

Hitachi Unified Compute Platform (UCP) Advisor

2.8.0

Preinstallation Requirements and Configuration Guide

Hitachi Unified Compute Platform (UCP) Advisor software provides features that automate and simplify deployment and management of the following systems: UCP converged infrastructure (CI), UCP hyperconverged (HC), UCP rack scale (RS), UCP 2000, UCP 4000, and logical UCP.

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Preface

Hitachi Unified Compute Platform (UCP) Advisor software provides features that automate and simplify deployment and management of the following systems: UCP converged infrastructure (CI), UCP hyperconverged (HC), UCP rack scale (RS), UCP 2000, UCP 4000, and logical UCP.

This guide provides specifications and requirements needed to plan and prepare for a Hitachi UCP Advisor installation.

Intended audience

This guide is intended for UCP system administrators and Hitachi representatives who are involved in installing and configuring UCP Advisor. Administrators should have storage, networking, server, VMware vCenter, and virtualization experience.

Product version

This document revision applies to UCP Advisor version 2.8.0 or later.

Related documents

This section identifies other documents useful in the installation and administration of UCP Advisor:

- *Hitachi Unified Compute Platform (UCP) Advisor Preinstallation Requirements and Configuration Guide, MK-92UCP104*
- *Hitachi Unified Compute Platform (UCP) Advisor Administration Guide, MK-92UCP102*
- *Hitachi Unified Compute Platform (UCP) Advisor Release Notes, RN-92UCP099*


Access product documentation here: https://knowledge.hitachivantara.com/Documents/Converged/UCP_Advisor.




Document conventions

This document uses the following typographic conventions:

Convention	Description
Bold	<ul style="list-style-type: none"> Indicates text in a window, including window titles, menus, menu options, buttons, fields, and labels. Example: Click OK. Indicates emphasized words in list items.
<i>Italic</i>	<ul style="list-style-type: none"> Indicates a document title or emphasized words in text. Indicates a variable, which is a placeholder for actual text provided by the user or for output by the system. Example: <code>pairedisplay -g group</code> <p>(For exceptions to this convention for variables, see the entry for angle brackets.)</p>
Monospace	Indicates text that is displayed on screen or entered by the user. Example: <code>pairedisplay -g oradb</code>
< > angle brackets	<p>Indicates variables in the following scenarios:</p> <ul style="list-style-type: none"> Variables are not clearly separated from the surrounding text or from other variables. Example: <code>Status-<report-name><file-version>.csv</code> Variables in headings.
[] square brackets	Indicates optional values. Example: [a b] indicates that you can choose a, b, or nothing.
{ } braces	Indicates required or expected values. Example: { a b } indicates that you must choose either a or b.
vertical bar	<p>Indicates that you have a choice between two or more options or arguments. Examples:</p> <p>[a b] indicates that you can choose a, b, or nothing.</p> <p>{ a b } indicates that you must choose either a or b.</p>

This document uses the following icons to draw attention to information:

Icon	Label	Description
	Note	Calls attention to important or additional information.

Icon	Label	Description
	Tip	Provides helpful information, guidelines, or suggestions for performing tasks more effectively.
	Caution	Warns the user of adverse conditions and/or consequences (for example, disruptive operations, data loss, or a system crash).
	WARNING	Warns the user of a hazardous situation which, if not avoided, could result in death or serious injury.

Conventions for storage capacity values

Physical storage capacity values (for example, disk drive capacity) are calculated based on the following values:

Physical capacity unit	Value
1 kilobyte (KB)	1,000 (10^3) bytes
1 megabyte (MB)	1,000 KB or $1,000^2$ bytes
1 gigabyte (GB)	1,000 MB or $1,000^3$ bytes
1 terabyte (TB)	1,000 GB or $1,000^4$ bytes
1 petabyte (PB)	1,000 TB or $1,000^5$ bytes
1 exabyte (EB)	1,000 PB or $1,000^6$ bytes

Logical capacity values (for example, logical device capacity, cache memory capacity) are calculated based on the following values:

Logical capacity unit	Value
1 block	512 bytes
1 cylinder	Mainframe: 870 KB Open-systems: <ul style="list-style-type: none"> ▪ OPEN-V: 960 KB ▪ Others: 720 KB
1 KB	$1,024 (2^{10})$ bytes

Logical capacity unit	Value
1 MB	1,024 KB or 1,024 ² bytes
1 GB	1,024 MB or 1,024 ³ bytes
1 TB	1,024 GB or 1,024 ⁴ bytes
1 PB	1,024 TB or 1,024 ⁵ bytes
1 EB	1,024 PB or 1,024 ⁶ bytes

Getting help

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Thank you!

