Splunk POD: A Turn-Key Solution for Cisco UCS Infrastructure and Splunk Deployment Guide

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The Cisco Validated Design (CVD) program consists of systems and solutions designed, tested, and documented to facilitate faster, more reliable, and more predictable customer deployments. For more information, go to: https://www.cisco.com/go/designzone

Executive Summary

Splunk POD is an integrated hardware and software solution that combines Cisco UCS servers, Cisco Nexus switches, Cisco Intersight, and Splunk Enterprise platform to deliver an "appliance-like" on-premises deployment experience. This document provides technical guidance for physically connecting the hardware, further configuring servers in Cisco Intersight, and installing the operating system to prepare them to operate as a cluster for Splunk POD.

Key Features

- Predictable Performance: Cisco-validated S/M/L bundles ensure consistent performance
- Simplified Deployment: Kubernetes-based automation reduces deployment time from weeks to hours
- Unified Support: Single vendor support for entire hardware and software stack
- Enhanced Security: Optional Enterprise Security (ES) integration for advanced threat detection

Solution Overview

This chapter contains the following:

Audience

Purpose of this document

Sizing Options

Solution Summary

Splunk POD is a turnkey solution that includes:

- Splunk Kubernetes Installer
- Splunk Enterprise platform running in Kubernetes (SOK) created with the Kubernetes Installer for Splunk POD
- Cisco UCS servers (Cisco UCS C225 and Cisco UCS C245 models)
- Cisco Nexus 9000 switches
- Cisco Intersight management
- Optional: Splunk Enterprise Security (ES)

Audience

The intended audience for this document includes, but is not limited to, sales engineers, field consultants, professional services, IT managers, IT engineers and IT architects, partners, and customers who are interested in deploying Splunk POD.

Purpose of this document

This document provides a step-by-step guide to configure and prepare the hardware for Splunk POD. This guide explains the host, network, and rack configuration requirements.

Sizing Options

Splunk POD offers 3 pre-defined sizing options to meet the needs of different size organizations (Table 1).

Table 1. Size Options

Size	Max Daily Ingest	Use Case	Hardware Profile
Small	500 GB/day	Department/Small Enterprise	12-13 nodes
Medium	1 TB/day	Mid-size Enterprise	15-16 nodes
Large	2.5 TB/day	Large Enterprise	19-20 nodes

Data Retention Requirements:

- 90 days in hot/warm cache (local storage)
- 1-year total retention (SmartStore)
- 3 copies (replicas) of data stored in SmartStore to prevent data loss

Solution Summary

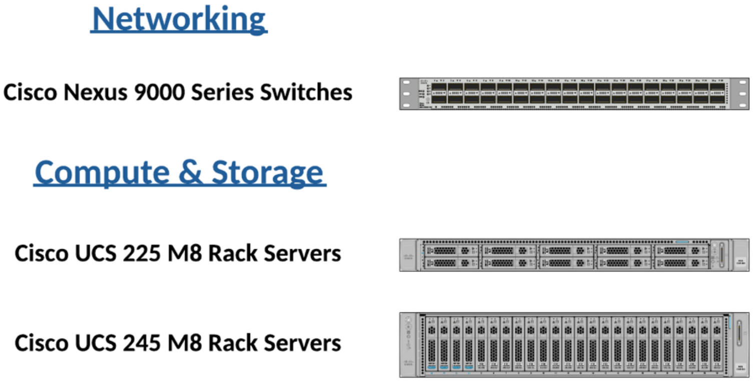
Some of the key benefits of Splunk POD include:

- Simplified Management and Deployment: Splunk POD combines the ease of server management provided by Cisco Intersight with the UCS platform for automated hardware configuration and deployment with the power of Kubernetes and the Splunk Operator for Kubernetes to provide rapid and simplified deployment. Using POD’s Kubernetes Installer, Splunk can be automatically configured and deployed in about 20 minutes from host/OS configuration using pre-configured specifications that match the POD hardware.
- High Availability and Reliability: Splunk POD focuses on providing resiliency to customer deployments with hardware and software redundancies. The power of Kubernetes allows self-healing and protection against outages.
- Real Time Insights and Proactive Monitoring: Using a combination of technologies, Intersight, Splunk, and other open-source tools, Splunk POD provides visibility into the health of the cluster.
- Accelerated Deployment and Reduced Risk: Validated reference architectures and Cisco Validated Designs (CVDs) provide prescriptive, step-by-step guidance for deploying Splunk Enterprise on Cisco UCS, accelerating time-to-value, and minimizing deployment risks

This architecture for running Splunk Enterprise on Cisco UCS uses the following infrastructure components for compute, network, and storage:

- Cisco UCS Nexus 9000 Switches
- Cisco UCS C-Series M8 Series C225 and Cisco UCS C245 Rack Servers

Figure 1. Cisco UCS Hardware


Networking
Cisco Nexus 9000 Series Switches
Compute & Storage
Cisco UCS 225 M8 Rack Servers
Cisco UCS 245 M8 Rack Servers

Splunk POD servers can be divided into two categories, with additional server types in each category, depending on server role.

Control Plane: Control Plane services consist of Cisco UCS C225 servers:

- Bastion: A Cisco UCS C225 server that hosts the Kubernetes Installer for Splunk POD as well as the Splunk Deployment server
- Controllers: Three Cisco UCS C225 servers that host the Kubernetes Control Plane services and the local OCI image registries used by the cluster.

Workers: Workers host the Kubernetes workloads. Apart from the Splunk Agent Management service, all Splunk services are deployed on these machines:

- Search Heads: Cisco UCS C225 servers sized to support Splunk Search workloads.
- Indexers: Cisco UCS C245 servers with local NVMe storage to support the deployment of Splunk Indexers with sufficient cache to store ~90 days of data in local cache
- Volume Servers: Cisco UCS C245 servers with ultra-dense local storage designed to host, at least, one year of data in S3-compliant storage.

Technology Overview

This chapter contains the following:

Cisco Unified Computing System

Splunk Enterprise

SeaweedFS Overview

Cisco Unified Computing System

Cisco Unified Computing System (Cisco UCS) is a next-generation data center platform that integrates computing, networking, storage access, and virtualization resources into a cohesive system designed to reduce total cost of ownership and increase business agility.

Cisco UCS C225 M8 Rack Server

The Cisco UCS C225 M8 Rack Server is a versatile general-purpose infrastructure and application server. This high-density, 1RU, single-socket rack server delivers industry-leading performance and efficiency for a wide range of workloads, including virtualization, collaboration, and bare-metal applications. The Cisco UCS C225 M8 Rack Server extends the capabilities of the Cisco UCS Rack Server portfolio. It powers 5th Gen and 4th Gen AMD EPYC Processors with 150 percent more cores per socket designed using AMD's chiplet architecture. With advanced features such as AMD Infinity Guard, compute-intensive applications will see significant performance improvements and reap other benefits such as power and cost efficiencies.

You can deploy the Cisco UCS C-Series Rack Servers as standalone servers or as part of the Cisco Unified Computing System managed by Cisco Intersight or Cisco UCS Manager to take advantage of Cisco standards-based unified computing innovations that can help reduce your Total Cost of Ownership (TCO) and increase your business agility.

The Cisco UCS C225 M8 Rack Server brings many new innovations to the Cisco UCS AMD Rack Server portfolio. With the introduction of PCIe Gen 5.0 for high-speed I/O, a DDR5 memory bus, and expanded storage capabilities, the server delivers significant performance and efficiency gains that will improve your application performance. For more details, go to: https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/ucs-c225-m8-rack-server-ds.html

Cisco UCS C245 M8 Rack Server

The Cisco UCS C245 M8 Rack Server is perfectly suited for a wide range of storage and I/O-intensive applications such as big data analytics, databases, collaboration, virtualization, consolidation, AI/ML, and high-performance computing supporting up to two AMD CPUs in a 2RU form factor.

The Cisco UCS C245 M8 Rack Server extends the capabilities of the Cisco UCS Rack Server portfolio. It powers 5th Gen and 4th Gen AMD EPYC Processors with up to 160 cores per socket designed using AMD's chiplet architecture. With advanced features like AMD Infinity Guard, compute-intensive applications will see significant performance improvements and will reap other benefits such as power and cost efficiencies.

Cisco UCS C245 M8 Rack Servers can be deployed as part of a Cisco UCS-managed environment, through Cisco Intersight, or standalone. When used in combination with Cisco Intersight, the Cisco UCS C245 M8 brings the power and automation of unified computing to enterprise applications, including Cisco Single Connect technology, drastically reducing switching and cabling requirements.

For more information, go to: https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/ucs-c245-m8-rack-server-ds.html

Splunk Enterprise

Splunk Enterprise is a software product that enables you to search, analyze, and visualize the data gathered from the components of your IT infrastructure or business. Splunk Enterprise collects data from any source, including metrics, logs, clickstreams, sensors, stream network traffic, web servers, custom applications, hypervisors, containers, social media, and cloud services. It enables you to search, monitor and analyze that data to discover powerful insights across multiple use cases like security, IT operations, application delivery and many more. With Splunk Enterprise, everyone from data and security analyst to business users can gain insights to drive operational performance and business results. Splunk makes it easy to input data from virtually any source – without the limitations of database structures.

Splunk POD runs Splunk Enterprise in Kubernetes via the Splunk Operator for Kubernetes (SOK). SOK provides a scalable, Kubernetes-native solution for deploying and managing Splunk Enterprise. It leverages custom resource objects to streamline operations and ensure high availability.

SeaweedFS Overview

SeaweedFS is an S3-compatible distributed storage system for blobs, objects, files and more. Splunk POD utilizes SeaweedFS for the Splunk Operator for Kubernetes app framework and for Splunk SmartStore. It is a separate storage component from Splunk indexer storage. SeaweedFS follows a simple architecture. It is composed of a master server which coordinates volume management and metadata, volume pods which manage actual data, and filers which handle file operations and the S3 API. Splunk POD deploys 3 master pods, at least 3 filer pods, and 1 volume pod per Volume Server. SeaweedFS creates 3 replicas of every object across nodes and is safe from the simultaneous loss of 2 Volume Servers.

Solution Design

This chapter contains the following:

Hardware Specifications

Hardware Inventory and Bill of Materials

Physical Components

Physical Topology

Network Configuration

Software Topology

Hardware Specifications

The following tables list the hardware specifications for this solution.

Table 2. Small POD

Name	Description	PID	Quantity
Cisco UCS Nexus Switch	Cisco Nexus 9336C-FX2 Switch for uplink network connectivity	N9K-9336C-FX2	2
Cisco UCS C225 M8	Cisco UCS C-Series 1RU C225 M8 Compute Server Node	UCSC-C225-M8S	5(6)*
Cisco UCS C245 M8	Cisco UCS C-Series 2RU C245 M8 Compute Server Node	UCSC-C245-M8SX	7

Note: Enterprise Security requires an additional Cisco UCS C225.

Table 3. Medium POD

Name	Description	PID	Quantity
Cisco UCS Nexus Switch	Cisco Nexus 9336C-FX2 Switch for uplink network connectivity	N9K-9336C-FX2	2
Cisco UCS C225 M8	Cisco UCS C-Series 1RU C225 M8 Compute Server Node	UCSC-C225-M8S	7(8)*
Cisco UCS C245 M8	Cisco UCS C-Series 2RU C245 M8 Compute Server Node	UCSC-C245-M8SX	8

Note: Enterprise Security requires an additional Cisco UCS C225 server.

Table 4. Large POD

Name	Description	PID	Quantity
Cisco UCS Nexus Switch	Cisco Nexus 9336C-FX2 Switch for uplink network connectivity	N9K-9336C-FX2	2
Cisco UCS C225 M8	Cisco UCS C-Series 1RU C225 M8 Compute Server Node	UCSC-C225-M8S	7(8)*
Cisco UCS C245 M8	Cisco UCS C-Series 2RU C245 M8 Compute Server Node	UCSC-C245-M8SX	12

Note: Enterprise Security requires an additional Cisco UCS C225 server.

Hardware Inventory and Bill of Materials

This is the current hardware specifications for Splunk POD, divided by server class.

Table 5. Control Plane - Bastion

Name	Model	Description	PID
CPU	16 Core Processor (1x AMD EYPC 9115)	AMD 9115 2.6GHz 125W 16C/64MB Cache DDR5 6000MT/s	UCS-CPU-A9115
Memory	64GB (4x 16GB)	16GB DDR5-6400 RDIMM 1Rx8 (16Gb)	UCS-MRX16G1RE5
Network Adapter	1 x Cisco VIC 15237	Cisco UCS VIC 15237 2x 40/100/200G mLOM C-Series w/Secure Boot	UCSC-M-V5D200GV2D
RAID Controller	HWRAID	Cisco Boot optimized M.2 RAID controller	UCS-M2-HWRAID
	Cisco	24G Tri-Mode M1 HBA for 16 Drives Support for RAID0, RAID1, RAID5, RAID6, RAID10, RAID50, RAID60	
Boot	2x 480GB M.2 SATA SSD configured for RAID1 for OS	480GB M.2 SATA SSD	UCS-M2-480G
Storage	2x 960GB NVMe local drives for storage	960GB 2.5in U.3 15mm P7450 Hg Perf Med End NVMe	Storage

Table 6. Control Plane – Kubernetes Controllers

Name	Model	Description	PID
CPU	8 Core Processor (1x AMD EYPC 9015)	AMD 9015 3.6GHz 125W 8C/64MB Cache DDR5 6000MT/s	CPU
Memory	64GB (4x 16GB)	16GB DDR5-6400 RDIMM 1Rx8 (16Gb)	UCS-MRX16G1RE5
Network Adapter	1 x Cisco VIC 15237	Cisco VIC 15237 2x 40/100/200G mLOM C-Series w/Secure Boot	UCSC-M-V5D200GV2D
RAID Controller	HWRAID	Cisco Boot optimized M.2 RAID controller	UCS-M2-HWRAID
	Cisco	24G Tri-Mode M1 HBA for 16 Drives Support for RAID0, RAID1, RAID5, RAID6, RAID10, RAID50, RAID60	
Boot	2x 480GB M.2 SATA SSD configured for RAID1 for OS	480GB M.2 SATA SSD	UCS-M2-480G
Storage	2x 960GB NVMe local drives for storage	960GB 2.5in U.3 15mm P7450 Hg Perf Med End NVMe	Storage

Table 7. Worker – Search Head

Name	Model	Description	PID
CPU	24 Core Processor (1x AMD EYPC 9255)	AMD 9255 3.2GHz 200W 24C/128MB Cache DDR5 6000MT/s	UCS-CPU-A925

Name	Model	Description	PID
Memory	256GB (8x 32GB)	32GB DDR5-6400 RDIMM 1Rx4 (16Gb)	UCS-MRX32G1RE5
Network Adapter	1 x Cisco VIC 15237	Cisco VIC 15237 2x 40/100/200G mLOM C-Series w/Secure Boot	UCSC-M-V5D200GV2D
RAID Controller	HWRAID	Cisco Boot optimized M.2 RAID controller	UCS-M2-HWRAID
	Cisco	24G Tri-Mode M1 HBA for 16 Drives Support for RAID0, RAID1, RAID5, RAID6, RAID10, RAID50, RAID60	
Boot	2x 480GB M.2 SATA SSD configured for RAID1 for OS	480GB M.2 SATA SSD	UCS-M2-480G
Storage	2x 960GB NVMe local drives for storage	960GB 2.5in U.3 15mm P7450 Hg Perf Med End NVMe	Storage

Table 8. Worker – Indexers

Name	Model	Description	PID
CPU	16 Core Processor (2x AMD EYPC 9115)	AMD 9115 2.6GHz 125W 16C/64MB Cache DDR5 6000MT/s	16 Core Processor (2x AMD EYPC 9115)
Memory	256GB (8x 32GB)	32GB DDR5-6400 RDIMM 1Rx4 (16Gb)	UCS-MRX32G1RE5
Network Adapter	1 x Cisco VIC 15237	Cisco VIC 15237 2x 40/100/200G mLOM C-Series w/Secure Boot	UCSC-M-V5D200GV2D
RAID Controller	HWRAID	Cisco Boot optimized M.2 RAID controller	UCS-M2-HWRAID
	Cisco	24G Tri-Mode MP1 RAID Controller w/4GB FBWC 32Drv Support for RAID0, RAID1, RAID5, RAID6, RAID10, RAID50, RAID60	UCSC-RAID-MP1L32
Boot	2x 480GB M.2 SATA SSD configured for RAID1 for OS	480GB M.2 SATA SSD	UCS-M2-480G
Storage	12x 6.4TB NVMe local drives for storage	6.4TB 2.5in U.3 15mm P7450 Hg Perf Hg End NVMe (3X)	Storage

Table 9. Worker – Volume Servers

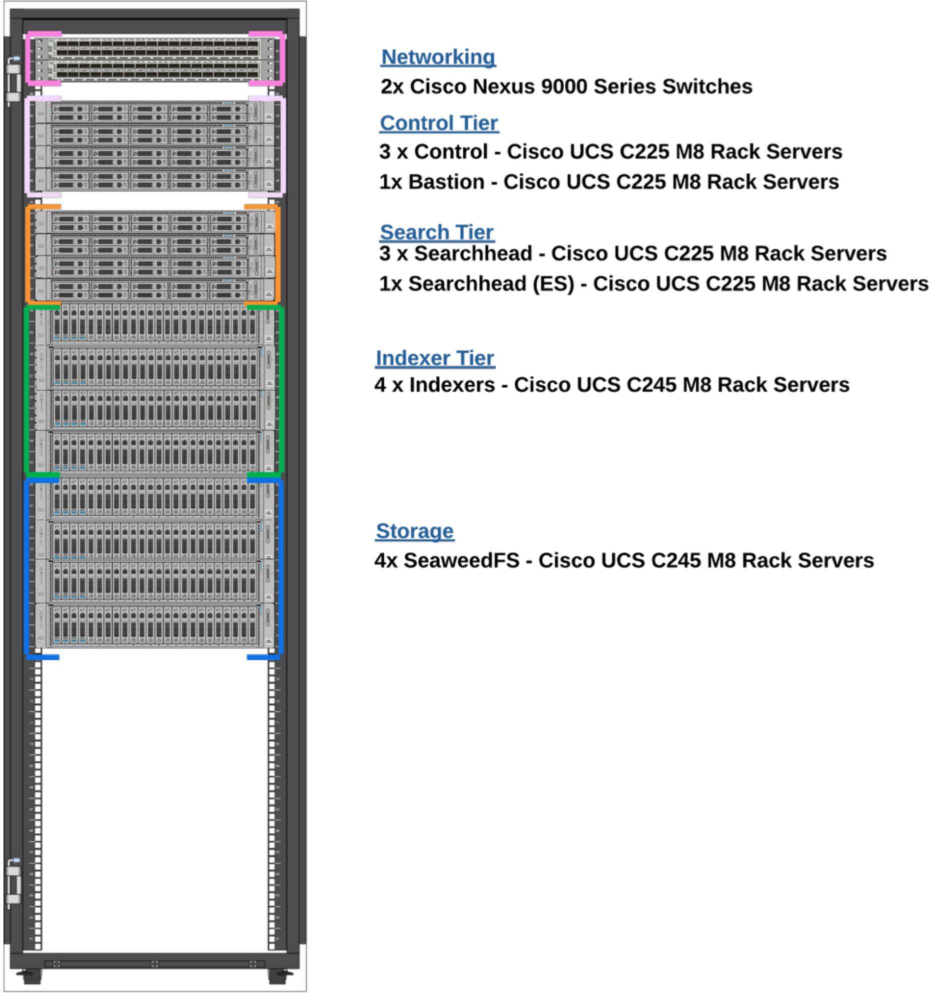
Name	Model	Description	PID
CPU	16 Core Processor (2x AMD EYPC 9115)	AMD 9115 2.6GHz 125W 16C/64MB Cache DDR5 6000MT/s	16 Core Processor (2x AMD EYPC 9115)
Memory	256GB (8x 32GB)	32GB DDR5-6400 RDIMM 1Rx4 (16Gb)	UCS-MRX32G1RE5
Network Adapter	1 x Cisco VIC 15237	Cisco VIC 15237 2x 40/100/200G mLOM C-Series w/Secure Boot	UCSC-M-V5D200GV2D
RAID Controller	HWRAID	Cisco Boot optimized M.2 RAID controller	UCS-M2-HWRAID

Name	Model	Description	PID
	Cisco	24G Tri-Mode MP1 RAID Controller w/4GB FBWC 32Drv Support for RAID0, RAID1, RAID5, RAID6, RAID10, RAID50, RAID60	UCSC-RAID-MP1L32
Boot	2x 480GB M.2 SATA SSD configured for RAID1 for OS	480GB M.2 SATA SSD	UCS-M2-480G
Storage	24x 15.3TB NVMe local drives for storage	15.3TB 2.5in U.3 15mm P7450 Hg Perf Med End NVMe	UCS-NVMEG4-M1536D

Physical Components

Figure 2 illustrates the Splunk POD rack configuration in a 42U server rack for the Medium sizing option. Other deployment types are not shown. Each server connects to Cisco 9000 series Nexus switches at the top of the rack, as detailed in the Physical Topology section.

Figure 2. Medium POD Rack Diagram

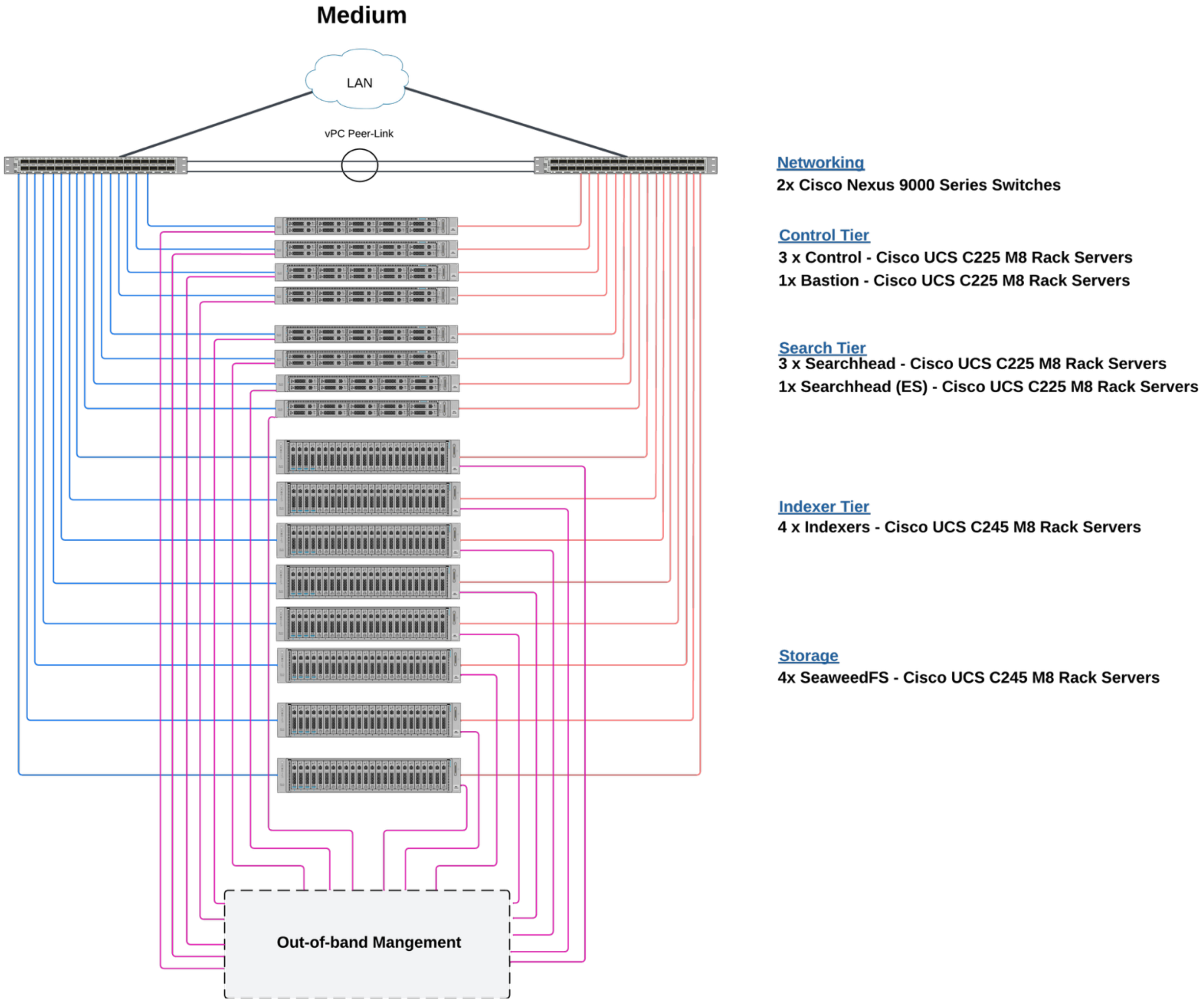

Networking
2x Cisco Nexus 9000 Series Switches
Control Tier
3 x Control - Cisco UCS C225 M8 Rack Servers
1x Bastion - Cisco UCS C225 M8 Rack Servers
Search Tier
3 x Searchhead - Cisco UCS C225 M8 Rack Servers
1x Searchhead (ES) - Cisco UCS C225 M8 Rack Servers
Indexer Tier
4 x Indexers - Cisco UCS C245 M8 Rack Servers
Storage
4x SeaweedFS - Cisco UCS C245 M8 Rack Servers

Physical Topology

This reference design shows a typical network configuration for the Medium sizing option. All servers connect to Nexus switches using 100G cables.

Note: This guide does not illustrate the other sizing options.

Figure 3. Medium POD Cable Diagram


Medium
LAN
vPC Peer-Link
Networking
2x Cisco Nexus 9000 Series Switches
Control Tier
3 x Control - Cisco UCS C225 M8 Rack Servers
1x Bastion - Cisco UCS C225 M8 Rack Servers
Search Tier
3 x Searchhead - Cisco UCS C225 M8 Rack Servers
1x Searchhead (ES) - Cisco UCS C225 M8 Rack Servers
Indexer Tier
4 x Indexers - Cisco UCS C245 M8 Rack Servers
Storage
4x SeaweedFS - Cisco UCS C245 M8 Rack Servers
Out-of-band Mangement

Network Configuration

Host Network

Connect all 100Gbps network cards on each host to the Nexus 9000 switches as shown in Figure 3. Configure the virtual interface cards in physical NIC mode with an OS HA bond to provide network redundancy for the cluster. The following sections include step-by-step instructions for configuring the VICs.

Console Network

All servers in Splunk POD have a 1Gbps console interface port. This allows you to access the virtual console and must be connected to an out-of-band switch that supports 1Gbps connections.

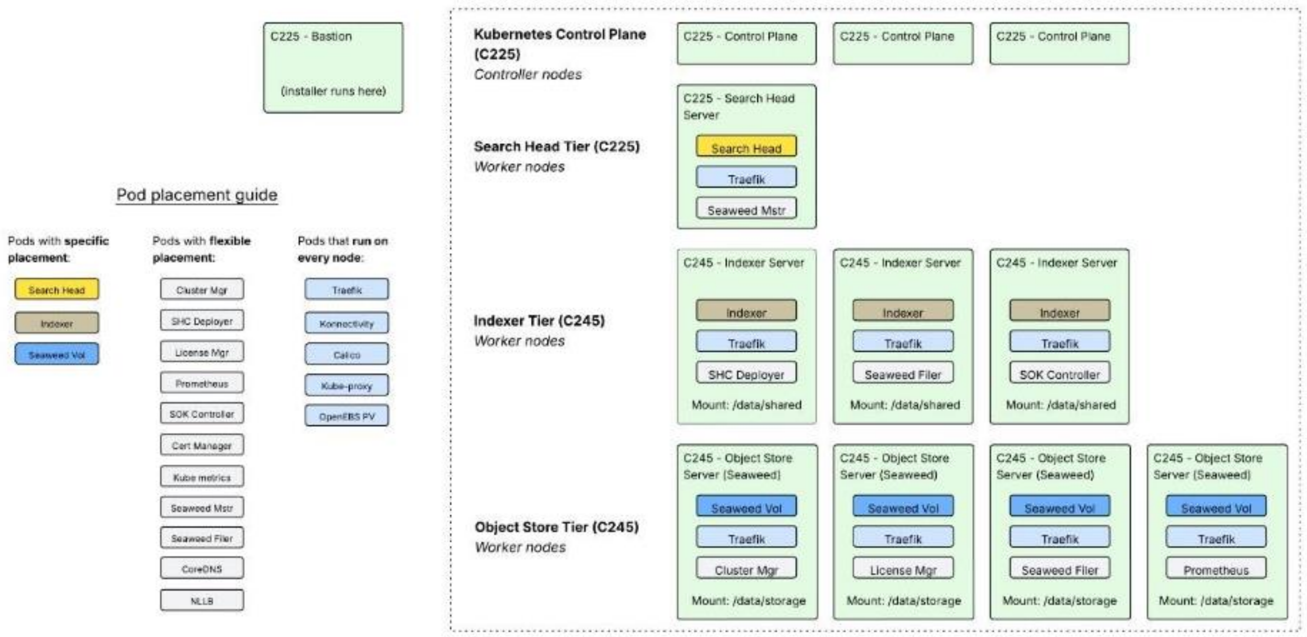
Software Topology

POD Deployment by Host Type

Figure 4 illustrates where the software is deployed in relation to the hardware. Splunk POD deploys each component to different hosts:

- Search Heads are deployed to Cisco UCS C225 machines and utilize the /data/shared mount
- Indexers are deployed to Cisco UCS C245 machines and utilize the /data/shared mount
- SeaweedFS volume pods are deployed to Cisco UCS C245 machines and utilize the /data/storage mount

Figure 4. Software Placement on Hosts



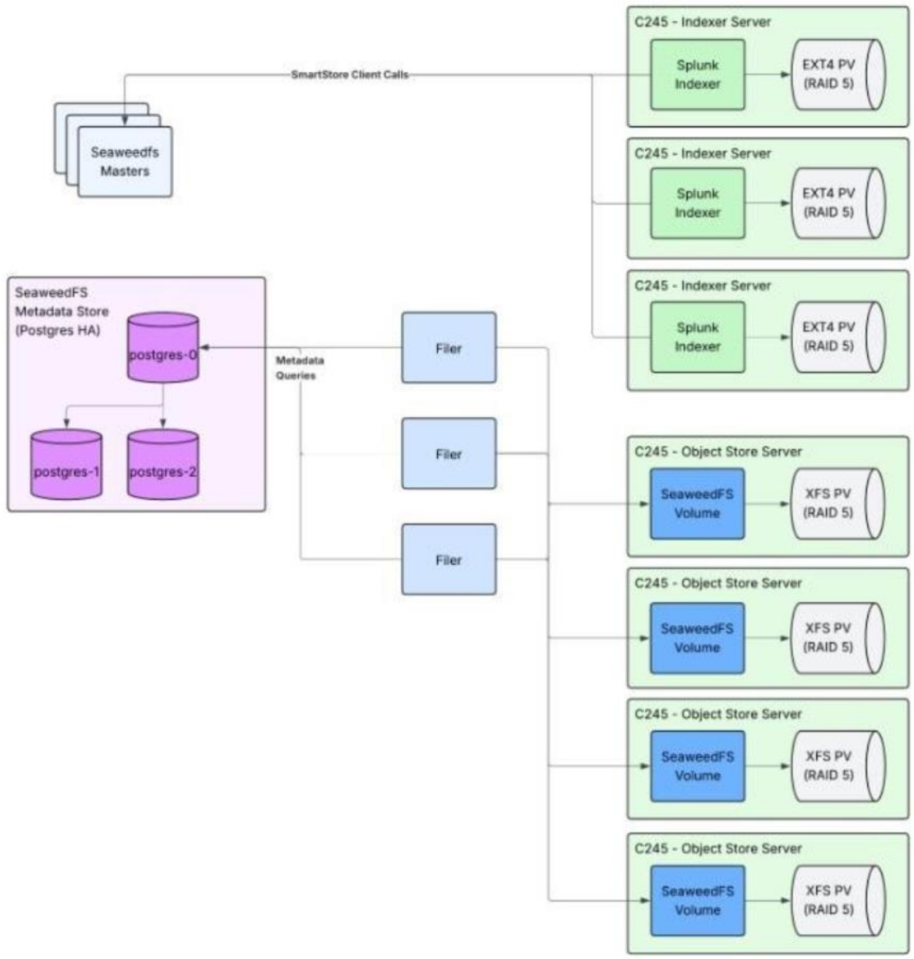
Splunk POD uses a set of rules to assign pods to specific hosts:

- Strict Separation (Protected Components)
  - Indexer pods never co-locate with other indexer pods
  - Search head pods never co-locate with other search head pods
  - SeaweedFS volume pods never co-locate with other SeaweedFS volume pods
  - These components are given dedicated hosts when possible
- Flexible Placement (other components)
  - Cluster Manager, License Manager, Deployer, Monitoring Console
  - Can co-locate with protected components if CPU/memory resources allow
  - May vary in placement between cluster deployments
- Fallback Behavior
  - If insufficient hosts with expected device names/mounts exist, pods will still schedule
  - Allows for emergency node replacement scenarios
  - Placement rules are soft constraints, not hard requirements

Storage Diagram Deployment

Figure 5 illustrates the architecture and deployment topology of the storage system in Splunk POD.

Figure 5. Software architecture and storage topology



Cisco UCS Install and Configure

This chapter contains the following:

This chapter details the Cisco Intersight deployed Cisco UCS C225 and C245 M8 Rack Servers.

Cisco UCS Configuration

Before deploying Splunk, you must configure the UCS servers appropriately. This section contains the required procedures:

- Procedure 1. Configure Cisco UCS Rack Servers
- Procedure 2. Claim Rack Servers in Cisco Intersight Platform
- Procedure 3. Configure Cisco Intersight Account and System Settings

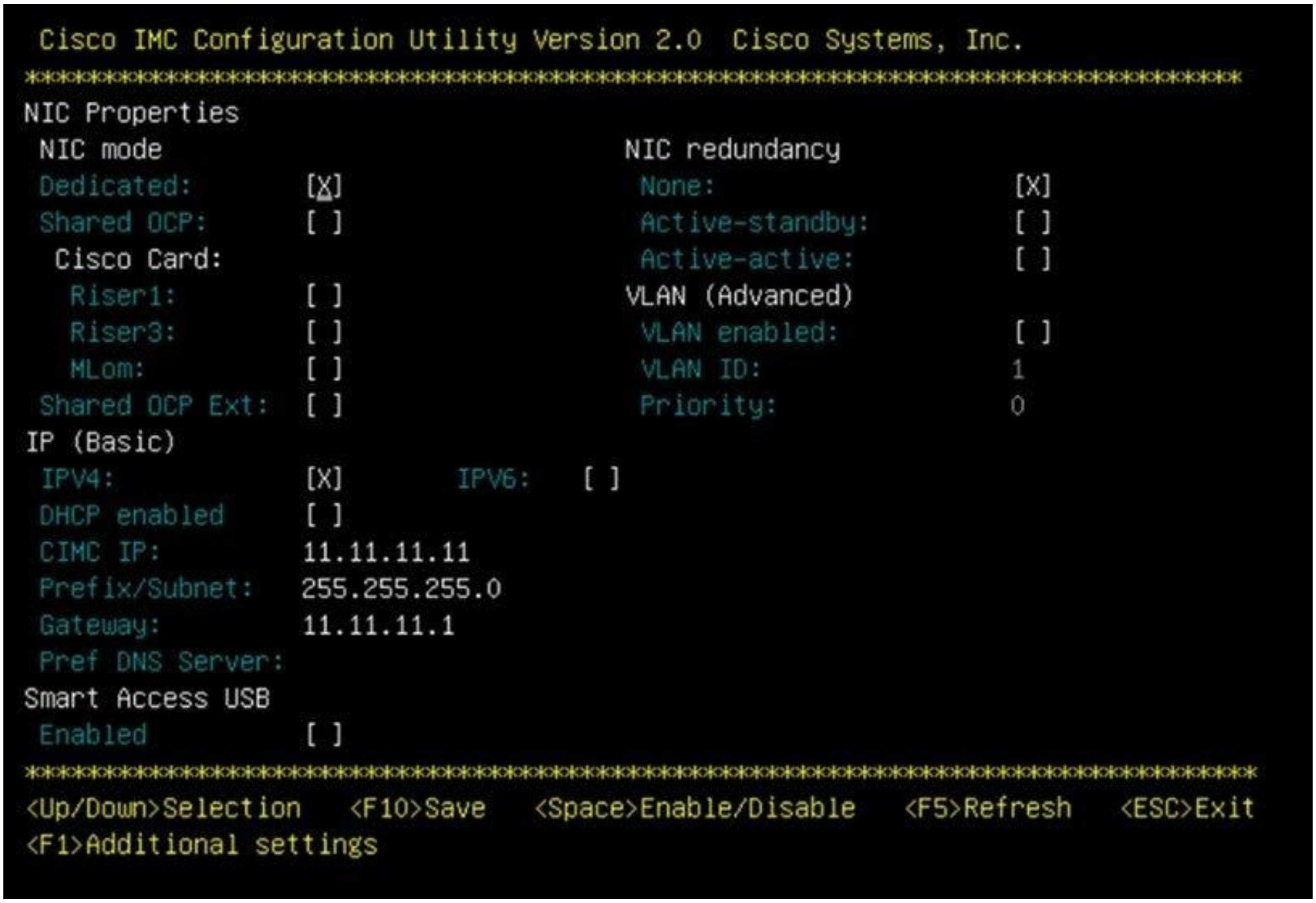
The compute nodes in Cisco UCS are configured using server profiles defined in Cisco Intersight. These server profiles derive all the server characteristics from various policies and templates.

Procedure 1. Configure Cisco UCS Rack Servers

Step 1. Configure CIMC To Standalone Mode; monitor the server boot process until you reach the Cisco menu and press F8 to enter to Cisco IMC Configuration Utility again.

Step 2. Apply the following configuration:

- NIC mode selected to Dedicated
- IP to IPV4
- CIMC IP with an IP in the same subnet as your computer
- NIC redundancy to none
- No VLAN
- IP Address for the CIMC
- Subnet for the CIMC
- Gateway for the CIMC
- Password for the Admin user. This password will be used to log into the CIMC Console later.



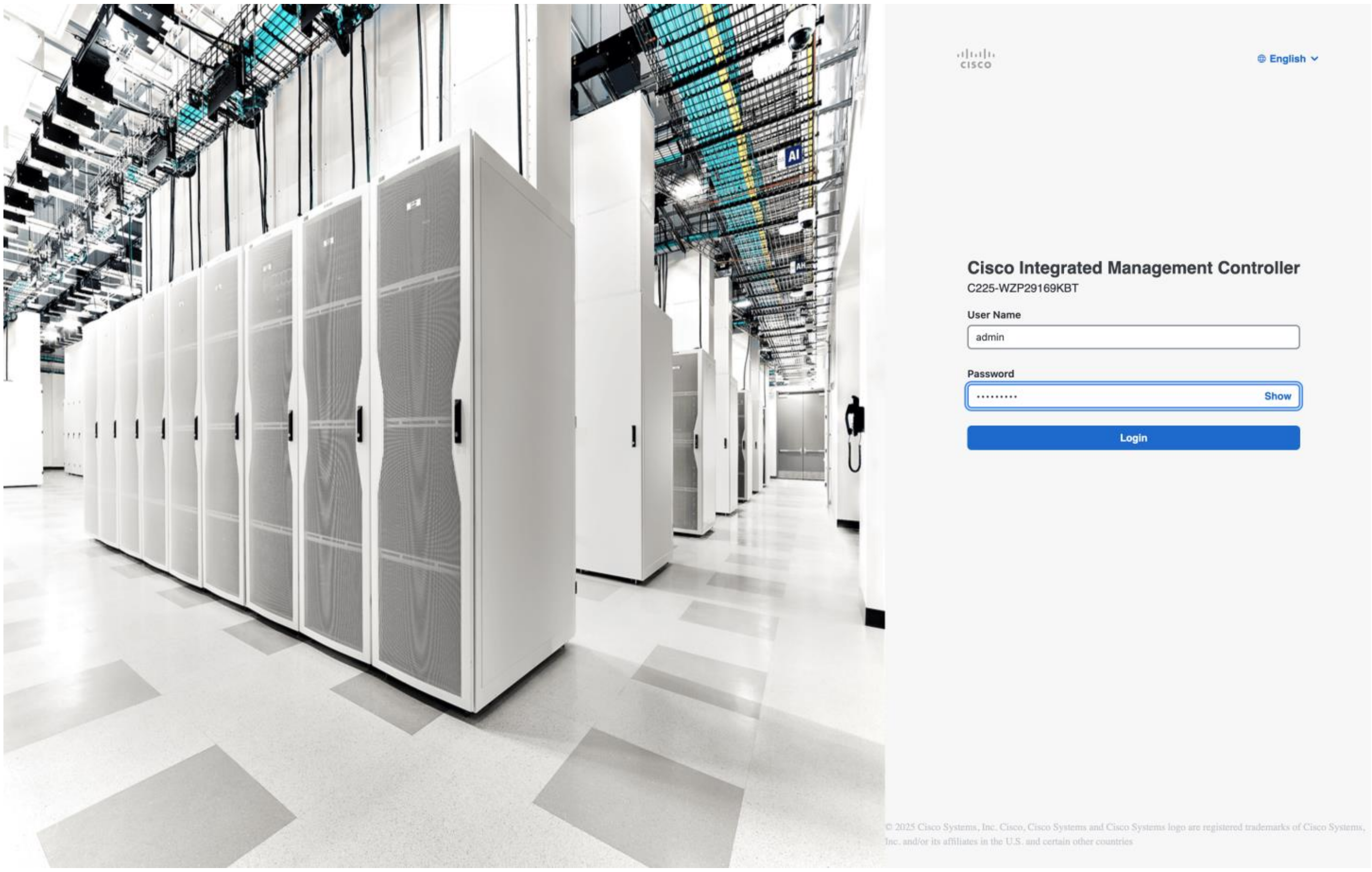
```
 Cisco IMC Configuration Utility Version 2.0  Cisco Systems, Inc.
********************************************************************************
NIC Properties
 NIC mode                               NIC redundancy
 Dedicated:        [X]                   None:                   [X]
 Shared OCP:       [ ]                   Active-standby:         [ ]
  Cisco Card:                            Active-active:          [ ]
   Riser1:         [ ]                  VLAN (Advanced)
   Riser3:         [ ]                   VLAN enabled:           [ ]
   MLom:           [ ]                   VLAN ID:                1
 Shared OCP Ext:   [ ]                   Priority:               0
IP (Basic)
 IPV4:             [X]        IPV6:   [ ]
 DHCP enabled      [ ]
 CIMC IP:          11.11.11.11
 Prefix/Subnet:    255.255.255.0
 Gateway:          11.11.11.1
 Pref DNS Server:
Smart Access USB
 Enabled           [ ]
*********************************************************************************
<Up/Down>Selection   <F10>Save   <Space>Enable/Disable   <F5>Refresh   <ESC>Exit
<F1>Additional settings
```

Step 3. Press F10 to save changes and reboot the server.

Step 4. Connect your computer to the physical Management Port on the server and open a web browser.

Step 5. Use the IP you configured https://x.x.x.x

Step 6. Log into the CIMC of your server by accessing https://<CIMC IP Address> and using the username and password. The user is " admin" and the password is the password set in Step 1 during CIMC configuration.


English

Cisco Integrated Management Controller

C225-WZP29169KBT

User Name: admin

Password: ••••••••• Show

Login

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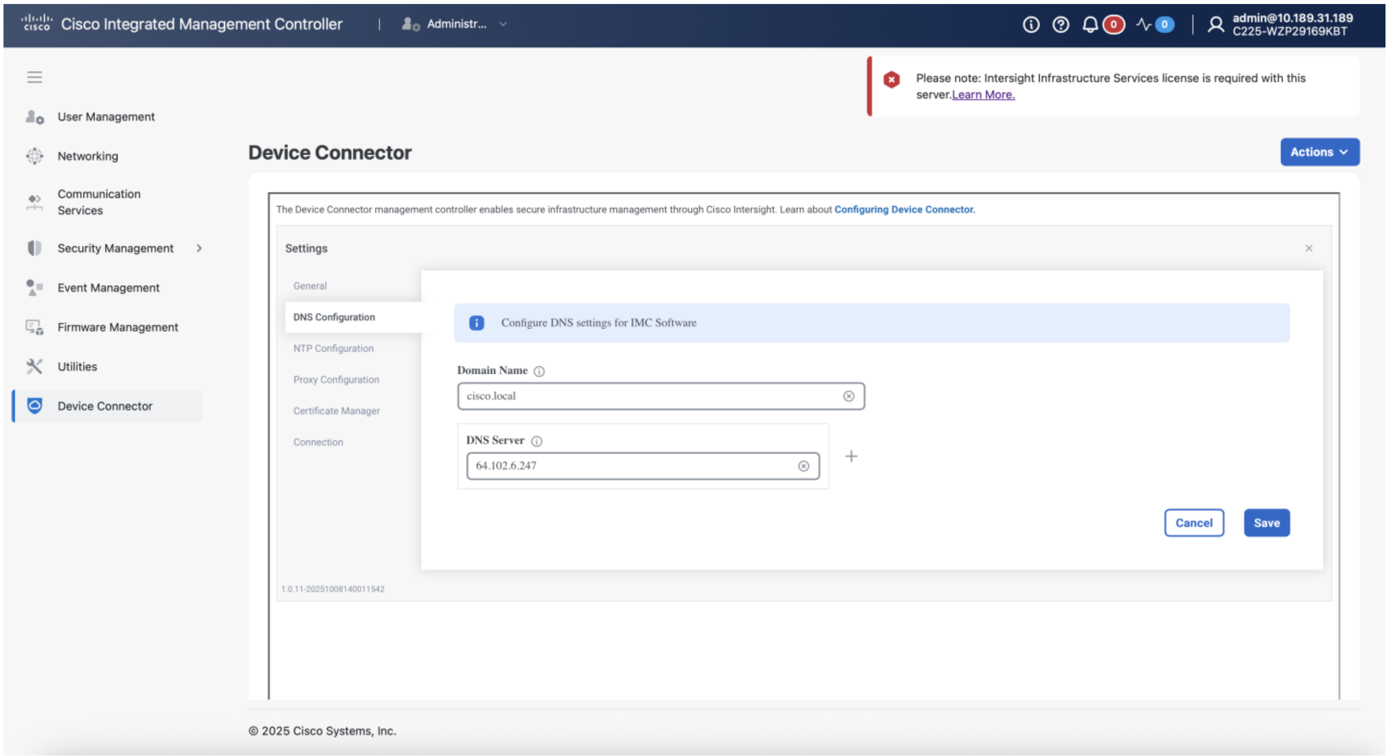
Step 7. Configure the DNS settings by entering your Domain Name and DNS Server.



