



Unified Compute Platform 3.5.1

UCP Pre-Installation Requirements and Configuration

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Preface

This book provides specifications and requirements that are needed to plan and prepare for a **Hitachi Unified Compute Platform (UCP)** installation.

Intended audience

This book is intended for UCP system administrators and Hitachi Data Systems (HDS) representatives who are involved in installing and configuring UCP. It assumes that you are familiar with the hypervisor manager you are using (vCenter or SCVMM), managing an Active Directory (AD) domain, and the hardware and software components of UCP.

Product version

This guide applies to UCP version 3.5.1.

Document organization

This book contains the following content.

Chapter/Appendix	Description
"Installation process overview"	Describes the process of configuring, building, and deploying UCP. This describes when each appendix is necessary.
Appendix A, "Safety requirements," on page 7	Safety information used during installation.
Appendix B, "Physical installation requirements," on page 11	Information regarding the physical site requirements and system specifications needed to plan for installation.

(Continued)

Chapter/Appendix	Description
Appendix C, "User accounts," on page 19	Questionnaire used to collect user account information for UCP Director.
Appendix D, "Hardware accounts," on page 21	Questionnaire used to setup the accounts used in UCP Director.
Appendix E, "UCP Disaster Recovery requirements," on page 23	Requirements for using UCP Disaster Recovery.
Appendix F, "Active Directory configuration," on page 27	Information regarding the UCP AD configuration.
Appendix G, "Storage system requirements and configuration," on page 35	Information necessary to use a new storage system.
Appendix H, "Shared storage system requirements and configuration," on page 39	Information necessary to use a shared storage system.
Appendix I, "Network firewall security," on page 43	Information regarding the firewall ports that need to be open for management network traffic.

Related documents

The following documents contain information about UCP version 3.5.1:

- *UCP Pre-Installation Requirements and Configuration* — Contains information and procedures you need to be aware of for a successful UCP installation.
- *UCP Administration Manual* — Contains technical and usage information for UCP and UCP Director. Describes how to administer UCP Director through UCP Director Console with both VMware vCenter and Microsoft SCVMM.
- *UCP Director API Reference* — Describes how to use the UCP Director API.
- *UCP Director CLI Reference* — Describes how to use the UCP Director CLI.
- *UCP Director Third-Party Copyrights and Licences* — Contains copyright and license information for the third-party software distributed with or embedded in UCP Director.

- *UCP DOC Administration Manual* — Contains technical and usage information for Unified Compute Platform Director Operations Center (UCP DOC). Describes how to administer UCP DOC through UCP DOC Console.
- *UCP DOC API Reference* — Describes how to use the UCP DOC API.
- *UCP DOC CLI Reference* — Describes how to use the UCP DOC CLI.

Getting help

If you need to call the Hitachi Data Systems® support center, please have your site ID and provide as much information about the problem as possible, including:

- The circumstances surrounding the error or failure
- The exact content of any returned messages

The Hitachi Data Systems customer support staff is available 24 hours a day, seven days a week. If you need technical support, please call:

- United States: (800) 446-0744
- Outside the United States: (858) 547-4526

Comments

Please send us your comments on this document:

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Include the document title, number, and revision, and refer to specific sections and paragraphs whenever possible.

Thank you! (All comments become the property of Hitachi Data Systems.)



Installation process overview

The UCP installation process is divided into four distinct phases. This document describes what takes place during each phase. It also includes the supplemental information that you can use to help ensure that your site is ready for a UCP installation.

The four phases of installation are:

1. [Plan](#)
2. [Build](#)
3. [Deploy](#)
4. [Operate](#)

Plan

Configuration planning starts when you purchase a UCP system. At this point, HDS personnel will work with you to select the hardware configuration that is right for your immediate use and future needs. These considerations include the:

- Type of system that will be installed, whether default or production
- Number of racks that will be installed
- Number of chassis in each rack
- Number of blades in each chassis and the configuration of each individual blade (CPU type and amount of RAM)
- Type of storage system that will be used and the configuration of the storage system
- Type of network used, whether Cisco or Brocade

In configurations with more than one UCP site, Unified Compute Platform Director Operations Center (UCP DOC) can be used to monitor all sites simultaneously. In addition, when managing more than one site in UCP DOC, you can select to use UCP Disaster Recovery to support volume replication between the two sites. Using UCP Disaster Recovery to automate storage replication simplifies the configuration of site failovers in VMware Site Recovery Manager (SRM).

To use Disaster Recovery, work with HDS personnel to address the configuration parameters. These parameters include:

- Distance between the two UCP sites
- Choice of array replication technology (asynchronous or synchronous)
- Choice of site-to-site connectivity
- Replication workload and site sizing

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 of the necessary information to ensure that your environment is ready for the upcoming UCP deployment. Additional information will be provided upon order placement that will clearly communicate:

- Build time and location
- How much of the system will be preassembled by HDS
- How involved the on-site system installation will be

Responsibilities

It is the responsibility of HDS personnel to work with you in determining the system configuration for each site and to provide information that you will use to setup your datacenter before deploying UCP for VMware vCenter.

