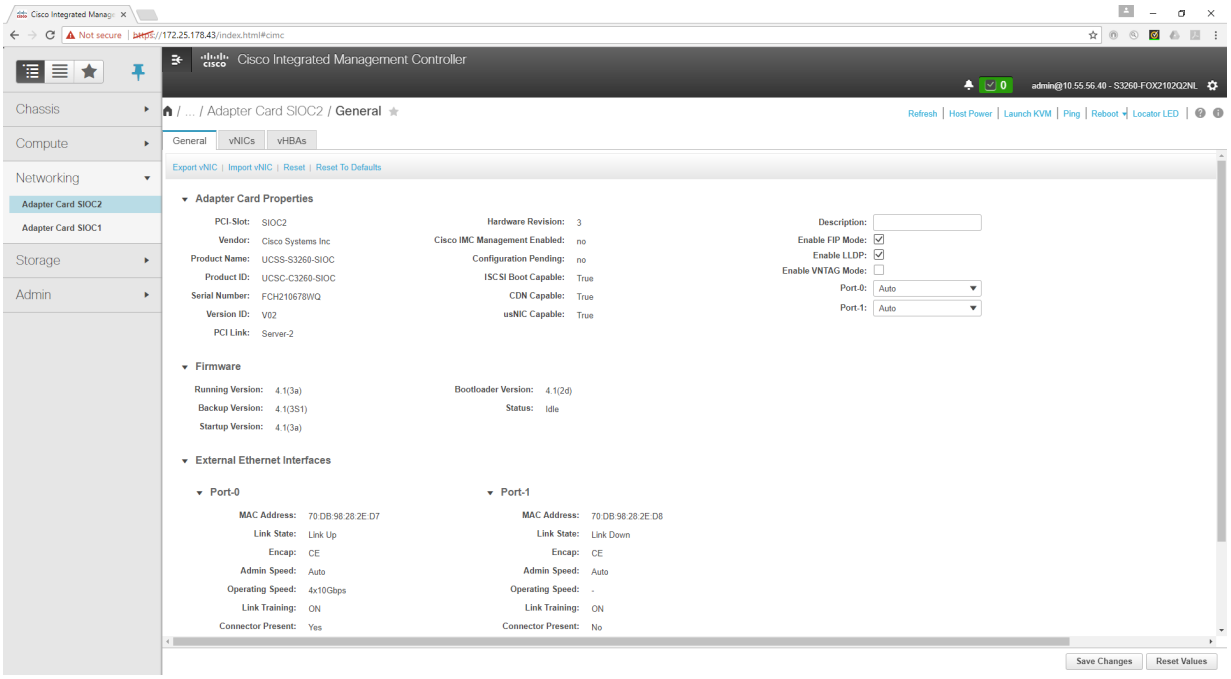
Check the condition of the system and the components required for the deployment on the Chassis > Summary page.



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

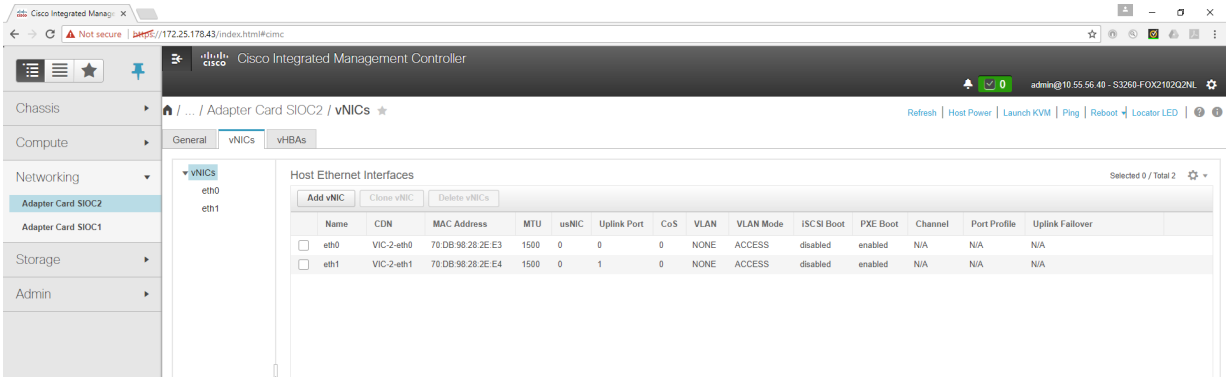
Only one SIOC is required. The second SIOC is optional and is used to achieve better high availability or greater throughput.

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.

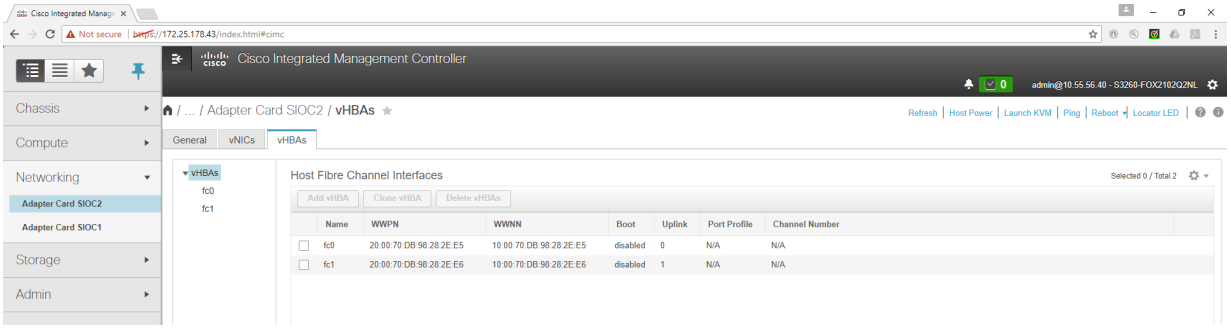


The virtual network interface card (vNIC) tab summarizes the existing host Ethernet interfaces, including the maximum transmission unit (MTU) size, the uplink port used, and VLAN information. As a best practice, you should create at least one vNIC per uplink port or one vNIC per VLAN ID.

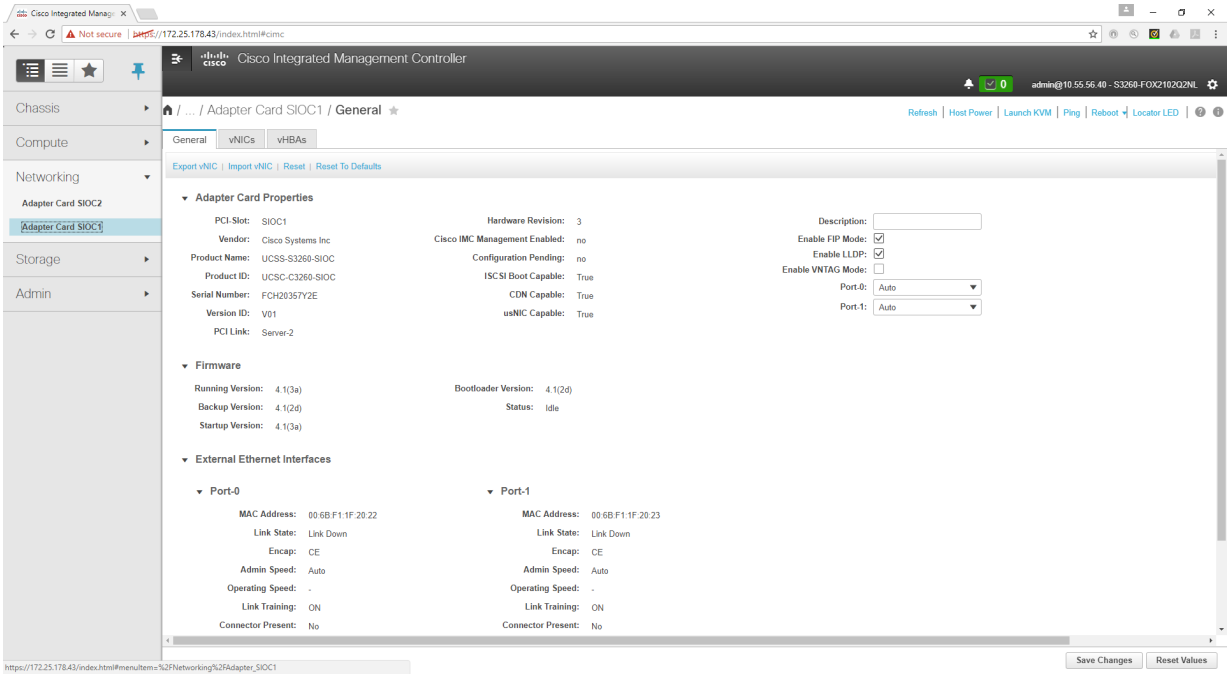
You should use MTU 9000 for the backup network if possible and on all participating devices in the network (clients, switches, and servers).

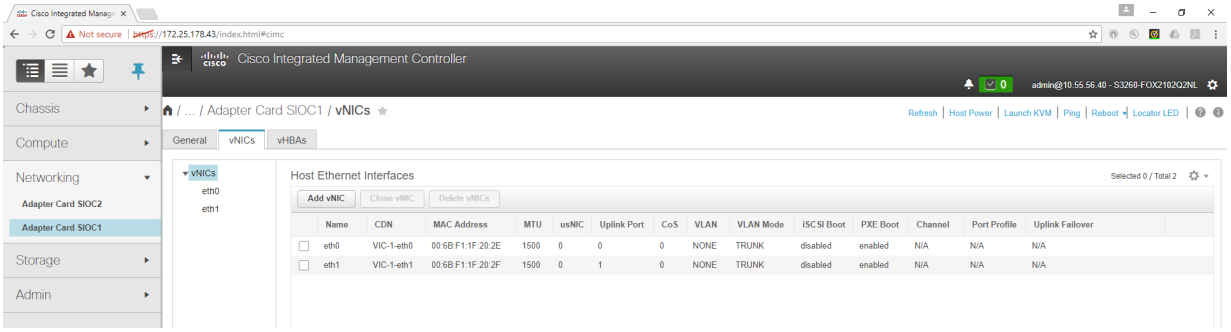


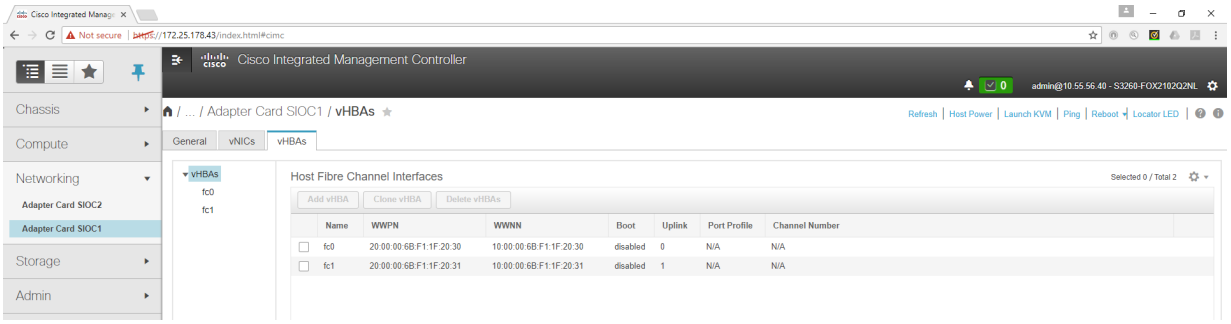
The virtual host bus adapter (vHBA) tab summarizes the existing host Fibre Channel Interfaces, including the worldwide port name (WWPN) and worldwide node name (WWNN) and information about whether the vHBA is used to boot the system. As a best practice, you should create at least one vHBA per uplink 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.

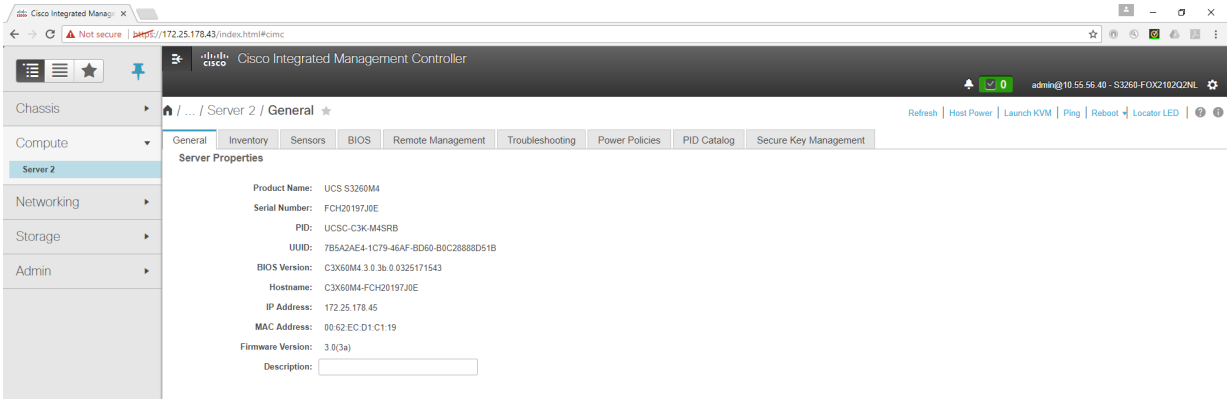




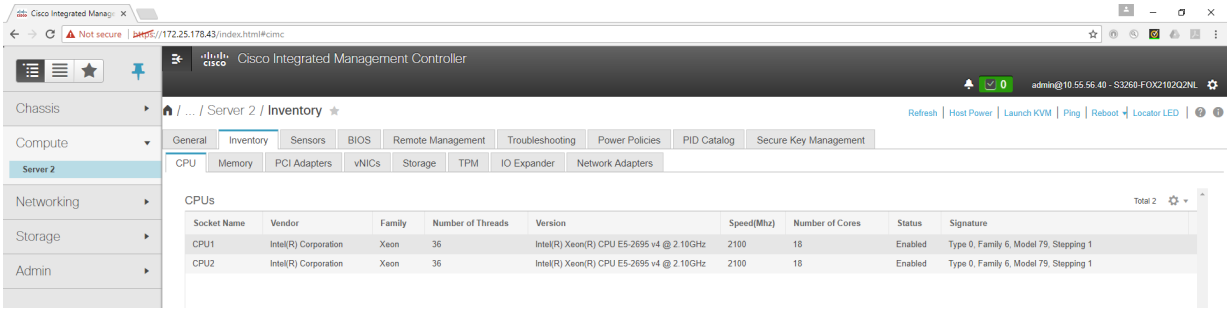


Choose Compute.

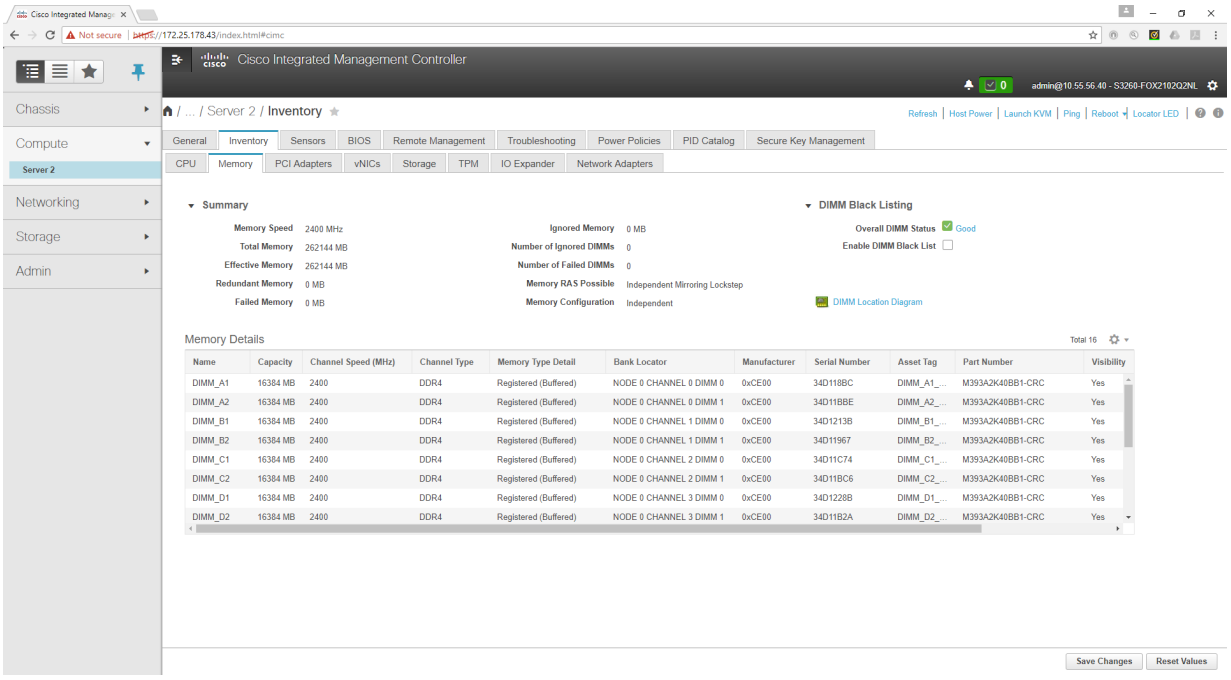
The Compute area summarizes the details of the server node, including information about the CPU, memory, PCIe cards, and local storage.



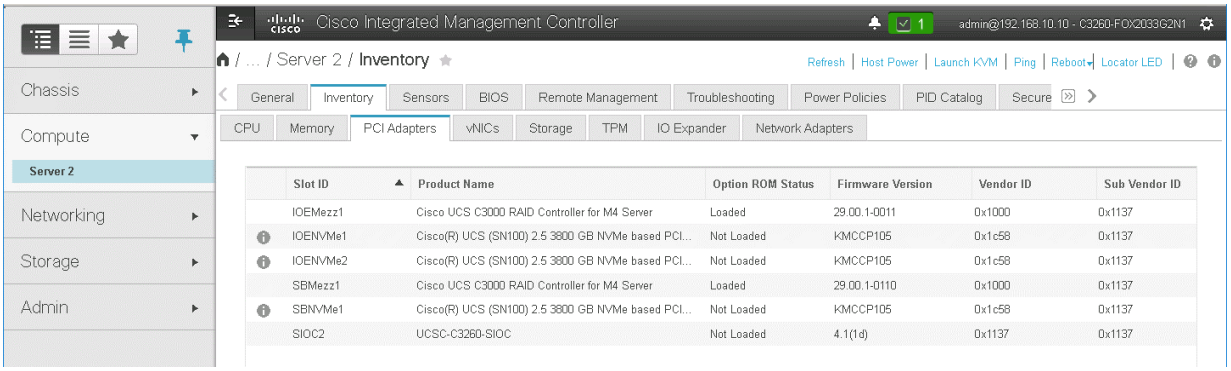
The CPU tab of the Inventory pane shows the CPUs.



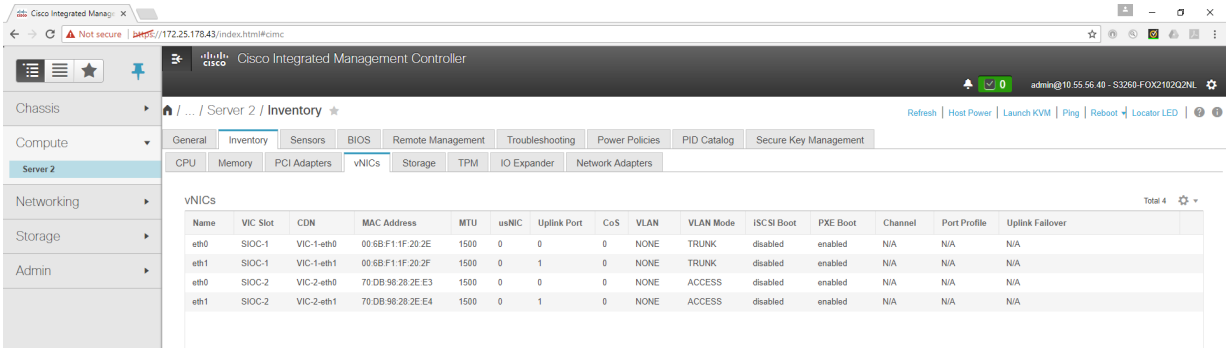
The Memory tab of the Inventory pane presents memory details.



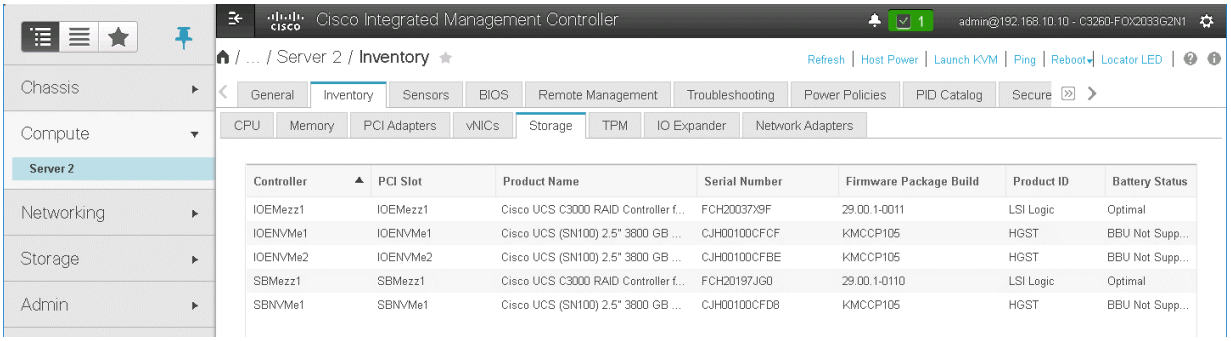
The S3260 SIOC is connected as the PCIe device and shown on the PCI Adapters tab.



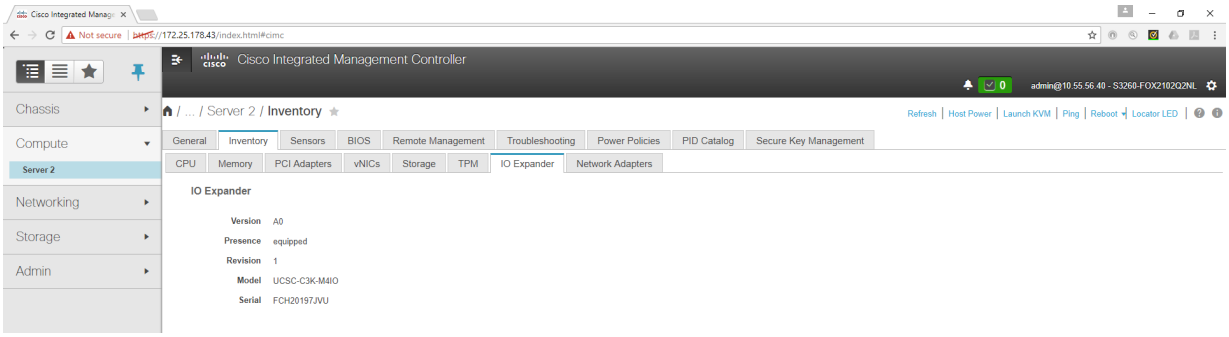
The vNICs tab of the Inventory pane shows the vNICs.



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



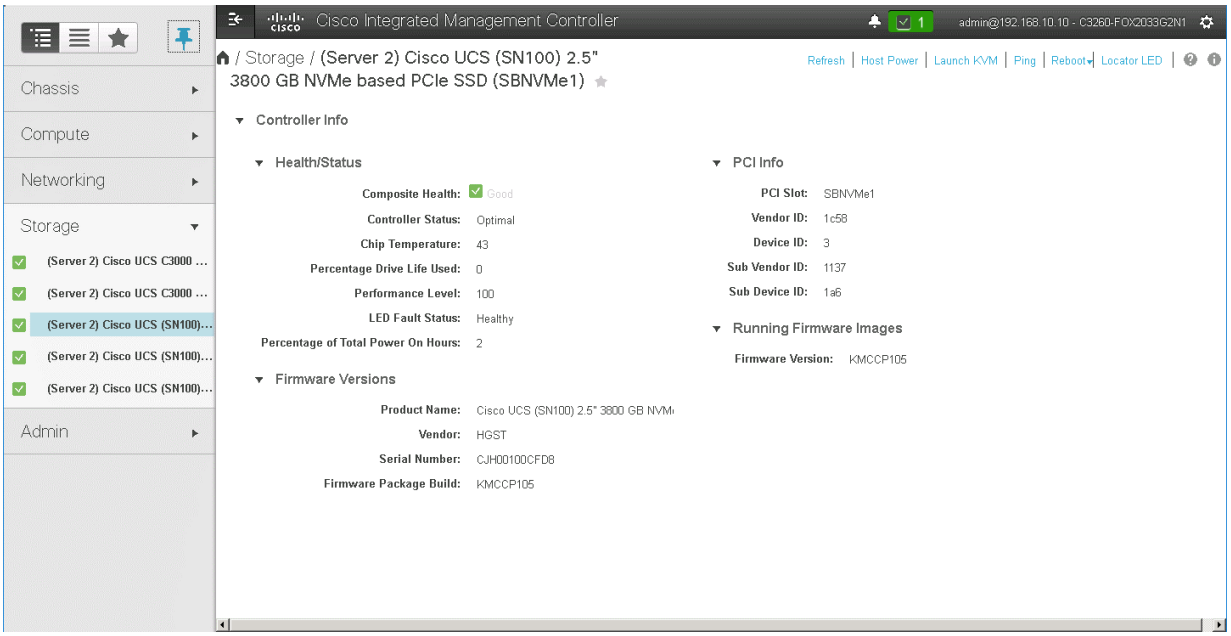
If the S3260 is equipped with an I/O expander board for installing PCIe cards or additional NVMe devices, the details are shown on the IO Expander tab.

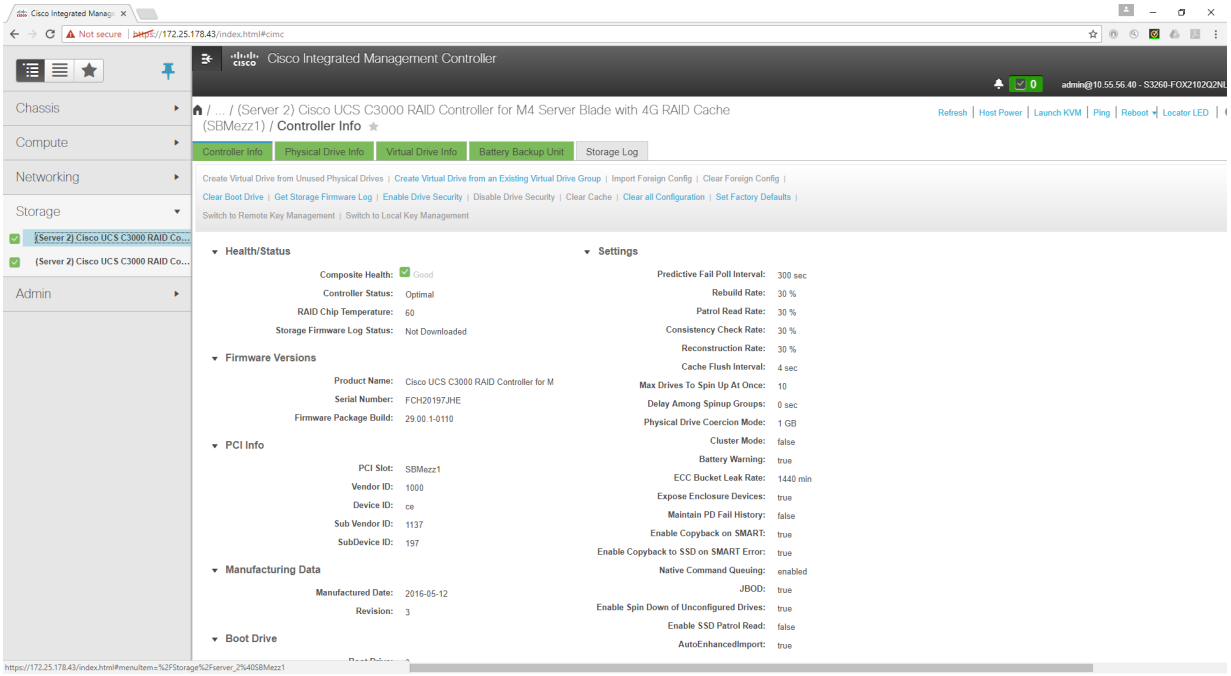


Choose Storage.

The storage configuration is the most important part of the Cisco UCS S3260 configuration for IBM Spectrum Protect.

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



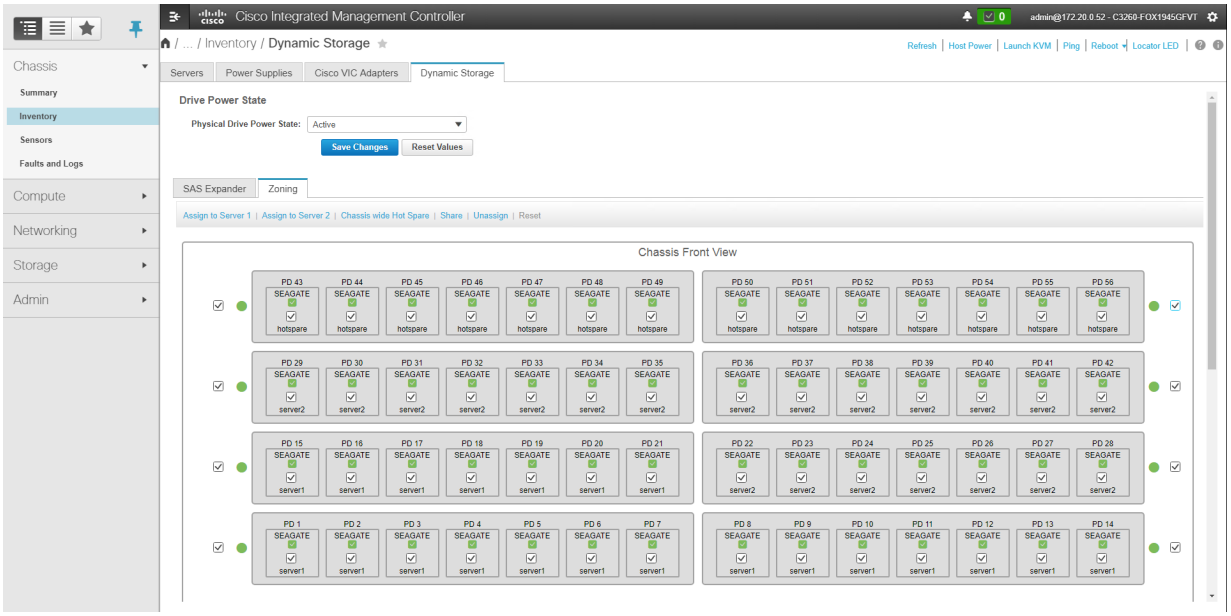


Choose Chassis.

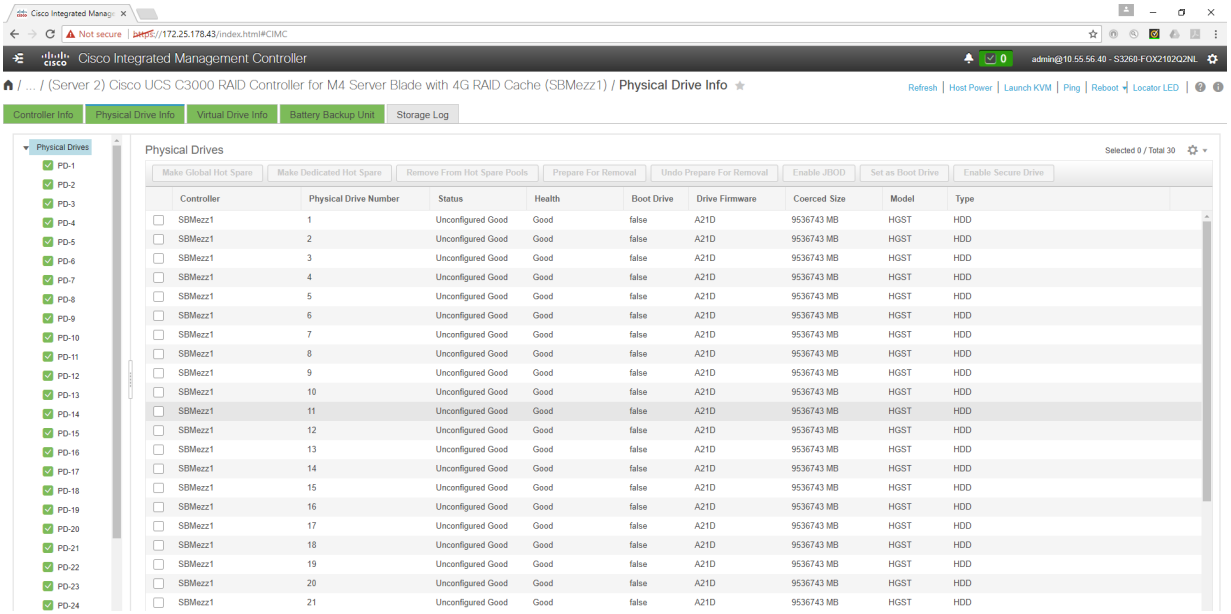
The RAID controller will see only the physical drives that are zoned for it in the Chassis area.

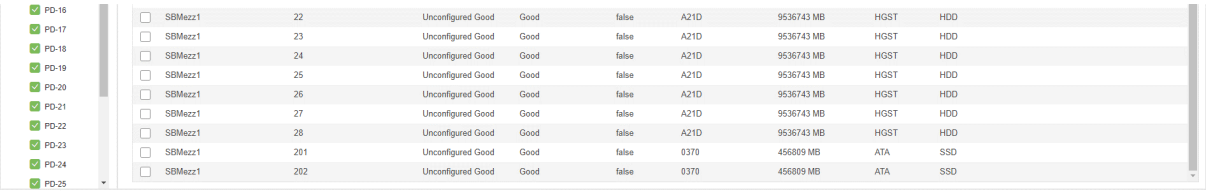
In the Chassis area, choose Inventory > Dynamic Storage. On this screen, click the Zoning tab.

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

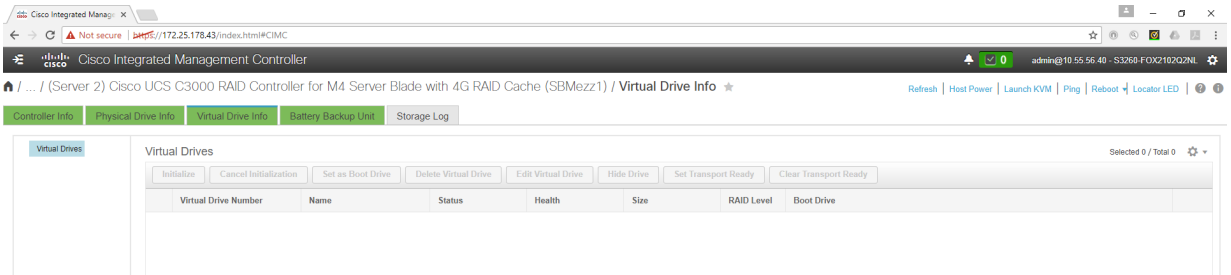


Give the system some time to complete the zoning process. Power on the server node so that the physical disk devices are discovered by the RAID controller before you start creating virtual drive groups and virtual drives in the Storage area.





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



To follow the guidelines in the IBM Spectrum Protect blueprint automated configuration, the LUNs listed in Tables 3 through 7 are required, depending on the number of disks installed.

The IMC does not show the virtual disk group number. The numbers are used in this document only to show which LUNs exist in the same virtual device group.

The LUN IDs are assigned automatically in the order of creation.

Table 3. Virtual drive group 0 with disk 201 and 202 (SSDs in the back of the chassis)

Virtual drive group	LUN ID	Size	Used as
0	0	200	Active log
0	1	Fill to maximum	Boot and OS

Table 4. drive group 1 with top-loaded disks 1 through 14

Virtual drive group	LUN ID	Size	Used as
1	2	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 1
1	3	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 2
1	4	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 3
1	5	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 4
1	6	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 5
1	7	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 6
1	8	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 7
1	9	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 8
1	10	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 9

Virtual drive group	LUN ID	Size	Used as
1	11	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 10
1	12	3 TB	Archive log
1	13	1 TB	Database backup 1
1	14	1 TB	Database backup 2
1	15	1 TB	Database backup 3
1	15	1 TB	Database backup 4

Table 5. Virtual drive group 2 with disks 15 through 28

Virtual drive group	LUN ID	Size	Used as
2	17	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 11
2	18	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 12
2	19	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 13
2	20	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 14
2	21	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 15
2	22	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 16
2	23	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 17
2	24	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 18
2	25	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 19
2	26	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 20
2	27	3 TB	Archive log 2
2	28	1 TB	Database backup 5
2	29	1 TB	Database backup 6
2	30	1 TB	Database backup 7
2	31	1 TB	Database backup 8

Table 6. Virtual drive group 3 with disks 29 through 42

Virtual drive group	LUN ID	Size	Used as
3	32	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 21
3	33	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 22
3	34	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 23
3	35	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 24

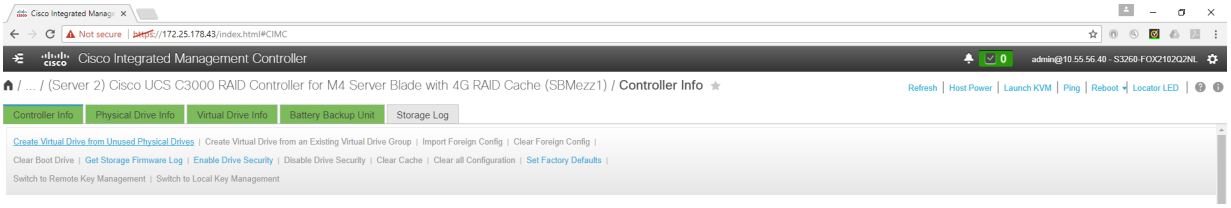
Virtual drive group	LUN ID	Size	Used as
3	36	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 25
3	37	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 26
3	38	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 27
3	39	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 28
3	40	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 29
3	41	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 30
3	42	3 TB	Archive log 3
3	43	1 TB	Database backup 9
3	44	1 TB	Database backup 10
3	45	1 TB	Database backup 11
3	46	1 TB	Database backup 12

Table 7. Virtual drive group 4 with disks 43 through 56

Virtual drive group	LUN ID	Size	Used as
4	47	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 31
4	48	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 32
4	49	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 33
4	50	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 34
4	51	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 35
4	52	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 36
4	53	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 37
4	54	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 38
4	55	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 39
4	56	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data 40
4	57	3 TB	Archive log 4

Create virtual disk group 0.

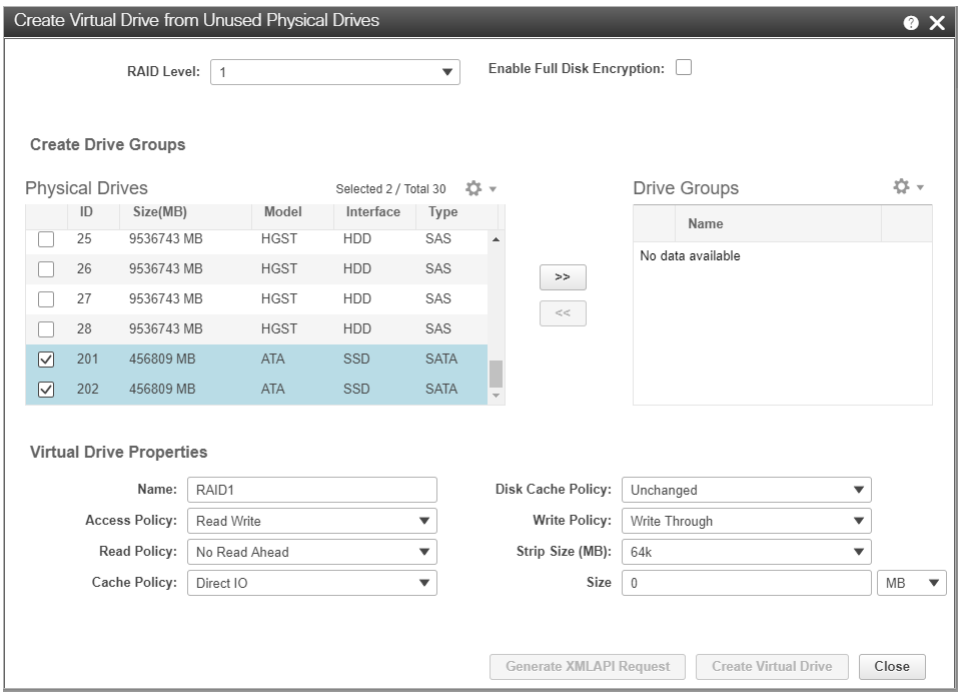
On the Controller Info page, click Create Virtual Drive from Unused Physical Drives.



For the operating system and the active log, 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 >>).

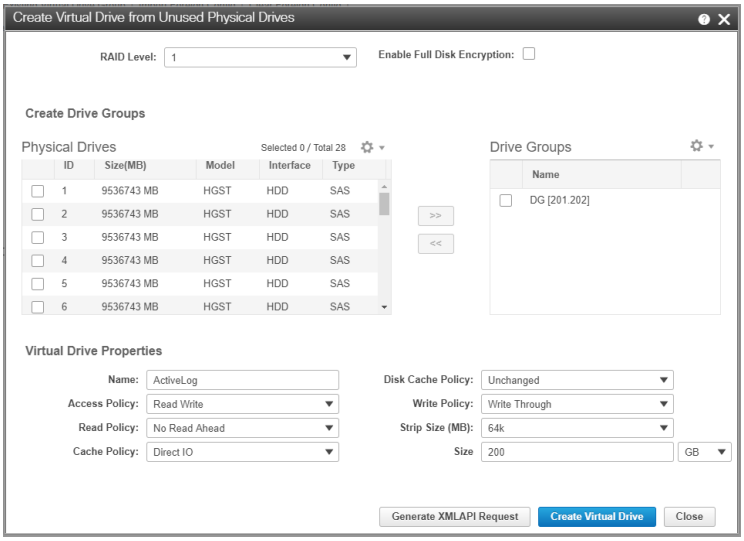


For the name, enter ActiveLog.

Change Cache Policy from DirectIO to Cached IO

Change Write Policy from WriteThrough to Write Back Good BBU.

Enter 200 as the size and select GB as the unit.

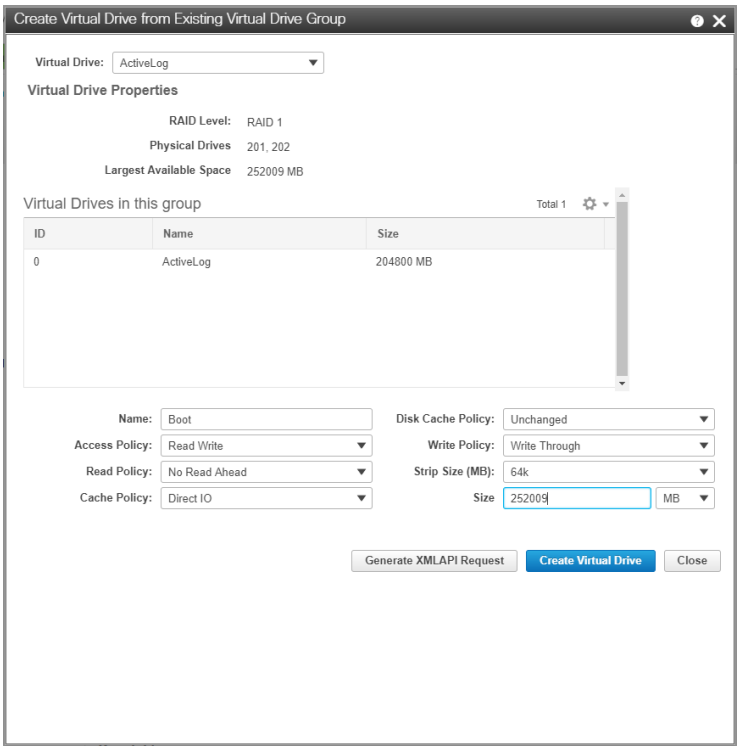


To create the OS virtual drive in virtual drive group 0, click Create Virtual Drive from Existing Virtual Drive Group.

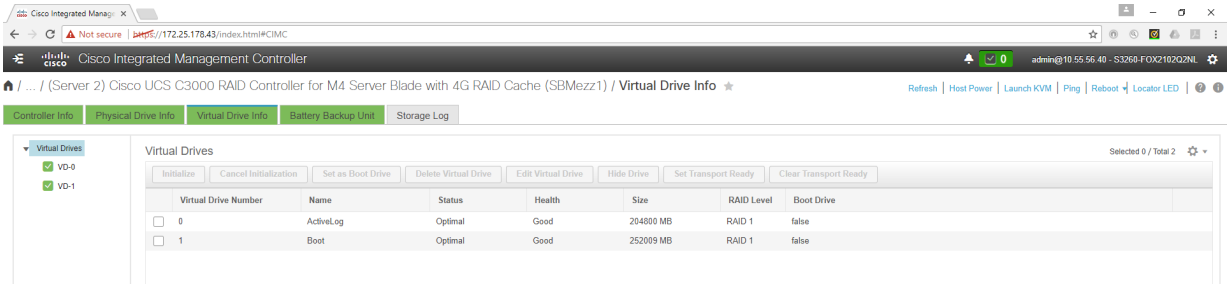
Select ActiveLog as the virtual drive to create the new virtual drive in the same virtual drive group.

Enter **Boot** as the name.

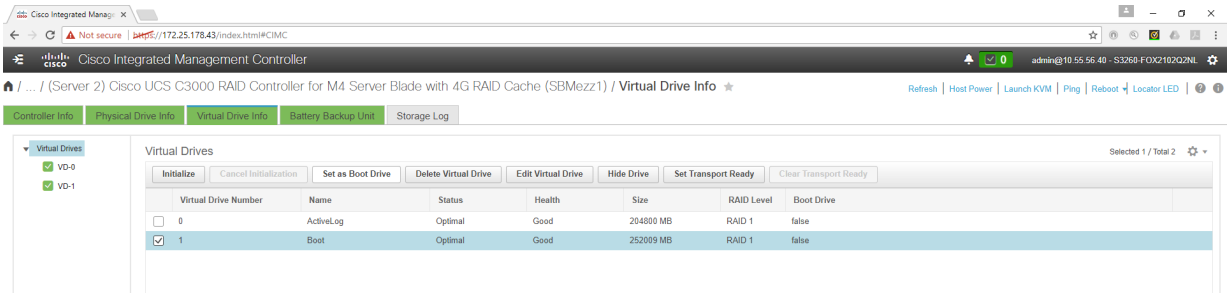
Enter the value shown for Largest Available Space as the size.



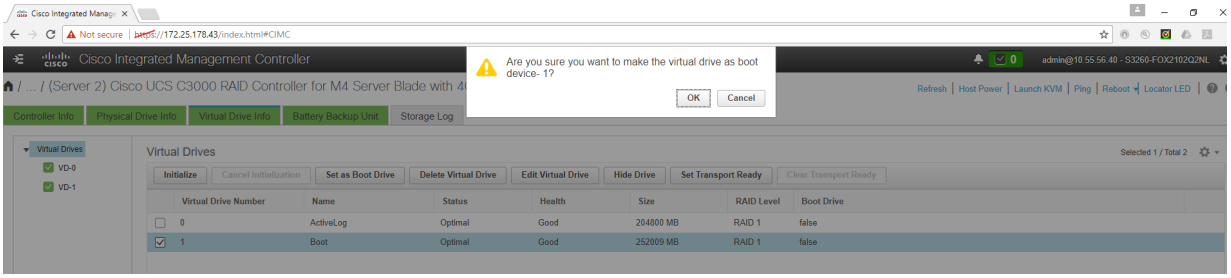
Go to the Virtual Drive Info tab and select the Boot virtual drive.



Click Set as Boot Drive.



Confirm that you want to make the Boot virtual drive the boot drive.

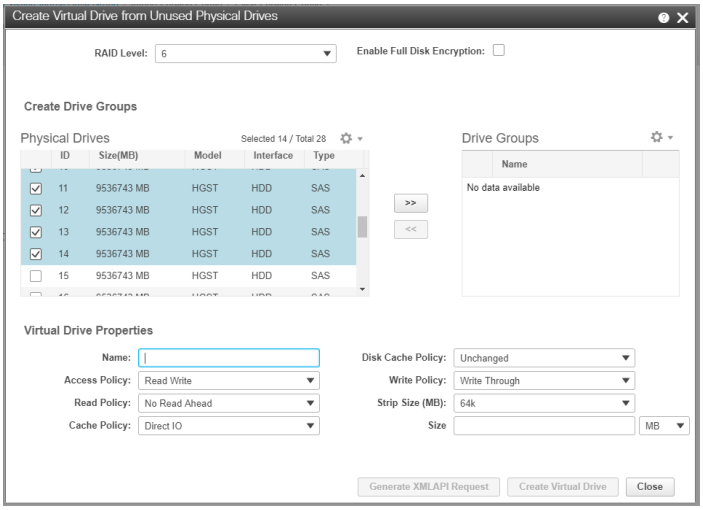


Return to the Controller Info tab to create the additional virtual drive groups and virtual drives.

Click Create Virtual Drive from Unused Physical Drives.

Select 6 as the RAID level.

Select physical drives 1 through 14 and add them to the drive group (click >>).



Enter **Data1** as the name.

Change Read Policy to Always Read Ahead.

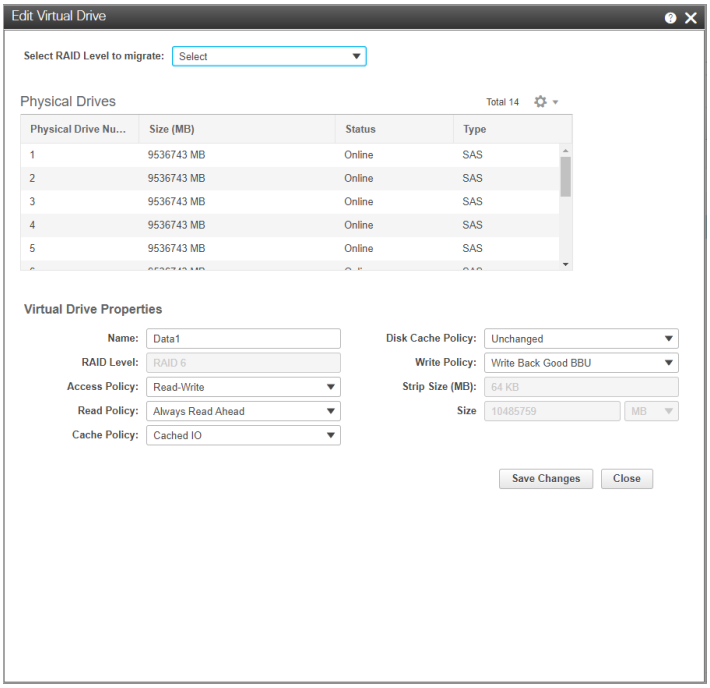
Change Cache Policy to Cached IO.

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.



To create the other virtual drives in virtual drive group 1, click Create Virtual Drive from Existing Virtual Drive Group.

Select Data 1 as the virtual drive to create the new virtual drive in the same virtual drive group.

Enter **Data2** as the name.

Change Read Policy to Always Read Ahead.

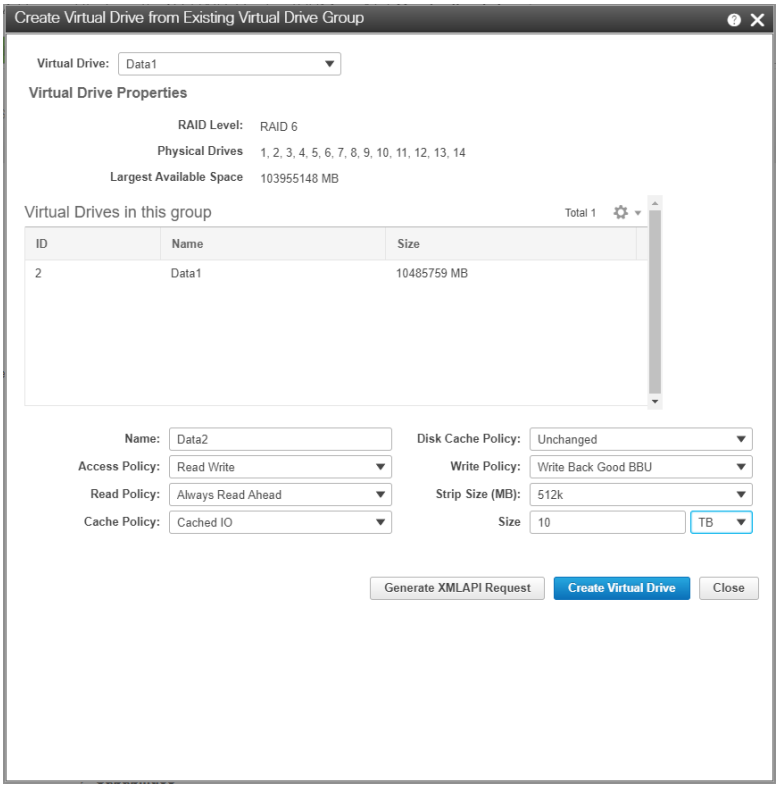
Change Cache Policy to Cached IO.

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.



Repeat these steps for Data3 through Data10.

Click Create Virtual Drive from Existing Virtual Drive Group.

Select Data1 as the virtual drive to create the new virtual drive in the same virtual drive group.

Enter Data***X*** as the name (replace *X* with the number).

Change Read Policy to Always Read Ahead.

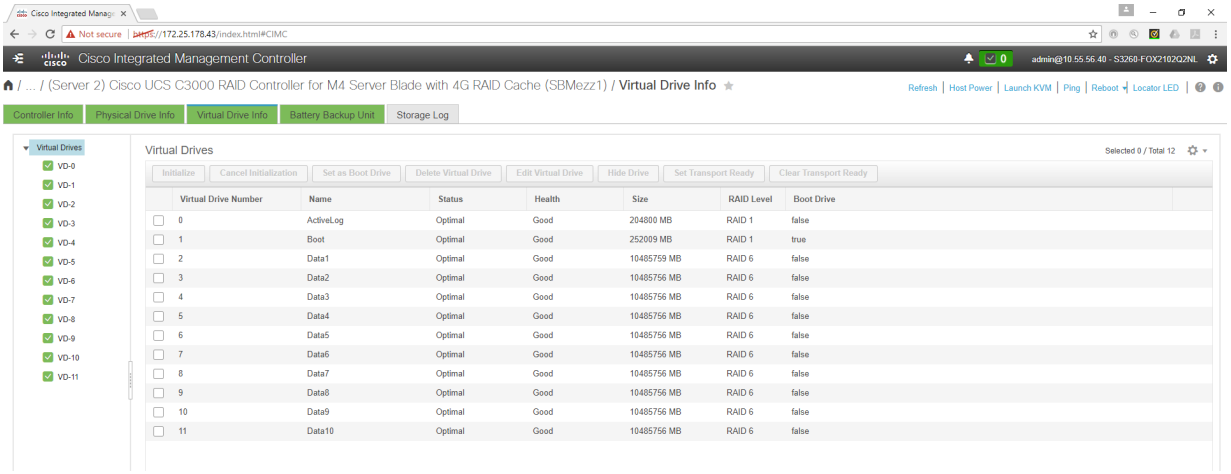
Change Cache Policy to Cached IO.

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.



Click Create Virtual Drive from Existing Virtual Drive Group.

Select Data1 as the virtual drive to create the new virtual drive in the same virtual drive group.

Enter **ArchLog1** as the name.

Change Read Policy to Always Read Ahead.