Please note: Intersight Infrastructure Services license is required with this server.Learn More.

Device Connector

The Device Connector management controller enables secure infrastructure management through Cisco Intersight. Learn about Configuring Device Connector.

Settings

Configure DNS settings for IMC Software

Domain Name: cisco.local

DNS Server: 64.102.6.247

1.0.11-20251008140011542

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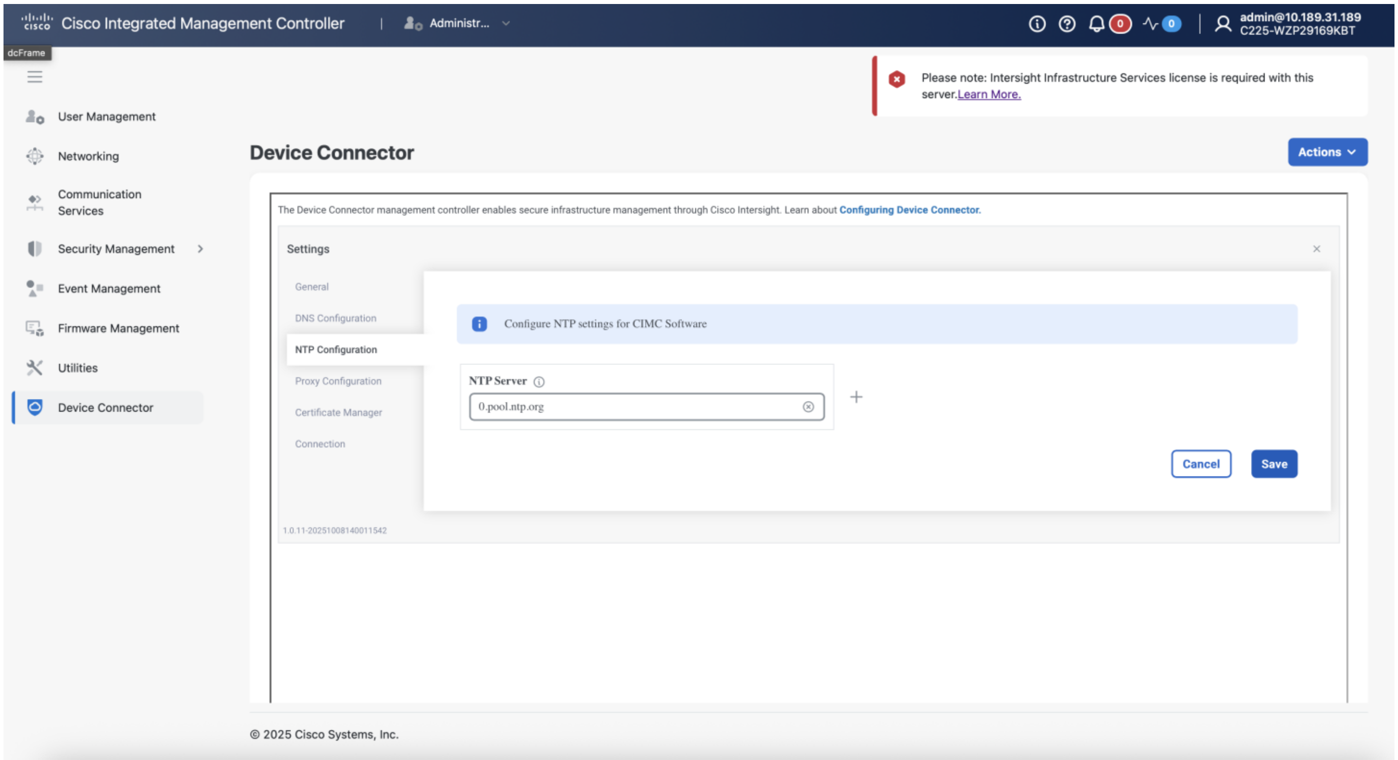
Step 8. Configure the NTP server.



Please note: Intersight Infrastructure Services license is required with this server.Learn More.

Device Connector

The Device Connector management controller enables secure infrastructure management through Cisco Intersight. Learn about Configuring Device Connector.

Settings

Configure NTP settings for CIMC Software

NTP Server: 0.pool.ntp.org

1.0.11-20251008140011542

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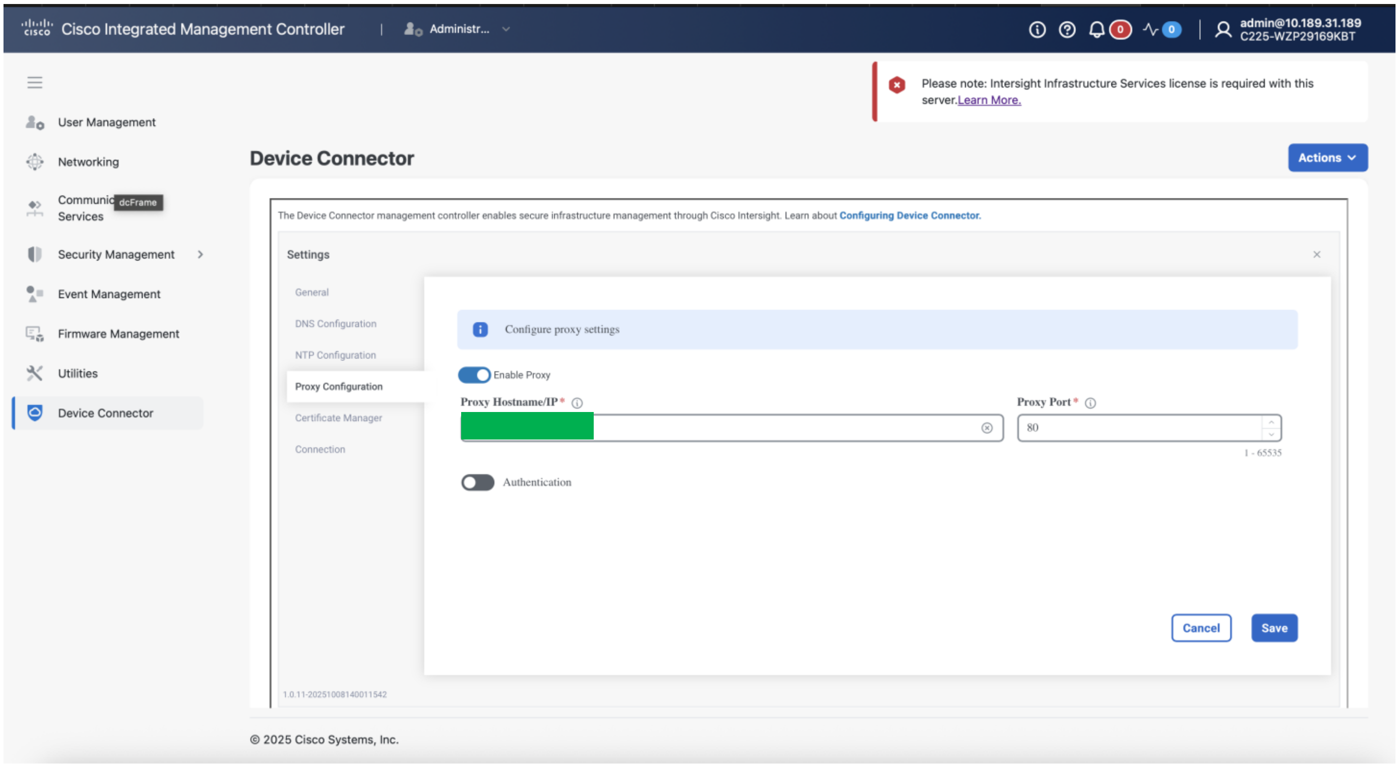
Step 9. Configure any proxy you desire to use by entering its host or IP and the appropriate port.



Please note: Intersight Infrastructure Services license is required with this server.Learn More.

Device Connector

The Device Connector management controller enables secure infrastructure management through Cisco Intersight. Learn about Configuring Device Connector.

Settings

Configure proxy settings

Enable Proxy: on

Proxy Hostname/IP *: [redacted]

Proxy Port *: 80 (1 - 65535)

Authentication: off

1.0.11-20251008140011542

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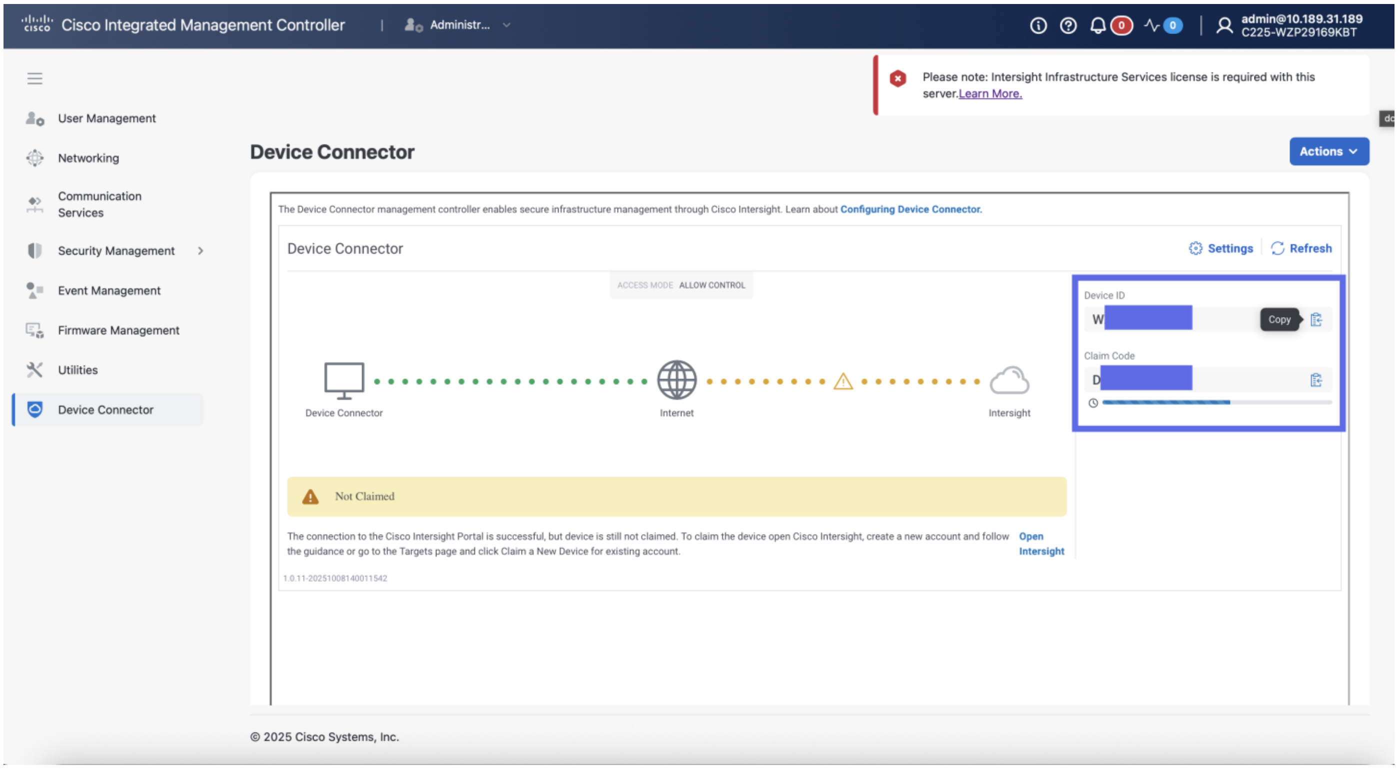
Step 10. Pause on the screen containing the device and claim codes. You will use these in the following section.



Please note: Intersight Infrastructure Services license is required with this server.Learn More.

Device Connector

The Device Connector management controller enables secure infrastructure management through Cisco Intersight. Learn about Configuring Device Connector.

Device Connector

ACCESS MODE ALLOW CONTROL

Device ID

W[redacted]

Claim Code

D[redacted]

Not Claimed

The connection to the Cisco Intersight Portal is successful, but device is still not claimed. To claim the device open Cisco Intersight, create a new account and follow the guidance or go to the Targets page and click Claim a New Device for existing account.

1.0.11-20251008140011542

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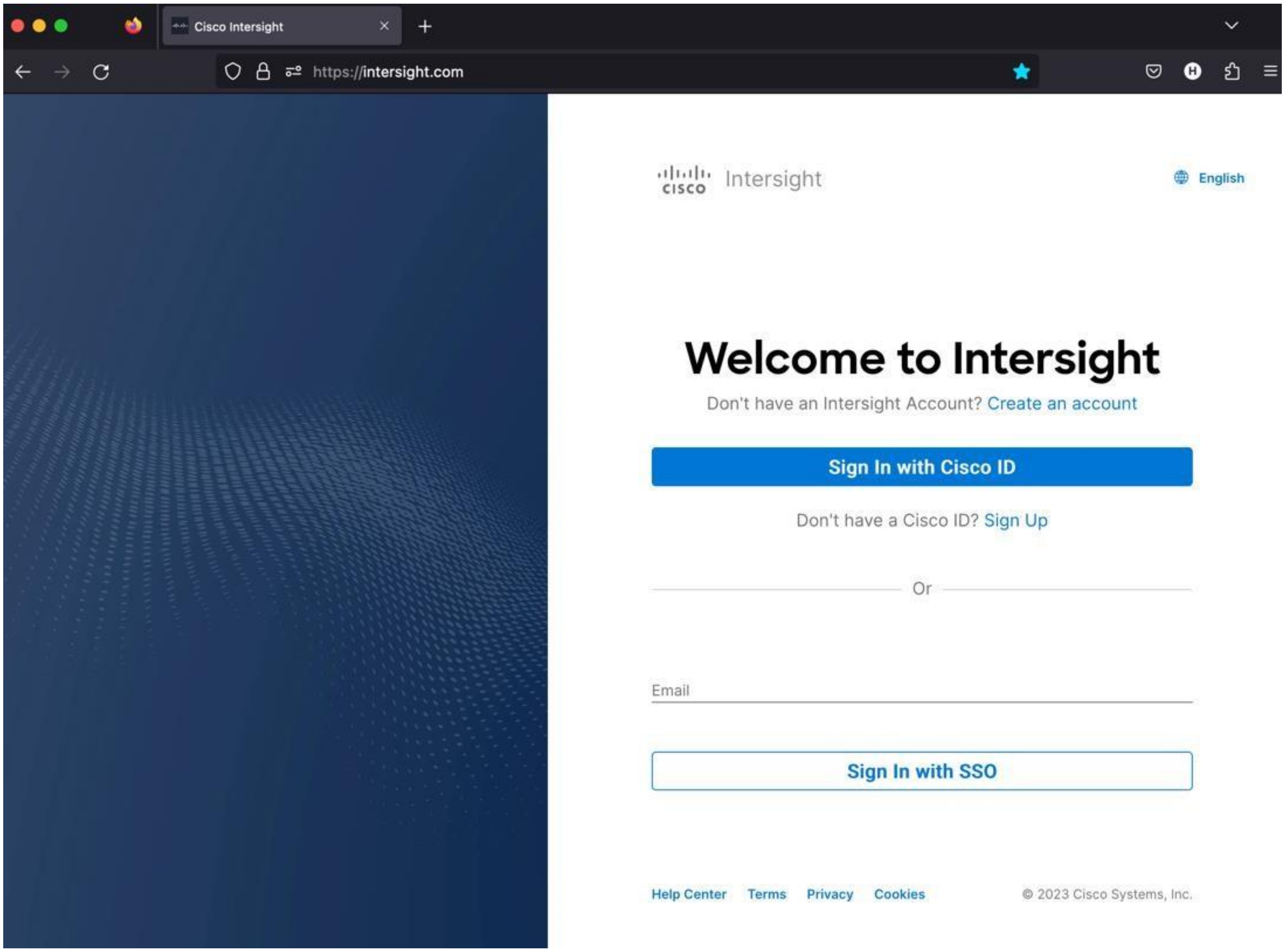
Procedure 2. Claim Rack Servers in Cisco Intersight Platform

Step 1. Go to https://intersight.com/.



Cisco Intersight

https://intersight.com

Intersight

English

Welcome to Intersight

Don't have an Intersight Account? Create an account

Sign In with Cisco ID

Don't have a Cisco ID? Sign Up

Or

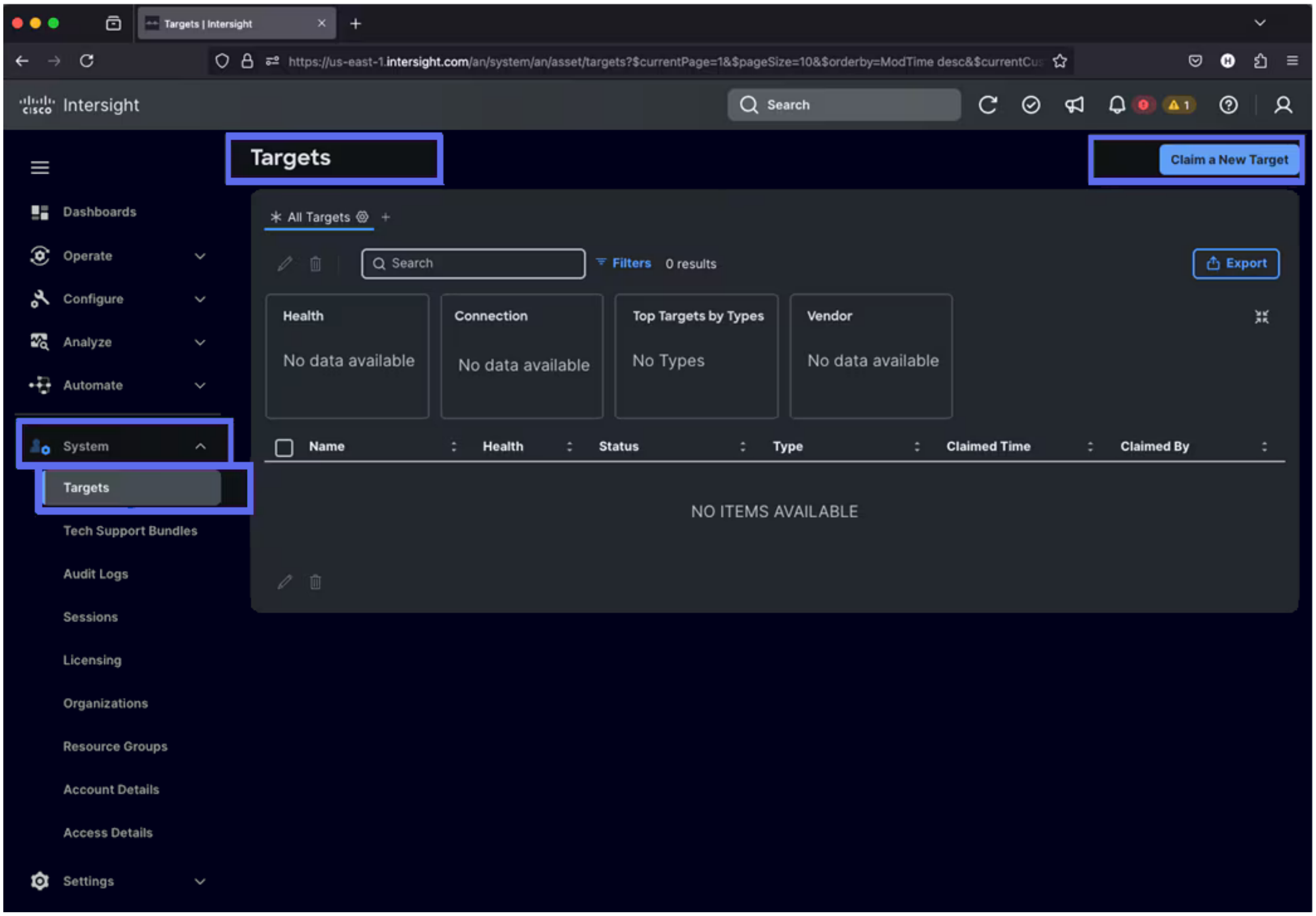
Email

Sign In with SSO

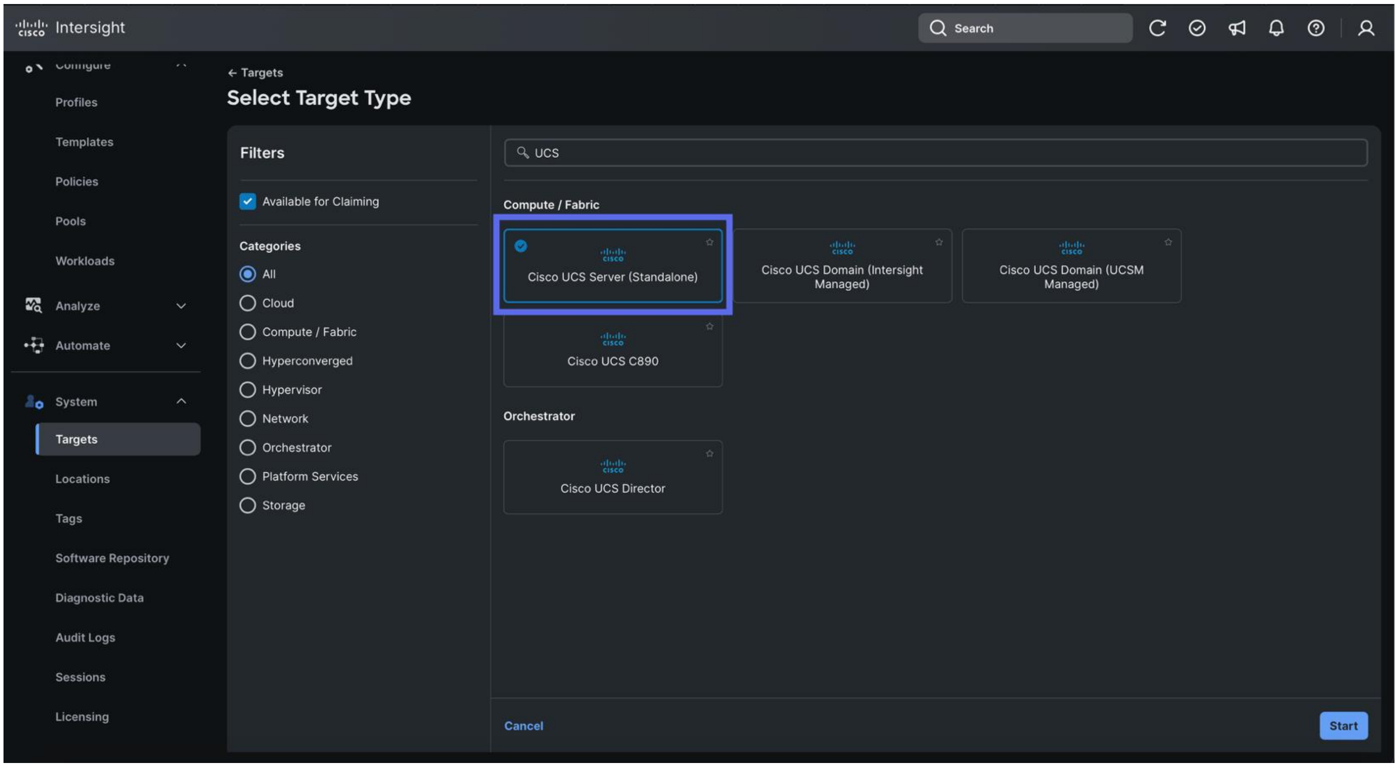
Help Center Terms Privacy Cookies © 2023 Cisco Systems, Inc.

Step 2. Sign in with your **Cisco** ID or if you don't have one, click Sign Up and setup your account.

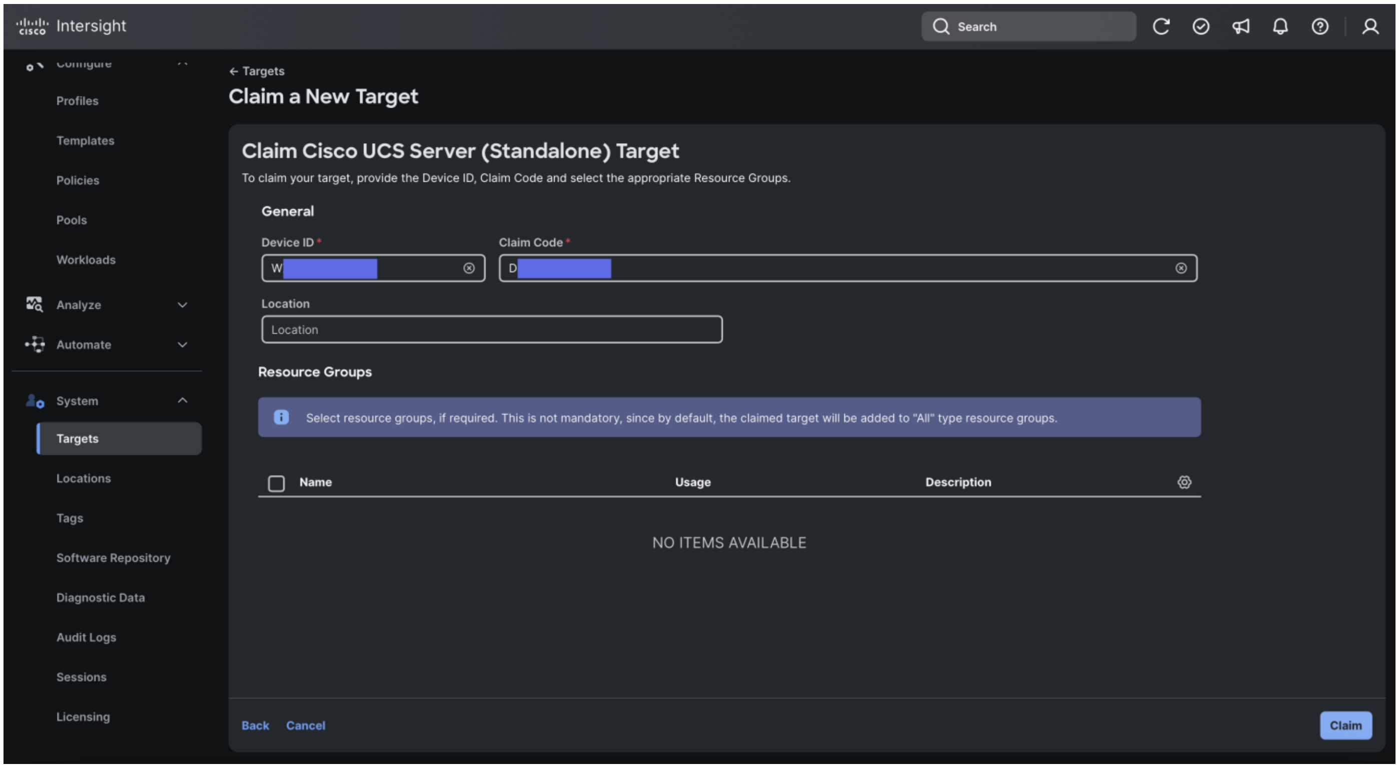
Step 3. After logging into your Cisco Intersight account, go to System > Targets > Claim a New Target.



Step 4. For the Select Target Type, select Cisco UCS Server (Standalone) and click Start.



Step 5. Enter the Device ID and Claim Code which was previously captured on the CIMC page. Click Claim to claim this device in Cisco Intersight.



Claim a New Target

Claim Cisco UCS Server (Standalone) Target

To claim your target, provide the Device ID, Claim Code and select the appropriate Resource Groups.

General

Device ID * W[redacted]

Claim Code * D[redacted]

Location: Location

Resource Groups

Select resource groups, if required. This is not mandatory, since by default, the claimed target will be added to "All" type resource groups.

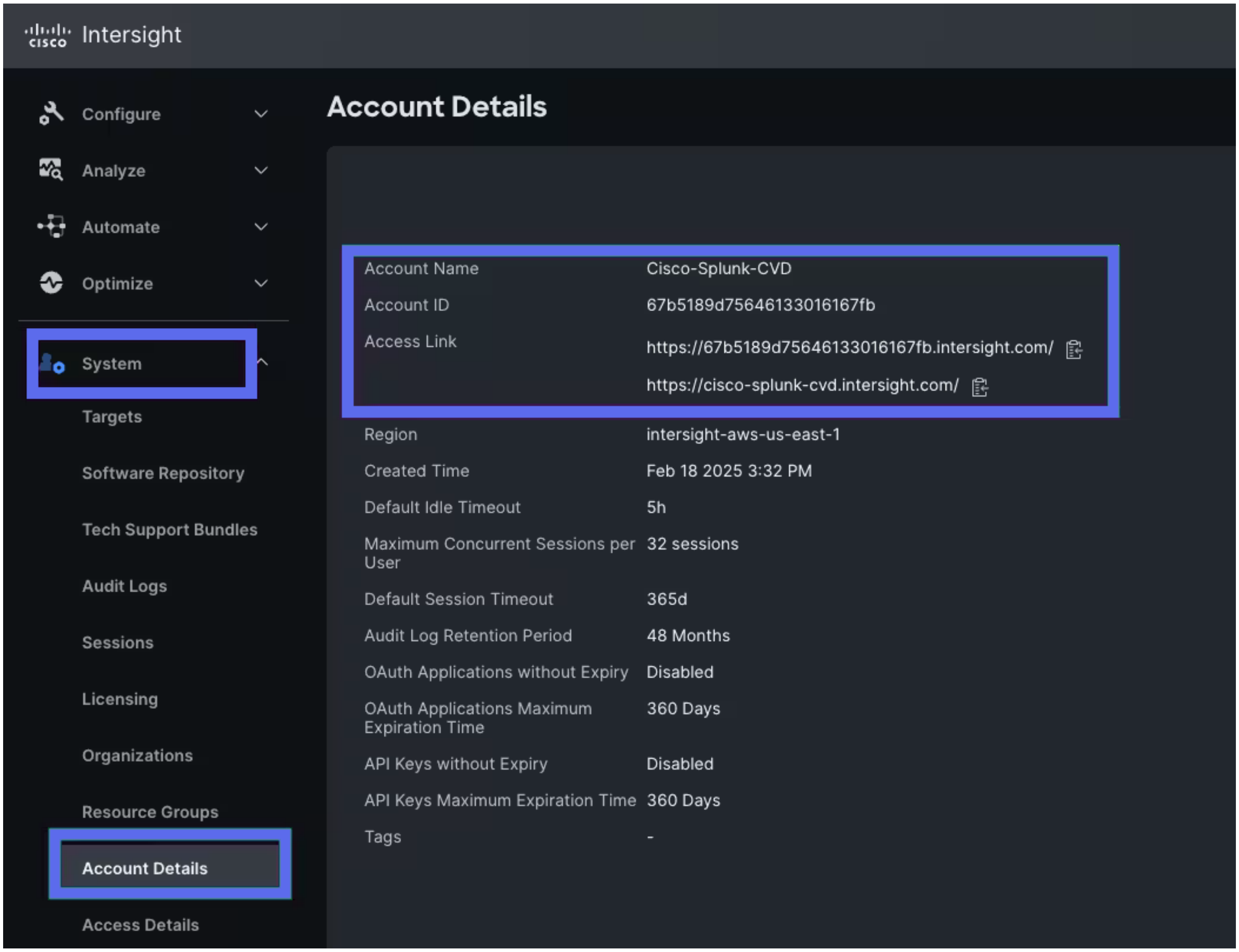
□	Name	Usage	Description

NO ITEMS AVAILABLE

Step 6. Repeat the procedure for the rest of your servers.

Procedure 3. Configure Cisco Intersight Account and System Settings

Step 1. Go to System > Account Details. For more information, see: https://intersight.com/help/saas/system/settings https://intersight.com/help/saas/system/settings



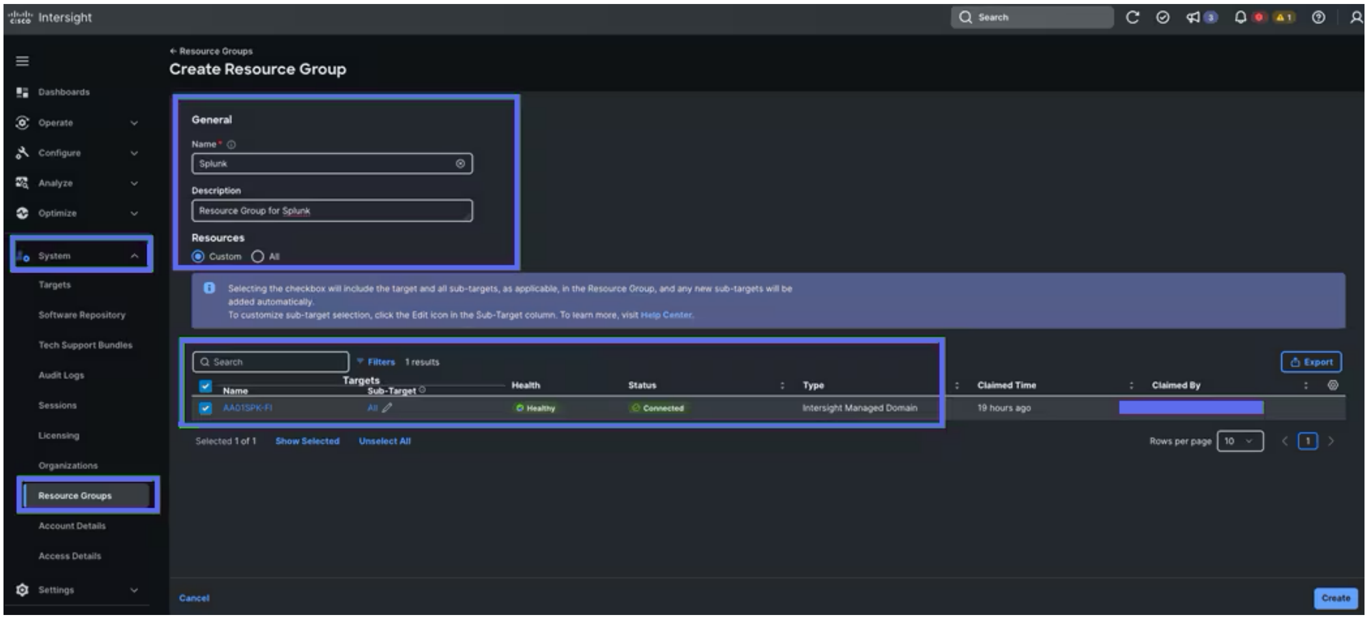
Account Details

Account Name	Cisco-Splunk-CVD
Account ID	67b5189d75646133016167fb
Access Link	https://67b5189d75646133016167fb.intersight.com/ https://cisco-splunk-cvd.intersight.com/
Region	intersight-aws-us-east-1
Created Time	Feb 18 2025 3:32 PM
Default Idle Timeout	5h
Maximum Concurrent Sessions per User	32 sessions
Default Session Timeout	365d
Audit Log Retention Period	48 Months
OAuth Applications without Expiry	Disabled
OAuth Applications Maximum Expiration Time	360 Days
API Keys without Expiry	Disabled
API Keys Maximum Expiration Time	360 Days
Tags	-

Step 2. In the System tab > Select Resource Group. Create New resource group.

Step 3. Select the Targets to be part of this resource group and click Create.

Note: For this solution, we created new resource group as “Spk-Resource” and selected all the sub-targets as shown below.



Create Resource Group

General

Name*: Splunk

Description: Resource Group for Splunk

Resources: ● Custom ○ All

Selecting the checkbox will include the target and all sub-targets, as applicable, in the Resource Group, and any new sub-targets will be added automatically.
To customize sub-target selection, click the Edit icon in the Sub-Target column. To learn more, visit Help Center.

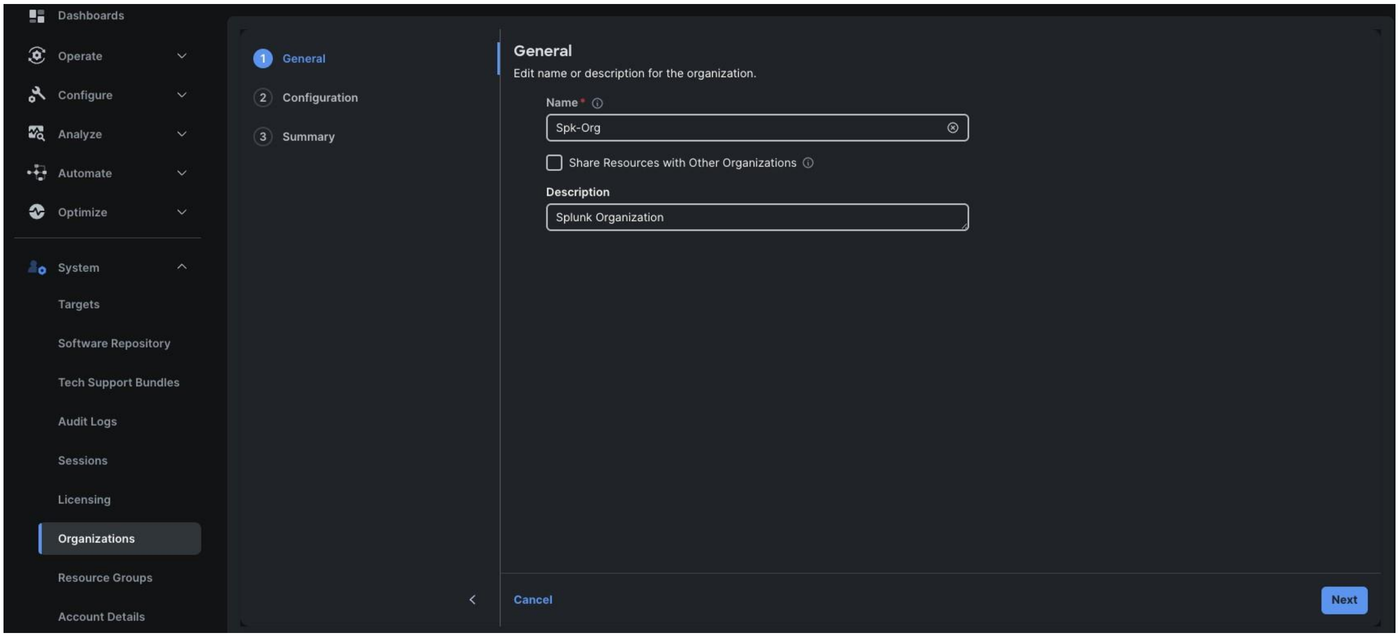
Search | Filters | 1 results | Export

☑	Targets Name	Sub-Target	Health	Status	Type	Claimed Time	Claimed By
☑	AA01SPK-FI	All	Healthy	Connected	Intersight Managed Domain	19 hours ago	[redacted]

Selected 1 of 1 | Show Selected | Unselect All | Rows per page 10 | 1

Cancel | Create

Step 4. Use the Spk-Resource group for this solution. Go to System menu, select Organizations then click Create Organization.



General

Edit name or description for the organization.

Name*: Spk-Org

□ Share Resources with Other Organizations

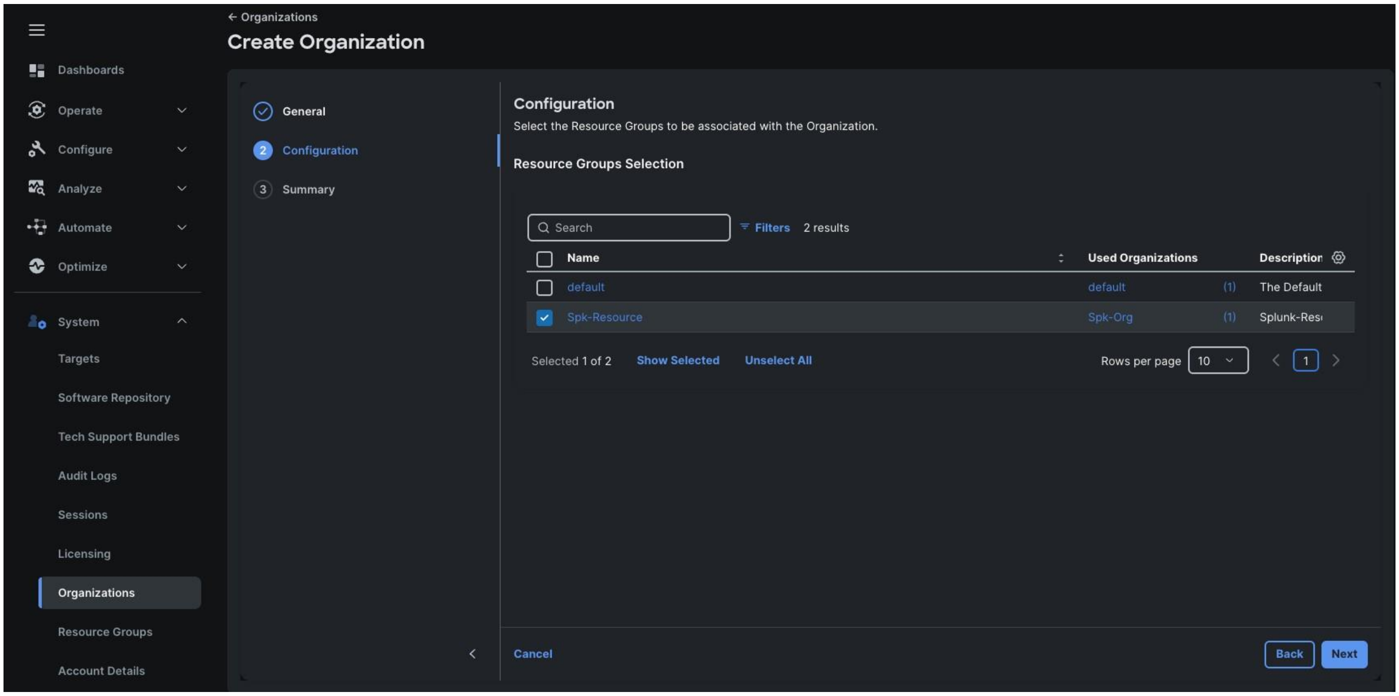
Description: Splunk Organization

Cancel | Next

Step 5. Enter the name for the new Organization creation.

Step 6. (Optional) Check the box to share resources with other organizations. Click Next.

Step 7. In the configuration option, select the “Spk-Resource” configured earlier and click Next.



Create Organization

Configuration

Select the Resource Groups to be associated with the Organization.