It is your responsibility to work with HDS personnel to:

- Specify the configuration of the system that will be assembled during the [Build](#) phase
- Confirm that the environment meets the physical requirements (including adequate power and cooling) of UCP
- Provide information that will be used during the later phases
- Ensure that all sites have connectivity to UCP DOC if using UCP DOC to manage more than one site
- Ensure that a replication link with adequate bandwidth is available between the sites if you will be using UCP Disaster Recovery to manage volume replication between two or more sites

Build

During this phase, HDS will:

- Fully assemble all system hardware
- Prepare the management block for deployment to your site
- Validate all component connectivity to ensure rapid on-site deployment

- Prepare and ship the system to your site

While HDS is preparing your UCP system, HDS personnel will work with you to define a number of environment variables that will be used during the [Deploy](#) phase.

Responsibilities

It is the responsibility of HDS to build your system and work with you to determine the environment variables that will be used during the [Deploy](#) phase.

It is your responsibility to work with HDS personnel to specify and configure the environment variables needed to deploy UCP.

Deploy

When the preconfigured UCP system arrives, HDS personnel will be ready to perform the following:

- Reassemble the system from the shipped containers
- Validate all component connectivity
- If existing storage is being used, HDS personnel will prepare, integrate, and validate UCP with the existing storage
- Configure system network settings
- Deploy and configure UCP Director
- Add all components to UCP Director inventory
- Connect UCP to the production network



Note: UCP must be installed by trained Hitachi Data Systems personnel or qualified partners. UCP is not a product that can be installed without trained assistance.

Responsibilities

It is the responsibility of HDS personnel to build, configure, and ensure that UCP works with your environment.

It is your responsibility to assist HDS personnel as needed to ensure a functional deployment.

Operate

After deployment, HDS personnel will assist in training you on how to use UCP. This includes:

- A demonstration of UCP Director Console
- An overview of the features of UCP Director
- Answering questions that you may have regarding the system

Additional services may be available depending on your needs

Responsibilities

It is the responsibility of HDS personnel to assist you in understanding the components and use of UCP.



A

Safety requirements

Install Hitachi equipment in accordance with the local safety codes and regulations that apply to the facility. This chapter contains additional safety information that may apply to your facility. Read and follow the safety guidelines in this chapter before installing the equipment.

The key sections in this chapter are:

- [General safety guidelines](#)
- [Work safety guidelines](#)
- [Electrical safety guidelines](#)

General safety guidelines

Observe the following general site guidelines:

- General requirements — The data center must comply with all applicable safety regulations, standards, and requirements for installing and operating industrial computer equipment similar to UCP.
- Fire protection — The data center must have an operational fire protection system appropriate for use with computer and electrical equipment.
- Hazards — The data center must be free of hazards (for example, cables on the floor that block access or that can cause people to trip).
- Equipment modifications — Do not make mechanical or electrical modifications to the equipment. Hitachi Data Systems is not responsible for regulatory compliance of a modified Hitachi Data Systems product.
- Earthquake safety — To minimize personal injury in the event of an earthquake, securely fasten the base server rack and the optional expansion server rack to a rigid structure that extends from the floor to the ceiling or from the walls of the room.
- Cabling — Do not block walkways when routing cables. Do not place heavy materials on cables. Do not place cables near any possible source of heat.
- Warning and safety labels — Safety warnings, cautions, and instructions in various languages are attached to UCP components. The safety warnings provide guidelines to follow when working with any equipment. Hitachi Data Systems recommends that you read all warning labels on the hardware. If warning labels become dirty, damaged, unreadable, or peel off, contact the Hitachi Data Systems support center.
- Authorized personnel — Allow only qualified and authorized personnel (such as a certified electrician) to perform hazardous tasks.

Work safety guidelines

Observe the following site guidelines:

- Do not wear loose clothing that could get caught in the equipment or mounting hardware. Fasten your tie or scarf and roll up your sleeves.
- Wear safety glasses when working under conditions that are hazardous to your eyes.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Keep walkways clear of tools, power cables, and parts to prevent them from being stepped on or causing people to trip and fall over them.
- Do not work on the equipment or disconnect cables during a thunderstorm, when wearing a wool sweater or other heavy wool clothing, or when power is applied.
- Keep floors dry to prevent slips and falls.
- Do not use ungrounded power cables.
- Keep the area clear and dust-free during and after installation.
- Do not block or cover equipment openings. Ensure that all equipment has adequate airflow. Failure to follow these guidelines can cause overheating and affect the system reliability.
- Use enough personnel when moving a rack, especially on sloping loading docks and ramps to a raised computer room floor. Move the cabinet slowly and deliberately and make sure that the floor is free from foreign objects and cables. UCP racks are equipped with casters so that you can move them short distances to position them for final installation.



WARNING: To avoid injury, wear protective footwear when moving equipment.