Chapter 1: Installation process

The UCP Advisor installation process is divided into four distinct phases. This document describes each phase.

It also includes supplemental information that you can use to ensure your site is ready for a UCP Advisor installation.

Plan phase

Configuration planning starts when you purchase UCP Advisor. At that point, Hitachi representatives work with you to select the correct software configuration for your immediate and future requirements. These considerations include:

- Type of system to install: converged or hyperconverged infrastructure.
- Number of racks required for installation.
- Number of servers in each rack and the configuration of each server (CPU type and amount of RAM).
- Type of storage used and the storage system configuration, in the case of a converged infrastructure appliance.

The information collected during this phase is used to configure the site or sites during the Build phase.

By the end of the Plan phase, you will have all the necessary information to ensure your environment is ready for your UCP Advisor deployment. Additional information is provided upon order placement which clearly outlines the following:

- Build time and location
- How much of the system is preassembled by Hitachi representatives
- The required amount of on-site system installation

System definition

Before the system arrives on-site, site-specific planning and pre-installation work is required. The type and amount of work is determined by the system configuration and the existing environment.

The following sections define the current deployment configuration scenarios and the required information and decisions you must make.

Hyperconverged infrastructure

In a hyperconverged system, the management VMs may be placed anywhere with hardware IP access. This is the only configuration where the UCP Advisor Gateway virtual machine does not need to be hosted on hardware inside the appliance. Additionally, a single Advisor Gateway VM can manage several UCP hyperconverged appliances.

If the management VMs are placed in a pre-existing environment, it is recommended to place the management VMs in a vApp or resource pool to reserve enough resources for the VMs to meet performance expectations.

Refer to [Management VM Environment Requirement \(on page 12\)](#) for recommendations on environment resource allocation. In this scenario, the management VMs may also be deployed into the existing environment before the equipment arrives on-site.

Converged infrastructure in a customer-provided environment

In this scenario, the converged infrastructure appliance is managed by a UCP Advisor controller VM hosted in your existing environment.

It is recommended that a vApp or resource pool is created for the management VMs to reserve enough resources to meet performance expectations. Refer to [Management VM Environment Requirement \(on page 12\)](#) for resource allocation recommendations for the customer-provided converged infrastructure environment.

The Advisor Gateway VM is required to be hosted somewhere inside the appliance that it is managing. The Advisor Gateway VM has a small footprint and can reside in the same cluster as a compute workload without adversely affecting that workload.

In this scenario, the Advisor controller VM can be deployed into the existing environment before the equipment arrives on-site.

Converged infrastructure with customer-provided management servers

When you provide dedicated management servers for the management VMs, the scenario splits into two more possible scenarios that mirror the converged infrastructure in a customer-provided environment and converged infrastructure with Hitachi management servers purchased with the system.

Talk to your Hitachi representative about Microsoft Windows licenses. Hitachi can provide licenses (Windows Server 2016 Standard) for these servers if you do not have available licenses.

If the management servers you provide have Fibre Channel access to the array that is attached to the converged infrastructure appliance (for example, the servers are re-racked inside the appliance when it arrives), then it can be treated as converged infrastructure with Hitachi management servers purchased with the system.

If the management servers you provide do not have Fibre Channel access to the array that is attached to the converged infrastructure appliance, then it must be treated like a converged infrastructure in a customer-provided environment.

Converged infrastructure purchased with Hitachi dedicated management servers

In this scenario, Hitachi installs all the necessary and optional software purchased with the appliance. While there is available capacity on the management servers for other services, consult with your Hitachi representative about the appropriate services for hosting with the Hitachi management VMs.