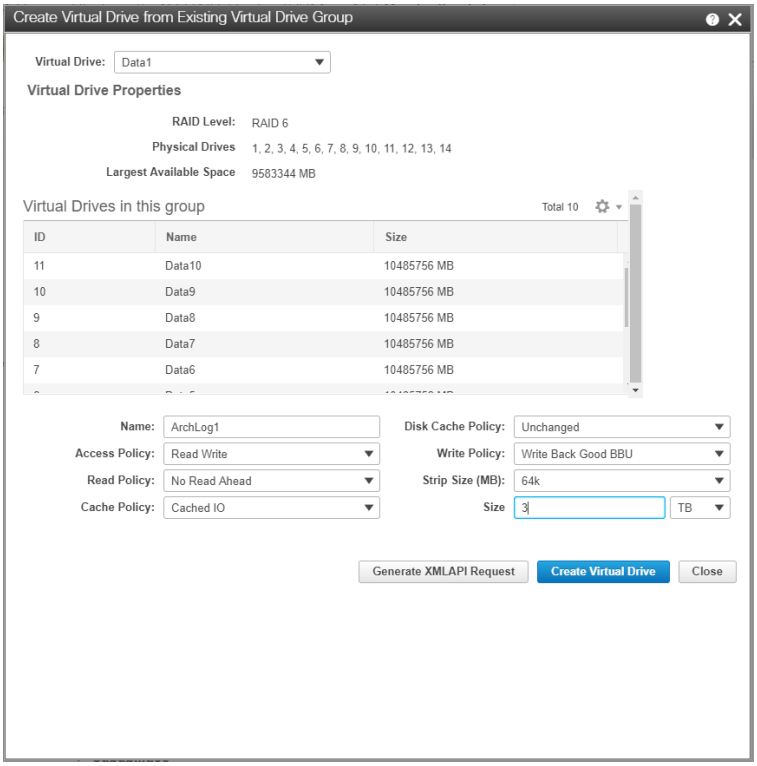
Change Cache Policy to Cached IO.

Change Write Policy to Write Back Good BBU.

Change Strip Size to 512 KB.

Enter **3** as the size and change the unit to TB.

Click Create Virtual Drive.



Click Create Virtual Drive from Existing Virtual Drive Group.

Select Data1 as the virtual drive to create the new virtual drive in the same virtual drive group.

Enter **DB-Backup1** as the name.

Change Read Policy to Always Read Ahead.

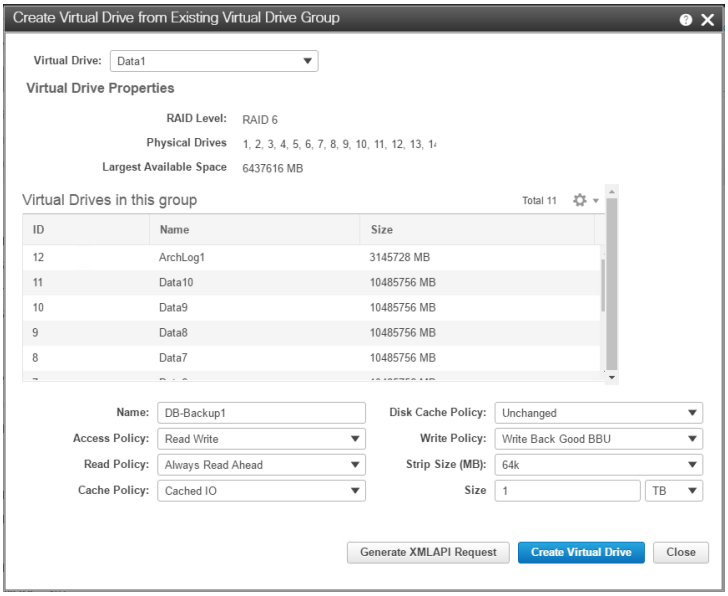
Change Cache Policy to Cached IO.

Change Write Policy to Write Back Good BBU.

Change Strip Size to 512 KB.

Enter 1 as the size and change the unit to TB.

Click Create Virtual Drive.



Repeat these steps to create DB-Backup 2 through 4.

Click Create Virtual Drive from Existing Virtual Drive Group.

Select Data1 as the virtual drive to create the new virtual drive in the same virtual drive group.

Enter **DB-Backup*X*** as the name (replace *X* with the number).

Change Read Policy to Always Read Ahead.

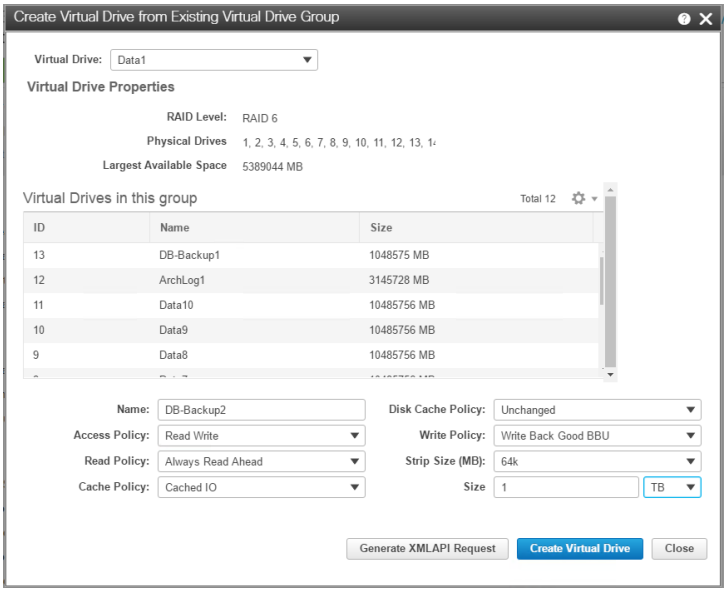
Change Cache Policy to Cached IO.

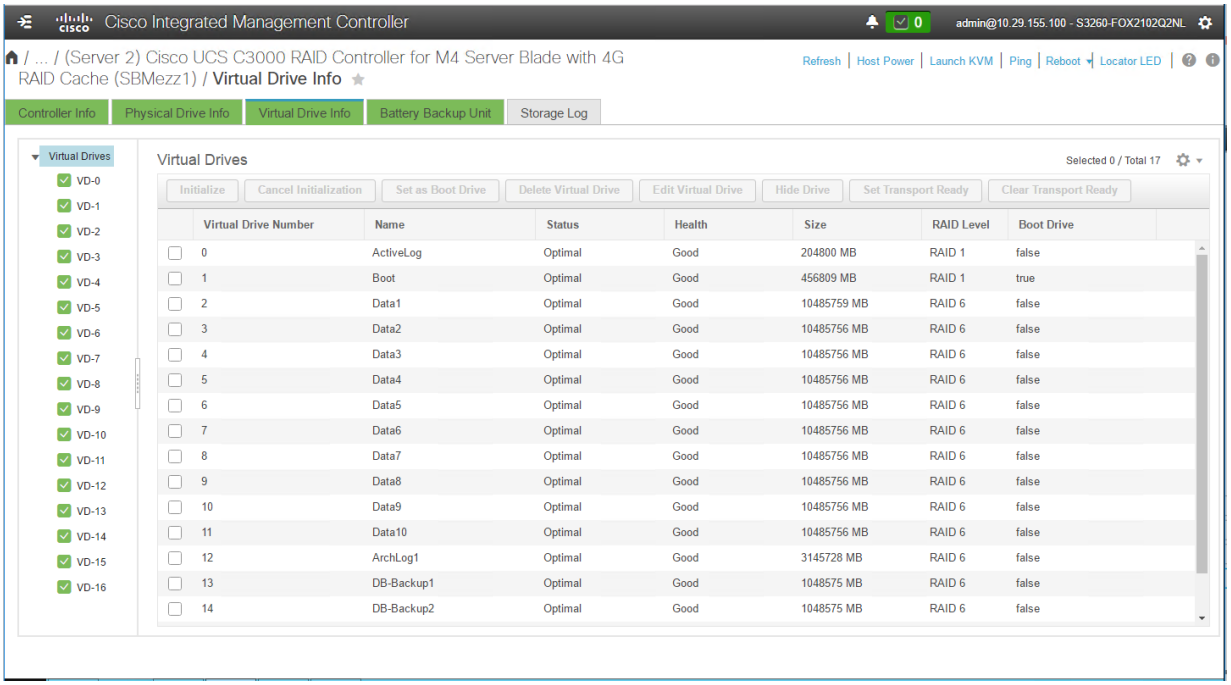
Change Write Policy to Write Back Good BBU.

Change Strip Size to 512 KB.

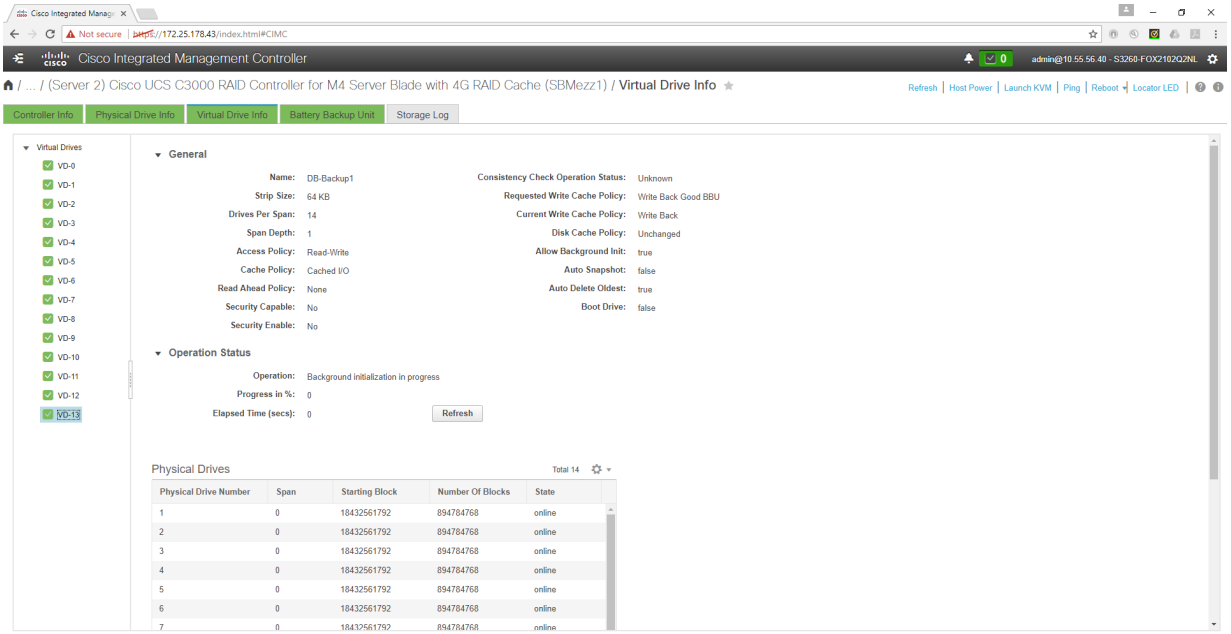
Enter 1 as the size and change the unit to TB.

Click Create Virtual Drive.





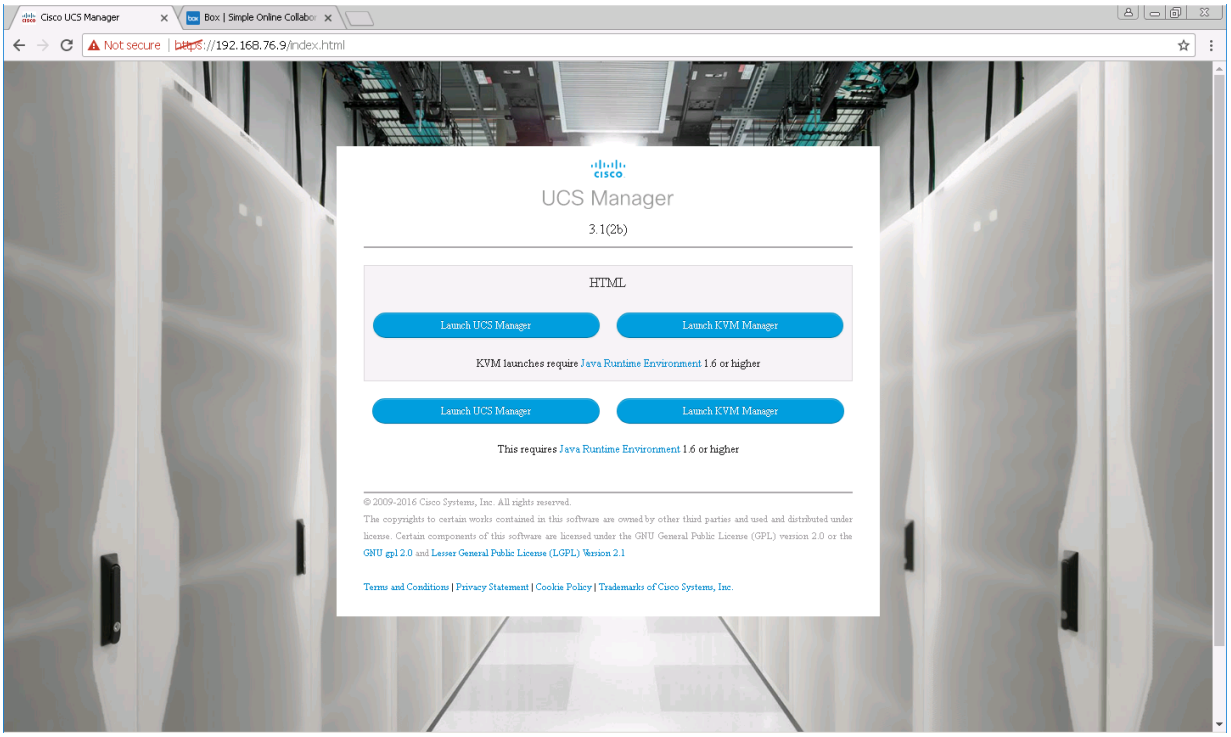
Be aware that the disk group initialization process is ongoing in the background for several hours, and full performance is available only after the initialization process finishes.



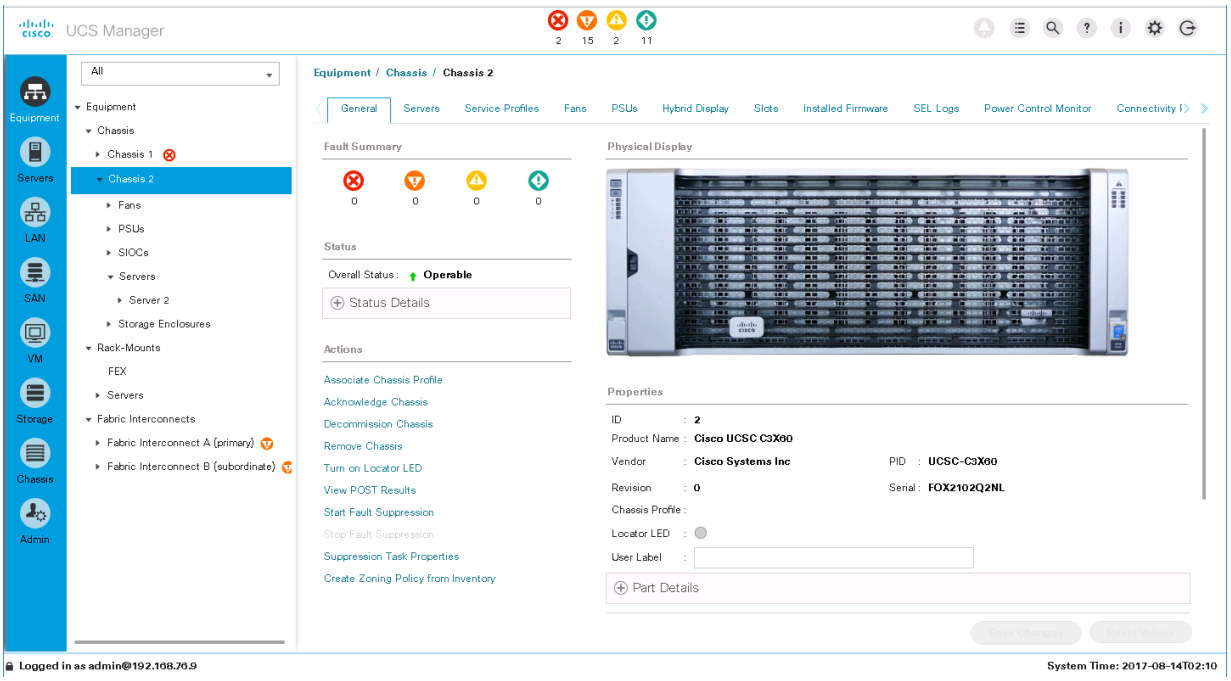
Use the same procedure as documented for virtual drive group 1 to create the virtual drives in virtual drive groups 2, 3, and 4 based on the available physical disks. The virtual drives and their sizes are listed in Tables 3 through 7 at the beginning of this section.

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.



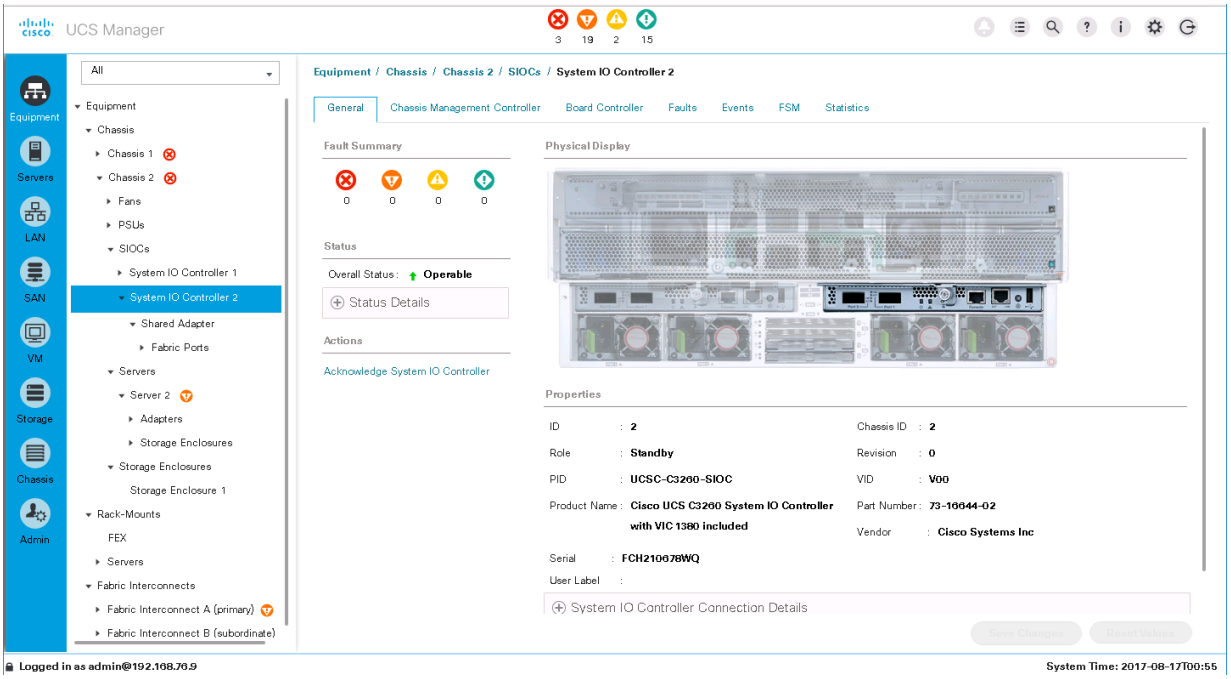
On the Equipment tab, identify the Cisco UCS S3260 chassis and check the condition of the system and the components required for the deployment.

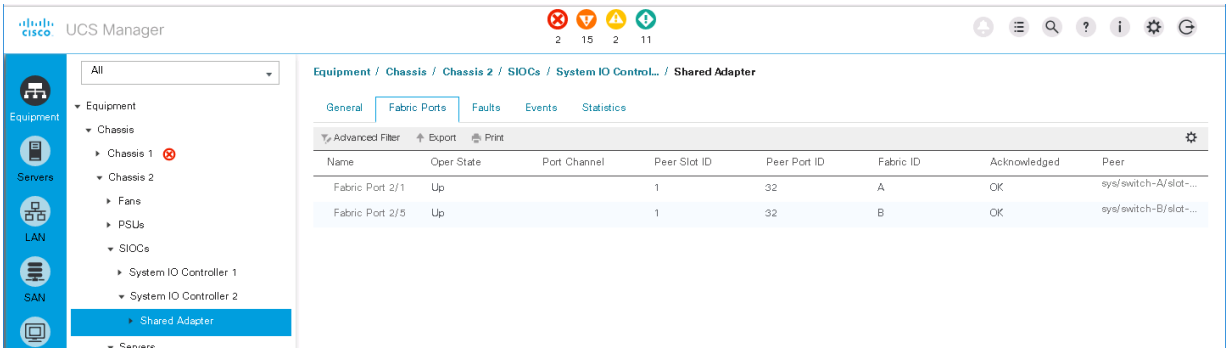


Check the SIOC Information

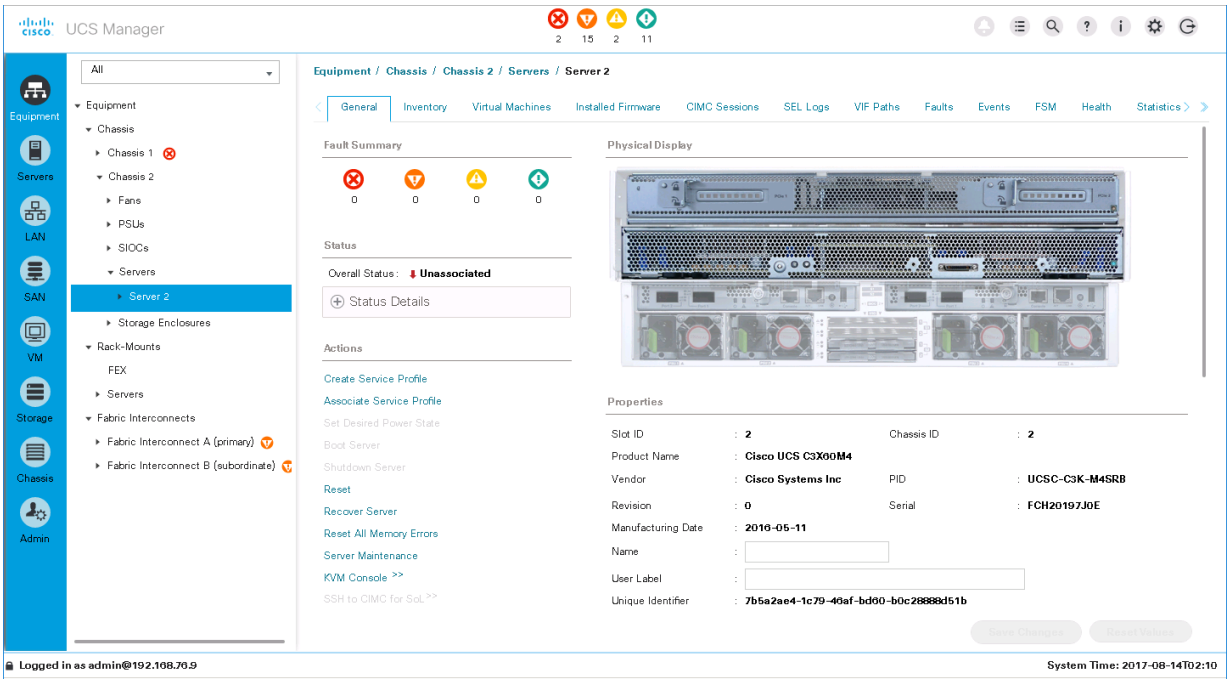
Only one SIOC is required. The second SIOC is optional and is used for better high availability or greater throughput.

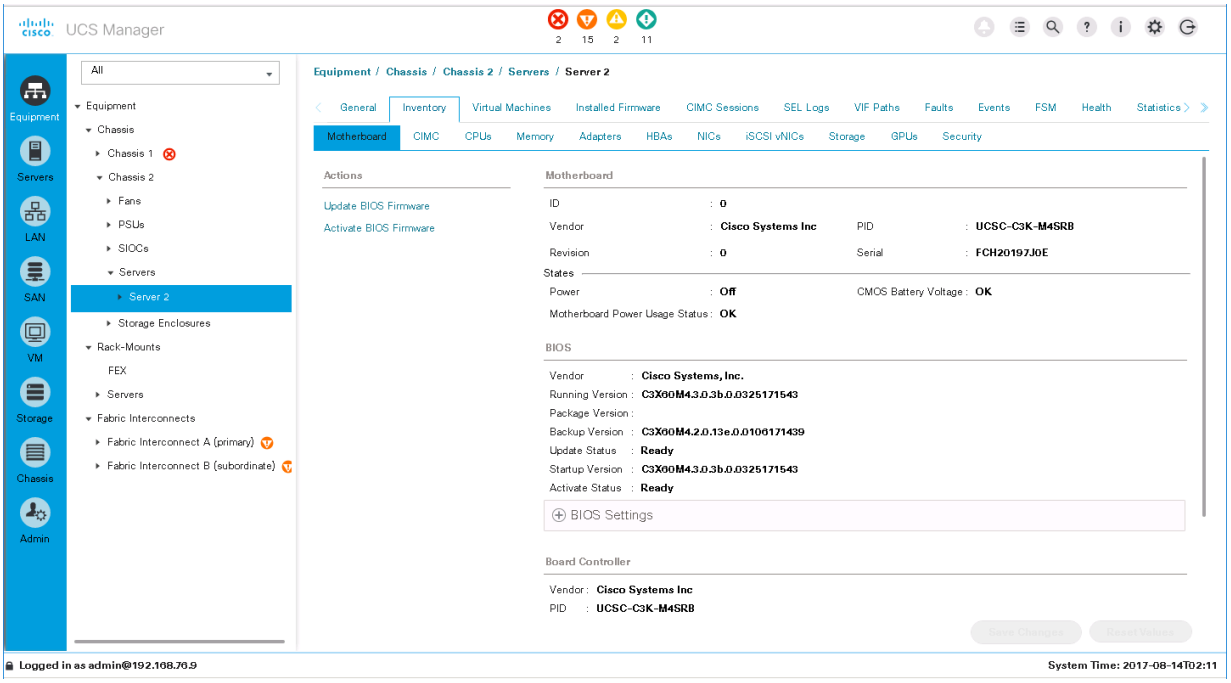
The General tab provides an overview of the SIOC and Ethernet ports, including the uplink status and port speeds. The operating speed can be 10 Gbps, 4 x 10 Gbps, or 40 Gbps. You should use 40 Gbps whenever possible.

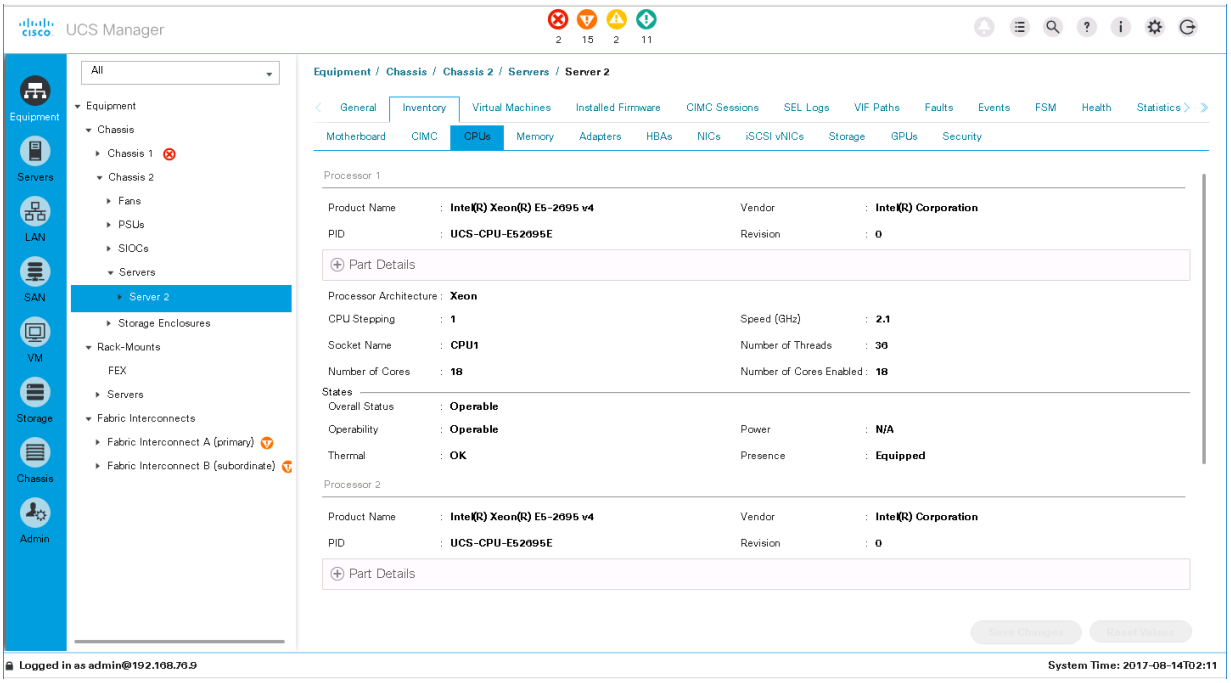


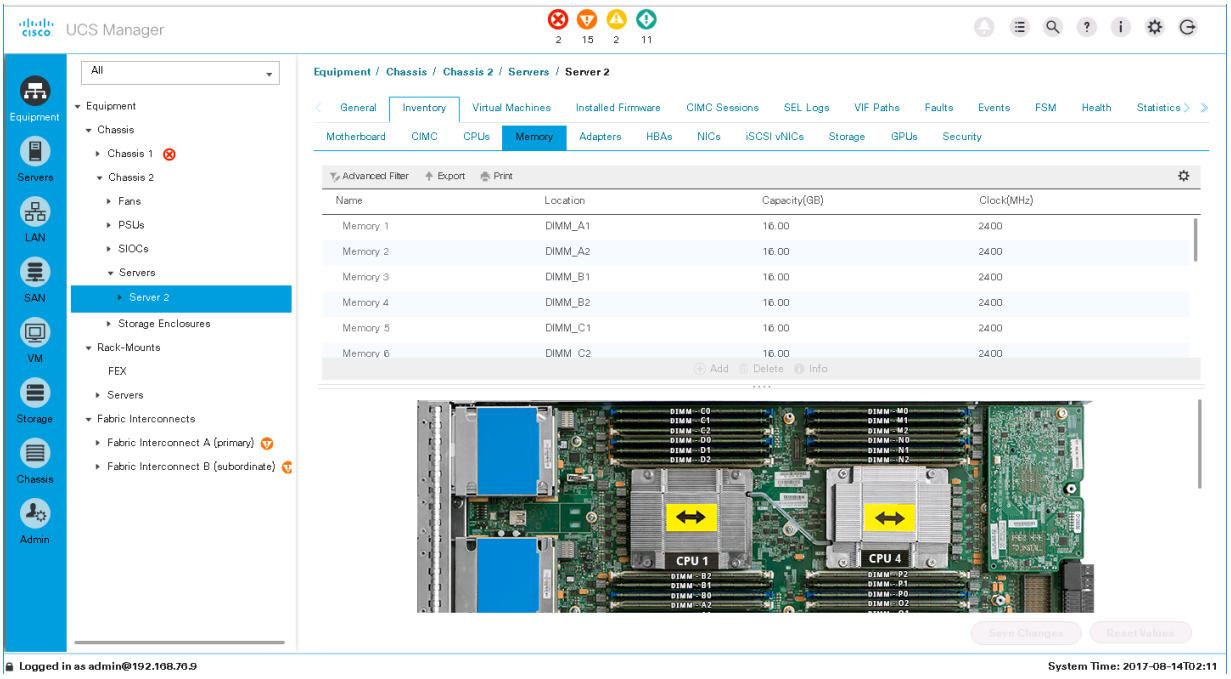


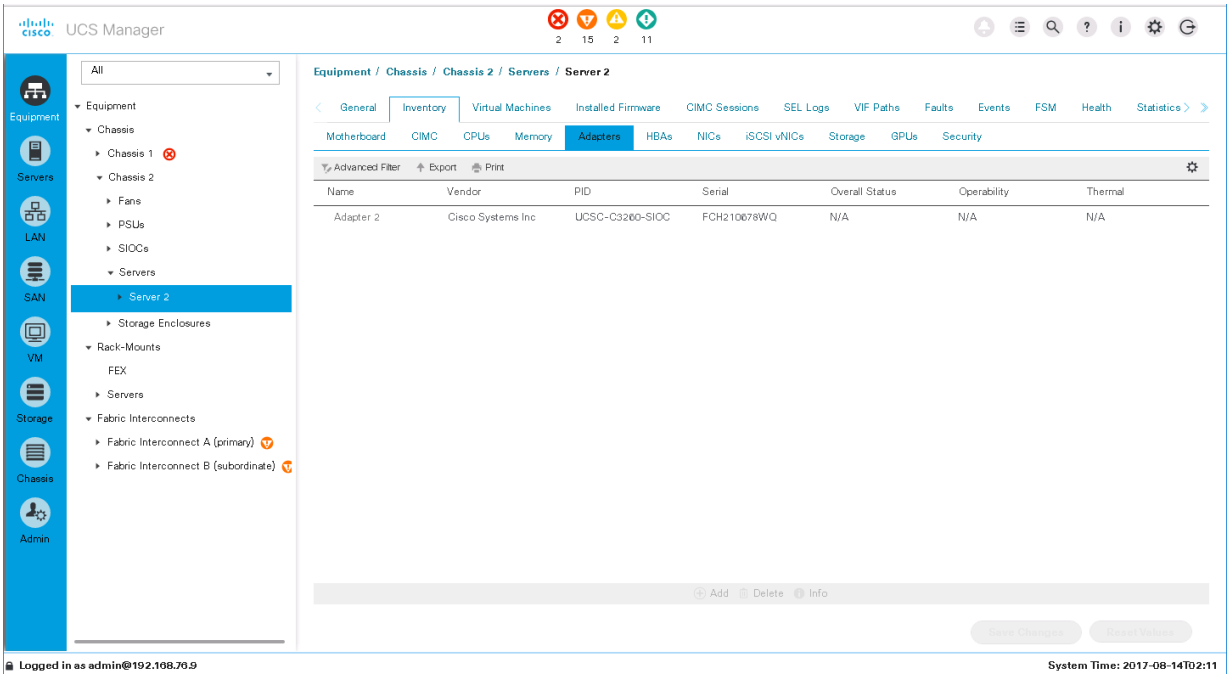
The Servers area shows the details of the server node, including information about the CPU, memory, PCIe cards, and local storage.



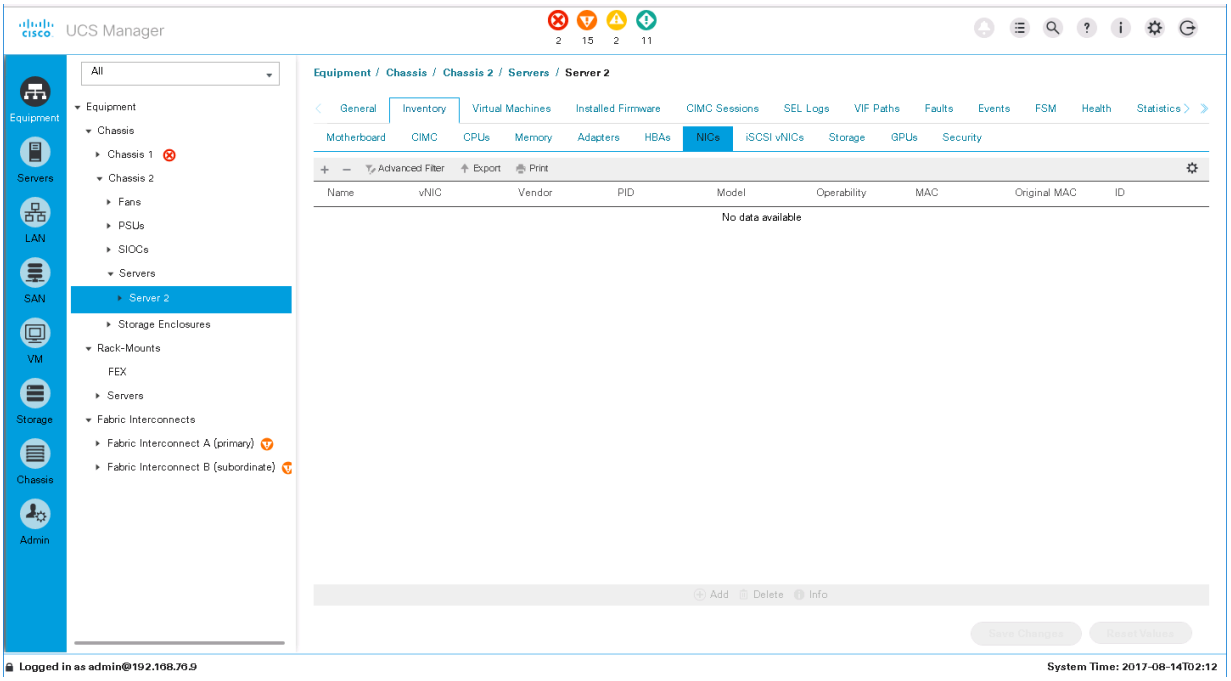


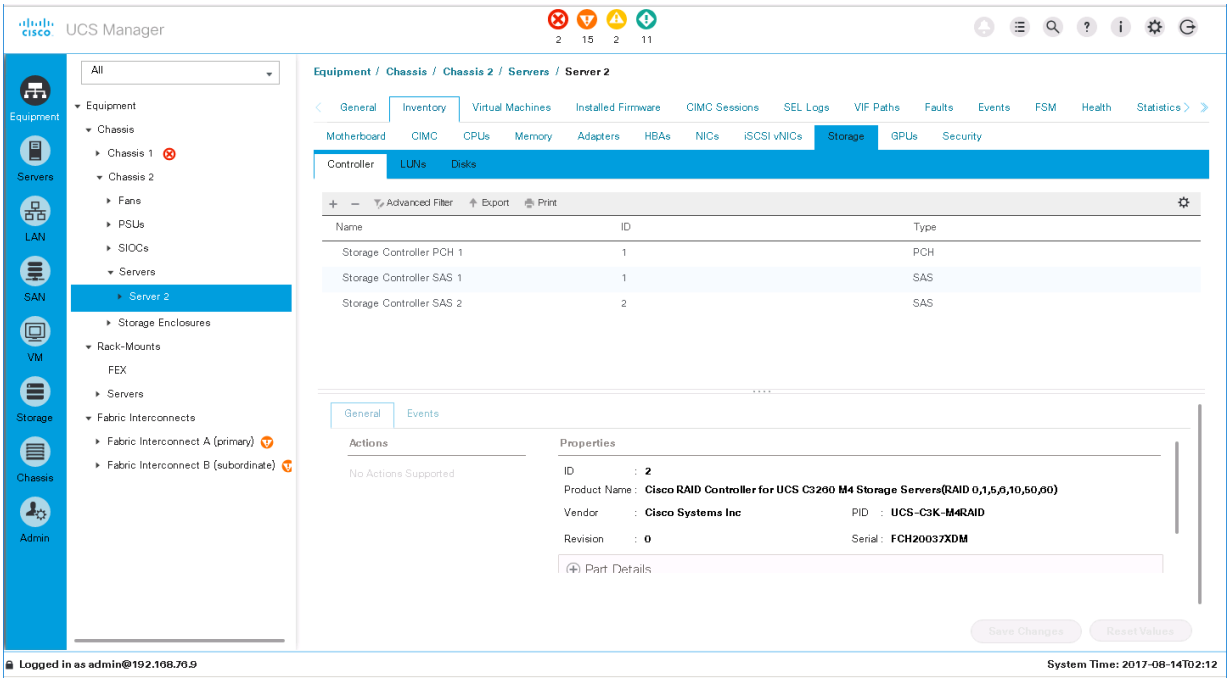




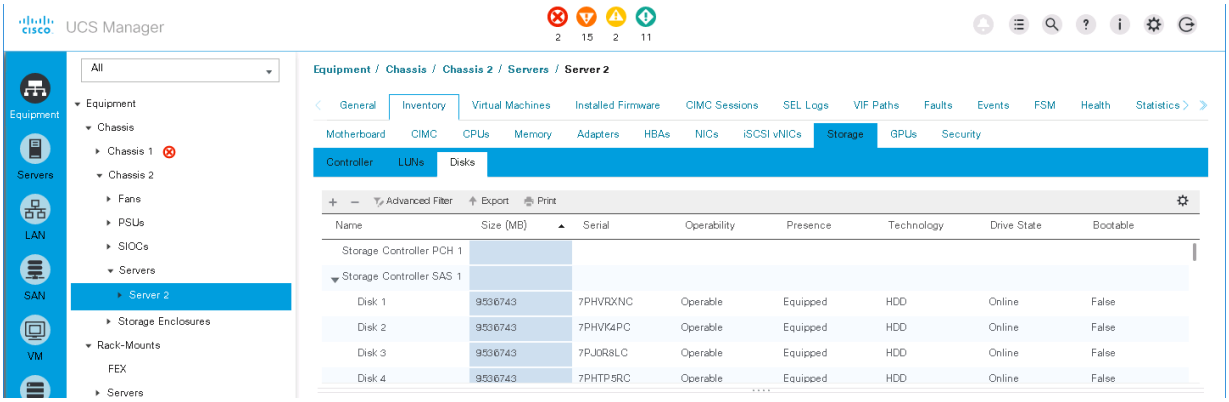


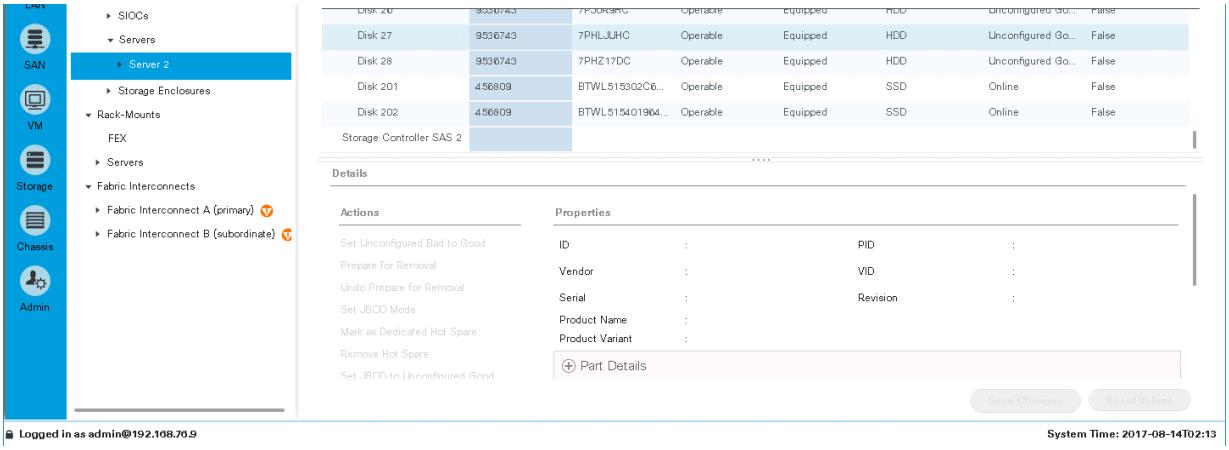
In a standalone configuration, the SIOS includes predefined vNICs and vHBAs. In a configuration managed by Cisco UCS, however, nothing is defined. This definition is part of the service profile configuration. If PCIe cards for networking or Fibre Channel are installed, the information is listed on the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



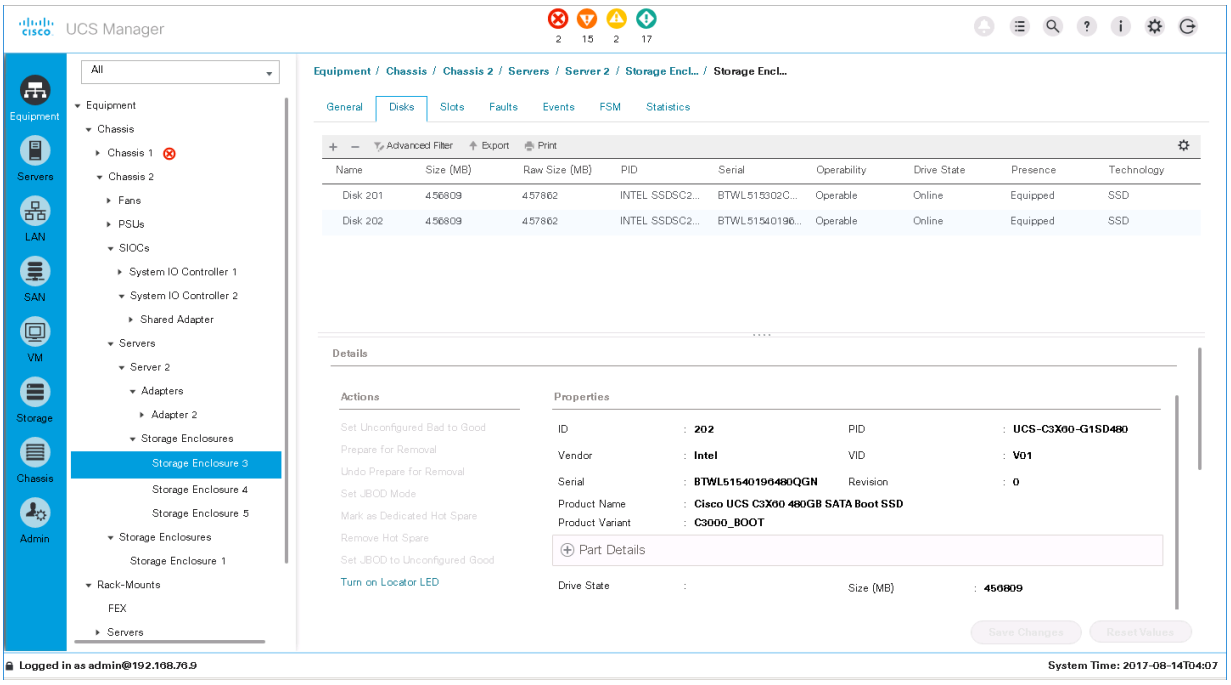


To complete the storage configuration discussed later in this document, you need to identify the physical disks available for the operating system installation. The Cisco UCS S3260 chassis comes with four disk slots on the rear side, with disk numbers 201 through 205. Identify and note the disks that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

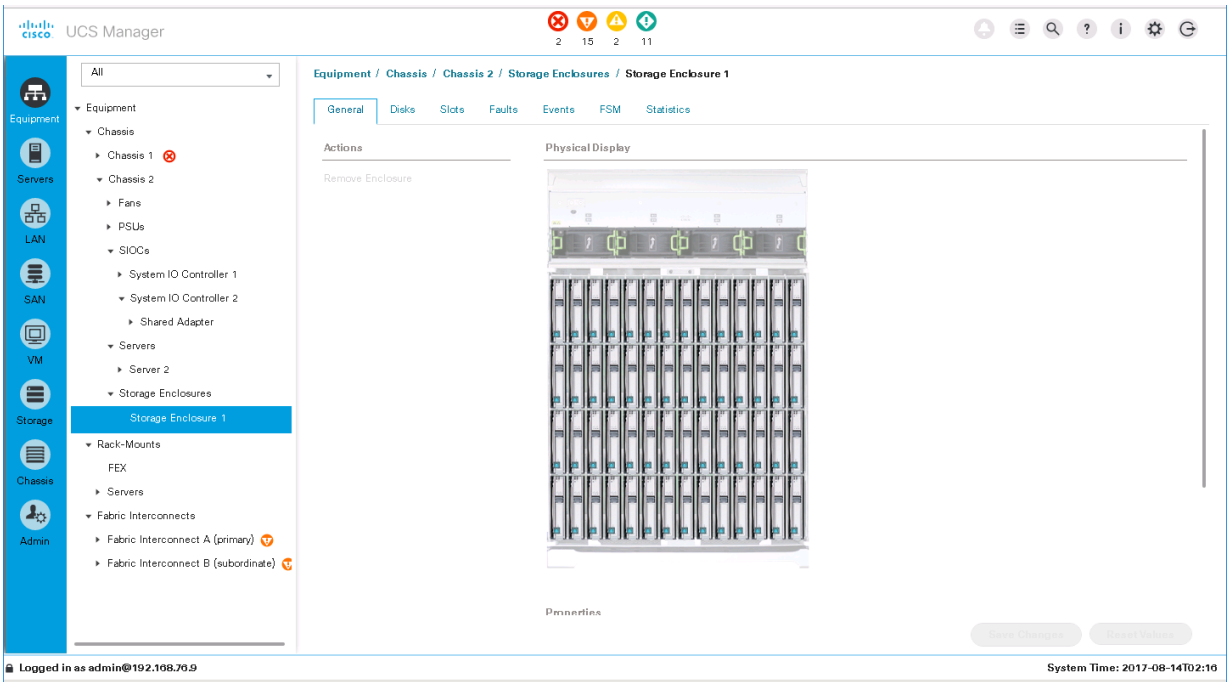




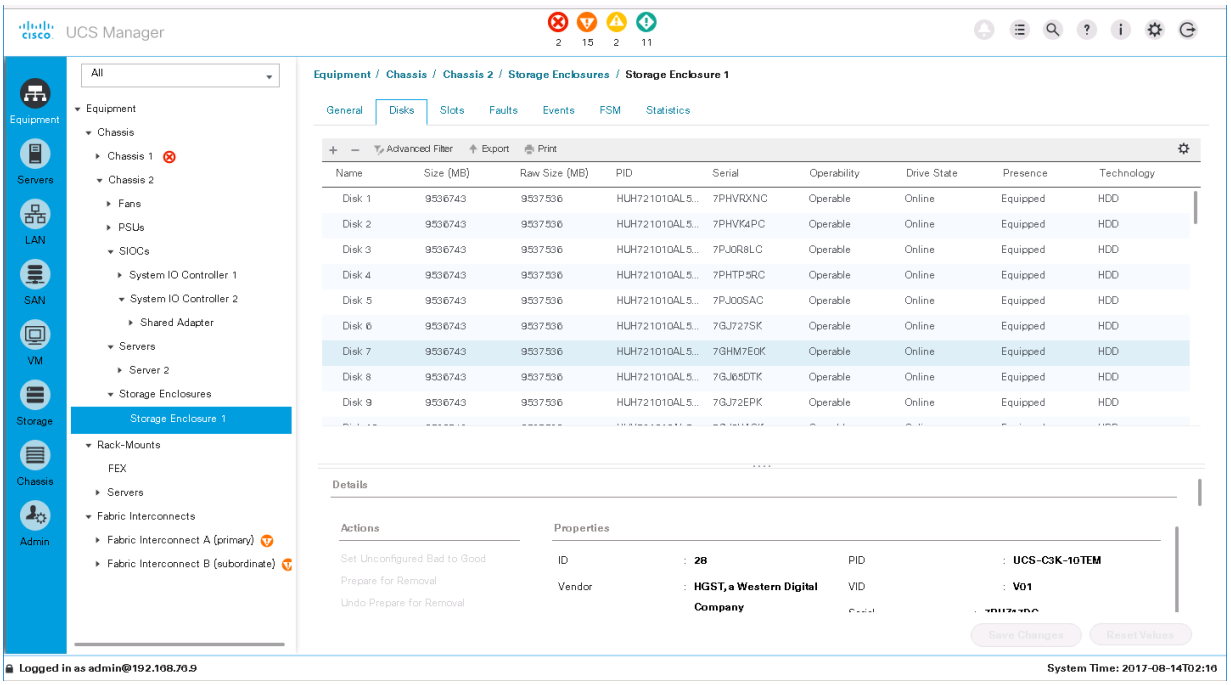
On the server node, Storage Enclosure 3 represents the disk slots on the back of the chassis, used for the operating system disks. Storage Enclosure 4 represents the NVMe slot on the server node, and Storage Enclosure 5 represents the two NVMe slots on the I/O expander board (if one is connected). Those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



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



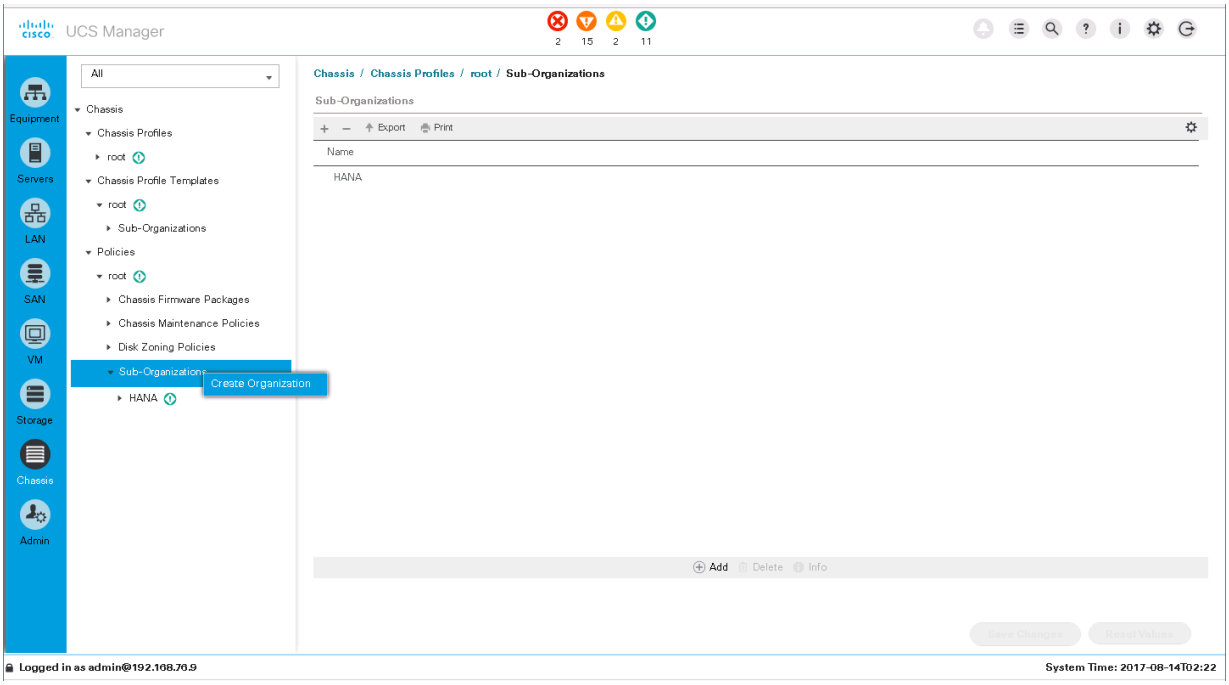
The Disks tab of Storage Enclosure 1 shows all the details about the top-loaded drives.



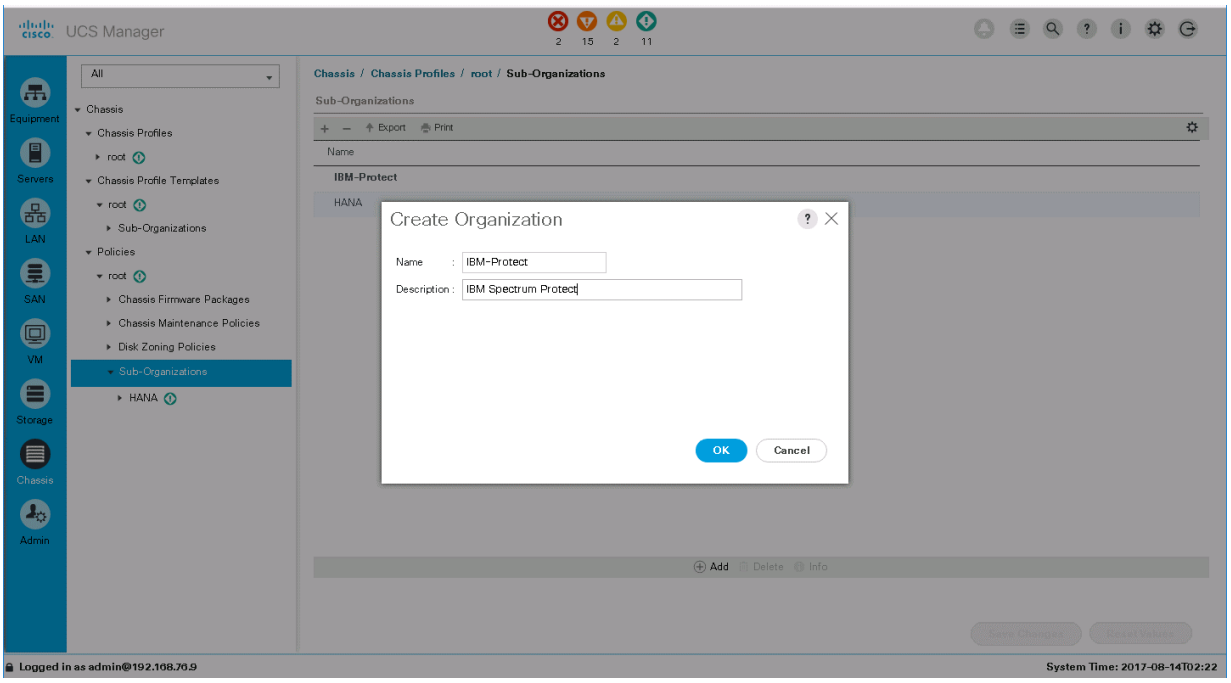
The next step is to specify a chassis profile for the Cisco UCS S3260 to define the disk zoning for the top-loaded drives (Storage Enclosure 1) within the chassis. Without a chassis profile, servers have no access to the top-loaded drives.