Warning about moving parts

Even though customers do not install or maintain equipment, these guidelines are provided to prevent possible injury when working with authorized service personnel. Observe the following warnings related to moving parts:

- Tuck in any loose clothing so that it cannot be caught by moving or rotating parts, such as a fan.
- Tie back long hair.
- Unless specifically instructed to the contrary, do not supply power to any device that contains rotating or moving parts that are not properly covered.

Electrical safety guidelines

Even though customers do not install or maintain equipment, these guidelines are provided to prevent possible injury when working with authorized service personnel in the area where equipment is installed. Observe the following electrical safety guidelines:

- Disconnect all power before installing, uninstalling, or moving equipment.
- Ensure that the voltage and frequency of your power source match the voltage and frequency required by the system.
- Follow proper grounding procedures to reduce the risk of electric shock or damage to equipment. All equipment should be properly grounded for proper operation and safety.

Physical installation requirements

This chapter provides physical site and system requirements and specifications that are needed to plan a UCP installation and prepare the site where the system will be installed so that the equipment installation is efficient and trouble-free.

Because each UCP installation is different, based on what compute and storage options are chosen, this chapter does not provide all of the information that is needed for every installation. Hitachi Data Systems personnel will assist in planning the requirements for your individual installation.

The key sections in this chapter are:

- [Equipment clearances](#)
- [Equipment weight](#)
- [Environment](#)
- [Mechanical specifications](#)
- [Environmental specifications](#)
- [Electrical specifications](#)
- [Heat output and air flow](#)

Equipment clearances

Receiving area

The receiving dock, storage area, and receiving area must be large enough to allow movement of, and access to, crated or packed equipment. The dimensions of a shipping crate for a single rack are shown in the following table.

Height	Width	Depth
86 in. / 2184 mm	42 in. / 1067 mm	54 in. / 1372 mm

Other areas

The hallways, doorways, ramps, and elevators must be large enough to allow UCP racks to be moved to the installation location. Unless the distance between the receiving dock and the data center is very long, UCP systems are typically unpacked in the receiving area and the individual racks with preinstalled equipment are rolled on their casters to the data center.

Equipment weight

The floors, elevators, and ramps must be able to support the weight of the delivered equipment as it is moved to the installation location. Spreader plates may be required to distribute the load and protect the floor as the equipment is moved from the receiving area to the installation location. A rack and shipping crate can weigh up to 1507 lbs/685 kg.

Environment

The following table lists general requirements that the data center must meet:

Item	Description
General	The data center must provide appropriate power, air conditioning, cabling, and fire protection.
ESD	The data center must provide adequate protection from electrostatic discharge (ESD).
Electrical interference	The data center must provide adequate protection from electrical/radio frequency interference.
Contamination	The data center must provide adequate protection from dust, pollution, and particulate contamination.

Item	Description
Acoustics	The data center must provide adequate acoustic insulation for operating the system.
User-supplied hardware	This includes cables, connectors, and receptacles that must be available and ready when the system is installed.

Mechanical specifications

The following table lists the mechanical specifications of a UCP rack.

Dimension	Value
Height (in / mm)	79.1 / 2009
Width (in / mm)	23.6 / 600
Depth (in / mm)	47.25 / 1200

Brocade Ethernet configuration rack specifications

The following table lists the rack specifications of a UCP rack in a Brocade Ethernet configuration.

Dimension	Value
Base compute rack weight (with 1 chassis, lbs / kg)	918.2 / 416.5
Expansion compute rack weight (with 1 chassis, lbs / kg)	775.9 / 352.7
CB500 with 8 blades (lbs / kg)	267.7 / 121.7

Cisco Ethernet configuration rack specifications

The following table lists the rack specifications of a UCP rack in a Cisco Ethernet configuration.

Dimension	Value
Base compute rack weight (with 1 chassis, lbs / kg)	984.0 / 430.9
Expansion compute rack weight (with 1 chassis, lbs / kg)	815.5 / 370.7
CB500 with 8 blades (lbs / kg)	266.4 / 121.1

Cisco converged configuration rack specifications

The following table lists the rack specifications of a UCP rack in a Cisco converged configuration.

Dimension	Value
Base compute rack weight (with 1 chassis, lbs / kg)	984.0 / 430.9
CB500 with 8 blades (lbs / kg)	266.4 / 121.1

Environmental specifications

The following table provides the environmental specifications and requirements of a UCP rack.