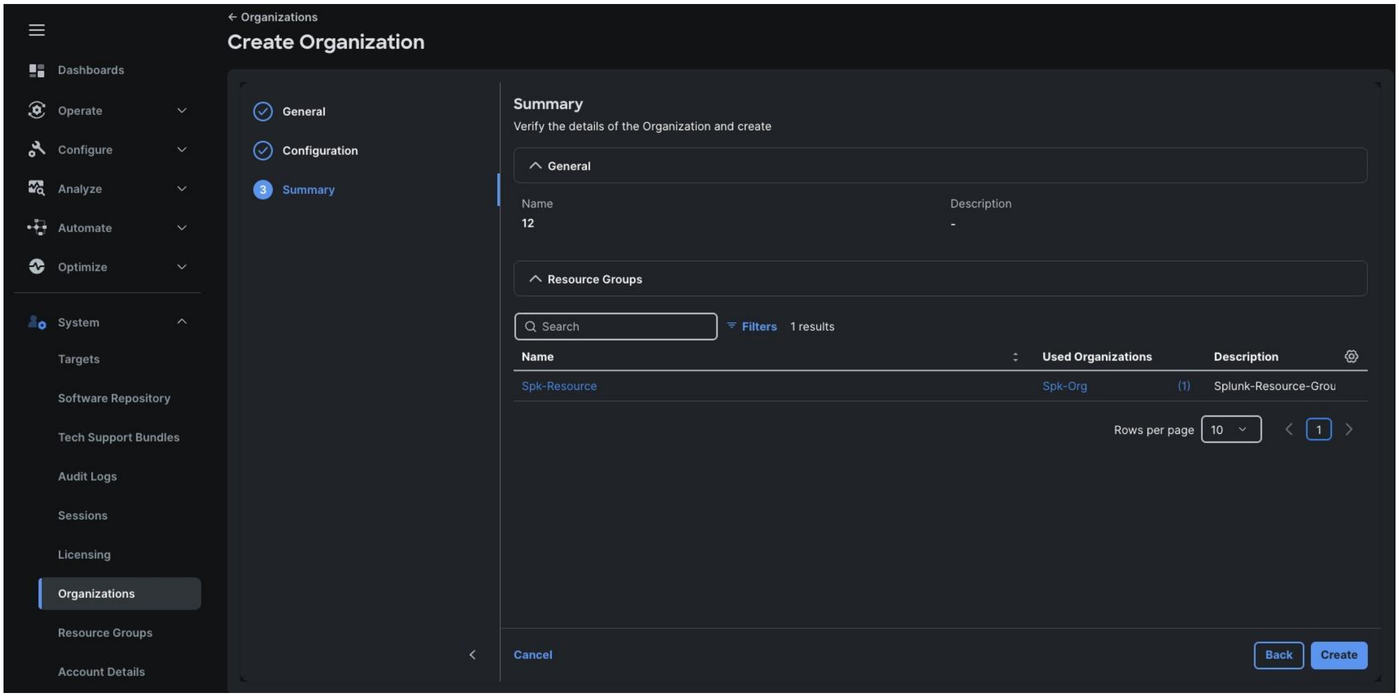
Resource Groups Selection

2 results

	Name	Used Organizations		Description
□	default	default	(1)	The Default
☑	Spk-Resource	Spk-Org	(1)	Splunk-Resi

Selected 1 of 2

Step 8. Verify the summary page and then click Create to create organization with resource group for this deployment as shown below:



Create Organization

Summary

Verify the details of the Organization and create

General

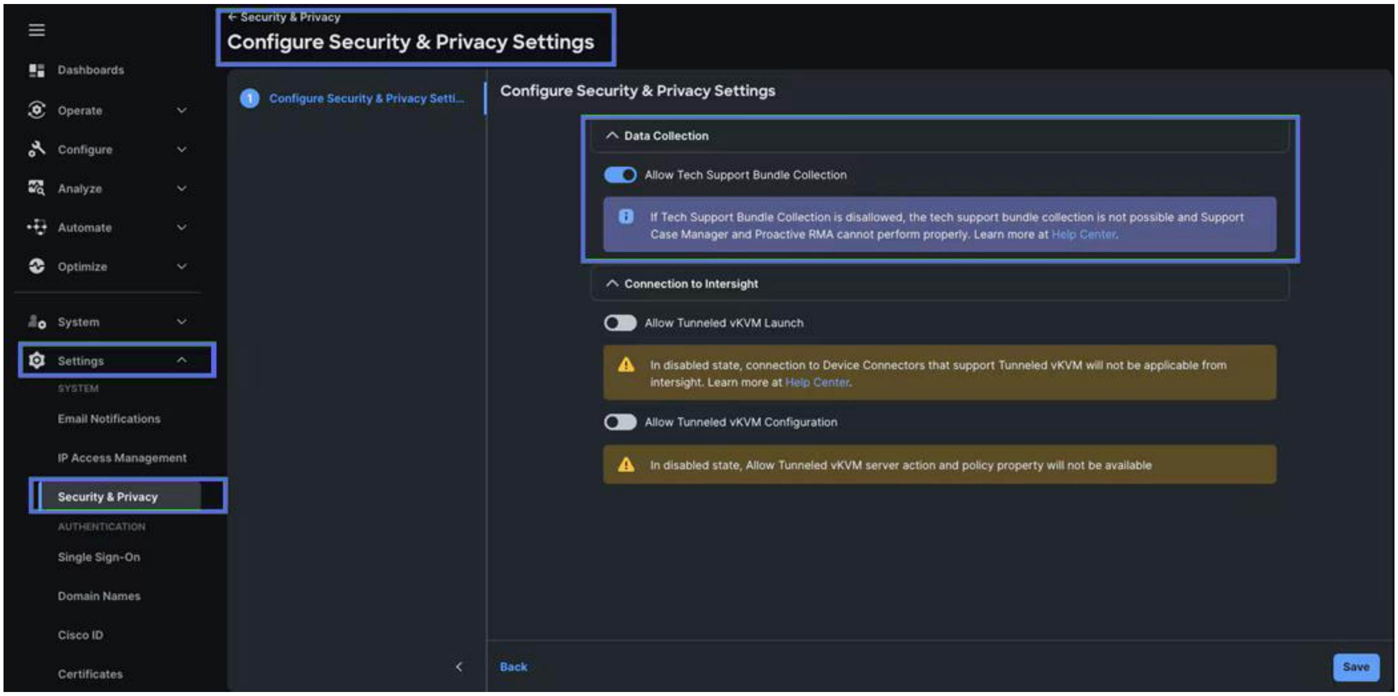
Name	Description
12	-

Resource Groups

1 results

Name	Used Organizations		Description
Spk-Resource	Spk-Org	(1)	Splunk-Resource-Grou

Step 9. To configure Allow Tech Support Bundle Collection, go to Settings > Security & Privacy > and enable the option and then click Save.



Configure Security & Privacy Settings

Configure Security & Privacy Settings

Data Collection

Allow Tech Support Bundle Collection (on)

If Tech Support Bundle Collection is disallowed, the tech support bundle collection is not possible and Support Case Manager and Proactive RMA cannot perform properly. Learn more at Help Center.

Connection to Intersight

Allow Tunneled vKVM Launch (off)

In disabled state, connection to Device Connectors that support Tunneled vKVM will not be applicable from intersight. Learn more at Help Center.

Allow Tunneled vKVM Configuration (off)

In disabled state, Allow Tunneled vKVM server action and policy property will not be available

Configure Policies for Cisco Server Profile Templates for Each Server Role

A server profile enables resource management by simplifying policy alignment and server configuration. The server profile wizard groups the server policies into the following categories to provide a quick summary view of the policies that are attached to a profile:

- Compute Configuration: BIOS, Boot Order, and Virtual Media policies.
- Management Configuration: Certificate Management, IMC Access, IPMI (Intelligent Platform Management Interface) Over LAN, Local User, Serial Over LAN, SNMP (Simple Network Management Protocol), Syslog and Virtual KVM (Keyboard, Video, and Mouse).
- Storage Configuration: SD Card, Storage.
- Network Configuration: LAN connectivity and SAN connectivity policies.

Some of the characteristics of the server profile template for this solution are as follows:

- BIOS policy is created to specify various server parameters in accordance with AMD CPU's best practices.
- Boot order policy defines virtual media (KVM mapper DVD) and local boot through M.2 SSD.
- IMC access policy defines the management IP address pool for KVM access.
- LAN connectivity policy is used to create two virtual network interface cards (vNICs) – One vNIC for Server Node Management and Splunk Data Ingestion Network Traffic, second vNIC for Splunk Indexing Server-to-Server Network Traffic Interface.

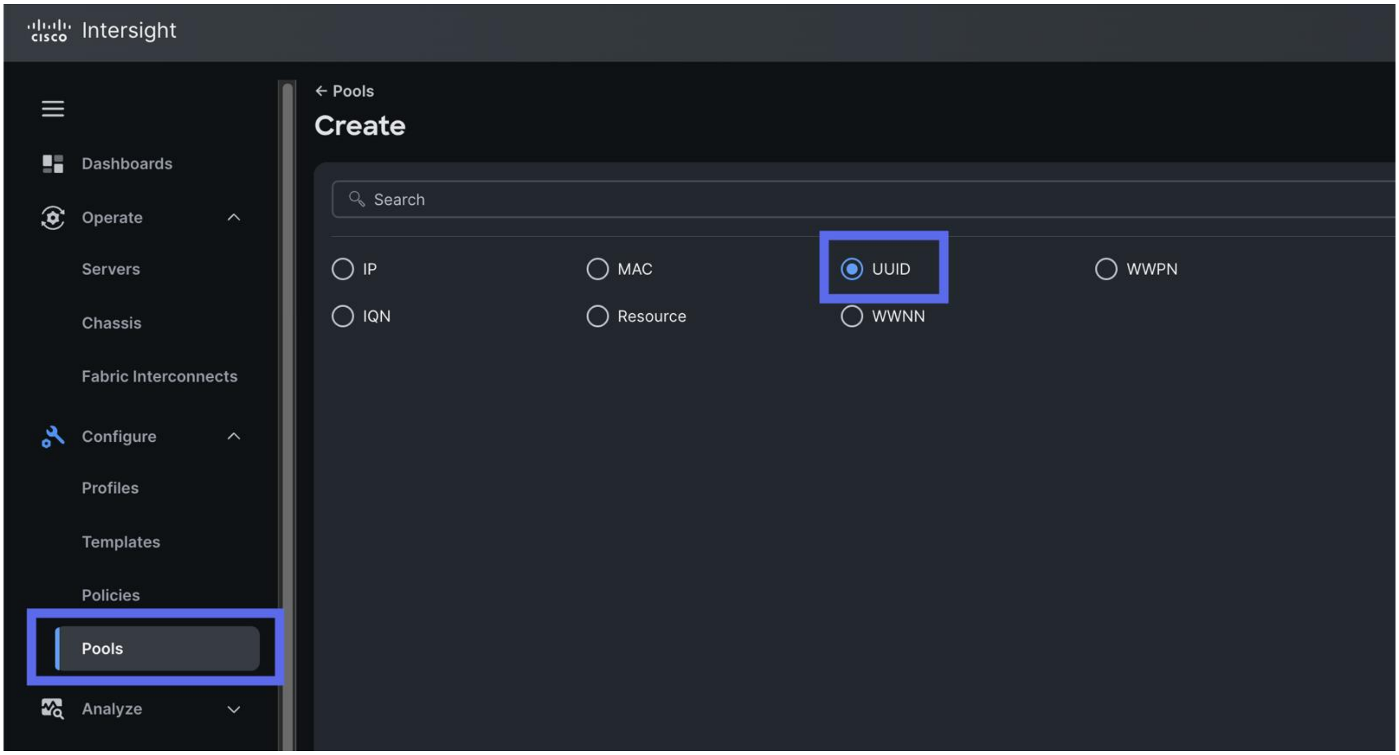
This section contains the following procedures to configure the various UCS Server Templates. It details:

- Procedure 1. Create UUID Pool
- Procedure 2. Configure BIOS Policy
- Procedure 3. Create Boot Order Policy
- Procedure 4. Create an Adapter Policy
- Procedure 5. Create C245 Indexer Storage Policy

- Procedure 6. Create C245 Volume Server Storage Policy
- Procedure 7. Create C225 Server Storage Policy
- Procedure 8. Create Indexer Server Profile Template
- Procedure 9. Create Volume Server Profile Template
- Procedure 10. Create Controllers Server Profile Template
- Procedure 11. Create Search Head Server Profile Template
- Procedure 12. Create Bastion Server Profile Template
- Procedure 13. Assign and Deploy Server Profiles

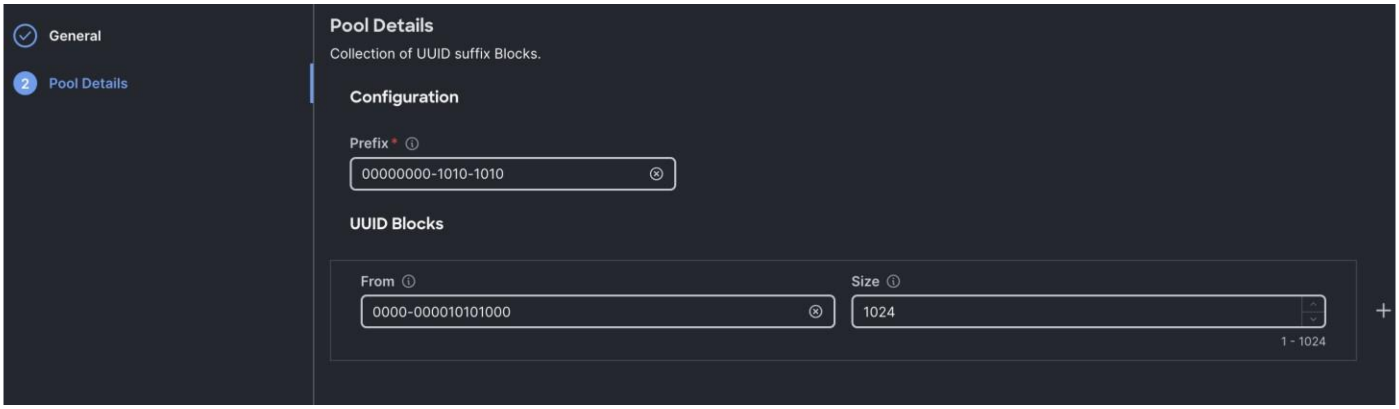
Procedure 1. Configure UUID Pool

Step 1. To create UUID Pool for a Cisco UCS, go to Configure > Pools > and click Create Pool. Select UUID.



Step 2. In the UUID Pool Create section, for the Organization, select "Spk-Org" and for the Policy name "Spk-UUID." Click Next.

Step 3. Select Prefix, UUID block and size according to your environment and click Create as shown below:



Pool Details

Collection of UUID suffix Blocks.

Configuration

Prefix * ⓘ

00000000-1010-1010

UUID Blocks

From ⓘ 0000-000010101000

Size ⓘ 1024

1 - 1024

Procedure 2. Configure BIOS Policy

Note: For more information, see Performance Tuning for Cisco UCS M8 Platforms with AMD EPYC 4th Gen and 5th Gen Processors here: https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/ucs-c245-m8-rack-ser-4th-gen-amd-epyc-pro-wp.html

Note: For this specific solution, we created a single BIOS policy (for both single socket Cisco UCS C225 servers and two socket Cisco UCS C245 M8 Server node) and used the setting as listed in Table 10.

Table 10. BIOS recommendations for Splunk Analytical Enterprise Workloads

BIOS Option	Default	Required
Processor		
SMT mode	Enabled	Enabled
SVM mode	Auto (Enabled)	Auto
DF C-states	Auto (Enabled)	Auto
ACPI SRAT L3 Cache as NUMA Domain	Auto (Disabled)	Auto
APBDIS	Auto (0)	1
Fixed SOC P-State SP5F 19h	Auto (P0)	Auto
4-link xGMI max speed*	Auto (32Gbps)	Auto
Enhanced CPU performance*	Disabled	Disabled
Memory		
NUMA nodes per socket	Auto (NPS1)	Auto
IOMMU	Auto (Enabled)	Auto
Memory interleaving	Auto (Enabled)	Auto

BIOS Option	Default	Required
Power/Performance		
Core performance boost	Auto (Enabled)	Auto
Global C-State control	Auto (Enabled)	Auto
L1 Stream HW Prefetcher	Auto (Enabled)	Auto
L2 Stream HW Prefetcher	Auto (Enabled)	Auto
Processor		
Determinism slider	Auto (Power)	Auto
CPPC	Auto (Disabled)	Enabled
Global C-State control	Auto (Enabled)	Auto
L1 Stream HW Prefetcher	Auto (Enabled)	Auto
Power profile selection F19h	High-performance mode	High-performance mode

Step 1. Go to Configure > Policies > and select Platform type as UCS Server and select on BIOS and click Start.

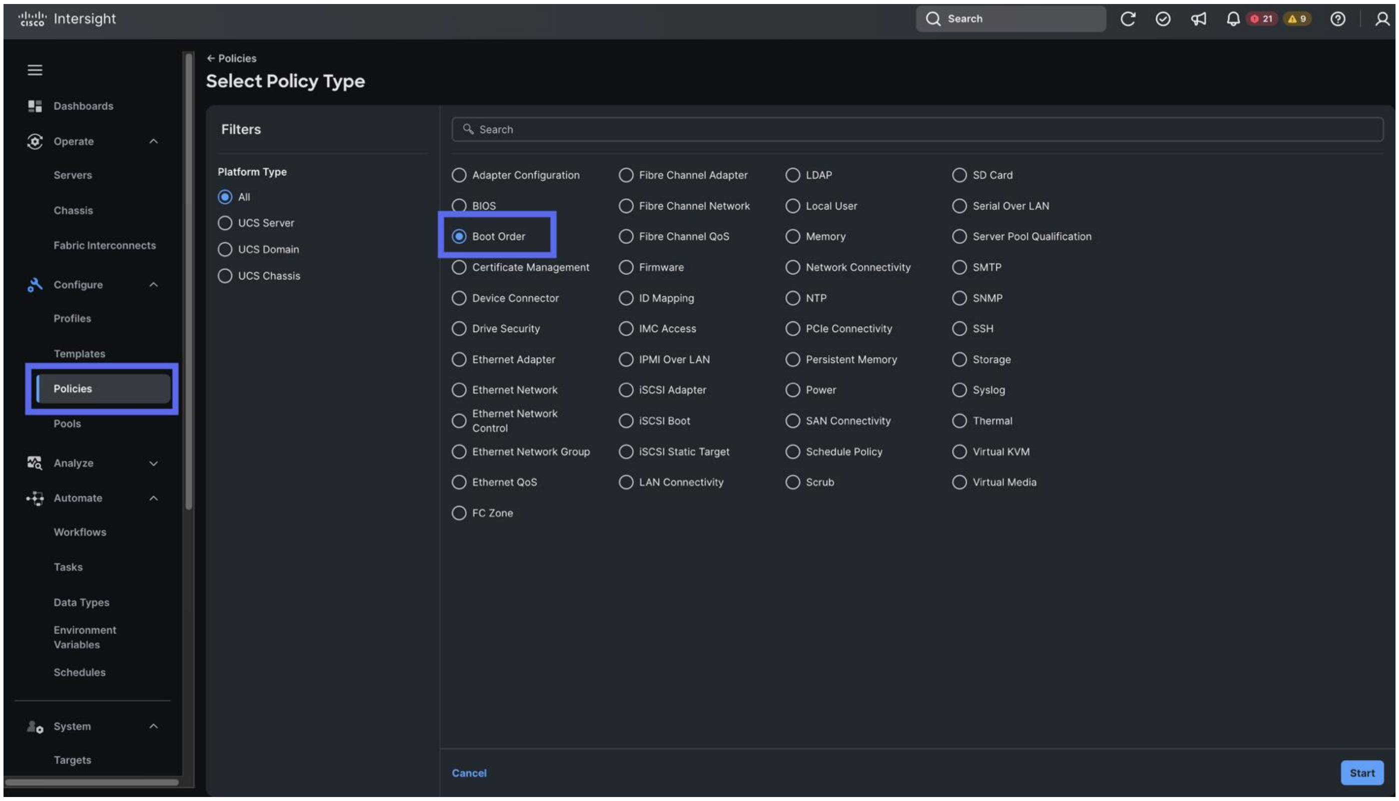
Step 2. In the BIOS create general menu, for the Organization, select Spk-Org and for the Policy name SpkBIOS-Policy. Click Next.

Step 3. Apply the mentioned parameters from the above table to configure the BIOS for C225 and C245 M8 Server running as Big-Data Analytical workloads.

Step 4. Click Create to create the BIOS policy.

Procedure 3. Create Boot Order Policy

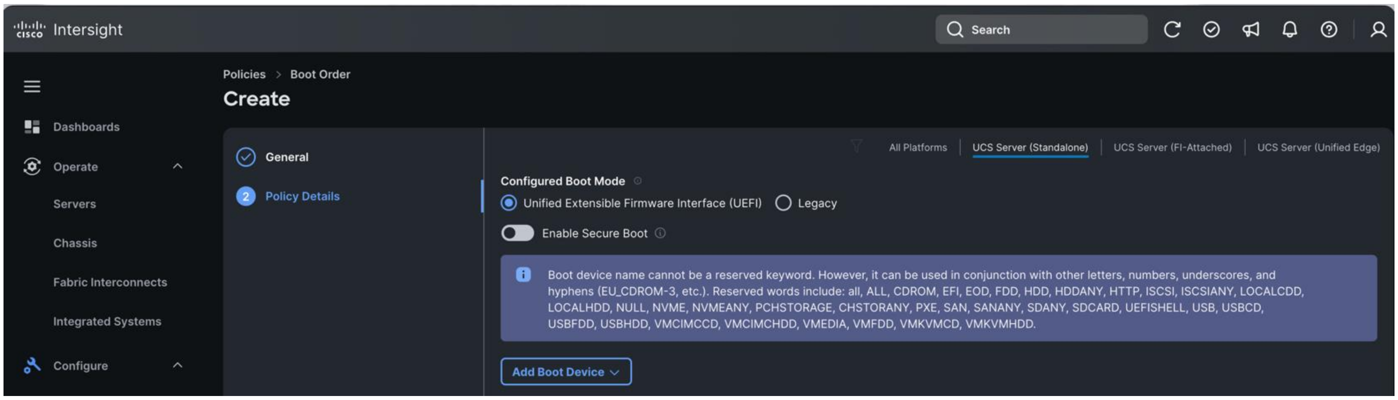
Step 1. To configure Boot Order Policy for a Cisco UCS Server Profile template profile, go to Configure > Polices > and click Create Policy. Select UCS Server and then Boot Order. Click Start.



Platform Type: ● All

● Boot Order

Step 2. Select Unified Extensible Firmware Interface (UEFI) and select UCS Server (Standalone).



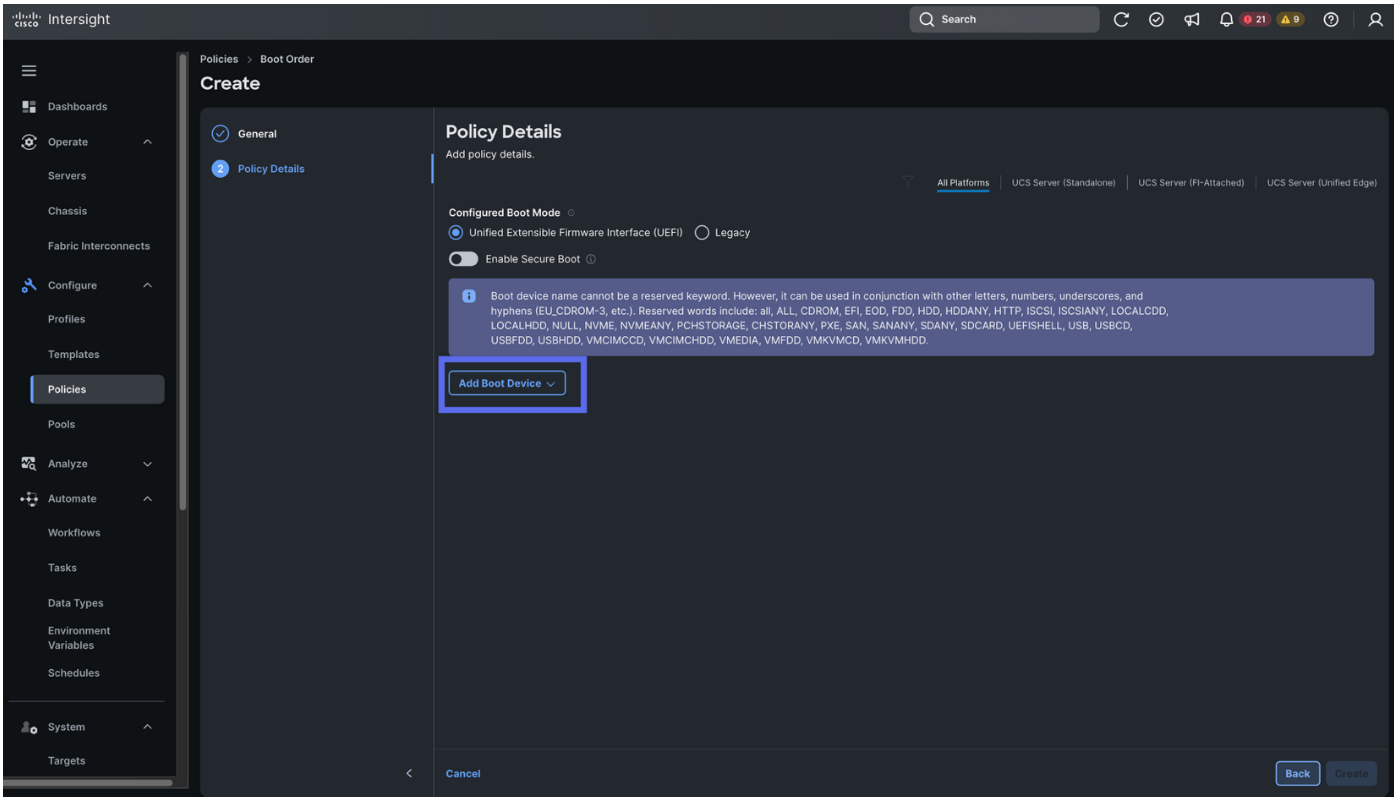
Configured Boot Mode

● Unified Extensible Firmware Interface (UEFI) ○ Legacy

Enable Secure Boot

Boot device name cannot be a reserved keyword. However, it can be used in conjunction with other letters, numbers, underscores, and hyphens (EU_CDROM-3, etc.). Reserved words include: all, ALL, CDROM, EFI, EOD, FDD, HDD, HDDANY, HTTP, ISCSI, ISCSIANY, LOCALCDD, LOCALHDD, NULL, NVME, NVMEANY, PCHSTORAGE, CHSTORANY, PXE, SAN, SANANY, SDANY, SDCARD, UEFISHELL, USB, USBCD, USBFDD, USBHDD, VMCIMCCD, VMCIMCHDD, VMEDIA, VMFDD, VMKVMCD, VMKVMHDD.

Step 3. Create the first Boot Device by clicking Add Boot Device. For Device Name, enter “KVM-Mapped-DVD” and for Sub-Type, select KVM MAPPED DVD.



Policy Details

Add policy details.

All Platforms | UCS Server (Standalone) | UCS Server (FI-Attached) | UCS Server (Unified Edge)

Configured Boot Mode

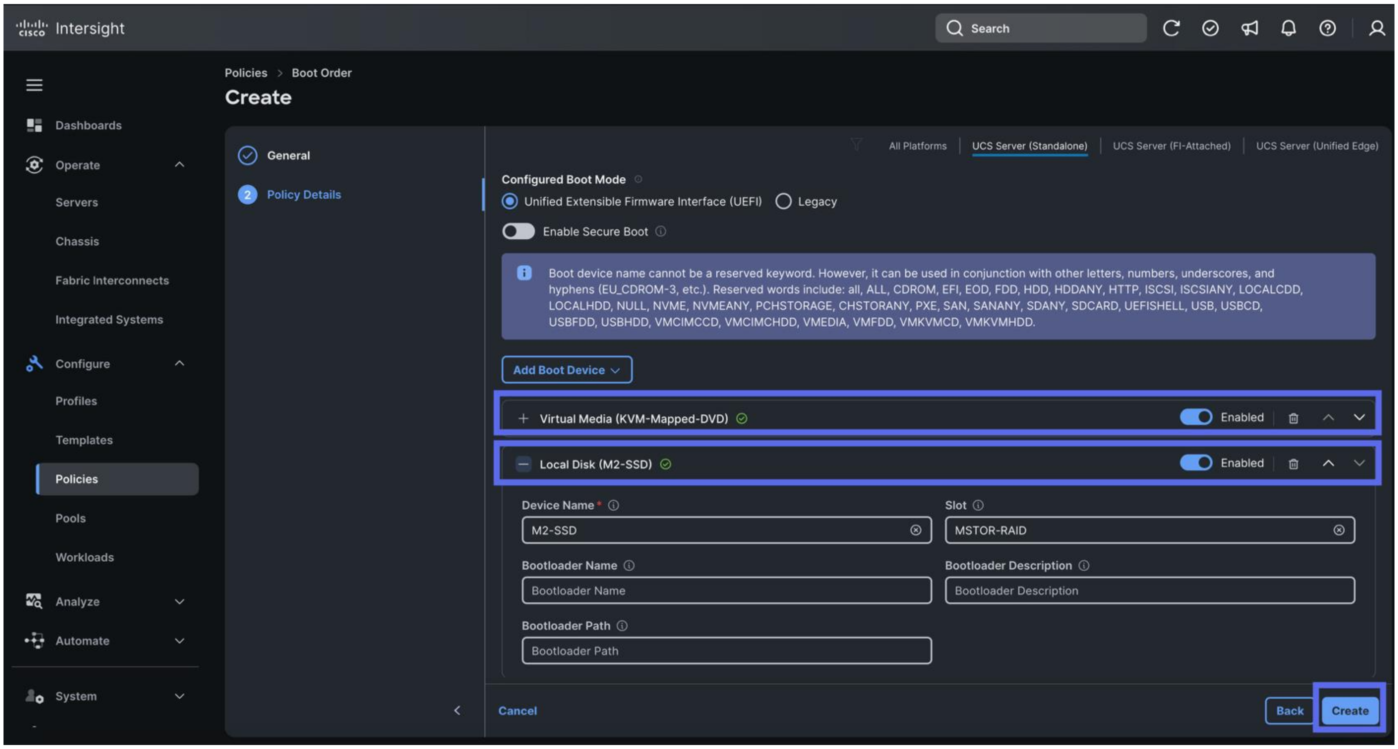
● Unified Extensible Firmware Interface (UEFI) ○ Legacy

Enable Secure Boot

Boot device name cannot be a reserved keyword. However, it can be used in conjunction with other letters, numbers, underscores, and hyphens (EU_CDROM-3, etc.). Reserved words include: all, ALL, CDROM, EFI, EOD, FDD, HDD, HDDANY, HTTP, ISCSI, ISCSIANY, LOCALCDD, LOCALHDD, NULL, NVME, NVMEANY, PCHSTORAGE, CHSTORANY, PXE, SAN, SANANY, SDANY, SDCARD, UEFISHELL, USB, USBCD, USBFDD, USBHDD, VMCIMCCD, VMCIMCHDD, VMEDIA, VMFDD, VMKVMCD, VMKVMHDD.

Step 4. Create the second Boot Device by clicking Add Boot Device again. For Device Name, enter “M2-SSD” and for Slot, enter “MSTOR-RAID.”

Step 5. Ensure both slots are set to Enabled then click Create.



All Platforms | UCS Server (Standalone) | UCS Server (FI-Attached) | UCS Server (Unified Edge)

Configured Boot Mode

● Unified Extensible Firmware Interface (UEFI) ○ Legacy

Enable Secure Boot

Boot device name cannot be a reserved keyword. However, it can be used in conjunction with other letters, numbers, underscores, and hyphens (EU_CDROM-3, etc.). Reserved words include: all, ALL, CDROM, EFI, EOD, FDD, HDD, HDDANY, HTTP, ISCSI, ISCSIANY, LOCALCDD, LOCALHDD, NULL, NVME, NVMEANY, PCHSTORAGE, CHSTORANY, PXE, SAN, SANANY, SDANY, SDCARD, UEFISHELL, USB, USBCD, USBFDD, USBHDD, VMCIMCCD, VMCIMCHDD, VMEDIA, VMFDD, VMKVMCD, VMKVMHDD.

+ Virtual Media (KVM-Mapped-DVD) ✓ Enabled

− Local Disk (M2-SSD) ✓ Enabled

Device Name * : M2-SSD

Slot: MSTOR-RAID

Bootloader Name: Bootloader Name

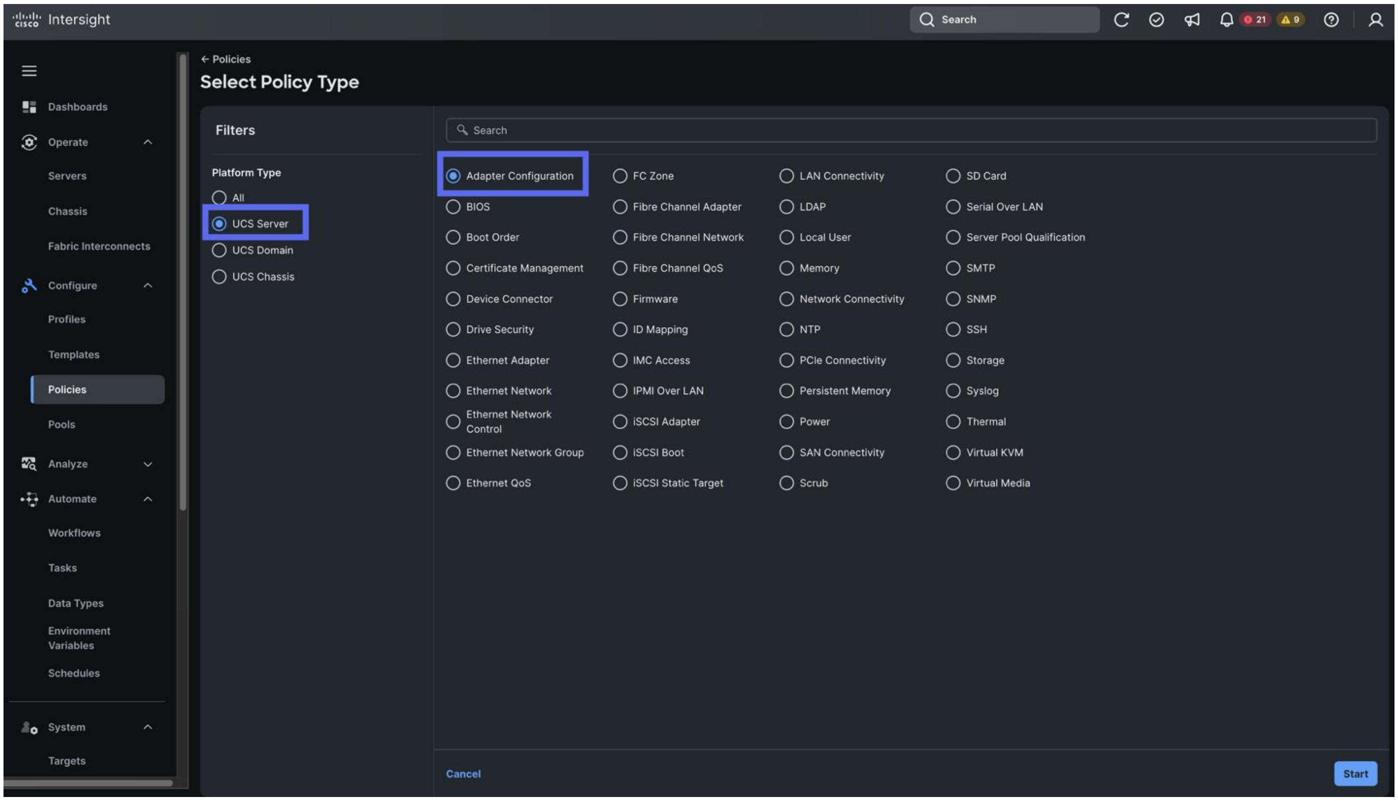
Bootloader Description: Bootloader Description

Bootloader Path: Bootloader Path

Procedure 4. Create An Adapter Policy

In this procedure, you will configure the network adapter policy for the servers

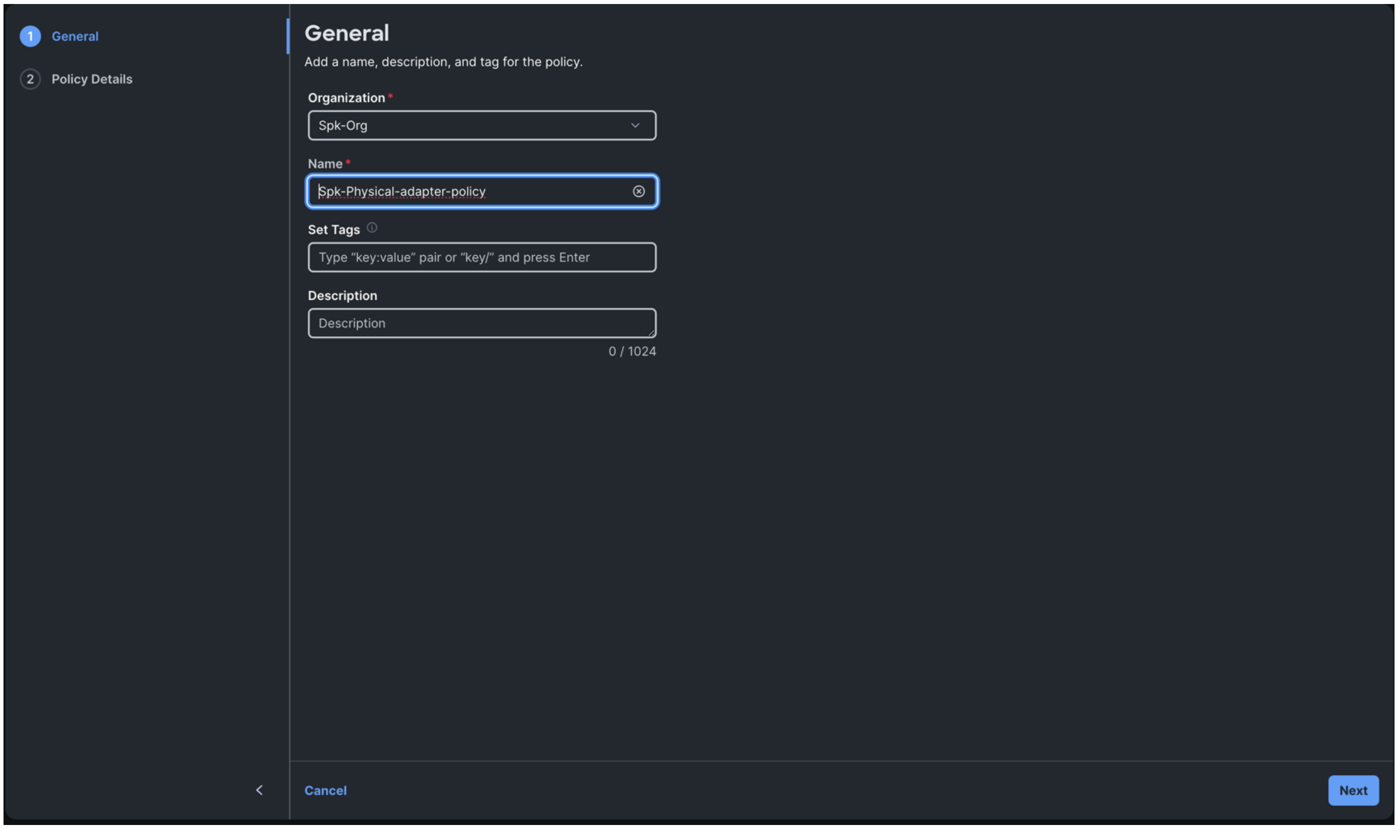
Step 1. Go to Configure > Polices > and click Create Policy. For the Platform Type, select UCS Server, for the Policy select Adapter Configuration. Click Start.



Platform Type: ● UCS Server

● Adapter Configuration

Step 2. Select Spk-Org for Organization and name the policy “Spk-Physical-adapter-policy.” Click Next.



General

Add a name, description, and tag for the policy.

Organization *: Spk-Org

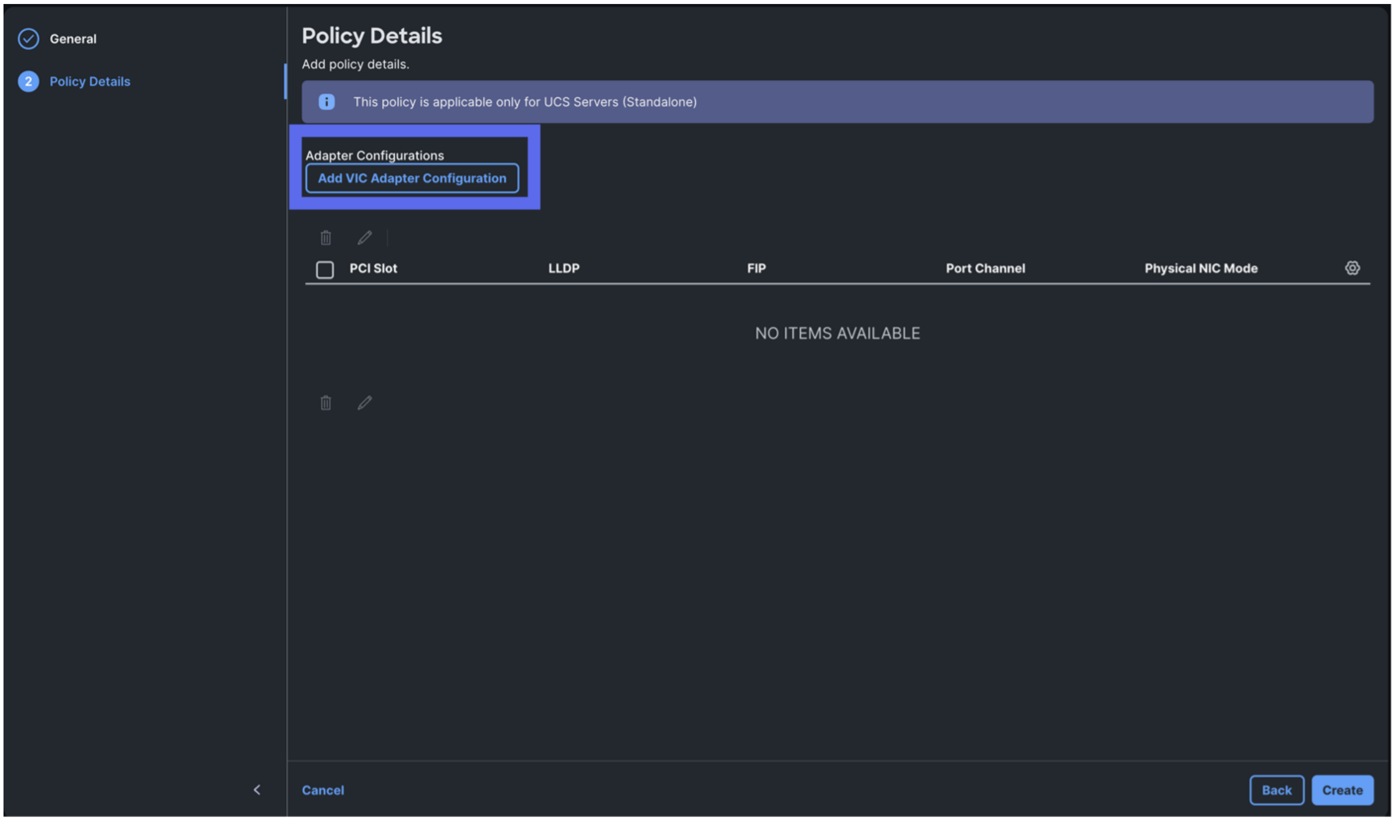
Name *: Spk-Physical-adapter-policy

Set Tags: Type "key:value" pair or "key/" and press Enter

Description: Description

0 / 1024

Step 3. Click Add VIC Adapter Configuration.



Policy Details

Add policy details.

This policy is applicable only for UCS Servers (Standalone)

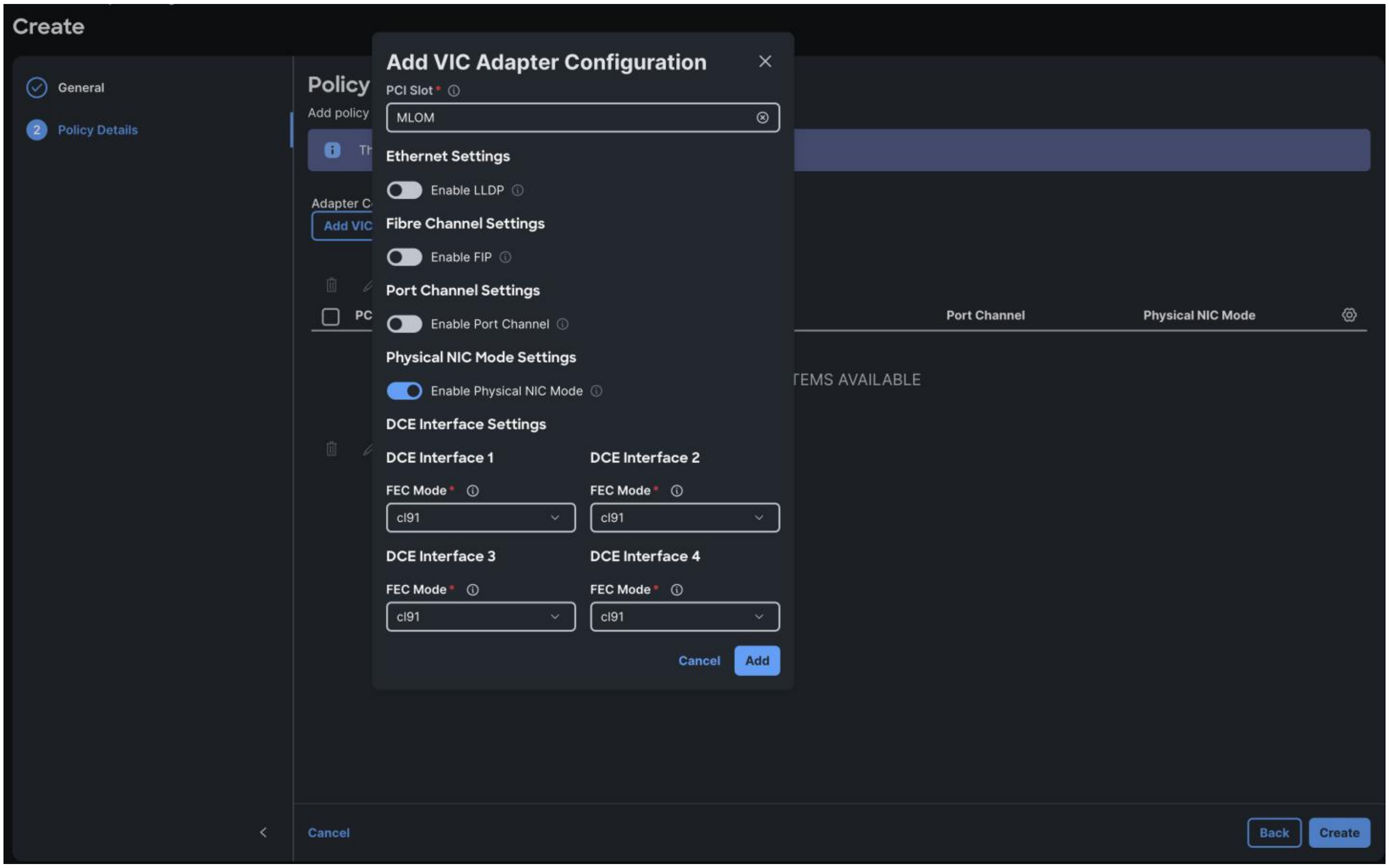
□	PCI Slot	LLDP	FIP	Port Channel	Physical NIC Mode

NO ITEMS AVAILABLE

Step 4. Update the Configuration with the following parameters:

- Set the PCI slot to MLOM
- Disable LLDP
- Disable FIP
- Disable Port Channel
- Enable Physical NIC Mode
- FEC Mode for all interfaces is cl91

Step 5. Click Add.