The Cisco UCS Manager configuration for IBM Spectrum Protect is specific to the use case, so you should define a new suborganization for IBM Spectrum Protect to keep all configurations dedicated to this use case.

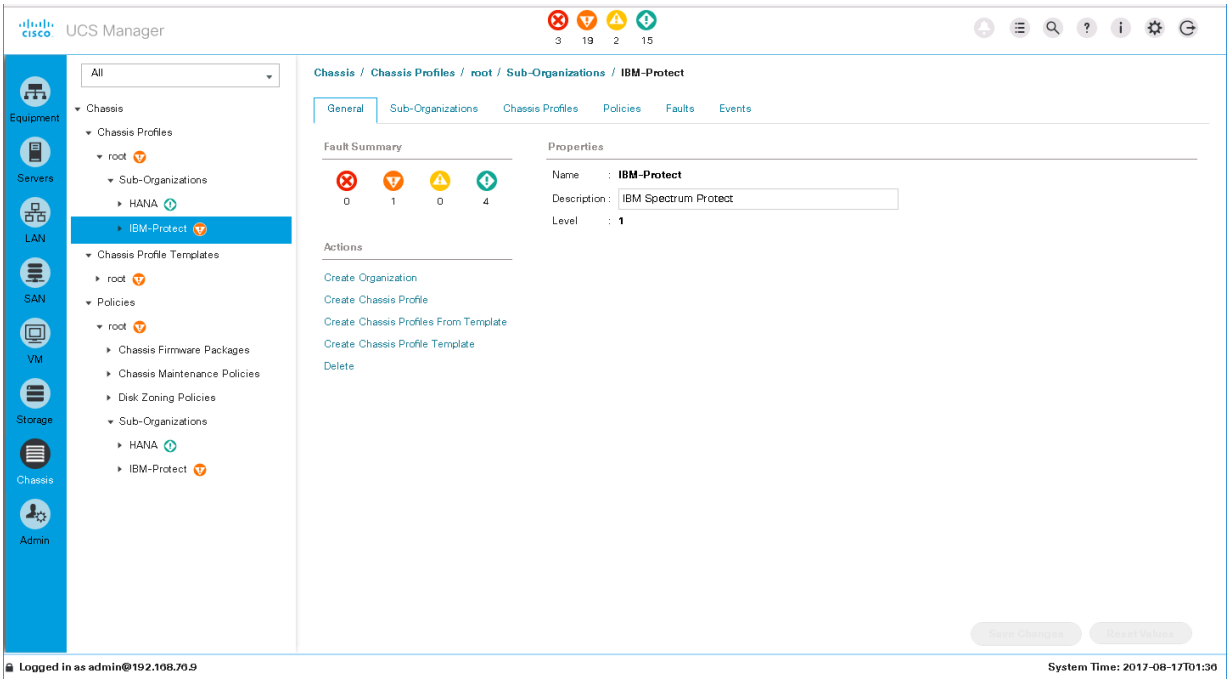
In the Chassis area, choose one of the root options, and choose Sub-Organizations. Right-click and choose Create Organization.



Enter an obvious name, such as **IBM-Protect**, enter a description, and click OK



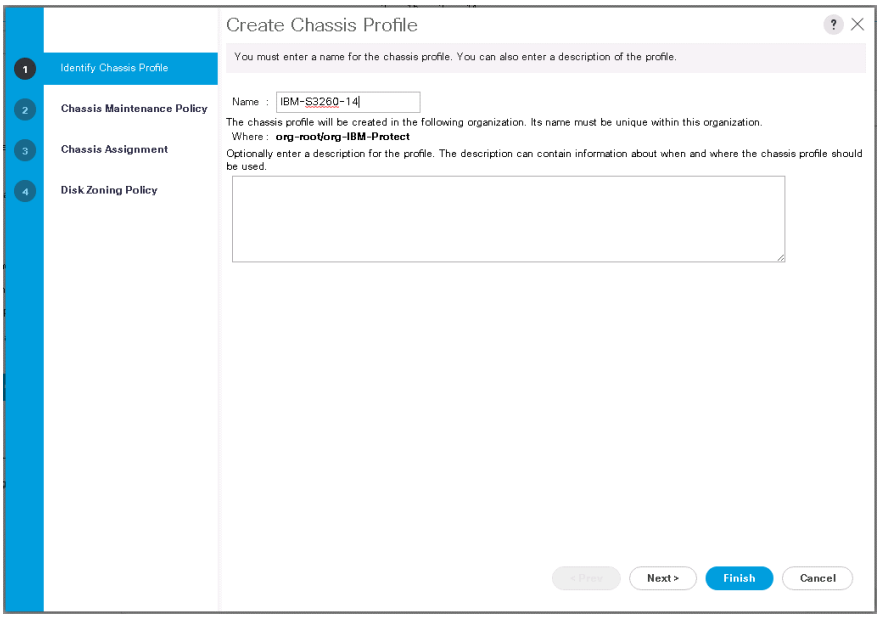
Select the suborganization you created and click Create Chassis Profile.



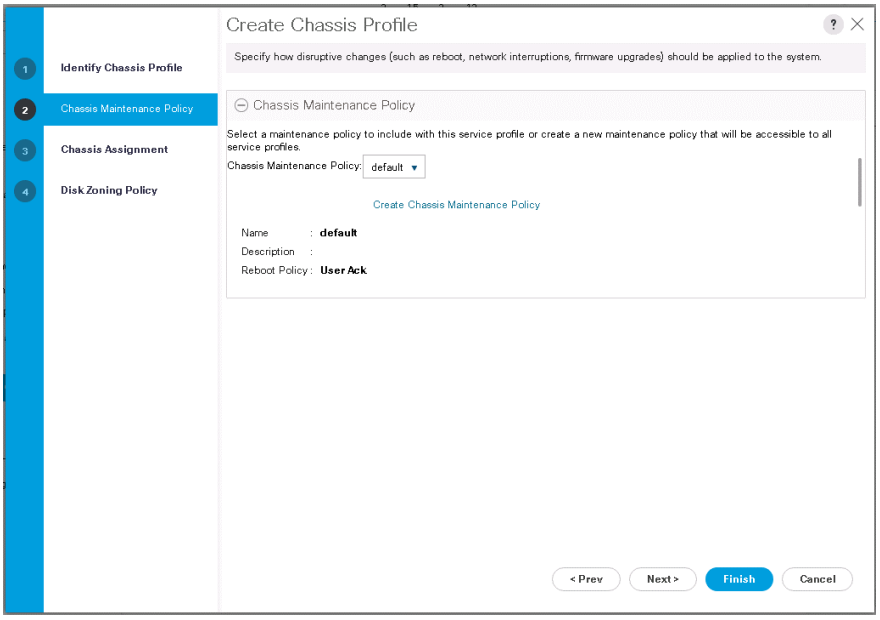
The next steps are dependent on the available disk drives in Disk Enclosure 1 and the number of drives assigned to the IBM Spectrum Protect server.

For a configuration with 14 disk drives, use the following set of steps.

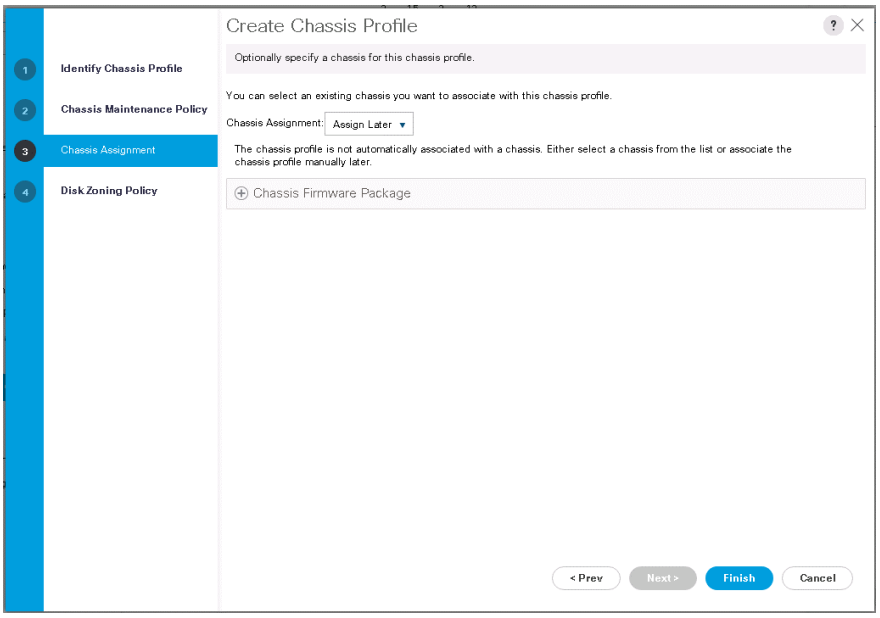
Enter an obvious name, such as **IBM-S3260-14**, and click Next.



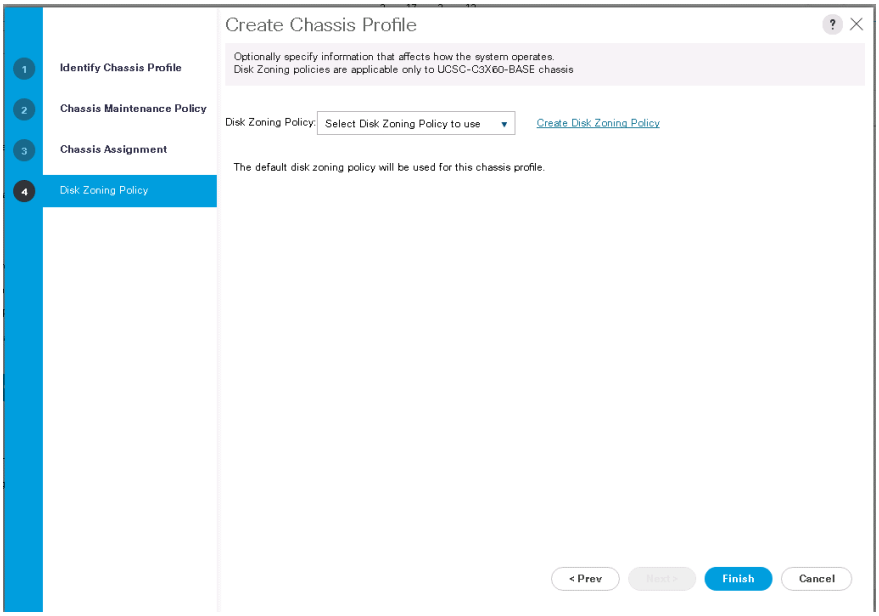
Select a chassis maintenance policy, such as the default policy used in the example here, and click Next.



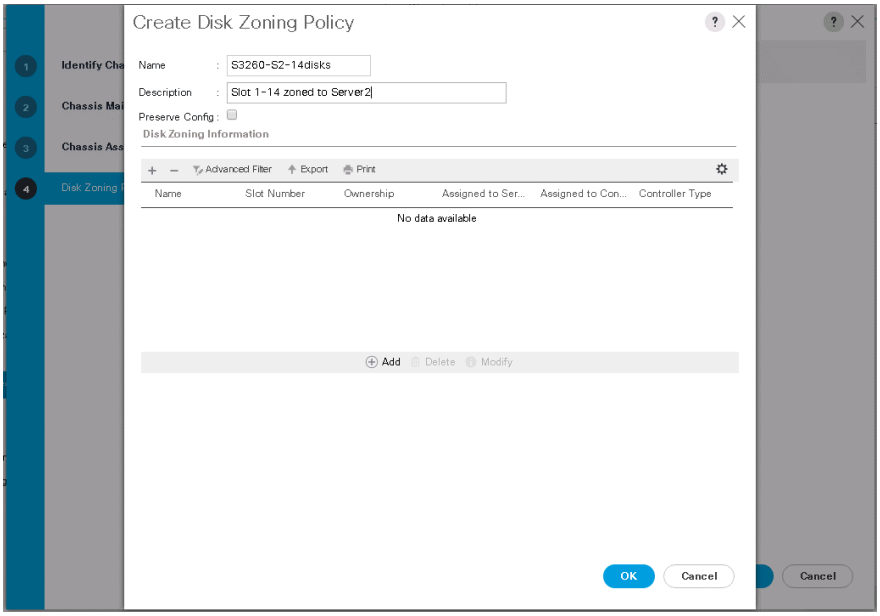
Keep Assign Later selected and click Next.



Click Create Disk Zoning Policy.



Enter an obvious name, such as **S3260-S2-14disks**, for the disk zoning policy and click Add.



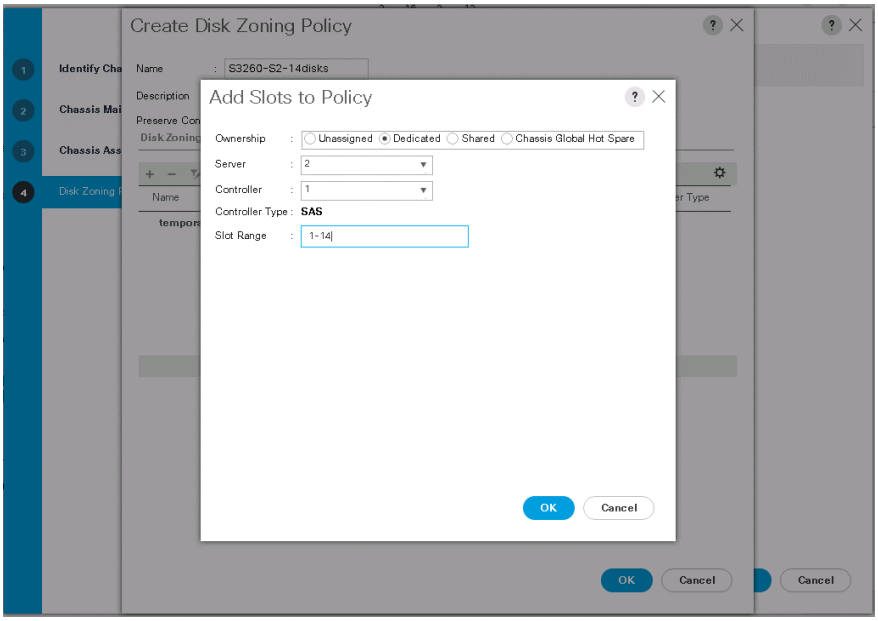
Select Dedicated as the ownership.

Select server 1 or 2.

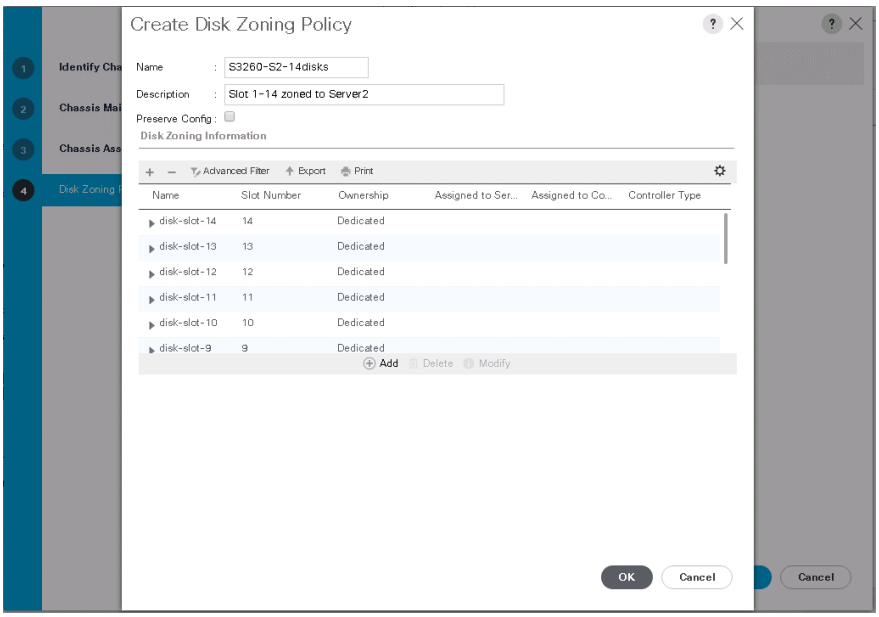
Select storage controller 1 for the RAID controller on the server and 2 for the RAID controller on the I/O expander.

Enter 1-14 as the slot range.

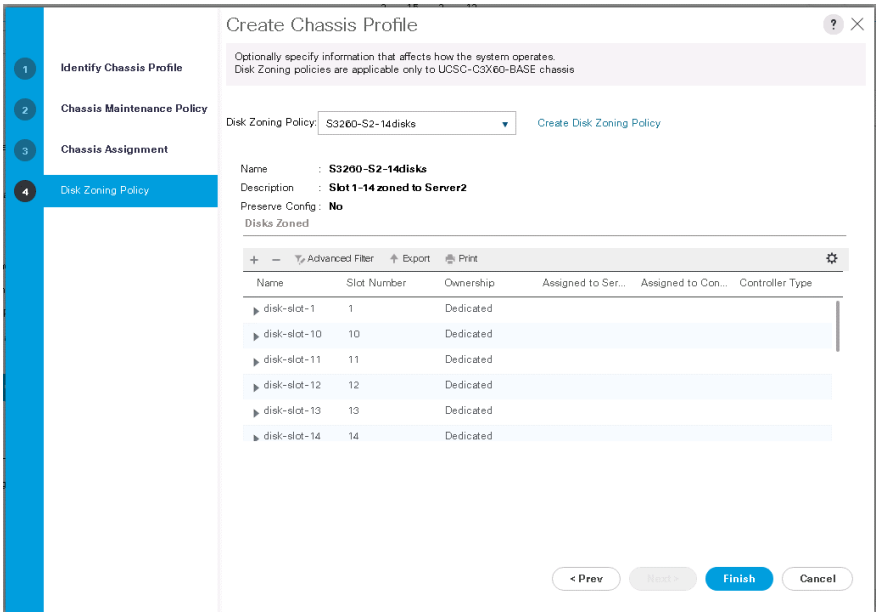
Click OK.



Verify that all information is correct and click OK.

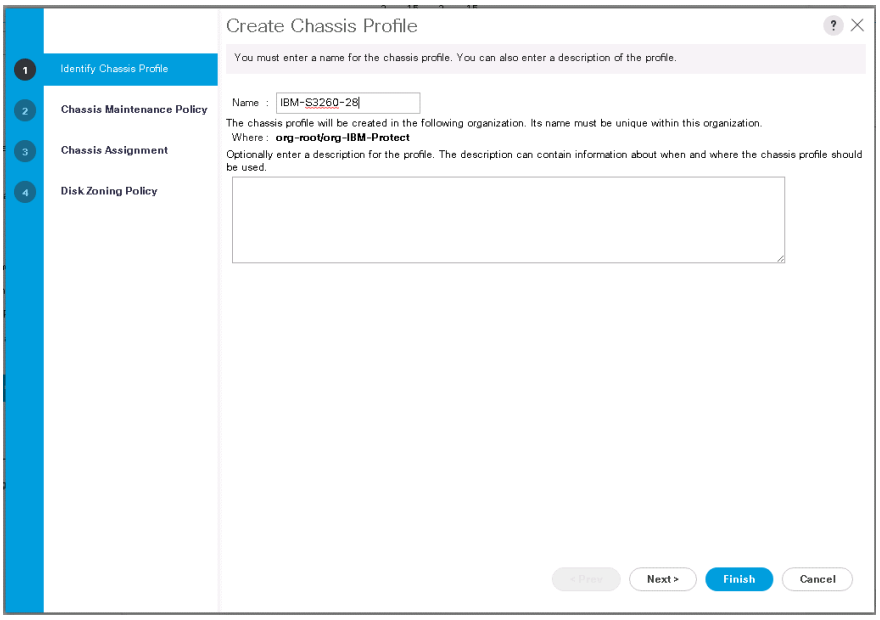


Verify that all information is correct and click Finish.

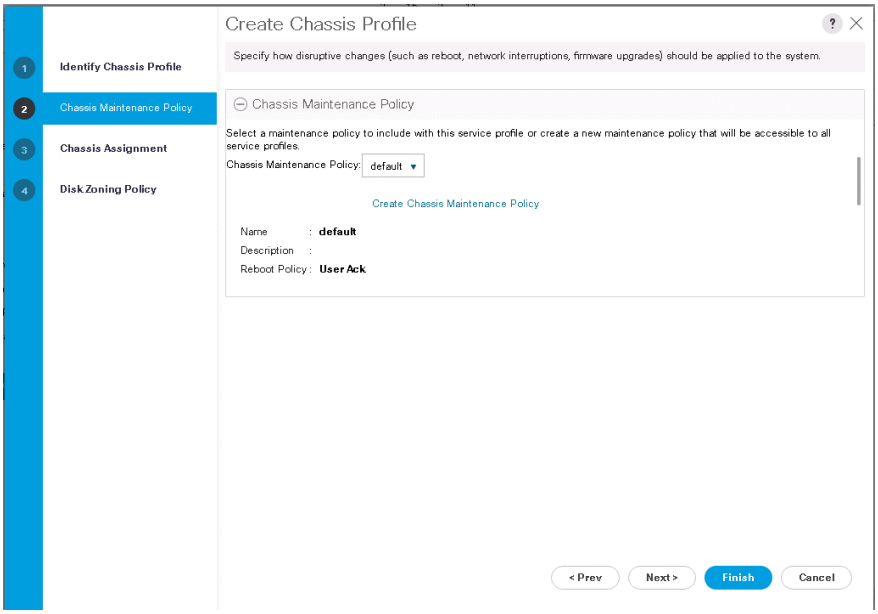


For a configuration with 28 disk drives, use the following set of steps.

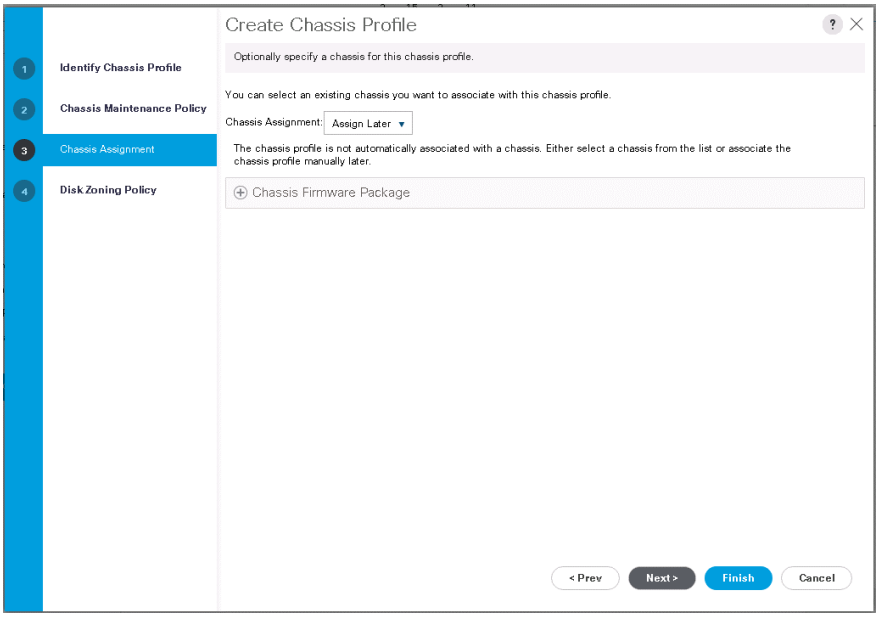
Enter an obvious name, such as **IBM-S3260-28**, and click Next.



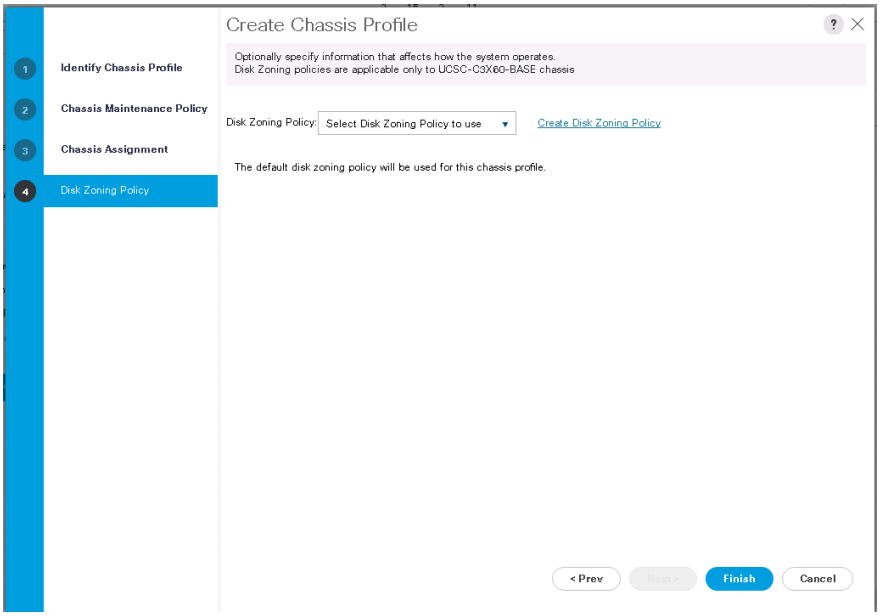
Select a chassis maintenance policy, such as the default policy used in this example, and click Next.



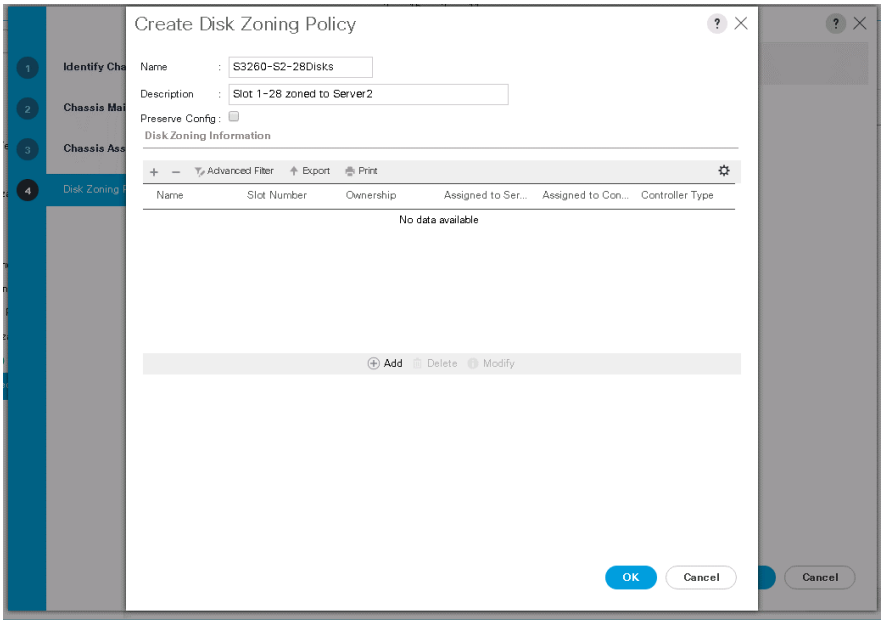
Keep Assign Later selected and click Next.



Click Create Disk Zoning Policy.



Enter an obvious name, such as **S3260-S2-28Disks**, for the disk zoning policy and click Add.



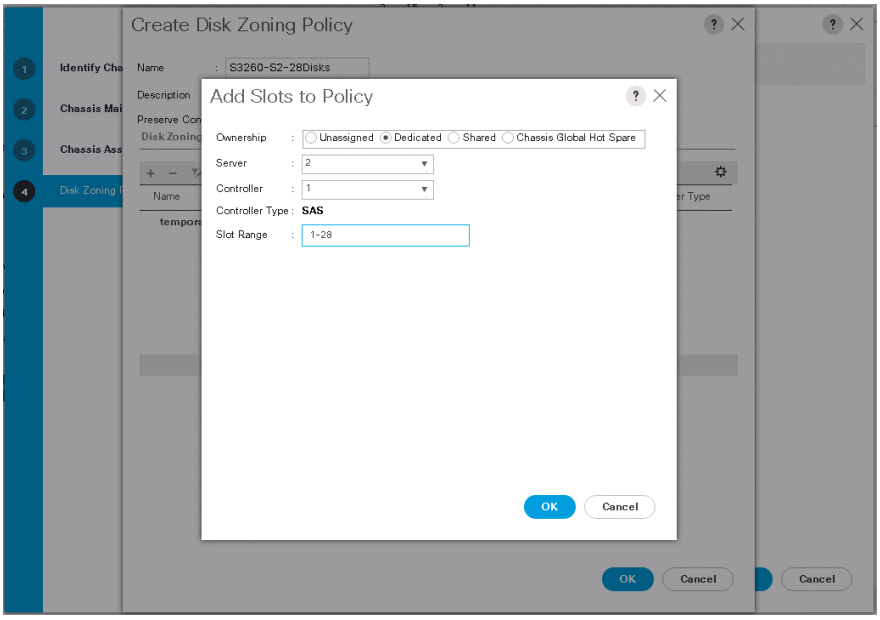
Select Dedicated as the ownership.

Select server 1 or 2.

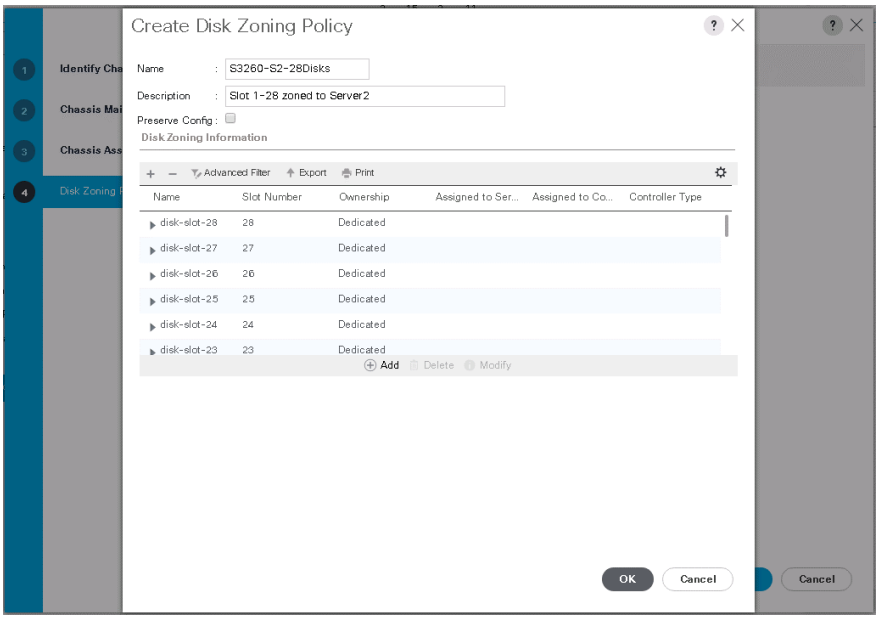
Select storage controller 1 for the RAID controller on the server and 2 for the RAID controller on the I/O expander.

Enter 1-28 as the slot range.

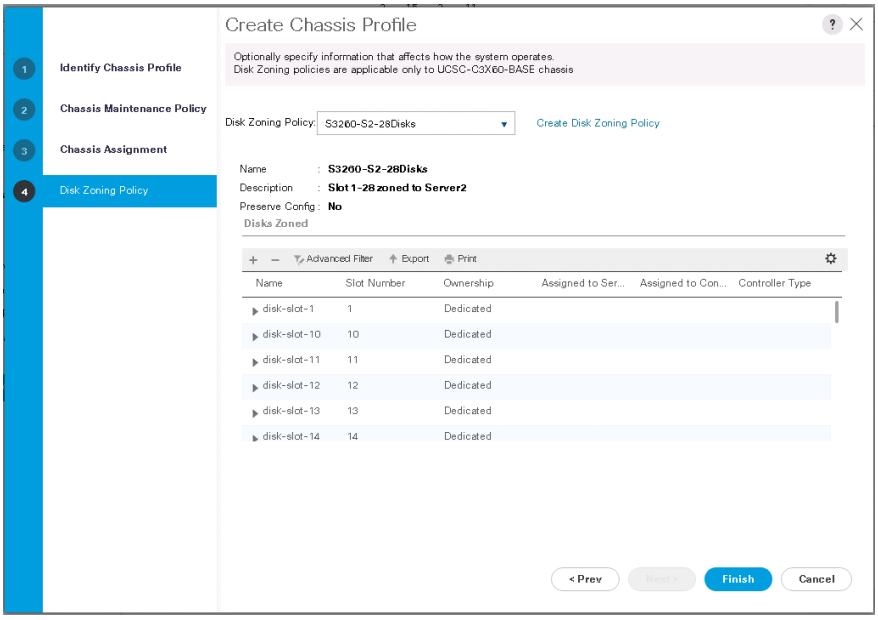
Click OK.



Verify that all information is correct and click OK.

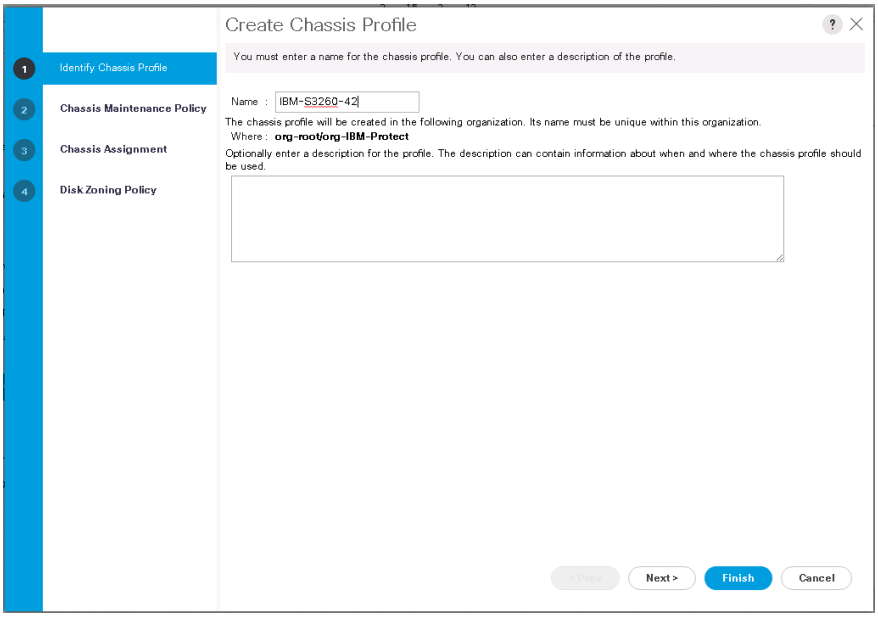


Verify that all information is correct and click Finish.

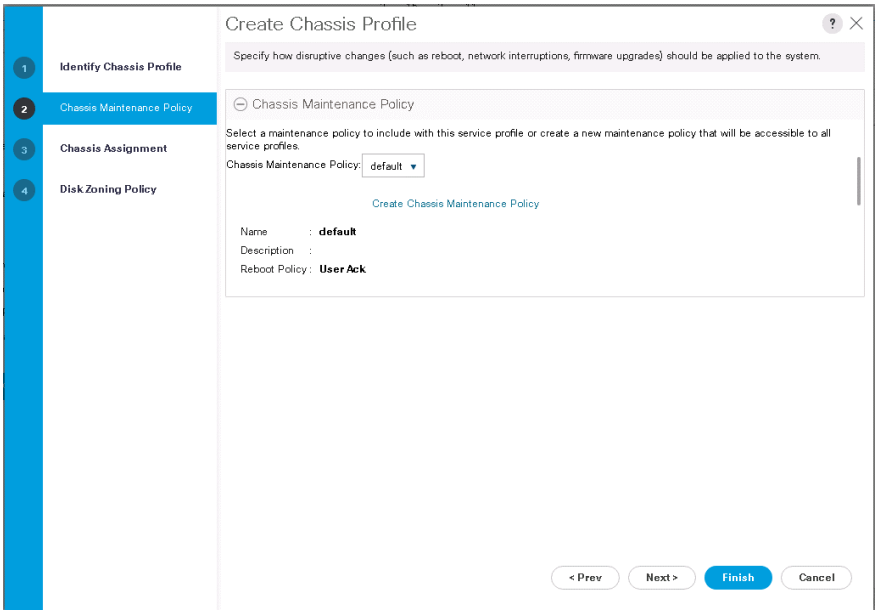


For a configuration with 42 disk drives, use the following set of steps.

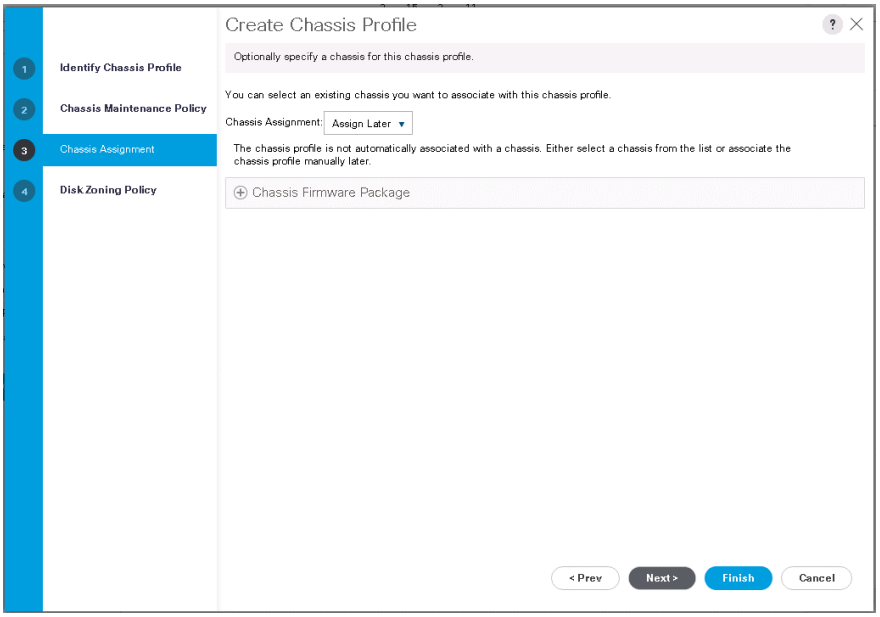
Enter an obvious name, such as **IBM-S3260-42**, and click Next.



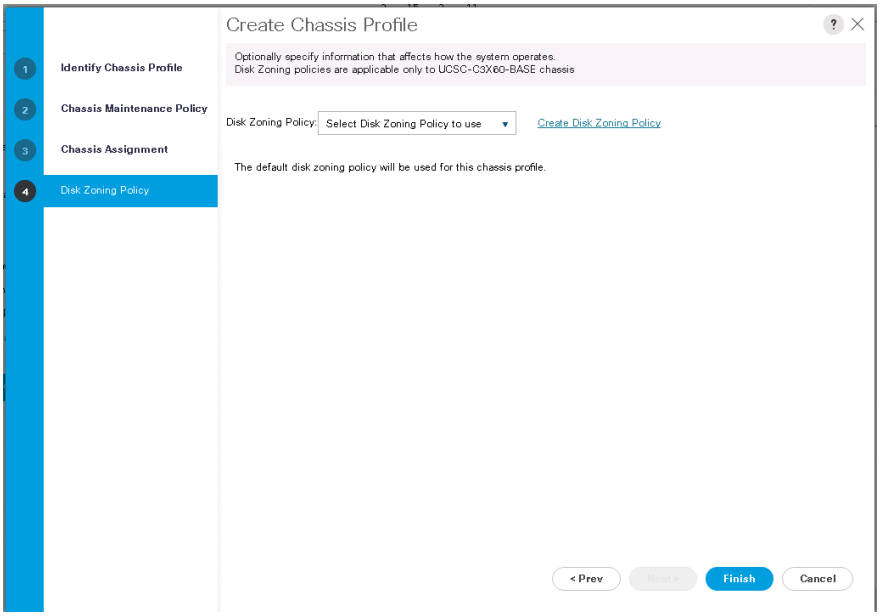
Select a chassis maintenance policy, such as the default policy used in the example here, and click Next.



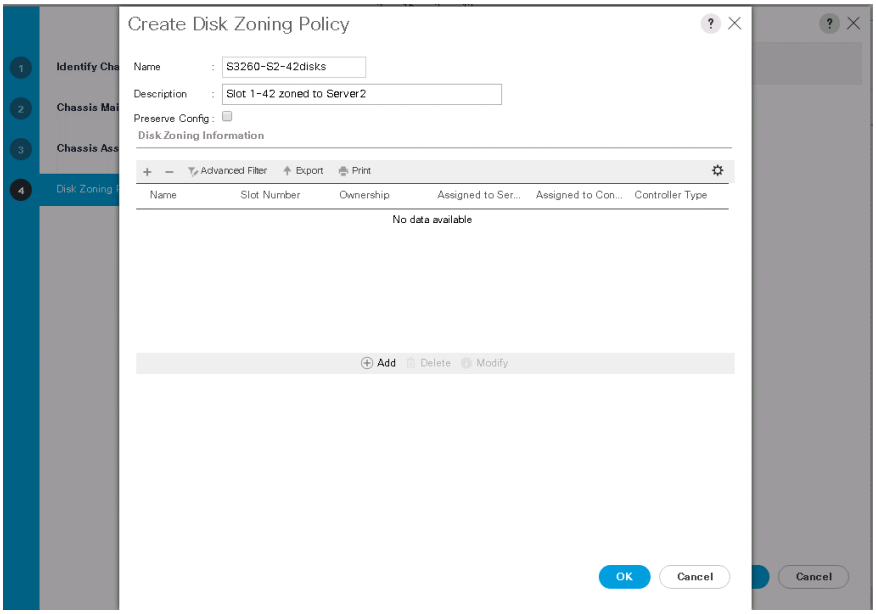
Keep Assign Later selected and click Next.



Click Create Disk Zoning Policy.



Enter an obvious name, such as **S3260-S2-42disks**, for the disk zoning policy and click Add.



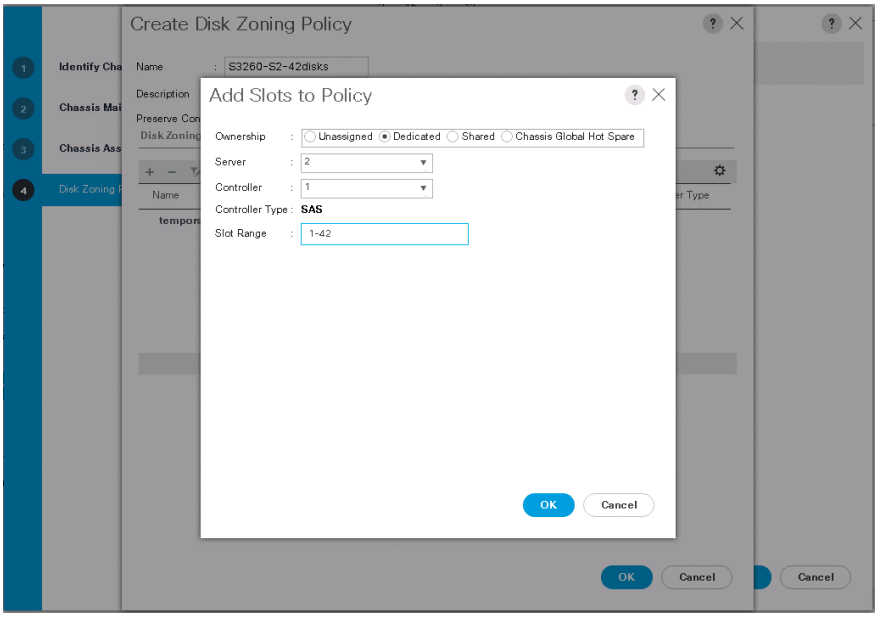
Select Dedicated as the ownership.

Select server 1 or 2.

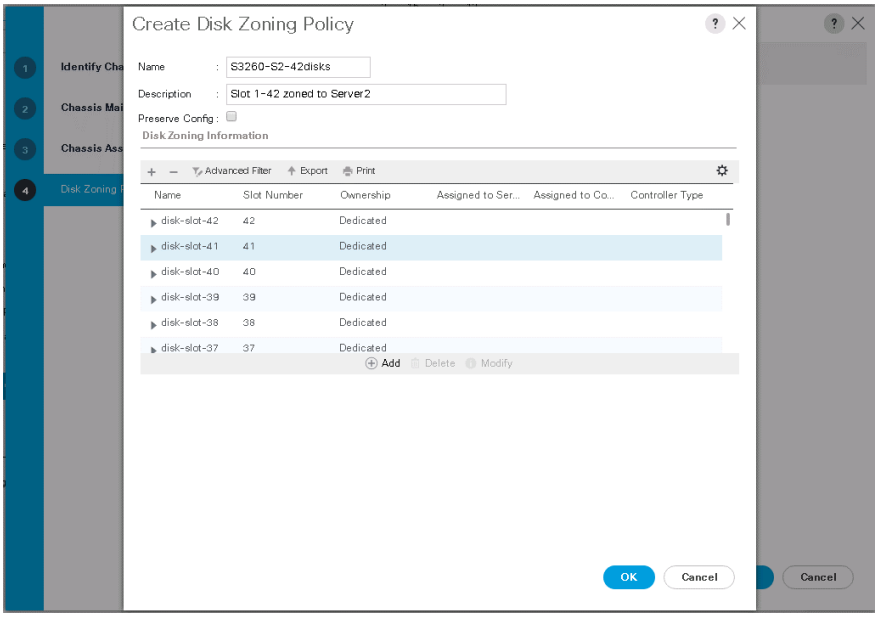
Select storage controller 1 for the RAID controller on the server and 2 for the RAID controller on the I/O expander card.

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

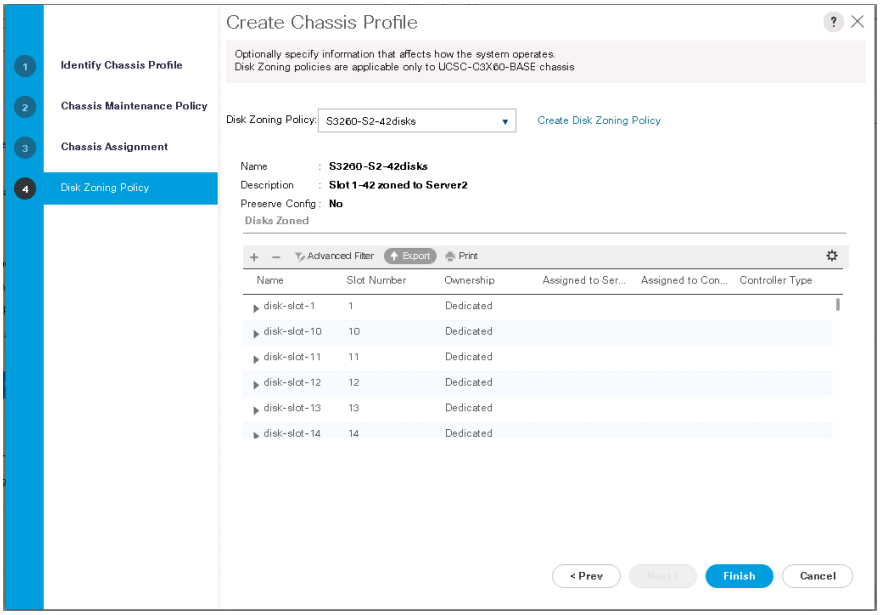
Click OK.



Verify that all information is correct and click OK.

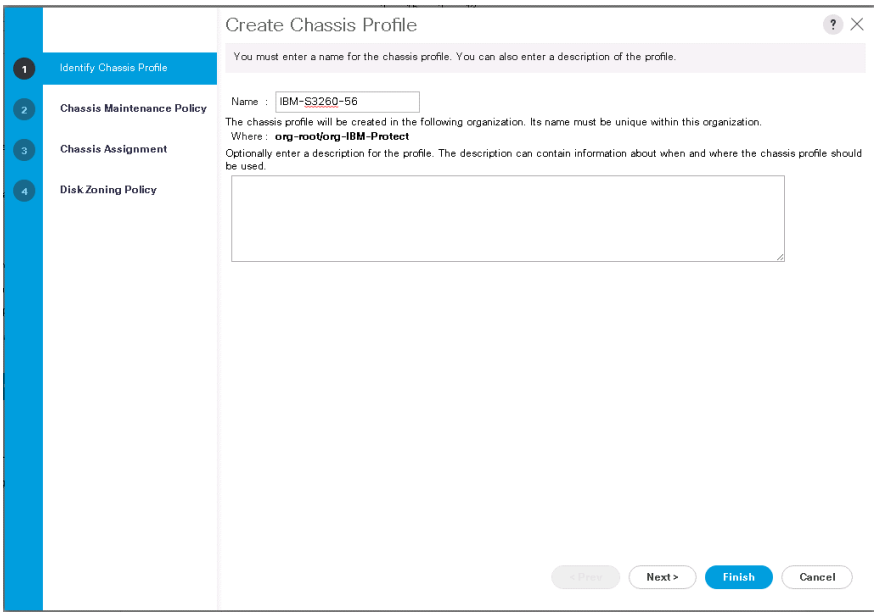


Verify that all information is correct and click Finish.

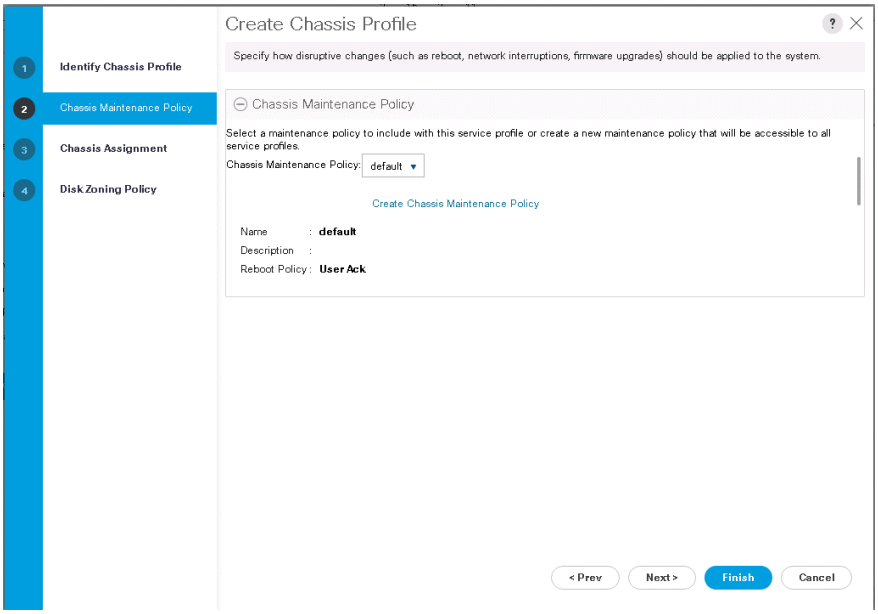


For a configuration with 56 disk drives, use the following set of steps.

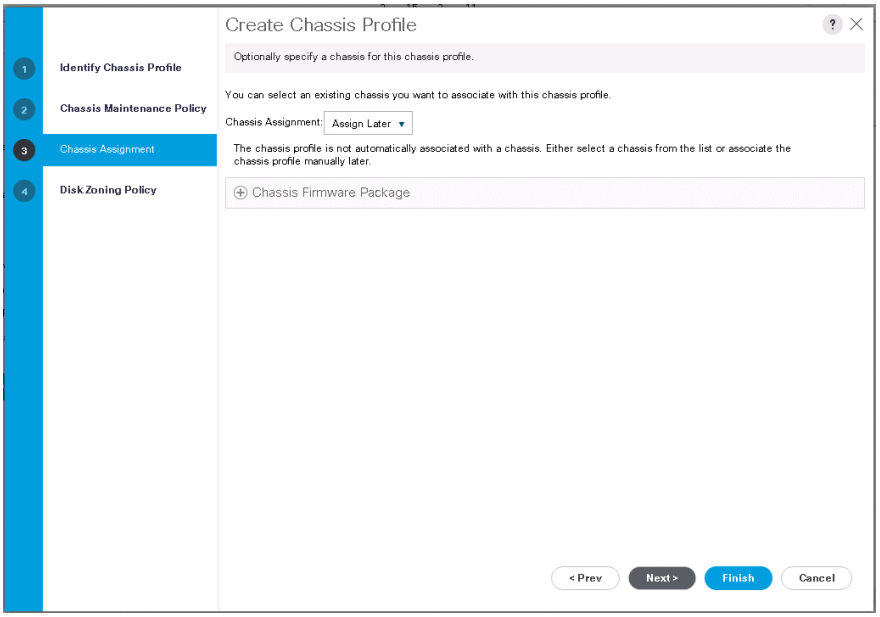
Enter an obvious name, such as **IBM-S3260-56**, and click Next.



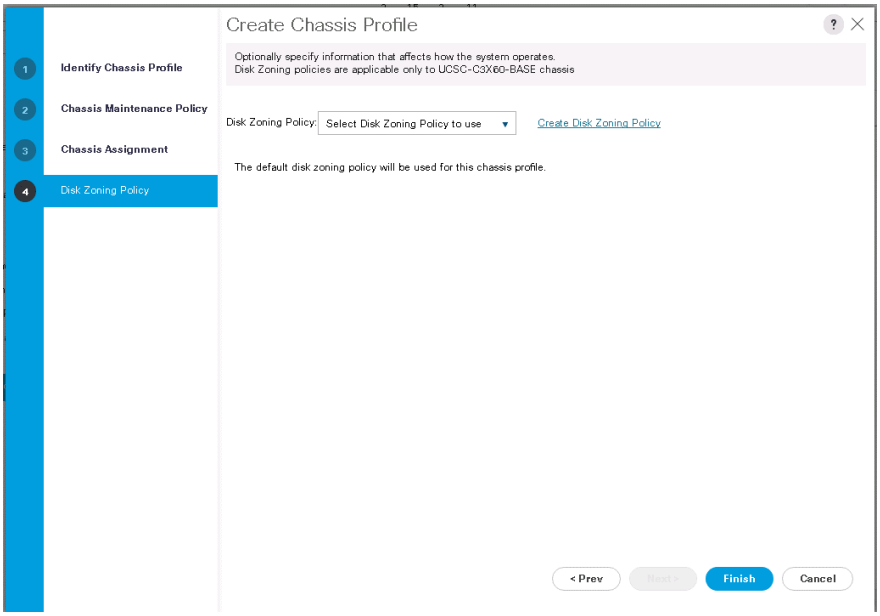
Select a chassis maintenance policy, such as the default policy used in the example here, and click Next.



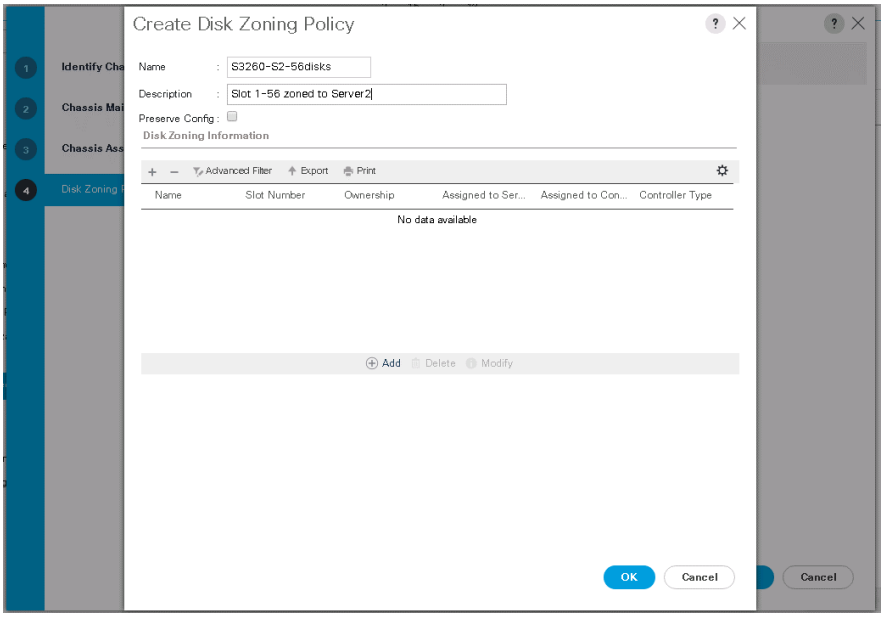
Keep Assign Later selected and click Next.



Click Create Disk Zoning Policy.