Item	Operating	Not operating	In storage
Temperature (°F / °C) ²	60.8 - 80.9 / 16 to 32	-18 - 109.4 / -10 to 43	-45 - 140 / -25 to 60
Relative Humidity (%)	20 to 80	8 to 90	5 to 95
Max. Wet Bulb (°F / °C) ⁵	78.8 / 26	80.6 / 27	84.2 / 29
Temperature Deviation per Hour (°F / °C)	50 / 10	50 / 10	68 / 20
Vibration to 10Hz: 0.25 mm	10 to 300 Hz 0.49 m/s	5 to 10 Hz: 2.5 mm 10 to 70 Hz: 4.9 m/s 70 to 99 Hz: 0.05 mm 99 to 300 Hz: 9.8 m/s	Sine Vibration: 4.9 m/s, 5 min. At the resonant frequency with the highest displacement found between 3 to 100 Hz ⁶ Random Vibration: 0.147 m/s ⁷ 30 min, 5 to 100 Hz
Earthquake Resistance (m/s)	Up to 2.5 ¹⁰	-	-
Shock	-	78.4 m/s, 15 ms	Horizontal: Incline Impact 1.22 m/s ⁸ Vertical: Rotational Edge 0.15 m ⁹
Altitude	-60x to 3,000m	-60x to 3,000m	-

Item	Operating	Not operating	In storage
Notes:			
1. - Environmental specification for operating condition should be satisfied before the storage system is powered on. Maximum temperature of 32°C should be strictly satisfied at air inlet portion.			
2. - Recommended temperature range is 21 to 24°C.			
3. - Non-operating condition includes both packing and unpacking conditions unless otherwise specified.			
4. - On shipping/storage condition, the product should be packed with factory packing.			
5. - No condensation in and around the drive should be observed under any conditions.			
6. - The above specifications of vibration are applied to all three axes.			
7. - See ASTM D999-01 The Methods for Vibration Testing of Shipping Containers.			
8. - See ASTM D5277-92 Test Method for Performing Programmed Horizontal Impacts Using an Inclined Impact Tester.			
9. - See ASTM D6055-96 Test Methods for Mechanical Handling of Unitized Loads and Large Shipping Cases and Crates.			
10. - Time is 5 seconds or less in case of the testing with device resonance point (6 to 7Hz).			

Electrical specifications

The following table lists the electrical specifications of UCP, including power requirements and power consumption. Base and expansion compute racks can each have up to six PDUs installed. Three are designed to attach to the primary power system and three to the secondary for a fully redundant configuration. If one chassis is installed in a compute rack, only two of the PDUs are required (one primary and one secondary). If two chassis are installed in a compute rack, four of the PDUs are required (two primary and two secondary). If three or four chassis are installed in a compute rack, all six of the PDUs are required.

PDU options

Requirement	US single phase	US three phase	EMEA/APAC single phase	EMEA/APAC three phase
Phase	AC, single phase 2 wire + ground	AC, three phase 3 wire + ground	AC, single phase 2 wire + ground	AC, three phase 3 wire + ground
Voltage, frequency, and amps	208 V +/-5%, 60 Hz, 50A	208 V +/-5%, 60 Hz, 50A	230 V +/-6%, 50 Hz, 60A	400 V +/-6%, 50 Hz, 32A
PDU plug type	CS8265P	CS8365P	IEC60309	IEC60309

Rack power consumption in a Brocade Ethernet configuration

Requirement	Base compute rack (with 1 chassis)	Expansion compute rack (with 1 chassis)	CB500 with 8 blades
Typical	5.968 KW	5.090 KW	4.493 KW
Maximum	7.347 KW	6.232 KW	5.485 KW

Rack power consumption in a Cisco Ethernet configuration

Requirement	Base compute rack (with 1 chassis)	Expansion compute rack (with 1 chassis)	CB500 with 8 blades
Typical	6.485 KW	5.333 KW	4.439 KW
Maximum	8.007 KW	6.549 KW	5.431 KW

Rack power consumption in a Cisco converged configuration

Requirement	Base compute rack (with 1 chassis)	CB500 with 8 blades
Typical	6.485 KW	4.439 KW
Maximum	8.007 KW	5.431 KW

Grounding

The site and equipment must meet all of the following conditions of installation for grounding.

- An insulated grounding conductor that is identical in size and insulation material and thickness to the grounded and ungrounded branch-circuit supply conductors. It must be green, with or without yellow stripes, and must be installed as a part of the branch circuit that supplies the unit or system.
- The grounding conductor described above should be grounded to earth ground at the service equipment or other acceptable building earth ground. In the case of a high rise steel-frame structure, this can be the steel frame.
- The attachment-plug receptacles in the vicinity of the unit or system must include a ground connection. The grounding conductors serving these receptacles must be connected to earth ground at the service equipment or other acceptable building earth ground such as the building frame in the case of a high-rise steel-frame structure.

Power connection

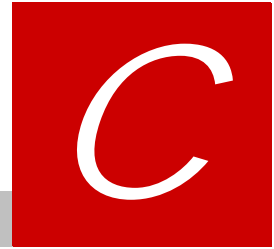
The AC power input for UCP has a single PDU structure, but power can be removed from one of the PDUs for servicing without having to shut down the entire system.



Note: Site power can be connected to the PDUs at either the top or bottom of the racks.

Heat output and air flow

The server chassis, the disk chassis, and the Ethernet switch contain front and/or rear fans to circulate air through the units from front to back. Air flows in through the front bezel to the rear of the component and exits through the perforations in the rear door. Either the front fans or the rear fans can cool the chassis by themselves. The racks do not contain fans. Airflow is from front to back.