Add VIC Adapter Configuration

PCI Slot * MLOM

Ethernet Settings

Enable LLDP: off

Fibre Channel Settings

Enable FIP: off

Port Channel Settings

Enable Port Channel: off

Physical NIC Mode Settings

Enable Physical NIC Mode: on

DCE Interface Settings

DCE Interface 1	DCE Interface 2
FEC Mode * cl91	FEC Mode * cl91

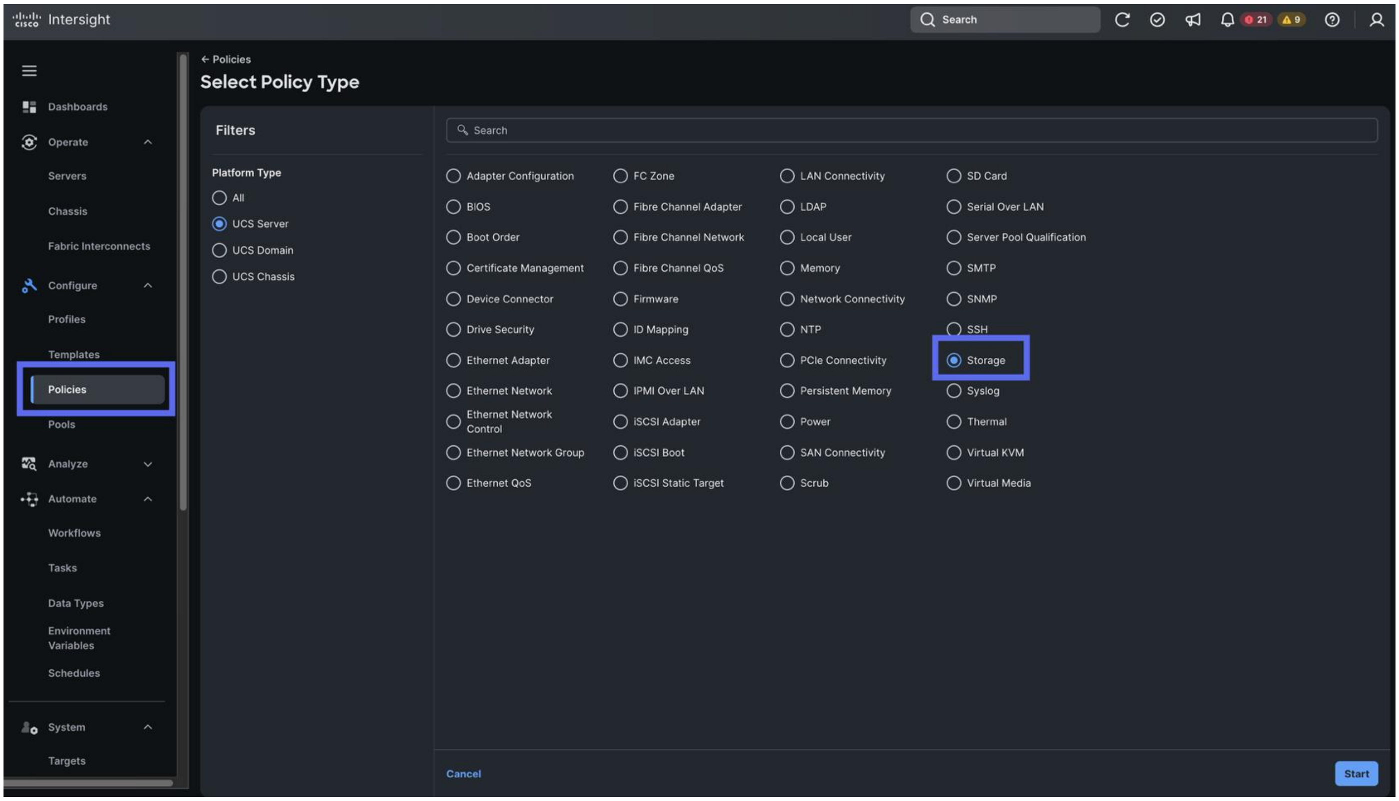
DCE Interface 3	DCE Interface 4
FEC Mode * cl91	FEC Mode * cl91

Step 6. Click Create.

Procedure 5. Create Indexer Server Storage Policies

In this procedure, you will configure the storage policies for the Cisco UCS C245 Indexers servers, Cisco UCS C245 Volume servers, and Cisco UCS C225 servers.

Step 1. Go to Configure > Polices > and click Create Policy. For the platform type select UCS Server and for the Policy select Storage.



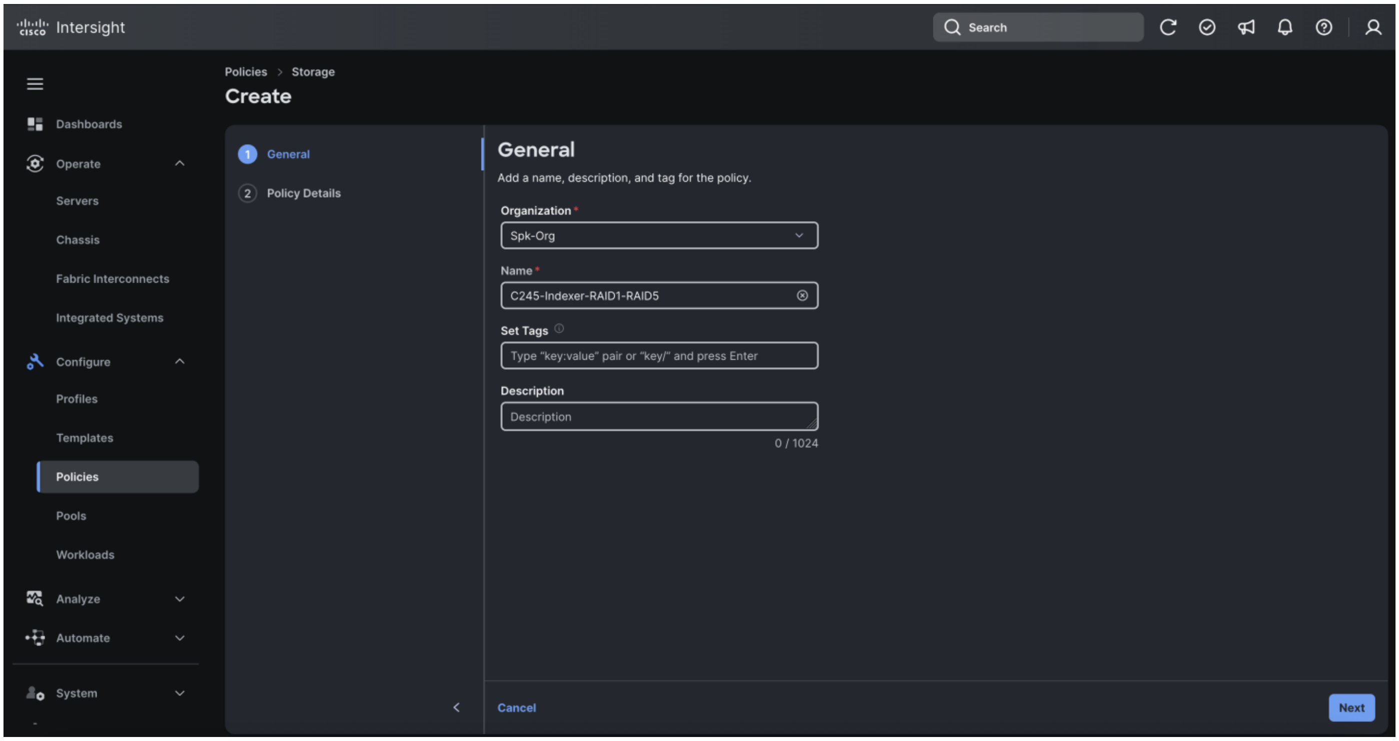
Select Policy Type

Platform Type

○ All
● UCS Server
○ UCS Domain
○ UCS Chassis

● Storage

Step 2. For the Organization, select Spk-Org, and for the name, enter “C245-Indexer-RAID1-RAID5.” Click Next.



Create

General

Add a name, description, and tag for the policy.

Organization *: Spk-Org

Name *: C245-Indexer-RAID1-RAID5

Set Tags: Type “key:value” pair or “key/” and press Enter

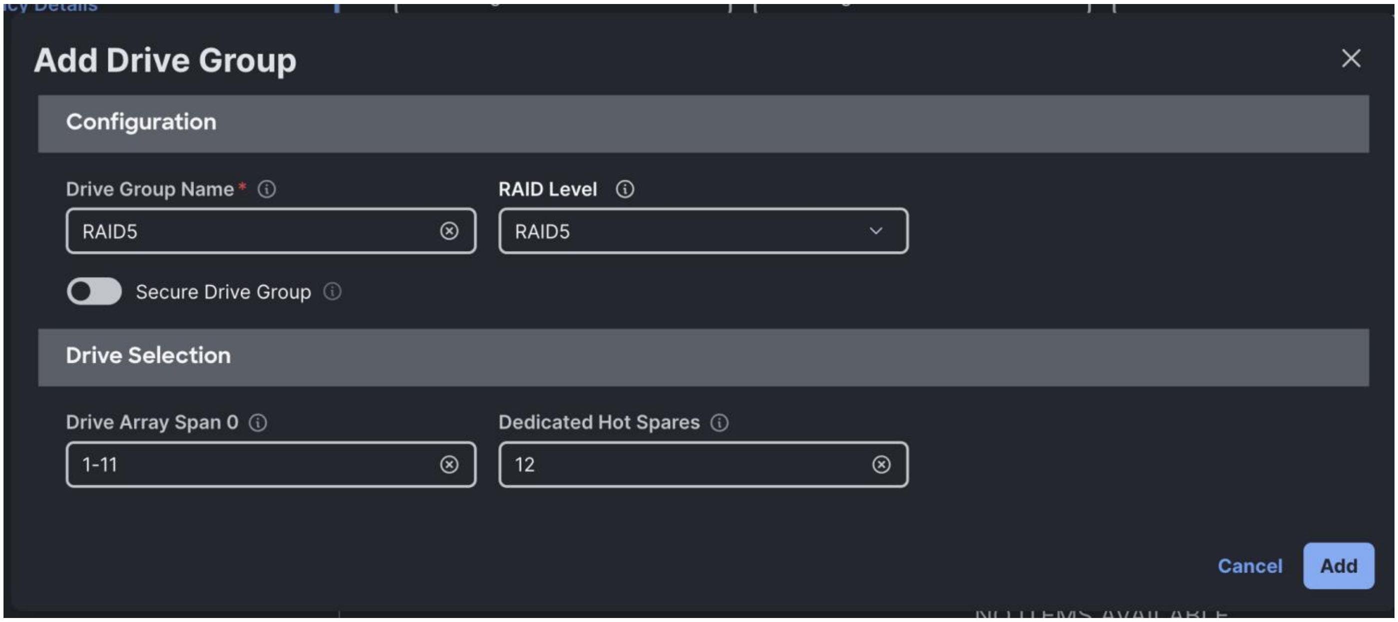
Description: Description

0 / 1024

Step 3. In the Policy Details section select UCS Server (Standalone) as the policy.

Step 4. On the same page, toggle the option for “MRAID/RAID Controller Configuration” and then click Add Drive Group.

Step 5. In the Add Drive Group modal, enter “RAID5” in the Drive Group Name and select RAID5 as the RAID Level. For the Drive Array Span 0, enter in “1-11” then enter in “12” for the Dedicated Hot Spares option.



Add Drive Group

Configuration

Drive Group Name*: RAID5

RAID Level: RAID5

Secure Drive Group

Drive Selection

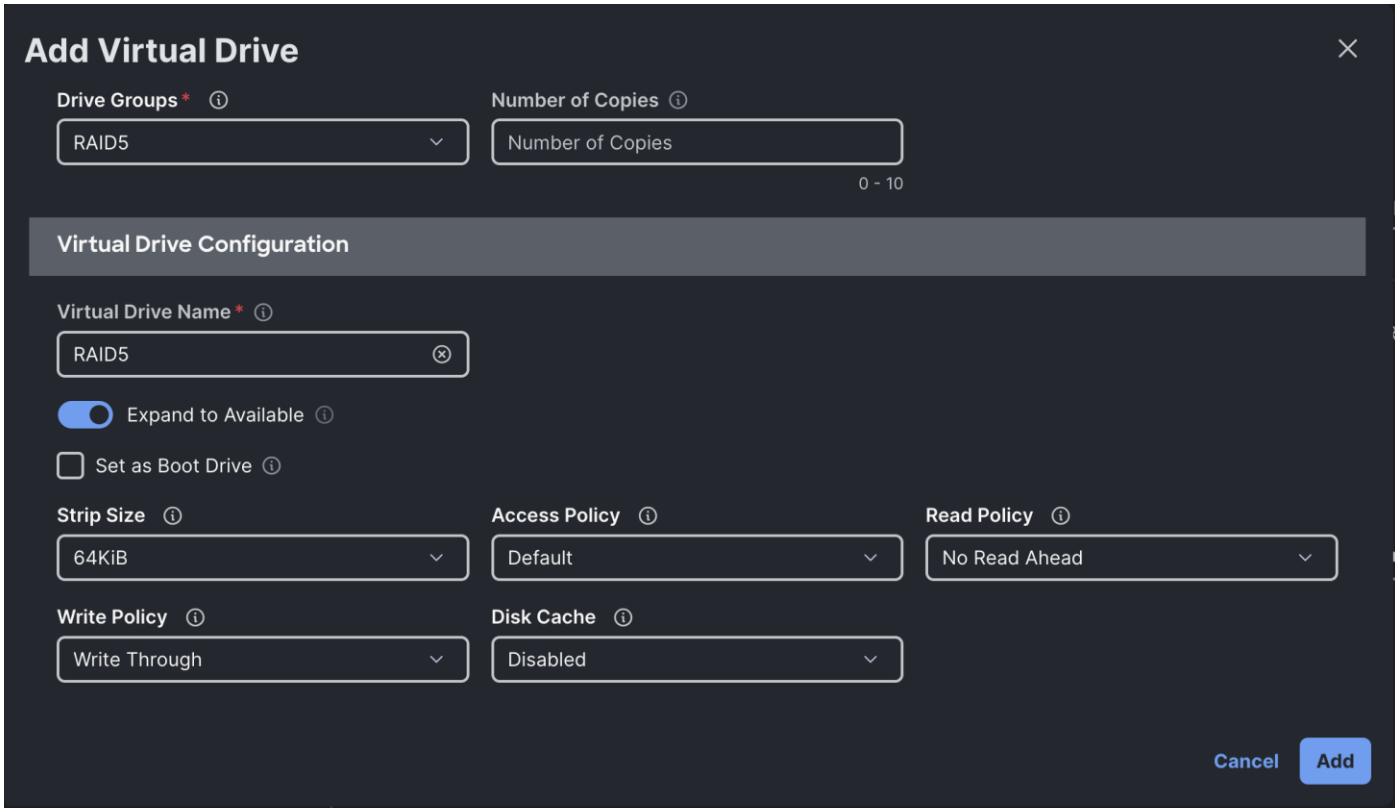
Drive Array Span 0: 1-11

Dedicated Hot Spares: 12

Step 6. Click Add Virtual Drive. In the “Add Virtual Drive” modal, enter in the following options:

- Drive Groups: RAID5
- Virtual Drive Name: RAID5
- Expand to Available: Toggled on
- Strip Size: 64KiB
- Access Policy: Default
- Read Policy: No Read Ahead
- Write Policy: Write Through
- Disk Cache: Disabled

Step 7. Click Add.



Add Virtual Drive

Drive Groups * : RAID5

Number of Copies: Number of Copies (0 - 10)

Virtual Drive Configuration

Virtual Drive Name * : RAID5

● Expand to Available

□ Set as Boot Drive

Strip Size: 64KiB

Access Policy: Default

Read Policy: No Read Ahead

Write Policy: Write Through

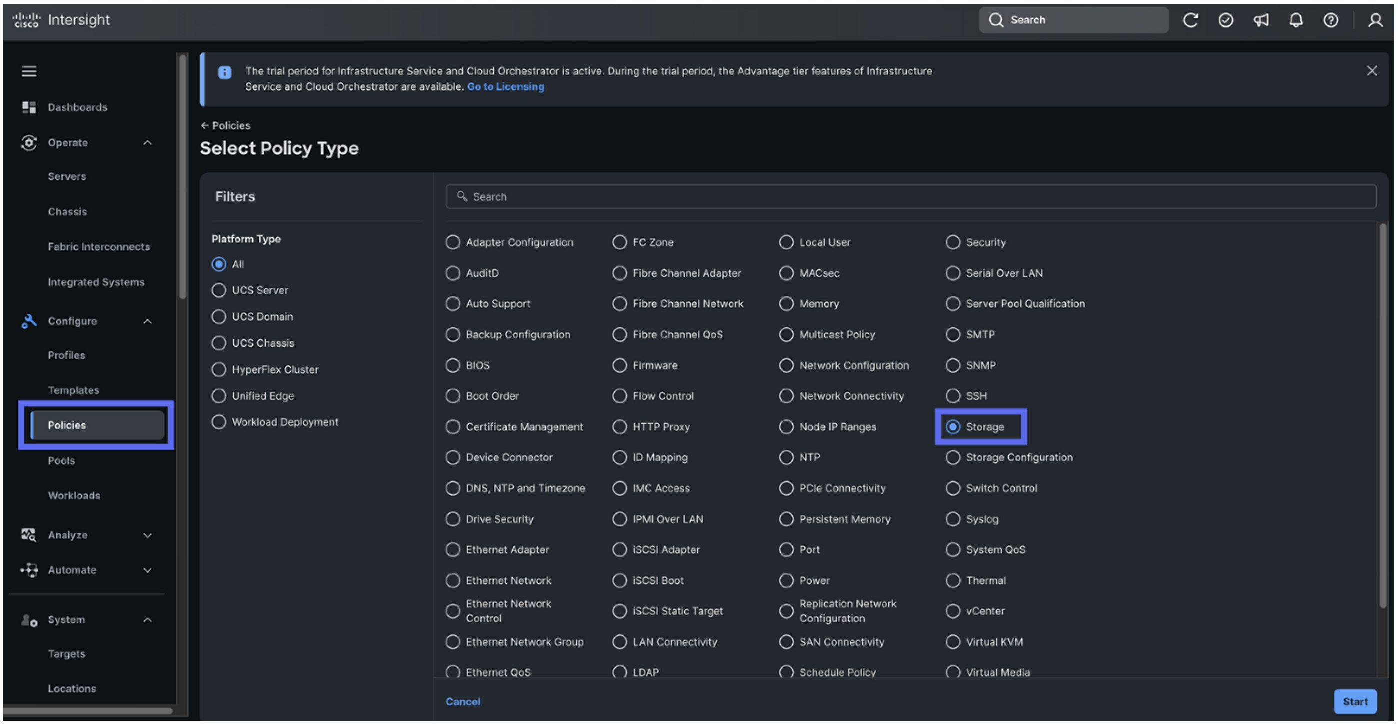
Disk Cache: Disabled

Step 8. Click Create when the Drive Group and Virtual Drive have been configured.

Procedure 6. Create Volume Server Storage Policies

Configure the Volume Server storage policies for the Volume servers with this procedure.

Step 1. Go to Configure > Polices > and click Create Policy. For the platform type, select UCS Server and for the Policy select Storage.



The trial period for Infrastructure Service and Cloud Orchestrator is active. During the trial period, the Advantage tier features of Infrastructure Service and Cloud Orchestrator are available. Go to Licensing

← Policies

Select Policy Type

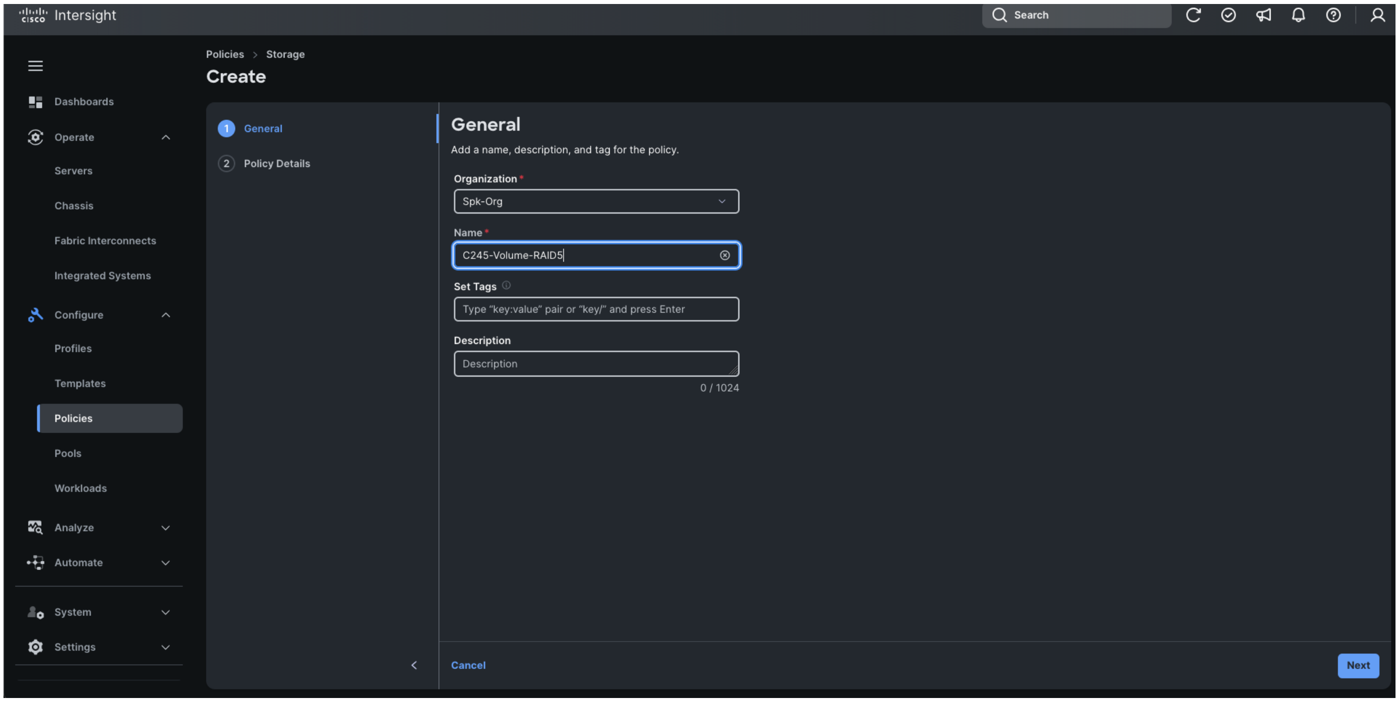
Filters

Platform Type

● All
○ UCS Server
○ UCS Domain
○ UCS Chassis
○ HyperFlex Cluster
○ Unified Edge
○ Workload Deployment

○ Adapter Configuration
○ AuditD
○ Auto Support
○ Backup Configuration
○ BIOS
○ Boot Order
○ Certificate Management
○ Device Connector
○ DNS, NTP and Timezone
○ Drive Security
○ Ethernet Adapter
○ Ethernet Network
○ Ethernet Network Control
○ Ethernet Network Group
○ Ethernet QoS
○ FC Zone
○ Fibre Channel Adapter
○ Fibre Channel Network
○ Fibre Channel QoS
○ Firmware
○ Flow Control
○ HTTP Proxy
○ ID Mapping
○ IMC Access
○ IPMI Over LAN
○ iSCSI Adapter
○ iSCSI Boot
○ iSCSI Static Target
○ LAN Connectivity
○ LDAP
○ Local User
○ MACsec
○ Memory
○ Multicast Policy
○ Network Configuration
○ Network Connectivity
○ Node IP Ranges
○ NTP
○ PCIe Connectivity
○ Persistent Memory
○ Port
○ Power
○ Replication Network Configuration
○ SAN Connectivity
○ Schedule Policy
○ Security
○ Serial Over LAN
○ Server Pool Qualification
○ SMTP
○ SNMP
○ SSH
● Storage
○ Storage Configuration
○ Switch Control
○ Syslog
○ System QoS
○ Thermal
○ vCenter
○ Virtual KVM
○ Virtual Media

Step 2. In the Create section, for the Organization, select Spk-Org, for the policy name enter "C245-Volume-RAID5." Click Next.



Policies > Storage

Create

General

Add a name, description, and tag for the policy.

Organization *: Spk-Org

Name *: C245-Volume-RAID5

Set Tags: Type "key:value" pair or "key/" and press Enter

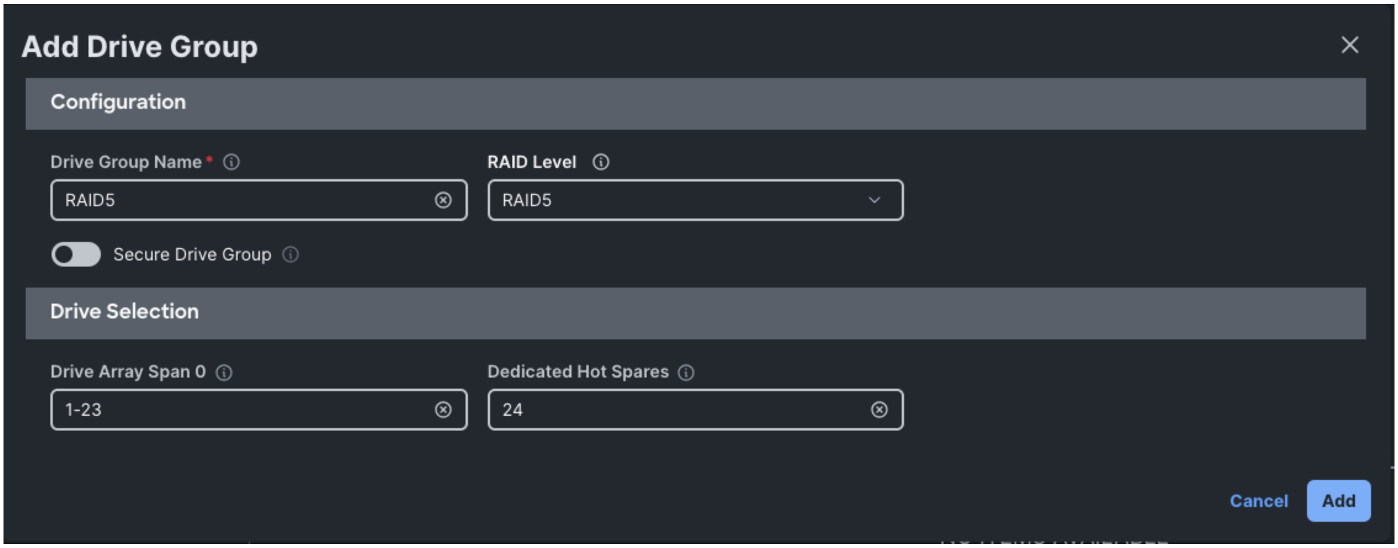
Description: Description

0 / 1024

Step 3. In the Policy Details section select UCS Server (Standalone) as the policy.

Step 4. On the same page, toggle the option for "MRAID/RAID Controller Configuration" and then click Add Drive Group.

Step 5. In the Add Drive Group modal, enter "RAID5" in the Drive Group Name and select "RAID5" as the RAID Level. For the Drive Array Span 0, enter in "1-23" then enter in "24" for the Dedicated Hot Spares option.



Add Drive Group

Configuration

Drive Group Name *: RAID5

RAID Level: RAID5

Secure Drive Group

Drive Selection

Drive Array Span 0: 1-23

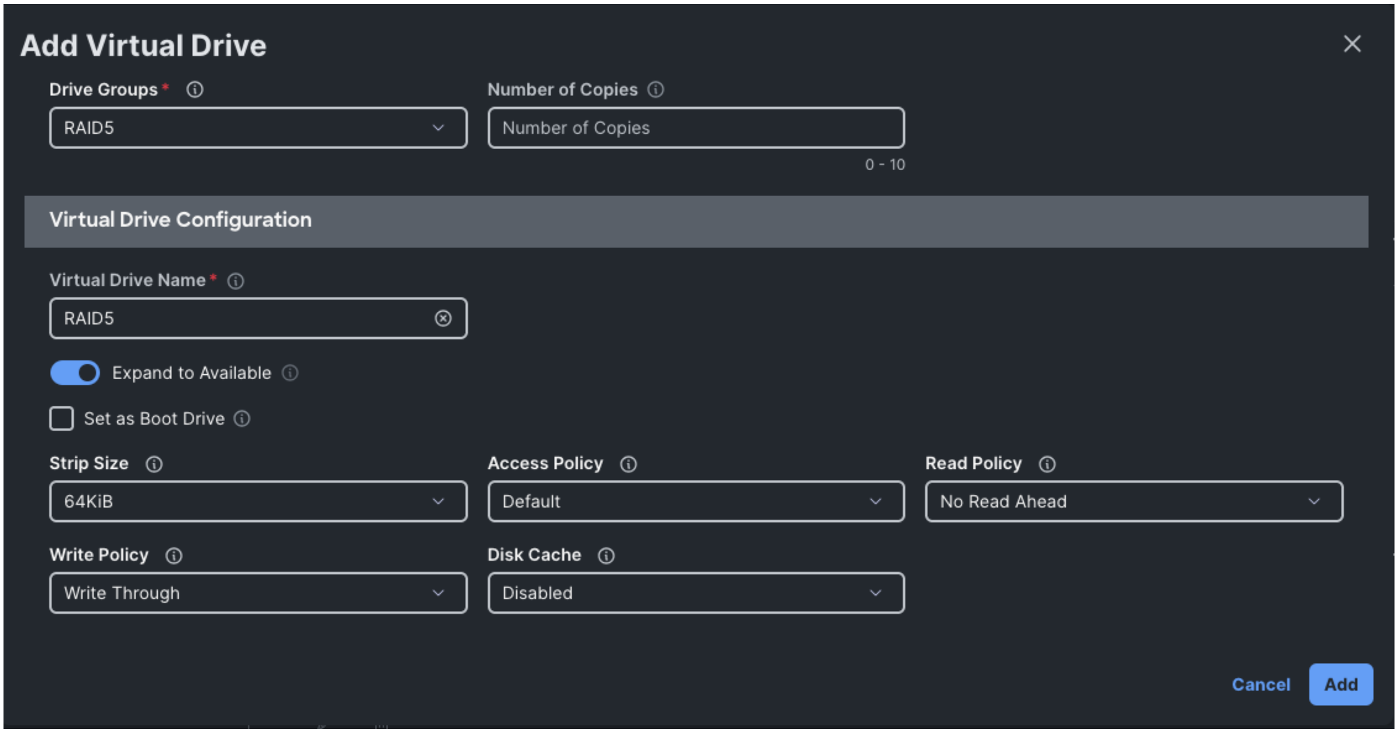
Dedicated Hot Spares: 24

Step 6. Click Add Virtual Drive. In the "Add Virtual Drive" modal, enter in the following options:

- Drive Groups: RAID5
- Virtual Drive Name: RAID5
- Expand to Available: Toggled on

- Strip Size: 64KiB
- Access Policy: Default
- Read Policy: No Read Ahead
- Write Policy: Write Through
- Disk Cache: Disabled

Step 7. Click Add.



Add Virtual Drive

Drive Groups *: RAID5

Number of Copies: Number of Copies (0 - 10)

Virtual Drive Configuration

Virtual Drive Name *: RAID5

Expand to Available: on

□ Set as Boot Drive

Strip Size: 64KiB

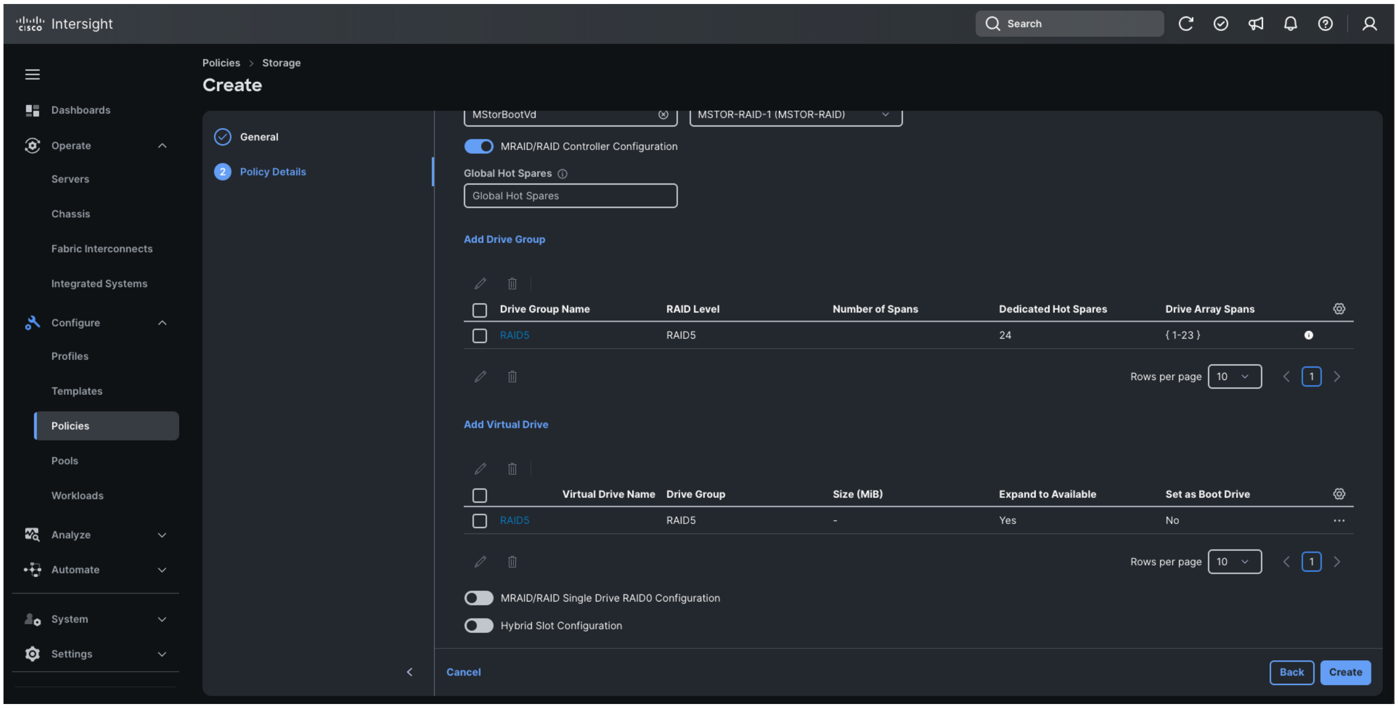
Access Policy: Default

Read Policy: No Read Ahead

Write Policy: Write Through

Disk Cache: Disabled

Step 8. Click Create when both the Drive Group and Virtual Drive have been configured.



Policies > Storage

Create

MStorBootVd

MSTOR-RAID-1 (MSTOR-RAID)

MRAID/RAID Controller Configuration: on

Global Hot Spares: Global Hot Spares

Add Drive Group

□	Drive Group Name	RAID Level	Number of Spans	Dedicated Hot Spares	Drive Array Spans
□	RAID5	RAID5		24	{ 1-23 }

Rows per page 10 1

Add Virtual Drive

□	Virtual Drive Name	Drive Group	Size (MiB)	Expand to Available	Set as Boot Drive
□	RAID5	RAID5	-	Yes	No

Rows per page 10 1

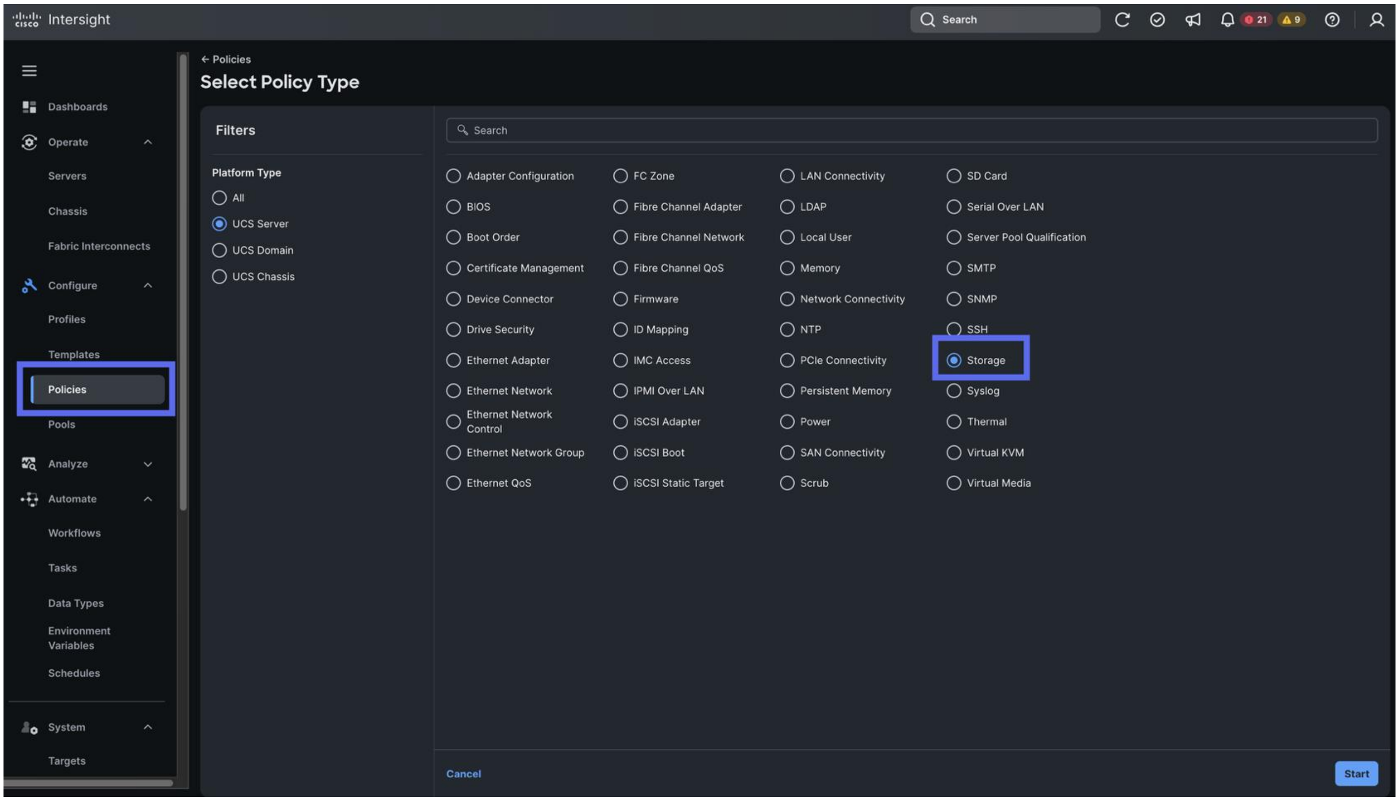
MRAID/RAID Single Drive RAID0 Configuration: off

Hybrid Slot Configuration: off

Procedure 7. Create C225 Storage Policies

Create another storage policy for the Cisco UCS C225 servers. All Cisco UCS C225 machines share the same storage policy.

Step 1. Go to Configure > Polices > and click Create Policy. For the platform type select UCS Server and for the Policy select Storage.

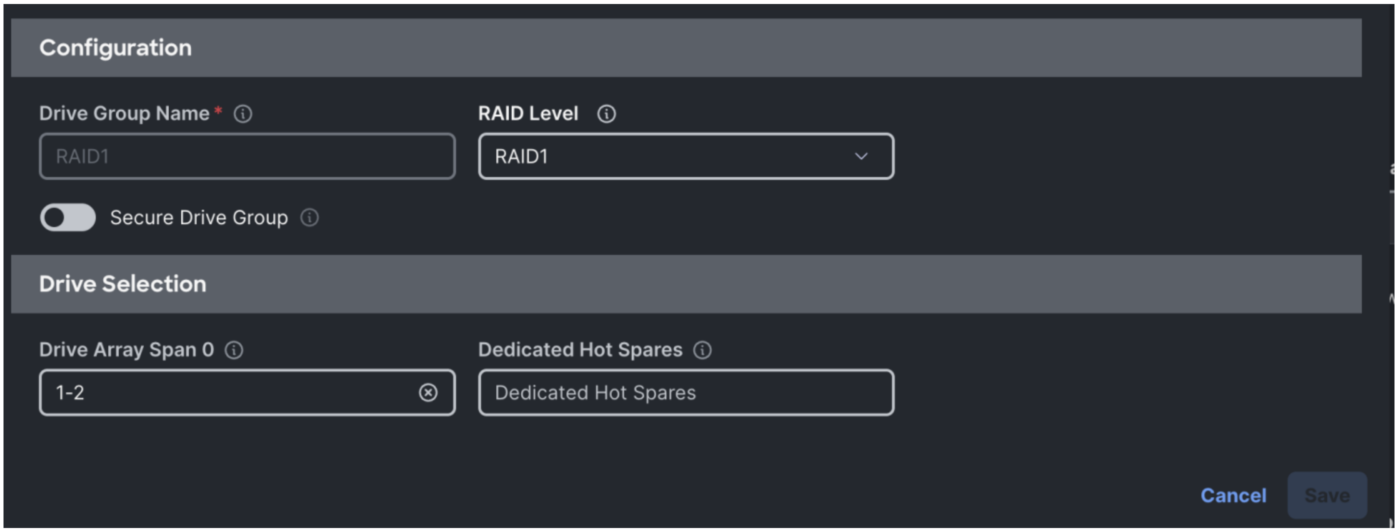


Step 2. In the Create section, for the Organization, select Spk-Org for the policy name enter “C225-Storage-RAID1.” Click Next.

Step 3. In the Policy Details section select UCS Server (Standalone) as the policy.

Step 4. On the same page, toggle the option for “MRAID/RAID Controller Configuration” and then click Add Drive Group.

Step 5. In the Add Drive Group modal, enter “RAID1” in the Drive Group Name and select RAID1 as the RAID Level. For the Drive Array Span 0, enter in “1-2.”