Enter an obvious name, such as **S3260-S2-56disks**, for the disk zoning policy and click Add.



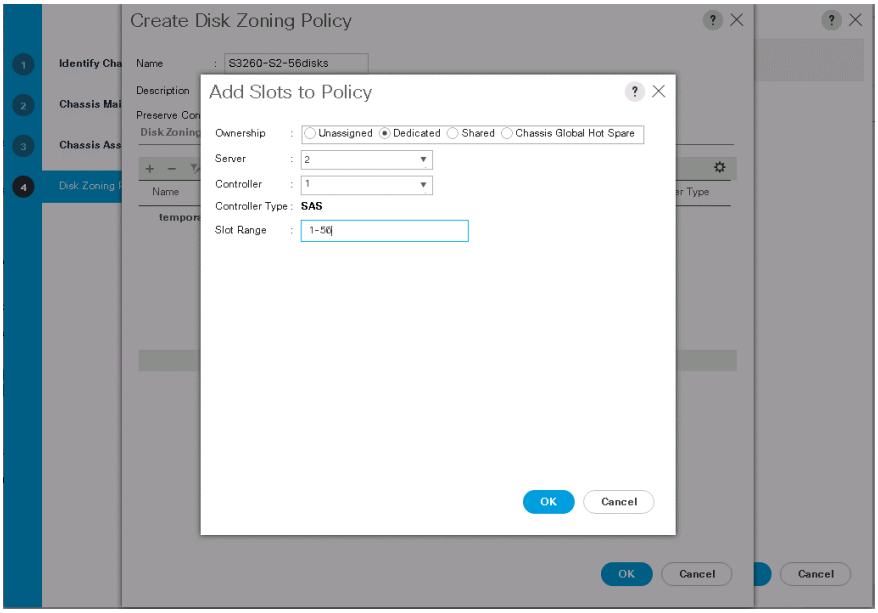
Select Dedicated as the ownership.

Select the server 1 or 2.

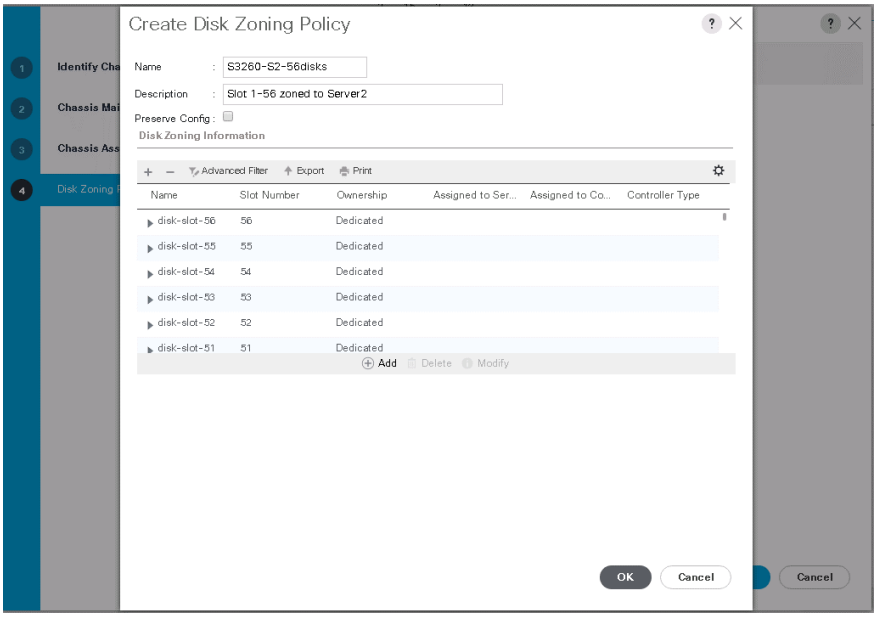
Select storage controller 1 for the RAID controller on the server and 2 for the RAID controller on the I/O expander card.

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

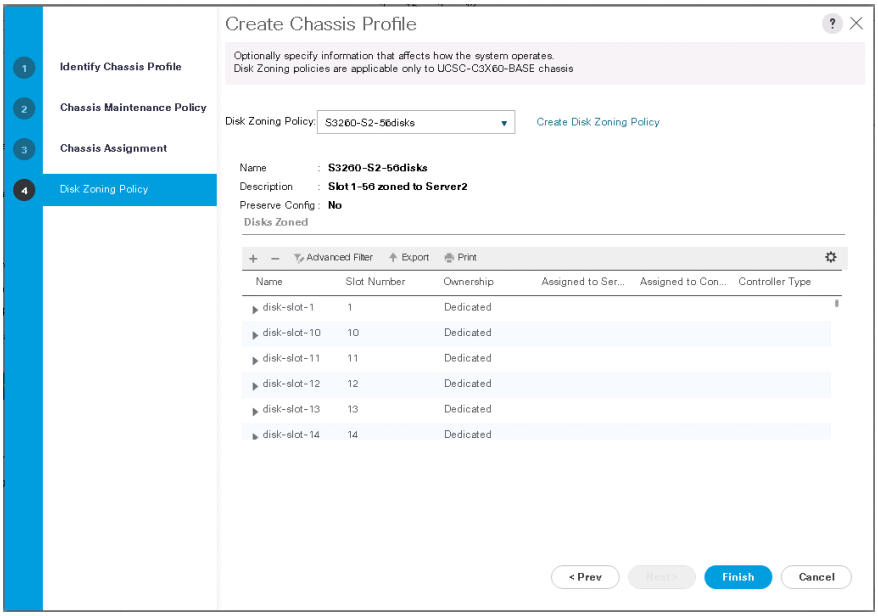
Click OK.

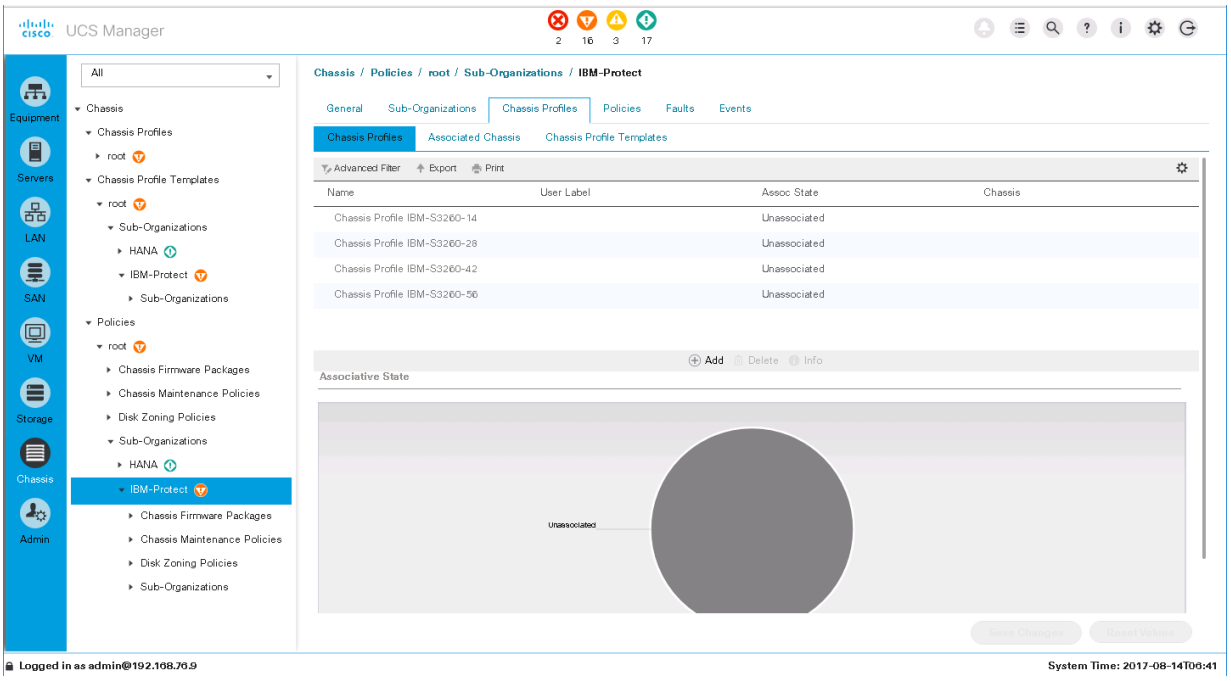


Verify that all information is correct and click OK.



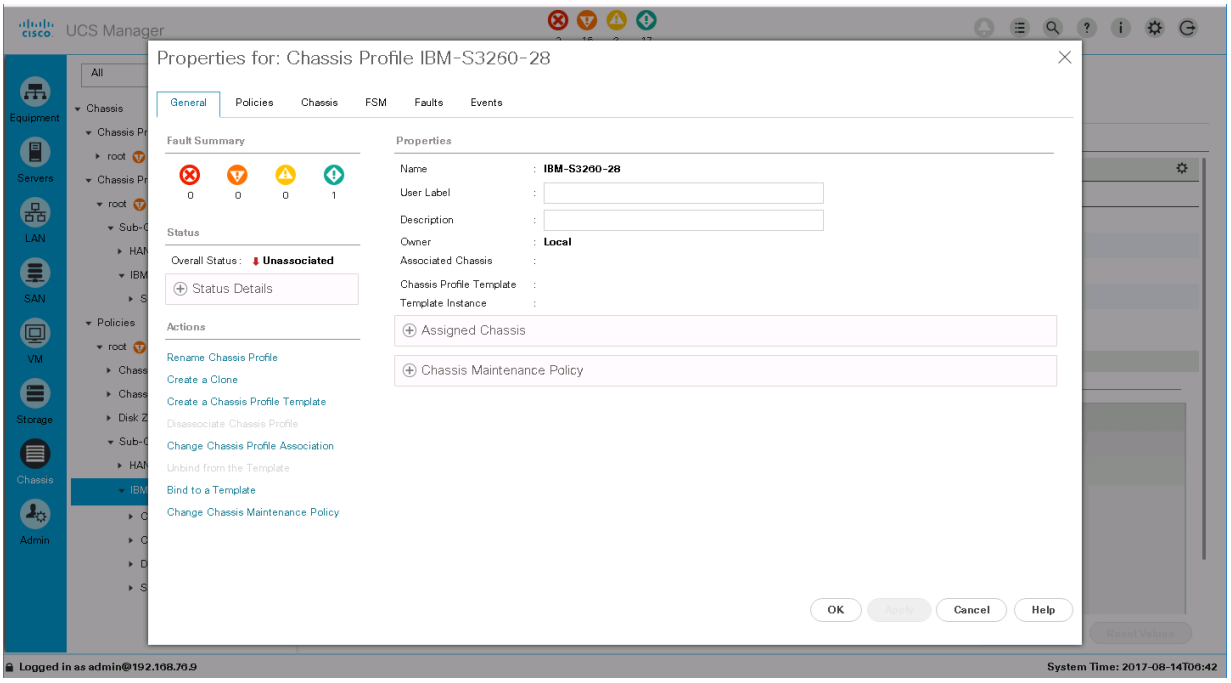
Verify that all information is correct and click Finish.





Now assign a chassis profile.

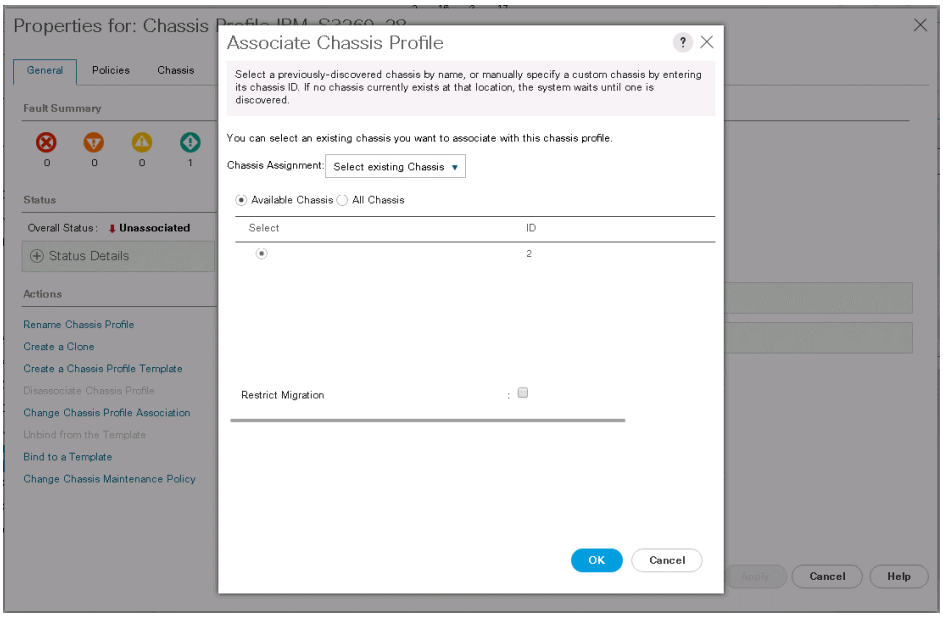
To assign one of the chassis profiles to a S3260 chassis, double-click the chassis profile you want to assign. Then click Change Chassis Profile Association.



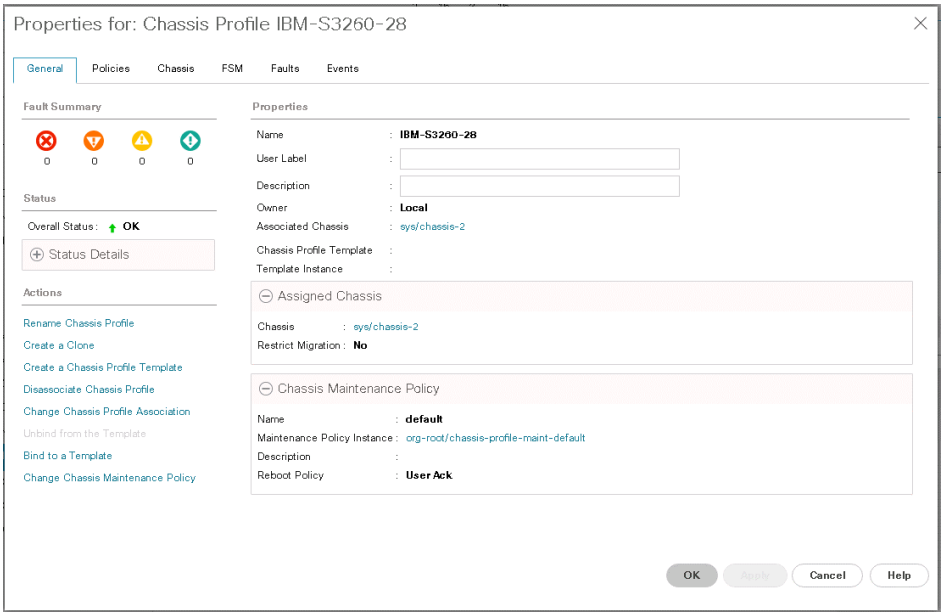
In the Chassis Assignment drop-down menu, choose “Select existing Chassis.”

Select the available chassis.

Click OK.

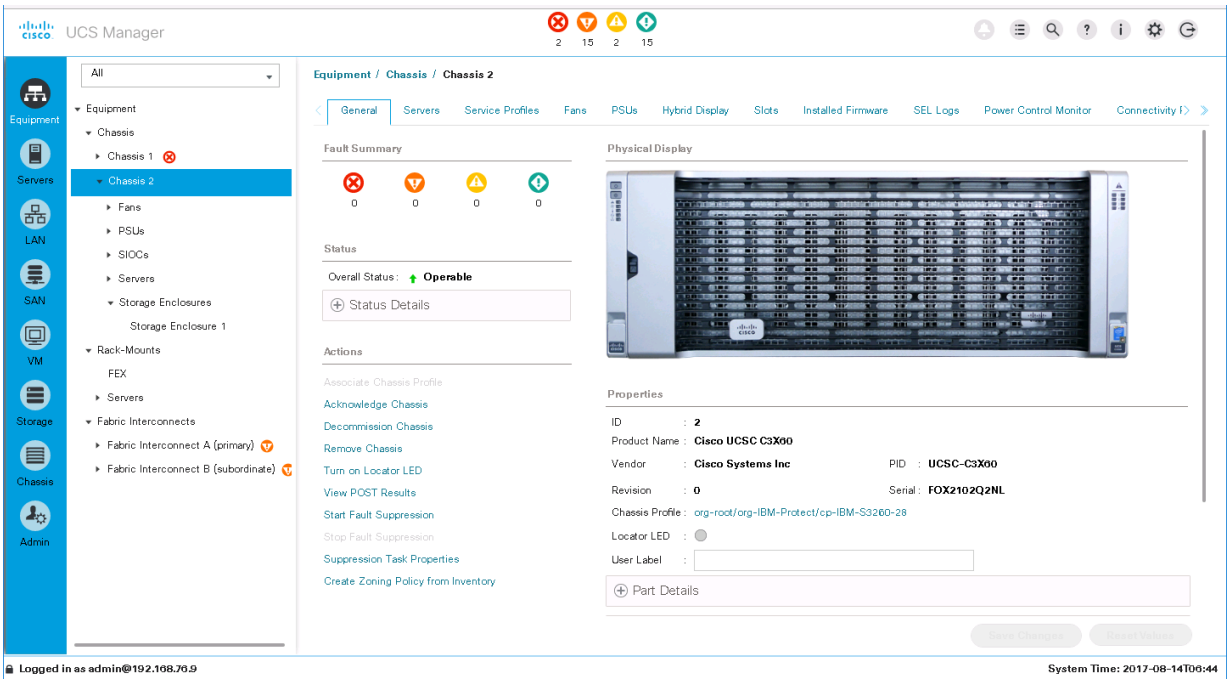


Click OK again.

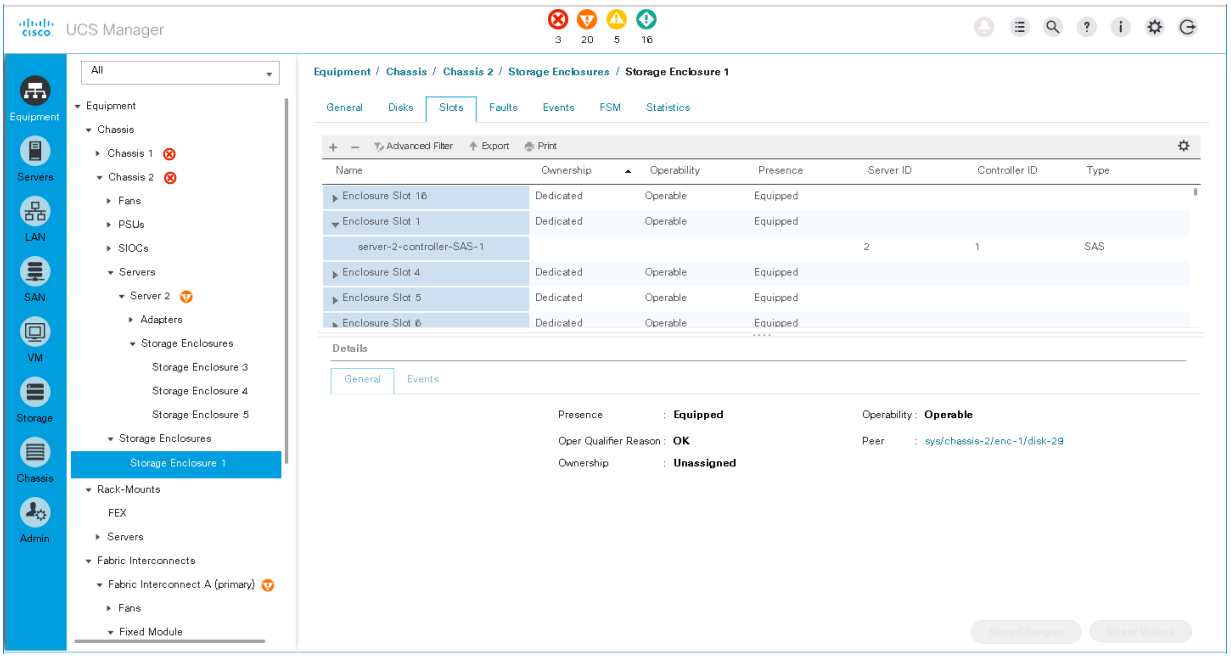


Under Equipment > Chassis > Chassis *X* on the General tab (where *X* is the chassis number), the chassis profile is now listed.

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



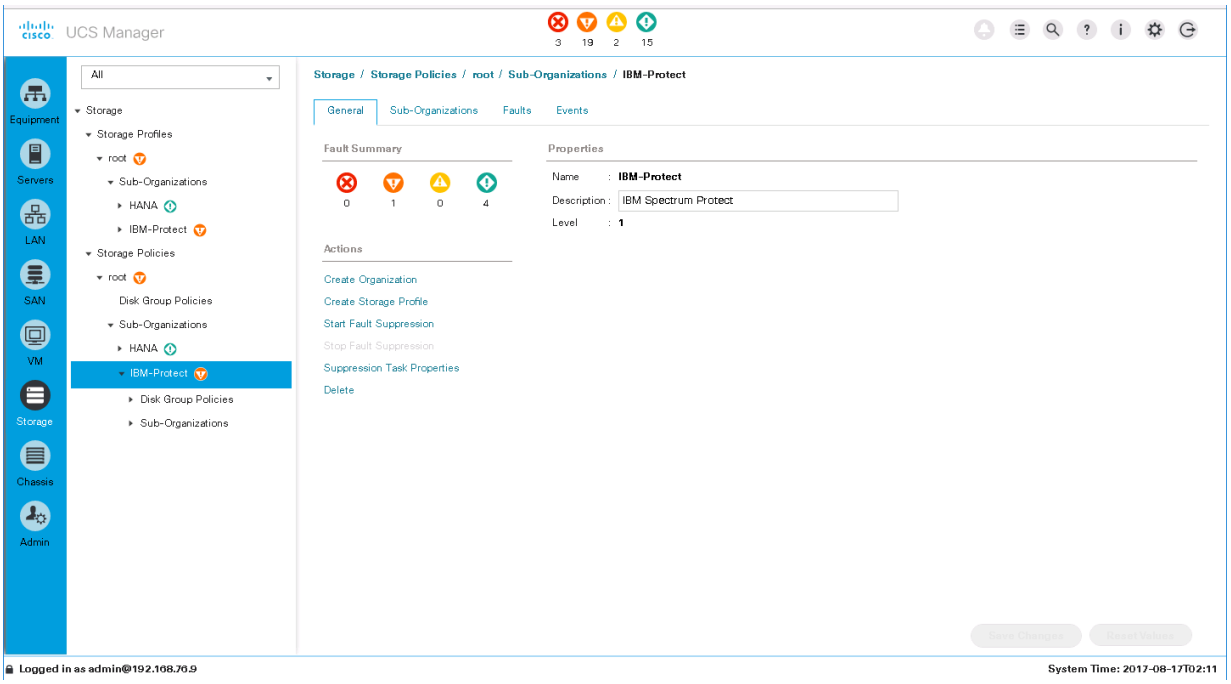
Under Storage Enclosure 1, on the Slots tab, the status is now shown as dedicated to server X.



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

This is the most important part of the Cisco UCS S3260 configuration for the IBM Spectrum Protect automated configuration.

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

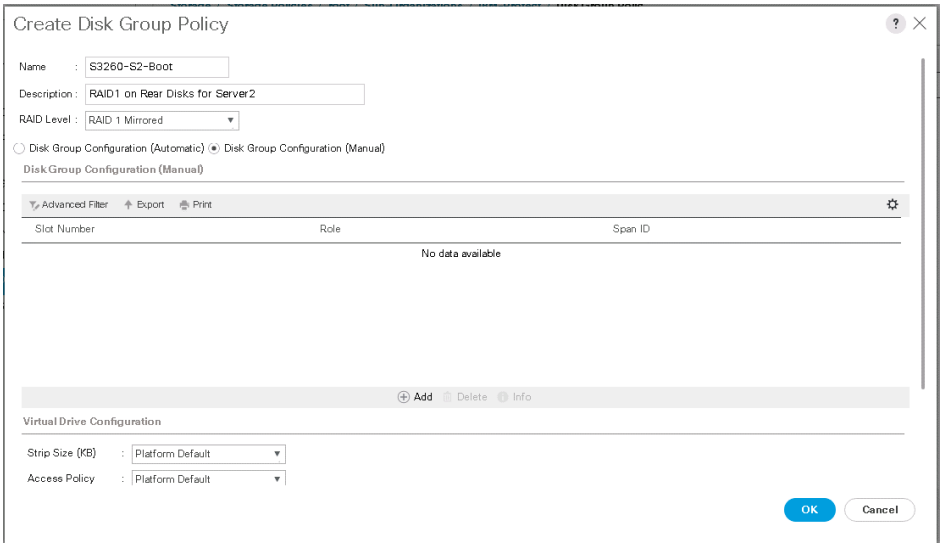


The first disk group policy is for the two disks in the back of the chassis.

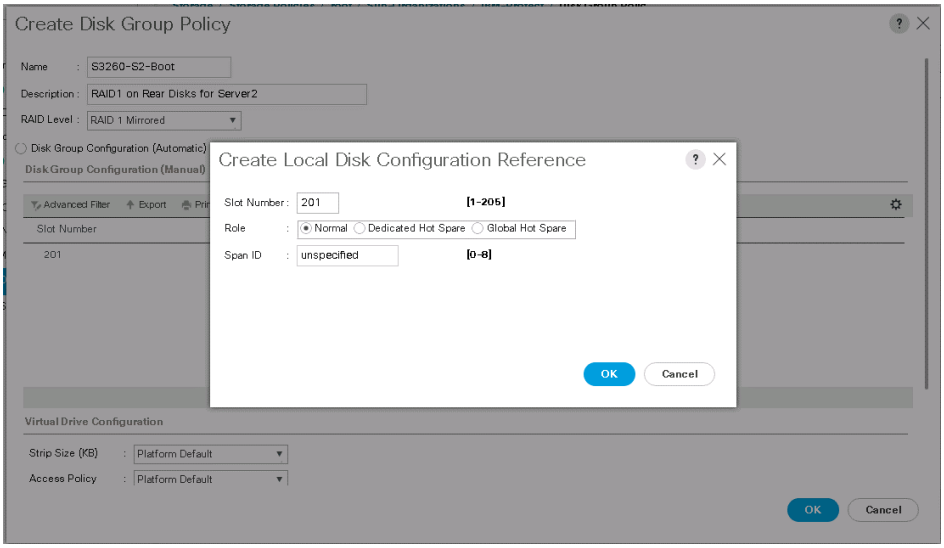
Enter an obvious name and a description.

For the RAID level, select RAID 1 Mirrored.

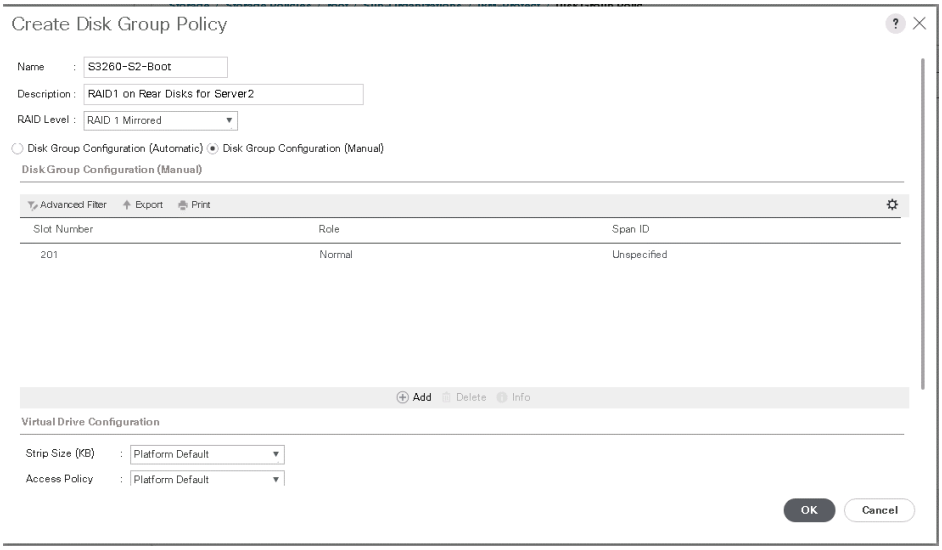
Select Disk Group Configuration (Manual) and click Add.



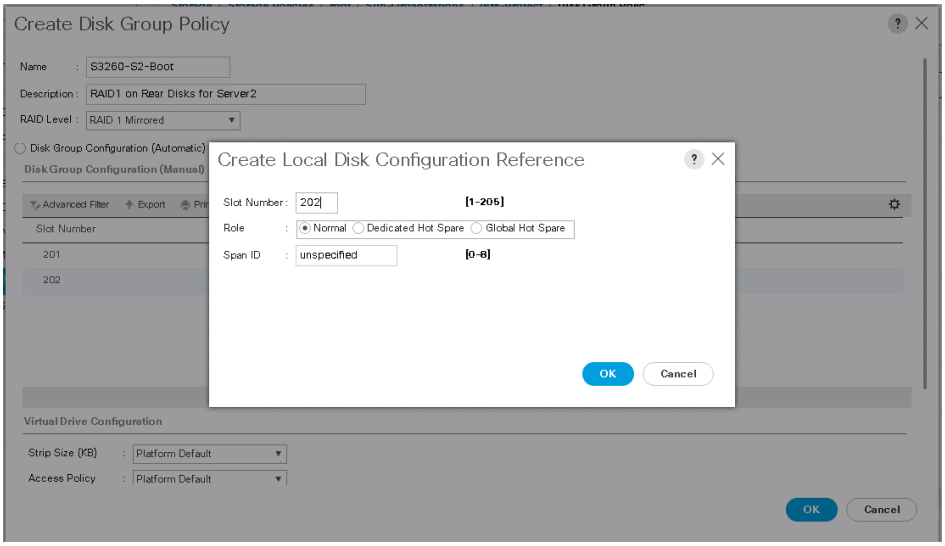
Enter a slot number in the range 201 through 205 available to the server (see the equipment information) and click OK.



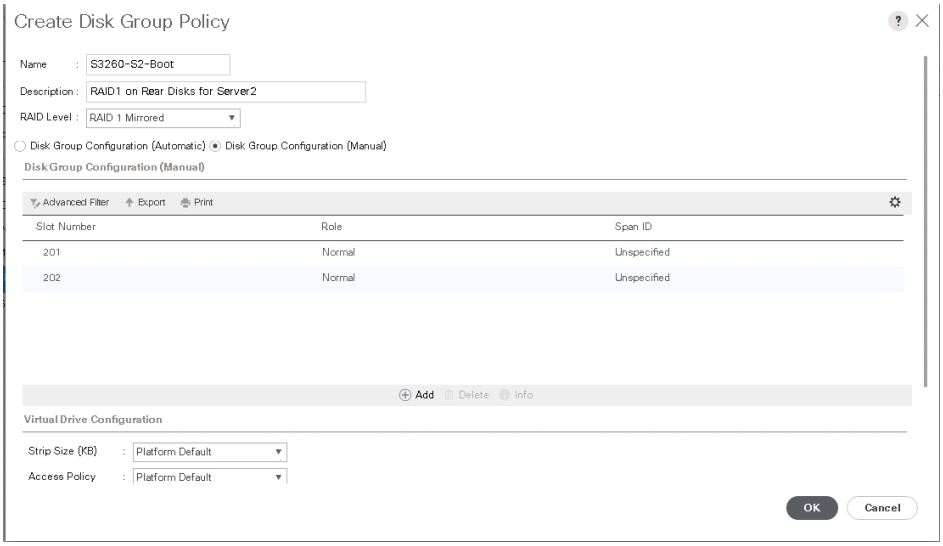
Click Add.



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



Click OK again.



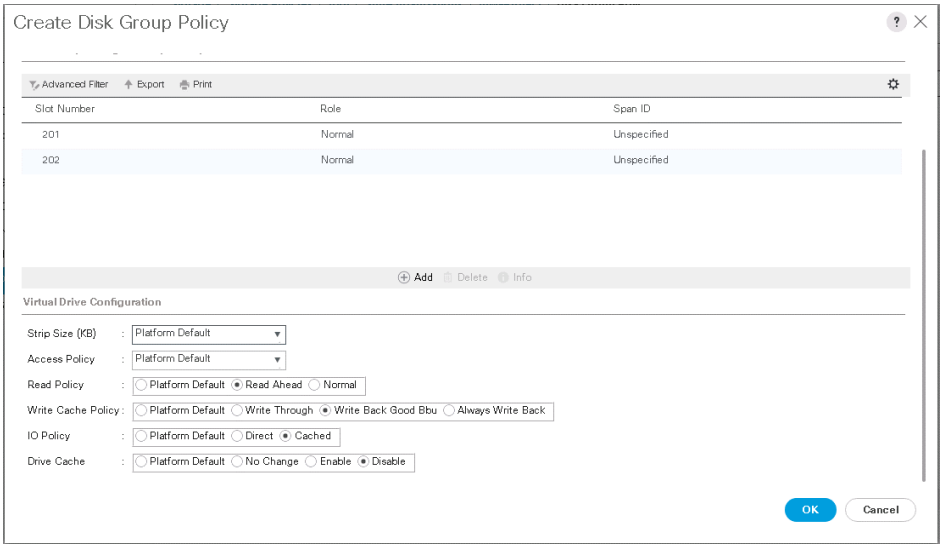
Select Read Ahead for Read Policy.

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.



There are many options for configuring disk groups on top-loaded drives for IBM Spectrum Protect. IBM Spectrum Protect is designed to work with from few to many disks or LUNs. In this document, we configure one disk group for every 14 disks and use RAID 6 with dual parity as the RAID level. With this configuration, two drives per disk group 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 first set of 14 disk drives.

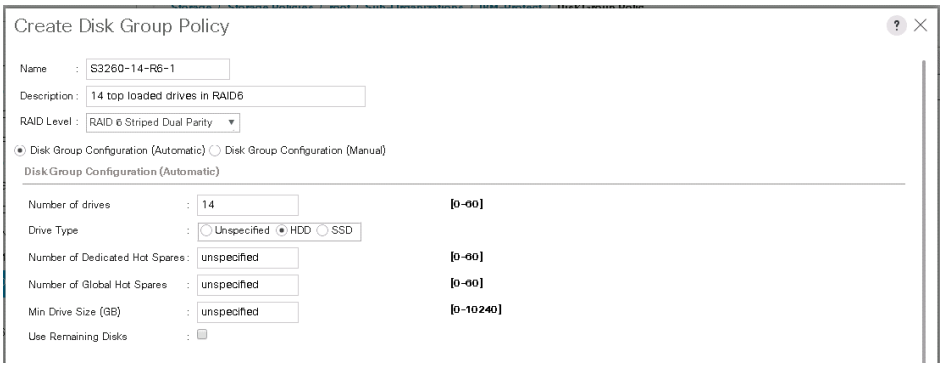
Enter an obvious name and a description.

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.



Select 512 KB for the stripe size.

Select Read Ahead for Read Policy.

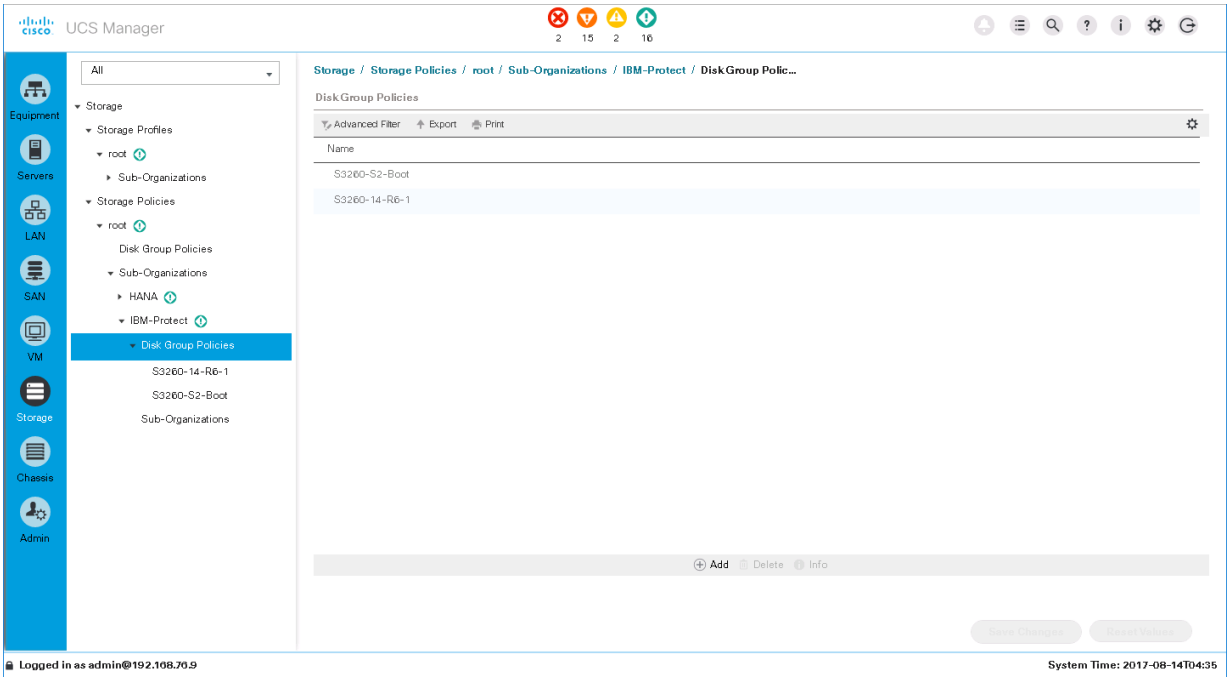
Select Write Back Good BBU for Write Cache Policy.

Select Cached for IO Policy.

Select Disable for Drive Cache.

Click OK.

Click Add for the second set of 14 disk drives.



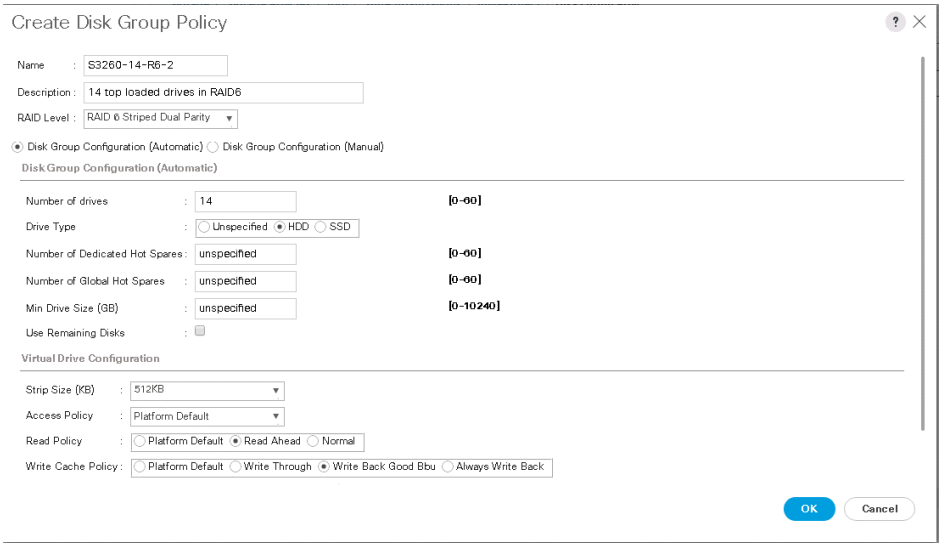
Enter an obvious name and a description.

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

Select Disk Group Configuration (Automatic).

Enter **14** as the number of drives.

Select HDD as the drive type and scroll down.



Select 512 KB for the stripe size.

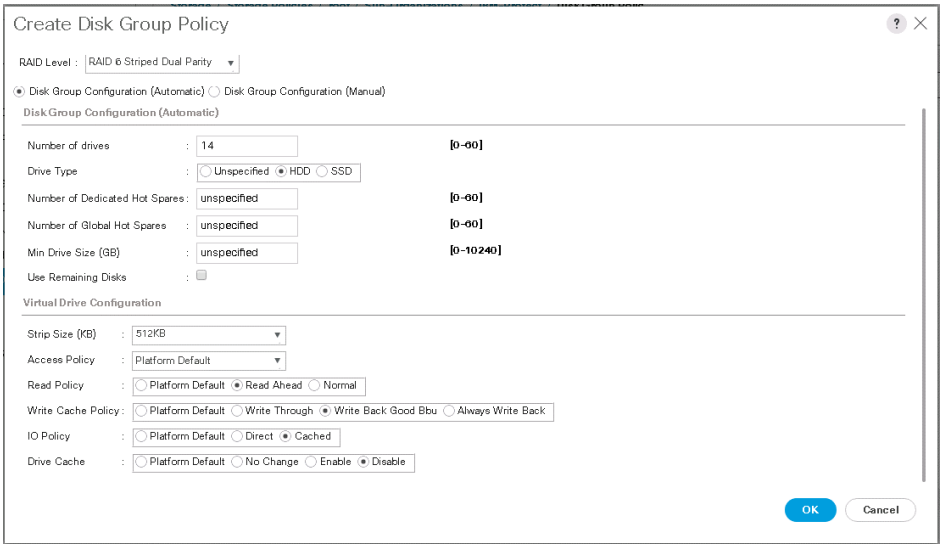
Select Read Ahead for Read Policy.

Select Write Back Good BBU for Write Cache Policy.

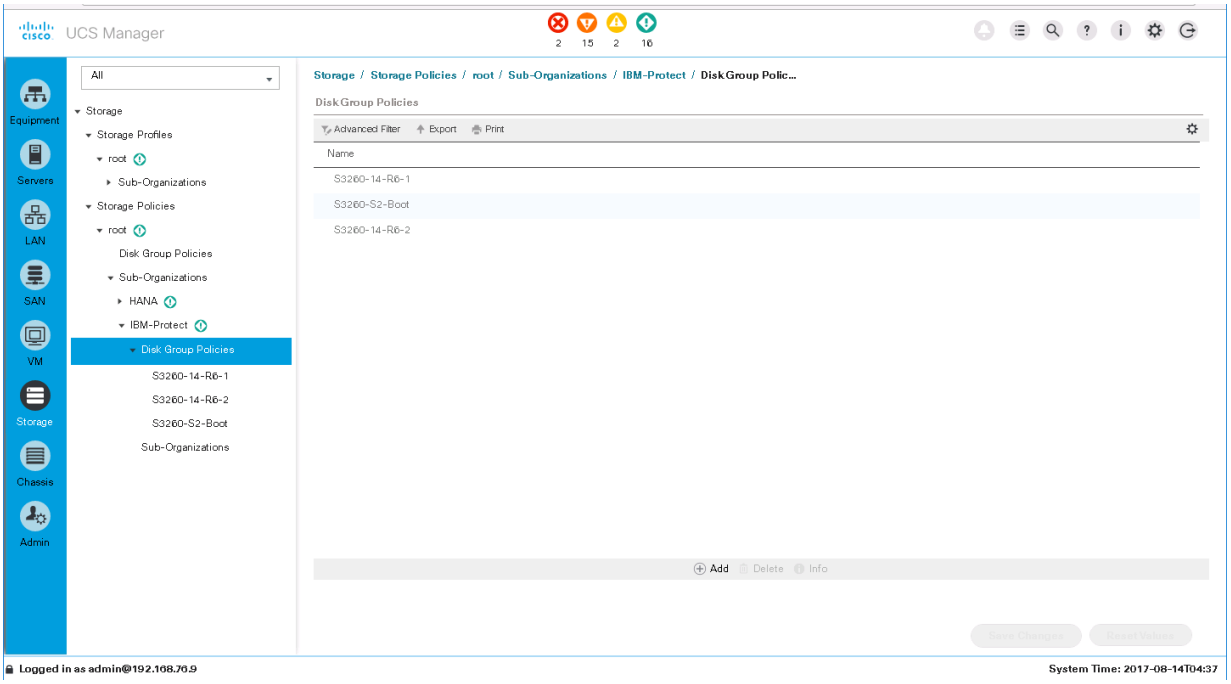
Select Cached for IO Policy.

Select Disable for Drive Cache.

Click OK.



Click Add for the third set of 14 disk drives.



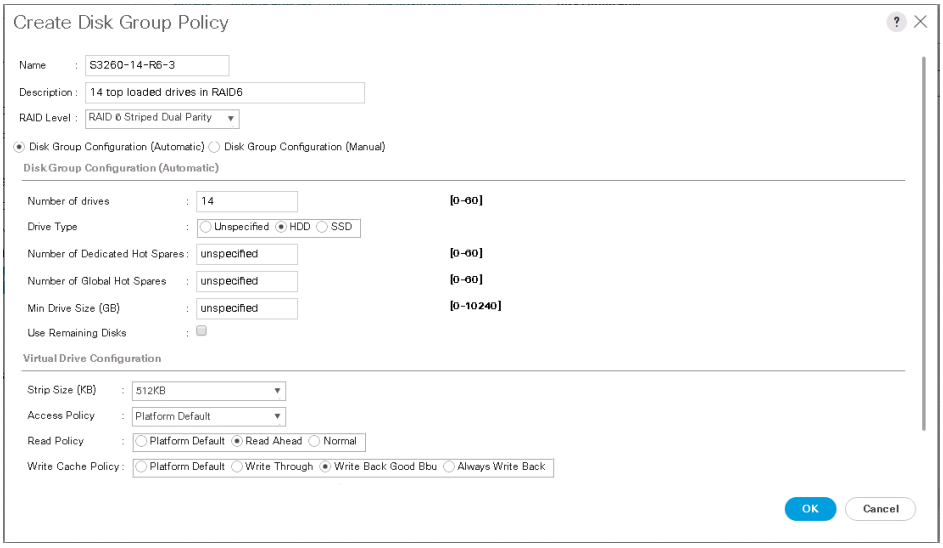
Enter an obvious name and a description.

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

Select Disk Group Configuration (Automatic).

Enter **14** as the number of drives.

Select HDD as the drive type and scroll down.



Select 512 KB as the stripe size.

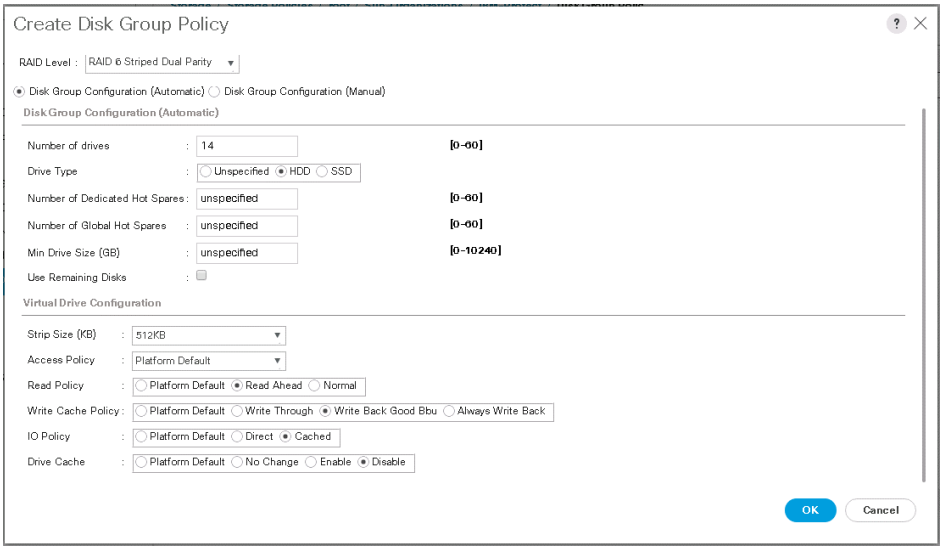
Select Read Ahead for Read Policy.

Select Write Back Good BBU for Write Cache Policy.

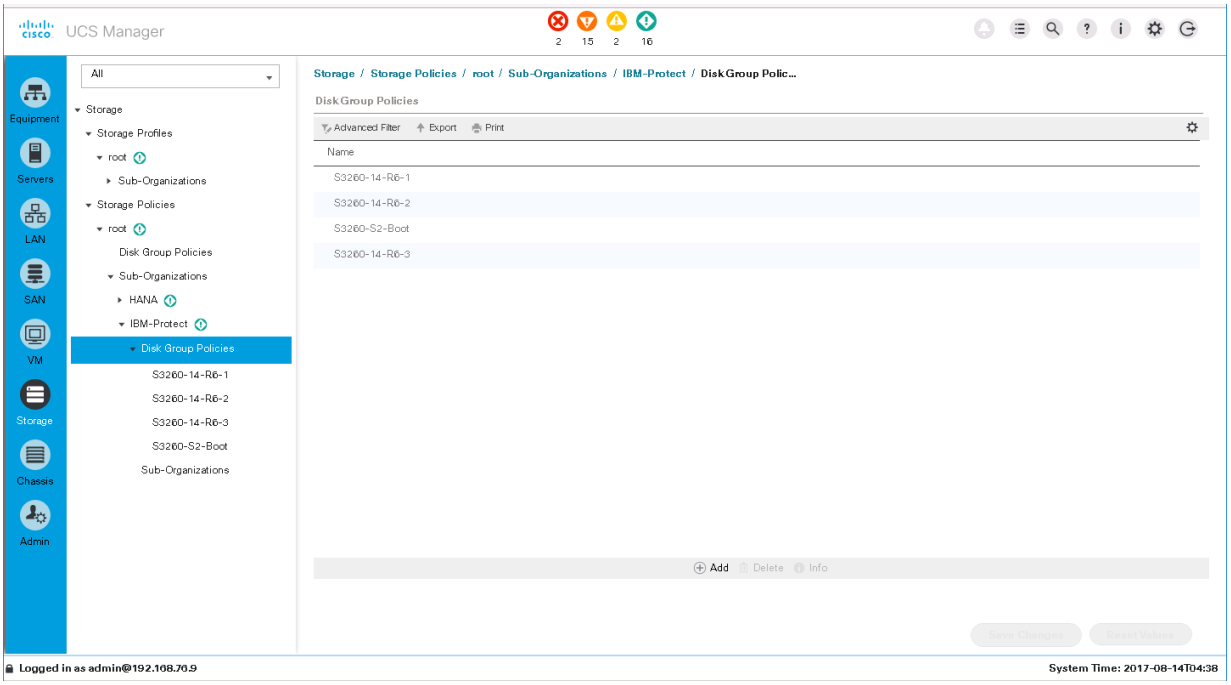
Select Cached for IO Policy.

Select Disable for Drive Cache.

Click OK.



Click Add for the fourth set of 14 disk drives.



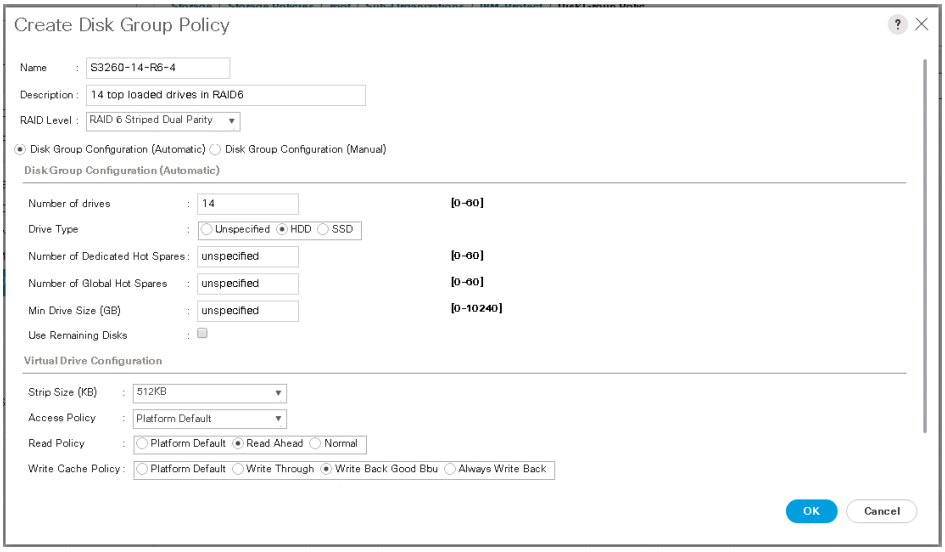
Enter an obvious name and a description.

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

Select Disk Group Configuration (Automatic).

Enter **14** as the number of drives.

Select HDD as the drive type and scroll down.



Select 512 KB as the stripe size.

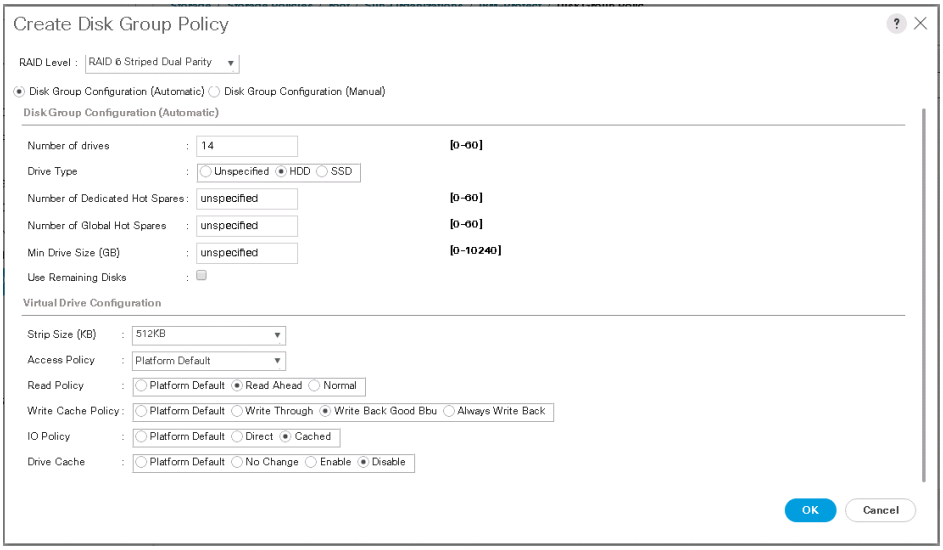
Select Read Ahead for Read Policy.

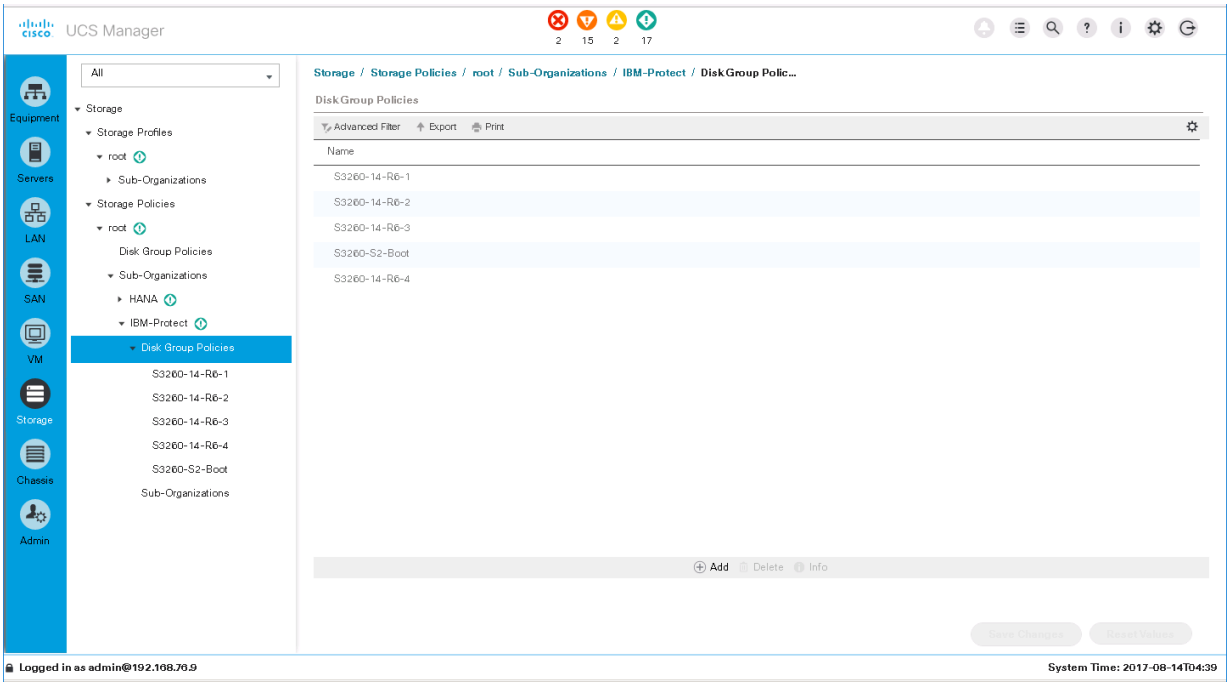
Select Write Back Good BBU for Write Cache Policy.