When the system is purchased with Hitachi management servers, the hardware is configured in a high availability cluster by the end of the deployment. This configuration ensures the availability of the management functionality in the case of a single server failure.

Planning responsibilities

It is the responsibility of Hitachi representatives to work with you in determining the system configuration for each site and to provide information you use to set up your data center before deploying UCP Advisor for VMware vCenter.

It is your responsibility to work with Hitachi representatives to:

- Specify the system configuration for assembly, during the build phase.
- Confirm that the virtual environment meets the system configuration requirements.
- Provide information for use during the later phases.

Build phase

During the Build phase, the Hitachi Distribution Center assembles and validates UCP Advisor components before shipping the system to the customer sites.

The Hitachi Distribution Center does the following:

- Fully assembles all system hardware.
- Prepares the management block for deployment to your site.
- Validates all component connectivity to ensure rapid on-site deployment.
- Prepares and ships the system to your site.

Deploy phase

When the preconfigured UCP Advisor system arrives at the customer site, Hitachi representatives perform the following tasks:

- Reassemble the system from the shipped containers.
- Validate all component connectivity.
- If existing storage is being used, Hitachi representatives prepare, integrate, and validate UCP Advisor with the existing storage.
- Configure system network settings.

- Deploy and configure UCP Advisor.
- Add all components to UCP Advisor inventory.
- Connect UCP Advisor to the production network.

UCP Advisor must be deployed by trained Hitachi representatives or qualified partners. UCP Advisor is not a product that can be installed without trained assistance.

Deployment responsibilities

It is the responsibility of Hitachi representatives to build, configure, and verify that the UCP Advisor system works with your environment.

It is your responsibility to assist Hitachi representatives to ensure a functional deployment.

Operate phase

After deployment, Hitachi representatives train you on UCP Advisor usage by doing the following:

- Providing a demonstration of UCP Advisor console.
- Sharing the product documentation location on the Hitachi Vantara Knowledge portal (https://knowledge.hitachivantara.com/Documents/Converged/UCP_Advisor).
- Giving an overview of the features of UCP Advisor.
- Answering questions you may have regarding the system and additional services that may be available.

Responsibilities

It is the responsibility of Hitachi representatives to assist you in understanding the components and use of UCP Advisor.

Chapter 2: Software requirements and recommendations

During the UCP Advisor planning, you must consider the software and management VM environment requirements and recommendations.

Management VM environment requirements

During the planning phase, if you choose to run UCP Advisor in an existing environment, it is recommended to set up a vApp in vCenter to contain the UCP Advisor controller VM and the UCP Advisor Gateway VM. This deployment ensures a consistent and responsive user experience in the UCP Advisor user interface.

This recommendation is provided with the following resource reservations:

- RAM: 20 GB
- CPU: 9.0 Ghz

UCP Advisor does not initially oversubscribe the reserved resources. However, as the system grows, more resources are required. This initial resource reservation is designed to accommodate a single appliance with moderate growth.

Management VM settings

There are different VM settings for the UCP Advisor controller VM and the UCP Advisor Gateway VM.

The following table provides the VM settings for the UCP Advisor controller VM.

Resource	Quantity (default config on deploy)
Operating system	Windows Server 2016
RAM	16 GB
CPU	4 vCPUs
Disk	250 GB
Network	1 vNIC VMXNET3
Supported virtualization host	ESXi 6.5x

The following table provides the VM settings for the UCP Advisor Gateway VM.

Resource	Quantity
Operating system	CentOS 7.3
RAM	2 GB
CPU	2 vCPUs (Default)
Disk	100 GB
Network	1 vNIC VMXNET3
Supported virtualization host	ESXi 6.5x

VMware vCenter Server Virtual Appliance

If you chose an existing vCenter environment, the version must match the minimum version required by UCP Advisor. UCP Advisor has been tested with VMware vCenter Server Virtual Appliance 6.5 U1a to U2 and 6.7U1. Previous versions of 6.5 are incompatible due to VMware changes in the plugin structure.

