



Overview

This chapter contains the following sections:

- [Cisco UCS Director, on page 1](#)
- [About the Cisco UCS Director Red Hat Enterprise KVM Connector , on page 4](#)
- [Prerequisites, on page 5](#)
- [System Requirements, on page 5](#)
- [About Workflows, on page 5](#)
- [Workflow Designer, on page 6](#)
- [Provisioning Support for Microsoft Windows, on page 6](#)

Cisco UCS Director

Cisco UCS Director is a complete, highly secure, end-to-end management, orchestration, and automation solution for a wide array of Cisco and non-Cisco data infrastructure components, and for the industry's leading converged infrastructure solutions based on the Cisco UCS and Cisco Nexus platforms. For a complete list of supported infrastructure components and solutions, see the [Cisco UCS Director Compatibility Matrix](#).

Cisco UCS Director is a 64-bit appliance that uses the following standard templates:

- Open Virtualization Format (OVF) for VMware vSphere
- Virtual Hard Disk (VHD) for Microsoft Hyper-V

Management through Cisco UCS Director

Cisco UCS Director extends the unification of computing and networking layers through Cisco UCS to provide you with comprehensive visibility and management of your data center infrastructure components. You can use Cisco UCS Director to configure, administer, and monitor supported Cisco and non-Cisco components. The tasks you can perform include the following:

- Create, clone, and deploy service profiles and templates for all Cisco UCS servers and compute applications.
- Monitor organizational usage, trends, and capacity across a converged infrastructure on a continuous basis. For example, you can view heat maps that show virtual machine (VM) utilization across all your data centers.
- Deploy and add capacity to converged infrastructures in a consistent, repeatable manner.

- Manage, monitor, and report on data center components, such as Cisco UCS domains or Cisco Nexus network devices.
- Extend virtual service catalogs to include services for your physical infrastructure.
- Manage secure multi-tenant environments to accommodate virtualized workloads that run with non-virtualized workloads.

Automation and Orchestration with Cisco UCS Director

Cisco UCS Director enables you to build workflows that provide automation services, and to publish the workflows and extend their services to your users on demand. You can collaborate with other experts in your company to quickly and easily create policies. You can build Cisco UCS Director workflows to automate simple or complex provisioning and configuration processes.

Once built and validated, these workflows perform the same way every time, no matter who runs the workflows. An experienced data center administrator can run them, or you can implement role-based access control to enable your users and customers to run the workflows on a self-service basis, as needed.

With Cisco UCS Director, you can automate a wide array of tasks and use cases across a wide variety of supported Cisco and non-Cisco hardware and software data center components. A few examples of the use cases that you can automate include, but are not limited to:

- VM provisioning and lifecycle management
- Network resource configuration and lifecycle management
- Storage resource configuration and lifecycle management
- Tenant onboarding and infrastructure configuration
- Application infrastructure provisioning
- Self-service catalogs and VM provisioning
- Bare metal server provisioning, including installation of an operating system

Features and Benefits

The features and benefits of Cisco UCS Director are as follows:

Feature	Benefit
Central management	<ul style="list-style-type: none"> • Provides a single interface for administrators to provision, monitor, and manage the system across physical, virtual, and bare metal environments • Provides unified dashboards, reports, and heat maps, which reduce troubleshooting and performance bottlenecks
Self-service catalog	<ul style="list-style-type: none"> • Allows end users to order and deploy new infrastructure instances conforming to IT-prescribed policies and governance
Adaptive provisioning	<ul style="list-style-type: none"> • Provides a real-time available capability, internal policies, and application workload requirements to optimize the availability of your resources

Feature	Benefit
Dynamic capacity management	<ul style="list-style-type: none"> • Provides continuous monitoring of infrastructure resources to improve capacity planning, utilization, and management • Identifies underutilized and overutilized resources
Multiple hypervisor support	<ul style="list-style-type: none"> • Supports VMware ESX, ESXi, Microsoft Hyper-V, and Red Hat hypervisors
Computing management	<ul style="list-style-type: none"> • Provisions, monitors, and manages physical, virtual, and bare metal servers, as well as blades • Allows end users to implement virtual machine life-cycle management and business continuance through snapshots • Allows administrators to access server utilization trend analysis
Network management	<ul style="list-style-type: none"> • Provides policy-based provisioning of physical and virtual switches and dynamic network topologies • Allows administrators to configure VLANs, virtual network interface cards (vNICs), port groups and port profiles, IP and Dynamic Host Control Protocol (DHCP) allocation, and access control lists (ACLs) across network devices
Storage management	<ul style="list-style-type: none"> • Provides policy-based provisioning and management of filers, virtual filers (vFilers), logical unit numbers (LUNs), and volumes • Provides unified dashboards that allow administrators comprehensive visibility into organizational usage, trends, and capacity analysis details.