Configuration

Drive Group Name*: RAID1

RAID Level: RAID1

Secure Drive Group: off

Drive Selection

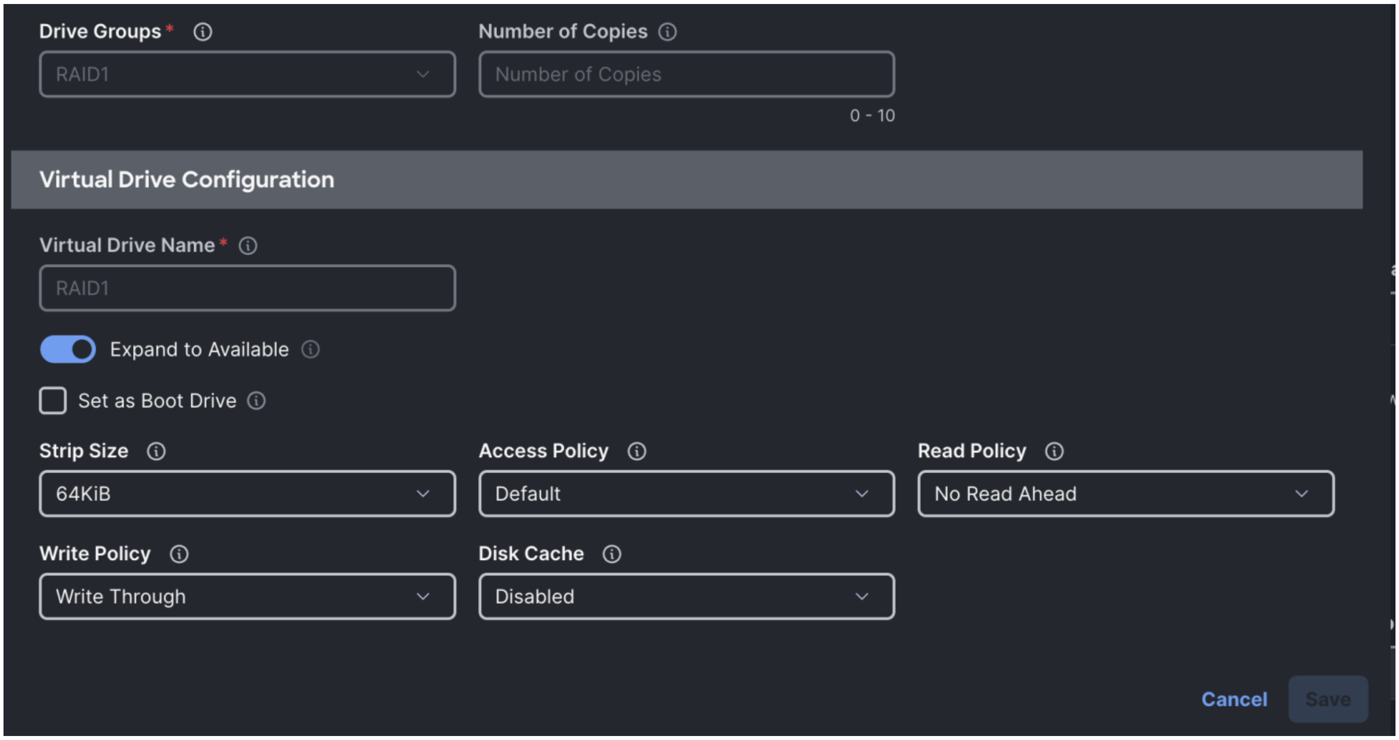
Drive Array Span 0: 1-2

Dedicated Hot Spares: Dedicated Hot Spares

Step 6. Click Add Virtual Drive. In the “Add Virtual Drive” modal, enter in the following options:

- Drive Groups: RAID1
- Virtual Drive Name: RAID1
- Expand to Available: Toggled on
- Strip Size: 64KiB
- Access Policy: Default
- Read Policy: No Read Ahead
- Write Policy: Write Through
- Disk Cache: Disabled

Step 7. Click Add.



Drive Groups*: RAID1

Number of Copies: Number of Copies (0 - 10)

Virtual Drive Configuration

Virtual Drive Name*: RAID1

Expand to Available: on

□ Set as Boot Drive

Strip Size: 64KiB

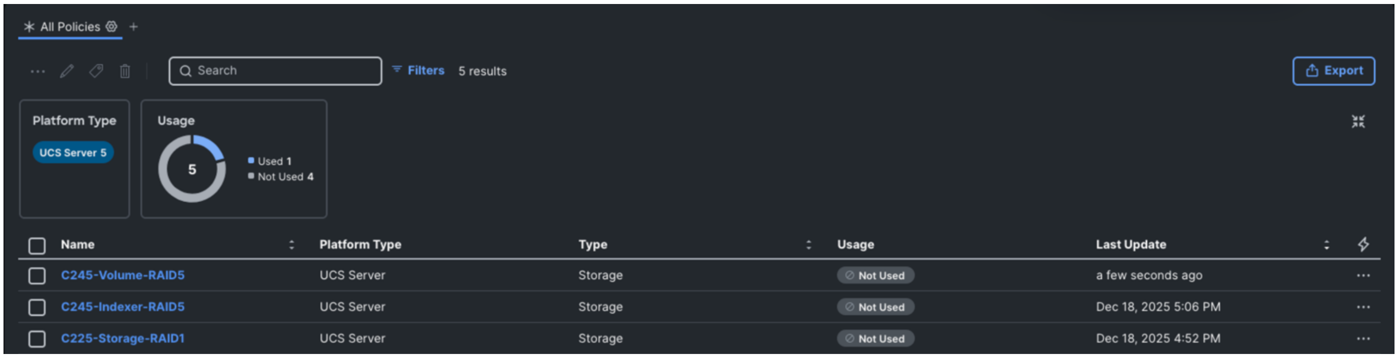
Access Policy: Default

Read Policy: No Read Ahead

Write Policy: Write Through

Disk Cache: Disabled

Step 8. Click Create when both the Drive Group and Virtual Drive have been configured. You should have the following policies:



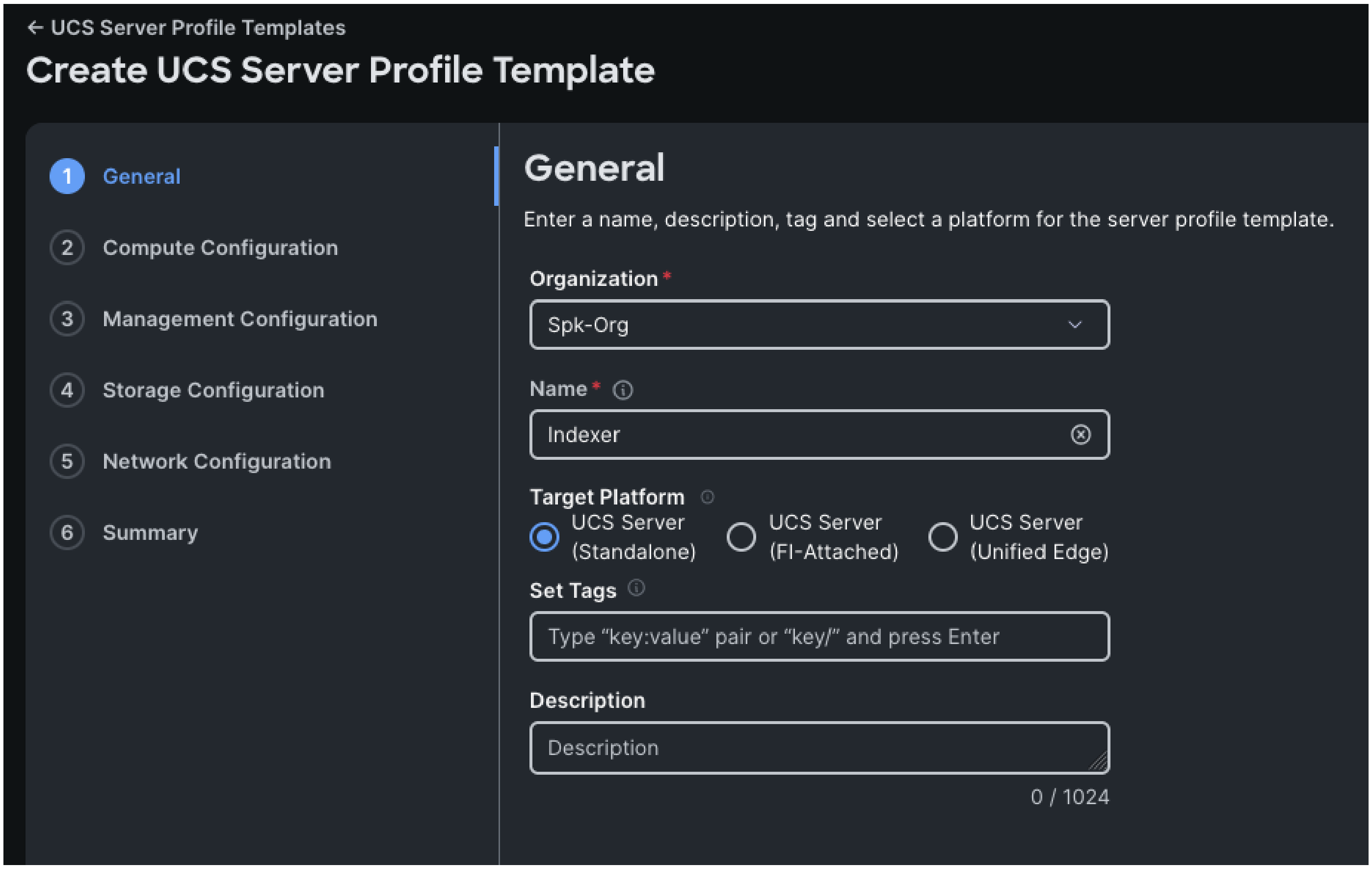
Name	Platform Type	Type	Usage	Last Update
C245-Volume-RAID5	UCS Server	Storage	Not Used	a few seconds ago
C245-Indexer-RAID5	UCS Server	Storage	Not Used	Dec 18, 2025 5:06 PM
C225-Storage-RAID1	UCS Server	Storage	Not Used	Dec 18, 2025 4:52 PM

Procedure 8. Create Server Profile Templates

Create server profile templates for the Indexer, Volume, Bastion, Controller, and Search Head servers. You do this by creating the indexer template and then cloning the rest.

Step 1. Go to Configure > Templates > UCS Server Profile Templates and click Create Server Profile Template.

Step 2. For the Organization, select Spk-Org, enter in “Indexer” for the name, and select UCS Server (Standalone) for the Target Platform. Click Next.



← UCS Server Profile Templates
Create UCS Server Profile Template
1 General
2 Compute Configuration
3 Management Configuration
4 Storage Configuration
5 Network Configuration
6 Summary

General

Enter a name, description, tag and select a platform for the server profile template.

Organization *
Spk-Org

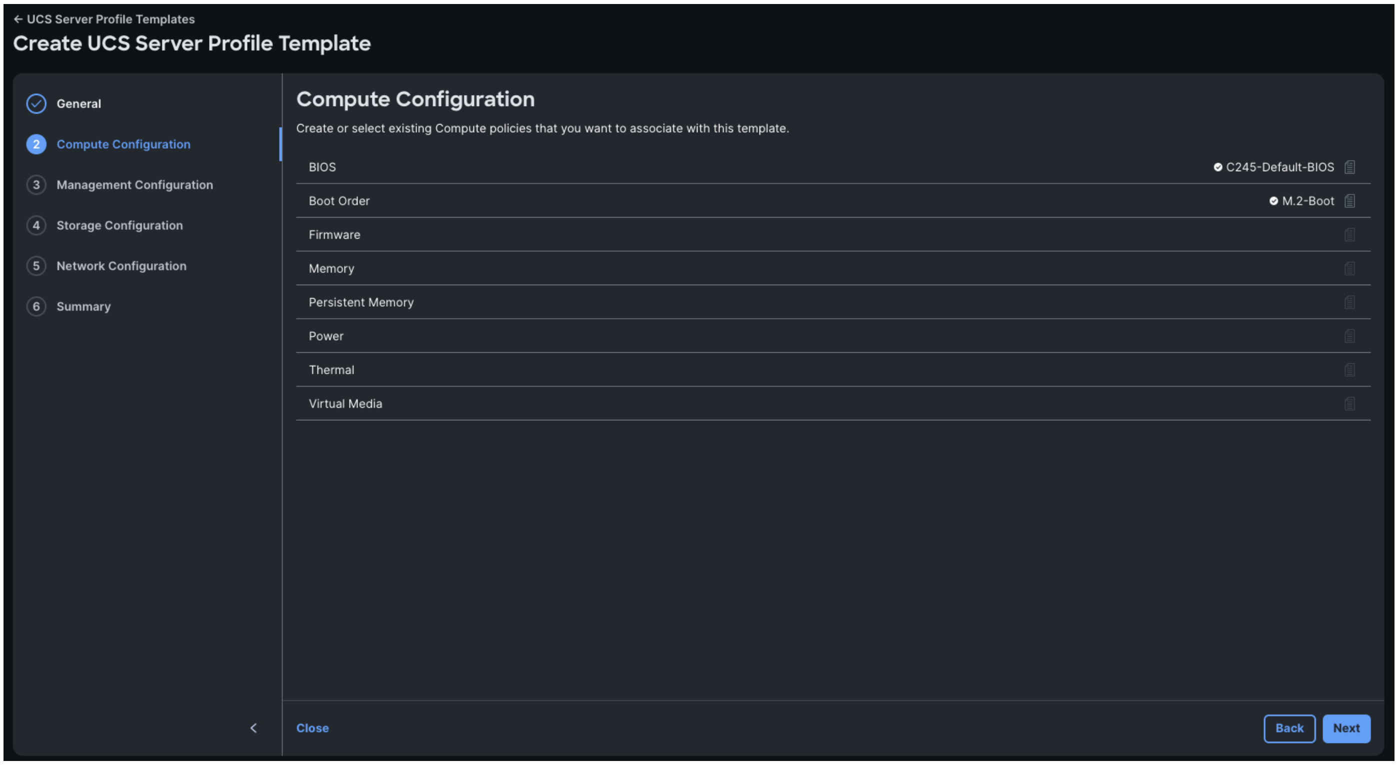
Name *
Indexer

Target Platform
● UCS Server (Standalone) ○ UCS Server (FI-Attached) ○ UCS Server (Unified Edge)

Set Tags
Type “key:value” pair or “key/” and press Enter

Description
Description
0 / 1024

Step 3. In the Compute Configuration step, select the C245-Default-BIOS policy, and select M.2-Boot for the Boot Order which was created in prior steps. Click Next.



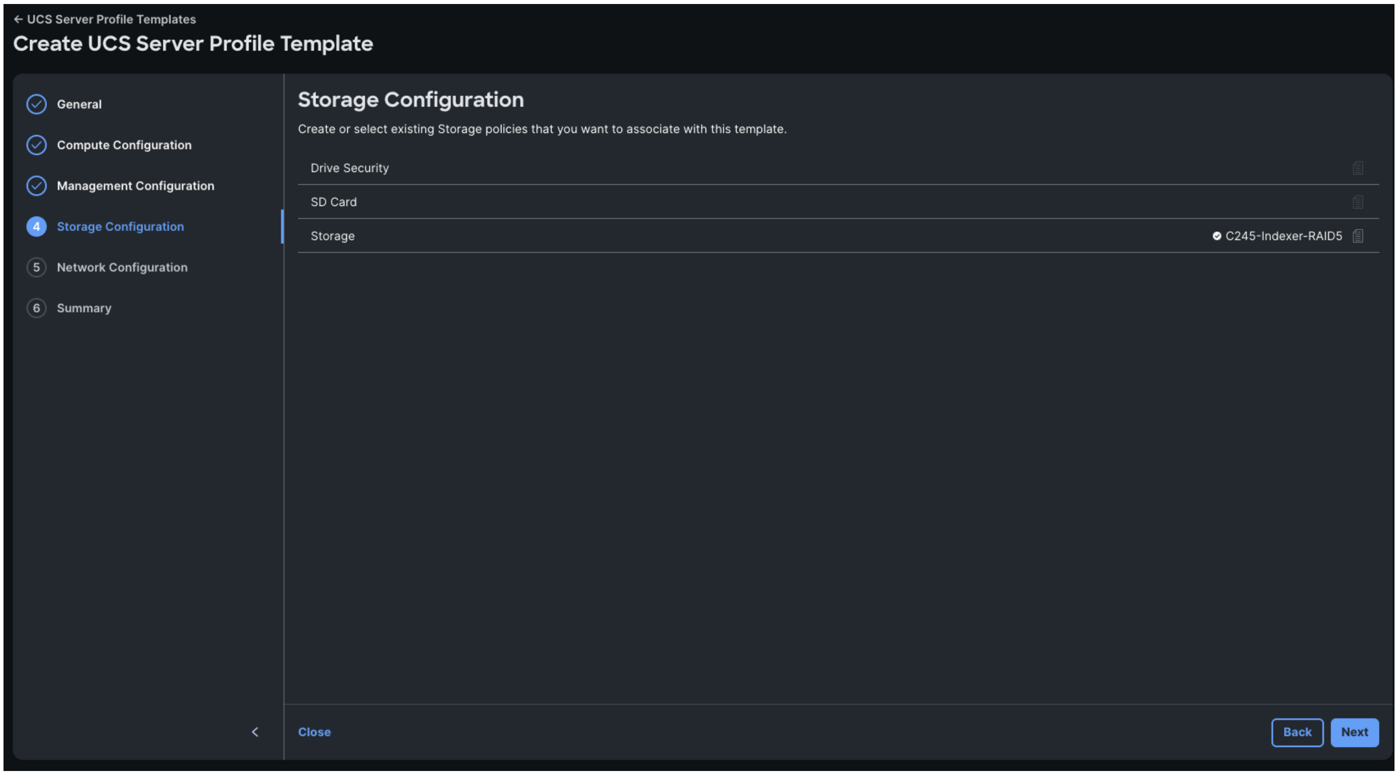
Compute Configuration

Create or select existing Compute policies that you want to associate with this template.

BIOS	C245-Default-BIOS
Boot Order	M.2-Boot
Firmware	
Memory	
Persistent Memory	
Power	
Thermal	
Virtual Media	

Step 4. Click Next in the Management Configuration screen.

Step 5. From Storage Configuration, select the C245-Indexer-RAID5 storage policy.

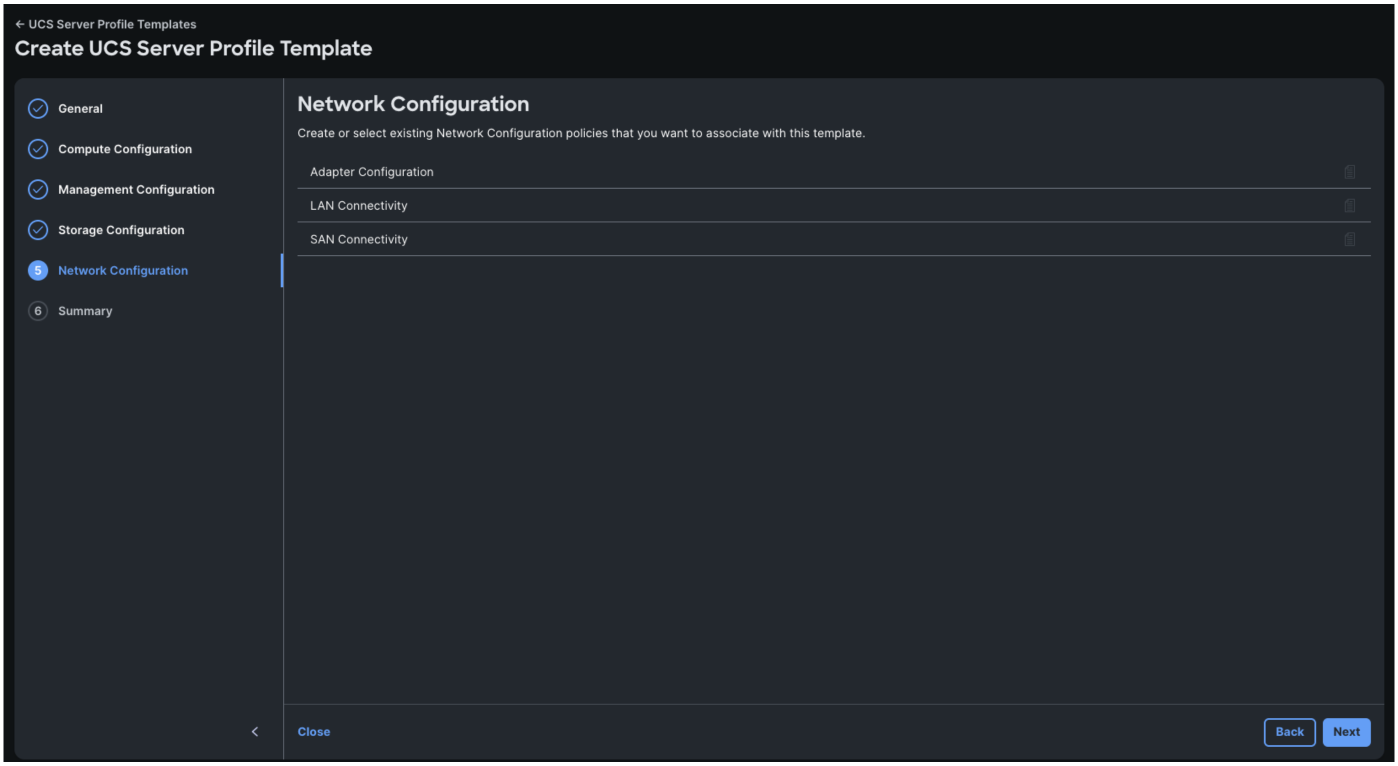


Storage Configuration

Create or select existing Storage policies that you want to associate with this template.

Drive Security	
SD Card	
Storage	C245-Indexer-RAID5

Step 6. Click Next in the Network Configuration screen.



← UCS Server Profile Templates

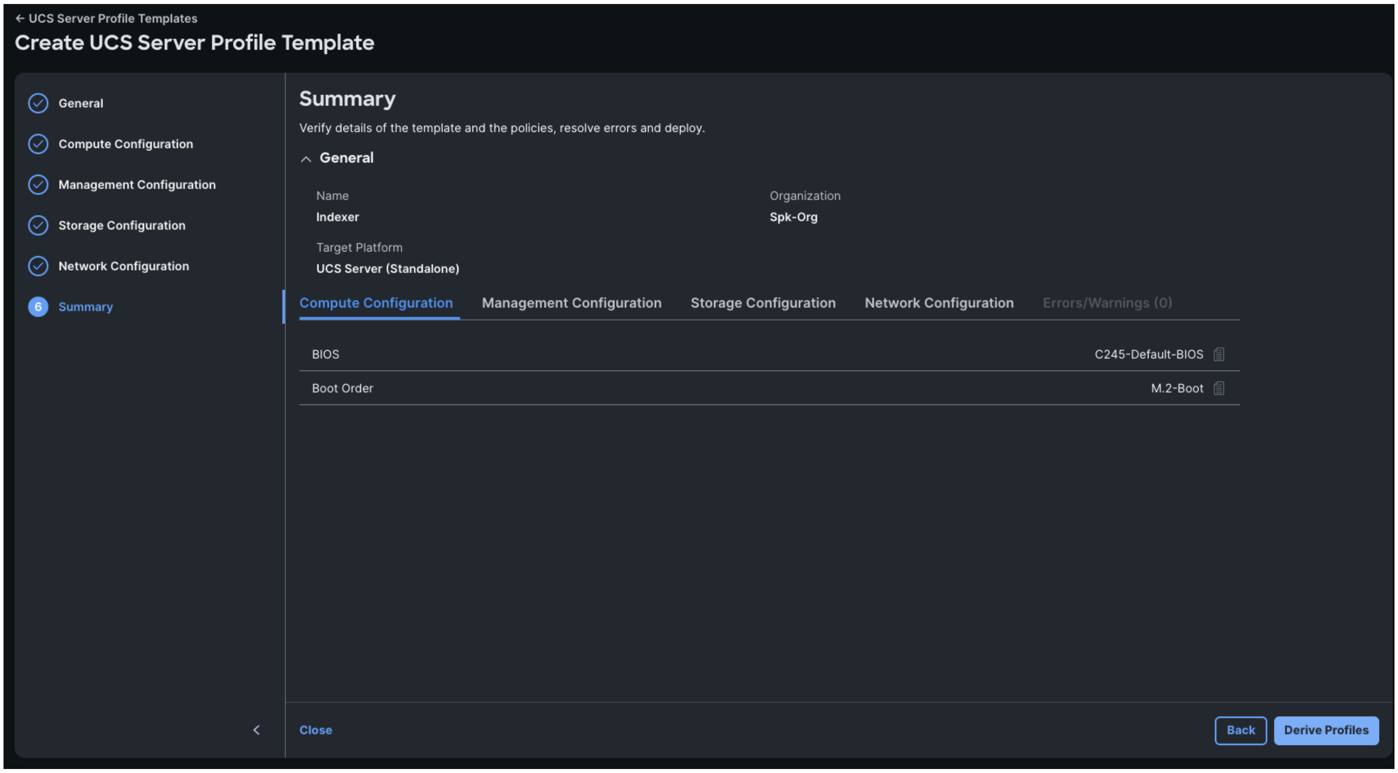
Create UCS Server Profile Template

Network Configuration

Create or select existing Network Configuration policies that you want to associate with this template.

- Adapter Configuration
- LAN Connectivity
- SAN Connectivity

Step 7. Click Derive Profiles in the Summary screen.



← UCS Server Profile Templates

Create UCS Server Profile Template

Summary

Verify details of the template and the policies, resolve errors and deploy.

General

Name: Indexer

Organization: Spk-Org

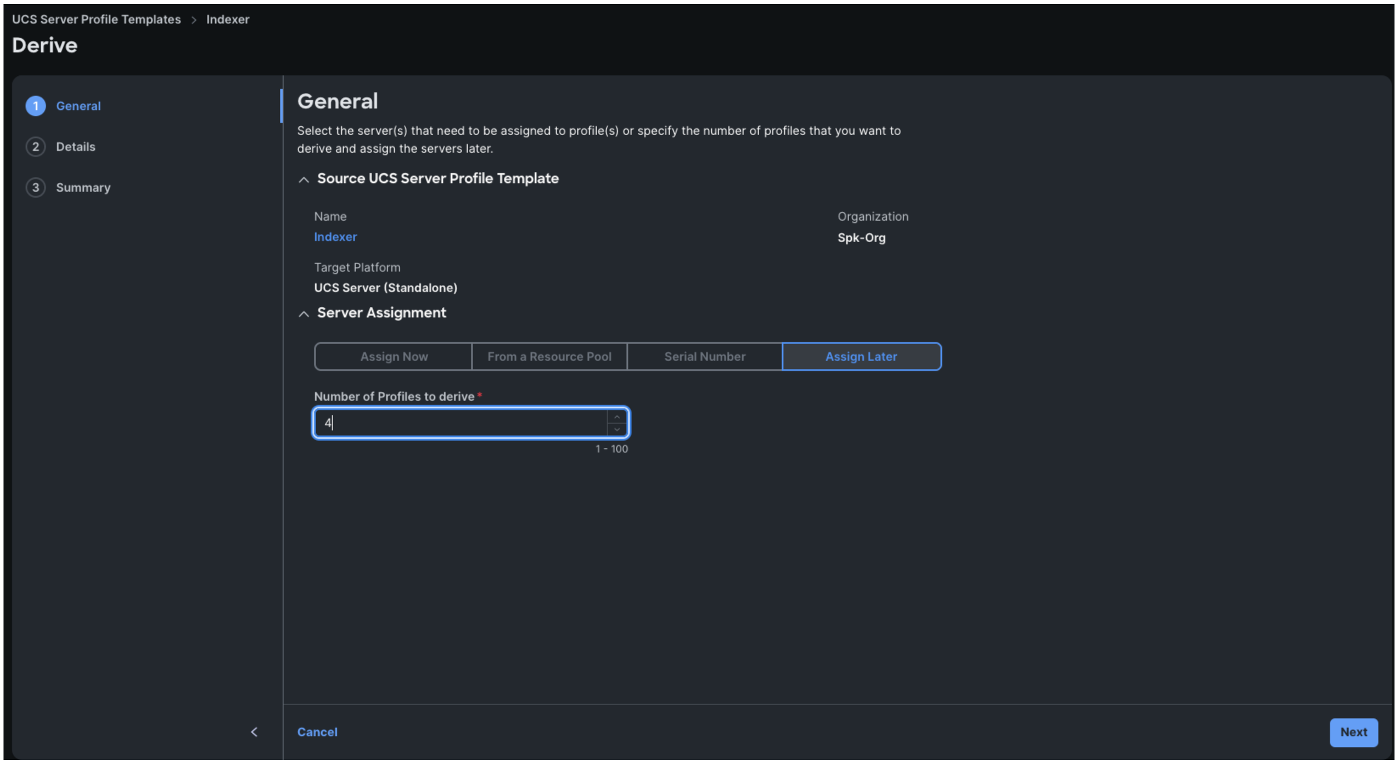
Target Platform: UCS Server (Standalone)

BIOS	C245-Default-BIOS
Boot Order	M.2-Boot

Step 8. In the following screen, enter the number of profiles to derive. This corresponds to the number of Indexers in your profile.

Note: As a reminder, the Small profile has 3 Indexers, the Medium profile has 4 indexers, and the Large has 7. Since we are demonstrating the Medium profile, enter in 4 indexers and choose Assign Later.

Step 9. Click Next.



Derive

General

Select the server(s) that need to be assigned to profile(s) or specify the number of profiles that you want to derive and assign the servers later.

Source UCS Server Profile Template

Name: Indexer

Organization: Spk-Org

Target Platform: UCS Server (Standalone)

Server Assignment

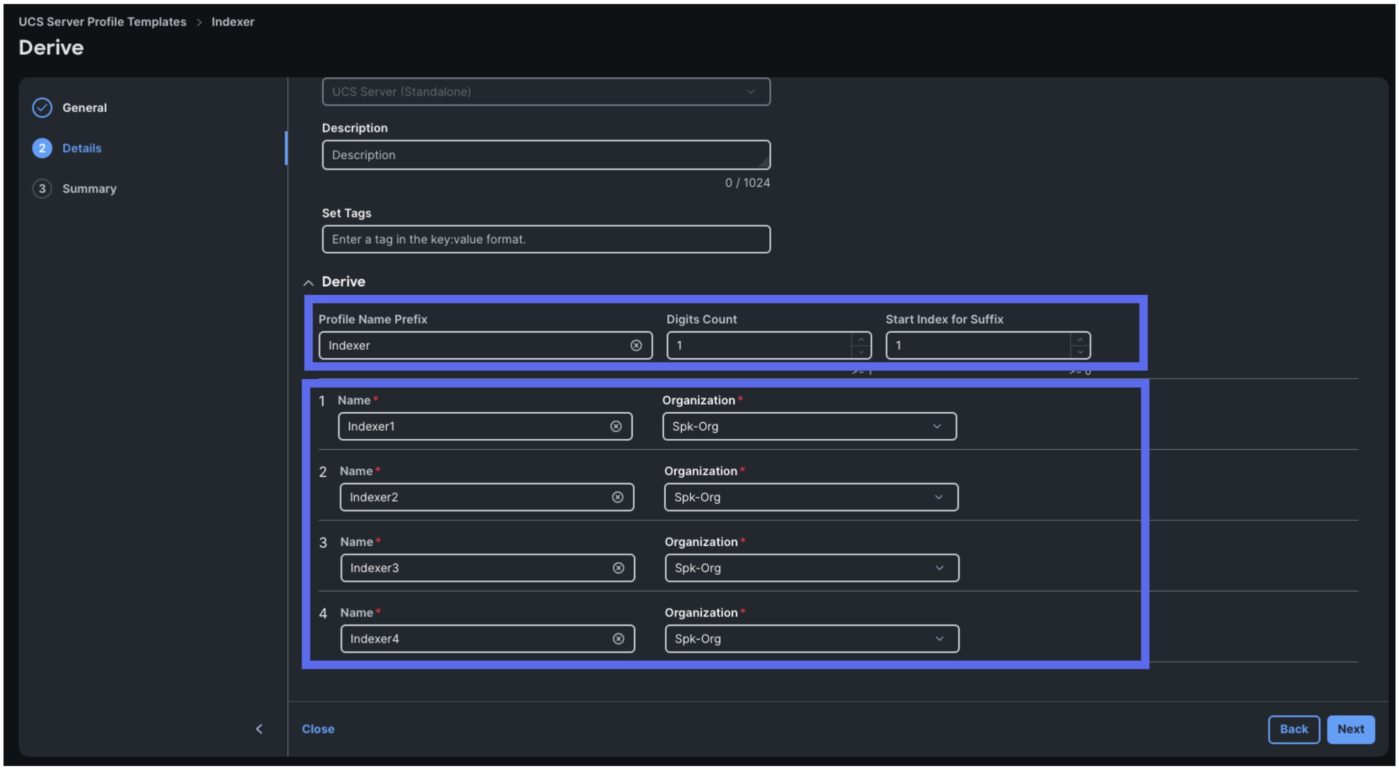
Assign Now | From a Resource Pool | Serial Number | [✓ Assign Later]

Number of Profiles to derive *: 4

1 - 100

Step 10. In the Details screen, expand the Derive option at the bottom, enter in “Indexer” as the Profile Name Prefix, enter “1” for Digits Count, and “1” for Start Index for Suffix.

Step 11. Click Next.



Derive

UCS Server (Standalone)

Description: Description

0 / 1024

Set Tags: Enter a tag in the key:value format.

Derive

Profile Name Prefix: Indexer

Digits Count: 1

Start Index for Suffix: 1

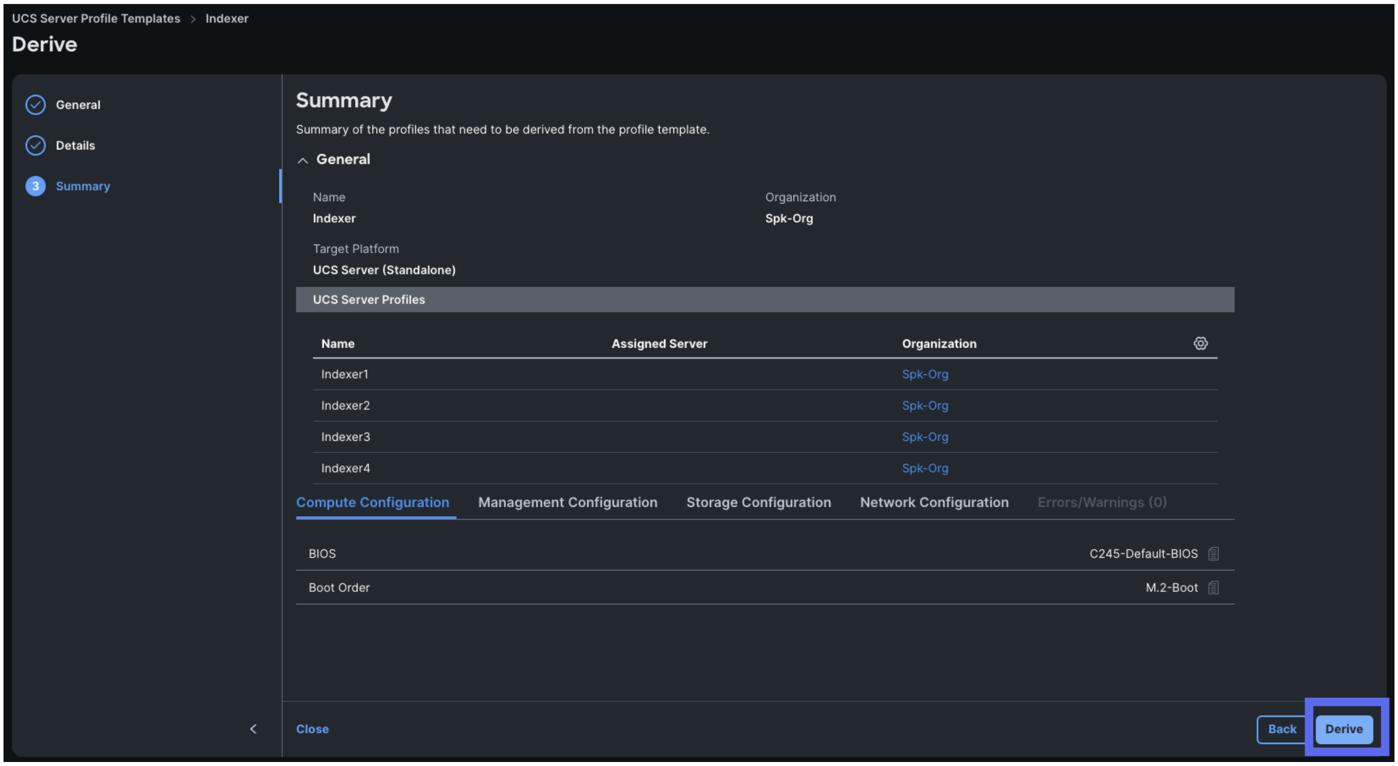
1 Name *: Indexer1 Organization *: Spk-Org

2 Name *: Indexer2 Organization *: Spk-Org

3 Name *: Indexer3 Organization *: Spk-Org

4 Name *: Indexer4 Organization *: Spk-Org

Step 12. Click Derive in the Summary screen.



UCS Server Profile Templates > Indexer

Derive

- General
- Details
- 3 Summary

Summary

Summary of the profiles that need to be derived from the profile template.

General

Name: Indexer

Organization: Spk-Org

Target Platform: UCS Server (Standalone)

UCS Server Profiles

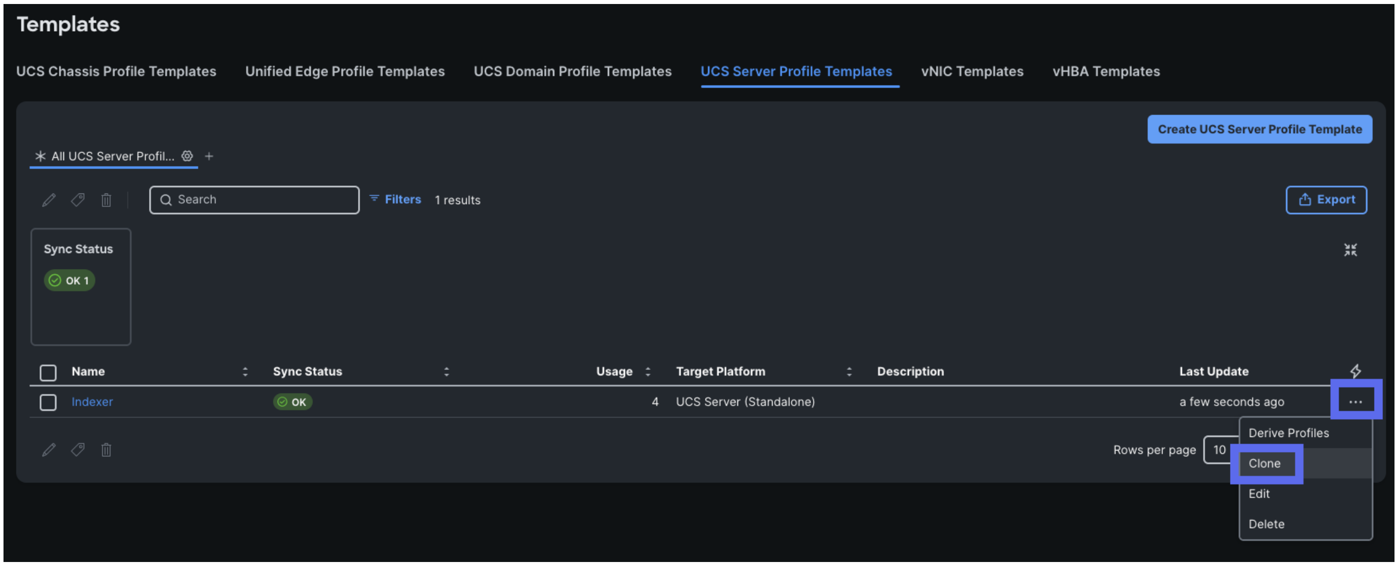
Name	Assigned Server	Organization
Indexer1		Spk-Org
Indexer2		Spk-Org
Indexer3		Spk-Org
Indexer4		Spk-Org

BIOS	C245-Default-BIOS
Boot Order	M.2-Boot

Procedure 9. Create a Volume Server Profile Template

Create the Volume Server Template by cloning the Indexer template.

Step 1. Go to Configure > Templates > UCS Server Profile Templates. Locate the Indexer template we just created and click the 3 dots on the right-hand side. Click Clone.



Templates

UCS Chassis Profile Templates
Unified Edge Profile Templates
UCS Domain Profile Templates
UCS Server Profile Templates
vNIC Templates
vHBA Templates
Create UCS Server Profile Template
All UCS Server Profil...
Search
Filters
1 results
Export
Sync Status
OK 1

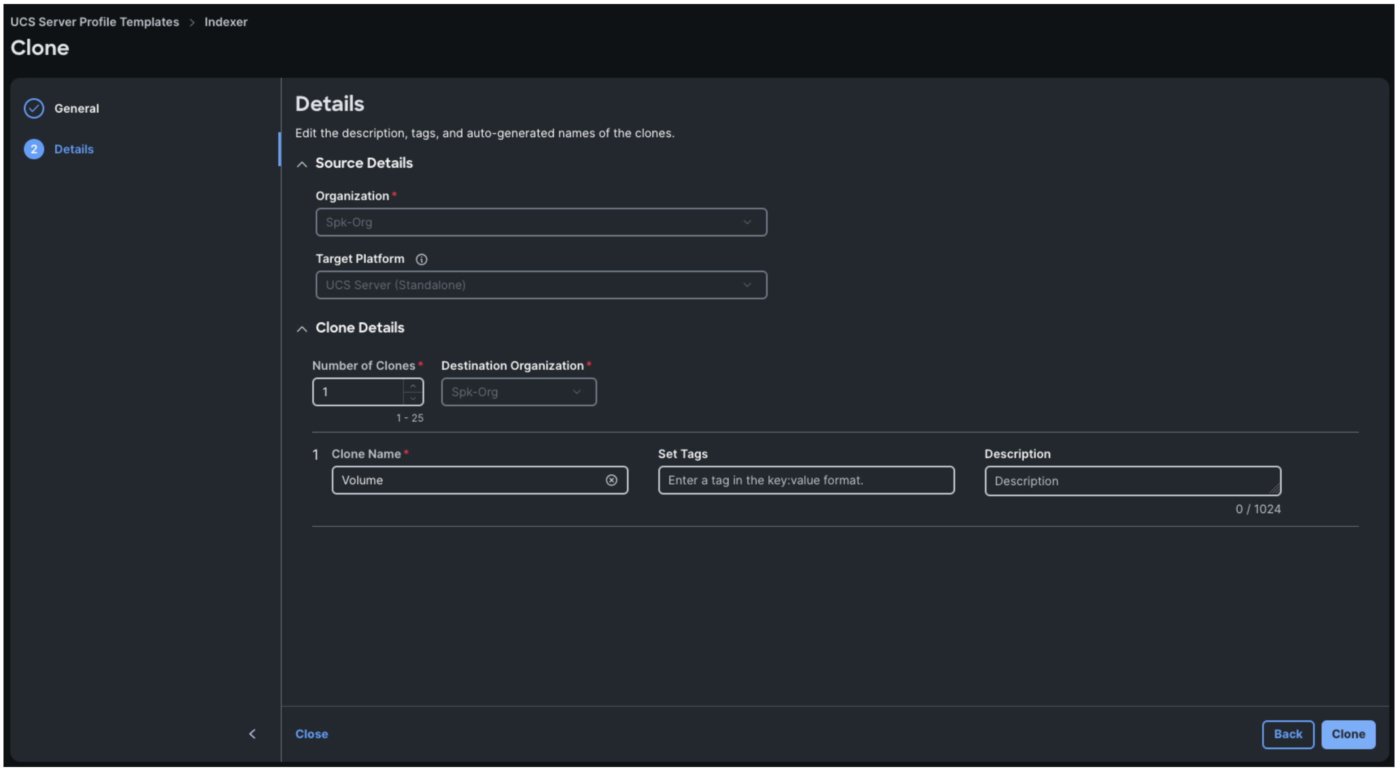
Name	Sync Status	Usage	Target Platform	Description	Last Update
Indexer	OK	4	UCS Server (Standalone)		a few seconds ago

Rows per page 10
Derive Profiles
Clone
Edit
Delete

Step 2. In the General screen click Next.

Step 3. In the Details page, change the Clone Name to “Volume.”

Step 4. Click Clone.



UCS Server Profile Templates > Indexer

Clone

General

Details

Details

Edit the description, tags, and auto-generated names of the clones.

Source Details

Organization *: Spk-Org

Target Platform: UCS Server (Standalone)

Clone Details

Number of Clones *: 1 (1 - 25)

Destination Organization *: Spk-Org

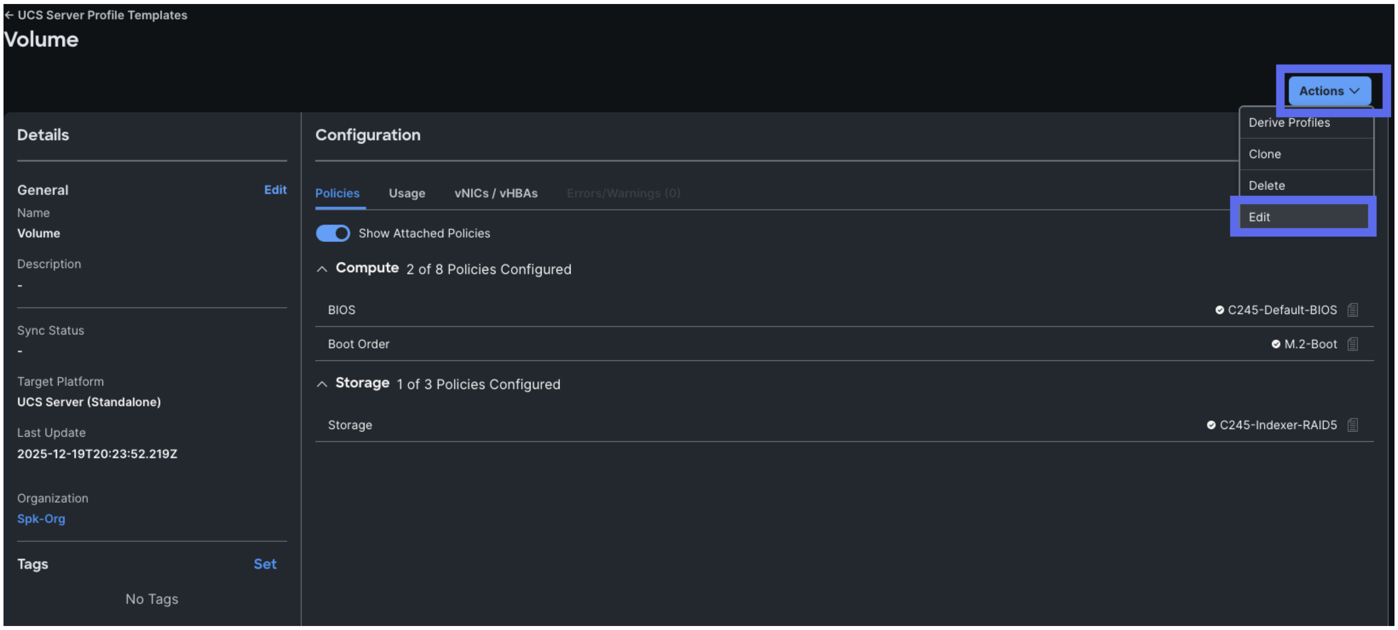
1 Clone Name *: Volume

Set Tags: Enter a tag in the key:value format.