Select Cached for IO Policy.

Select Disable for Drive Cache.

Click OK.





The LUNs are created for the disk groups. Tables 8 through 12 summarize the required LUNs and the sizes for every disk group created.

Table 8. Disk group S3260-S2-Boot with disk 201 and 202 (SSDs in the back of the chassis)

Disk group	Size	Name
S3260-S2-Boot	200	ActiveLog
S3260-S2-Boot	Fill to max	Boot

Table 9. Disk group S3260-14-R6-1 with top-loaded disks 1 through 14

Disk group	Size	Name
S3260-14-R6-1	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data1
S3260-14-R6-1	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data2
S3260-14-R6-1	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data3
S3260-14-R6-1	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data4
S3260-14-R6-1	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data5
S3260-14-R6-1	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data6
S3260-14-R6-1	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data7
S3260-14-R6-1	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data8
S3260-14-R6-1	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data9
S3260-14-R6-1	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data10
S3260-14-R6-1	3 TB	ArchLog1
S3260-14-R6-1	1 TB	DB-Backup1
S3260-14-R6-1	1 TB	DB-Backup2
S3260-14-R6-1	1 TB	DB-Backup3
S3260-14-R6-1	1 TB	DB-Backup4

Table 10. Disk group S3260-14-R6-2 with disks 15 through 28

Disk group	Size	Name
S3260-14-R6-2	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data11
S3260-14-R6-2	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data12
S3260-14-R6-2	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data13
S3260-14-R6-2	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data14
S3260-14-R6-2	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data15
S3260-14-R6-2	• 10 TB if 10-TB drives are used	Data16

	• 6 TB if 6-TB drives are used	
S3260-14-R6-2	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data17
S3260-14-R6-2	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data18
S3260-14-R6-2	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data19
S3260-14-R6-2	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data20
S3260-14-R6-2	3 TB	ArchLog2
S3260-14-R6-2	1 TB	DB-Backup5
S3260-14-R6-2	1 TB	DB-Backup6
S3260-14-R6-2	1 TB	DB-Backup7
S3260-14-R6-2	1 TB	DB-Backup8

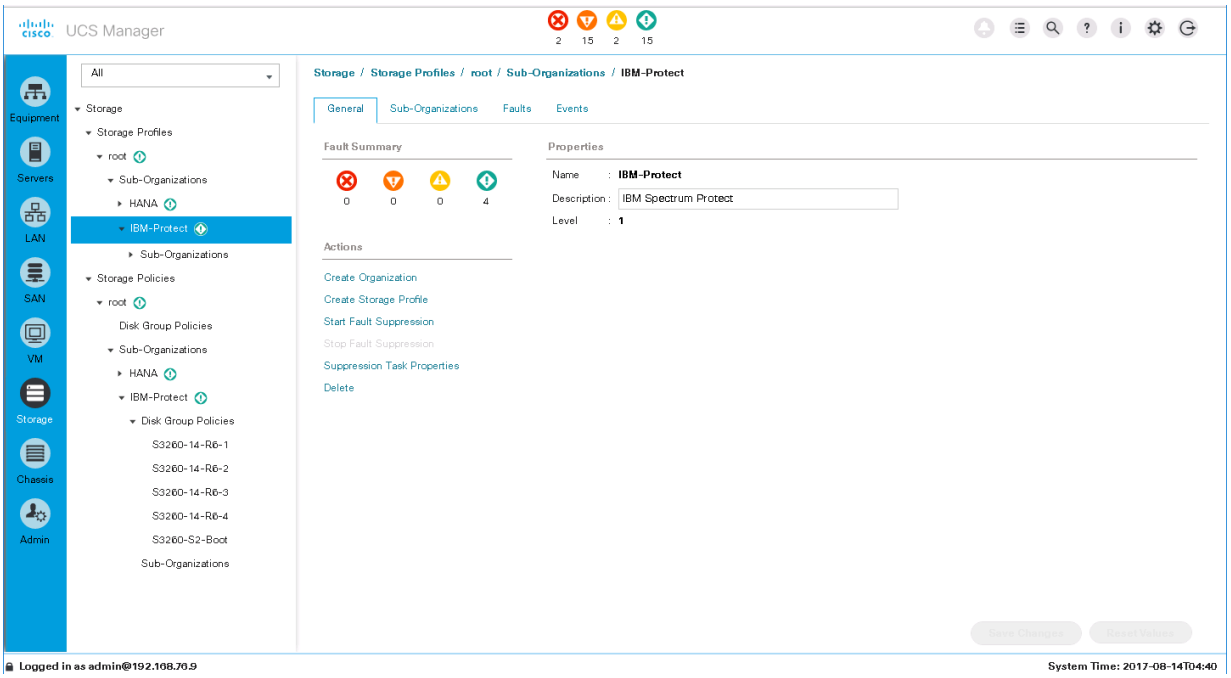
Table 11. Disk group S3260-14-R6-3 with disks 29 through 42

Disk group	Size	Name
S3260-14-R6-3	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data21
S3260-14-R6-3	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data22
S3260-14-R6-3	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data23
S3260-14-R6-3	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data24
S3260-14-R6-3	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data25
S3260-14-R6-3	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data26
S3260-14-R6-3	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data27
S3260-14-R6-3	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data28
S3260-14-R6-3	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data29
S3260-14-R6-3	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data30
S3260-14-R6-3	3 TB	ArchLog3
S3260-14-R6-3	1 TB	DB-Backup9
S3260-14-R6-3	1 TB	DB-Backup10
S3260-14-R6-3	1 TB	DB-Backup11
S3260-14-R6-3	1 TB	DB-Backup12

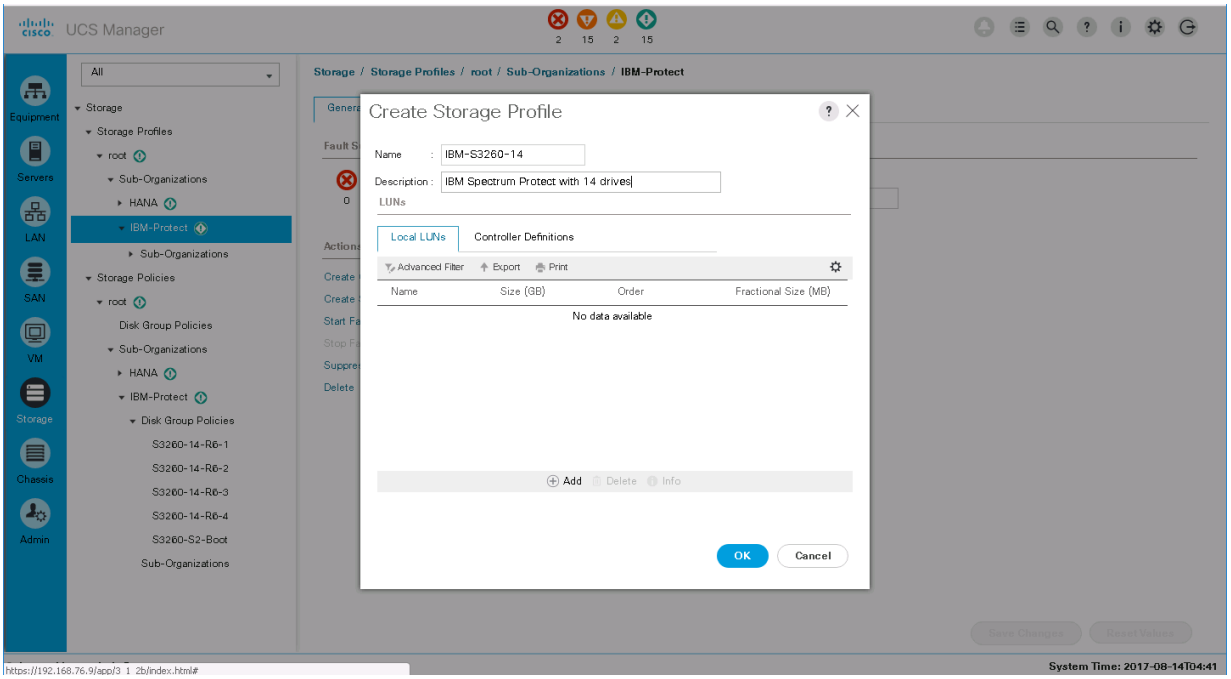
Table 12. Disk group S3260-14-R6-4 with disks 43 through 56

Disk group	Size	Name
S3260-14-R6-4	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data31
S3260-14-R6-4	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data32
S3260-14-R6-4	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data33
S3260-14-R6-4	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data34
S3260-14-R6-4	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data35
S3260-14-R6-4	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data36
S3260-14-R6-4	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data37
S3260-14-R6-4	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data38
S3260-14-R6-4	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data39
S3260-14-R6-4	• 10 TB if 10-TB drives are used • 6 TB if 6-TB drives are used	Data40
S3260-14-R6-4	3 TB	ArchLog4

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



Enter an obvious name and a description and click Add.

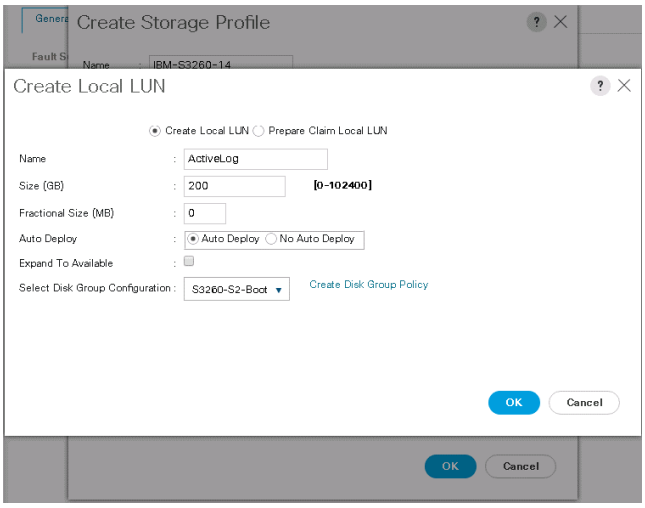


Enter ActiveLog as the name.

Enter 200 as the size in GB.

Select S3260-S2-Boot as the disk group configuration.

Click OK.



Click Add.

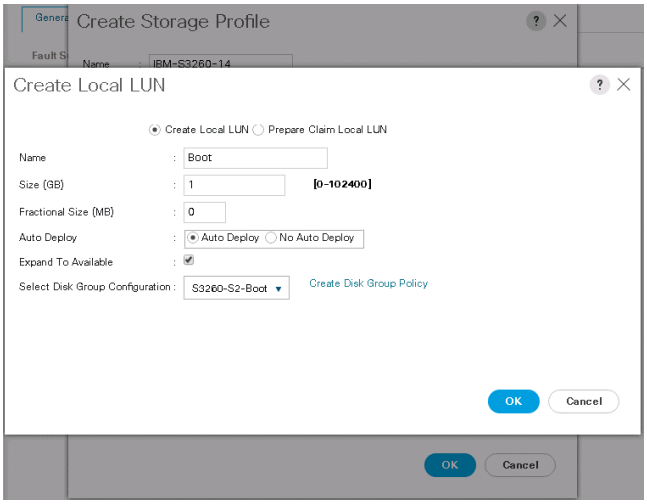
Enter **Boot** as the name.

Enter **1** as the size in GB.

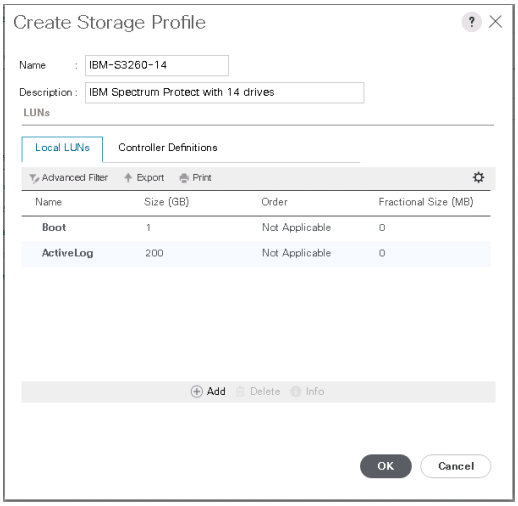
Select the Expand to Available checkbox.

Select S3260-S2-Boot as the disk group.

Click OK.



Click Add to continue creating LUNs on S3260-14-R6-1.

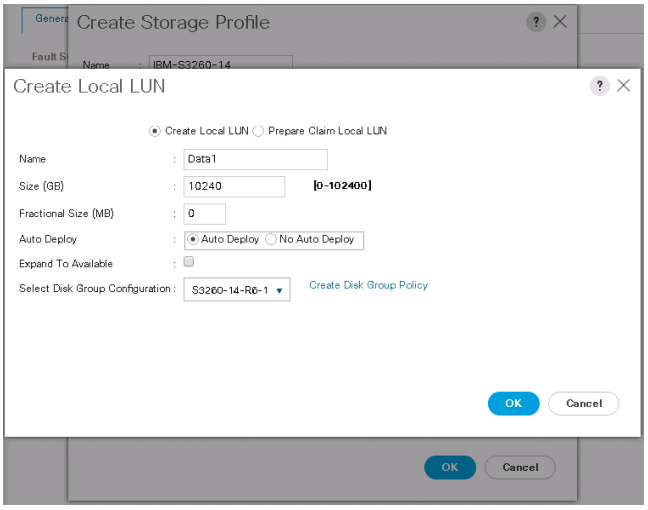


Enter **Data1** as the name.

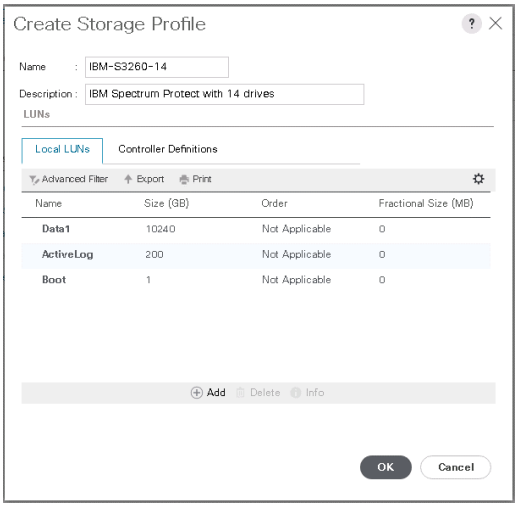
Enter **10240** as the size in GB (equal to 10 TB).

Select S3260-14-R6-1 as the disk group.

Click OK.



Click Add.

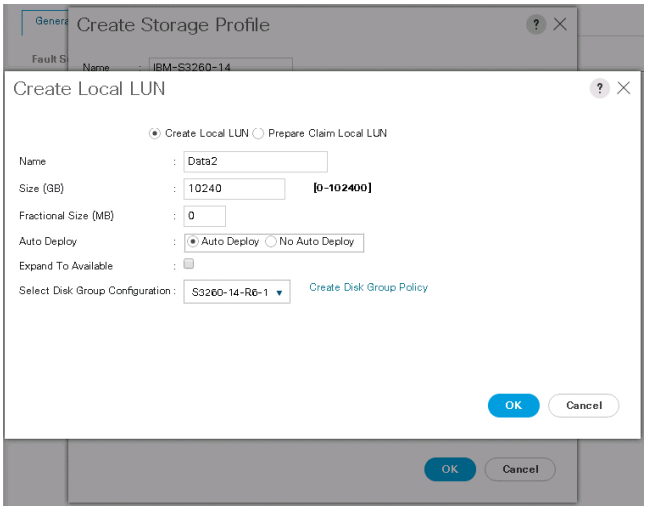


Enter **Data2** as the name.

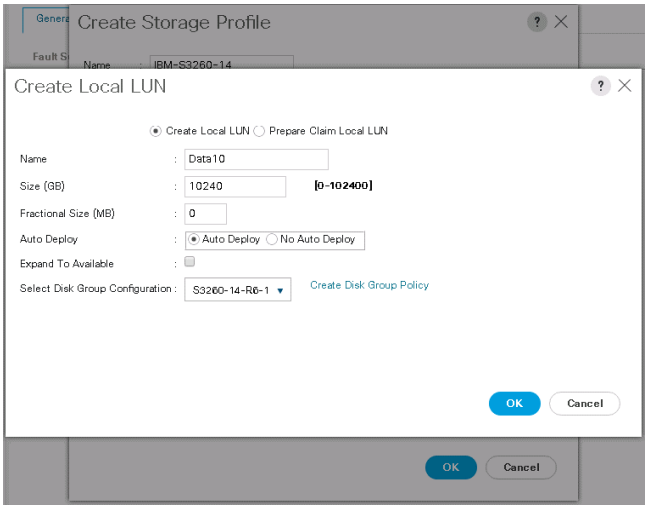
Enter **10240** as the size in GB.

Select S3260-14-R6-1 as the disk group.

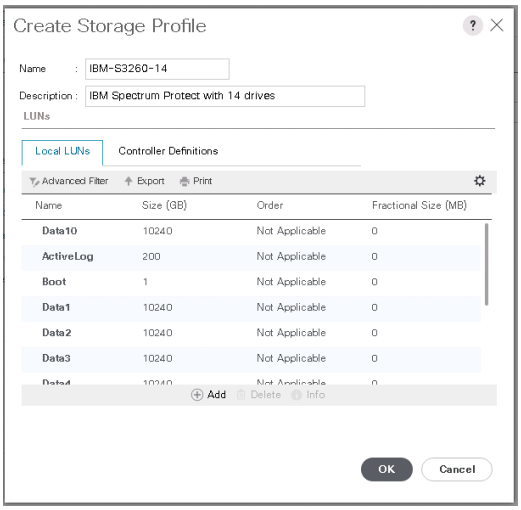
Click OK.



Repeat the preceding steps for Data3 through Data10 using the same size and disk group.



Click Add.

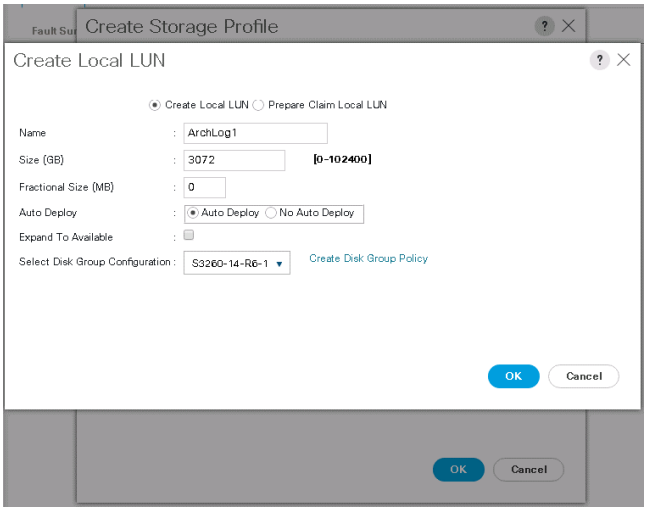


Enter **ArchLog1** as the name.

Enter **3072** as the size in GB.

Select S3260-14-R6-1 as the disk group.

Click OK.

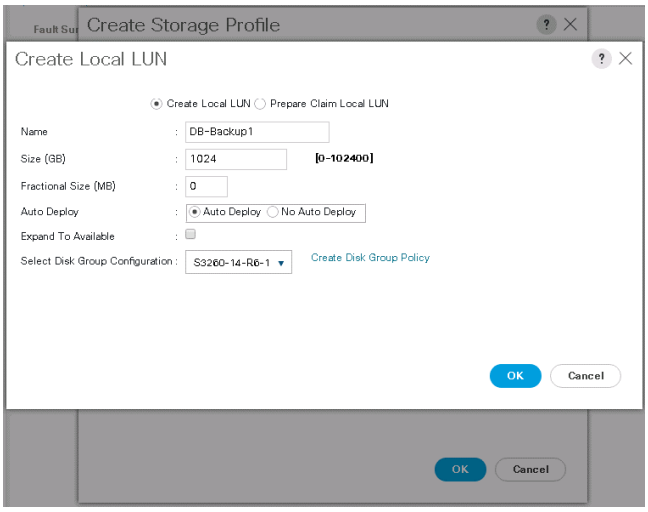


Click Add.

Enter **DB-Backup1** as the name.

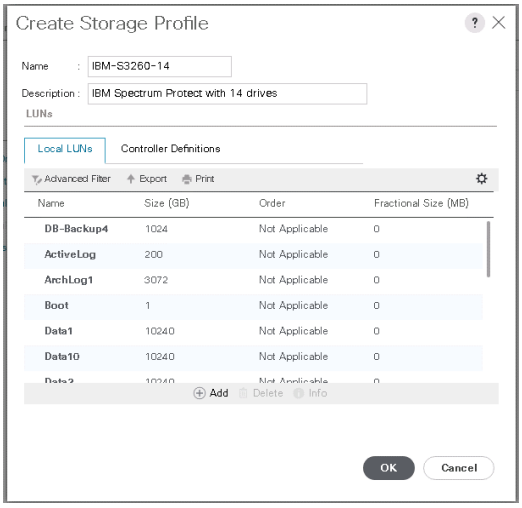
Enter **1024** as the size in GB.

Select S3260-14-R6-1 as the disk group.

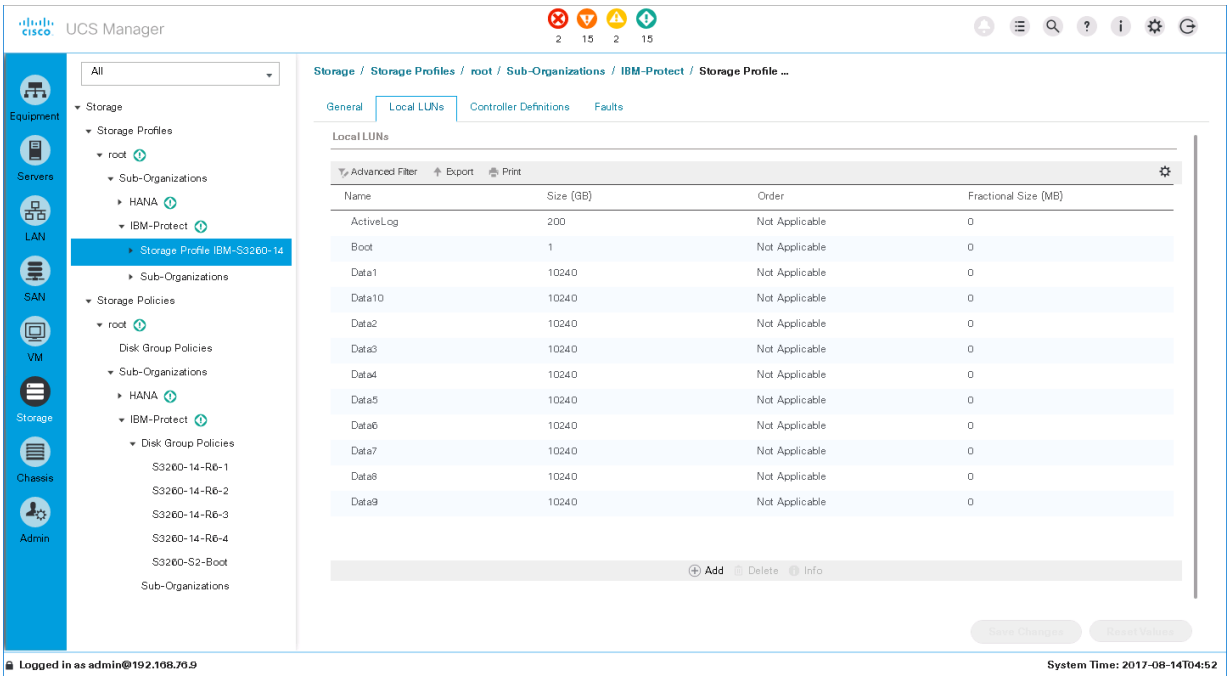


Repeat the preceding steps for DB-Backup2 through DB-Backup4 using the same size and disk group.

After all LUNs listed for S3260-S2-Boot and S3260-14-R6-1 have been created click, OK.



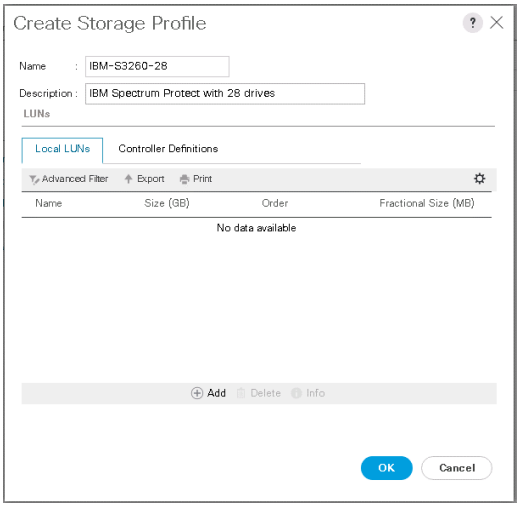
Click OK.



For a configuration with 28 disk drives, use the set of steps that follow.

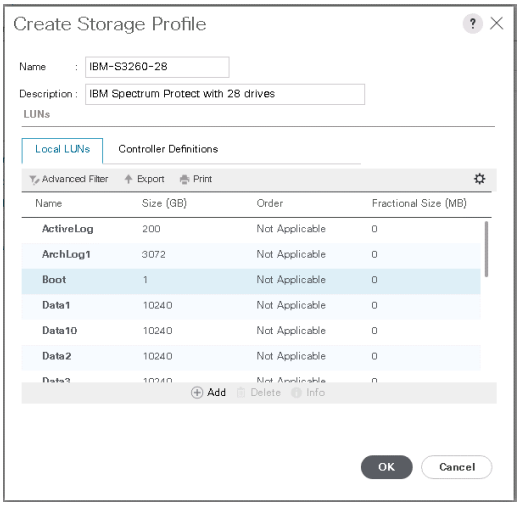
Click Create Storage Profile.

Enter an obvious name and click Add.



First create all LUNs on S3260-Boot and S3260-14-R6-1 as documented earlier for 14 disk drives. Then create the LUNs on S3260-14-R6-2.

Click Add.

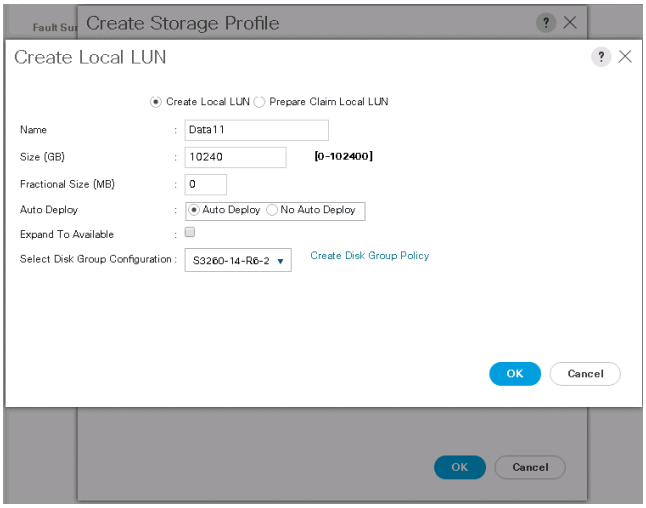


Enter **Data11** as the name.

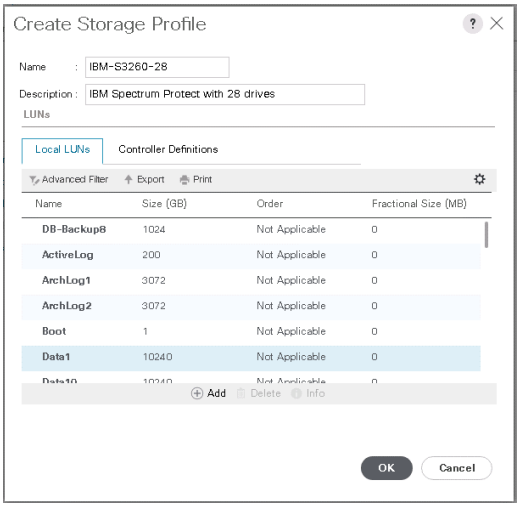
Enter **10240** as the size in GB.

Select S3260-14-R6-2 as the disk group.

Click OK.



Repeat the preceding steps for all the LUNs listed in Table 10 for disk group S3260-14-R6-2, Data12 through Data20, ArchLog2, and DB-Backup5 through DB-Backup8.

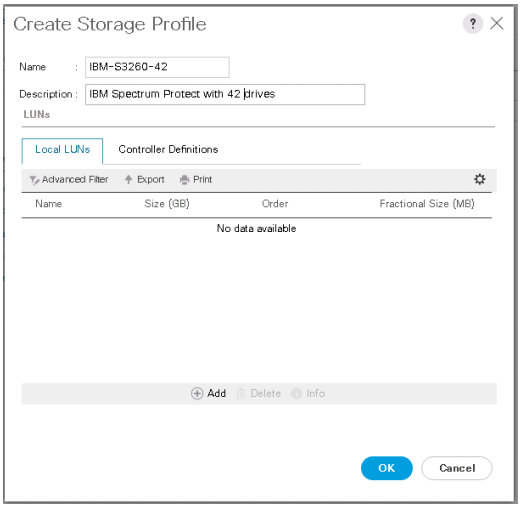


Click OK.

For a configuration with 42 disk drives, use the set of steps that follow.

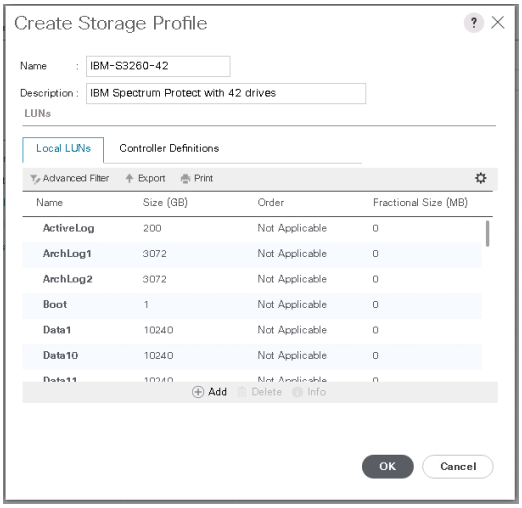
Click Create Storage Profile.

Enter an obvious name and click Add.



First create all the LUNs on S3260-Boot, S3260-14-R6-1, and S3260-14-R6-2 as documented earlier for 14 disk drives and 28 disk drives. Then create the LUNs on S3260-14-R6-3.

Click Add.

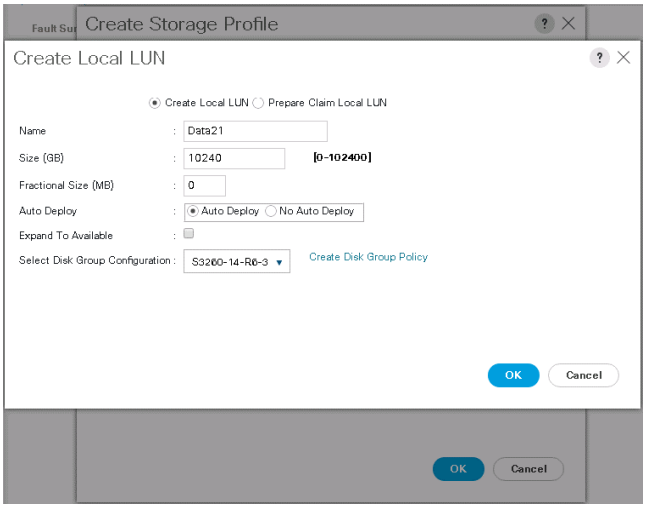


Enter **Data21** as the name.

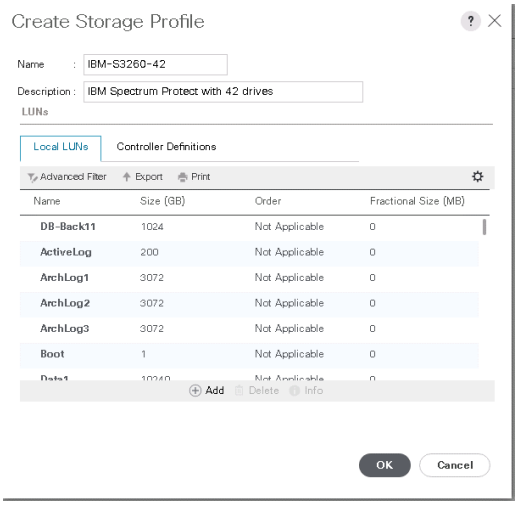
Enter **10240** as the size in GB.

Select S3260-14-R6-3 as the disk group.

Click OK.



Repeat the preceding steps for all LUNs listed in Table 11 for disk group S3260-14-R6-3, Data22 through Data30, ArchLog3, and DB-Backup9 through DB-Back12.

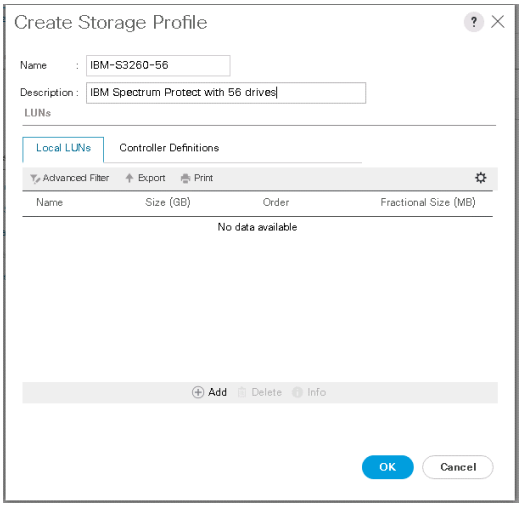


Click OK.

For a configuration with 56 disk drives, use the set of steps that follow.

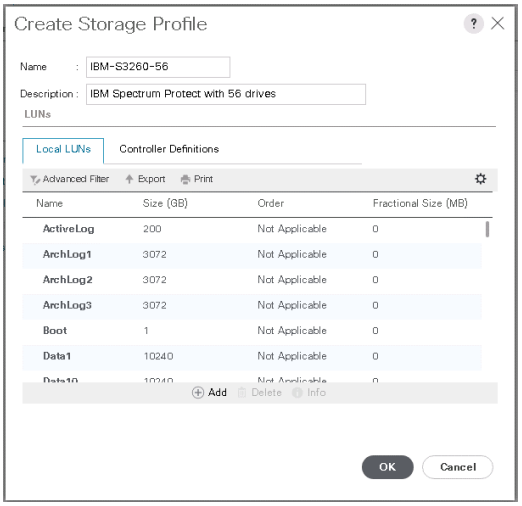
Click Create Storage Profile.

Enter an obvious name and click Add.



First create all the LUNs on S3260-Boot, S3260-14-R6-1, S3260-14-R6-2, and S3260-14-R6-3 as documented for 14, 28, and 42 disk drives. Then create the LUNs on S3260-14-R6-4.

Click Add.

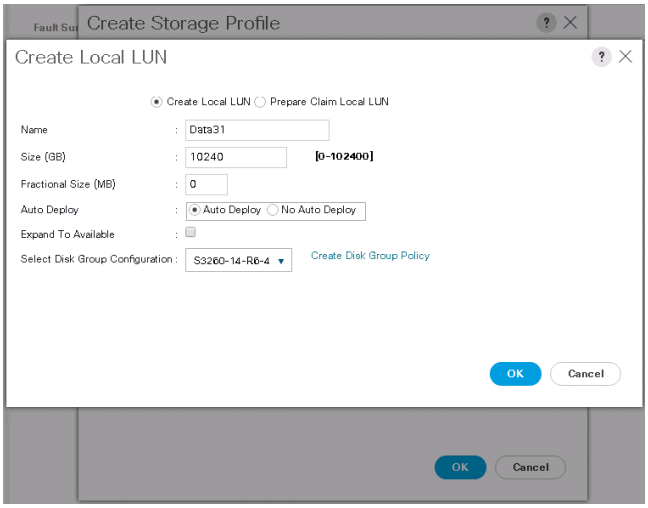


Enter **Data31** as the name.

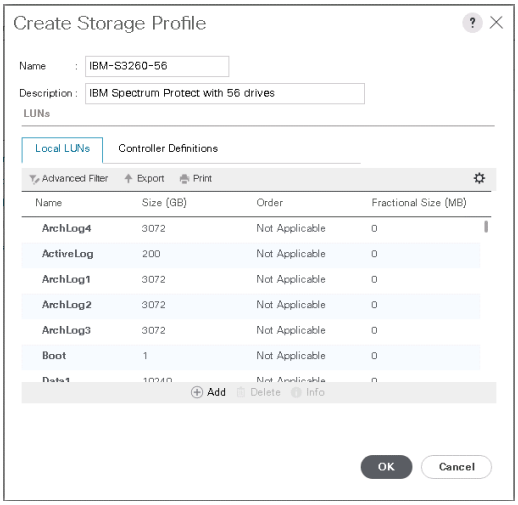
Enter **10240** as the size in GB.

Select S3260-14-R6-3 as the disk group.

Click OK.

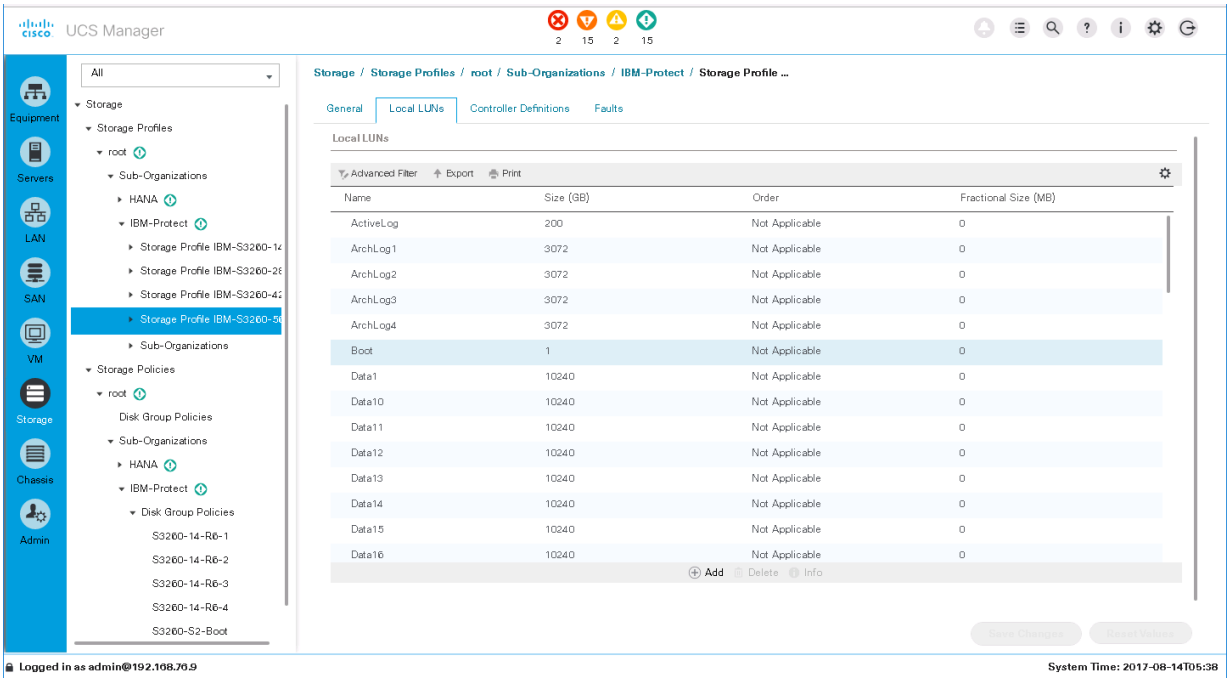


Repeat the preceding steps for all the LUNs listed in Table 12 for disk group S3260-14-R6-4, Data32 through Data40 and ArchLog4.



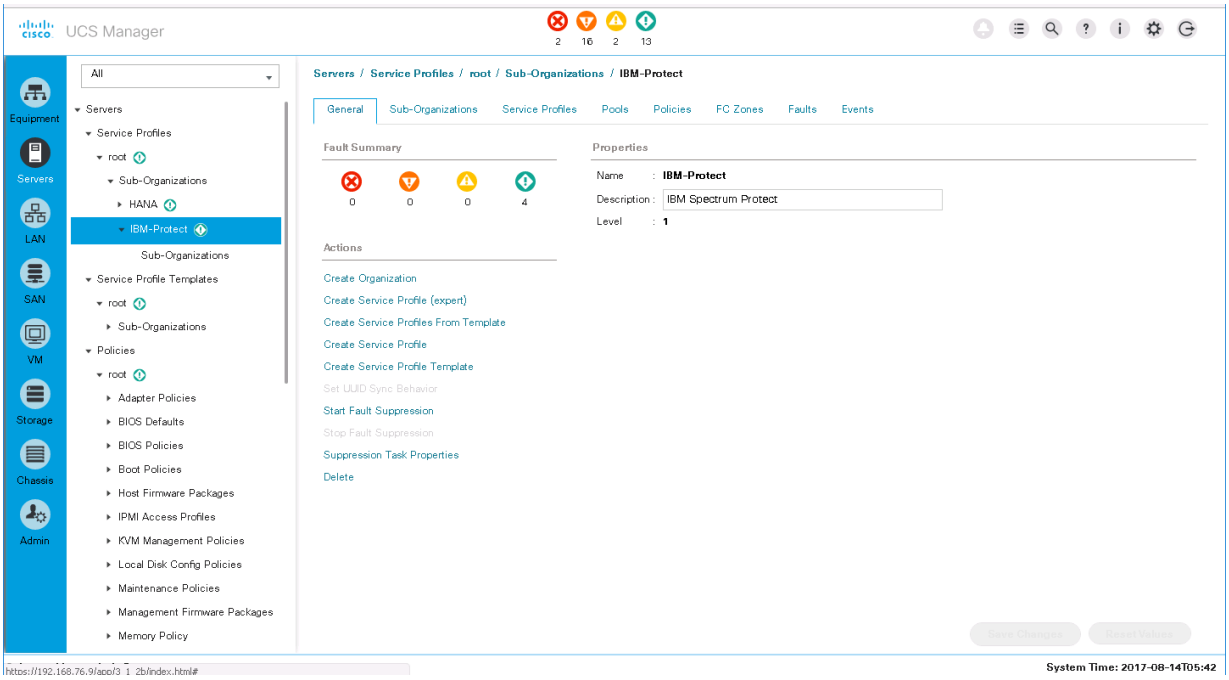
Click OK.

Verify that all the LUNs are configured as documented in Tables 8 through 12. Different sizes or numbers of LUNs are possible, but such variations require changes in the IBM Spectrum Protect installation procedure.



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

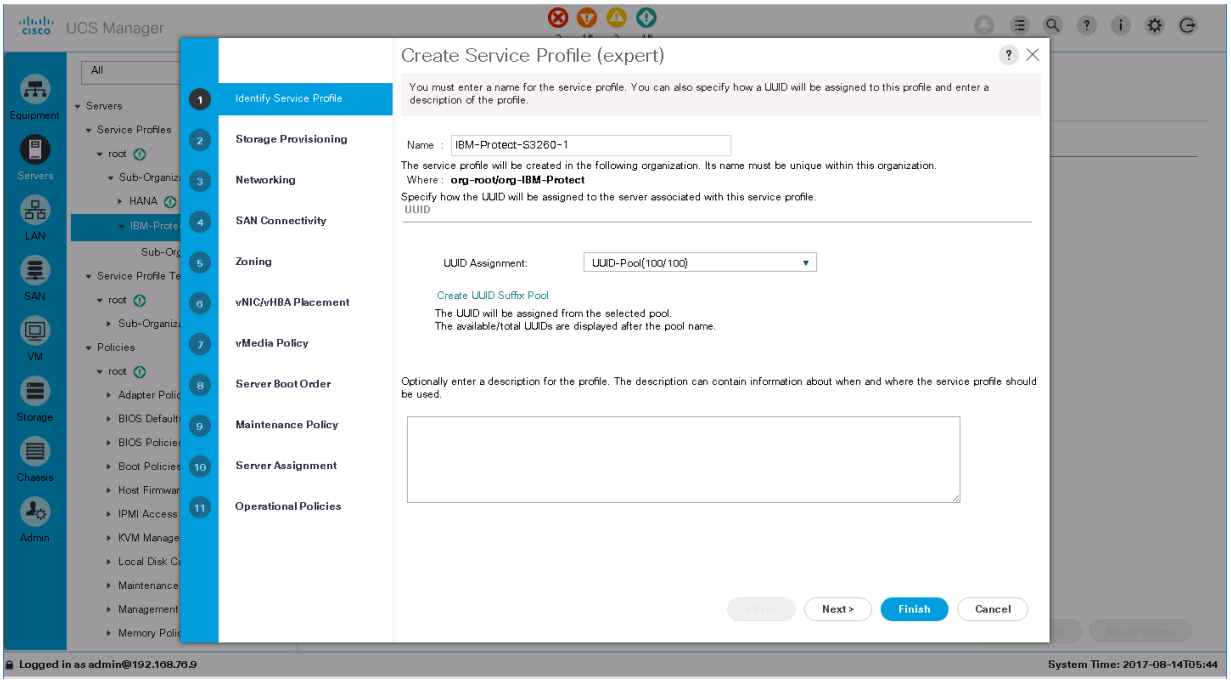
Go to Servers > root > Sub-Organizations > IBM-Protect and click Create Service Profile (expert).



Enter an obvious name.

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

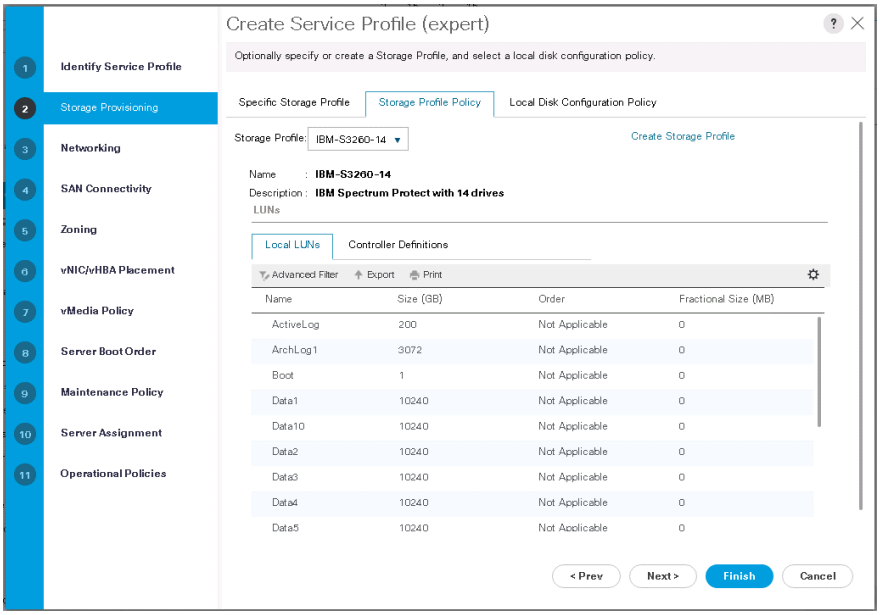
Click Next.



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

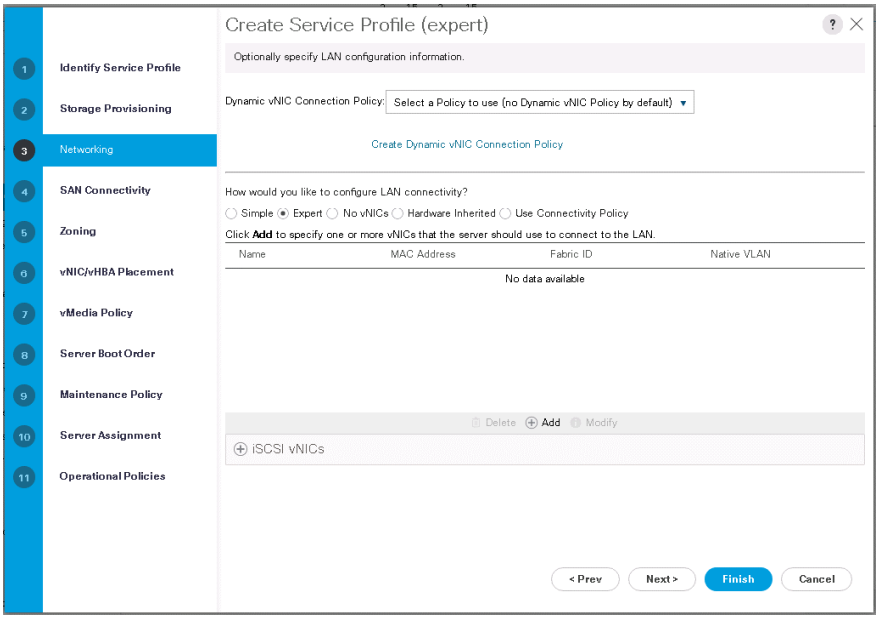
Select the storage profile that you want (in the example here, IBM-S3260-14 is used).

Click Next.



In the Networking section, select the Expert button.

Click Add.

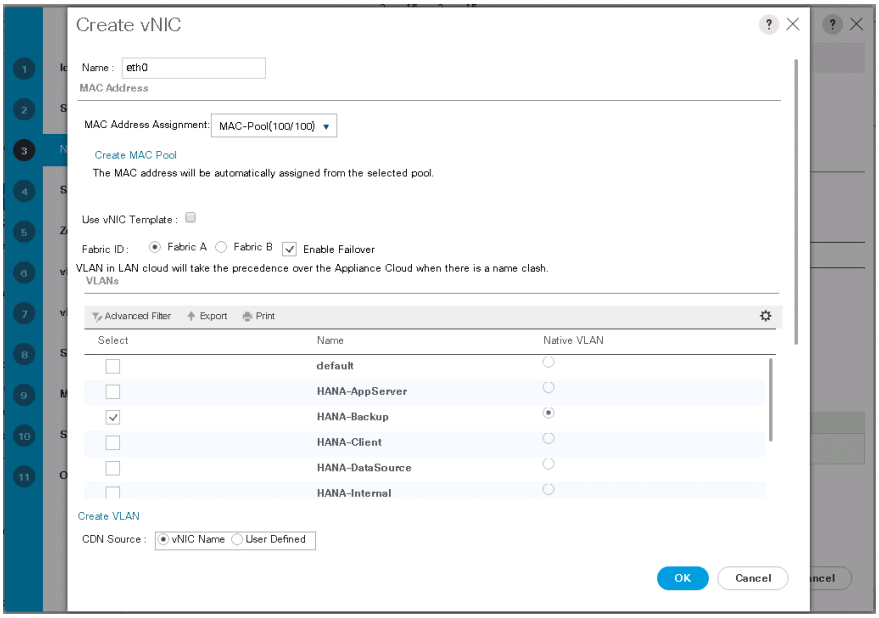


Enter **eth0** as the name.

Select a MAC address pool with free addresses.

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

Select your backup network (the example here uses HANA-Backup) and select the Native VLAN button.

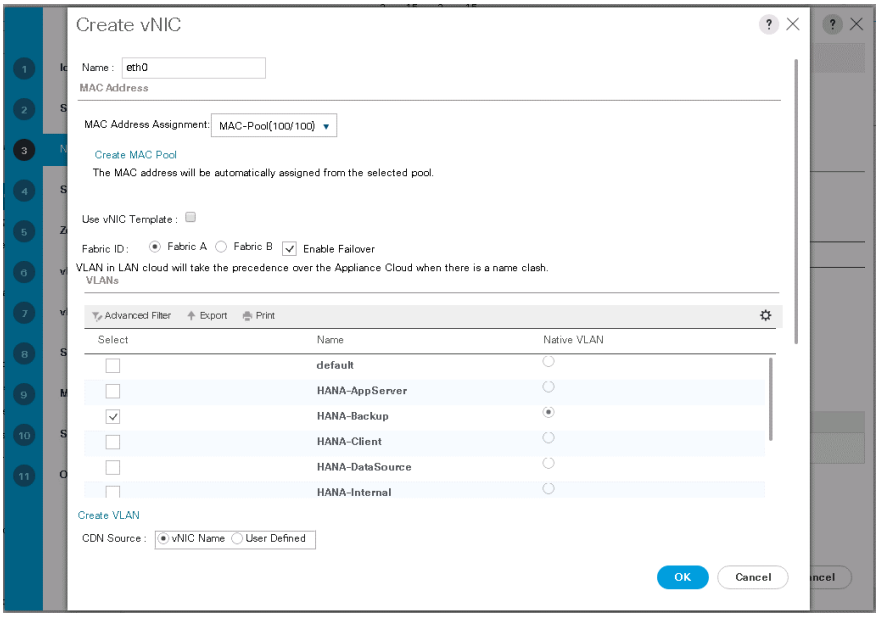


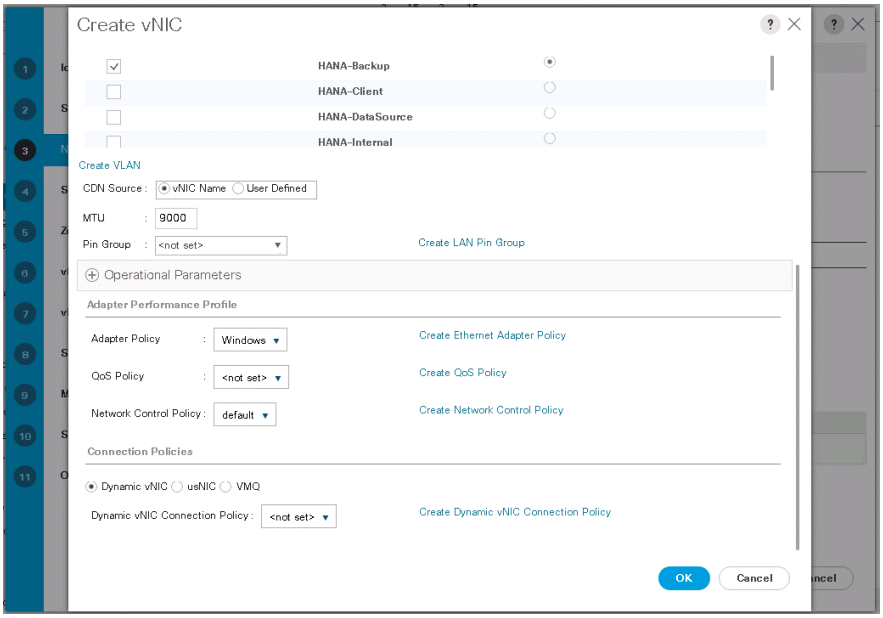
Enter **1500** or **9000** for the MTU value. MTU 9000 works only if all network components and the server are configured with MTU 9000. Check with your network administrator and server administrator to determine which value to use.

Select Windows or Linux for Adapter Policy.

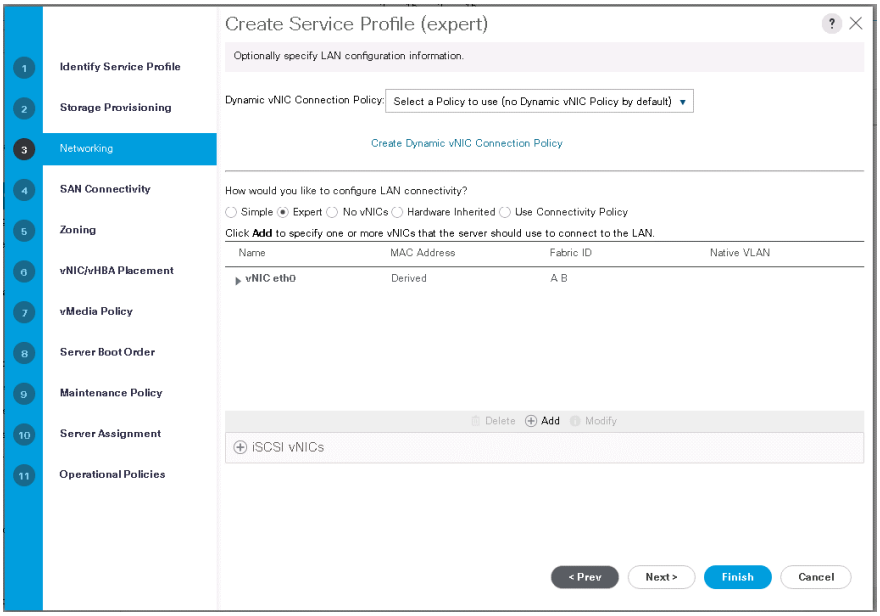
Set QoS Policy and Network Control Policy as defined by your local network administrator.

Click OK.





Click Add.