User accounts

Please provide the actual account names and passwords that will be used in place of the default account credentials.

Type	Account	Default password	Details
AD account - SQL Server service account	ucp\svc_sql	Kum0@pur@1nS	Domain user, local admin on SQL server
AD account - UCP Director service account	ucp\svc_ucp	Kum0@pur@1nS	UCP user, sysadmin role on SQL Server, local admin on vCenter Server, local admin on UCP management server
AD account - UCP local domain admin account	ucp\administrator	Kum0@pur@1nS	Domain admin
AD account - UCP local domain account	ucp\ucpadmin	Kum0@pur@1nS	Domain user admin for the UCPManagement VM
AD account - vCenter Server service account when using VMware vCenter	ucp\svc_vcncr	Kum0@pur@1nS	Domain user, local admin on vCenter Server
AD account - SCVMM Server service account when using SCVMM	ucp\svc_scvmm	Kum0@pur@1nS	Domain user, local admin on vCenter Server
ESXi - Built-in ESXi account when using VMware vCenter	root	Kum0@pur@1nS	Used for validation testing only
HCSM, HDvM - Built-in admin account	system	manager	HDvM/HCSM Administrator
HCSM, HDvM - UCP Director user account	ucpadmin	Kum0@pur@1nS	HDvM Administrator

Type	Account	Default password	Details
Microsoft SQL Server - Built-in admin account	sa	Kum0@pur@1nS	
Microsoft SQL Server - SQL syslogin account when using VMware vCenter	svc_sso	Kum0@pur@1nS	DB owner for VMware RSA database
Microsoft SQL Server - SQL syslogin account when using VMware vCenter	svc_updatemgr	Kum0@pur@1nS	DB owner for VMware Update Manager database
SRM service account when using VMware vCenter	ucp\svc_srm	Kum0@pur@1nS	
UCP DOC service account	ucp\svc_ucpdctr	Kum0@pur@1nS	Domain User, Service Account for UCP DOC
UCPManagement VM RabbitMQ account	ucp	Kum0@pur@1nS	Used for UCPManagement VM internal AMQP services
UCPUtility Linux built-in account	root	Kum0@pur@1nS	
UCPUtility Linux SVP server account	ucpscp	Kum0apura1ns	
Windows Deployment Services account	ucp\ucp_wdsdeployment	Kum0@pur@1nS	
Windows VM built-in admin account	administrator	Kum0@pur@1nS	

For more information on how to setup and configure the Active Directory elements, see [Appendix F, "Active Directory configuration,"](#) on page 27.



Hardware accounts

Please provide the actual account names and passwords that will be used in place of the default account credentials.

Hardware element	Applicable configurations	Default account name	Default password	Permission	Description
Brocade VDX 6746 and VDX 6740 or Ethernet switches	Brocade Ethernet	admin	Br0c@d3Eth	Administrator	Factory default administrator account
		user	Br0c@d3Eth	User	Factory default user account
		ucpadmin	Kum0@pur@1nS	Administrator	Account used by UCP
		ucpsnmpuser	UCPsnmppwd123	User (monitoring only)	Account used for SNMP notifications
Cisco NX 5548 Ethernet switches	Cisco converged Cisco Ethernet	admin	C1sc0Eth	Administrator	Factory default administrator account
		user	C1sc0Eth	User	Factory default user account
		ucpadmin	Kum0@pur@1nS	Administrator	Account used by UCP
		ucpsnmpuser	UCPsnmppwd123	User (monitoring only)	Account used for SNMP notifications
Brocade FCX648	Brocade Ethernet	admin	Br0c@d3Eth	Administrator	Factory default administrator account
		ucpadmin	Kum0@pur@1nS	Administrator	Account used for UCP

Hardware element	Applicable configurations	Default account name	Default password	Permission	Description
Cisco NX 3048	Cisco Ethernet	admin	C1sc0Eth	Administrator	Factory default administrator account
		ucpadmin	Kum0@pur@1nS	Administrator	Account used for UCP
Brocade 5460 and 6510 Fibre Channel switches	Brocade Ethernet Cisco Ethernet	root	Br0c@d3FC	Root	Factory default root account
		admin	Br0c@d3FC	Administrator	Factory default administrator account
		factory	Br0c@d3FC	Factory	Factory default factory account
		user	Br0c@d3FC	User	Factory default user account
		ucpadmin	Kum0@pur@1nS	Administrator	Account used by UCP
		ucpmgmt	Kum0@pur@1nS	Administrator	Account used for vFab1 management (Brocade 6510A & 6510B only)
		ucpsnmpuser	UCPsnmppwd123	User (monitoring only)	Account used for SNMP notifications
Hitachi CB500 blade chassis	Cisco converged Brocade Ethernet Cisco Ethernet	ucpadmin	Kum0@pur@1nS	Administrator	Account used by UCP
Hitachi 520H blade server BMC	Cisco converged Brocade Ethernet Cisco Ethernet	ucpadmin	Kum0@pur@1nS	Administrator	Account used by UCP
CR210HM	Cisco converged Brocade Ethernet Cisco Ethernet	ucpadmin	Kum0@pur@1nS	Administrator	Default remote management console account



UCP Disaster Recovery requirements

UCP Disaster Recovery is an optional add on that is used to automate volume replication between two UCP installations. It enables you to use VMware SRM to set up a recovery plan and perform site failovers. You can use UCP Disaster Recovery when using SCVMM with either a Brocade Ethernet or Cisco Ethernet configuration.