Description: Description (0 / 1024)

Close | Back | Clone

Step 5. When cloned, click Actions on the top-right and select Edit to configure the cloned the Template.



← UCS Server Profile Templates

Volume

Details

General

Name: Volume

Description: -

Sync Status: -

Target Platform: UCS Server (Standalone)

Last Update: 2025-12-19T20:23:52.219Z

Organization: Spk-Org

Tags: No Tags

Configuration

Show Attached Policies

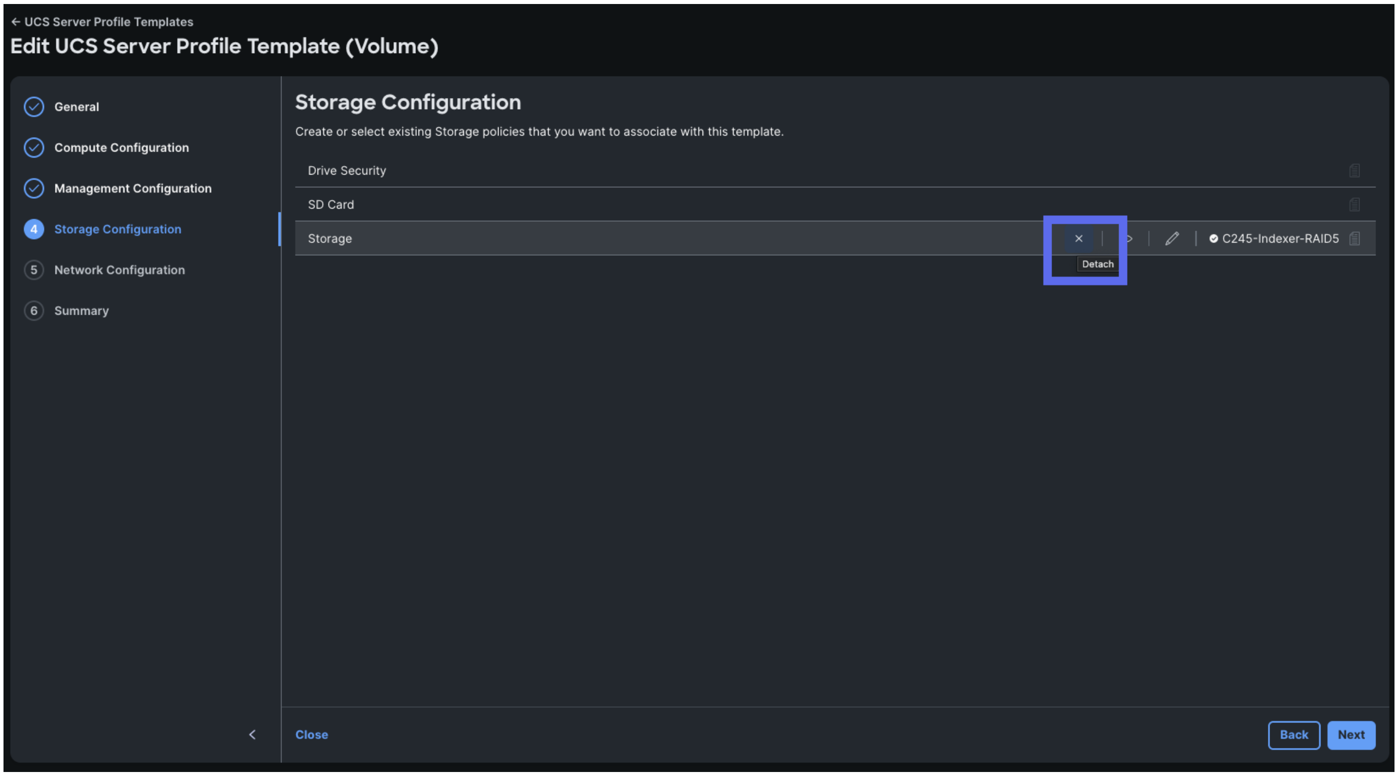
Compute 2 of 8 Policies Configured

BIOS	C245-Default-BIOS
Boot Order	M.2-Boot

Storage 1 of 3 Policies Configured

Storage	C245-Indexer-RAID5

Step 6. Click Next to proceed with the cloned settings until you get to Storage Configuration. Click the **X** icon to Detach the Storage policy.

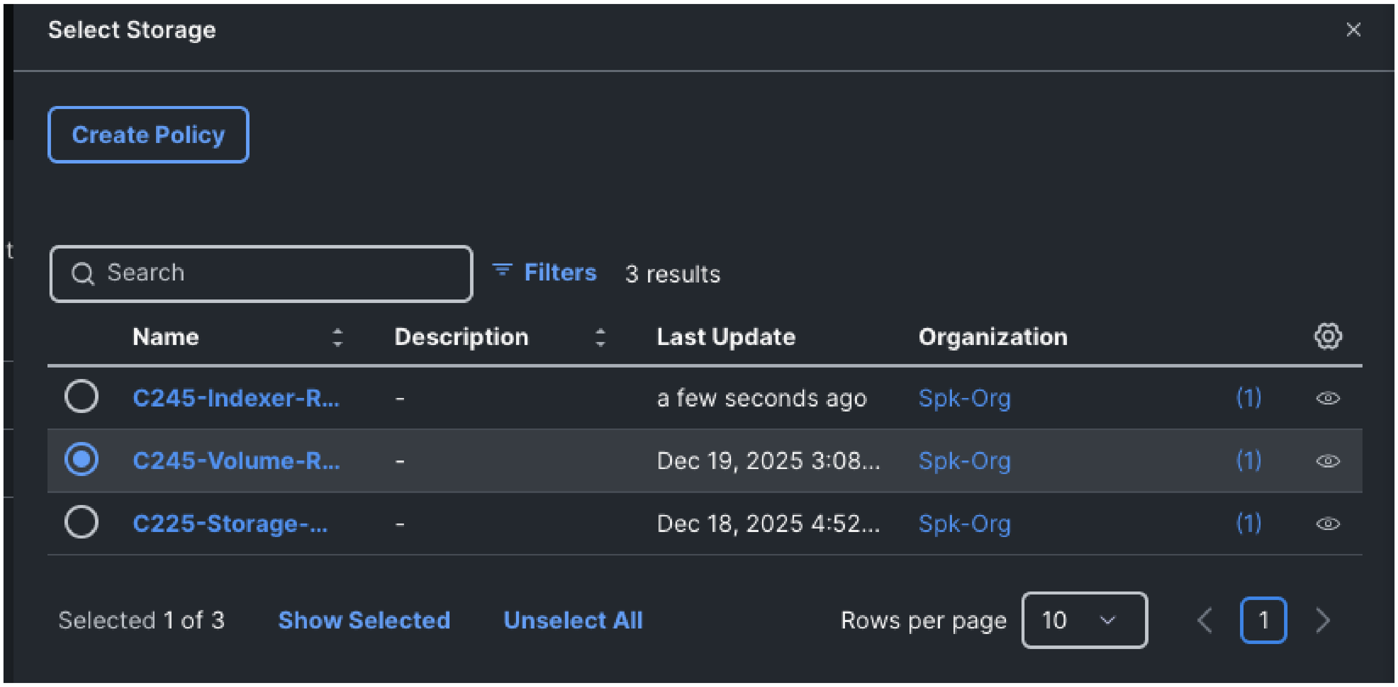


Storage Configuration

Create or select existing Storage policies that you want to associate with this template.

Drive Security	
SD Card	
Storage	C245-Indexer-RAID5

Step 7. Now that the previous policy is detached, attach the C245-Volume-RAID5 policy. When selected, click Next in Storage Configuration to proceed.

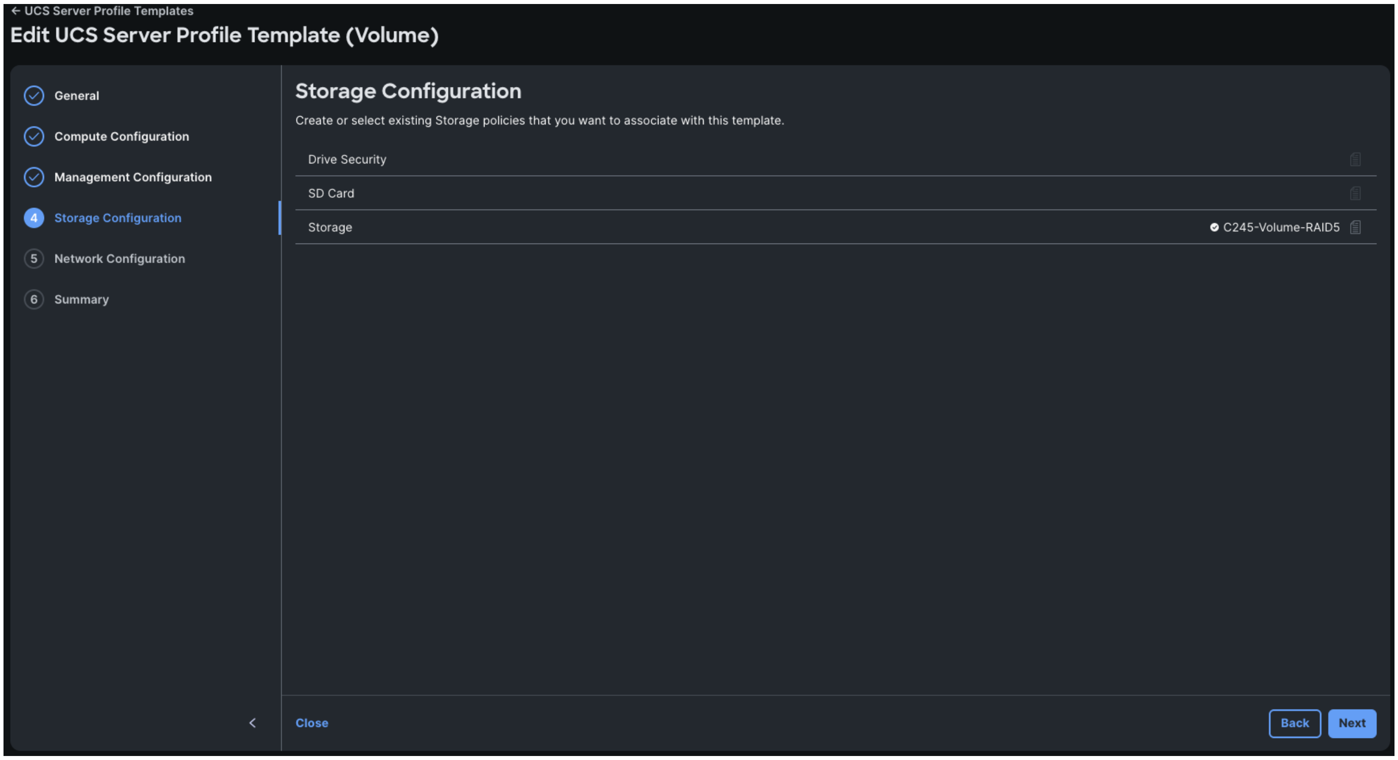


3 results

	Name	Description	Last Update	Organization		
○	C245-Indexer-R...	-	a few seconds ago	Spk-Org	(1)	
●	C245-Volume-R...	-	Dec 19, 2025 3:08...	Spk-Org	(1)	
○	C225-Storage-...	-	Dec 18, 2025 4:52...	Spk-Org	(1)	

Selected 1 of 3

Step 8. Click Next on the following screens since you do not need to make any additional changes. When you reach the Summary section, click Derive Profiles.



← UCS Server Profile Templates

Edit UCS Server Profile Template (Volume)

Storage Configuration

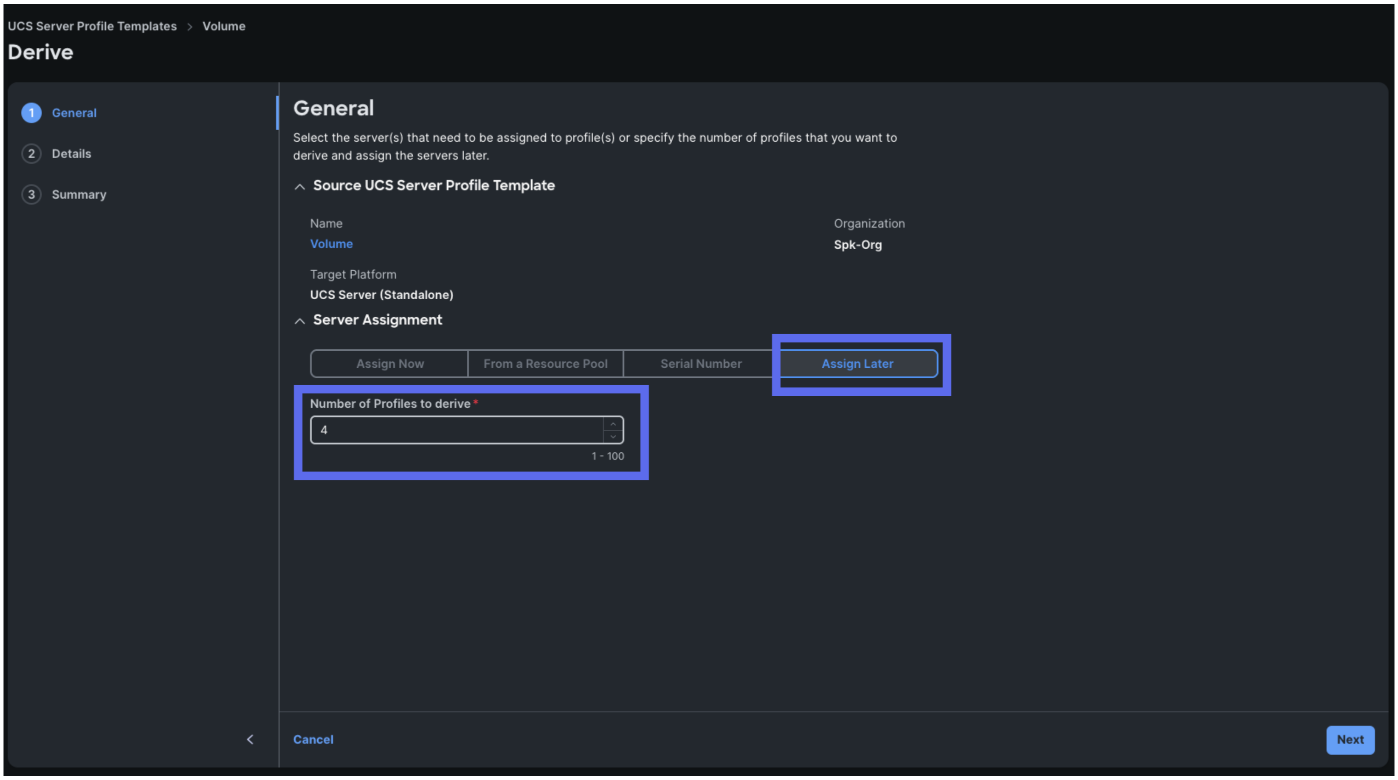
Create or select existing Storage policies that you want to associate with this template.

Drive Security

SD Card

Storage — C245-Volume-RAID5

Step 9. Change the number of profiles to derive according to the profile you are using. We will change the Number of Profiles to Derive to 4 for this guide since we are configuring the Medium Profile.



UCS Server Profile Templates > Volume

Derive

General

Select the server(s) that need to be assigned to profile(s) or specify the number of profiles that you want to derive and assign the servers later.

Source UCS Server Profile Template

Name: Volume

Organization: Spk-Org

Target Platform: UCS Server (Standalone)

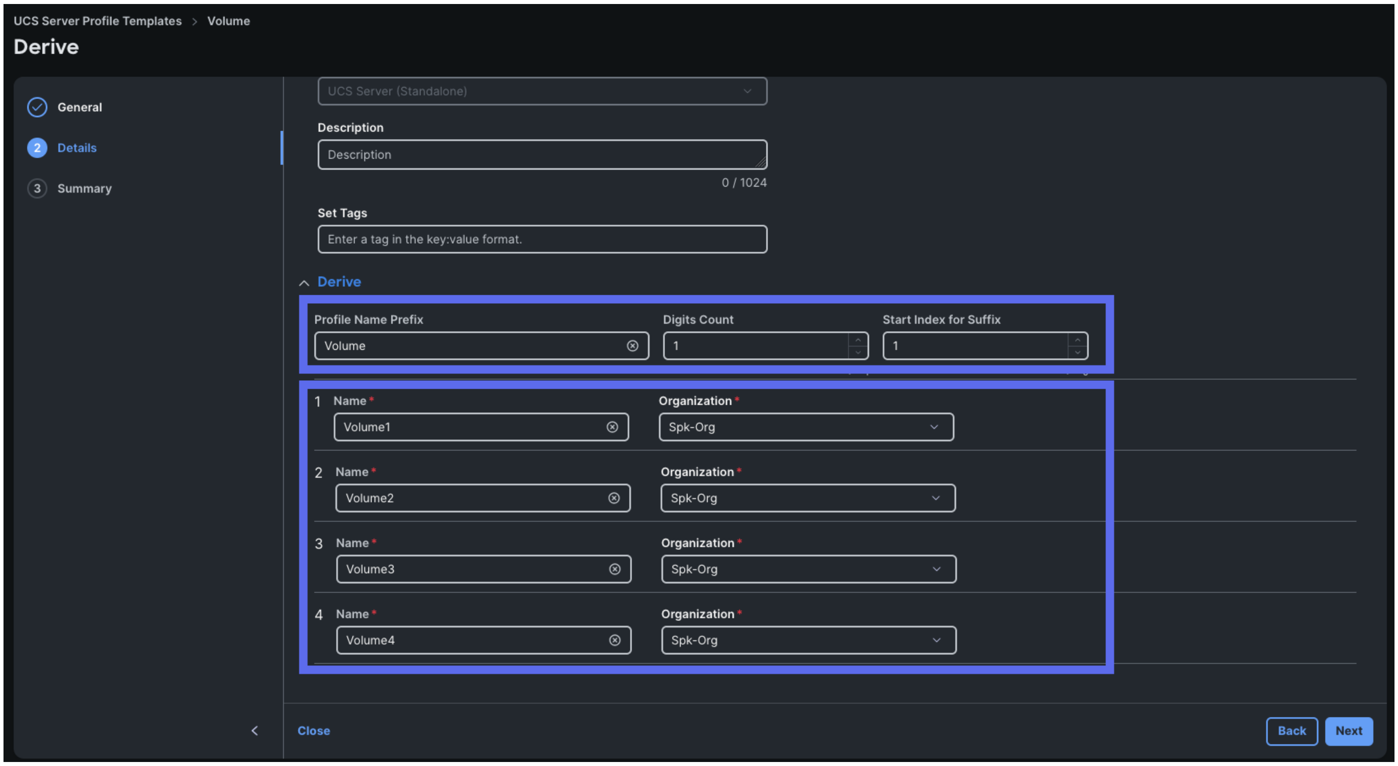
Server Assignment

Number of Profiles to derive *: 4

1 - 100

Step 10. In the Details screen, expand the Derive option at the bottom, enter in “Volume” as the Profile Name Prefix, enter “1” for Digits Count, and “1” for Start Index for Suffix.

Step 11. Click Next.



Description: Description 0 / 1024

Set Tags: Enter a tag in the key:value format.

Derive

Profile Name Prefix: Volume
Digits Count: 1
Start Index for Suffix: 1

1 Name * Volume1 Organization * Spk-Org
2 Name * Volume2 Organization * Spk-Org
3 Name * Volume3 Organization * Spk-Org
4 Name * Volume4 Organization * Spk-Org

Step 12. Click Derive in the Summary screen.

Procedure 10. Create a Controllers Server Profile Template

Now you will create the Controller Template by cloning the Controller template.

Step 1. Go to > Configure > Templates > UCS Server Profile Templates. Locate the Volume template, click the ellipses, and click Clone.

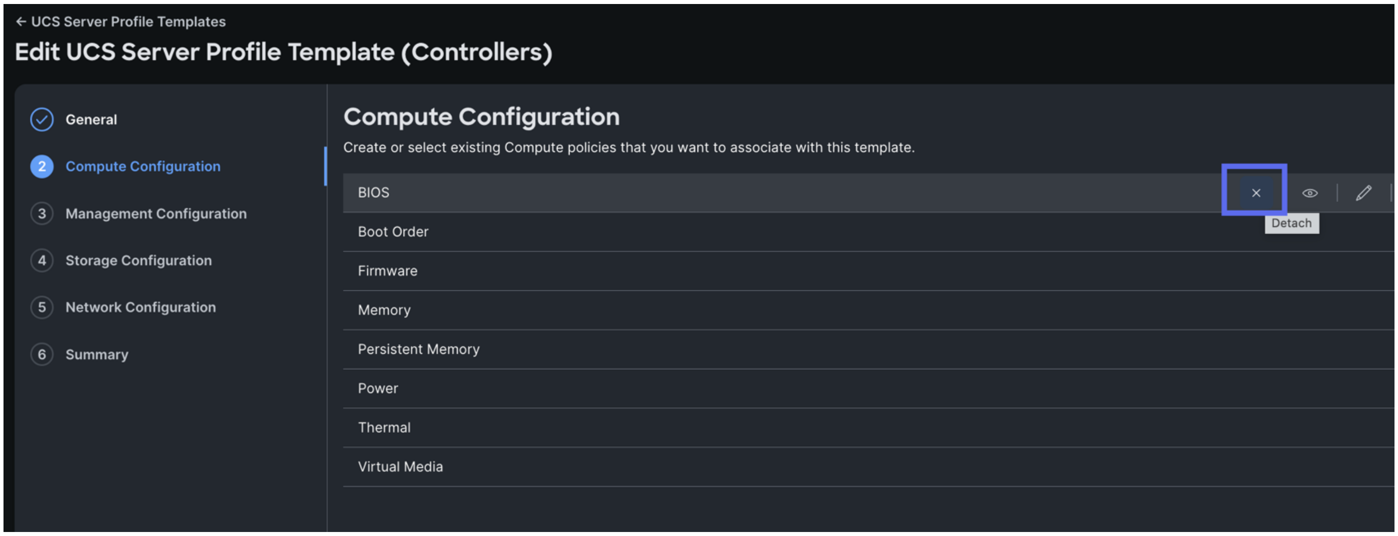
Step 2. In the General screen click Next.

Step 3. In the Details page, change the Clone Name to "Controller." Click Clone.

Step 4. When cloned, click Actions on the top-right and select Edit to configure the cloned the Template.

Step 5. Click Next to proceed past the General screen to the Compute Configuration page. Click the **X** icon to detach the cloned BIOS policy.

Step 6. When detached, you will create a new Boot Policy for the C225 machines. Click Select the BIOS and then click Create Policy.

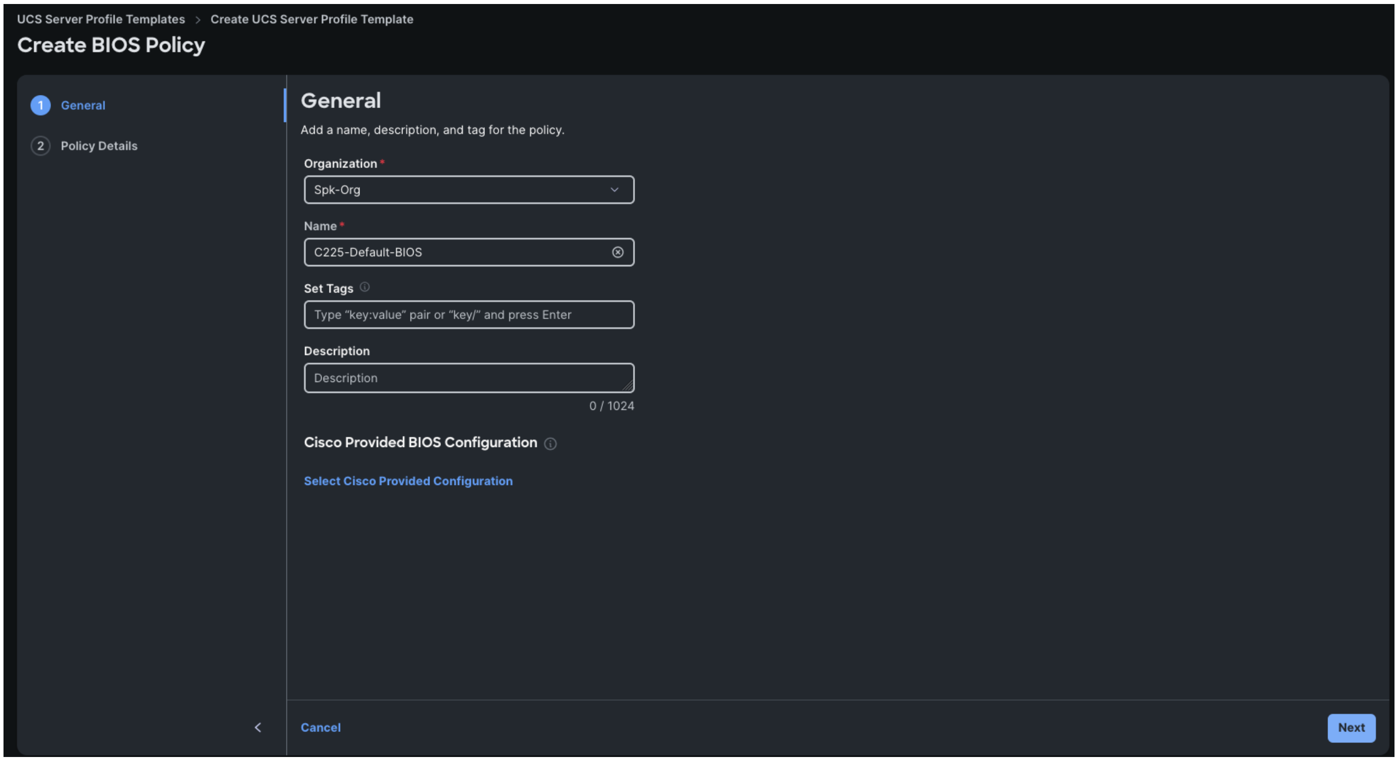

← UCS Server Profile Templates

Edit UCS Server Profile Template (Controllers)

Compute Configuration

Create or select existing Compute policies that you want to associate with this template.

Step 7. Enter "C225-Default-BIOS" for the Name and click Next.


UCS Server Profile Templates > Create UCS Server Profile Template

Create BIOS Policy

General

Add a name, description, and tag for the policy.

Organization * Spk-Org

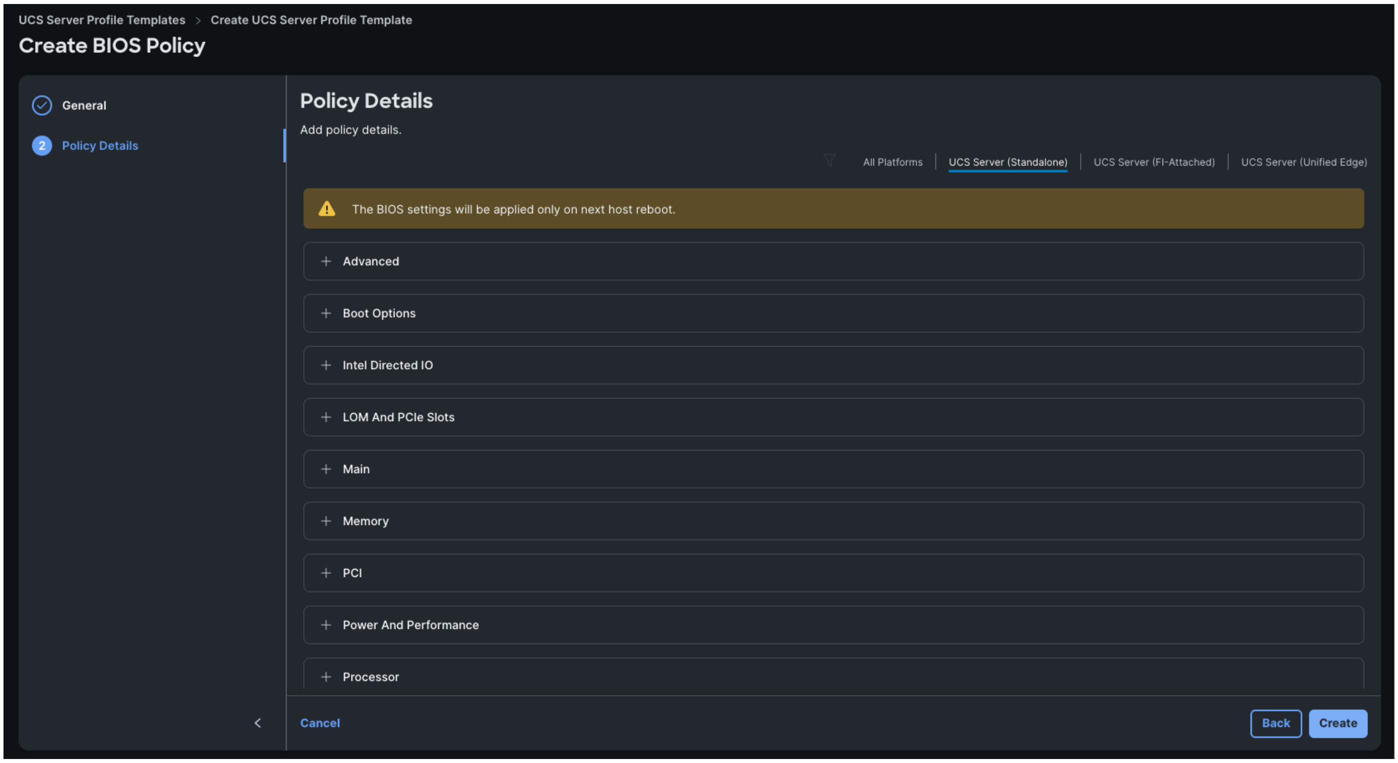
Name * C225-Default-BIOS

Set Tags: Type "key:value" pair or "key/" and press Enter

Description: Description 0 / 1024

Cisco Provided BIOS Configuration

Step 8. Click Next.



UCS Server Profile Templates > Create UCS Server Profile Template

Create BIOS Policy

1. General
2. Policy Details

Policy Details

Add policy details.

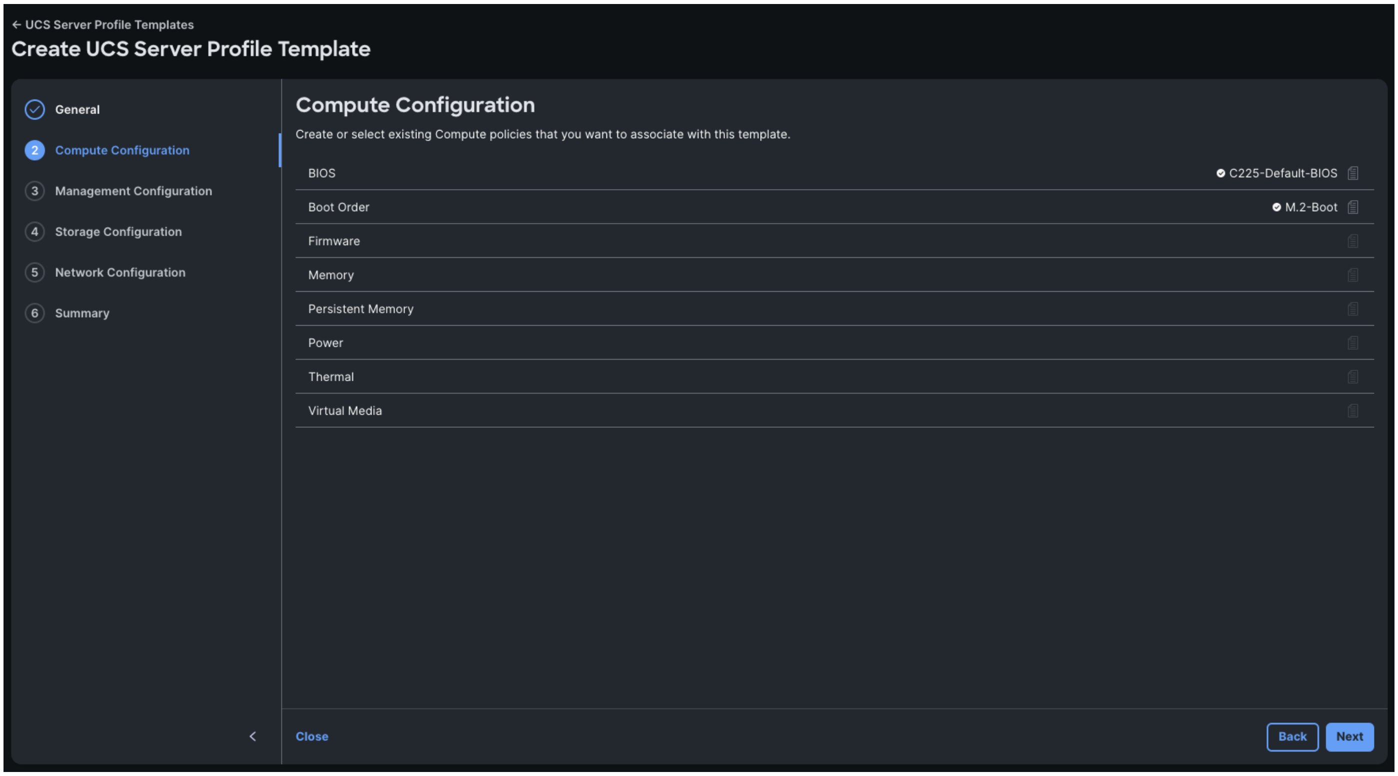
All Platforms | UCS Server (Standalone) | UCS Server (FI-Attached) | UCS Server (Unified Edge)

The BIOS settings will be applied only on next host reboot.

- Advanced
- Boot Options
- Intel Directed IO
- LOM And PCIe Slots
- Main
- Memory
- PCI
- Power And Performance
- Processor

Note: This creates a default, BIOS Policy. You may configure it according to your needs.

Step 9. When you configured the BIOS Policy, click Next in the Compute Configuration.



← UCS Server Profile Templates

Create UCS Server Profile Template

1. General
2. Compute Configuration
3. Management Configuration
4. Storage Configuration
5. Network Configuration
6. Summary

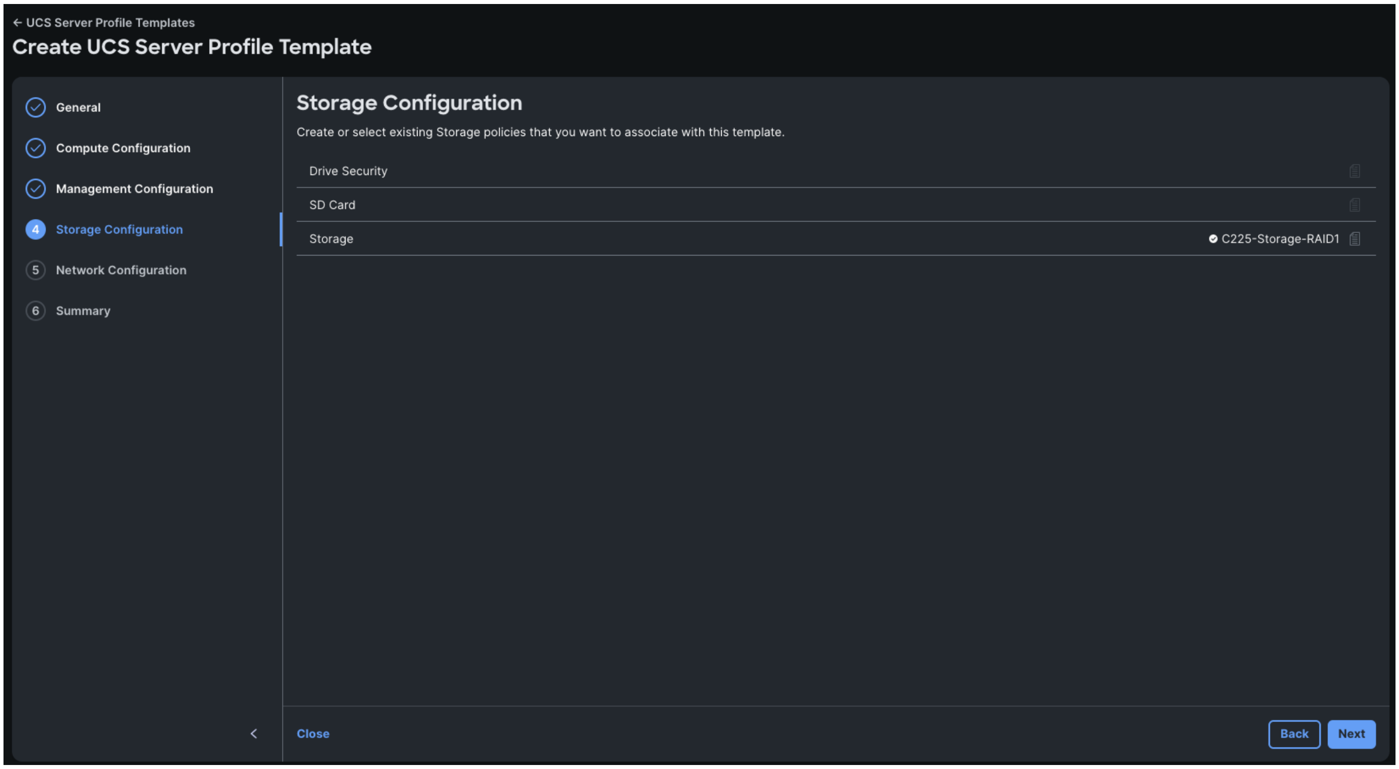
Compute Configuration

Create or select existing Compute policies that you want to associate with this template.

BIOS	C225-Default-BIOS
Boot Order	M.2-Boot
Firmware	
Memory	
Persistent Memory	
Power	
Thermal	
Virtual Media	

Step 10. Proceed through the Management Configuration screen by clicking Next. When you get to the Storage Configuration screen, modify the storage policy to use the “C225-Storage-Policy.”

Step 11. Click Next.


← UCS Server Profile Templates

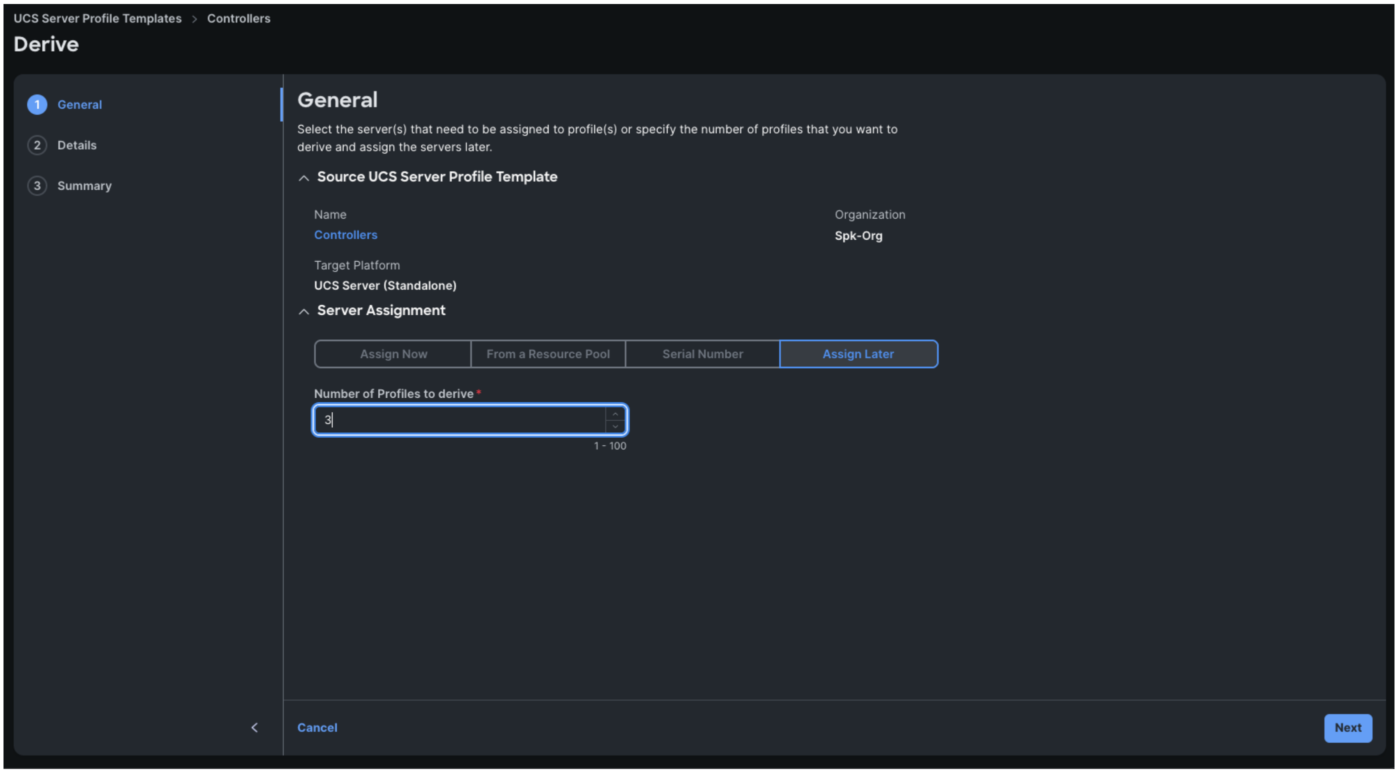
Create UCS Server Profile Template

Storage Configuration

Create or select existing Storage policies that you want to associate with this template.

Drive Security	
SD Card	
Storage	C225-Storage-RAID1

Step 12. Proceed through the Network Configuration screen by clicking Next. When you get to the Summary screen, click Derive Profiles. Enter 3 for the Number of Profiles to derive, choose Assign Later, and click Next.


UCS Server Profile Templates > Controllers

Derive

General

Select the server(s) that need to be assigned to profile(s) or specify the number of profiles that you want to derive and assign the servers later.

Source UCS Server Profile Template

Name: Controllers

Organization: Spk-Org

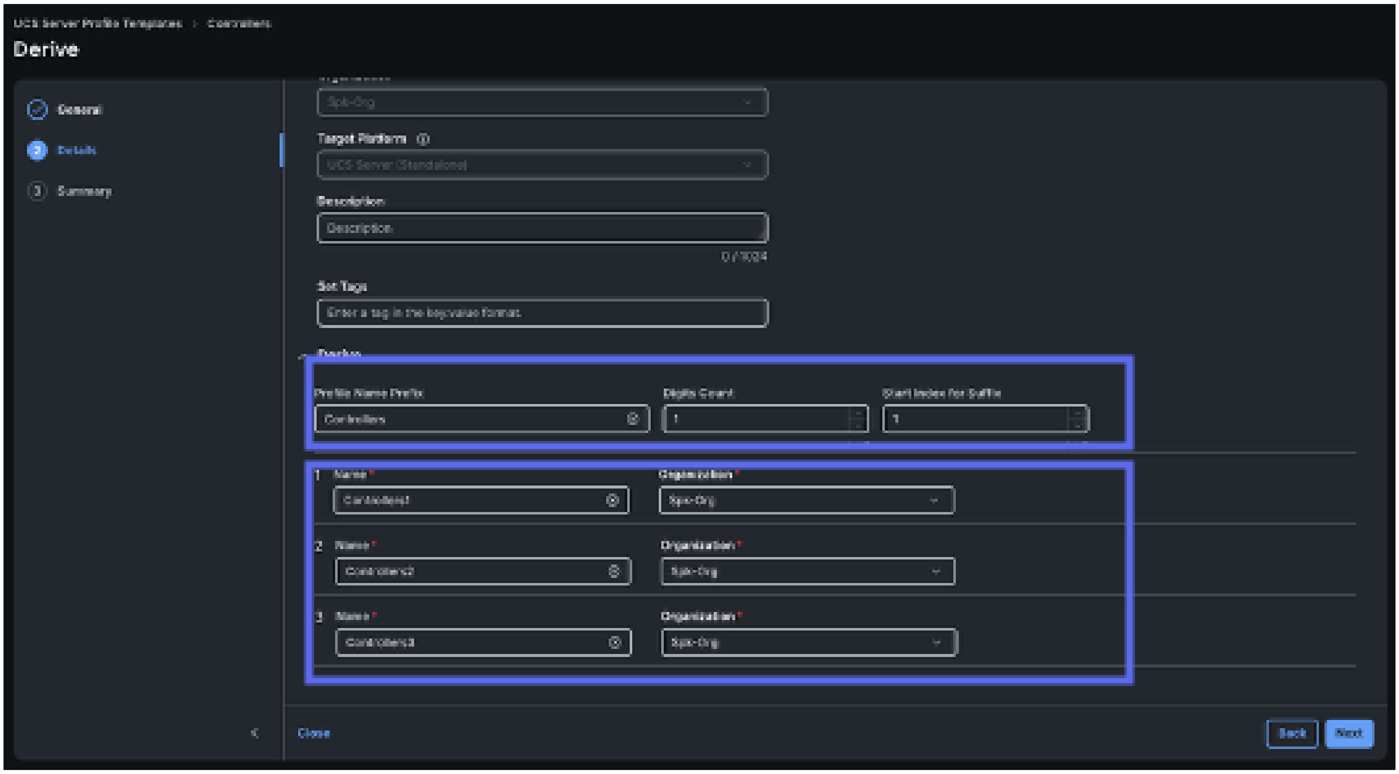
Target Platform: UCS Server (Standalone)

Server Assignment

Number of Profiles to derive *: 3

1 - 100

Step 13. In Details, enter “Controller” as the Profile Name Prefix, set Digits Count to 1 and Start Index to 1, then click Next and Derive on the Summary screen.