Physical and Virtual Management Features

Physical Server Management	Virtual Computing Management
<ul style="list-style-type: none"> • Discover and collect configurations and changes • Monitor and manage physical servers • Perform policy-based server provisioning • Manage blade power • Manage server life cycle • Perform server use trending and capacity analysis • Perform bare metal provisioning using preboot execution environment (PXE) boot management 	<ul style="list-style-type: none"> • Discover, collect, and monitor virtual computing environments • Perform policy-based provisioning and dynamic resource allocation • Manage the host server load and power • Manage VM life cycle and snapshots • Perform analysis to assess VM capacity, sprawl, and host utilization

<p>Physical Storage Management</p> <ul style="list-style-type: none"> • Discover, collect, and monitor storage filers • Perform policy-based provisioning of vFilers • Provision and map volumes • Create and map Logical Unit Number (LUN) and iGroup instances • Perform SAN zone management • Monitor and manage network-attached storage (NAS) and SAN-based storage • Implement storage best practices and recommendation 	<p>Virtual Storage Management</p> <ul style="list-style-type: none"> • Discover, collect, and monitor storage of vFilers and storage pools • Perform policy-based storage provisioning for thick and thin clients • Create new datastores and map them to virtual device contexts (VDCs) • Add and resize disks to VMs • Monitor and manage organizational storage use • Perform virtual storage trend and capacity analysis
<p>Physical Network Management</p> <ul style="list-style-type: none"> • Discover, collect, and monitor physical network elements • Provision VLANs across multiple switches • Configure Access Control Lists (ACLs) on network devices • Configure storage network s • Implement dynamic network topologies 	<p>Virtual Network Management</p> <ul style="list-style-type: none"> • Add networks to VMs • Perform policy-based provisioning with IP and DHCP allocation • Configure and connect Virtual Network Interface Cards (vNICs) to VLANs and private VLANs • Create port groups and port profiles for VMs • Monitor organizational use of virtual networks

About the Cisco UCS Director Red Hat Enterprise KVM Connector

The Cisco UCS Director Red Hat Enterprise (RHEV) VM Kernel-based Virtual Machine (KVM) Connector is a full virtualization solution for Linux on AMD64 and Intel 64 hardware. KVM is a Linux kernel module created for the standard Red Hat Enterprise Linux 6 kernel.

The Red Hat Enterprise Virtualization Manager can be managed by Cisco UCS Director through the Representational State Transfer (REST) API.

The Cisco UCS Director KVM Connector provides for basic inventory, VM/host level monitoring, VM basic power actions, and snapshot actions. The following provisioning services are also supported:

- **Compute Policy**—Memory and CPU resize options.
- **Storage Policy**—Local, NFS, and iSCSI storage types are supported.
- **Network Policy**—Multiple NICs are supported.

Prerequisites



Note Cisco UCS Director recognizes Red Hat Enterprise Virtual Machine (VM), Red Hat Enterprise Virtual Hypervisor Hosts, and Red Hat Enterprise Linux Hosts for additional functionality.

- Installation of Red Hat Enterprise Virtualization Manager version 3.2 and 3.3
- Installation of Red Hat Enterprise Virtual Hypervisor Hosts/RHEL Hosts (version 6.5)
- Configured system administrator privileges
- Cisco UCS Director release 5.0 or later release

System Requirements

The minimum system requirements depend upon how many VMs you plan to manage.



Note For optimal performance, reserve additional CPU and memory resources.

For information about minimum system requirements for a multi-node setup, see the [Cisco UCS Director Multi-Node Installation and Configuration Guide](#).

Up to 2000 VMs

If you plan to manage up to 2000 VMs, the Cisco UCS Director environment must meet at least the minimum system requirements in the following table.

Table 1: Minimum System Requirements for up to 2000 VMs

Element	Minimum Supported Requirement
vCPU	4
Memory	8 GB
Hard Disk	100 GB

About Workflows

Cisco UCS Director Orchestrator allows you to organize workflows so that you can automate simple or complex actions on your infrastructure (either physical or virtual). By using Orchestrator you can organize tasks into distinct workflows to accomplish specific IT services, such as adding VMs. You can then add multiple tasks to a workflow is accomplished using the workflow UI designer. Triggers help initiate actions

inside a workflow. You can execute the workflow directory or have a trigger begin the process. A typical workflow consists of the following elements:

- Workflow Designer (GUI interface)
- Predefined Tasks

The simplest workflow consists of two connected tasks. A task represents a particular action or operation. The workflow determines the order in which your tasks are executed by Orchestrator. When constructing workflows, by dragging-and-dropping tasks, it is possible to route the output of one workflow into the input of another workflow. This connecting of multiple tasks is how you create more complex workflows.

About the Workflow Tasks

Cisco UCS Director includes several workflows tasks to aid in the construction of RHEV KVM-specific workflows using Workflow Designer. The following available workflow tasks are:

- RHEV KVEM VM Tasks
 - RHEV KVM Resource Allocation
 - RHEV KVM VM Provision

Workflow Designer

You use the workflow designer to implement actions or to select tasks from a list and then drag and drop them onto your **Workflow Designer** pane.

Provisioning Support for Microsoft Windows

Cisco UCS Director in conjunction with the Cisco UCS Director Baremetal Agent supports all types of Linux and Microsoft Windows operating systems in baremetal provisioning workflows. Certain operating systems are packaged out-of-the-box with the Cisco UCS Director Baremetal Agent. However, additional operating systems can be added as necessary. Any operating system that supports PXE boot and/or install is supported and can be leveraged in baremetal provisioning workflows.

RHEV KVM supports Microsoft Windows 2008/2012 provisioning.