This chapter explains the UCP Disaster Recovery configuration and requirements.

Planning and sizing

If you select to install UCP Disaster Recovery and automated storage-based replication, HDS personnel will work with you to define remote copy planning and design (RCP and D). This is needed to determine the resource and hardware requirements for your configuration.

At this time, HDS personnel will help you determine the compute and storage requirements of the replication site, as well as the replication technology that you can use. At the end of this engagement, you should be able to identify the:

- Compute and storage requirements of recovery site
- Distance between the 2 sites
- Choice of Replication technology

Site connectivity

UCP Disaster Recovery is an add-on to UCP DOC. HDS personnel will configure each identified UCP site for disaster recovery. Each site also needs to have connectivity to the UCP DOC installation.

Before UCP sites can be installed and configured for UCP Disaster Recovery, you need to setup and configure the Fibre Channel connectivity between them that was identified during planning and sizing. The Fibre Channel connectivity is then used for replication.

A dedicated replication link is recommended to support low latency connectivity and close to zero recovery point objective (RPO) for replication.



Active Directory configuration

This chapter explains the AD configuration that UCP needs in order to function. This can be used to assist you in preparing your existing AD infrastructure if you decide to use it, or will explain how the AD infrastructure is setup if you decide to use the AD server that is included in the management block.

The key sections of this chapter are:

- [Defining the OU structure](#)
- [Creating AD groups for vCenter](#)
- [Creating AD user accounts for vCenter](#)
- [Creating service accounts](#)

New Active Directory deployment

Using the AD server that is included in the management block ensures that the AD infrastructure is setup correctly and will function with UCP. It also helps ensure that changes to your existing AD infrastructure do not negatively impact the operation of UCP. Using the AD server that is included in the management block also means that the need for an information technology infrastructure library (ITIL) or other change management process will not be required.

The AD that is included with UCP can be integrated into your existing infrastructure either through DNS forwarding or through an AD external trust relationship.

When integrating the UCP AD server into your AD infrastructure through an external trust, you can establish a one-way outgoing trust to your production AD. This enables you to configure the groups that can administer or use the UCP system without needing to make changes to, and potentially interfere with the operation of, UCP Director.

Existing Active Directory deployment

To use your existing AD infrastructure, changes will need to be made to accommodate UCP. This is because UCP will be fully integrated into your production AD infrastructure and will be dependent on it to function correctly.

Because of this, using an existing AD infrastructure is more complex than using the AD server that is included in the UCP management block. To ensure changes are not made that negatively impact the performance of UCP Director, using an existing AD infrastructure requires strong ITIL or other change management controls to be in place. If you decide to use your existing AD infrastructure, consult with HDS personnel to ensure that your change management controls are sufficient.

If you decide to use your existing AD infrastructure, you will need to make the configuration changes specified in the following sections to make sure that the operating systems, groups, and accounts that UCP Director relies on are in place before UCP is installed:

- [Defining the OU structure](#)
- [Creating AD groups for vCenter](#)
- [Creating AD user accounts for vCenter](#)

- [Creating service accounts](#)

Defining the OU structure

Computer accounts, groups, and service accounts are created in the UCP OU. Specifically, this OU is used for the groups, computer accounts, and service accounts used to manage UCP and not the VMs that UCP supports. The following are the child OU entities that are created in the parent UCP OU:

- Computer_Accounts
- Groups
- Service_Accounts

Creating AD groups

This section lists the groups that need to be created based on the hypervisor manager that you use, as follows:

- [Creating AD groups for vCenter](#)
- [Creating AD groups for SCVMM](#)

Creating AD groups for vCenter

The following vCenter roles are created by UCP Director in vCenter server:

- UCP System Administrator — Has every permission to perform any task within UCP Director.
- UCP Network Administrator — Can perform all tasks related to networking within UCP Director.
- UCP Server Administrator — Can perform all tasks related to server management within UCP Director.
- UCP Storage Administrator — Can perform all tasks related to storage management within UCP Director.