UCS Server Profile Templates > Controllers

Derive

Organization: Spk-Org

Target Platform: UCS Server (Standalone)

Description: Description 0 / 1024

Set Tags: Enter a tag in the key:value format.

Derive

Profile Name Prefix: Controllers

Digits Count: 1

Start Index for Suffix: 1

1 Name *: Controllers1 Organization *: Spk-Org

2 Name *: Controllers2 Organization *: Spk-Org

3 Name *: Controllers3 Organization *: Spk-Org

Procedure 11. Create the Search Head Server Profile Template

Now you will create the Search Head Server Template by cloning the Controller template.

Step 1. Go to Configure > Templates > UCS Server Profile Templates. Locate the Controller template, click the 3 dots on the right, and click Clone.

Step 2. In the General screen click Next.

Step 3. In the Details page, change the Clone Name to “Search Head.” Then click Clone.

Step 4. When cloned, click Actions on the top-right and select Edit to configure the cloned the Template.

Step 5. Click Next to proceed until the Summary Screen. Click Derive.

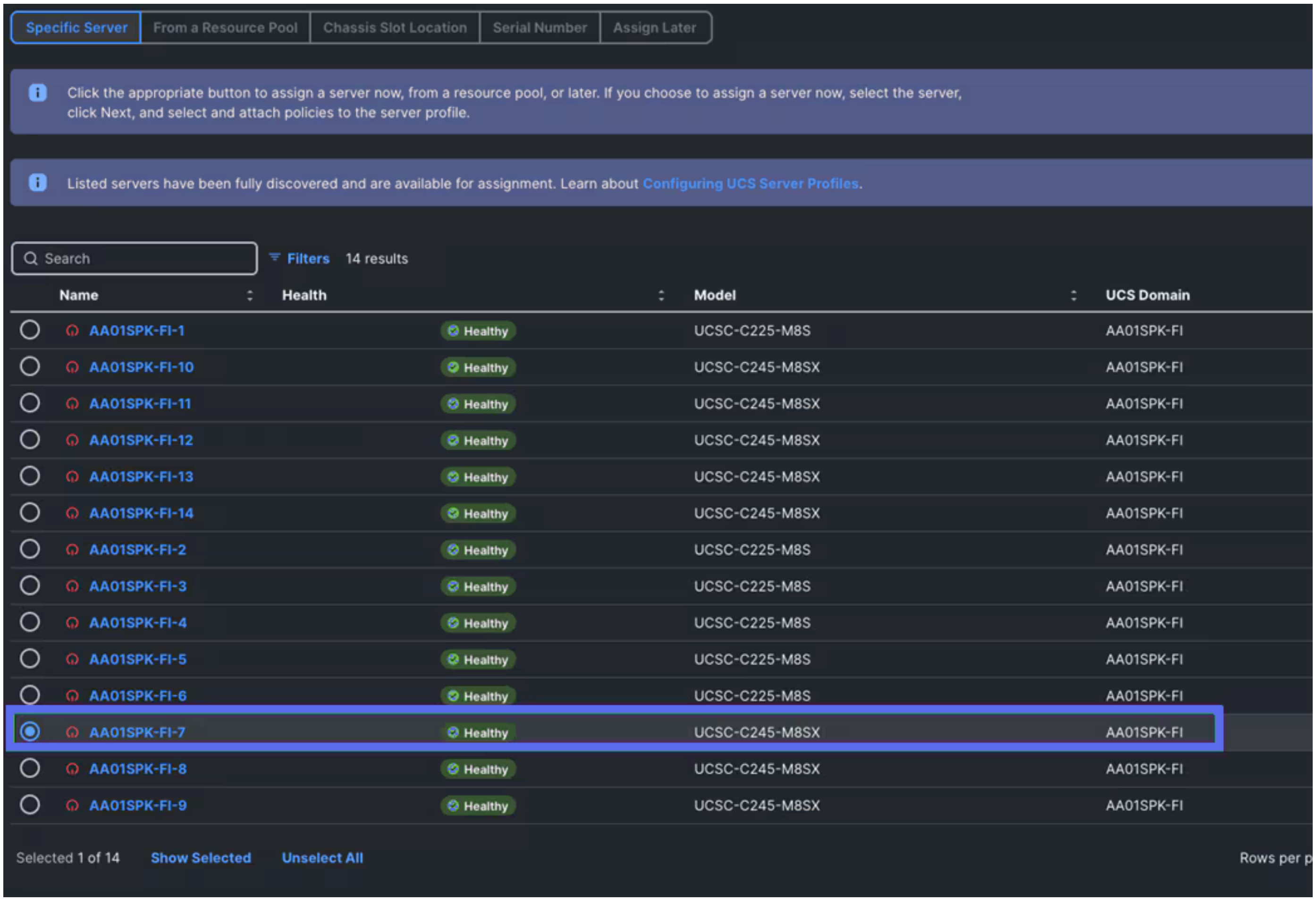
Step 6. In the Details screen, expand the Derive option at the bottom, enter in “SearchHead” as the Profile Name Prefix, enter “1” for Digits Count, and “1” for Start Index for Suffix.

Step 7. Click Next.

Procedure 12. Assign and Deploy Server Profiles

Step 1. Go to > Configure > UCS Server Profiles > then select the server profile “Indexer1” and choose Assign Server from the drop-down list.

Step 2. From the Assign Server to UCS server Profile, select the specific Server where you want to apply this server profile and click Assign.



Click the appropriate button to assign a server now, from a resource pool, or later. If you choose to assign a server now, select the server, click Next, and select and attach policies to the server profile.

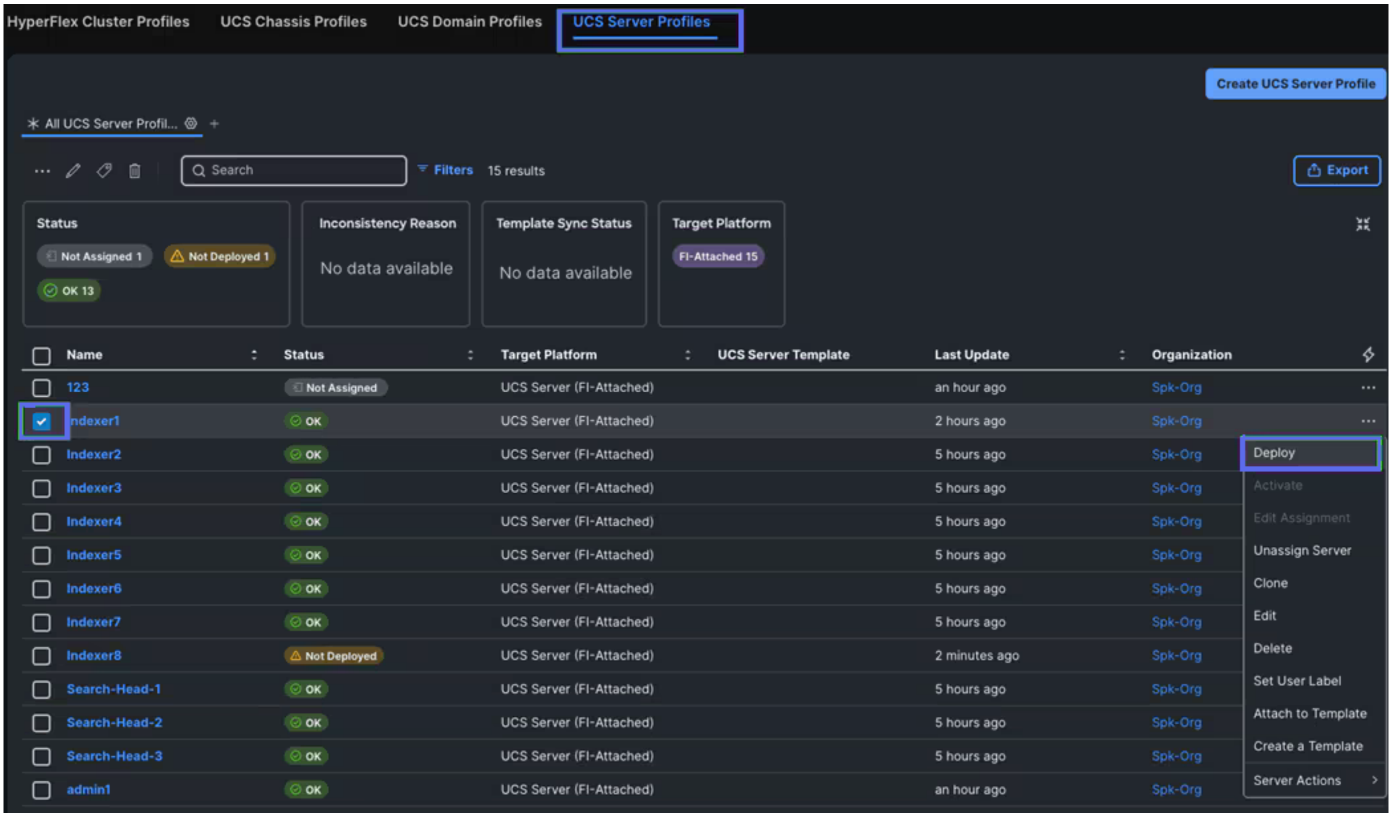
Listed servers have been fully discovered and are available for assignment. Learn about Configuring UCS Server Profiles.

14 results

	Name	Health	Model	UCS Domain
○	AA01SPK-FI-1	Healthy	UCSC-C225-M8S	AA01SPK-FI
○	AA01SPK-FI-10	Healthy	UCSC-C245-M8SX	AA01SPK-FI
○	AA01SPK-FI-11	Healthy	UCSC-C245-M8SX	AA01SPK-FI
○	AA01SPK-FI-12	Healthy	UCSC-C245-M8SX	AA01SPK-FI
○	AA01SPK-FI-13	Healthy	UCSC-C245-M8SX	AA01SPK-FI
○	AA01SPK-FI-14	Healthy	UCSC-C245-M8SX	AA01SPK-FI
○	AA01SPK-FI-2	Healthy	UCSC-C225-M8S	AA01SPK-FI
○	AA01SPK-FI-3	Healthy	UCSC-C225-M8S	AA01SPK-FI
○	AA01SPK-FI-4	Healthy	UCSC-C225-M8S	AA01SPK-FI
○	AA01SPK-FI-5	Healthy	UCSC-C225-M8S	AA01SPK-FI
○	AA01SPK-FI-6	Healthy	UCSC-C225-M8S	AA01SPK-FI
●	AA01SPK-FI-7	Healthy	UCSC-C245-M8SX	AA01SPK-FI
○	AA01SPK-FI-8	Healthy	UCSC-C245-M8SX	AA01SPK-FI
○	AA01SPK-FI-9	Healthy	UCSC-C245-M8SX	AA01SPK-FI

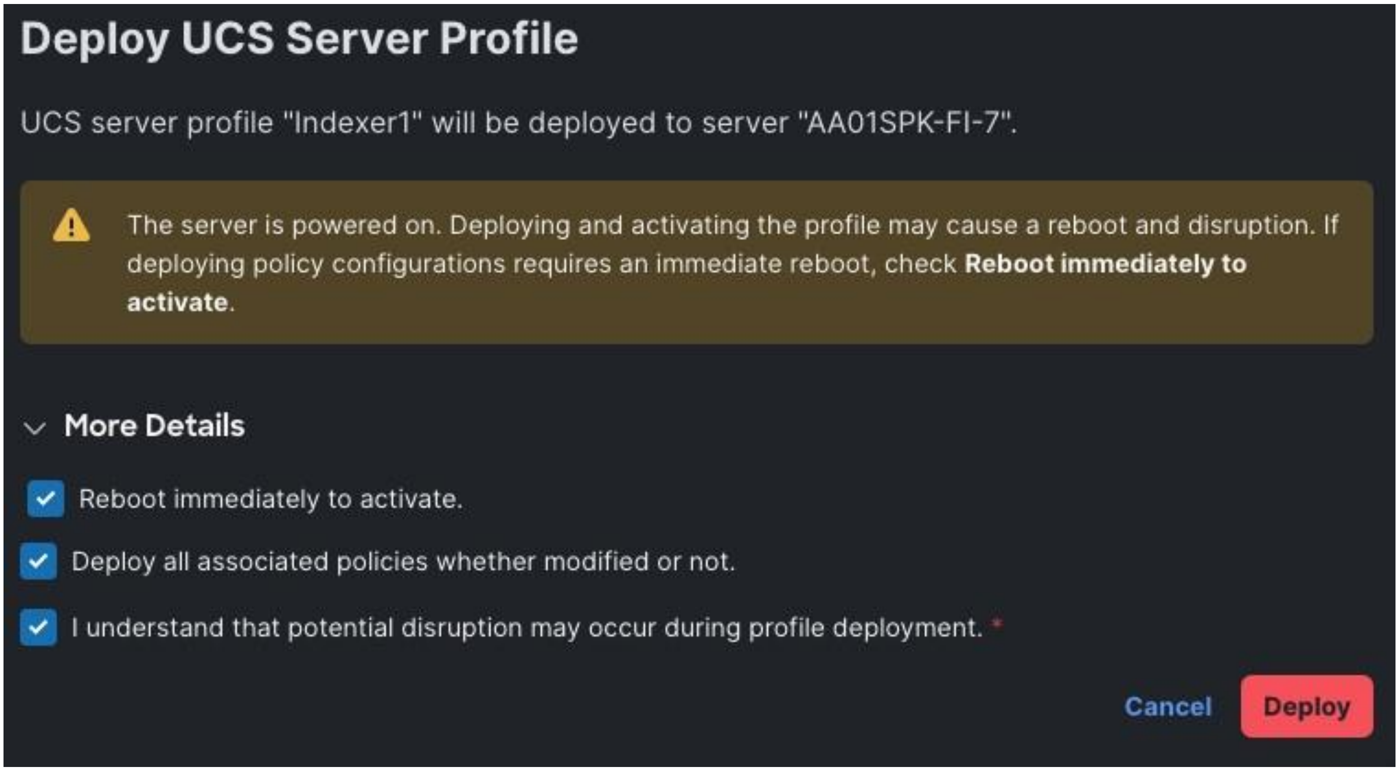
Selected 1 of 14 Show Selected Unselect All Rows per p

Step 3. After you assign the server profile to the appropriate server, go to Configure > Profiles > UCS Server Profile > select the same server and click Deploy to configure server as shown below:



	Name	Status	Target Platform	UCS Server Template	Last Update	Organization
□	123	Not Assigned	UCS Server (FI-Attached)		an hour ago	Spk-Org
☑	Indexer1	OK	UCS Server (FI-Attached)		2 hours ago	Spk-Org
□	Indexer2	OK	UCS Server (FI-Attached)		5 hours ago	Spk-Org
□	Indexer3	OK	UCS Server (FI-Attached)		5 hours ago	Spk-Org
□	Indexer4	OK	UCS Server (FI-Attached)		5 hours ago	Spk-Org
□	Indexer5	OK	UCS Server (FI-Attached)		5 hours ago	Spk-Org
□	Indexer6	OK	UCS Server (FI-Attached)		5 hours ago	Spk-Org
□	Indexer7	OK	UCS Server (FI-Attached)		5 hours ago	Spk-Org
□	Indexer8	Not Deployed	UCS Server (FI-Attached)		2 minutes ago	Spk-Org
□	Search-Head-1	OK	UCS Server (FI-Attached)		5 hours ago	Spk-Org
□	Search-Head-2	OK	UCS Server (FI-Attached)		5 hours ago	Spk-Org
□	Search-Head-3	OK	UCS Server (FI-Attached)		5 hours ago	Spk-Org
□	admin1	OK	UCS Server (FI-Attached)		an hour ago	Spk-Org

Step 4. Check the boxes and click Deploy to activate the server profile.



Deploy UCS Server Profile

UCS server profile "Indexer1" will be deployed to server "AA01SPK-FI-7".

The server is powered on. Deploying and activating the profile may cause a reboot and disruption. If deploying policy configurations requires an immediate reboot, check **Reboot immediately to activate**.

More Details

☑ Reboot immediately to activate.

☑ Deploy all associated policies whether modified or not.

☑ I understand that potential disruption may occur during profile deployment. *

Step 5. Repeat steps 1 – 4 for each server profile.

Install and Configure Red Hat Enterprise Linux 9.6

This chapter contains the following:

Install Red Hat Enterprise Linux (RHEL) 9.6

Post OS Install

Note: Cisco Intersight enables you to install vMedia-based operating systems on managed servers in a data center. With this capability, you can perform an unattended OS installation on one or more Cisco UCS C-Series Standalone servers and Cisco Intersight Managed Mode (IMM) servers (Cisco UCS C-Series, Cisco UCS B-Series, and Cisco UCS X-Series) from your centralized data center through a simple process. For detailed instructions about adding images to the software repository and installing the operating system, see: https://intersight.com/help/saas/resources/OSinstallguide#os_install_steps

This chapter provides detailed procedures for installing Red Hat Enterprise Linux Server on Cisco UCS C225 and Cisco UCS C245 M8 servers. There are multiple ways to install the RHEL operating system. The installation procedure described in this deployment guide uses ISM automated workflow to install the operating system on all the servers through Intersight. For more information, see: https://intersight.com/help/saas/resources/installing_an_operating_system#performing_os_installation_in_cisco_mode

Note: In this solution, Red Hat Enterprise Linux version 9.6 (DVD/ISO) was utilized for OS the installation through Intersight Software Repository as explained in the following sections.

Install Red Hat Enterprise Linux (RHEL) 9.6

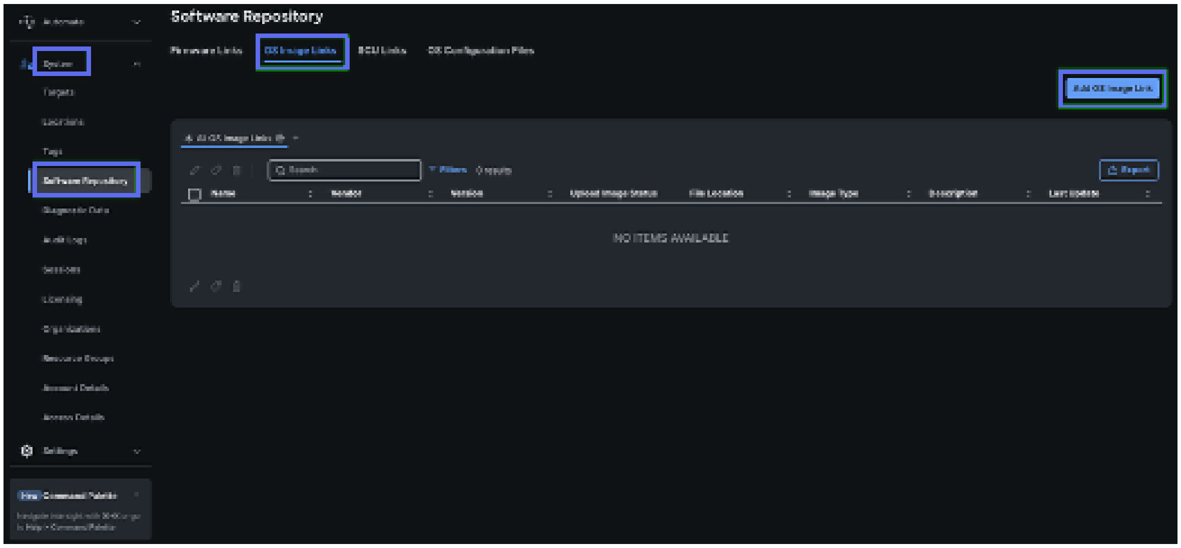
This section contains the following procedures:

- Procedure 1. Add OS Image Link
- Procedure 2. Add Server Configuration Utility Image
- Procedure 3. Install the Operating System
- Procedure 4. (Optional) Manual Operating System Install

Procedure 1. Add OS Image Link

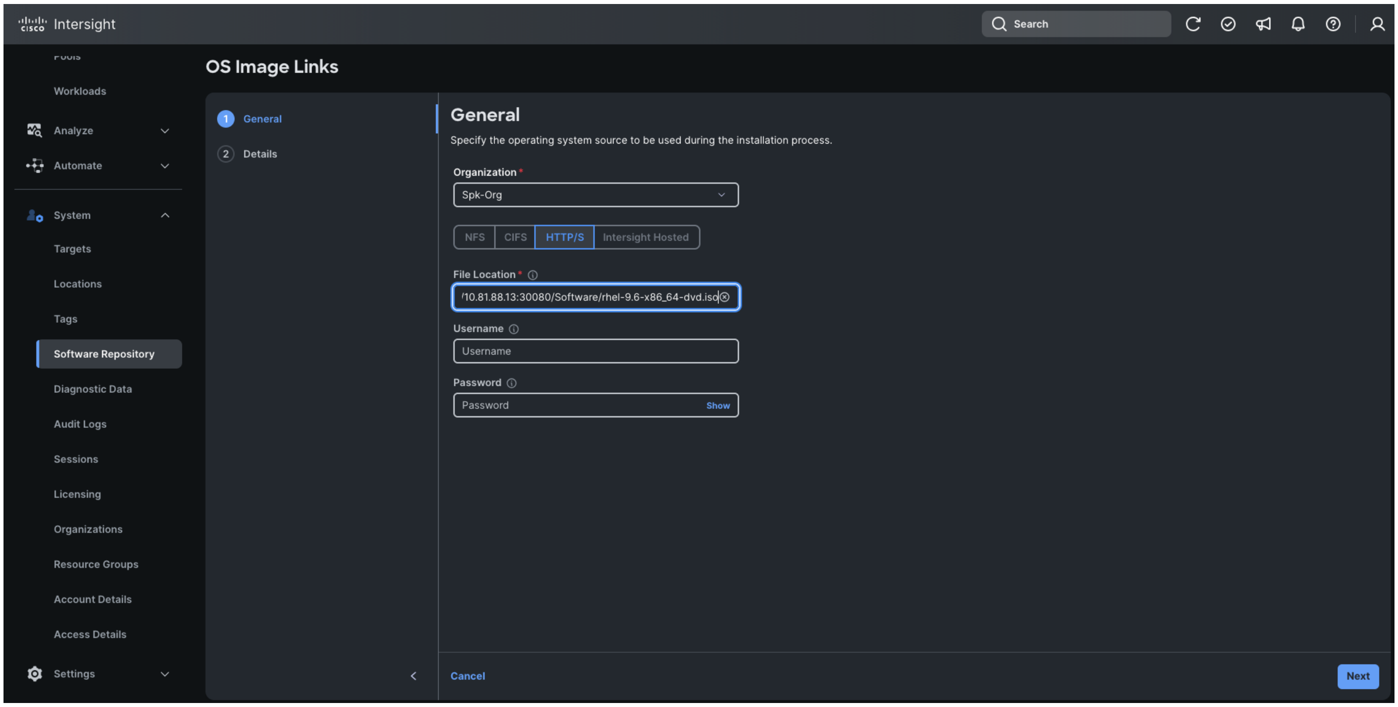
Step 1. Log into Intersight account.

Step 2. Go to Systems > Software Repository > OS Image Links tab and click the Add OS Image Link icon as shown below:



Step 3. Add the image source of the operating system along with details of the file share location and the protocol (CIFS/NFS/HTTPS) to the software repository.

Note: For this solution, we used HTTPS server and provided access of OS ISO as configured below:



OS Image Links

General

Specify the operating system source to be used during the installation process.

Organization *: Spk-Org

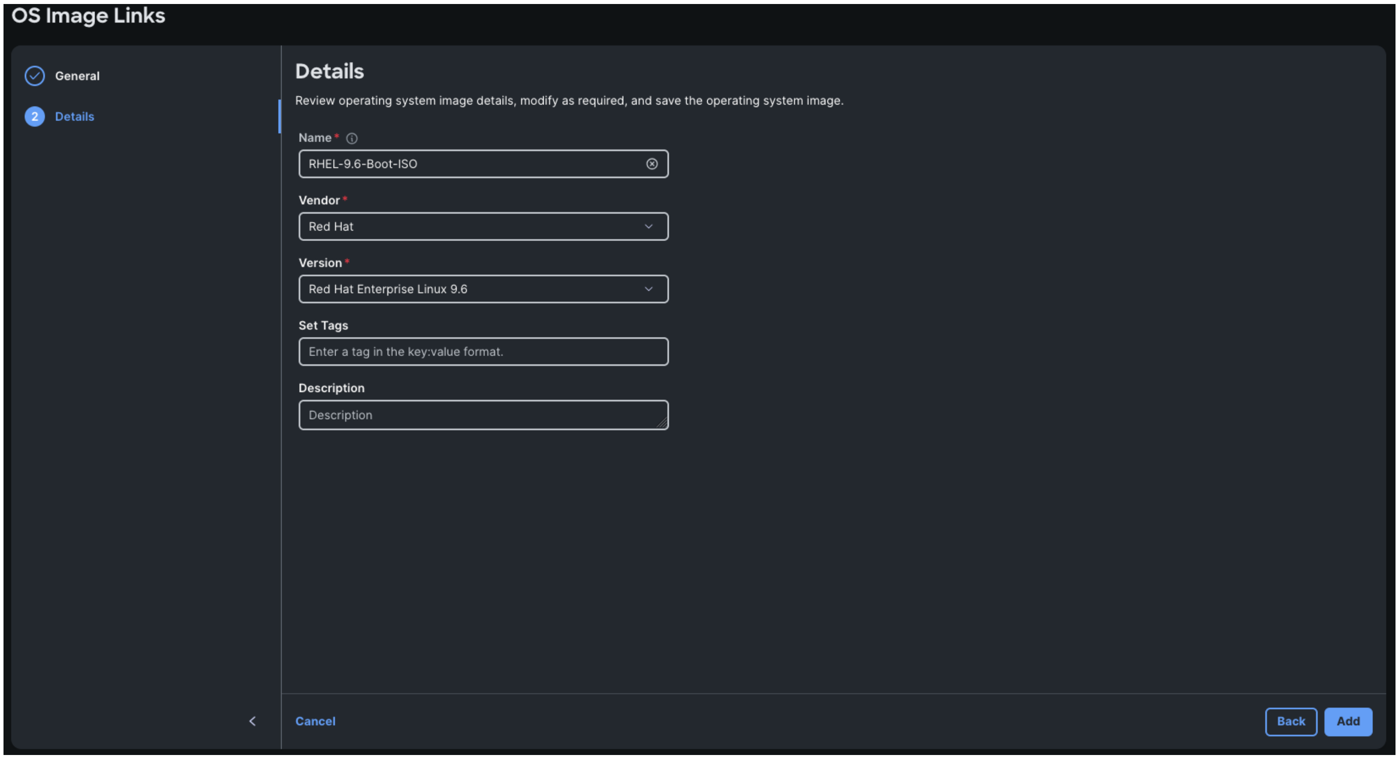
HTTP/S

File Location *: /10.81.88.13:30080/Software/rhel-9.6-x86_64-dvd.iso

Username: Username

Password: Password

Step 4. Provide the details for Operating System image, modify as required, and save the Operating System image as shown below. Click Add.



OS Image Links

Details

Review operating system image details, modify as required, and save the operating system image.

Name * : RHEL-9.6-Boot-ISO

Vendor * : Red Hat

Version * : Red Hat Enterprise Linux 9.6

Set Tags : Enter a tag in the key:value format.

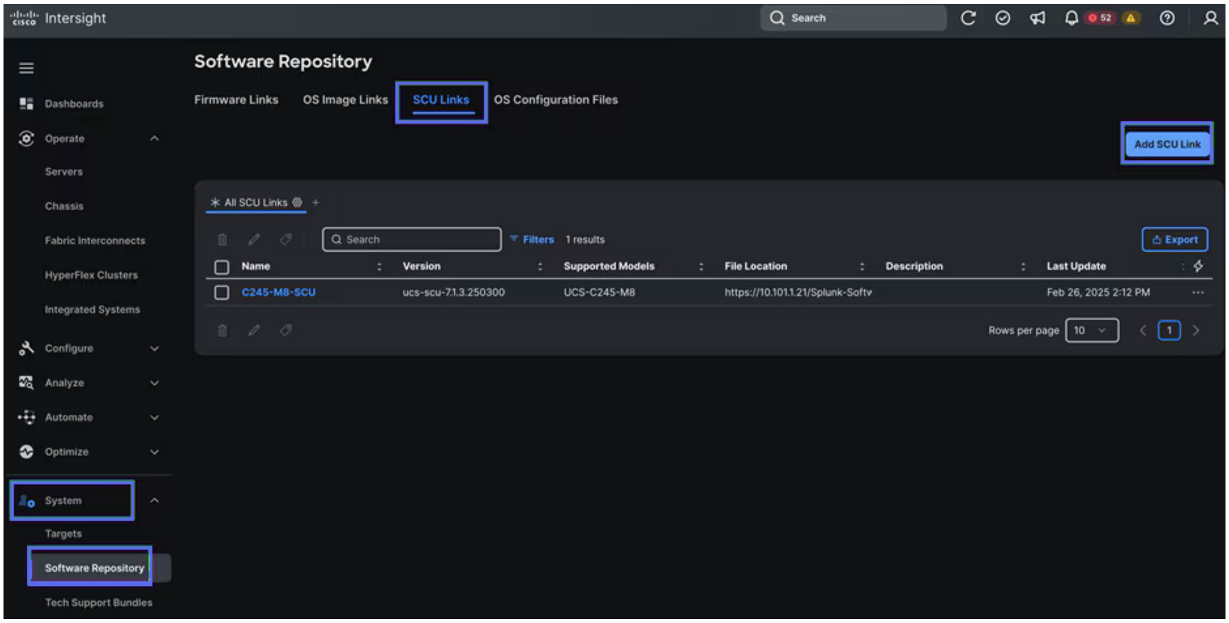
Description : Description

Note: The software repository can be CIFS, NFS, or HTTPS and need not be publicly available. It should be accessible by Cisco IMC. Cisco IMC establishes vMedia connection with the software repository hosted ISO images. It is then mounted as Cisco IMC-managed vMedia files and booted to the server. For more information, see: https://intersight.com/help/saas/resources/adding_OSimage#about_this_task

Procedure 2. Add Server Configuration Utility Image

Step 1. Log into Intersight Account.

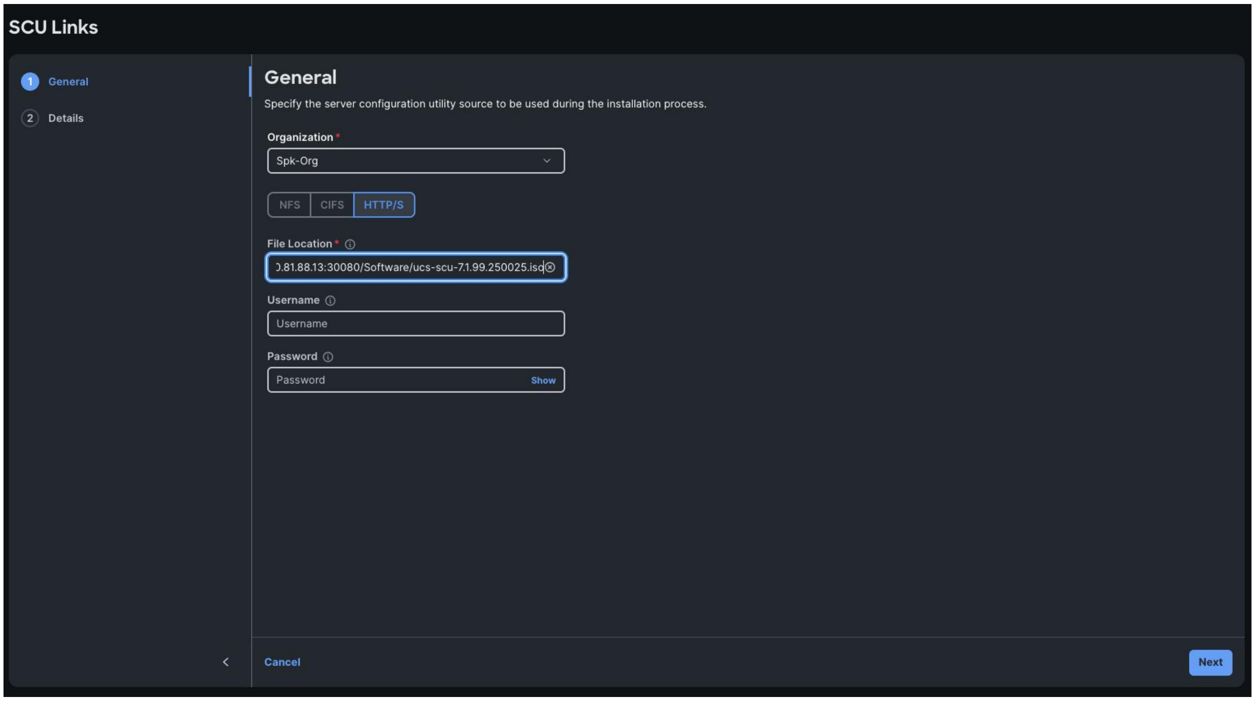
Step 2. Go to Systems > Software Repository > SCU Links tab and click Add SCU Link as shown below:



Software Repository

Name	Version	Supported Models	File Location	Description	Last Update
C245-M8-SCU	ucs-scu-7.1.3.250300	UCS-C245-M8	https://10.101.1.21/Splunk-Softv		Feb 26, 2025 2:12 PM

Note: For this solution, we used HTTPS server and provided access of SCU ISO as configured below:



General

Specify the server configuration utility source to be used during the installation process.

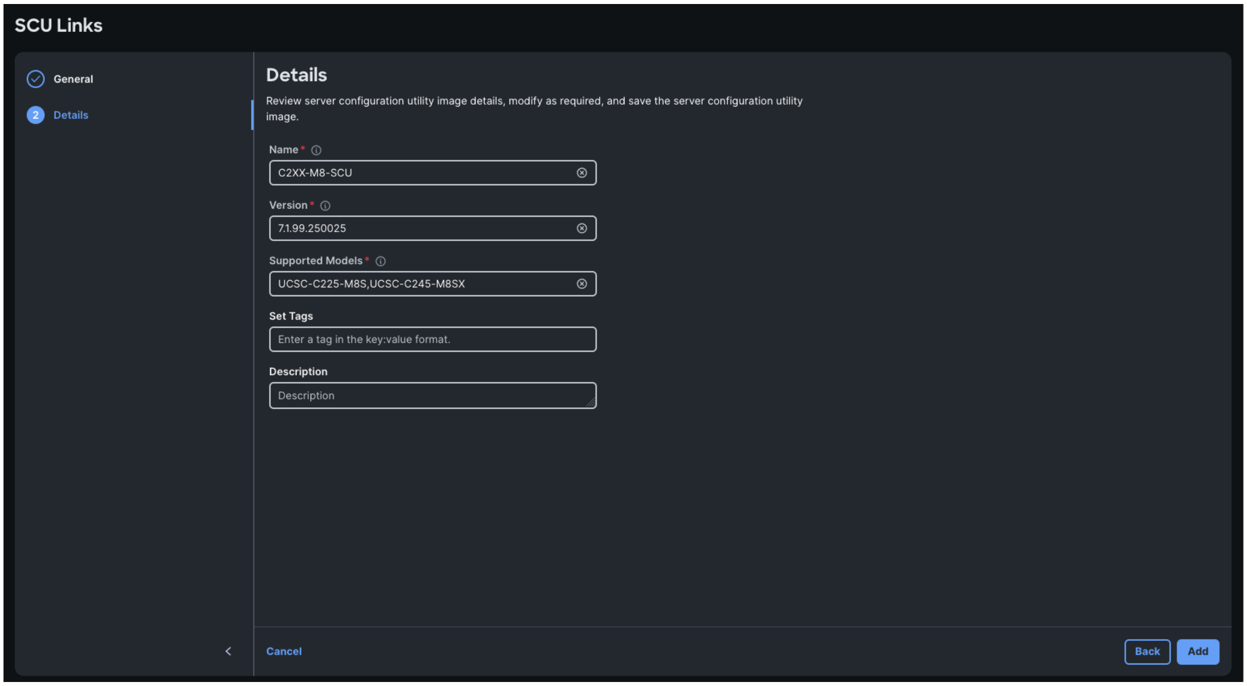
Organization *: Spk-Org

File Location *:).81.88.13:30080/Software/ucs-scu-7.1.99.250025.iso

Username: Username

Password: Password

Step 3. Review the Server Configuration Utility image details, modify as required, and save the Server Configuration Utility image.



Details

Review server configuration utility image details, modify as required, and save the server configuration utility image.

Name *: C2XX-M8-SCU

Version *: 7.1.99.250025

Supported Models *: UCSC-C225-M8S,UCSC-C245-M8SX

Set Tags: Enter a tag in the key:value format.

Description: Description

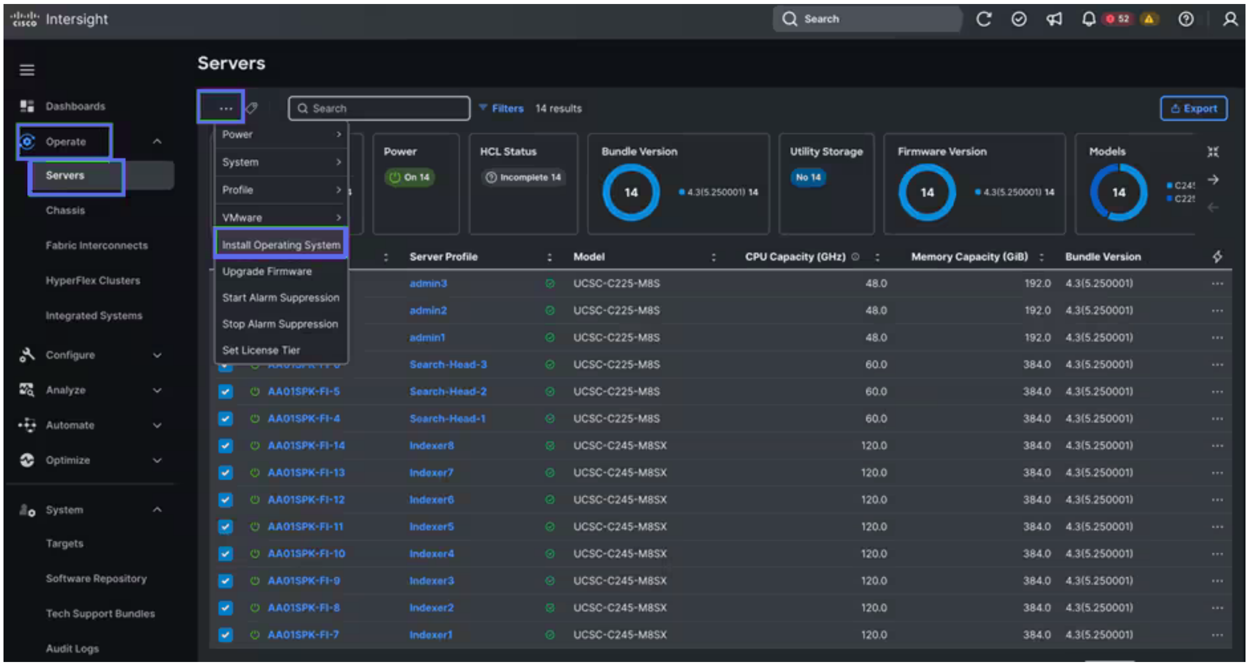
Procedure 3. Install the Operating System

Step 1. Log into Intersight Account.

Step 2. Go to Operate > Servers > and then select a server.

Note: Using the ellipses in the upper left of the Servers screen allows you to select multiple servers to install the operating system in parallel. For this example, the installation will be on a single server.

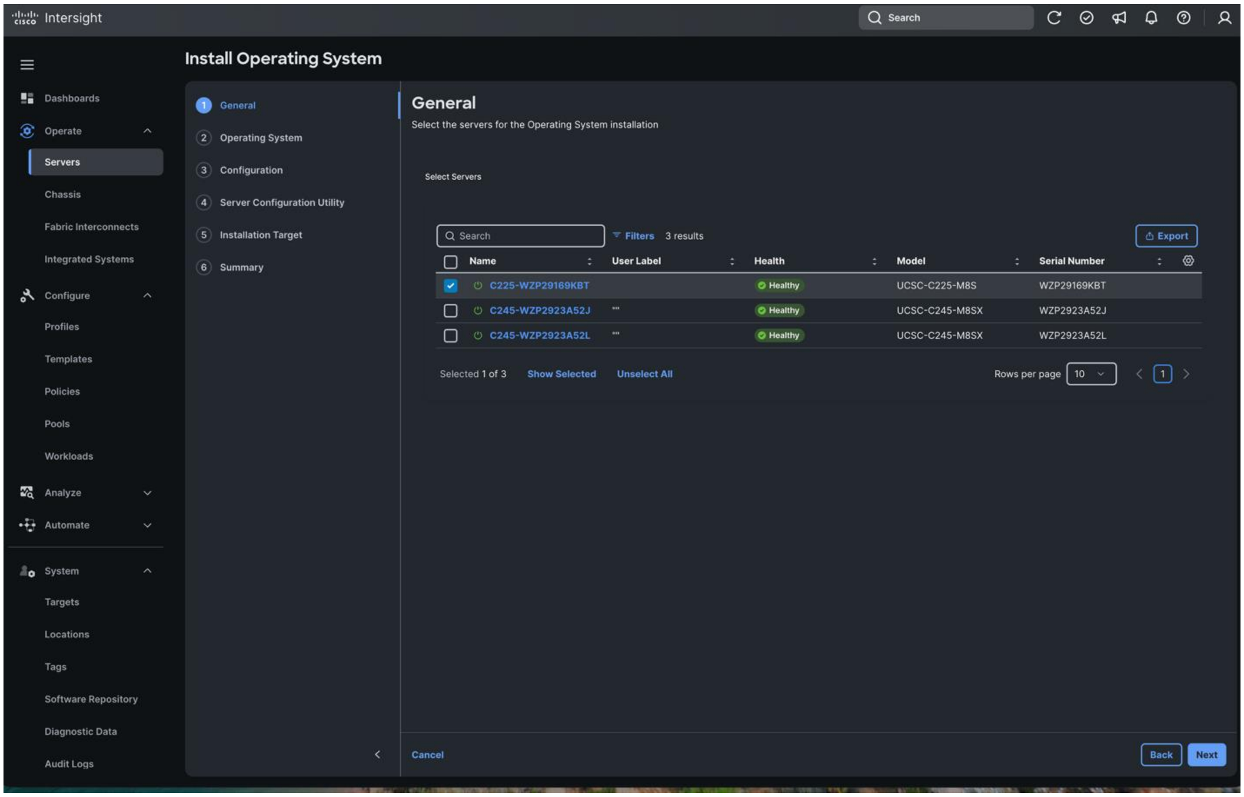
Step 3. Click the ellipses and select Install Operating System as shown below:



14 results

	Server Profile	Model	CPU Capacity (GHz)	Memory Capacity (GiB)	Bundle Version
	admin3	UCSC-C225-M8S	48.0	192.0	4.3(5.250001)
	admin2	UCSC-C225-M8S	48.0	192.0	4.3(5.250001)
	admin1	UCSC-C225-M8S	48.0	192.0	4.3(5.250001)
☑ [illegible]	Search-Head-3	UCSC-C225-M8S	60.0	384.0	4.3(5.250001)
☑ AA01SPK-FI-5	Search-Head-2	UCSC-C225-M8S	60.0	384.0	4.3(5.250001)
☑ AA01SPK-FI-4	Search-Head-1	UCSC-C225-M8S	60.0	384.0	4.3(5.250001)
☑ AA01SPK-FI-14	Indexer8	UCSC-C245-M8SX	120.0	384.0	4.3(5.250001)
☑ AA01SPK-FI-13	Indexer7	UCSC-C245-M8SX	120.0	384.0	4.3(5.250001)
☑ AA01SPK-FI-12	Indexer6	UCSC-C245-M8SX	120.0	384.0	4.3(5.250001)
☑ AA01SPK-FI-11	Indexer5	UCSC-C245-M8SX	120.0	384.0	4.3(5.250001)
☑ AA01SPK-FI-10	Indexer4	UCSC-C245-M8SX	120.0	384.0	4.3(5.250001)
☑ AA01SPK-FI-9	Indexer3	UCSC-C245-M8SX	120.0	384.0	4.3(5.250001)
☑ AA01SPK-FI-8	Indexer2	UCSC-C245-M8SX	120.0	384.0	4.3(5.250001)
☑ AA01SPK-FI-7	Indexer1	UCSC-C245-M8SX	120.0	384.0	4.3(5.250001)

Step 4. From the Install Operating System menu, make sure all the relevant servers are selected and click Next.