If there is no existing environment meeting the UCP Advisor requirements, Hitachi representatives can install the prerequisite software on the management servers (depending on your deployment scenario).

Supported operating system types for bare metal provisioning

UCP Advisor supports bare metal provisioning for the operating system (OS) types shown in the following table.

Operating system name	Operating system version	Boot modes
CentOS	7.3	LEGACY
CentOS	7.4	LEGACY/UEFI
CentOS	7.5	LEGACY/UEFI
Oracle Enterprise Linux	7.3	LEGACY
Oracle Enterprise Linux	7.4	LEGACY/UEFI
Oracle Enterprise Linux	7.5	LEGACY/UEFI
Red Hat Enterprise Linux	7.3	LEGACY

Operating system name	Operating system version	Boot modes
Red Hat Enterprise Linux	7.4	LEGACY/UEFI
Red Hat Enterprise Linux	7.5	LEGACY/UEFI
SUSE Linux Enterprise Server	12, SP2	LEGACY/UEFI
SUSE Linux Enterprise Server	12, SP3	LEGACY/UEFI
VMware ESXi	6.7 U1	LEGACY/UEFI
VMware ESXi	6.5 U1	LEGACY/UEFI
VMware ESXi	6.5 U2	LEGACY/UEFI
VMware ESXi	6.0 U3a	LEGACY/UEFI