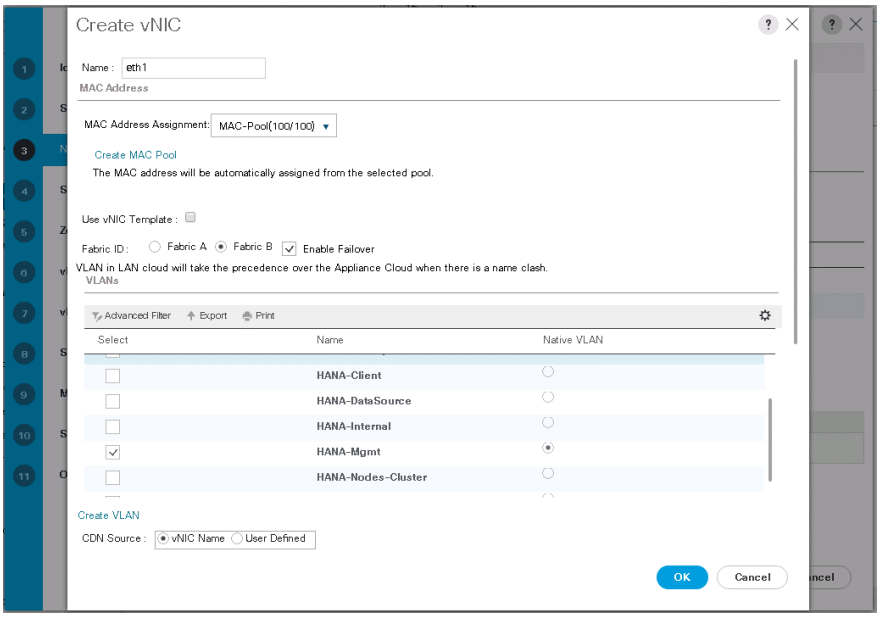


Enter **eth1** as the name.

Select a MAC address pool with free addresses.

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

Select your management network (the example here uses HANA-Mgmt) and select the Native VLAN button.

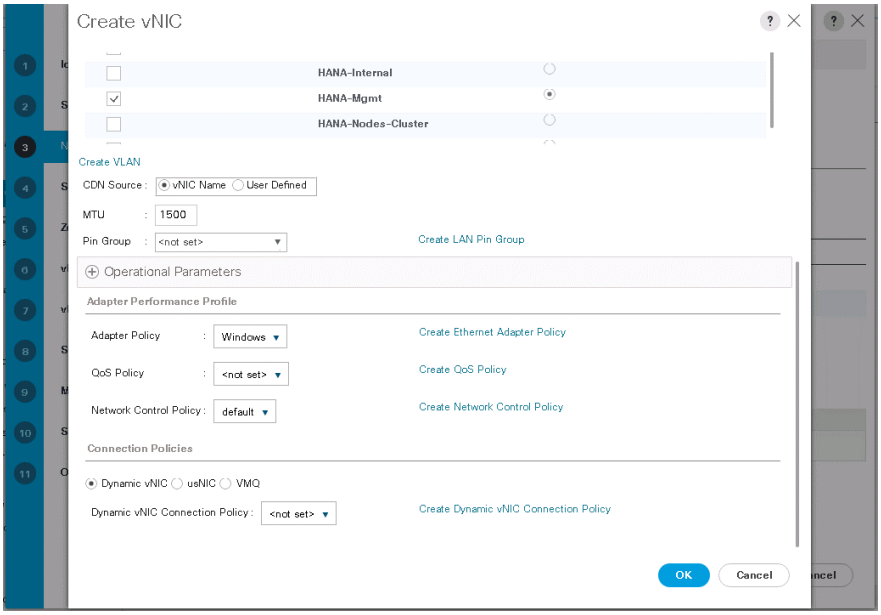


Enter **1500** as the MTU.

Select Windows or Linux for Adapter Policy.

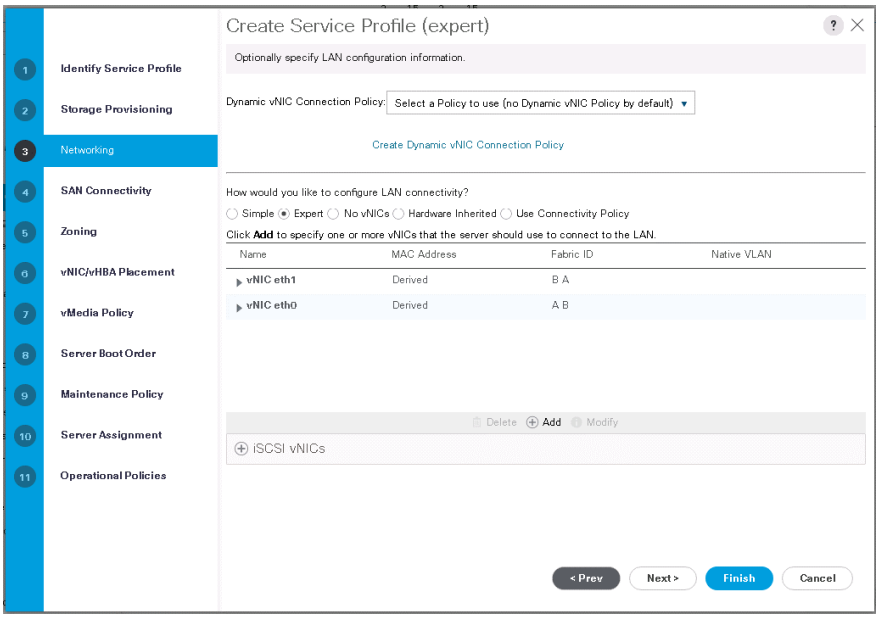
Set QoS Policy and Network Control Policy as defined by your local network administrator.

Click OK.



Repeat the preceding steps for all required networks.

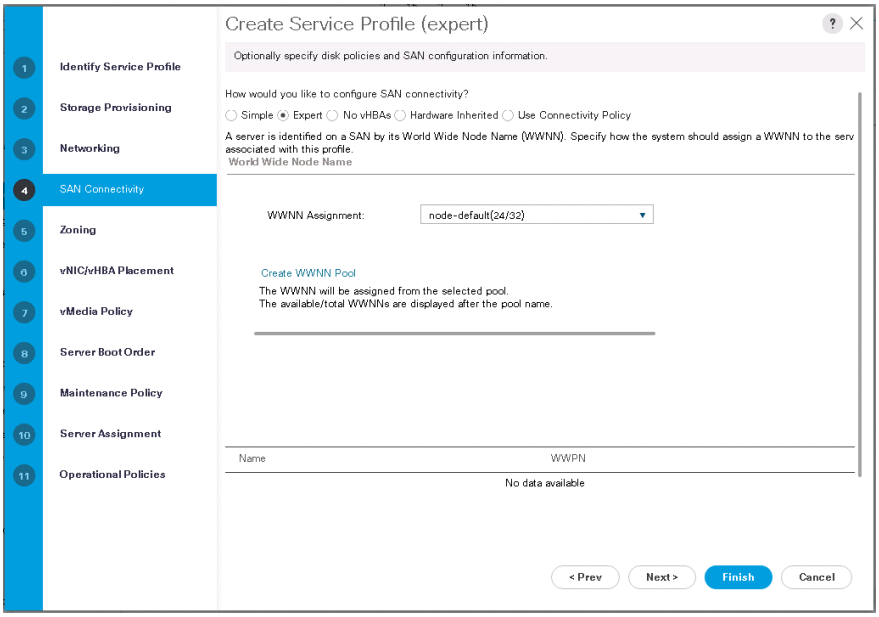
Click Next.



In the SAN Connectivity section, if the IBM Spectrum Protect Server requires SAN access to read data from external disks or to access a tape library, select the Expert button. (If SAN access is not required, click Next.)

Select a WWNN pool with free IDs for WWNN Assignment.

Click Add (you may need to scroll down in the window).



Enter **fc0** as the name.

Select a WWPN pool with free IDs for WWPN Assignment.

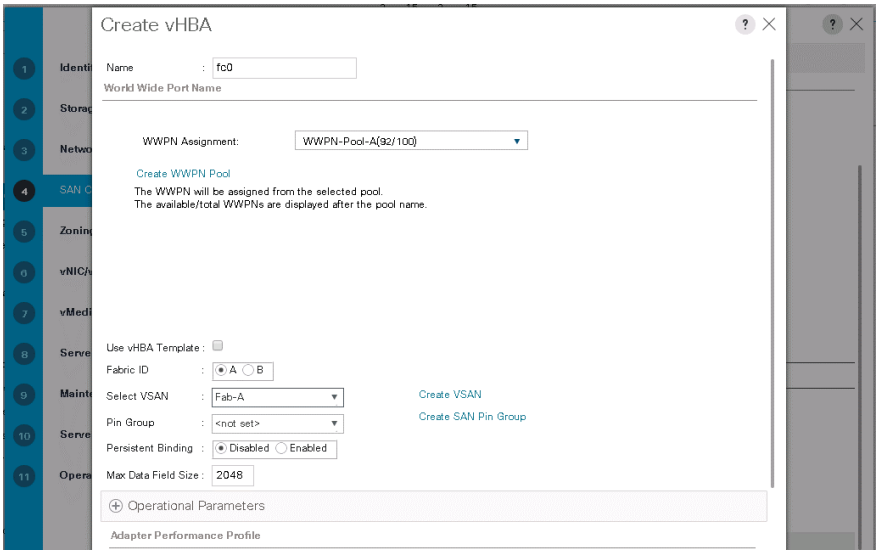
Select A as the fabric ID.

Select a VSAN (the example here uses Fab-A).

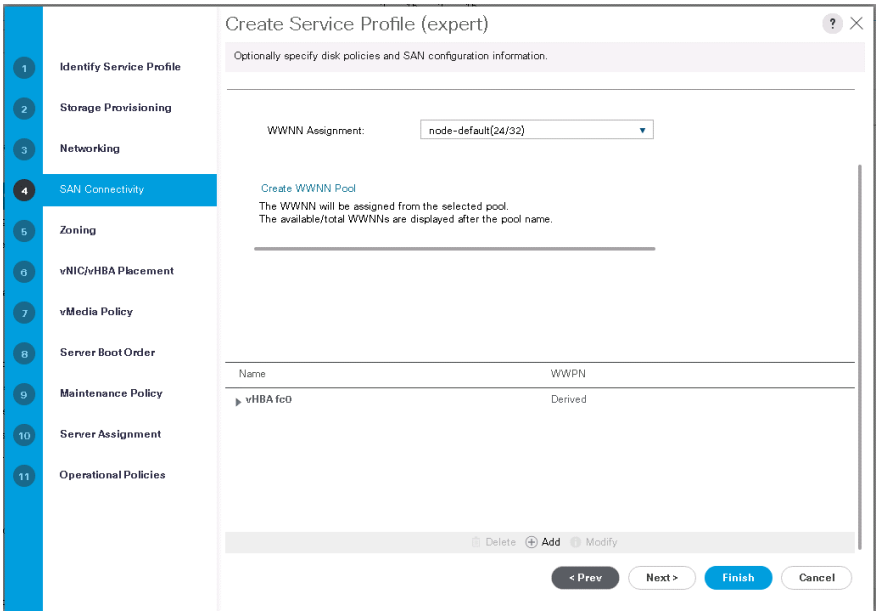
Select a PIN group if required. Ask your SAN administrator.

Select Windows or Linux for Adapter Profile.

Click OK.



Click Add.



Enter **fc1** as the name.

Select a WWPN pool with free IDs for WWPN Assignment.

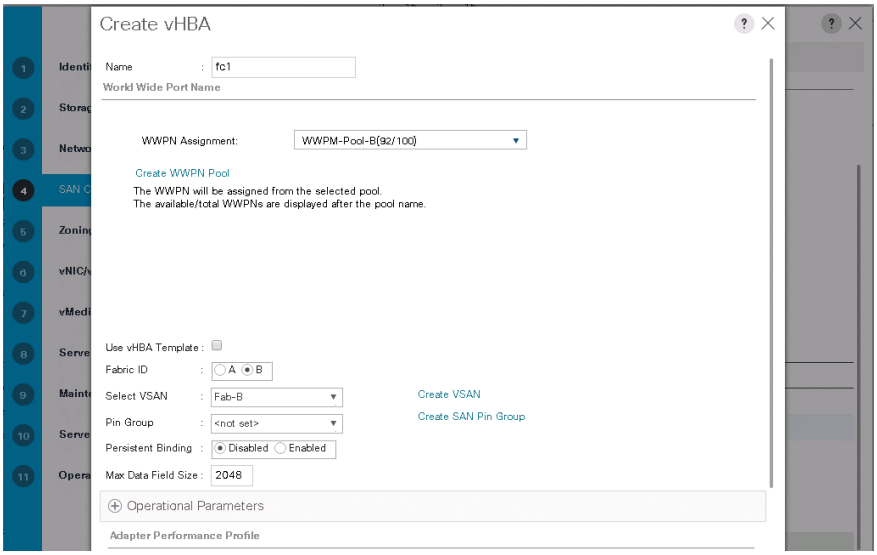
Select B as the fabric ID.

Select a VSAN (the example here uses Fab-B).

Select a PIN group if required. Ask your SAN administrator.

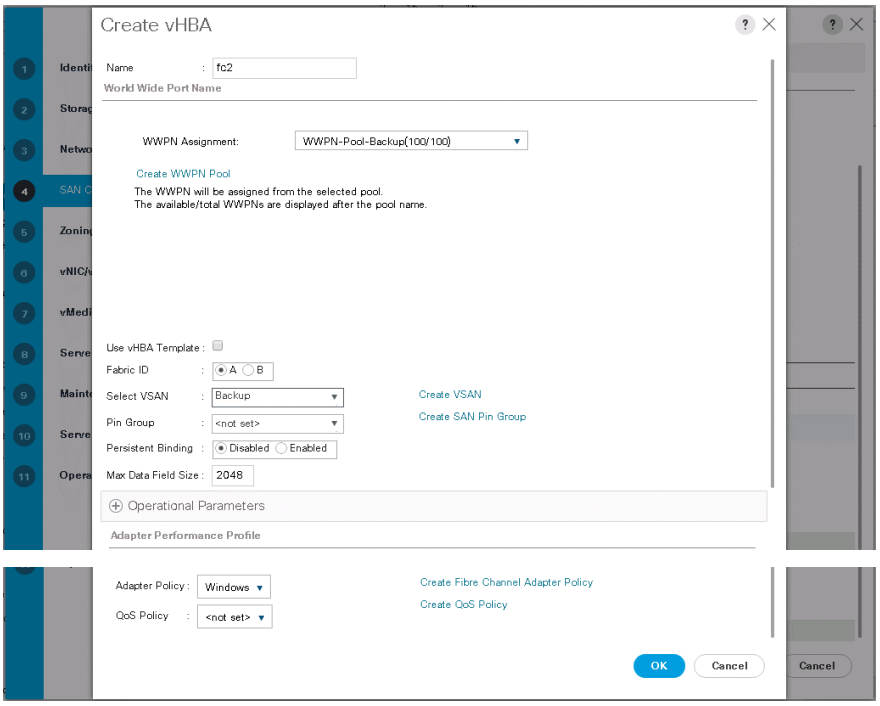
Select Windows or Linux for Adapter Profile.

Click OK.

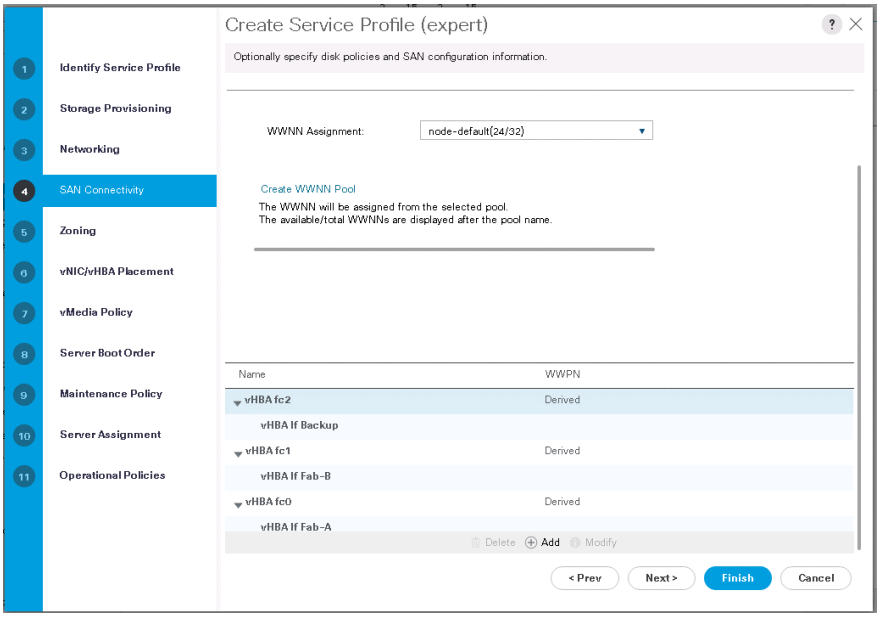


If additional connections are required, use the same procedure to create more.

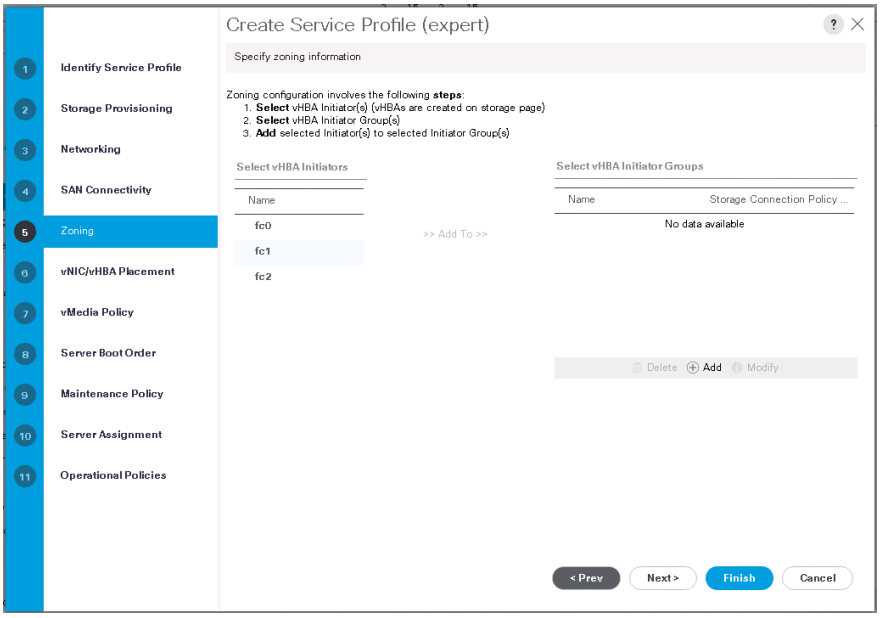
The lab configuration described here uses a dedicated backup VSAN for Fibre Channel tape access and created vHBA fc2 for this purpose.



Click Next.

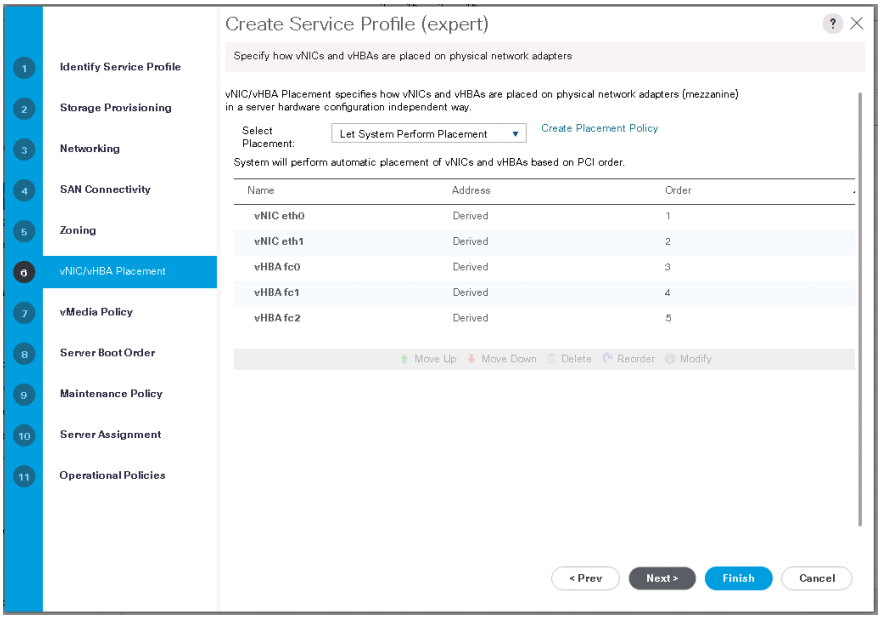


In the Zoning area, click Next.

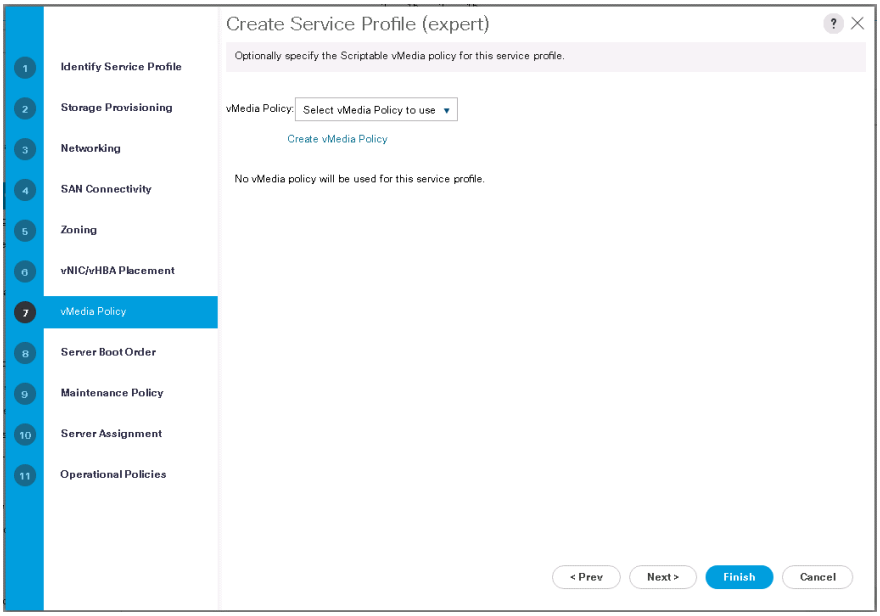


In the vNIC/vHBA Placement section, leave the setting Let System Perform Placement. With this setting, Cisco UCS will automatically distribute the vNIC and vHBA across both SIOCs if they are available.

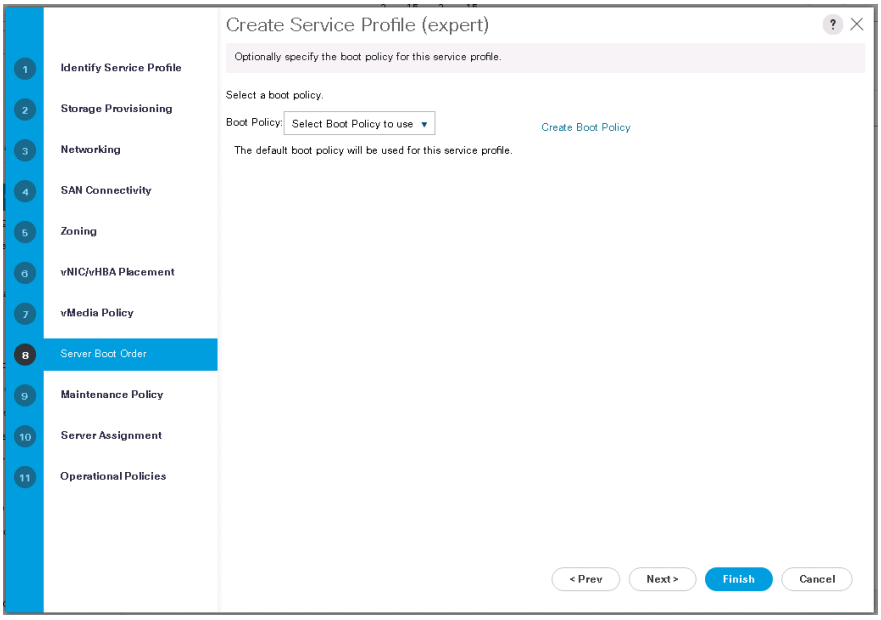
Click Next.



In the vMedia Policy section, click Next.



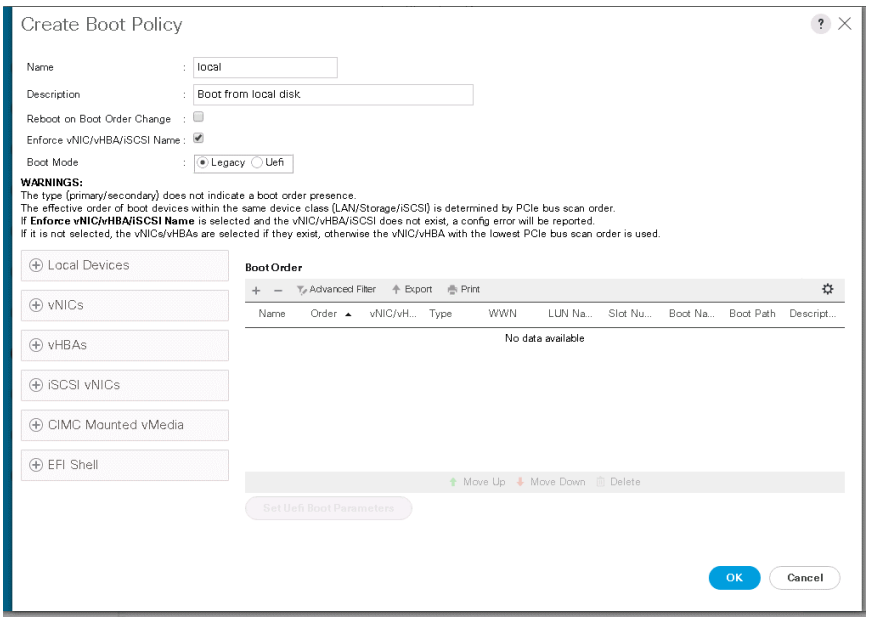
In the Server Boot Order section, click Create Boot Policy.



Enter an obvious name and a description.

Click Local Devices.

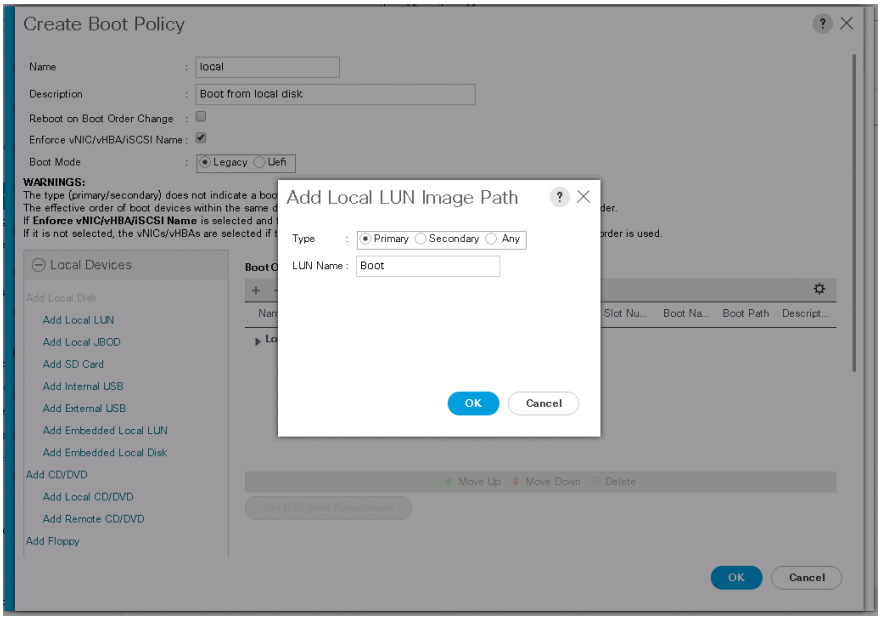
Click Add Local LUN.



Select Primary as the type.

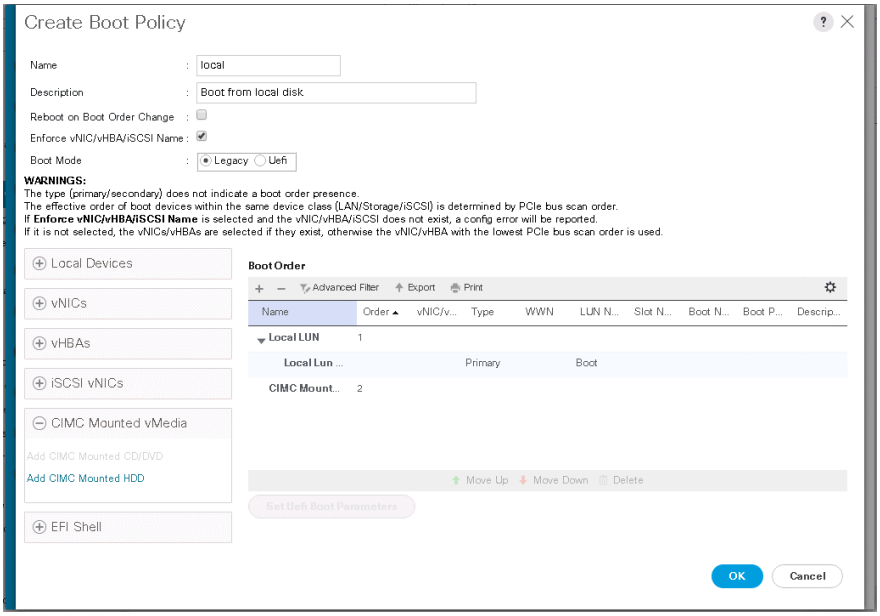
Enter **Boot** as the LUN name. Be aware that you must use the same name as the name for the boot LUN created in the Storage Profile section.

Click OK.

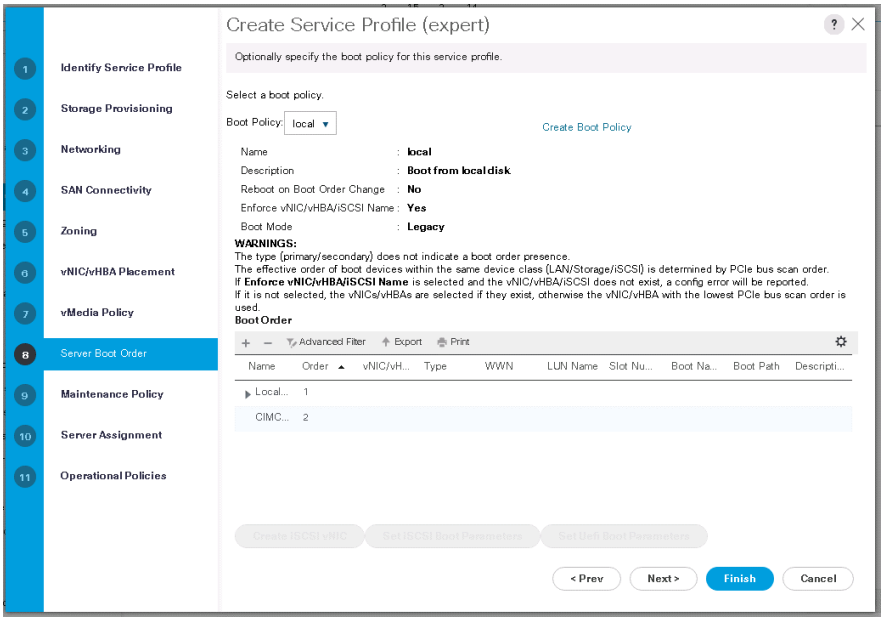


Click CIMC Mounted Media.

Click Add CIMC Mounted CD/DVD.

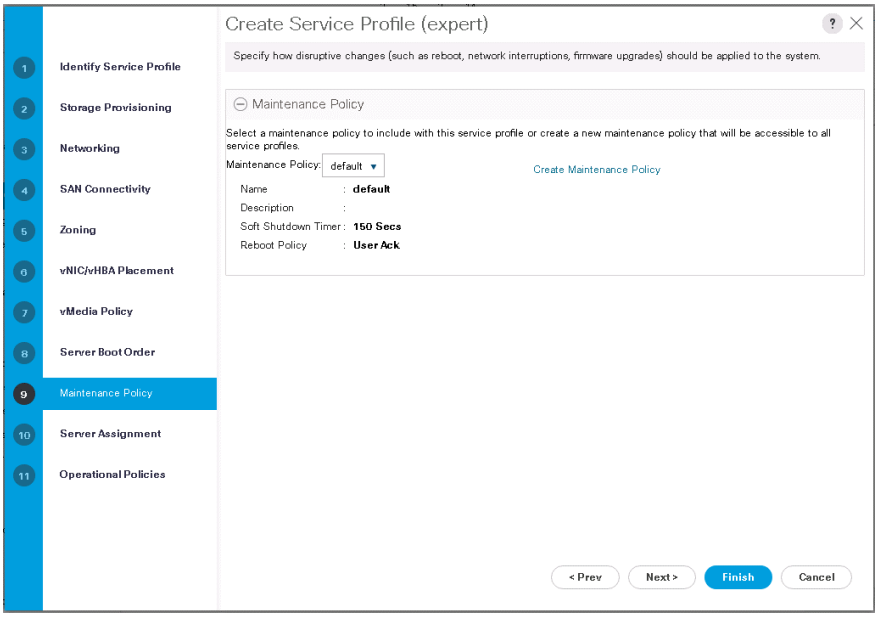


Click Next.



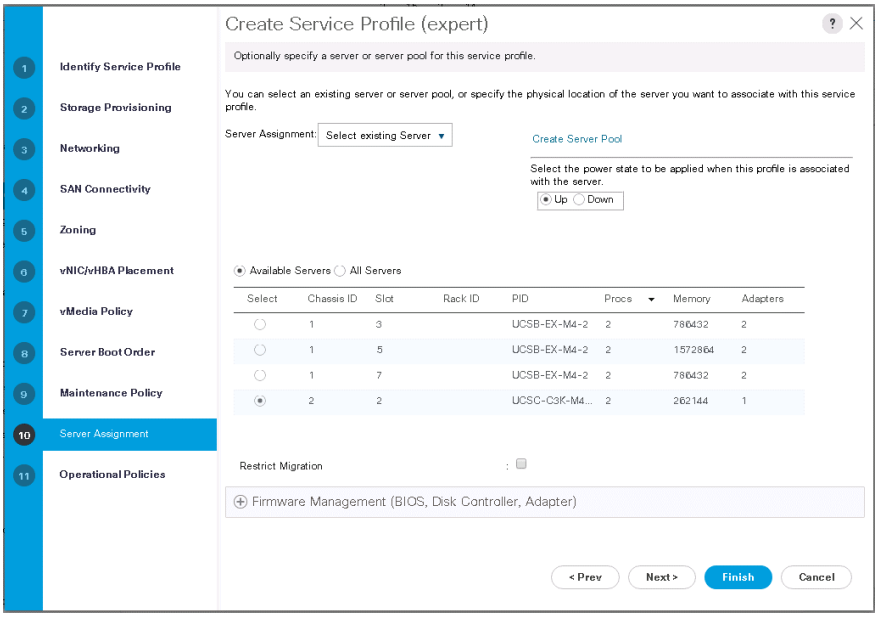
In the Maintenance section, select default for Maintenance Policy.

Click Next.



In the Server Assignment section, select the chassis or server (the example here uses chassis or server 2).

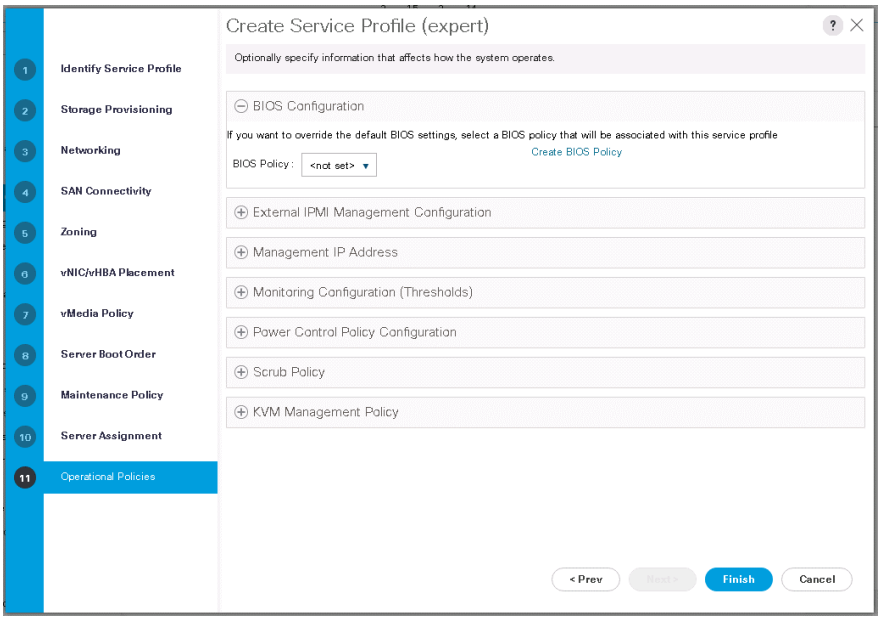
Click Next.



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

IBM Spectrum Protect does not require you to select any particular option.

Click Finish.



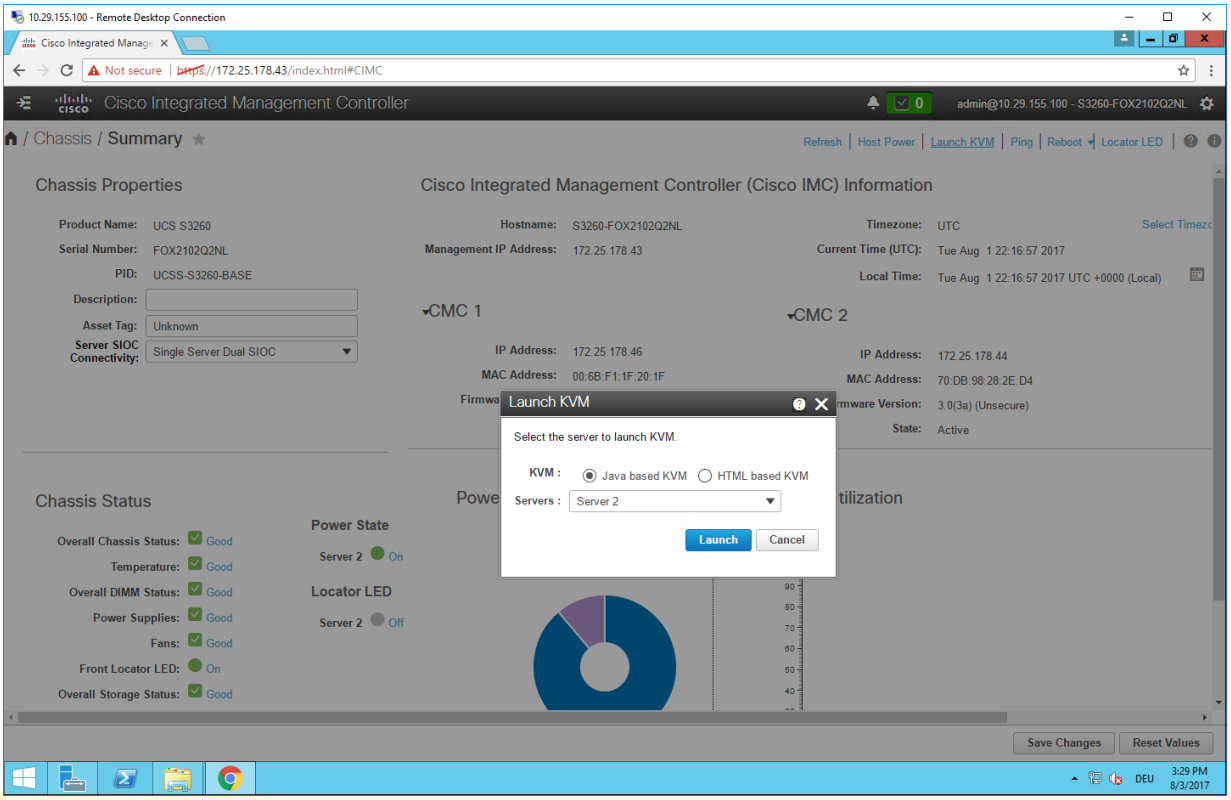
The assignment of the service profile to the physical server will take some time. Check the FSM tab to monitor the status. If a firmware update is required, the overall process can take up to an hour to finish.

IBM Spectrum Protect server installation on Microsoft Windows Server

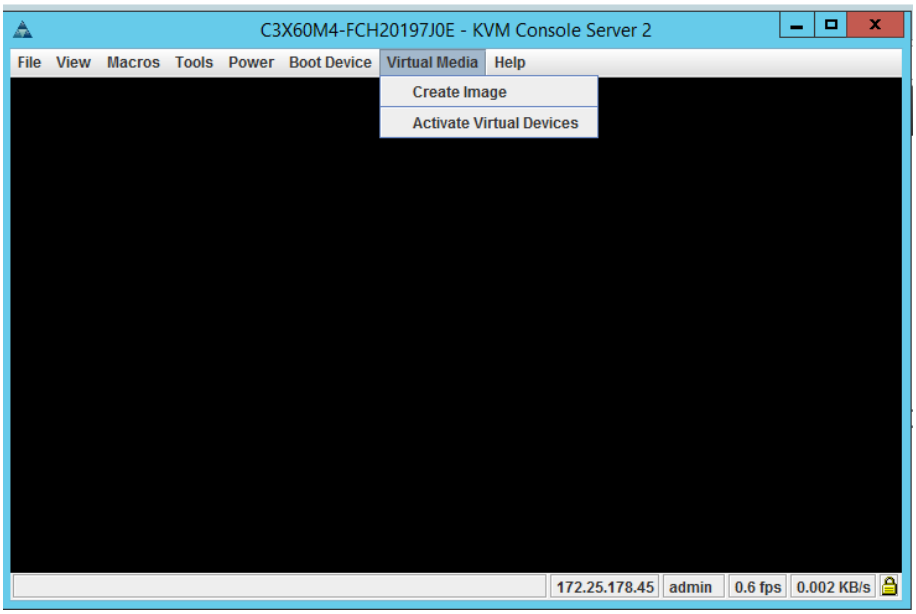
This section discusses how to install and configure the operating system and install IBM Spectrum Protect.

Operating system installation

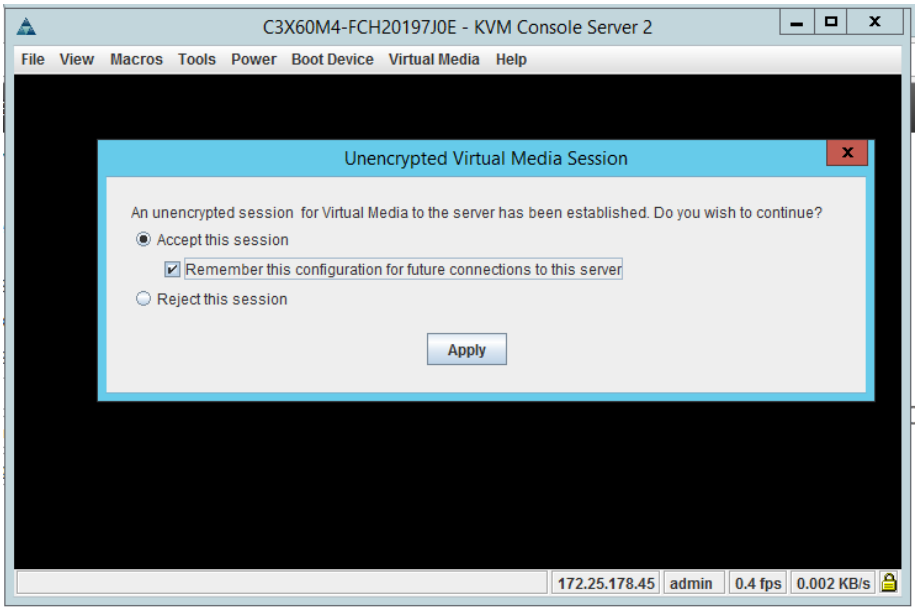
To install the OS, open the Cisco Integrated Management Controller webpage and click Launch KVM on the Summary page.



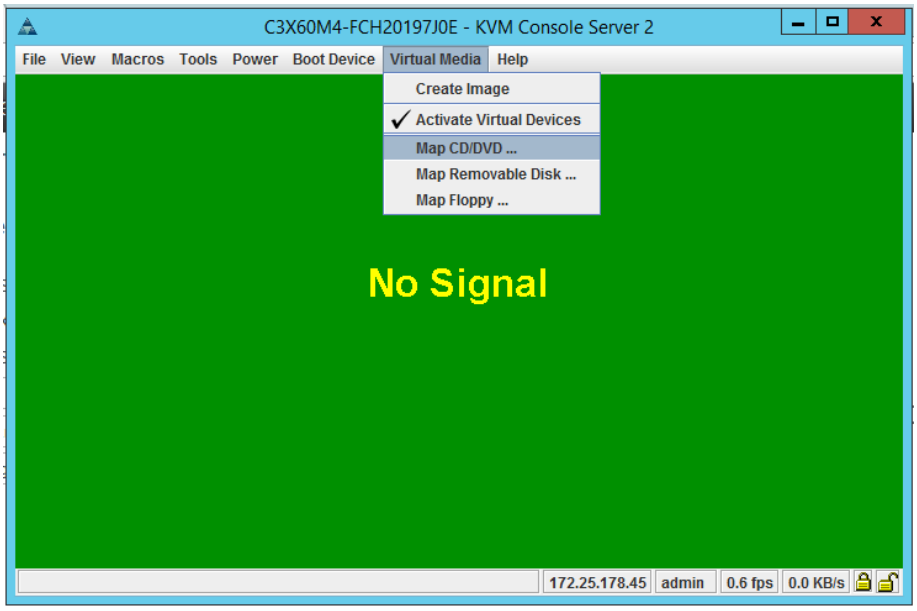
A new KVM window opens. Select Virtual Media and choose Activate Virtual Devices.



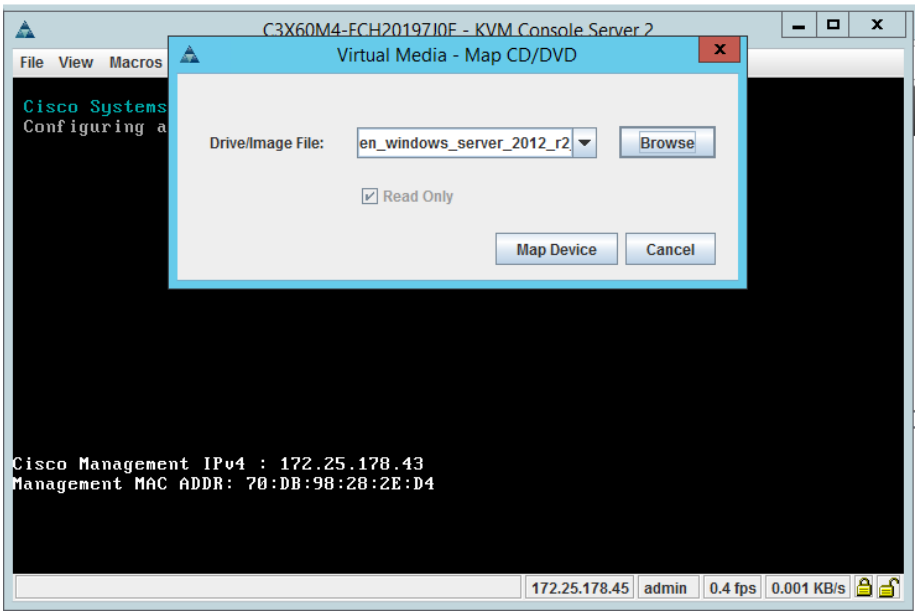
Accept the unencrypted session.



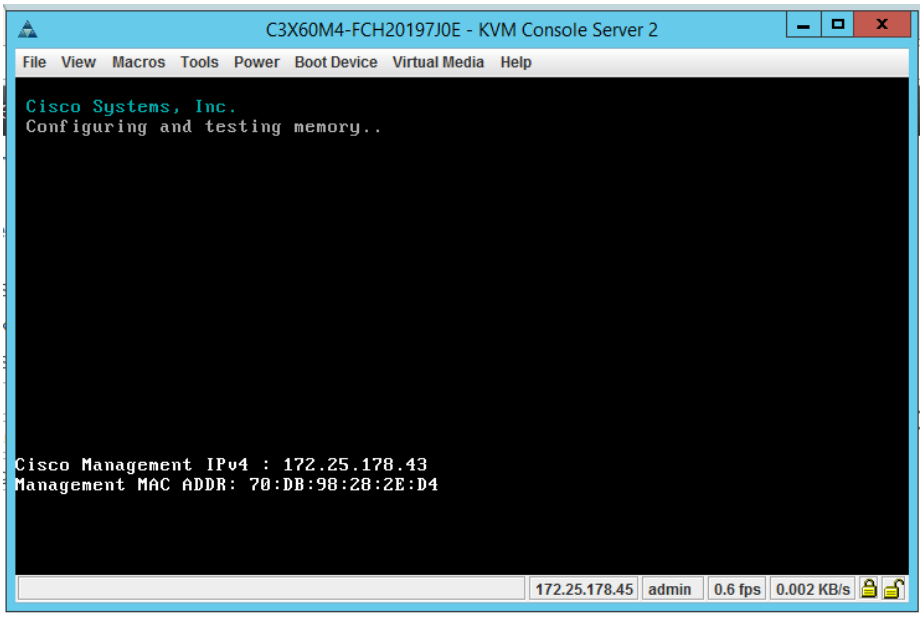
Select Virtual Media again and choose Map CD/DVD.



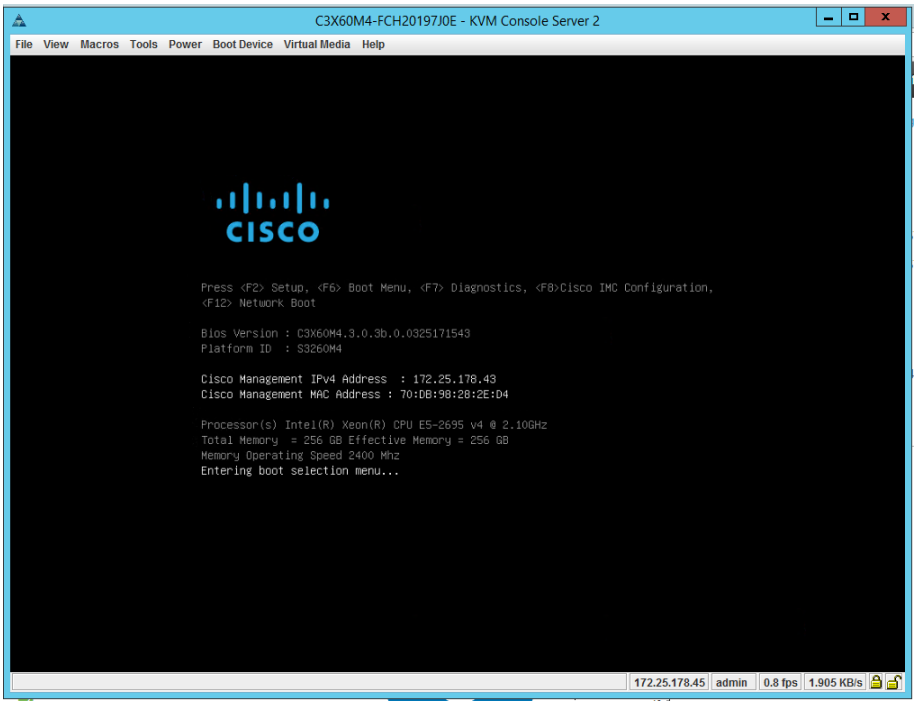
Select the ISO image of the operating system that you want to install.



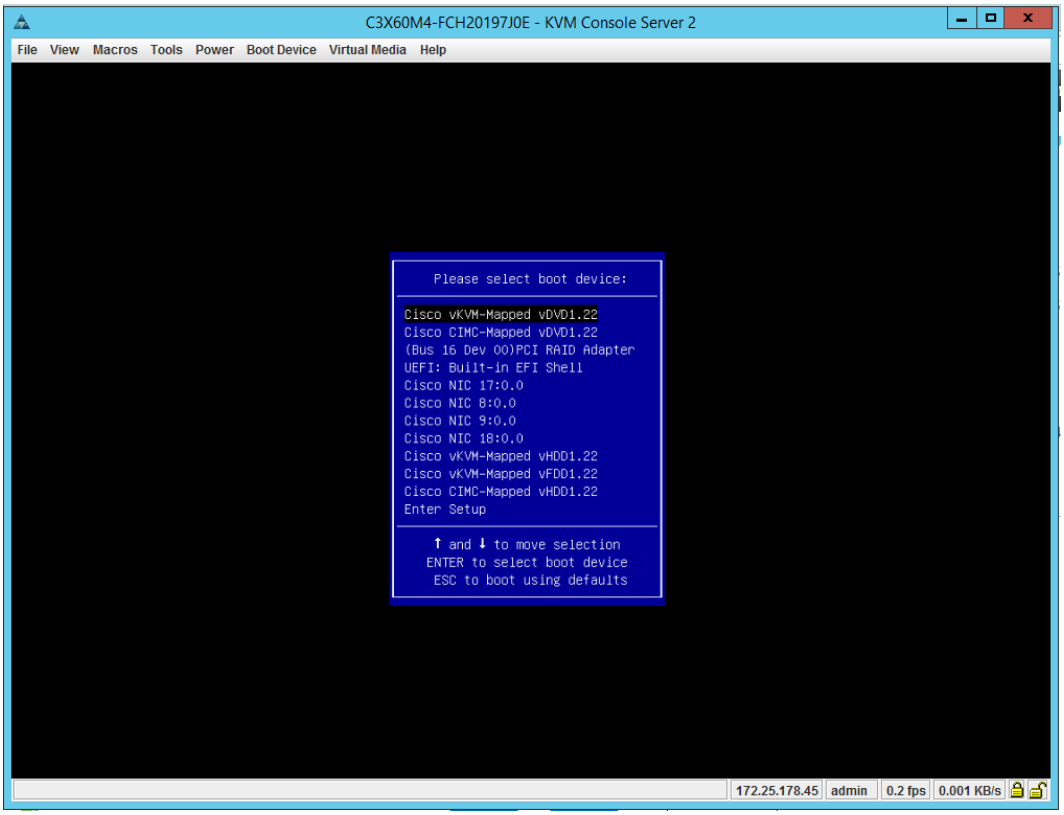
Power on or reset the server.