General

Select the servers for the Operating System installation

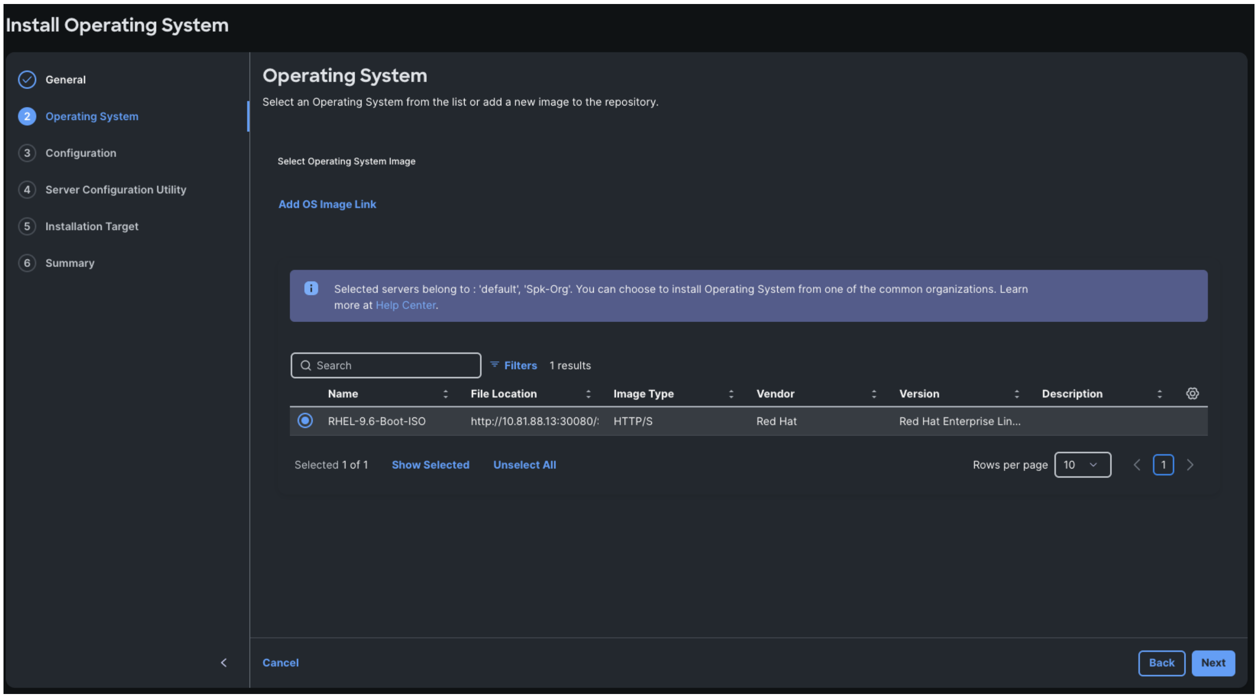
Select Servers

3 results

☐ Name	User Label	Health	Model	Serial Number
☑ C225-WZP29169KBT		Healthy	UCSC-C225-M8S	WZP29169KBT
☐ C245-WZP2923A52J	""	Healthy	UCSC-C245-M8SX	WZP2923A52J
☐ C245-WZP2923A52L	""	Healthy	UCSC-C245-M8SX	WZP2923A52L

Selected 1 of 3

Step 5. Select the OS Image Link previously configured.



Operating System

Select an Operating System from the list or add a new image to the repository.

Select Operating System Image

Add OS Image Link

Selected servers belong to : 'default', 'Spk-Org'. You can choose to install Operating System from one of the common organizations. Learn more at Help Center.

Search | Filters | 1 results

	Name	File Location	Image Type	Vendor	Version	Description
●	RHEL-9.6-Boot-ISO	http://10.81.88.13:30080/:	HTTP/S	Red Hat	Red Hat Enterprise Lin...	

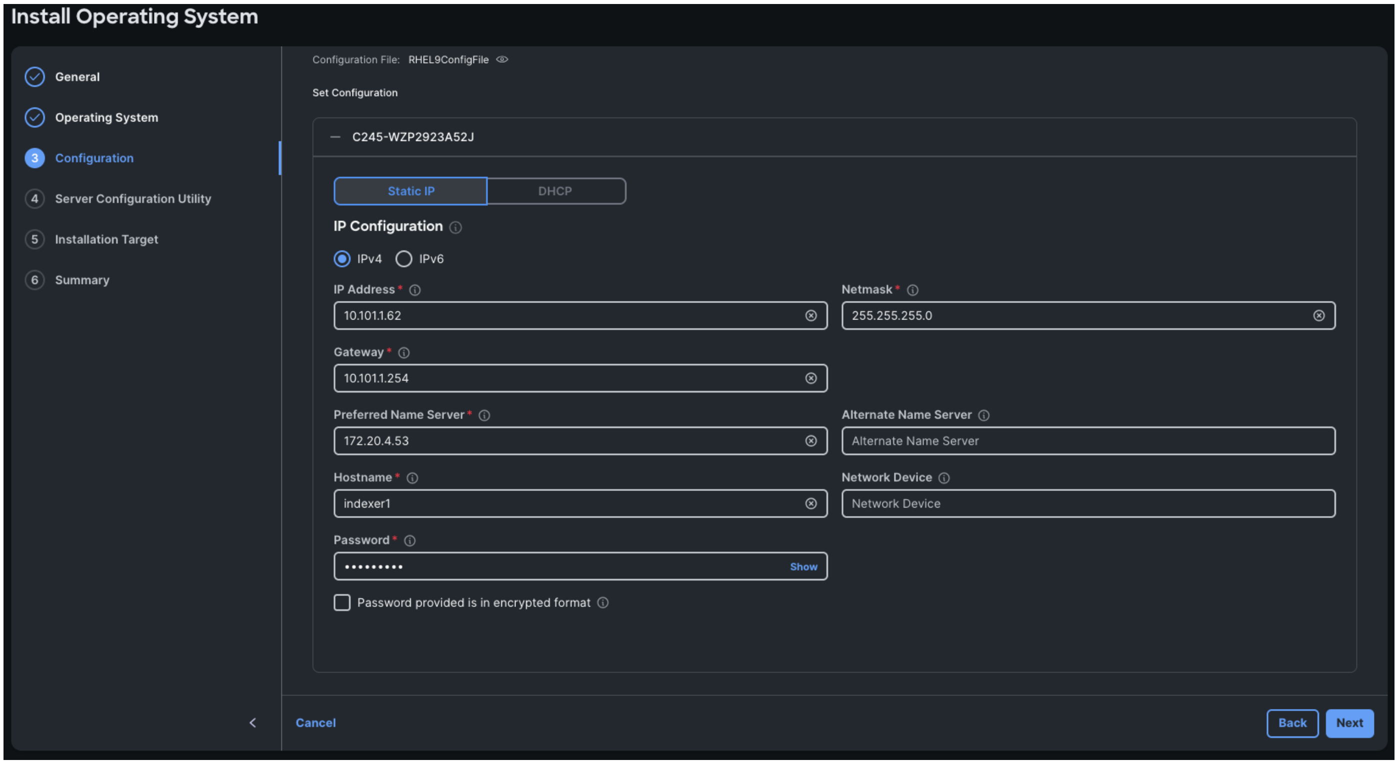
Selected 1 of 1 | Show Selected | Unselect All | Rows per page 10 | 1

Step 6. From the Configuration menu, select the configuration sources.

Note: We used the default Cisco option and default RHEL9ConfigFile as shown below.

Note: You can either use custom or Cisco validated templates for selected Operating System version. For more information about Cisco validated templates, go to: https://us-east-1.intersight.com/help/saas/resources/installing_an_operating_system#performing_os_installation_in_cisco_mode

Step 7. From the Configuration menu, provide the details for the RHEL host with the appropriate IP Address, Netmask, Gateway, Preferred Name Server, Hostname, and password then click Next.



Install Operating System

Configuration File: RHEL9ConfigFile

Set Configuration

C245-WZP2923A52J

IP Configuration

● IPv4 ○ IPv6

IP Address *: 10.101.1.62

Netmask *: 255.255.255.0

Gateway *: 10.101.1.254

Preferred Name Server *: 172.20.4.53

Alternate Name Server: Alternate Name Server

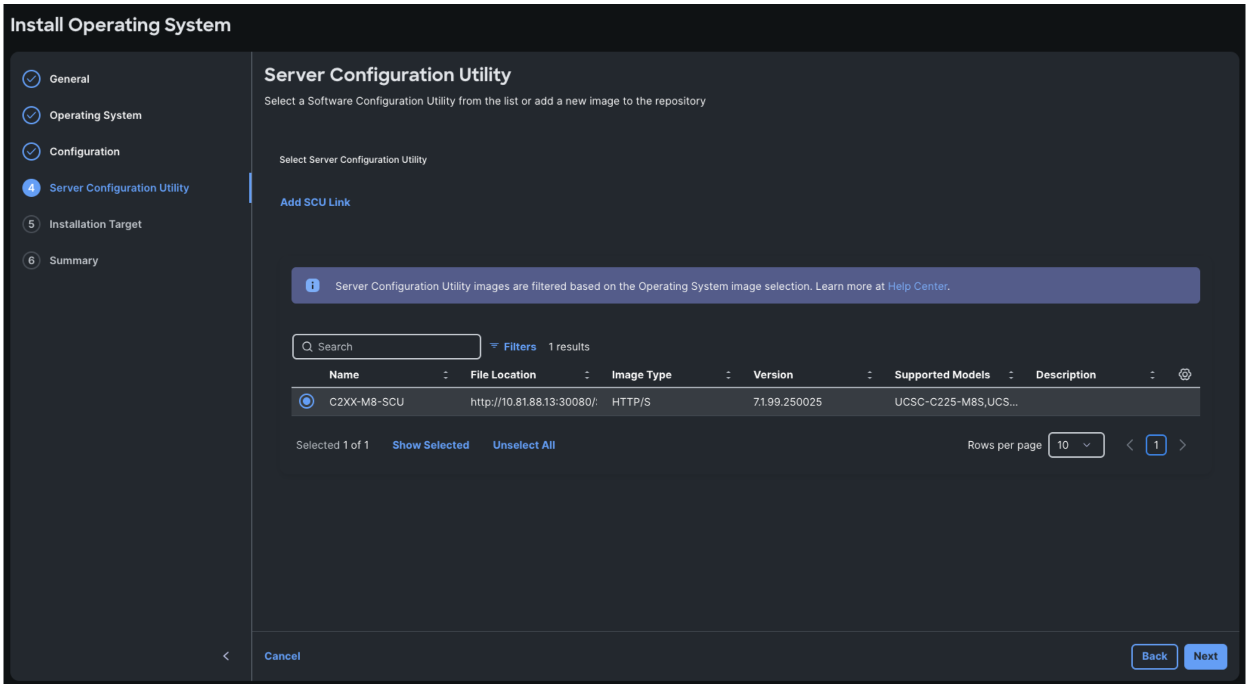
Hostname *: indexer1

Network Device: Network Device

Password *: ••••••••• Show

□ Password provided is in encrypted format

Step 8. From the Server Configuration Utility menu, select the SCU Link previously configured as shown below:



Install Operating System

Server Configuration Utility

Select a Software Configuration Utility from the list or add a new image to the repository

Select Server Configuration Utility

Add SCU Link

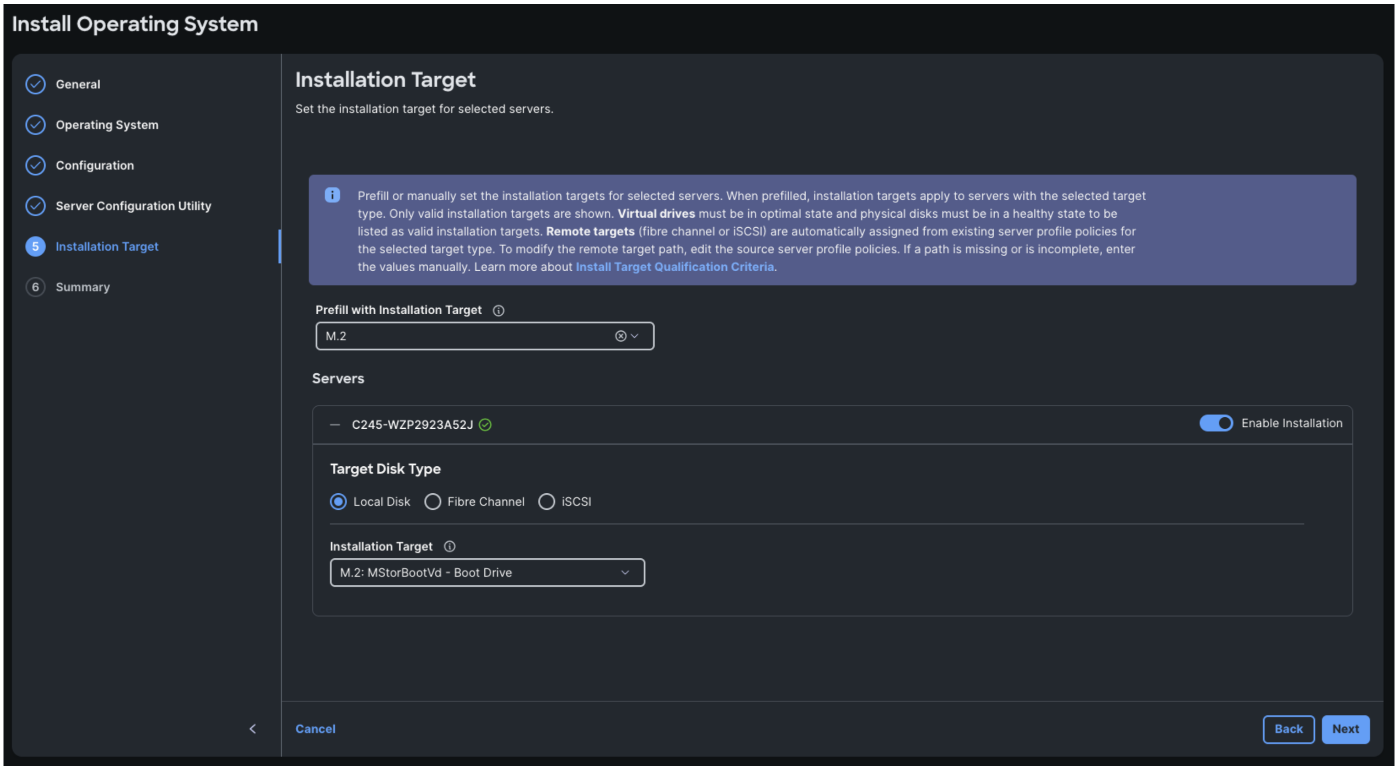
Server Configuration Utility images are filtered based on the Operating System image selection. Learn more at Help Center.

Search Filters 1 results

	Name	File Location	Image Type	Version	Supported Models	Description
●	C2XX-M8-SCU	http://10.81.88.13:30080/:	HTTP/S	7.1.99.250025	UCSC-C225-M8S,UCS...	

Selected 1 of 1 Show Selected Unselect All Rows per page 10 1

Step 9. From the Installation Target menu, select M.2 for the Installation target. When you select the M.2 option, all the servers will automatically detect the Boot Drive previously configured into the UCS Boot drive setup.



Installation Target

Set the installation target for selected servers.

Prefill or manually set the installation targets for selected servers. When prefilled, installation targets apply to servers with the selected target type. Only valid installation targets are shown. **Virtual drives** must be in optimal state and physical disks must be in a healthy state to be listed as valid installation targets. **Remote targets** (fibre channel or iSCSI) are automatically assigned from existing server profile policies for the selected target type. To modify the remote target path, edit the source server profile policies. If a path is missing or is incomplete, enter the values manually. Learn more about Install Target Qualification Criteria.

Prefill with Installation Target: M.2

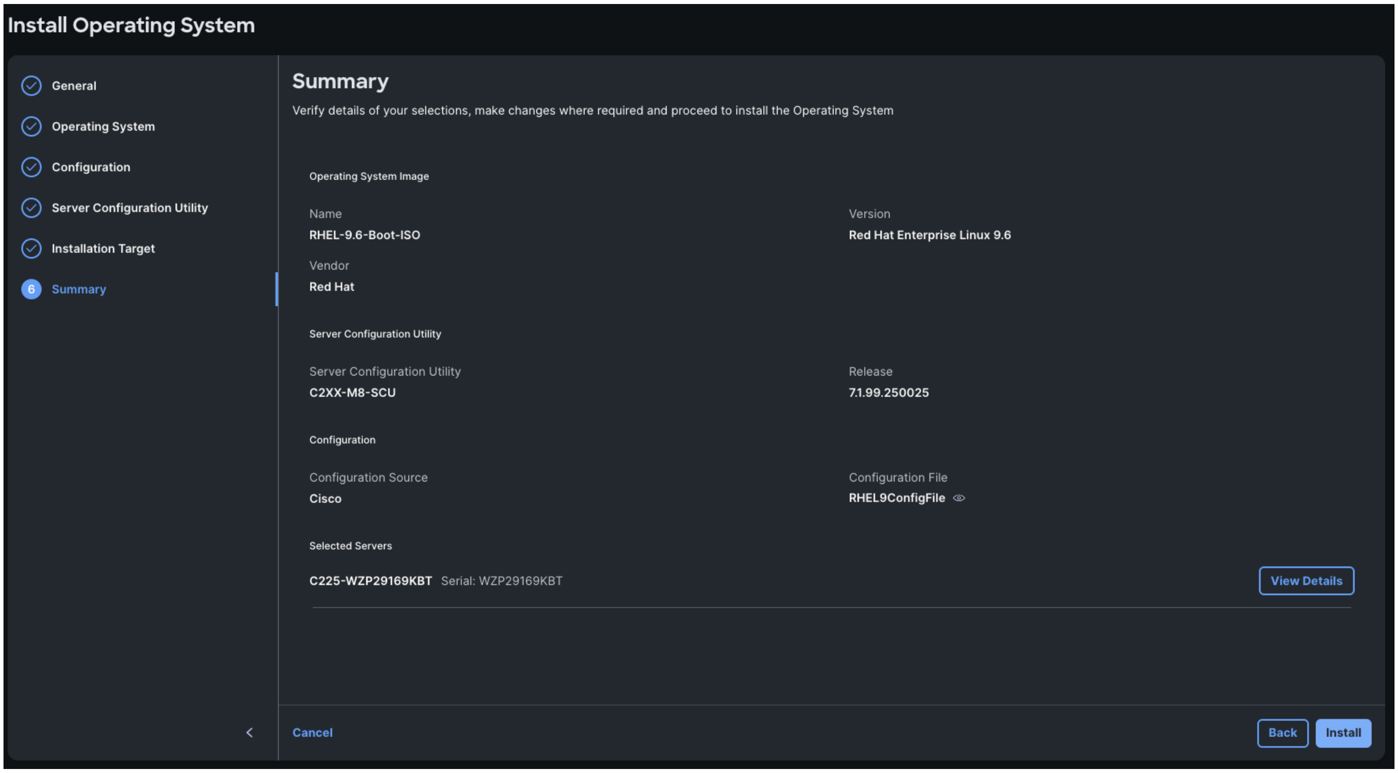
Servers

C245-WZP2923A52J ✓ — Enable Installation

Target Disk Type: ● Local Disk ○ Fibre Channel ○ iSCSI

Installation Target: M.2: MStorBootVd - Boot Drive

Step 10. Click Next and from the Summary menu, verify the details of your selections, make changes where required, and click Install to install the Operating System.



Summary

Verify details of your selections, make changes where required and proceed to install the Operating System

Operating System Image

Name RHEL-9.6-Boot-ISO	Version Red Hat Enterprise Linux 9.6
Vendor Red Hat	

Server Configuration Utility

Server Configuration Utility C2XX-M8-SCU	Release 7.1.99.250025

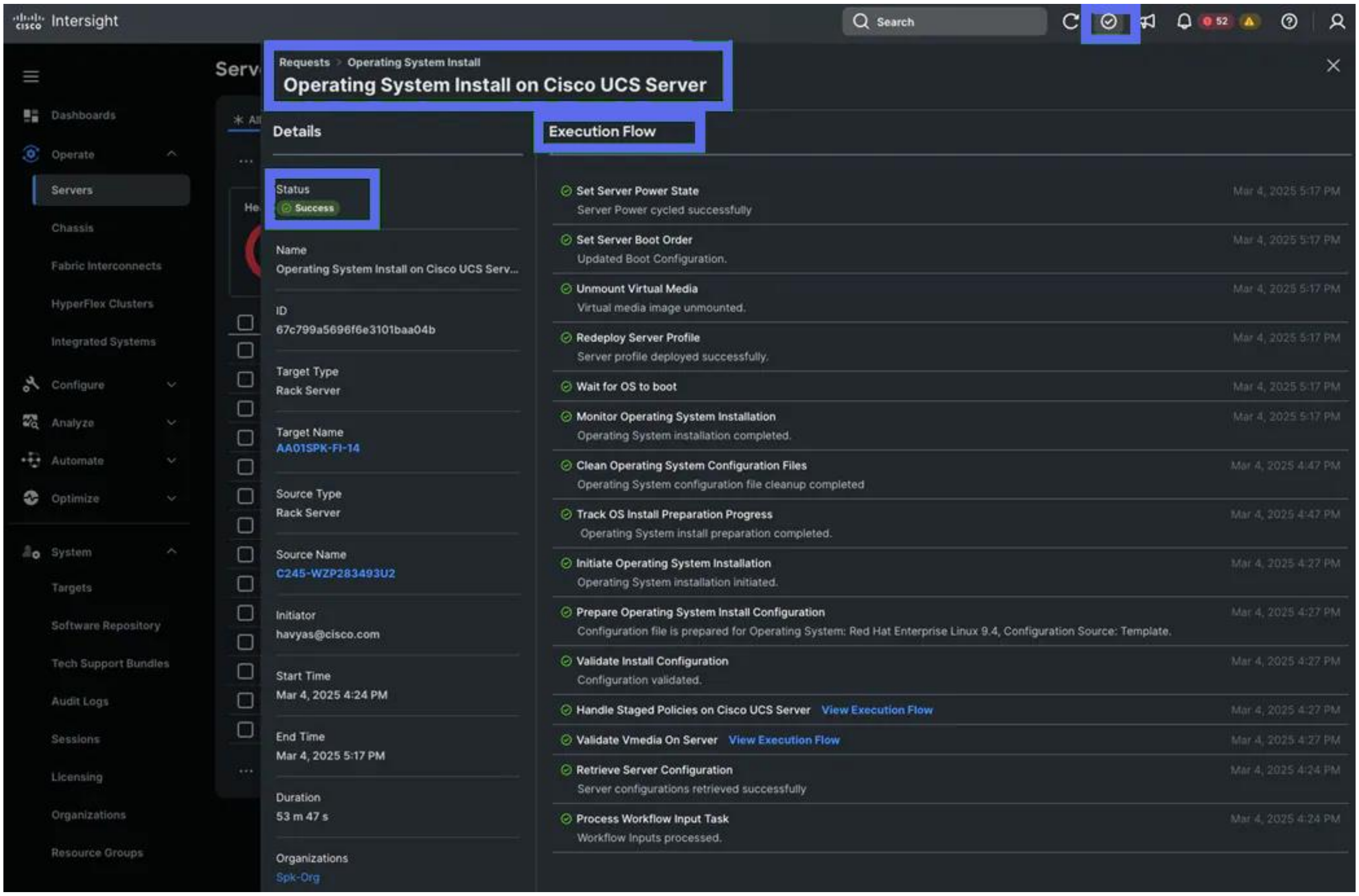
Configuration

Configuration Source Cisco	Configuration File RHEL9ConfigFile

Selected Servers

C225-WZP29169KBT Serial: WZP29169KBT

Step 11. To check the status of the task, click Request then click the individual task to see the execution flow as shown below:



Operating System Install on Cisco UCS Server

Status: Success

Name: Operating System Install on Cisco UCS Serv...

ID: 67c799a5696f6e3101baa04b

Target Type: Rack Server

Target Name: AA01SPK-FI-14

Source Type: Rack Server

Source Name: C245-WZP283493U2

Initiator: havyas@cisco.com

Start Time: Mar 4, 2025 4:24 PM

End Time: Mar 4, 2025 5:17 PM

Duration: 53 m 47 s

Organizations: Spk-Org

```
Set Server Power State                                                  Mar 4, 2025 5:17 PM
  Server Power cycled successfully
Set Server Boot Order                                                   Mar 4, 2025 5:17 PM
  Updated Boot Configuration.
Unmount Virtual Media                                                   Mar 4, 2025 5:17 PM
  Virtual media image unmounted.
Redeploy Server Profile                                                 Mar 4, 2025 5:17 PM
  Server profile deployed successfully.
Wait for OS to boot                                                     Mar 4, 2025 5:17 PM
Monitor Operating System Installation                                   Mar 4, 2025 5:17 PM
  Operating System installation completed.
Clean Operating System Configuration Files                              Mar 4, 2025 4:47 PM
  Operating System configuration file cleanup completed
Track OS Install Preparation Progress                                   Mar 4, 2025 4:47 PM
  Operating System install preparation completed.
Initiate Operating System Installation                                  Mar 4, 2025 4:27 PM
  Operating System installation initiated.
Prepare Operating System Install Configuration                          Mar 4, 2025 4:27 PM
  Configuration file is prepared for Operating System: Red Hat Enterprise Linux 9.4, Configuration Source: Template.
Validate Install Configuration                                          Mar 4, 2025 4:27 PM
  Configuration validated.
Handle Staged Policies on Cisco UCS Server   View Execution Flow        Mar 4, 2025 4:27 PM
Validate Vmedia On Server   View Execution Flow                         Mar 4, 2025 4:27 PM
Retrieve Server Configuration                                           Mar 4, 2025 4:24 PM
  Server configurations retrieved successfully
Process Workflow Input Task                                             Mar 4, 2025 4:24 PM
  Workflow Inputs processed.
```

Step 12. After the OS installation finishes, reboot the server, and complete the appropriate registration steps.

Procedure 4. (Optional) Manual Operating System Install Example

Note: This optional Manual installation of the OS can be performed through the virtual KVM console.

Step 1. Download the Red Hat Enterprise Linux 9.4 OS image and save the IOS file to local disk.

Step 2. Launch the vKVM console on your server by going to Cisco Intersight > Operate > Servers > click one of the server node and then from the Actions drop-down list select Launch vKVM.

Step 3. Click Accept security and open KVM. Click Virtual Media > vKVM-Mapped vDVD. Click Browse and map the RHEL ISO image, click Open and then click Map Drive. After mapping the iso file, click Power > Power Cycle System to reboot the server.

Step 4. During the server boot order, it detects the virtual media connected as RHEL ISO DVD media and it will launch the RHEL OS installer.

Step 5. Select language and for the Installation destination assign the local virtual drive. Apply the hostname and click Configure Network to configure any or all the network interfaces. Alternatively, you can configure only the “Public Network” in this step. You can configure additional interfaces as part of post OS install steps.

Tech tip: For an additional RPM package, we recommend selecting the “Customize Now” option and the relevant packages according to your environment.

Step 6. After the OS installation finishes, reboot the server, and complete the appropriate registration steps.

Step 7. Repeat steps 1-6 on all server nodes and install RHEL 9.6 on all the server nodes.

Post OS Install

This section contains the following procedures:

- Procedure 1. Set up Remote Login from the Bastion
- Procedure 2. Disable the Linux Firewall
- Procedure 3. Disable SELinux
- Procedure 4. Upgrade Cisco UCS VIC Driver for Cisco UCS VIC
- Procedure 5. Configure Chrony
- Procedure 6. Disable Transparent Huge Pages
- Procedure 7. Configure File System Bastion, Controllers, Search Heads, and Indexers
- Procedure 8. Configure File System for Volume Servers
- Procedure 9. Run the Kubernetes Installer for Splunk POD

Procedure 1. Set up Remote Login from the Bastion

To manage all the nodes in a cluster from the Bastion node, SSH keys for remote access needs to be setup. This is required for the Kubernetes Installer for Splunk POD to function correctly.

This example deploys an open SSH key. It is strongly recommended to use a passphrase protected SSH key and the toolchain.

Step 1. Log into the Bastion:

```
# example
# ssh 10.10.10.10
```

Step 2. Run the ssh-keygen command to create both public and private keys on the admin node:

```
# ssh-keygen -N '' -f ~/.ssh/id_rsa
```

Step 3. Create an Ansible inventory file containing all hosts in the cluster. Example below:

```
[bastion]
10.10.10.10

[controllers]
10.10.10.11
10.10.10.12
10.10.10.13

# c225s
[searchheads]
10.10.10.21
10.10.10.22
10.10.10.23

# c245s indexers
[indexers]
```

```
10.10.10.31
10.10.10.32
10.10.10.33

# volume servers
[volumes]
10.10.10.41
10.10.10.42
10.10.10.43
10.10.10.44
```

Tech tip: A Splunk service account should be created on all hosts in the POD.

Step 4. Ensure that the service account user has passwordless sudo. This is required to install and manage Kubernetes.

```
# Example Ansible command
# ansible -i hosts all -m shell -a "sudo -l"
```

The result should look like this for all servers:

```
User splunk may run the following commands on host1:
    (ALL) NOPASSWD: ALL
```

Step 5. When that is created, run the following command from the admin node to copy the public key id_rsa.pub to all the nodes of the cluster. ssh-copy-id appends the keys to the remote-hosts .ssh/authorized_keys

Tech tip: The user is not required to be splunk, but a service account is strongly recommended.

```
# Example Ansible command
# ansible -i hosts all -m authorized_key -a "user=splunk key=\"{{ lookup('file', lookup('env','HOME') + '/.ssh/id_rsa.pub') }}\" state=present" -k
```

Step 6. Enter the password of the remote host(s). Ensure the key has been deployed to all servers.

```
# Example Ansible command
# ansible -i hosts all -m ping
```

Step 7. Enable RHEL subscription for all machines:

```
# sudo subscription-manager register –username <password> --password <password> --autoattach
# sudo subscription-manager repos --enable codeready-builder-for-rhel-9-$(arch)-rpms
```

Procedure 2. Disable the Linux Firewall

Tech tip: Firewalld will interfere with the operation of Kubernetes and must be disabled.

Step 1. Run the following commands to disable the Linux firewall:

```
# Example Ansible command
# ansible all -m service -a "name=firewalld state=stopped enabled=false" -b


# Example shell command
# sudo systemctl stop firewalld && sudo systemctl disable firewalld
```

Procedure 3. Disable SELinux

Tech tip: SELinux must be disabled during the install procedure and cluster setup.

Step 1. SELinux can be disabled by editing /etc/selinux/config and changing the SELINUX line to SELINUX=disabled. To disable SELinux, run the following commands. It can also be disabled via the Ansible module:

```
# Example Ansible command
# ansible all -m selinux -a "state=disabled" -b
# reboot the hosts
# ansible all:\!bastion -m shell -a "shutdown -r now"  -b
```

Note: This command may fail if SELinux is already disabled. This requires reboot to take effect.

Step 2. Reboot the machine, if needed for SELinux to be disabled in case it does not take effect. It can be checked using the following command:

```
# Example Ansible command
# ansible all -m shell -a "sestatus" -o -b
```

Procedure 4. Upgrade Cisco UCS VIC Driver for Cisco UCS VIC

The latest Cisco Network driver is required for performance and updates. The latest drivers can be downloaded from here: https://software.cisco.com/download/home/283862063/type/283853158/release/4.3(5e)

In the ISO image, the required driver can be located here: "\Network\Cisco\VIC\RHEL\RHEL9.4\kmodenic-4.8.0.0 1128.4.rhel9u4_5.14.0_427.13.1.x86_64.rpm"

Step 1. From a node connected to the Internet, download, extract, and transfer "kmod-enic-*.rpm to Bastion server.

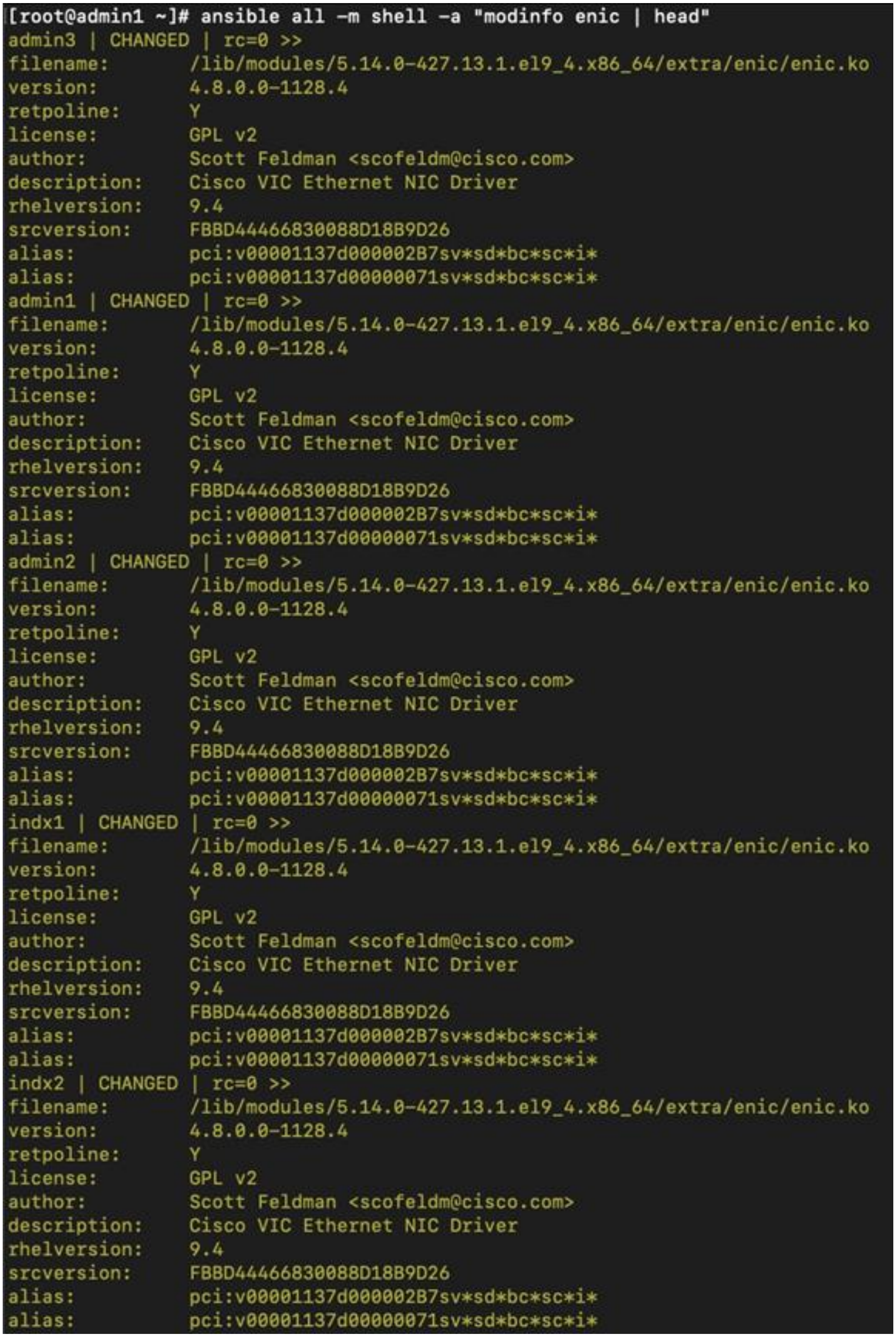
Step 2. Copy the rpm on all nodes of the cluster using the following Ansible commands. For this example, the rpm is assumed to be in present working directory of the Bastion host:

```
# Example Ansible command
# ansible all -m copy -a "src=/root/kmod-enic-4.8.0.0-1128.4.rhel9u4_5.14.0_427.13.1.x86_64.rpm
dest=/root/." -b
```

Step 3. Use the yum module to install the "enic" driver rpm file on all the nodes through Ansible:

```
# Example Ansible command
# ansible all -m shell -a "rpm -ivh =/root/kmod-enic-4.8.0.0-1128.4.rhel9u4_5.14.0_427.13.1.x86_64.rpm" -b
```

Step 4. Make sure that the above installed version of "kmod-enic" driver is being used on all nodes by running the command " modinfo enic" on all nodes:



```
[root@admin1 ~]# ansible all -m shell -a "modinfo enic | head"
admin3 | CHANGED | rc=0 >>
filename:       /lib/modules/5.14.0-427.13.1.el9_4.x86_64/extra/enic/enic.ko
version:        4.8.0.0-1128.4
retpoline:      Y
license:        GPL v2
author:         Scott Feldman <scofeldm@cisco.com>
description:    Cisco VIC Ethernet NIC Driver
rhelversion:    9.4
srcversion:     FBBD44466830088D18B9D26
alias:          pci:v00001137d000002B7sv*sd*bc*sc*i*
alias:          pci:v00001137d00000071sv*sd*bc*sc*i*
admin1 | CHANGED | rc=0 >>
filename:       /lib/modules/5.14.0-427.13.1.el9_4.x86_64/extra/enic/enic.ko
version:        4.8.0.0-1128.4
retpoline:      Y
license:        GPL v2
author:         Scott Feldman <scofeldm@cisco.com>
description:    Cisco VIC Ethernet NIC Driver
rhelversion:    9.4
srcversion:     FBBD44466830088D18B9D26
alias:          pci:v00001137d000002B7sv*sd*bc*sc*i*
alias:          pci:v00001137d00000071sv*sd*bc*sc*i*
admin2 | CHANGED | rc=0 >>
filename:       /lib/modules/5.14.0-427.13.1.el9_4.x86_64/extra/enic/enic.ko
version:        4.8.0.0-1128.4
retpoline:      Y
license:        GPL v2
author:         Scott Feldman <scofeldm@cisco.com>
description:    Cisco VIC Ethernet NIC Driver
rhelversion:    9.4
srcversion:     FBBD44466830088D18B9D26
alias:          pci:v00001137d000002B7sv*sd*bc*sc*i*
alias:          pci:v00001137d00000071sv*sd*bc*sc*i*
indx1 | CHANGED | rc=0 >>
filename:       /lib/modules/5.14.0-427.13.1.el9_4.x86_64/extra/enic/enic.ko
version:        4.8.0.0-1128.4
retpoline:      Y
license:        GPL v2
author:         Scott Feldman <scofeldm@cisco.com>
description:    Cisco VIC Ethernet NIC Driver
rhelversion:    9.4
srcversion:     FBBD44466830088D18B9D26
alias:          pci:v00001137d000002B7sv*sd*bc*sc*i*
alias:          pci:v00001137d00000071sv*sd*bc*sc*i*
indx2 | CHANGED | rc=0 >>
filename:       /lib/modules/5.14.0-427.13.1.el9_4.x86_64/extra/enic/enic.ko
version:        4.8.0.0-1128.4
retpoline:      Y
license:        GPL v2
author:         Scott Feldman <scofeldm@cisco.com>
description:    Cisco VIC Ethernet NIC Driver
rhelversion:    9.4
srcversion:     FBBD44466830088D18B9D26
alias:          pci:v00001137d000002B7sv*sd*bc*sc*i*
alias:          pci:v00001137d00000071sv*sd*bc*sc*i*
```

Procedure 5. Configure Chrony

Step 1. Edit “/etc/chrony.conf” file:

```
# vi /etc/chrony.conf


pool <ntpserver> iburst
driftfile /var/lib/chrony/drift
makestep 1.0 3
rtcsync
#(optional) edit on ntpserver allow 10.29.134.0/24
local stratum 10 # local stratum 8 on ntpserver
keyfile /etc/chrony.keys
leapsectz right/UTC
logdir /var/log/chrony
```

Step 2. Copy “chrony.conf” file from the admin node to the “/etc/” of all nodes by running command below:

```
Example Ansible commands
# ansible all -m copy -a "src=/etc/chrony.conf dest=/etc/chrony.conf" -b
```

Step 3. Start Chrony service. Adjust timezone accordingly for the POD:

```
Example Ansible commands
# ansible all -m shell -a  "timedatectl set-timezone America/Los_Angeles" -b
# ansible all -m service -a "name=chronyd state=running enabled=true" -b
# ansible all -m shell -a "hwclock --systohc" -b
```

Procedure 6. Disable Transparent Huge Pages

Step 1. Run the following command:

```
# ansible all -m shell -a "echo never > /sys/kernel/mm/transparent_hugepage/enabled"
# ansible all -m shell -a "echo never > /sys/kernel/mm/transparent_hugepage/defrag"
```

Step 2. Update the kernels to disable transparent huge pages permanently. This command should be run on all servers:

```
# /sbin/grubby --update-kernel=ALL --args=transparent_hugepage=never
```

Procedure 7. Configure File System for Bastion, Controllers, Search Heads, and Indexers

Cisco UCS C225 hosts ship with identical drive configurations, regardless of role. Each host has a RAID1 m2 boot volume, as configured above, and another RAID1 pairing of data drives. The Cisco UCS C245s that will host the indexers have 12 drives configured as RAID5 with a hot spare. All servers should have those volumes formatted as ext4 and mounted in the same location.

Step 1. Use fdisk to determine the data drive name. It is the larger volume and is probably /dev/sdb:

```
Example Shell command
# sudo fdisk -l | grep /dev/sdb
```

Step 2. Format data drive as ext4. This command is non-destructive by default. If a drive is already formatted, it will error without wiping the partition.

Example Shell command

```
# mkfs.ext4 /dev/sdb


Example Ansible command
# ansible -i hosts bastion:searchheads:controllers:indexers -m filesystem -a "fstype=ext4 dev=/dev/sdb" -b
```

Step 3. Update /etc/fstab and mount volumes:

```
Example Shell command
# sudo mkdir /data/shared


Append this line to /etc/fstab
# /dev/sdb /data/shared ext4 defaults,rw,relatime 0 0
# sudo mount -a


Verify the drive mounted correctly with df
Example Shell command
# df -h | grep shared


Example Ansible command
# ansible -i hosts bastion:searchheads:controllers:indexers -m shell -a "df -h | grep shared"
```

Procedure 8. Configure File System for Volume Servers

The Cisco UCS C245s that will host the volume servers have 24 drives configured as RAID5 with a hot spare. The volume servers should be using xfs instead of ext4.

Step 1. Use fdisk to determine the data drive name:

```
Example Shell command
# sudo fdisk -l | grep /dev/sdb
```

Step 2. Format data drive as xfs. This command is non-destructive by default. If a drive is already formatted, it will error without wiping the partition.

```
Example Shell command
# mkfs.xfs /dev/sdb
Example Ansible command
# ansible -i hosts volume -m filesystem -a “fstype=xfs dev=/dev/sdb” -b
```

Step 3. Update /etc/fstab and mount volumes.

```
Example Shell command
# sudo mkdir /data/storage
Append this line to /etc/fstab
# /dev/sdb /data/storage xfs defaults,noatime 0 0
Mount the drive
# sudo mount -a


Example Ansible Command
# ansible -i hosts volumes -m mount -a "src=/dev/sdb path=/data/storage fstype=xfs opts=defaults,noatime
state=mounted" -b
```

```
Verify Drives are mounted correctly
Example Shell command
# df -h | grep shared
Example Ansible command
# ansible -i hosts volumes -m shell -a "df -h | grep storage"
```

Procedure 9. Run the Kubernetes Installer for Splunk POD

Step 1. Run the Splunk Kubernetes Installer once you have successfully prepared the hardware. The installer contains all necessary dependencies to install and run Splunk on Kubernetes on your recently configured hardware.

Step 2. Access the Splunk POD documentation here: https://help.splunk.com/?resourceId=Splunk_POD_overview

Step 3. Proceed with the steps detailed in the “Deploy Splunk POD” section to continue configuring the software required for Splunk POD.

Conclusion

Cisco UCS provides a tightly integrated platform combining compute, storage, and networking, which is purpose-built to support high-performance, scalable workloads like Splunk. This integration ensures predictable performance and high availability for Splunk Enterprise deployments. Deploying Splunk Enterprise on Cisco UCS servers managed by Cisco Intersight offers a unified, high-performance, and scalable infrastructure for operational analytics.

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CVD Program

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