In order to manage these roles, the following groups are added to the UCP OU in AD:

- UCP_Admins — A security group used to grant full administrative access to users in UCP. Users that are added to this group will have network, server, and storage administrator access. This group needs to be added to the vCenter UCP System Administrator role.
- UCP_NetworkAdmins — A security group used to grant network administration access to users in UCP. This group needs to be added to the vCenter UCP Network Administrator role.
- UCP_ServerAdmins admin group — A security group used to grant server administration access to users in UCP. This group needs to be added to the vCenter UCP Server Administrator role.
- UCP_StorageAdmins admin group — A security group used to grant storage administration access to users in UCP. This group needs to be added to the vCenter UCP Storage Administrator role.
- UCP_AmqpConsumers — The account specified when registering a UCP site into UCP DOC must be a member of this group. ucpadmin and svc_ucpdctr are members of this group. This group is also used by UCP DOC to read monitor data from UCP Director.

Additional groups in the production AD can be added to the corresponding vCenter roles as required.

Creating AD groups for SCVMM

The following groups are added to the UCP OU in AD:

- UCP_Admins — A security group used to grant full administrative access to users in UCP. Users that are added to this group will have network, server, and storage administrator access.
- UCP_AmqpConsumers — The account specified when registering a UCP site into UCP DOC must be a member of this group. ucpadmin and svc_ucpdctr are members of this group. This group is also used by UCP DOC to read monitor data from UCP Director.

Creating AD user accounts

This section lists the AD user accounts that need to be created based on the hypervisor manager that you use, as follows:

- [Creating AD user accounts for vCenter](#)
- [Creating AD user accounts for SCVMM](#)

Creating AD user accounts for vCenter

Use an account with domain administrator rights to the infrastructure domain to add the following user accounts in Microsoft Active Directory:

- `ucpadmin` — The UCP system administrator account. This account needs to be added to the `UCP_Admins` group and the password should be set to never expire.
- `ucpnetworkadmin` — The UCP network administrator account. This account needs to be added to the `UCP_NetworkAdmins` group and the password should be set to never expire.
- `ucpserveradmin` — The UCP server administrator account. This account needs to be added to the `UCP_ServerAdmins` group and the password should be set to never expire.
- `ucpstorageadmin` — The UCP storage administrator account. This account needs to be added to the `UCP_StorageAdmins` group and the password should be set to never expire.
- `ucp_wdsdeploy` — The UCP WDS image deployment account. This account is an administrator of the WDS VM. This account is not part of any AD group, and its password is set to never expire.

The actual names of these accounts are specified in [Appendix C, "User accounts,"](#) on page 19.

When the UCP AD is integrated with your AD, you can create additional user accounts in these security groups to control access to the resources in UCP Director.

Creating AD user accounts for SCVMM

Use an account with domain administrator rights to the infrastructure domain to add the following user accounts in Microsoft Active Directory:

- `ucpadmin` — The UCP system administrator account. This account needs to be added to the `UCP_Admins` group and the password should be set to never expire.
- `ucp_wdsdeploy` — The UCP WDS image deployment account. This account is an administrator of the WDS VM. This account is not part of any AD group, and its password is set to never expire.

The actual names of these accounts are specified in [Appendix C, “User accounts,”](#) on page 19.

When the UCP AD is integrated with your AD, you can create additional user accounts in these security groups to control access to the resources in UCP Director.

Creating service accounts

This section lists the service accounts that need to be created based on the hypervisor manager that you use, as follows:

- [Creating service accounts for vCenter](#)
- [Creating service accounts for SCVMM](#)

Creating service accounts for vCenter

The following accounts are added to the `Service_Accounts` OU in AD:

- `svc_vcctr` — The account that the vCenter server service runs under. This account needs local administrator access on the vCenter server.
- `svc_sql` — The account that the SQL server service runs under. This account needs local administrator access on the SQL server.
- `svc_ucp` — The account that the UCP server service runs under. This account needs the system administrator role on SQL VM and local administrator on the UCPManagement VM.

- `svc_ucpdcntr` — The UCP Datacenter service account. This account is an administrator of the UCPDatacenter VM including the local SQL Express instance. This account runs the internal Datacenter Director services. This account should have a password that never expires.
- `svc_srm` — The UCP SRM account. This account is an administrator of the SRM VM.

The actual names of these accounts are specified in [Appendix C, “User accounts.”](#) on page 19.

Creating service accounts for SCVMM

The following accounts are added to the Service_Accounts OU in AD:

- `svc_sql` — The account that the SQL server service runs under. This account needs local administrator access on the SQL server.
- `svc_ucp` — The account that the UCP server service runs under. This account needs the system administrator role on SQL VM and local administrator on the UCPManagement VM.
- `svc_ucpdcntr` — The UCP Datacenter service account. This account is an administrator of the UCPDatacenter VM including the local SQL Express instance. This account runs the internal Datacenter Director services. This account should have a password that never expires.
- `svc_scvmm` — The account that the SCVMM server service runs under. This account needs local administrator access on the SCVMM server.

The actual names of these accounts are specified in [Appendix C, “User accounts.”](#) on page 19.



Storage system requirements and configuration

This appendix covers the requirements and configuration for a UCP storage system.