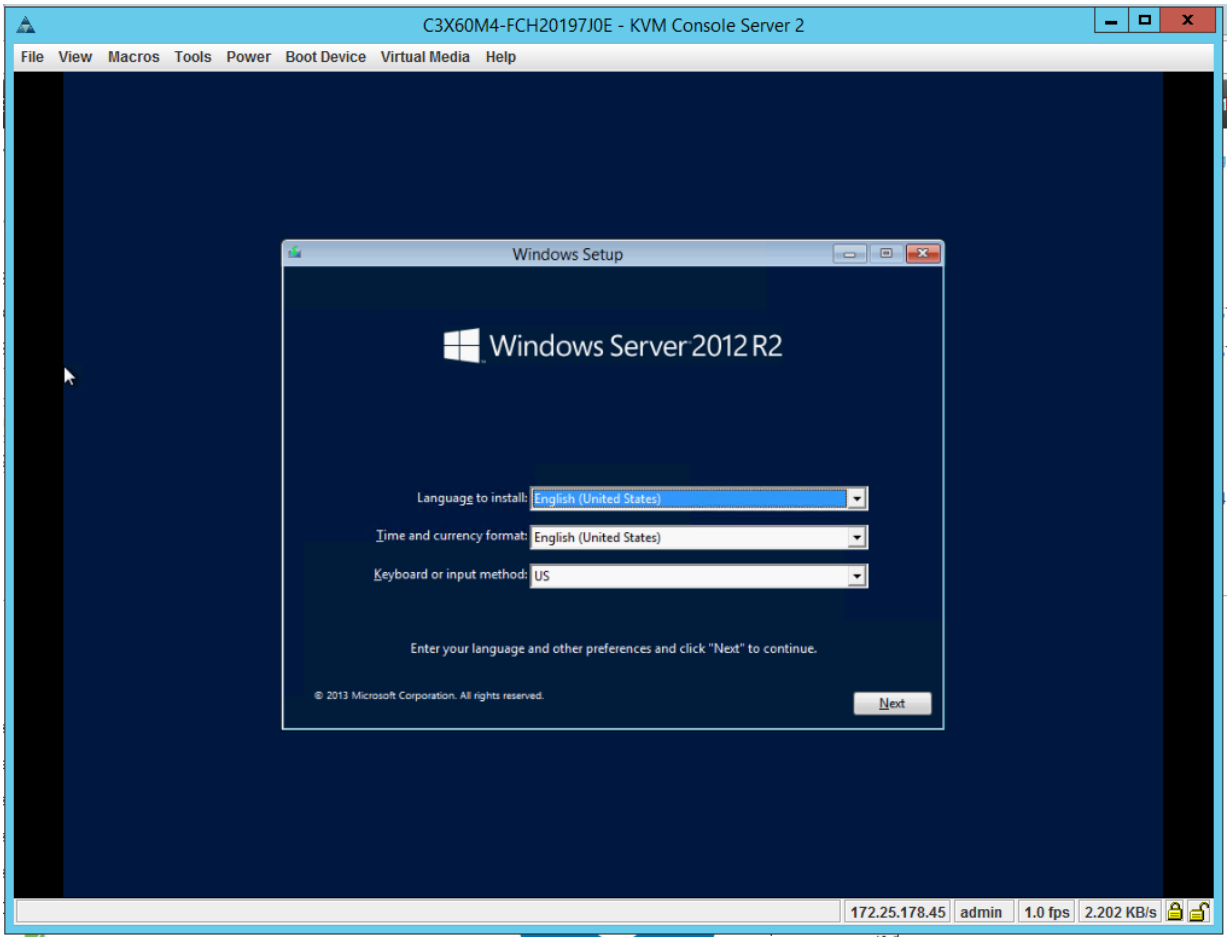
Press F6 to open the boot menu



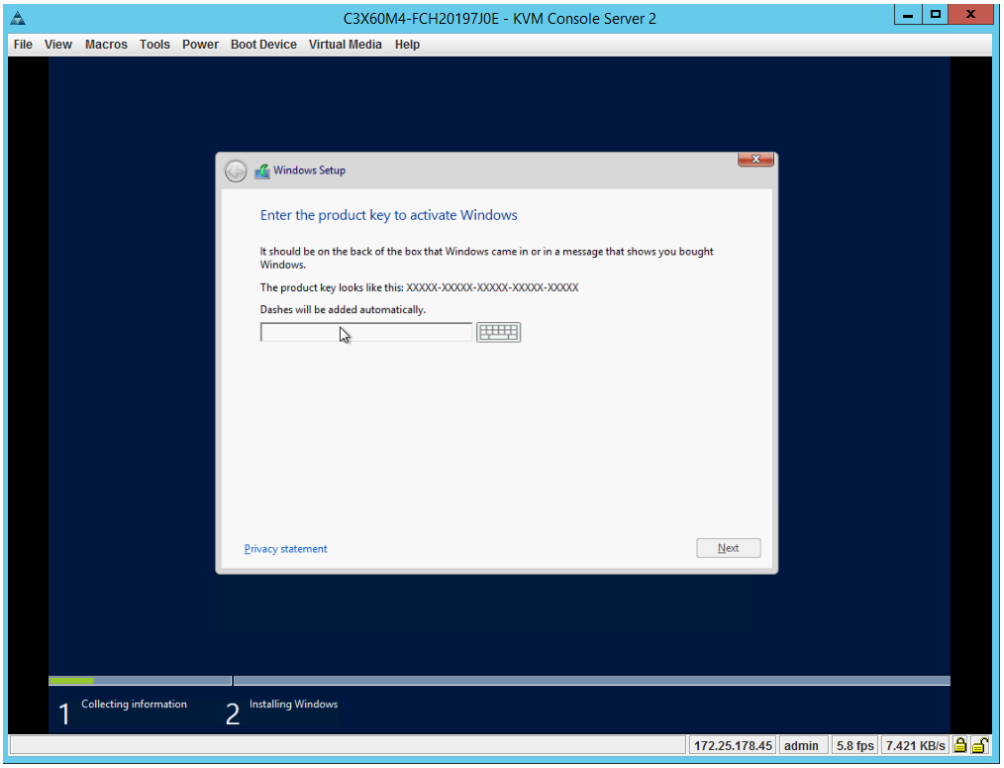
Select Cisco vKVM-Mapped vDVD1.22.



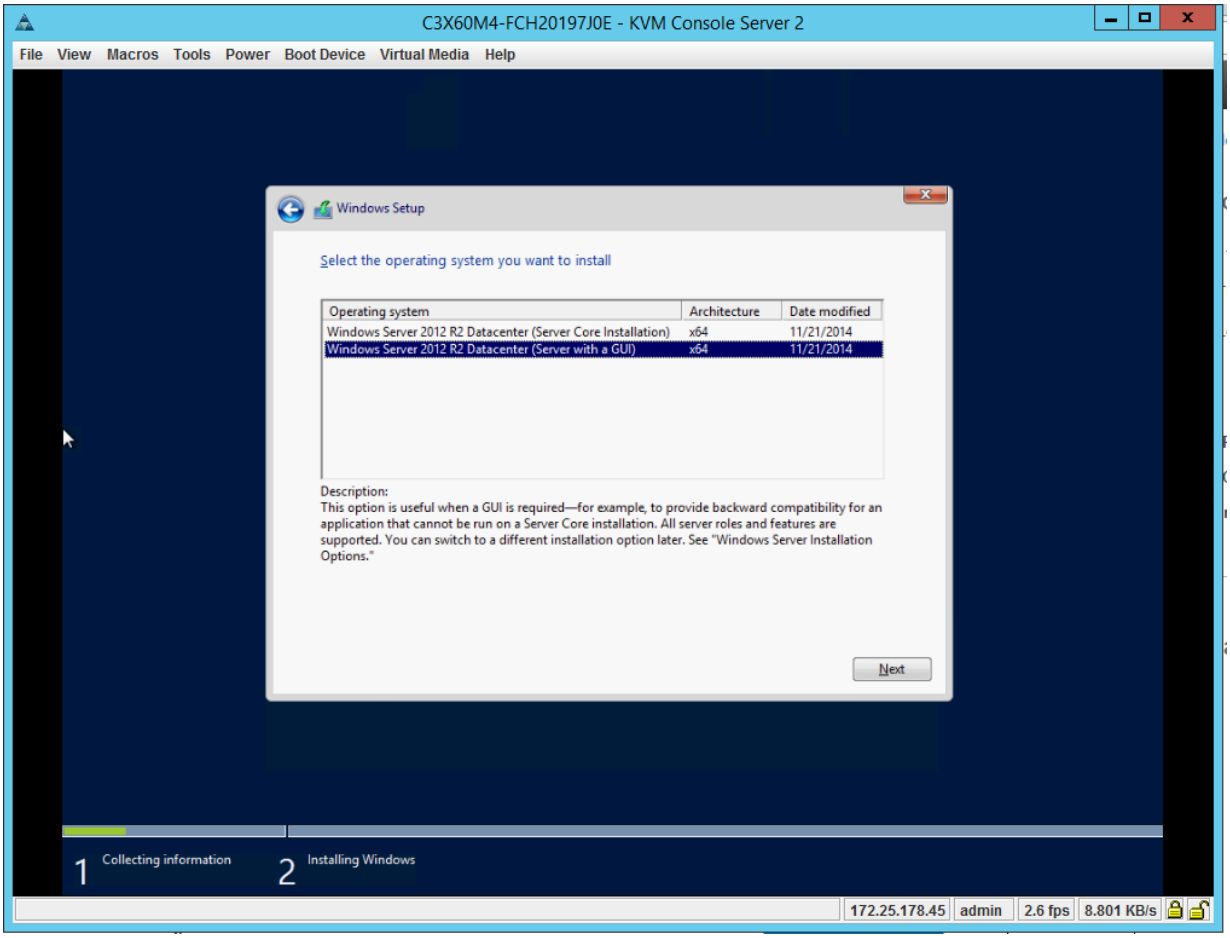
Select the language and keyboard or input method. Click Next. On the next screen, click Install.



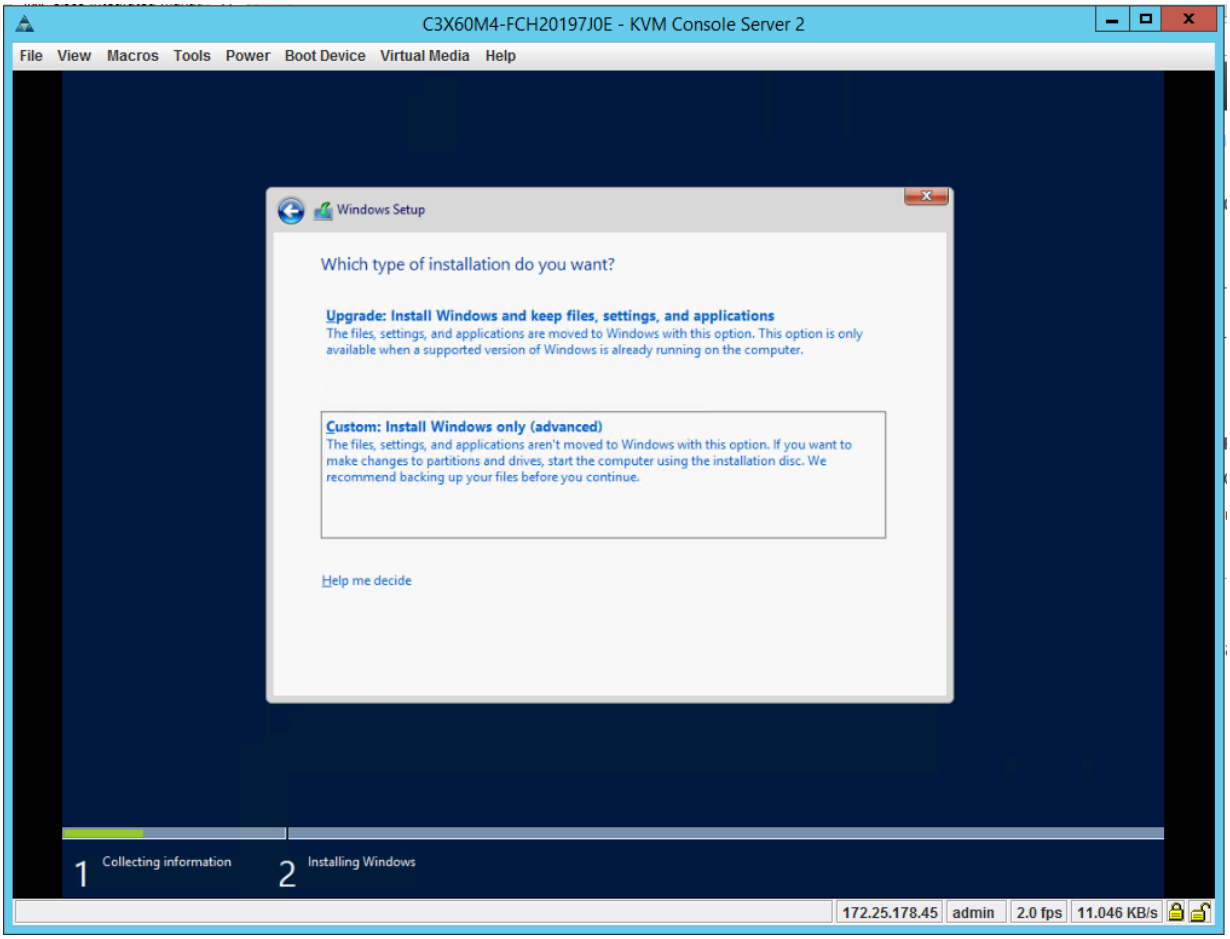
Enter a valid license key if requested to do so.



Select the OS type that you want to install and accept the license agreement on the next screen.

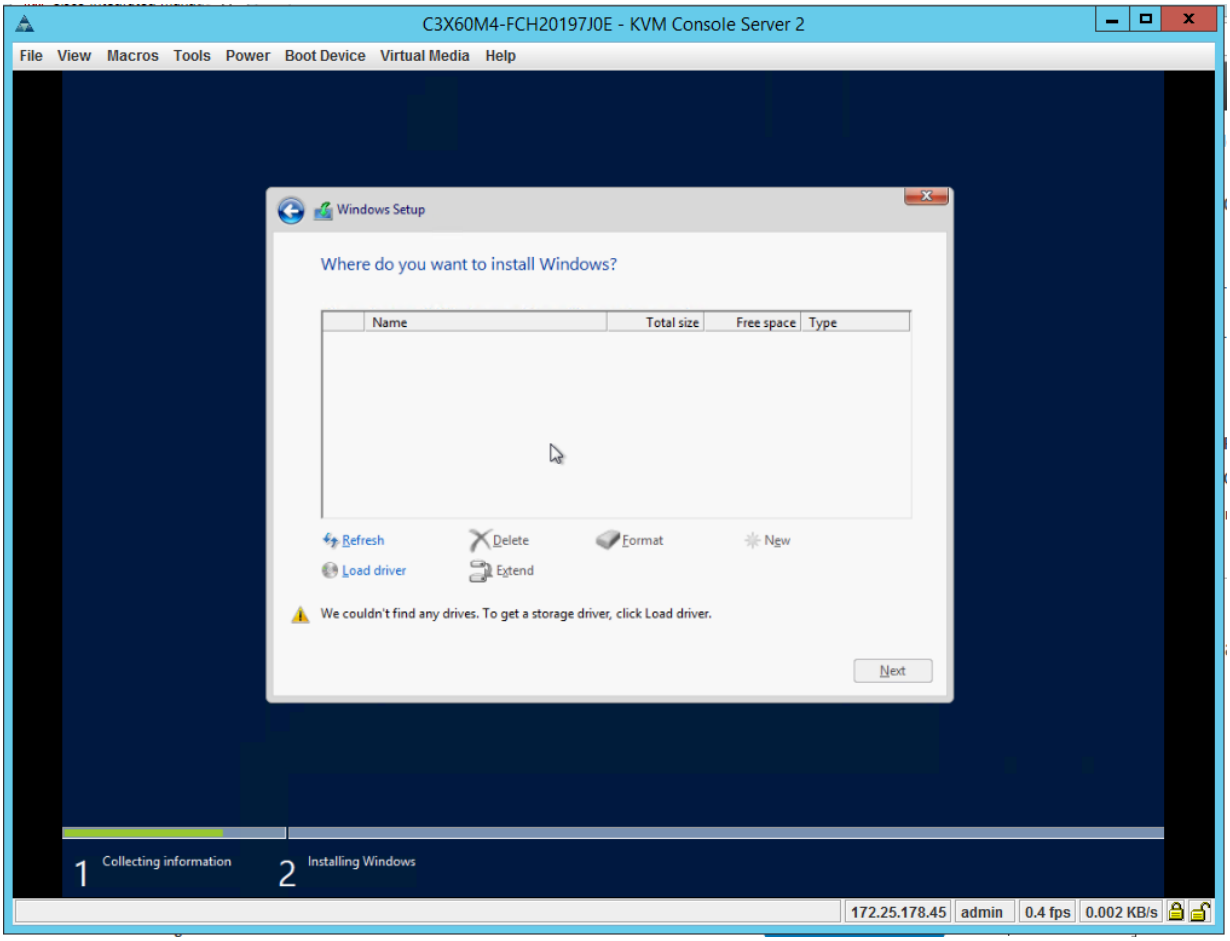


Select Custom Install.

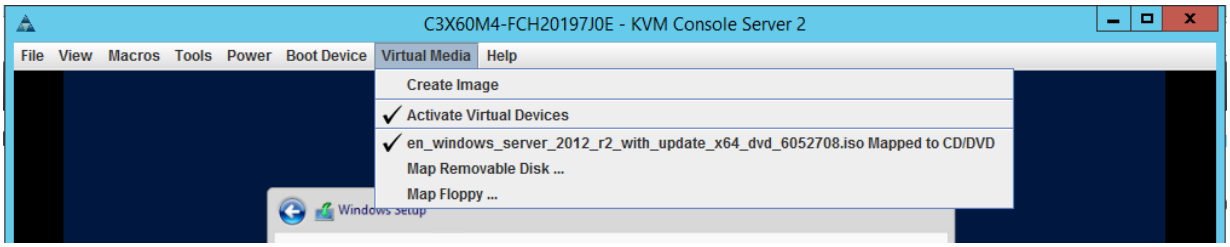


The driver for the RAID controller used in the Cisco UCS S3260 is not available on the Microsoft Windows Server 2012 installation ISO image. The list of available disks to install the OS is empty.

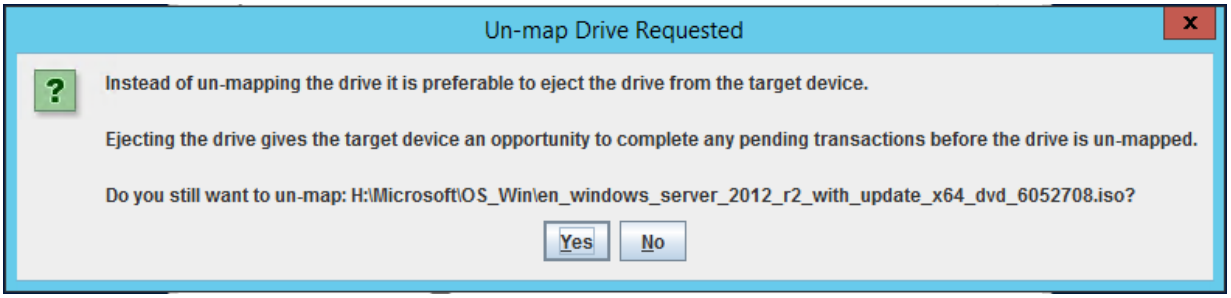
To load the required driver, you need the Cisco UCS drivers image from Cisco.com.



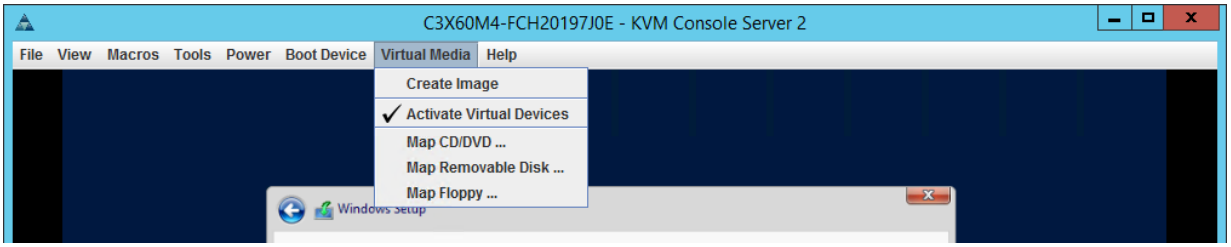
Select Virtual Media and choose Mapped to CD/DVD.



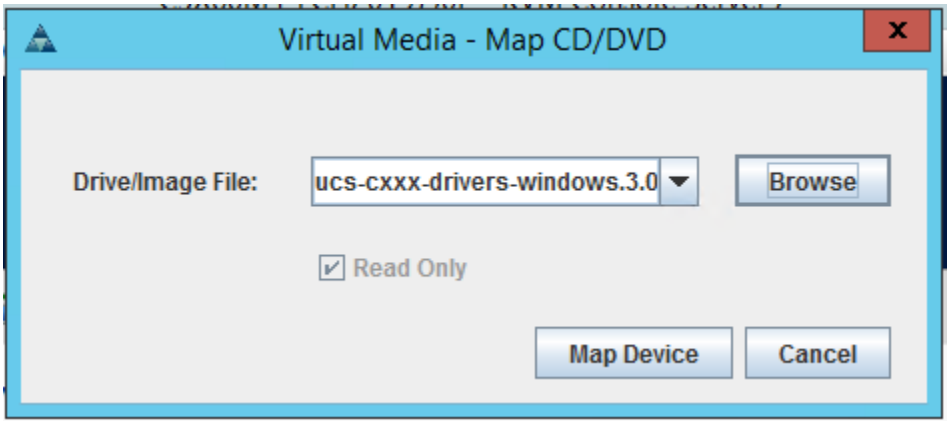
Click Yes to unmap the OS installation ISO image.

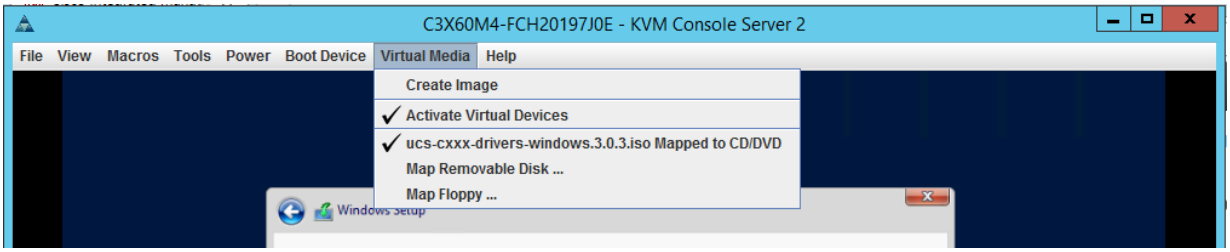


Again select Virtual Media and choose Map CD/DVD.

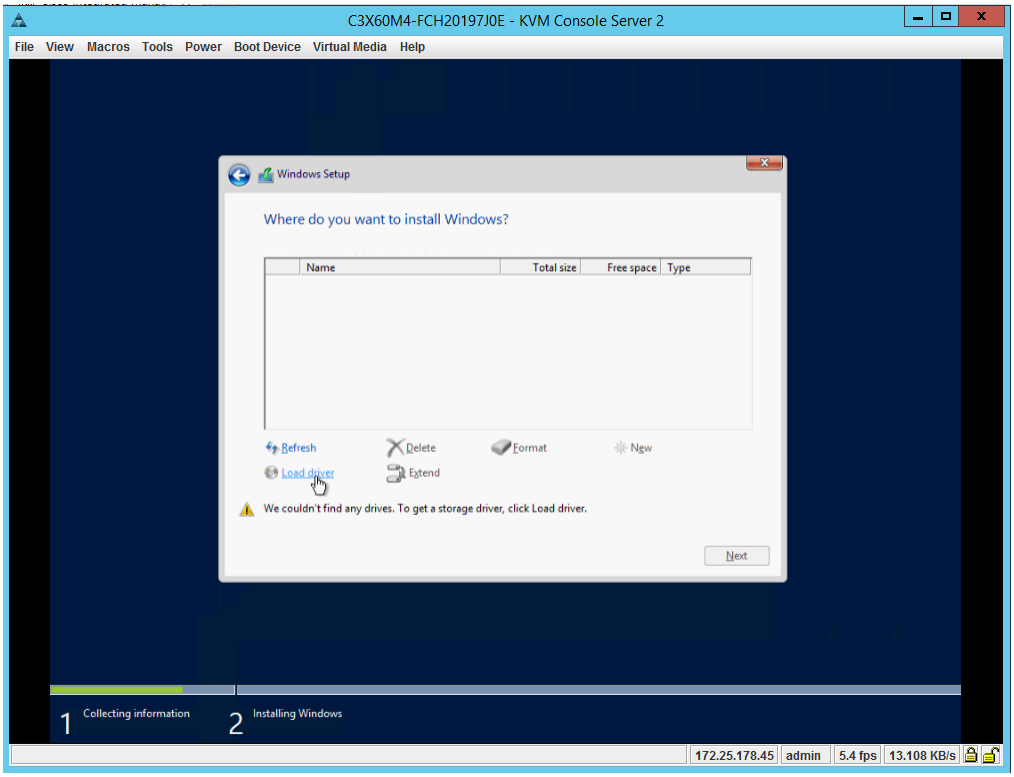


Select the Cisco UCS drivers image for Windows. The minimum version required is Release 3.0.3b.

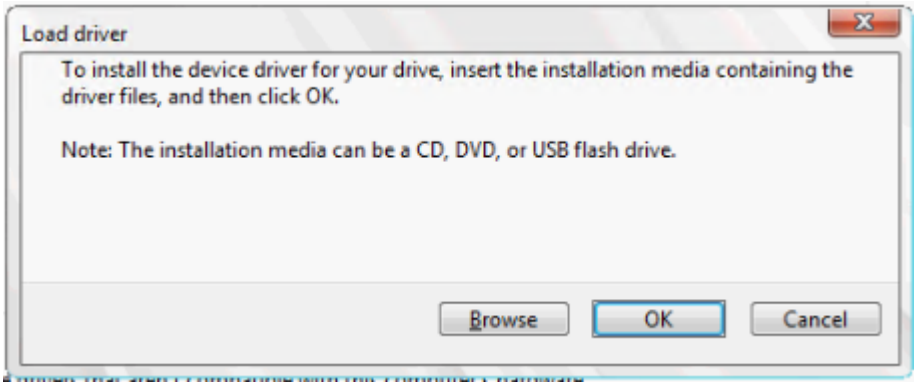




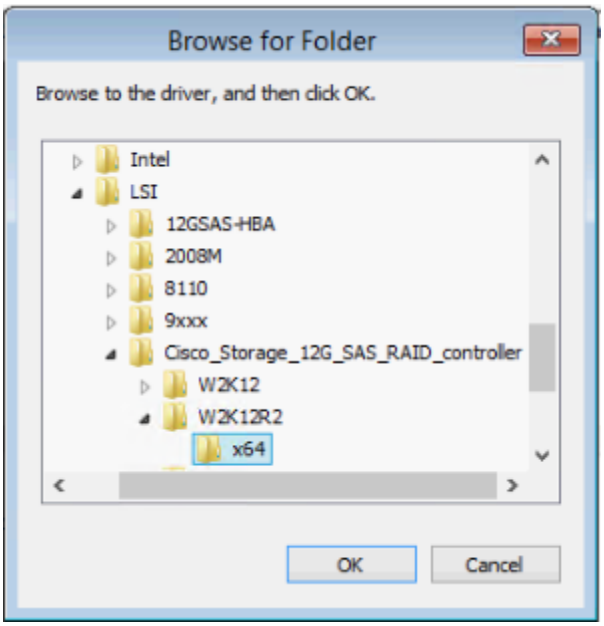
Click Load Driver.



Click Browse.

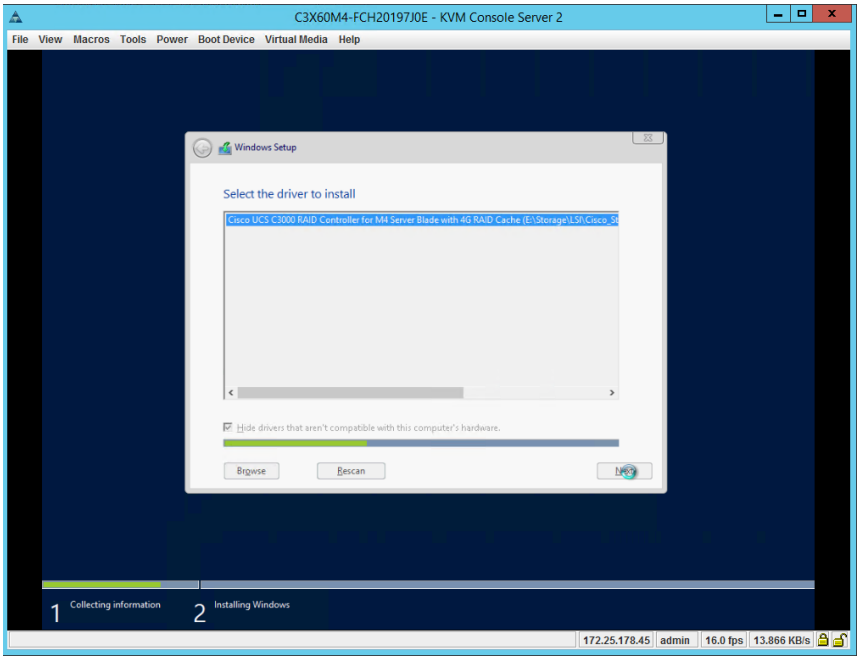


Choose > Storage > LSI > Cisco_Storage_12G_SAS_RAID_controller > W2K12R2 > x64.

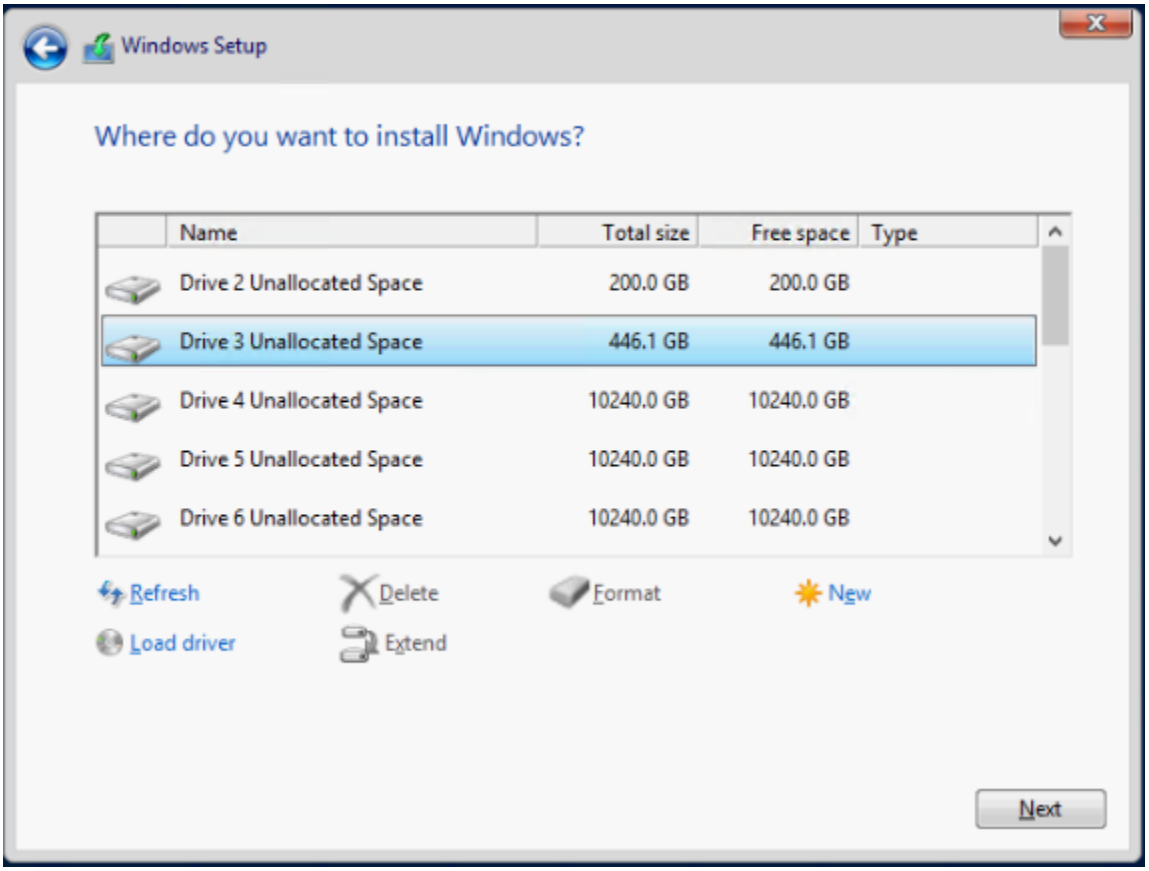


The RAID controller is listed as the driver to install.

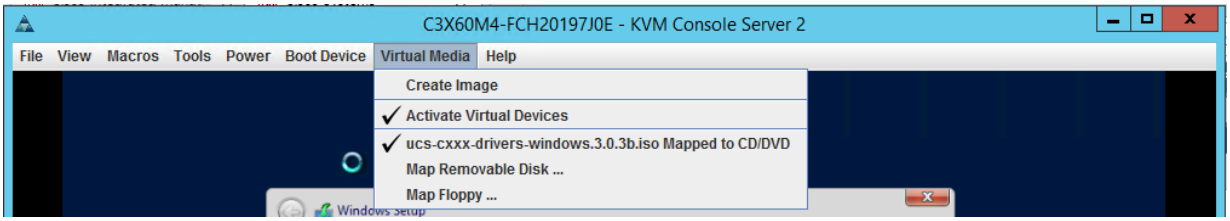
Click Next.



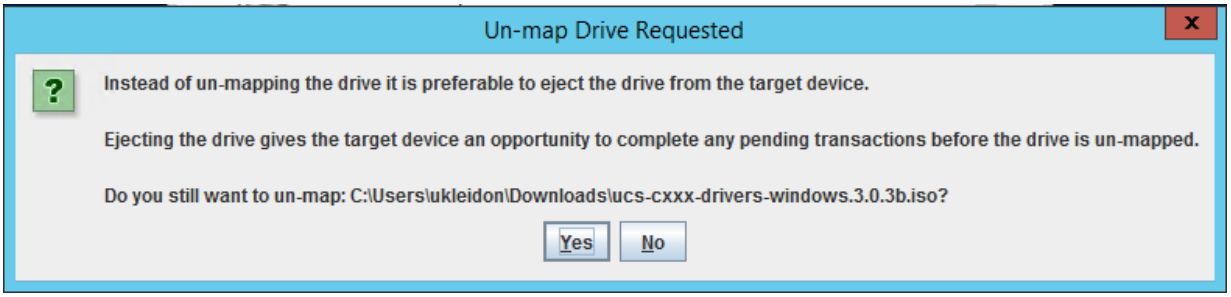
Now all virtual drives created on the RAID controller are listed. To continue the installation, you need to map the OS installation image to the CD/DVD.



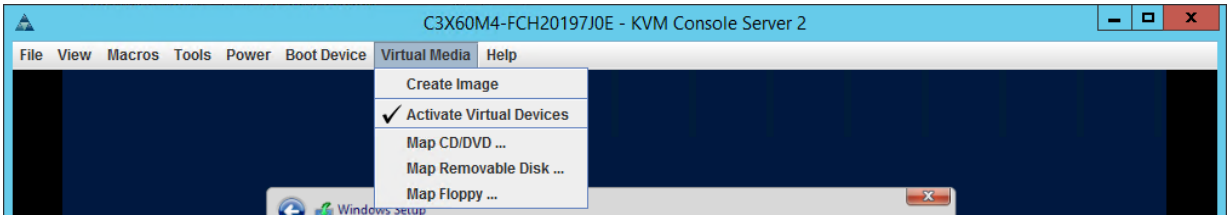
Select Virtual Media and choose the Mapped to CD/DVD option.



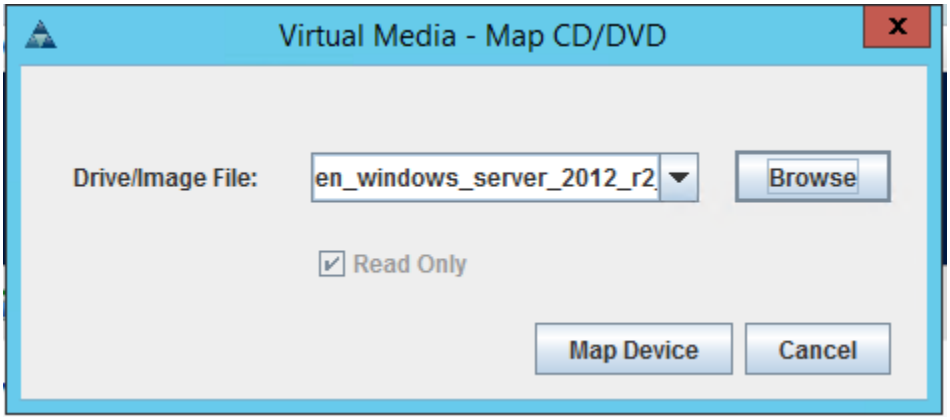
Click Yes to unmap the ISO image.



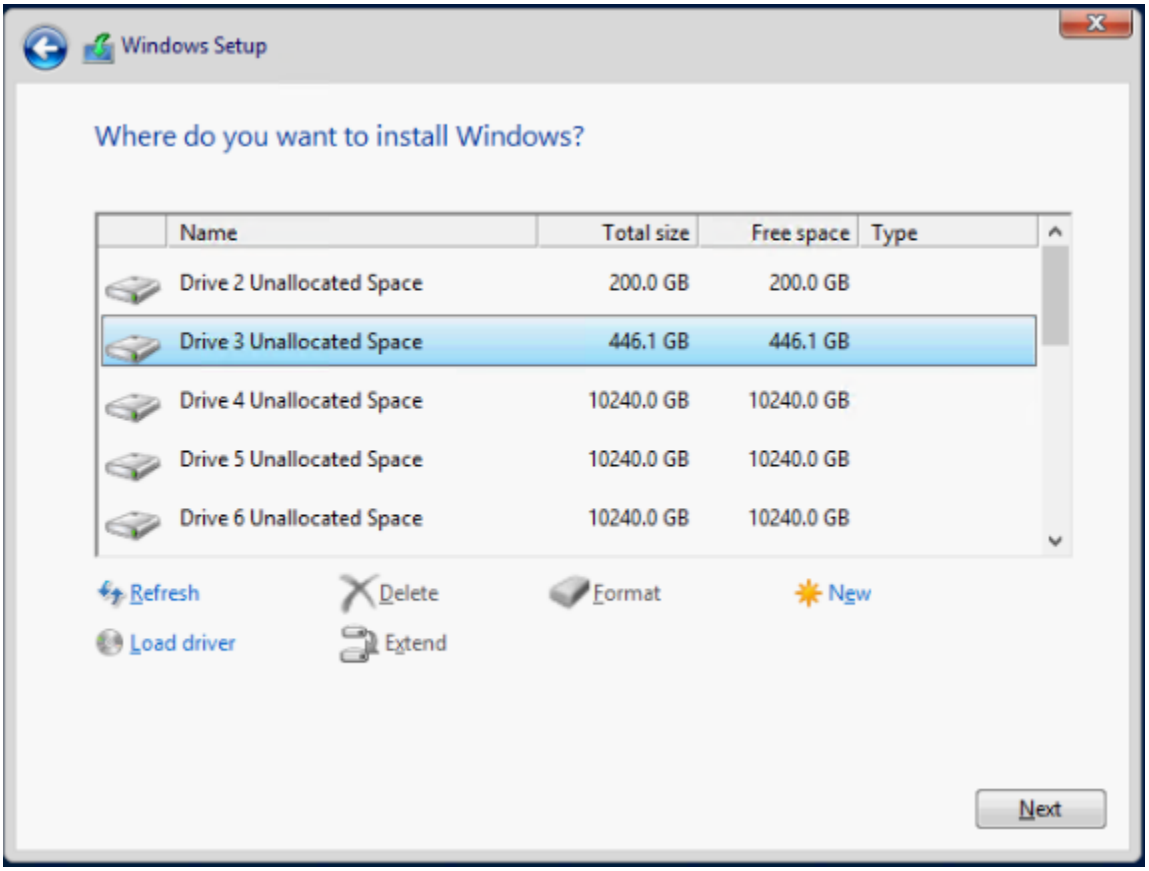
Select Virtual Media and choose Map CD/DVD.



Select the OS installation image.

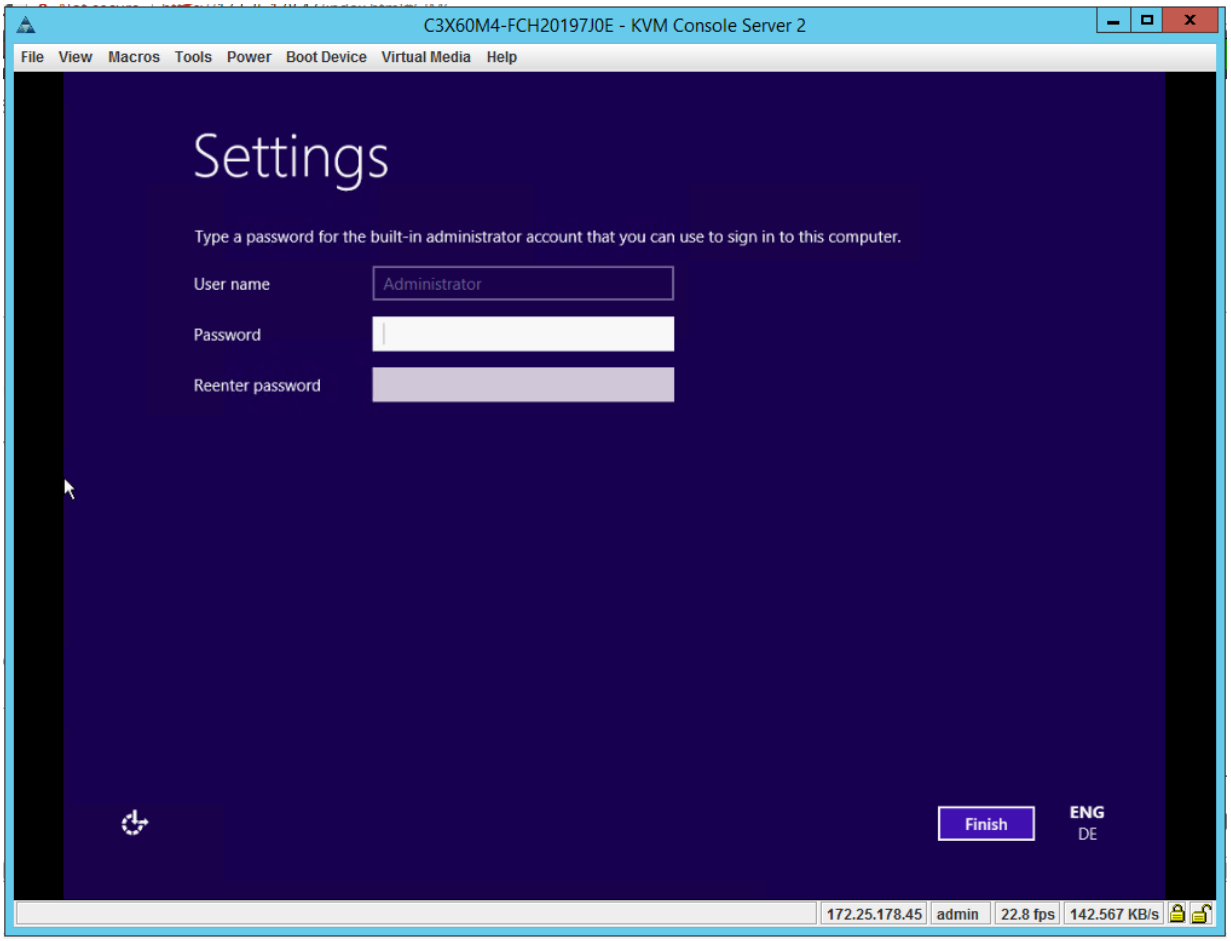


Select the drive created for the OS. The best way to identify this drive is by the size.

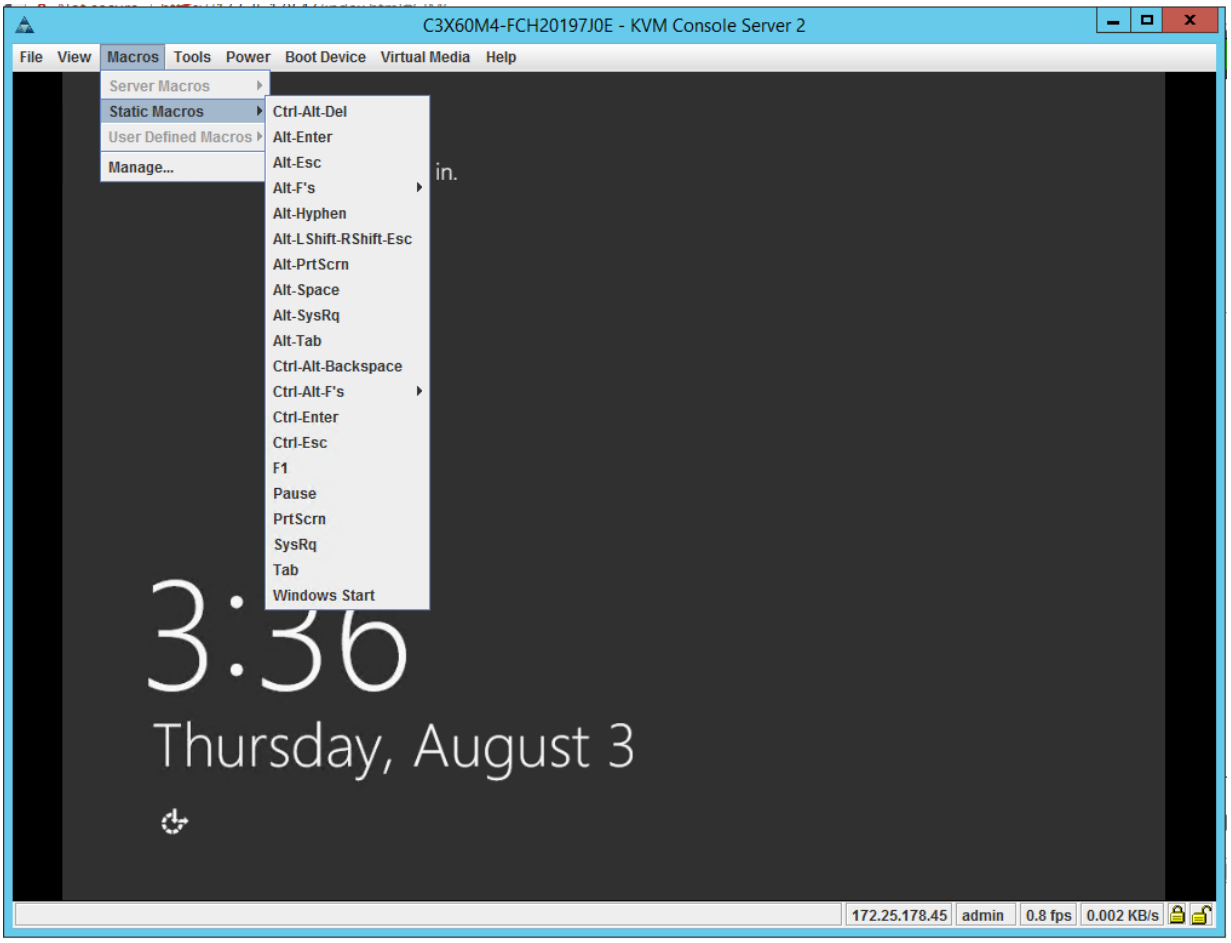


The OS installation will start, and the server will reboot automatically.

The final step of the initial installation is to enter and confirm the password for the administrator.



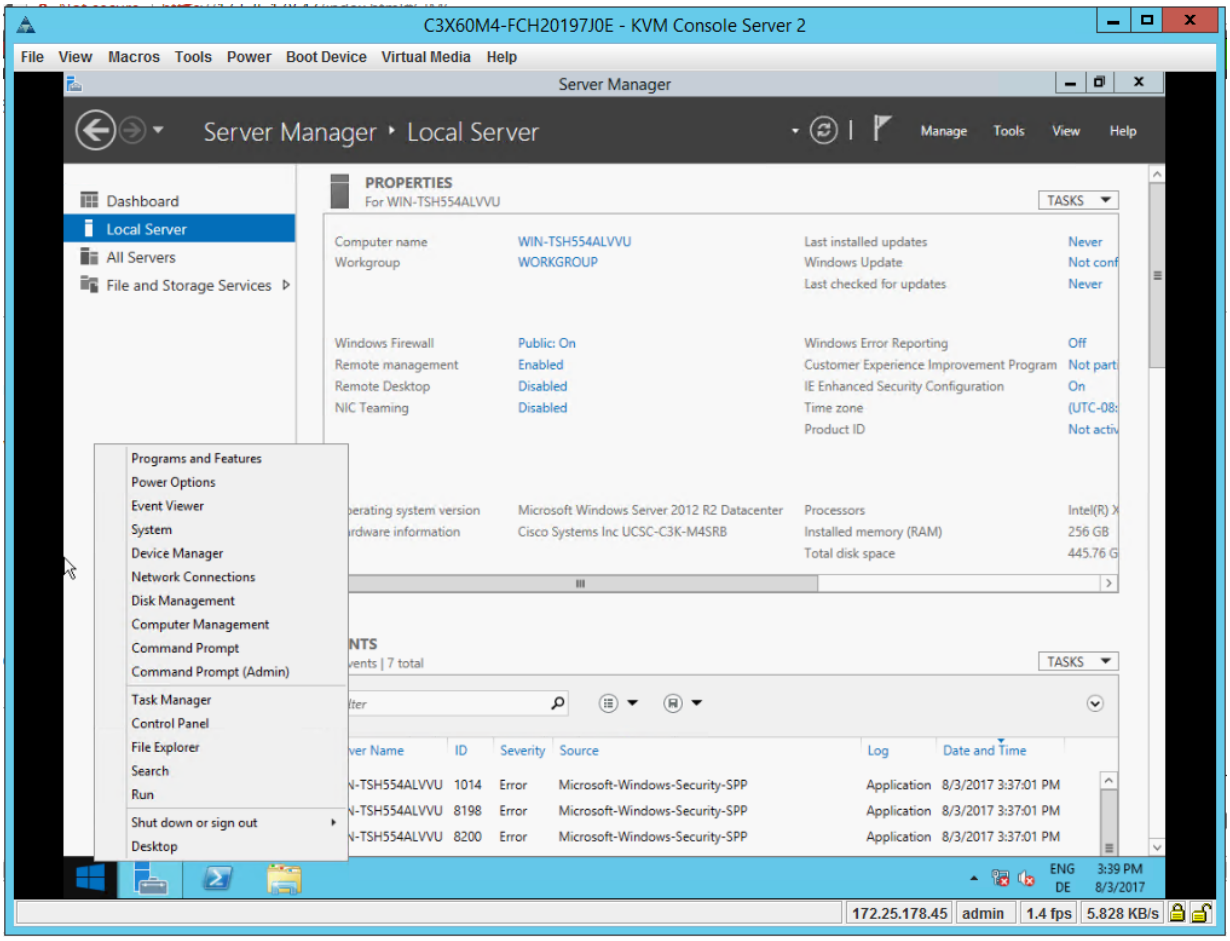
Choose Macros > Static Macros > Ctrl-Alt-Del and log on to the system.



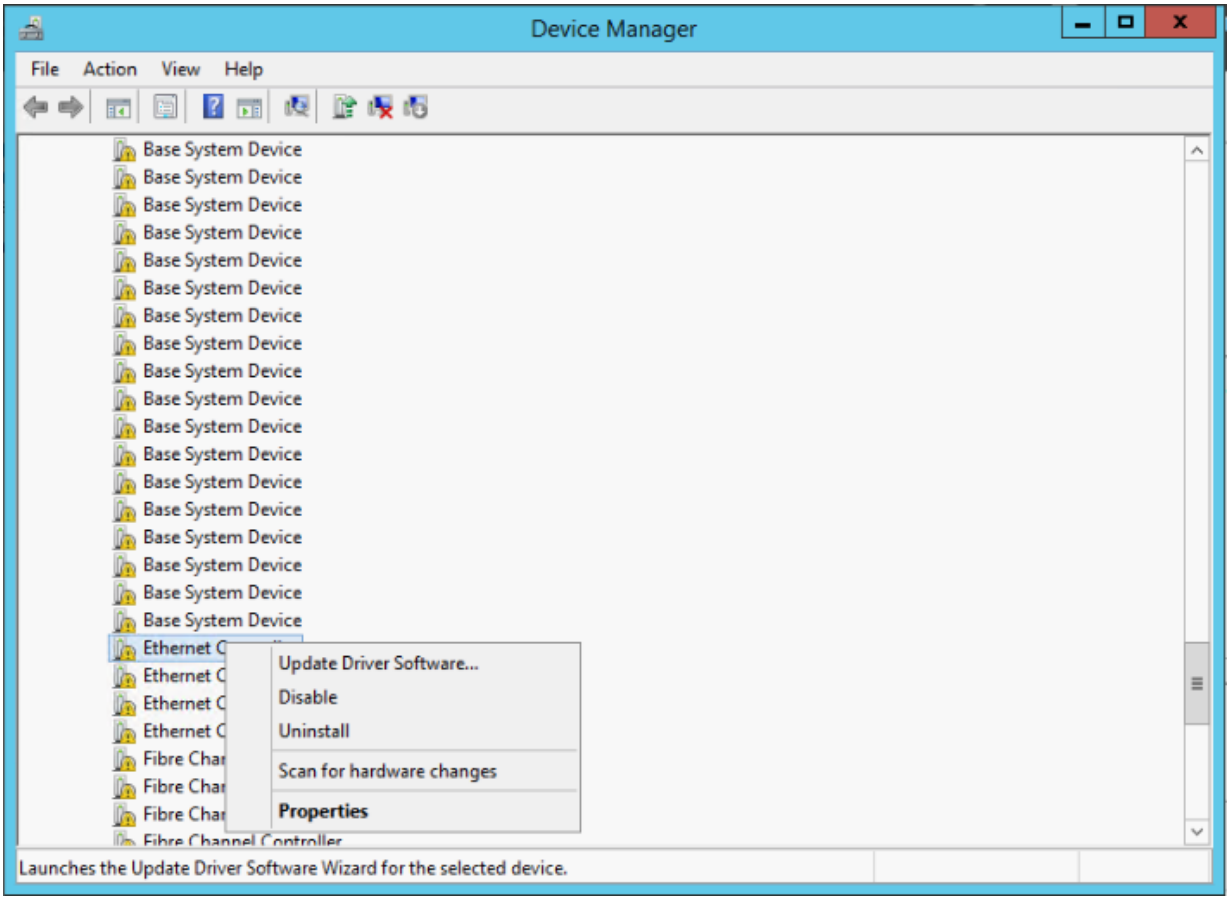
Some additional drivers are required.

Map the Cisco UCS drivers image again to the CD/DVD.

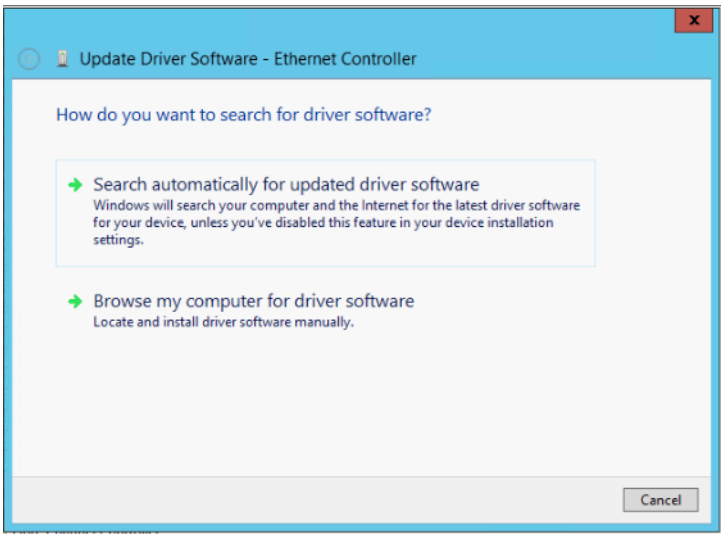
Open the Device Manager and scroll down to the unrecognized Ethernet controller.



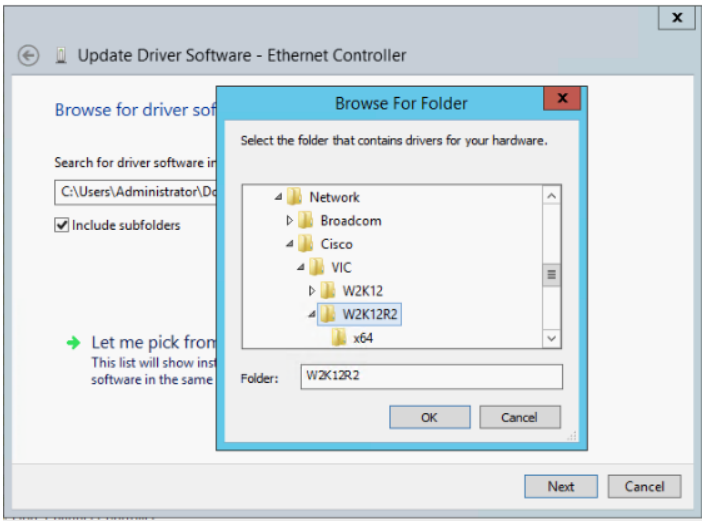
Right-click to open the Options menu and choose Update Driver Software.