CentOS 7.3

File name: CentOS-7-x86_64-Everything-1611.iso

Source: http://archive.kernel.org/centos-vault/7.3.1611/isos/x86_64/

SHA256: af4969ebdbdc479d330de97c5bfbb37eedc64c369f009cb15a97f9553ba441c88

Boot modes: LEGACY

HBA manufacturer/model: Emulex lpe31000

Driver version: Emulex lpfc 11.1.0.2

NIC manufacturer: Mellanox

NIC driver version: Mellanox Connect-IB Version 2.1-1

CentOS 7.4

File name: CentOS-7-x86_64-DVD-1708.iso

Source: http://archive.kernel.org/centos-vault/7.4.1708/isos/x86_64/

SHA256: ec7500d4b006702af6af023b1f8f1b890b6c7ee54400bb98cef968b883cd6546

Boot modes: LEGACY/UEFI

HBA manufacturer/model: Emulex lpe31000

Driver version: Emulex lpfc 11.4.0.1

NIC manufacturer: Mellanox

NIC driver version: Mellanox Connect-IB Version 3.0-1

CentOS 7.5

File name: CentOS-7-x86_64-Everything-1804.iso

Source: <http://centos.org>

SHA256: 99723c8b87dcec21df8aed23de1eb810346d42cfd2a3fafafe70a68296053417

Boot modes: LEGACY/UEFI

HBA manufacturer/model: Emulex lpe31000

Driver version: Emulex lpfc 11.4.0.4

NIC manufacturer: Mellanox

NIC driver version: Mellanox Connect-IB Version 3.0-1

Oracle Linux 7.3

File name: V834394-01.iso

Source: https://edelivery.oracle.com/osdc/faces/SoftwareDelivery*

SHA256: 2ad5327428c44d505a7d882a273cb3f5fbac4e56e739cf18f895565dde987101

Boot modes: LEGACY

HBA manufacturer/model: Emulex lpe31000

Driver version: Emulex lpfc 11.1.0.2

NIC manufacturer: Mellanox

NIC driver version: Mellanox Connect-IB Version 2.1-1

Oracle Linux 7.4

File name: V921569-01.iso

Source: https://edelivery.oracle.com/osdc/faces/SoftwareDelivery*

SHA256: f2e11a2fceb8e285490c8df7c2172336cc23eb4bab95924b98d1029dce7eb0b

Boot modes: LEGACY/UEFI

HBA manufacturer/model: Emulex lpe31000

Driver version: Emulex lpfc 11.4.0.1

NIC manufacturer: Mellanox

NIC driver version: Mellanox Connect-IB Version 3.0-1

Oracle Linux 7.5

File name: V975365-01.iso

Source: https://edelivery.oracle.com/osdc/faces/SoftwareDelivery*

SHA256: d0cc4493db10c2a49084f872083ed9ed6a09cc065064c009734712b9ef357886

Boot modes: LEGACY/UEFI

HBA manufacturer/model: Emulex lpe31000

Driver version: Emulex lpfc 11.4.0.4

NIC manufacturer: Mellanox

NIC driver version: Mellanox Connect-IB Version 3.0-1

Red Hat Enterprise Linux 7.3

File name: rhel-server-7.3-x86_64-dvd.iso

Source: <https://access.cdn.redhat.com/>

SHA256: 120acbca7b3d55465eb9f8ef53ad7365f2997d42d4f83d7cc285bf5c71e1131f

Boot modes: LEGACY

HBA manufacturer/model: Emulex lpe31000

Driver version: Emulex lpfc 11.1.0.2

NIC manufacturer: Mellanox

NIC driver version: Mellanox Connect-IB Version 2.1-1

Red Hat Enterprise Linux 7.4

File name: rhel-server-7.4-x86_64-dvd.iso

Source: <https://access.cdn.redhat.com/>

SHA256: 431a58c8c0351803a608ffa56948c5a7861876f78ccbe784724dd8c987ff7000

Boot modes: LEGACY/UEFI

HBA manufacturer/model: Emulex lpe31000

Driver version: Emulex lpfc 11.2.0.6

NIC manufacturer: Mellanox

NIC driver version: Mellanox Connect-IB Version 3.0-1

Red Hat Enterprise Linux 7.5

File name: rhel-server-7.5-x86_64-dvd.iso

Source: <https://access.cdn.redhat.com/>

SHA256: 51864155b7e87ec56c0315688855120ca0859de96434b36710d8bf41dd33e06e

Boot modes: LEGACY/UEFI

HBA manufacturer/model: Emulex lpe31000

Driver version: Emulex lpfc 11.4.0.4

NIC manufacturer: Mellanox

NIC driver version: Mellanox Connect-IB Version 3.0-1

SUSE Linux Enterprise Server 12, SP2

File name: SLE-12-SP2-Server-DVD-x86_64-GM-DVD1.iso

Source: https://www.suse.com/download-linux*

SHA256: dd724e9248f2c3507e8e9d0050a4c8b6e9aeda7fdf0870858757cc6c01b7d47d

Boot modes: LEGACY/UEFI

HBA manufacturer/model: Emulex lpe31000

Driver version: Emulex lpfc 11.1.0.1

NIC manufacturer: Mellanox

NIC driver version: Mellanox Connect-IB Version 3.0-1

SUSE Linux Enterprise Server 12, SP3

File name: SLE-12-SP3-Server-DVD-x86_64-GM-DVD1.iso

Source: https://www.suse.com/download-linux*

SHA256: 48408157ef667100671b22f92c3e20771ccf2100108b96e3ae83d8df30abddd5

Boot modes: LEGACY/UEFI

HBA manufacturer/model: Emulex lpe31000

Driver version: Emulex lpfc 11.4.0.1

NIC manufacturer: Mellanox

NIC driver version: Mellanox Connect-IB Version 3.0-1

VMware ESXi 6.7 U1