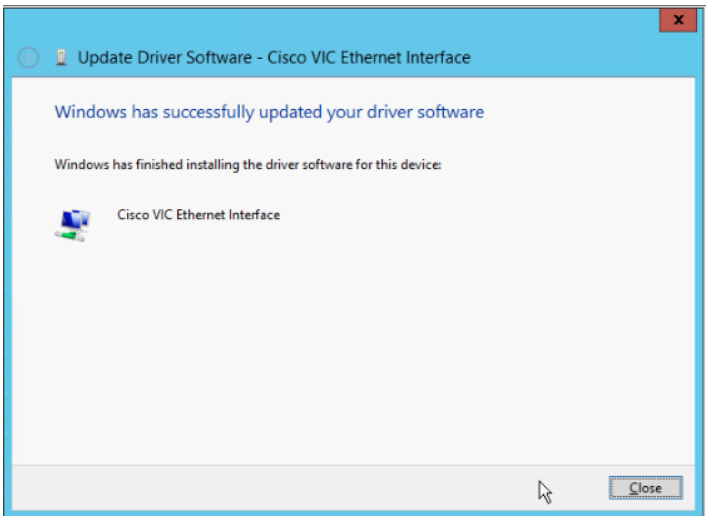
Click “Browse my computer for driver software.”

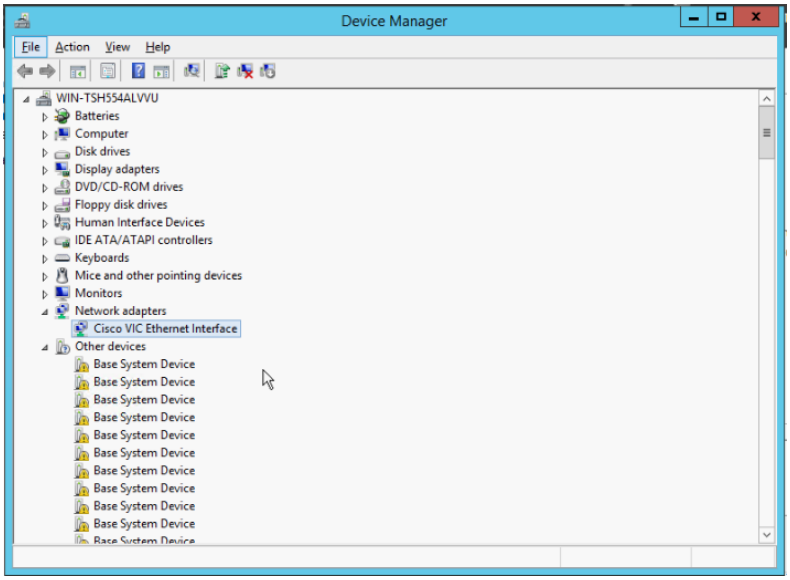


Choose Network > Cisco > VIC > W2K12R2 and select the “Include subfolders” checkbox.

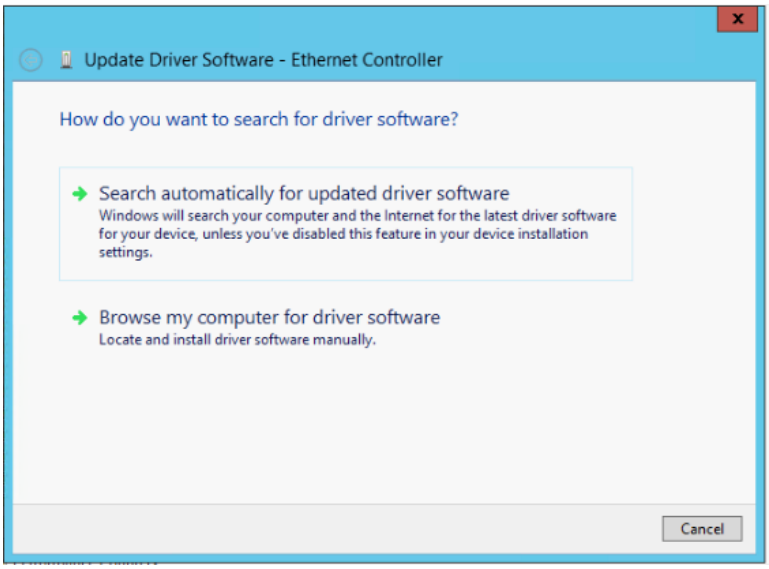


The driver for the Cisco virtual interface card (VIC) Ethernet interface will be installed.

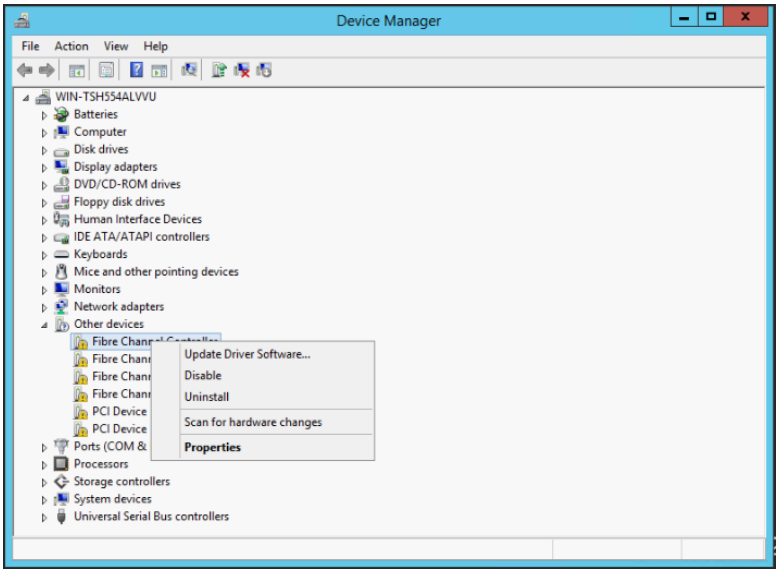




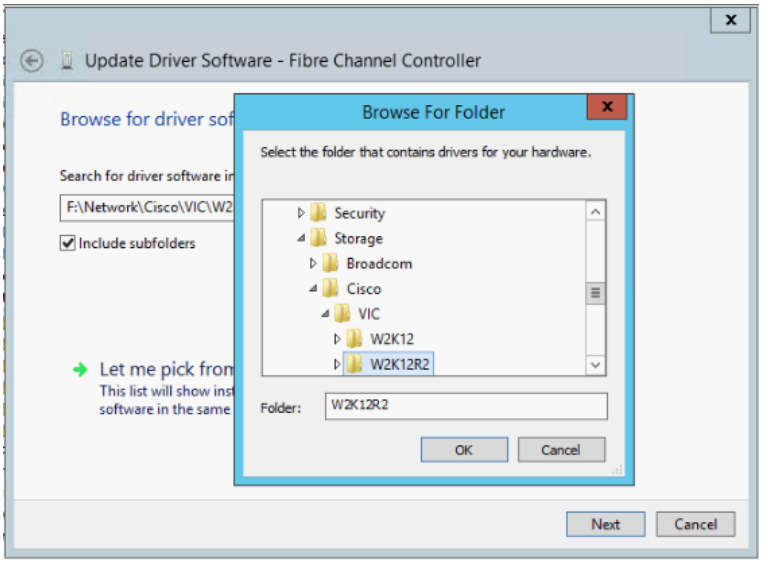
For all remaining Ethernet controllers, click “Search automatically for updated driver software.”



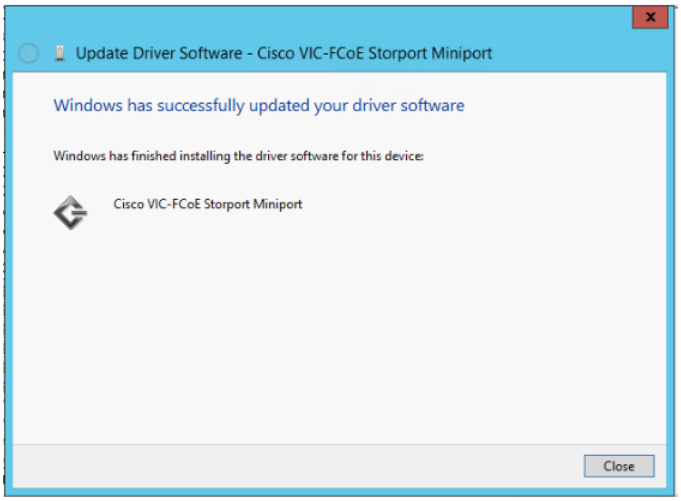
Right-click Fibre Channel Controller and choose Update Driver Software.

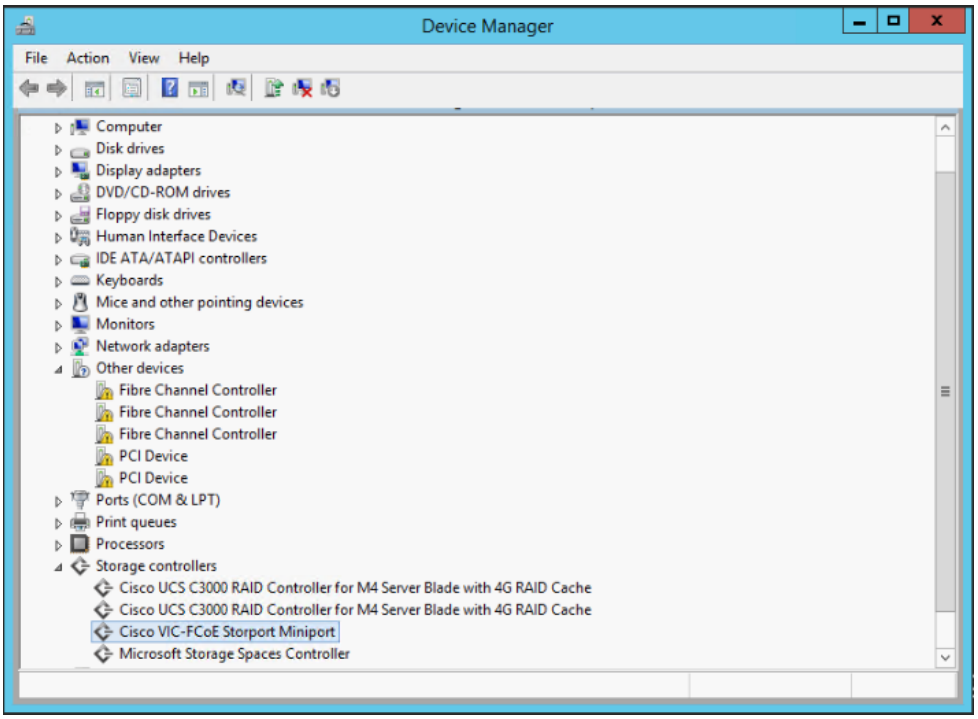


Choose Storage > Cisco > VIC > W2K12R2 > x64.



The driver for the Cisco VIC FCoE Storport miniport will be installed.

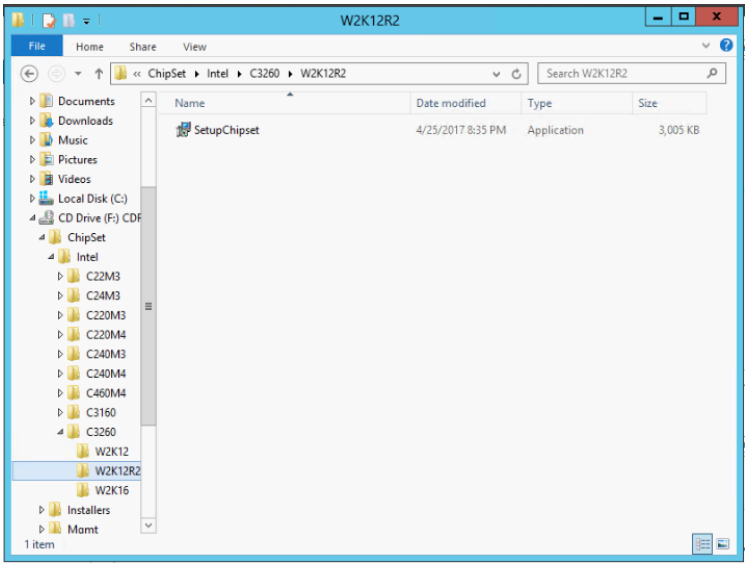




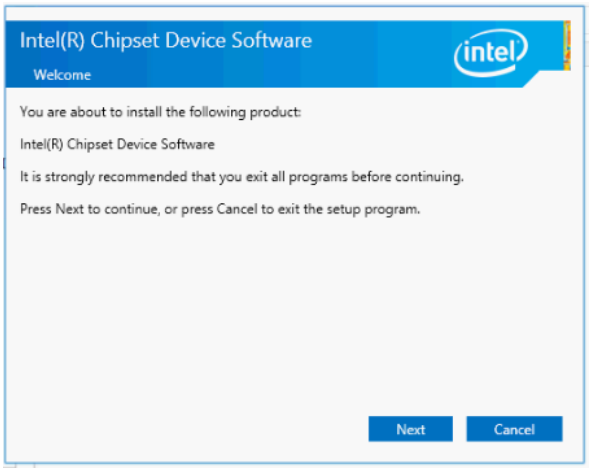
For all remaining Fibre Channel controllers, click “Search automatically for updated driver software.”

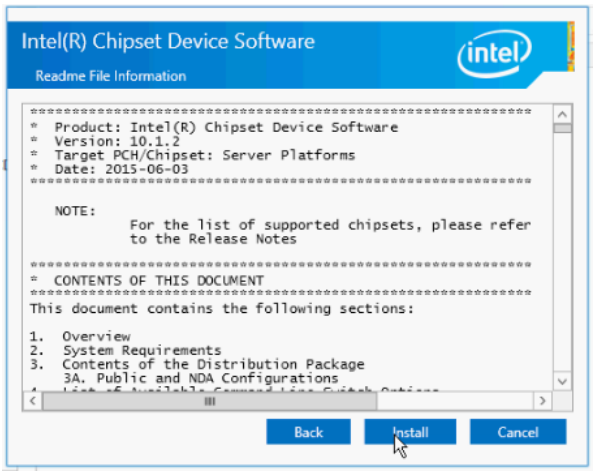
Next, you need to install the Intel chip-set drivers.

Open Microsoft Windows File Explorer, choose Chipset > Intel > C3260 > W2K12R2, and start SetupChipset.



Follow the instructions on the screen. You will need to reboot the system to finish the installation.

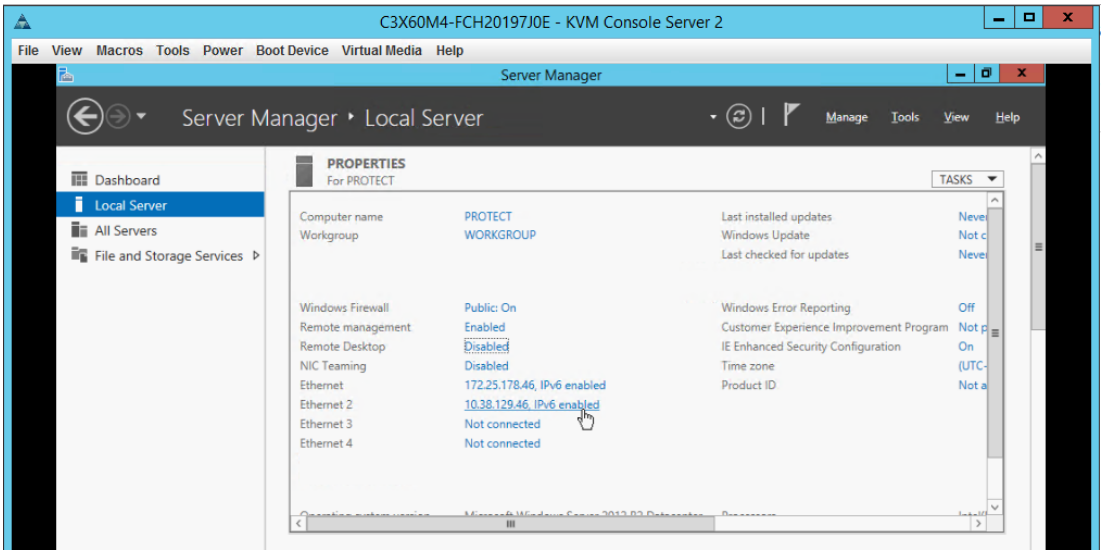




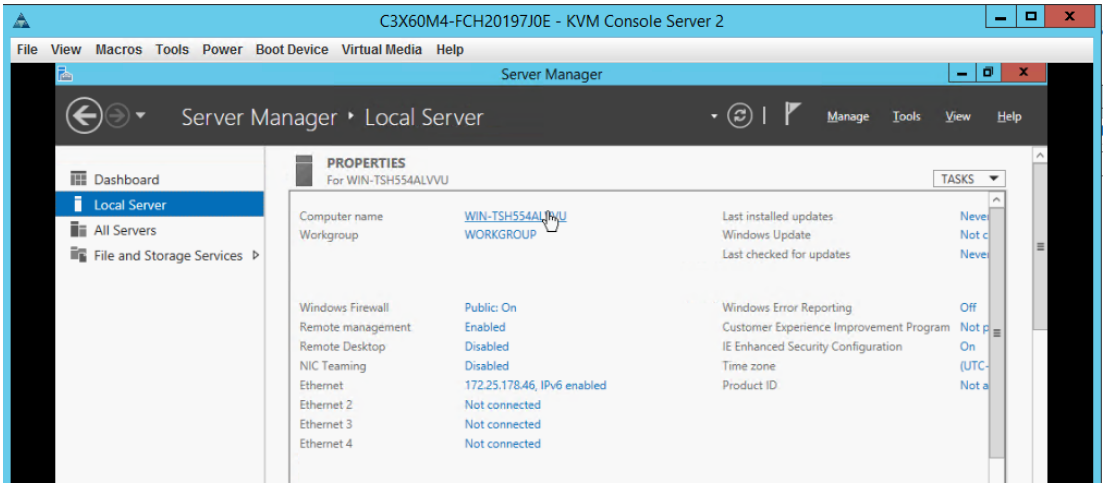
Reboot the system.

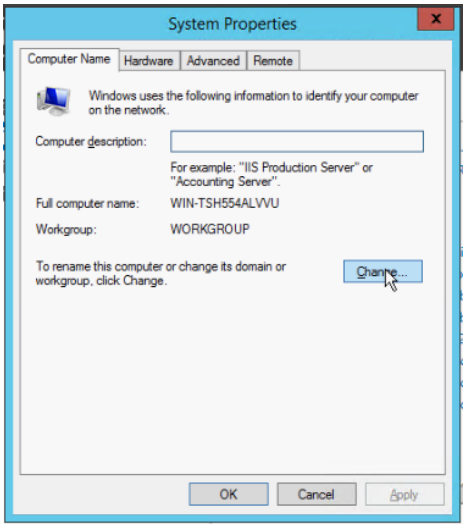
Log on to the system after the system has rebooted.

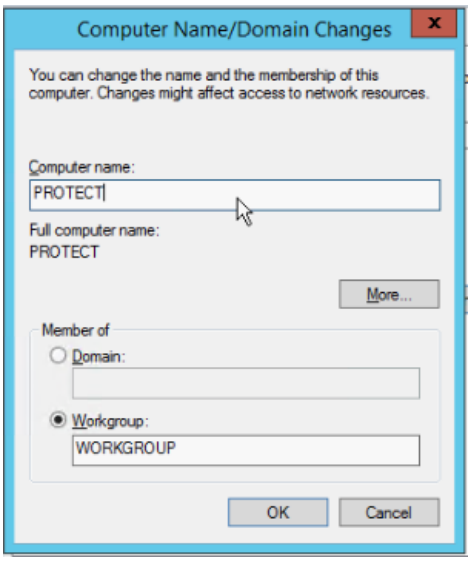
Finish the network configuration as required for you landscape and make sure that the system is reachable in the backup network.



Change the computer name and add the system to the Microsoft Active Directory domain if required.







Reboot the system.

Operating system configuration

Now you need to configure the operating system.

Firewall

Open the firewall port for the IBM Spectrum Protect server. Open the default port 1500 in a command window as follows:

C:\> netsh advfirewall firewall add rule name=" TSM server port 1500" dir=in action=allow protocol=TCP localport=1500

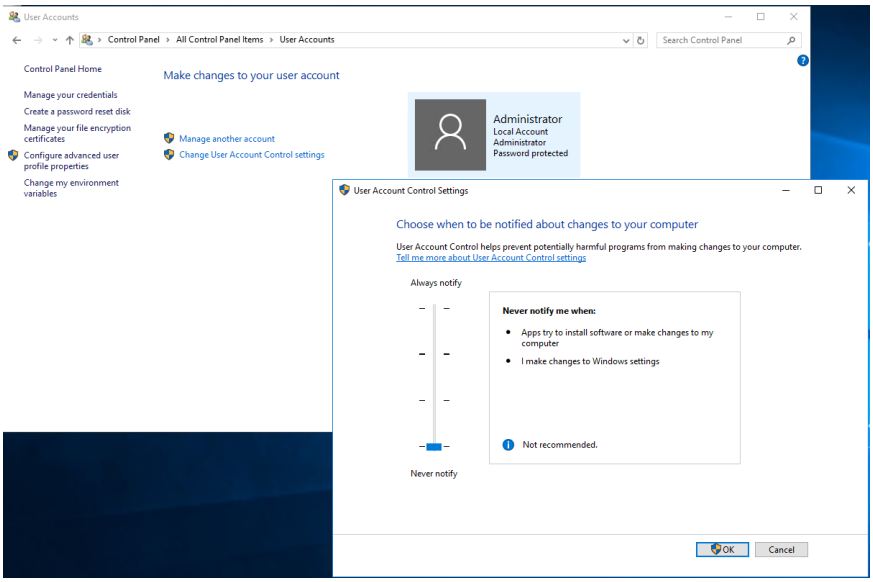
Optional: If you plan to use this system as an IBM Spectrum Protect Operations Center hub, open the default port for secure (HTTPS) communications. The port number is 11090. For example, issue the following command:

C:\> netsh advfirewall firewall add rule name=" TSM Operations Center port 11090" dir=in action=allow protocol=TCP localport=11090

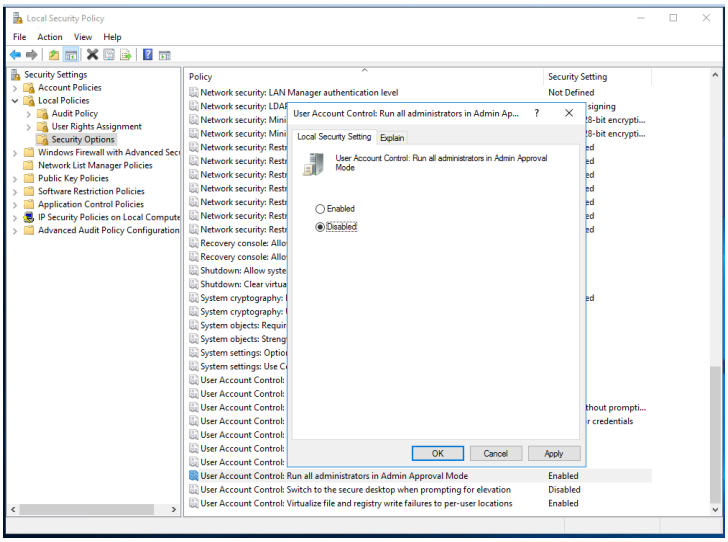
User Account Control

For the IBM Spectrum Protect server, you should disable the user account control settings. Detailed documentation is available from Microsoft. At a high level, you implement this change in two steps:

Step 1 is to disable user account control in the Control Center.



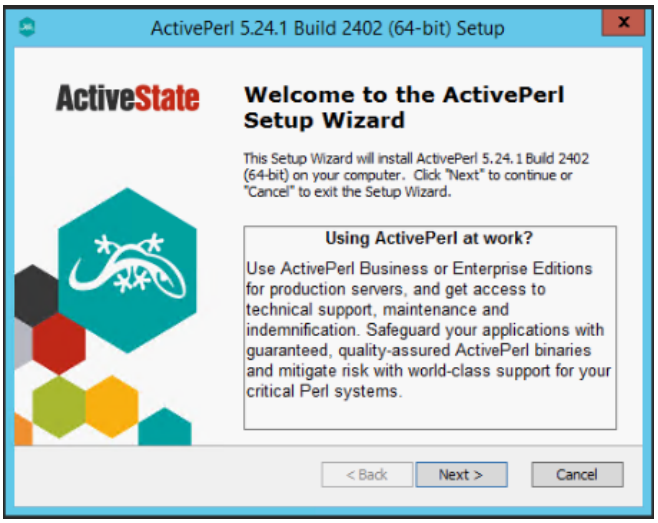
Step 2 is to disable user account control in the Local Security Policy console.



Perl installation

To use the IBM automated configuration scripts, you need to install the Perl interpreter on the system.

The setup here uses ActivePerl 5.24.



Verify that the installation is complete and that Perl is added to %PATH%.

Open a command window and run perl –version.

```
Administrator: C:\Windows\system32\cmd.exe

C:\Users\Administrator\Downloads>perl -version

This is perl 5, version 24, subversion 1 (v5.24.1) built for MSWin32-x64-multi-t
hread
(with 1 registered patch, see perl -V for more detail)

Copyright 1987-2017, Larry Wall

Binary build 2402 [401627] provided by ActiveState http://www.ActiveState.com
Built Jan  5 2017 02:08:02

Perl may be copied only under the terms of either the Artistic License or the
GNU General Public License, which may be found in the Perl 5 source kit.

Complete documentation for Perl, including FAQ lists, should be found on
this system using "man perl" or "perldoc perl".  If you have access to the
Internet, point your browser at http://www.perl.org/, the Perl Home Page.


C:\Users\Administrator\Downloads>_
```

Prepare the disks

Use the diskpart utility to list all the disks in the system.

Here is the list of the existing disks in the system based on the 14-disk configuration in this document.

```
Administrator: C:\Windows\system32\cmd.exe - diskpart

C:\Users\Administrator>diskpart

Microsoft DiskPart version 6.3.9600

Copyright (C) 1999-2013 Microsoft Corporation.
On computer: PROTECT

DISKPART> list disk

  Disk ###  Status         Size     Free     Dyn  Gpt
  --------  -------------  -------  -------  ---  ---
  Disk 0    Online          200 GB   200 GB
  Disk 1    Online          446 GB      0 B
  Disk 2    Online            9 TB     9 TB
  Disk 3    Online            9 TB     9 TB
  Disk 4    Online            9 TB     9 TB
  Disk 5    Online            9 TB     9 TB
  Disk 6    Online            9 TB     9 TB
  Disk 7    Online            9 TB     9 TB
  Disk 8    Online            9 TB     9 TB
  Disk 9    Online            9 TB     9 TB
  Disk 10   Online            9 TB     9 TB
  Disk 11   Online            9 TB     9 TB
  Disk 12   Online         3072 GB  3072 GB
  Disk 13   Online         1023 GB  1023 GB
  Disk 14   Online         1023 GB  1023 GB
  Disk 15   Online         1023 GB  1023 GB
  Disk 16   Online         1023 GB  1023 GB
  Disk 17   Online         3800 GB  3800 GB
  Disk 18   Online         3800 GB  3800 GB
  Disk 19   Online         3945 MB     0 B
  Disk 20   No Media            0 B     0 B

DISKPART>
```

Disk 0 = Active log

Disk 1 = Operating system

Disk 2 – 11 = Storage disks

Disk 12 = Archive log

Disk 13 - 16 = Database backup

Disk 17 = Database

Disk 18 = Optional mirror for the database

Disk 19 = KVM mapped ISO image

Disk 20 = Cisco IMC mapped ISO image

To bring new disks online and clear the read-only attribute, run diskpart.exe with the following commands. Repeat this process for each disk:

```
diskpart
select Disk 0
online disk
attribute disk clear readonly
select Disk 2
online disk
attribute disk clear readonly
< ... >
select Disk XX
online disk
attribute disk clear readonly
```

IBM Spectrum Protect installation

Now install IBM Spectrum Protect.

Storage configuration for IBM Spectrum Protect

You can use the storage preparation script to automate file system configuration, or you can complete the process by using manual steps as documented in the IBM Spectrum Protect srv_blueprint_windows_31.pdf document, Section7- Step 4: Configure file systems for IBM Spectrum Protect. Be sure to change the content of the files storage_prep_win.pl and responsefilesmall_win.txt before starting the scripts.

The disk grouping section from storage_prep_win.pl with the modifications for this Cisco UCS S3260 configuration is described here.

Note: The database will run on the NVMe device, which eliminates the requirement for a minimum of four disks.

You can use storage_prep_win.pl with or without the -uselist option.

If you use the -uselist option, an area with disks defined per use type is maintained. If you don't use the -uselist option, the script will identify the use type per disk based on the size and automatically create the list of disks.

The definitions for the disk sizes for -uselist are shown here:

```
# Define expected size ranges for different disk types based on system size
if ($size eq "small")
{
  $dbLow = 3700;
  $dbHigh = 3850;
  $actLow = 100;
  $actHigh = 500;
  $archLow = 1900;
  $archHigh = 3599;
  $dbbkLow = 1000;
  $dbbkHigh = 1599;
  $stgLow = 5100;
  $stgHigh = 10000;
}
if ($size eq "medium")
{
  $dbLow = 3700;
  $dbHigh = 3850;
  $actLow = 100;
  $actHigh = 500;
  $archLow = 1900;
  $archHigh = 3599;
  $dbbkLow = 1000;
  $dbbkHigh = 1599;
  $stgLow = 5100;
  $stgHigh = 10000;
}
```

The definitions of disk lists for -uselist are shown here.

For an installation with 14 disk drives, use these definitions as the baseline:

```
# Edit these disk grouping if you are manually specifying the disks to process
# with the -uselist option
if ($uselist)
{
  lprint $log, "** Defining list of disks (-uselist specified).\n";
  if ($size eq "small")
```

```
  {
    @db_disks = ("Disk 17");
    @act_disks = ("Disk 0");
    @arch_disks = ("Disk 12");
    @dbbk_disks = ("Disk 13", "Disk 14", "Disk 15", "Disk 16");
    @stg_disks = ("Disk 2", "Disk 3", "Disk 4", "Disk 5", "Disk 6", "Disk 7", "Disk 8",
                  "Disk 9", "Disk 10", "Disk 11");
  }
```

For an installation with 28 disk drives, use these definitions as the baseline:

```
# Edit these disk grouping if you are manually specifying the disks to process
# with the -uselist option
if ($uselist)
{
  lprint $log, "** Defining list of disks (-uselist specified).\n";
  if ($size eq "small")
  {
    @db_disks = ("Disk 32");
    @act_disks = ("Disk 0");
    @arch_disks = ("Disk 12","Disk 27");
    @dbbk_disks = ("Disk 13", "Disk 14", "Disk 15", "Disk 16","Disk 28", "Disk 29",
     "Disk 30", "Disk 31");
    @stg_disks = ("Disk 2", "Disk 3", "Disk 4", "Disk 5", "Disk 6", "Disk 7", "Disk 8",
                  "Disk 9", "Disk 10", "Disk 11", "Disk 17", "Disk 18", "Disk 19", "Disk 20",
                  "Disk 21", "Disk 22", "Disk 23","Disk 24", "Disk 25", "Disk 26");
  }
```

For an installation with 42 disk drives, use these definitions as the baseline:

```
# Edit these disk grouping if you are manually specifying the disks to process
# with the -uselist option
if ($uselist)
{
  lprint $log, "** Defining list of disks (-uselist specified).\n";
  if ($size eq "small")
  {
    @db_disks = ("Disk 47");
```

```
    @act_disks = (" Disk 0" );
    @arch_disks = (" Disk 12" ," Disk 27" ,“Disk 42“);
    @dbbk_disks = (" Disk 13" , " Disk 14" , " Disk 15" , " Disk 16" ," Disk 28" , " Disk 29" ,
     " Disk 30" , " Disk 31" ," Disk 43" , " Disk 44" , " Disk 45" , " Disk 46" );
    @stg_disks = (" Disk 2" , " Disk 3" , " Disk 4" , " Disk 5" , " Disk 6" , " Disk 7" , " Disk 8" ,
                  " Disk 9" , " Disk 10" , " Disk 11" , " Disk 17" , " Disk 18" , " Disk 19" , " Disk 20" ,
                  " Disk 21" , " Disk 22" , " Disk 23" ," Disk 24" , " Disk 25" , " Disk 26"
   " Disk 32" , " Disk 33" , " Disk 34" , " Disk 35" , " Disk 36" , " Disk 37" , " Disk 38" ,
                  " Disk 39" , " Disk 40" , " Disk 41" );
  }
```

For an installation with 56 disk drives, use these definitions as the baseline:

```
# Edit these disk grouping if you are manually specifying the disks to process
# with the -uselist option
if ($uselist)
{
  lprint $log, " ** Defining list of disks (-uselist specified).\n" ;
  if ($size eq " small" )
  {
    @db_disks = (" Disk 61" );
    @act_disks = (" Disk 0" );
    @arch_disks = (" Disk 12" ," Disk 27" ,“Disk 42“,“Disk 56“);
    @dbbk_disks = (" Disk 13" , " Disk 14" , " Disk 15" , " Disk 16" ," Disk 28" , " Disk 29" ,
     " Disk 30" , " Disk 31" ," Disk 43" , " Disk 44" , " Disk 45" , " Disk 46" );
    @stg_disks = (" Disk 2" , " Disk 3" , " Disk 4" , " Disk 5" , " Disk 6" , " Disk 7" , " Disk 8" ,
                  " Disk 9" , " Disk 10" , " Disk 11" , " Disk 17" , " Disk 18" , " Disk 19" , " Disk 20" ,
                  " Disk 21" , " Disk 22" , " Disk 23" ," Disk 24" , " Disk 25" , " Disk 26"
   " Disk 32" , " Disk 33" , " Disk 34" , " Disk 35" , " Disk 36" , " Disk 37" , " Disk 38" ,
                  " Disk 39" , " Disk 40" , " Disk 41" ," Disk 47" , " Disk 48" , " Disk 49" , " Disk 50" ,
   " Disk 51" , " Disk 52" , " Disk 52" ," Disk 53" , " Disk 54“, " Disk 55" );
  }
```

With the changes made, the storage_prep_win.pl script can run to prepare the storage for the IBM Spectrum Protect installation:

```
S:\IBM\tsmconfig>perl storage_prep_win.pl small
*******************************************************************************
**  IBM Spectrum Protect storage preparation script (WIN32) log
```

```
**  Date:  17/08/30 15:49:32
*******************************************************************************
*-----------------------------------------------------------------------------*
** Beginning disk configuration.
** Program version 3.1c
      ==>Creating parent directory c:\tsminst1
      ==>Running command: diskpart /s diskpart.in
            rescan
            list disk
** Determining the list of disks to process
      ==>Skipping non-empty disk:
        Disk 2    Online         246 GB      0 B
      ==>Skipping non-empty disk:
        Disk 18   Online          19 TB      0 B        *
      ==>Number of disks identified: 17
** Disks to be processed:
      ==>Database disks and sizes (GB)
      1. Disk 13 (3799)
      ==>Active log disks and sizes (GB)
      2. Disk 0 (199)
      ==>Archive log disks and sizes (GB)
      3. Disk 1 (3000)
      ==>Database backup disks and sizes (GB)
      4. Disk 14 (1023) 5. Disk 15 (1023) 6. Disk 16 (1023) 7. Disk 17 (1023)

      ==>Storage pool disks and sizes (GB)
      8. Disk 3 (9216) 9. Disk 4 (9216) 10. Disk 5 (9216) 11. Disk 6 (9216)
      12. Disk 7 (9216) 13. Disk 8 (9216) 14. Disk 9 (9216) 15. Disk 10 (9216)
      16. Disk 11 (9216) 17. Disk 12 (9216)

...
      ==>Running command: diskpart /s diskpart.in
            select Disk 12
            convert gpt
            create partition primary
            assign mount=c:\tsminst1\TSMfile09
```

```
            format FS=NTFS LABEL=TSMfile09 UNIT=64K QUICK
      File system c:\tsminst1\TSMfile09 created       [OK]
** All storage preparations have completed successfully.

*-----------------------------------------------------------------------*

S:\IBM\tsmconfig>
```

The command **mountvol** shows all the configured file systems:

```
S:\IBM\tsmconfig>mountvol
Creates, deletes, or lists a volume mount point.

MOUNTVOL [drive:]path VolumeName
MOUNTVOL [drive:]path /D
MOUNTVOL [drive:]path /L
MOUNTVOL [drive:]path /P
MOUNTVOL /R
MOUNTVOL /N
MOUNTVOL /E

  path        Specifies the existing NTFS directory where the mount
              point will reside.
  VolumeName  Specifies the volume name that is the target of the mount
              point.
  /D          Removes the volume mount point from the specified directory.
  /L          Lists the mounted volume name for the specified directory.
  /P          Removes the volume mount point from the specified directory,
              dismounts the volume, and makes the volume not mountable.
              You can make the volume mountable again by creating a volume
              mount point.
  /R          Removes volume mount point directories and registry settings
              for volumes that are no longer in the system.
  /N          Disables automatic mounting of new volumes.
  /E          Re-enables automatic mounting of new volumes.

Possible values for VolumeName along with current mount points are:
```

```
\\?\Volume{b26dc892-c3b0-4f3f-a5b4-a0ab01cc9289}\
    C:\tsminst1\TSMalog\
\\?\Volume{43dab995-3f40-4d06-ae6f-45d8380e025b}\
    C:\tsminst1\TSMarchlog\
\\?\Volume{21b22be6-0000-0000-0000-100000000000}\
    *** NO MOUNT POINTS ***
\\?\Volume{9d4e0869-fb6e-469e-9a61-98a8a2245d8c}\
    C:\tsminst1\TSMfile00\
\\?\Volume{41b8b5c6-3eca-4b26-b724-8c4b37a6e2b1}\
    C:\tsminst1\TSMfile01\
\\?\Volume{bab6d7cb-562c-4767-a535-6249f5e3e4af}\
    C:\tsminst1\TSMfile02\
\\?\Volume{499141a6-d21c-44c1-8977-664c838a399a}\
    C:\tsminst1\TSMfile03\
\\?\Volume{0da59c08-0f68-4fc3-8457-edbcc36a15f6}\
    C:\tsminst1\TSMfile04\
\\?\Volume{a990c6b3-520d-4d49-b316-7b18eb87a680}\
    C:\tsminst1\TSMfile05\
\\?\Volume{90666720-6e4f-44e2-b18e-cd9c6c27679c}\
    C:\tsminst1\TSMfile06\
\\?\Volume{249ddff7-b637-47f8-a587-e1de358718f6}\
    C:\tsminst1\TSMfile07\
\\?\Volume{0d32d076-54a2-4f5d-b893-6f346924436b}\
    C:\tsminst1\TSMfile08\
\\?\Volume{38bcb467-47d3-4c7e-9431-c7f698ffe087}\
    C:\tsminst1\TSMfile09\
\\?\Volume{20202624-44e8-473e-b3c8-4e88ff8e42f0}\
    C:\tsminst1\TSMdbspace00\
\\?\Volume{220962f4-ccce-4382-b560-889246cc2ef6}\
    C:\tsminst1\TSMbkup00\
\\?\Volume{70e967e2-c359-4dc7-b75a-96bcd3b6de19}\
    C:\tsminst1\TSMbkup01\
\\?\Volume{e0f9de3d-3e77-4d05-b6b7-a8d67753f0e6}\
    C:\tsminst1\TSMbkup02\
\\?\Volume{3896902b-47f6-4880-baa7-94be8ec76319}\
```

```
    S:\
  \\?\Volume{142b5aa8-75d5-4a7a-a584-b180abbfbbc3}\
    C:\tsminst1\TSMbkup03\
  \\?\Volume{21b22be6-0000-0000-0000-501f00000000}\
    C:\

S:\IBM\tsmconfig>
```

For the database used in IBM Spectrum Protect, you should use more than one directory to store the data files. The storage_prep_win.pl script created one mount point, c:\tsminst1\TSMdbspace00, because only one disk is used. Under this mount point, four directories are required. Open a command window and run these commands:

```
md c:\tsminst1\TSMdbspace00\01
md c:\tsminst1\TSMdbspace00\02
md c:\tsminst1\TSMdbspace00\03
md c:\tsminst1\TSMdbspace00\04
```

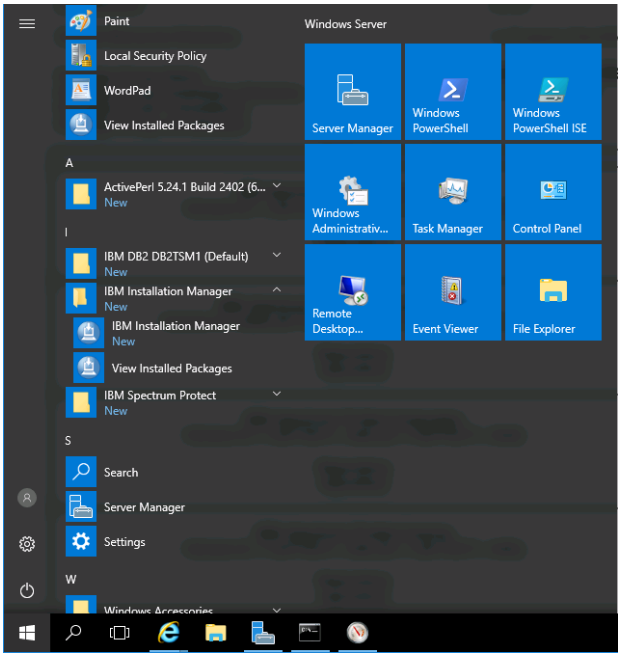
IBM Spectrum Protect installation

The installation of the IBM Spectrum Protect server can now proceed as documented in srv_blueprint_windows_v31.pdf (Chapter 4, Step 7).

Install the IBM Spectrum Protect backup client with spinstall.bat and be sure that the administrative client command-line files are selected for installation. More information is available at https://www.ibm.com/support/knowledgecenter/SSGSG7_7.1.6/client/t_inst_winclient.html.

Next install the IBM Spectrum Protect server with install.bat.

To verify the installation, start IBM Installation Manager and choose View Installed Packages.



You will see a table with information similar to the following:

IBM Installation Manager - Installed Offerings

IBM® Installation Manager Version 1.8.6 (1.8.6000.20161118_1611)

Installation Directory: C:\Program Files\IBM\Installation Manager\eclipse

Architecture: 64-bit

Shared Resource Directory: C:\Program Files\IBM\IBMIMShared

Package Group Name: IBM Spectrum Protect

Package Group Installation Directory: C:\Program Files\Tivoli\TSM

Package Group Translations: en

Package Group Architecture: 64-bit

Packages

IBM Spectrum Protect device driver - Version 8.1.1.20170317_1447 (8.1.1.20170317_1447)

IBM Spectrum Protect Operations Center - Version 8.1.2000.20170307_0839 (8.1.2000.20170307_0839)

IBM Spectrum Protect languages - Version 8.1.1.20170317_1444 (8.1.1.20170317_1444)

IBM Spectrum Protect license - Version 8.1.1.20170317_1443 (8.1.1.20170317_1443)

IBM Spectrum Protect server - Version 8.1.1.20170317_1452 (8.1.1.20170317_1452)

IBM Spectrum Protect storage agent - Version 8.1.1.20170317_1441 (8.1.1.20170317_1441)

The final step is to configure the IBM Spectrum Protect instance.

Because the disk configuration has changed and the related file system count is now different, a new response file for the TSMserverconfig.pl script is required to match the modifications for this Cisco UCS S3260 configuration

For an installation with 14 disk drives, create responsefileS3260_14_win.txt.

```
serverscale S
db2user   tsminst1
db2userpw pAssW0rd
instdirmountpoint c:\tsminst1
dbdirpaths
c:\tsminst1\TSMdbspace00\01,c:\tsminst1\TSMdbspace00\02,c:\tsminst1\TSMdbspace00\03,c:\tsminst1\TSMdbspace00\04
tsmstgpaths
c:\tsminst1\TSMfile00,c:\tsminst1\TSMfile01,c:\tsminst1\TSMfile02,c:\tsminst1\TSMfile03,c:\tsminst1\TSMfile04,c:\tsminst1\TSMfile05,c:\tsminst1\TSMfile06,c:\tsminst1\TSMfile07,c:\tsminst1\TSMfile08,c:\tsminst1\TSMfile09
actlogpath c:\tsminst1\TSMalog
archlogpath c:\tsminst1\TSMarchlog
dbbackdirpaths c:\tsminst1\TSMbkup00,c:\tsminst1\TSMbkup01,c:\tsminst1\TSMbkup02,c:\tsminst1\TSMbkup03
backupstarttime 22:00
tsmsysadminid  admin
tsmsysadminpw  passw0rd
tcpport        1500
servername     spsrv01
serverpassword passw0rd
```

For an installation with 28 disk drives, create responsefileS3260_28_win.txt.

```
serverscale S
db2user   tsminst1
db2userpw pAssW0rd
instdirmountpoint c:\tsminst1
dbdirpaths
c:\tsminst1\TSMdbspace00\01,c:\tsminst1\TSMdbspace00\02,c:\tsminst1\TSMdbspace00\03,c:\tsminst1\TSMdbspace00\04
tsmstgpaths
c:\tsminst1\TSMfile00,c:\tsminst1\TSMfile01,c:\tsminst1\TSMfile02,c:\tsminst1\TSMfile03,c:\tsminst1\TSMfile04,c:\tsminst1\TSMfile05,c:\tsminst1\TSMfile06,c:\tsminst1\TSMfile07,c:\tsminst1\TSMfile08,c:\tsminst1\TSMfile09,c:\tsminst1\TSMfile10,c:\tsminst1\TSMfile11,c:\tsminst1\TSMfile12,c:\tsminst1\TSMfile13,c:\tsminst1\TSMfile14,c:\tsminst1\TSMfile15,c:\tsminst1\TSMfile16,c:\tsminst1\TSMfile17,c:\tsminst1\TSMfile18,c:\tsminst1\TSMfile19
actlogpath c:\tsminst1\TSMalog
archlogpath c:\tsminst1\TSMarchlog
dbbackdirpaths
c:\tsminst1\TSMbkup00,c:\tsminst1\TSMbkup01,c:\tsminst1\TSMbkup02,c:\tsminst1\TSMbkup03,c:\tsminst1\TSMbkup04,c:\tsminst1\TSMbkup05,c:\tsminst1\TSMbkup06,c:\tsminst1\TSMbkup07
backupstarttime 22:00
tsmsysadminid  admin
```

```
tsmsysadminpw  passw0rd
tcpport        1500
servername     spsrv01
serverpassword passw0rd
```

For an installation with 42 disk drives, create responsefileS3260_42_win.txt.

```
serverscale M
db2user   tsminst1
db2userpw pAssW0rd
instdirmountpoint c:\tsminst1
dbdirpaths
c:\tsminst1\TSMdbspace00\01,c:\tsminst1\TSMdbspace00\02,c:\tsminst1\TSMdbspace00\03,c:\tsminst1\TSMdbspace00\04
tsmstgpaths
c:\tsminst1\TSMfile00,c:\tsminst1\TSMfile01,c:\tsminst1\TSMfile02,c:\tsminst1\TSMfile03,c:\tsminst1\TSMfile04,c:\tsminst1\TSMfile05,c:\tsminst1\TSMfile06,c:\tsminst1\TSMfile07,c:\tsminst1\TSMfile08,c:\tsminst1\TSMfile09,c:\tsminst1\TSMfile10,c:\tsminst1\TSMfile11,c:\tsminst1\TSMfile12,c:\tsminst1\TSMfile13,c:\tsminst1\TSMfile14,c:\tsminst1\TSMfile15,c:\tsminst1\TSMfile16,c:\tsminst1\TSMfile17,c:\tsminst1\TSMfile18,c:\tsminst1\TSMfile19,c:\tsminst1\TSMfile20,c:\tsminst1\TSMfile21,c:\tsminst1\TSMfile22,c:\tsminst1\TSMfile23,c:\tsminst1\TSMfile24,c:\tsminst1\TSMfile25,c:\tsminst1\TSMfile26,c:\tsminst1\TSMfile27,c:\tsminst1\TSMfile28,c:\tsminst1\TSMfile29
actlogpath c:\tsminst1\TSMalog
archlogpath c:\tsminst1\TSMarchlog
dbbackdirpaths
c:\tsminst1\TSMbkup00,c:\tsminst1\TSMbkup01,c:\tsminst1\TSMbkup02,c:\tsminst1\TSMbkup03,c:\tsminst1\TSMbkup04,c:\tsminst1\TSMbkup05,c:\tsminst1\TSMbkup06,c:\tsminst1\TSMbkup07,c:\tsminst1\TSMbkup08,c:\tsminst1\TSMbkup09,c:\tsminst1\TSMbkup10,c:\tsminst1\TSMbkup11
backupstarttime 22:00
tsmsysadminid  admin
tsmsysadminpw  passw0rd
tcpport        1500
servername     spsrv01
serverpassword passw0rd
```

For an installation with 56 disk drives, create responsefileS3260_56_win.txt.

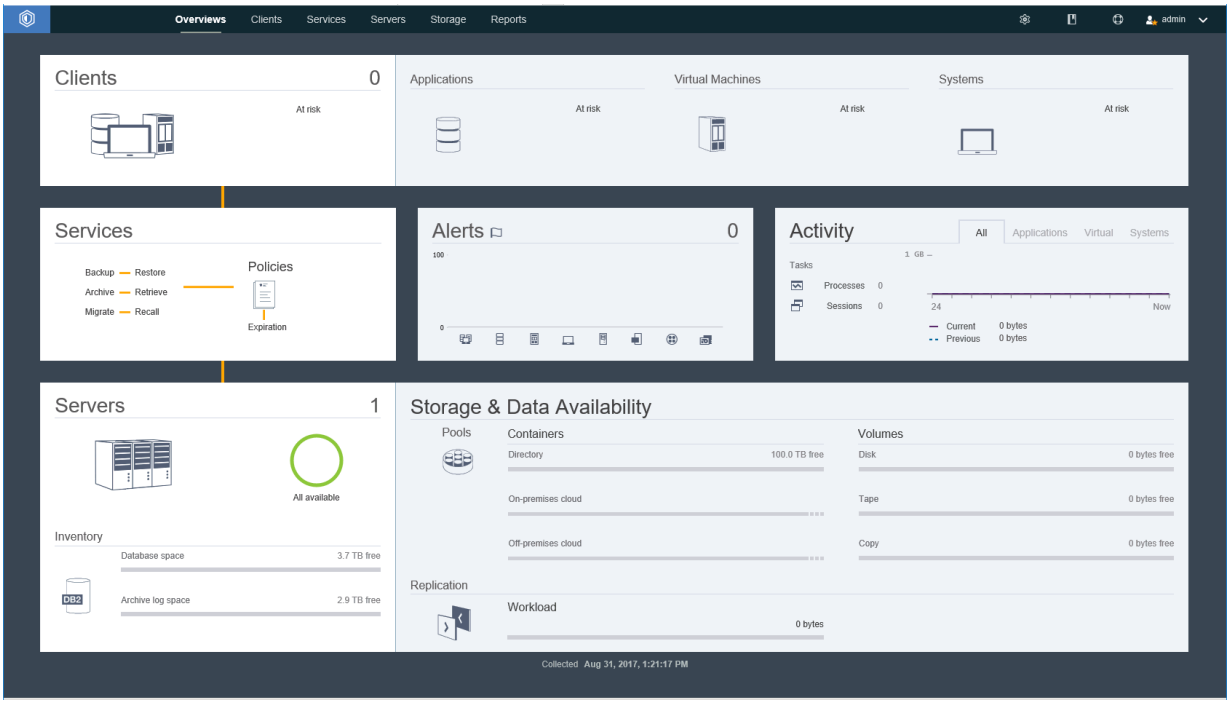
```
serverscale M
db2user   tsminst1
db2userpw pAssW0rd
instdirmountpoint c:\tsminst1
dbdirpaths
c:\tsminst1\TSMdbspace00\01,c:\tsminst1\TSMdbspace00\02,c:\tsminst1\TSMdbspace00\03,c:\tsminst1\TSMdbspace00\04
```

```
tsmstgpaths
c:\tsminst1\TSMfile00,c:\tsminst1\TSMfile01,c:\tsminst1\TSMfile02,c:\tsminst1\TSMfile03,c:\tsminst1\TSMfile04,c:\tsminst1\TSMfile05,c:\tsminst1\TSMfile06,c:\tsminst1\TSMfile07,c:\tsminst1\TSMfile08,c:\tsminst1\TSMfile09,c:\tsminst1\TSMfile10,c:\tsminst1\TSMfile11,c:\tsminst1\TSMfile12,c:\tsminst1\TSMfile13,c:\tsminst1\TSMfile14,c:\tsminst1\TSMfile15,c:\tsminst1\TSMfile16,c:\tsminst1\TSMfile17,c:\tsminst1\TSMfile18,c:\tsminst1\TSMfile19,c:\tsminst1\TSMfile20,c:\tsminst1\TSMfile21,c:\tsminst1\TSMfile22,c:\tsminst1\TSMfile23,c:\tsminst1\TSMfile24,c:\tsminst1\TSMfile25,c:\tsminst1\TSMfile26,c:\tsminst1\TSMfile27,c:\tsminst1\TSMfile28,c:\tsminst1\TSMfile29,c:\tsminst1\TSMfile30,c:\tsminst1\TSMfile31,c:\tsminst1\TSMfile32,c:\tsminst1\TSMfile33,c:\tsminst1\TSMfile34,c:\tsminst1\TSMfile35,c:\tsminst1\TSMfile36,c:\tsminst1\TSMfile37,c:\tsminst1\TSMfile38,c:\tsminst1\TSMfile39

actlogpath c:\tsminst1\TSMalog

archlogpath c:\tsminst1\TSMarchlog

dbbackdirpaths
c:\tsminst1\TSMbkup00,c:\tsminst1\TSMbkup01,c:\tsminst1\TSMbkup02,c:\tsminst1\TSMbkup03,c:\tsminst1\TSMbkup04,c:\tsminst1\TSMbkup05,c:\tsminst1\TSMbkup06,c:\tsminst1\TSMbkup07,c:\tsminst1\TSMbkup08,c:\tsminst1\TSMbkup09,c:\tsminst1\TSMbkup10,c:\tsminst1\TSMbkup11

backupstarttime 22:00

tsmsysadminid  admin

tsmsysadminpw  passw0rd

tcpport        1500

servername     spsrv01

serverpassword passw0rd


S:\IBM\tsmconfig>dir responsefile*

 Volume in drive S is Software

 Volume Serial Number is 463C-E492


 Directory of S:\IBM\tsmconfig


08/30/2017  02:21 PM          2,292 responsefilelarge.txt

08/30/2017  02:21 PM          2,180 responsefilelarge_aix.txt

08/30/2017  02:21 PM          2,296 responsefilelarge_win.txt

08/30/2017  02:21 PM            967 responsefilemed.txt

08/30/2017  02:21 PM            967 responsefilemed_aix.txt

08/30/2017  02:21 PM            964 responsefilemed_win.txt

08/31/2017  07:45 AM          1,096 responsefileS3260_14_win.txt

08/31/2017  07:45 AM          1,096 responsefileS3260_28_win.txt

08/31/2017  07:45 AM          1,096 responsefileS3260_42_win.txt

08/31/2017  07:45 AM          1,096 responsefileS3260_56_win.txt

08/30/2017  02:21 PM            966 responsefilesmall.txt
```

```
08/30/2017  02:21 PM            964 responsefilesmall_aix.txt
08/30/2017  09:26 PM            758 responsefilesmall_win.txt
08/30/2017  02:21 PM            737 responsefile_ess.txt
          14 File(s)        17,475 bytes
           0 Dir(s)  21,935,589,261,312 bytes free

S:\IBM\tsmconfig>

S:\IBM\tsmconfig> perl TSMserverconfig.pl responsefileS3260_14_win.txt

    ...
    Step 17 of 17
                        Configuration complete

                         Congratulations!

          Your IBM Spectrum Protect server is started and ready for use.
    S:\IBM\tsmconfig>
```

Open the operations center and log on as admin to verify the instance configuration.

The Servers tile shows the database and archive log space. The Storage & Data Availability tile shows the storage pool capacity (here, 100 TB).



Configure the IBM Spectrum Protect server instance as required in your landscape based on the product documentation from IBM.

For more information

For additional information, see the following:

- Cisco UCS S3260 Storage Server
- Cisco UCS 6000 Series Fabric Interconnects
- Cisco UCS Manager
- Achieve Optimal Network Throughput on the Cisco UCS S3260 Storage Server (Cisco white paper)
- IBM Spectrum Protect
- IBM Spectrum Protect blueprint

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