File name: VMware-VMvisor-Installer-6.7.0-8169922.x86_64.iso

Source: https://my.vmware.com/web/vmware/login*

SHA256: fe1f225fcb84b3870c0512f1028c4493169d1c704f643abf4e463ed102c6a38b

Boot modes: LEGACY/UEFI

HBA manufacturer/model: Emulex lpe31000

Driver version: Emulex lpfc 10.2.340.18

NIC manufacturer: Mellanox

NIC driver version: Nmlx5-core 4.16.0.0-1

VMware ESXi 6.5 U1

File name: VMware-VMvisor-Installer-6.5.0.update01-5969303.x86_64.iso

Source: https://my.vmware.com/web/vmware/login*

SHA256: f6e5000dff423c275b3ffbdfe08145f369d04b8c4ade5a413f2ef2a029a5e3ef

Boot modes: LEGACY/UEFI

HBA manufacturer/model: Emulex lpe31000

Driver version: Emulex lpfc 11.4.142.11

NIC manufacturer: Mellanox

NIC driver version: Nmlx5-core 4.16.0.0-1

VMware ESXi 6.5 U2

File name: VMware-VMvisor-Installer-6.5.0.update02-8294253.x86_64.iso

Source: https://my.vmware.com/web/vmware/login*

SHA256: d290c36acb28d85e812b42f242f5c6c0f059551df4a24432adf1a4b9e96eb694

Boot modes: LEGACY/UEFI

HBA manufacturer/model: Emulex lpe31000

Driver version: Emulex lpfc 11.4.142.11

NIC manufacturer: Mellanox

NIC driver version: Nmlx5-core 4.16.0.0-1

VMware ESXi 6.0 U3a

File name: VMware-VMvisor-Installer-201706001-5572656.x86_64.iso

Source: https://my.vmware.com/web/vmware/login*

SHA256: c3aec5dd00d47548089918075c84edb8e8c5017cbec901c6abf8a815d5149aac

Boot modes: LEGACY/UEFI

HBA manufacturer/model: Emulex lpe31000

Driver version: Emulex lpfc 10.2.298.12-1

NIC manufacturer: Mellanox

NIC driver version: Nmlx5-core 4.15.8.8-1

Chapter 3: Firewall exceptions

Security administrators use firewalls to protect the network or selected components in the network from intrusion. A firewall might exist between UCP Advisor and your management environment, depending on your deployment. Therefore, you must configure firewall exceptions for your environment.

Required firewall port exceptions

The ports in the following table are used for UCP Advisor management traffic. To access UCP Advisor from the production network, exceptions for these ports are necessary.

Scenario	Source	Destination	Protocol/Port
vCenter access	Web Client	VCSA	TCP/9443
	Web Client	UCP Advisor controller VM	TCP/443
vCenter to Advisor communication	UCP Advisor VM	VCSA	TCP/443, 23031
	VCSA	UCP Advisor controller VM	TCP/23011
API access to UCP Advisor	API Client	UCP Advisor controller VM	TCP/23015
CLI access to UCP Advisor	CLI Client	UCP Advisor controller VM	TCP/23015
Log collection and switch backup and restore	Managed hardware	UCP Advisor controller VM	TCP/22
SNMP communication	Managed hardware	UCP Advisor controller VM	UDP/161,162
IPMI communication	Managed hardware	UCP Advisor controller VM	UDP/623
Adding an N+1 appliance	UCP Advisor controller VM	UCP Advisor Gateway VM	TCP/443

Scenario	Source	Destination	Protocol/Port
	UCP Advisor Gateway VM	UCP Advisor controller VM	TCP/443

Optional firewall port exceptions

The ports in the following table are used for UCP Advisor management traffic, element management traffic, and system integration traffic (for example, Automation Director, VRO, and Syslog). The security administrator can configure firewall port exceptions.

Scenario	Source	Destination	Protocol/Port
Hi-Track Monitor hosted on another VM	Hi-Track Monitor VM	UCP Advisor controller VM	TCP/443
RDP access to Advisor VM	RDP client	UCP Advisor controller VM	TCP/3389
SSH access to Advisor Gateway VM	SSH client	UCP Advisor Gateway VM	TCP/22
Usage of vRealize Log Insight	VCSA, UCP Advisor controller VM, UCP Hardware	vRealize Log Insight VM	TCP/514, TCP/1514, TCP/V6514, TCP/9000, TCP/9543, and UDP/514
	vRealize Log Insight VM	UCP Advisor controller VM	TCP/2055
Usage of vRealize Orchestrator	VCSA, UCP Advisor controller VM, end user web browser	vRealize Orchestrator VM	TCP/8230, TCP/8240, TCP/8250, TCP/8244, TCP/8280, TCP/8281, TCP/8282, TCP/8283
	vRealize Orchestrator VM	UCP Advisor controller VM	TCP/23021
Usage of Automation Director	Automation Director VM	UCP Advisor controller VM	TCP/22015

Additional information about vRealize Log Insight and vRealize Orchestrator can be found on the VMware documentation portal.

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