Storage system requirements

The following Hitachi storage systems are supported:

Model	Enterprise class	UCP Disaster Recovery support
VSP	Yes	Yes
VSP G1000	Yes	Yes
HUS-VM	Yes	Yes
HUS 130	No	No
HUS 150	No	No

The following is a list of the base components that are delivered with a storage system that is part of UCP. Additional storage resources should be added to the order based on storage capacity and performance requirements.

- Front End Director (FED) port requirements
 - UCP requires a minimum of sixteen dedicated Fibre Channel ports.
 - Four ports will be used for the management servers
 - Twelve ports will be used for the compute servers.
 - The Fibre Channel ports are dedicated to the UCP system and must be connected to the UCP Fibre Channel switches as an isolated SAN in a predetermined cabling configuration for optimal availability and workload distribution. Additional ports, up to sixty-four total, can be connected to UCP.
- Storage capacity requirements
 - The storage system will have one parity group of 600GB SAS 10K disks arranged in a RAID 6D+2P configuration. This storage space is used exclusively by the UCP management block.
 - There will be at least one spare 600GB SAS 10K disk available in the storage system for the management parity group.

- Virtual volumes will be carved out to support SAN datastores for the management block. A pool ID will need to be allocated for the management pool. Host storage groups (HGs) assigned to the management ports will be created to allow the management block access to the storage with WWPN security.
- Additional capacity needs to be added to the UCP order for use in the deployment of VMs and related data storage requirements. This capacity will be in the form of additional disks, parity groups, and pools. Compute resources consume pools of storage, which can be made up of any combination of internal or external storage. Pools can either HDP or HDT. All storage used by UCP management and compute resources should be installed and configured prior to UCP installation.
- Configuration requirements
 - An administrator-level user account is created on the storage system at the Distribution Center during configuration, and is required for UCP management to enable UCP Director to provision and monitor storage on the storage system.
 - The storage system must be managed by HDvM. An instance of HDvM on the management block is created during UCP deployment and is used to manage the storage system.
 - The storage system must be configured to relay SNMP traps to UCP Director for alerts to properly function.
 - Device Manager Resource groups are used for managing resources.
- Networking requirements
 - When deployed as a UCP dedicated resource, the UCP storage system is connected directly to the 1GbE management network.
 - Routing from the UCP Element management network and the customer network is only required if the customer desires storage system management access, or SNMP messaging and alerting outside of UCP.
- Third-party backup
 - Third party backup environments are supported as long as they are connected directly to the storage system or the Fibre Channel management switches.

Storage system requirements

- Additional FED ports would be required to support the additional SAN workload.



Shared storage system requirements and configuration

This appendix covers the requirements and configuration needed to use a shared storage system.

Shared storage system requirements

The following is a list of the requirements to use an existing VSP or HUS-VM storage system with UCP.

- Front End Director (FED) port requirements:
 - UCP requires sixteen available dedicated Fibre Channel ports. Four of these ports will be used for the management servers and twelve will be connected to compute servers.
 - The dedicated Fibre Channel ports must be connected to the UCP Fibre Channel switches as an isolated SAN, and can not be connected to the production SAN.
 - Eight of the dedicated ports must come from the primary cluster on the storage system and eight of the dedicated ports must come from the secondary cluster on the storage system.
 - Additional ports, up to sixty-four total, can be connected to UCP. The first sixteen dedicated ports are connected to the Base Compute Rack, and an additional sixteen can be connected. Up to thirty-two dedicated ports can be connected to the Expansion Compute Rack, based on IO requirements. Additional ports must be added four at a time, with one pair on the primary cluster and one pair on the secondary cluster of the storage system.
- Fibre Channel cabling requirements
 - Use the 10M Fibre Optic cable harnesses to connect the FED ports to the Fibre Channel switches if the Base compute Rack and optional Expansion Compute Rack, if ordered, are colocated with the storage system (within approximately seven meters). One cable harness per set of sixteen FED ports is needed.
 - Individual Fibre Optic cable jumpers of an appropriate length to support a direct connection between the storage system and the Fibre Channel switches will need to be ordered if the Base Compute Rack and optional expansion compute rack are not colocated with the storage system. The number of cable jumpers used should match the number of ports used.

- Storage capacity requirements
 - The storage system must have one parity group of 600GB SAS 10K disks arranged in a RAID 6D+2P configuration. This storage space needs to be available for exclusive use by the UCP management servers.
 - There should be at least one spare 600GB SAS 10K disk available in the storage system for the management parity group.
 - The two management group LDEVs will be placed into an HDP pool and virtual volumes will be carved out to support SAN datastores for the management block. A pool ID will need to be allocated for the management pool. Host storage groups (HGs) assigned to the management ports will be created to allow the management block access to the storage with WWPN security.
 - Additional capacity needs to be made available for use in the deployment of VMs and related data storage requirements. This capacity will be in the form of additional disks, parity groups, and pools. Compute resources consume pools of storage, which can be made up of any combination of internal or external storage. Pools can either HDP or HDT. All storage used by UCP management and compute resources should be installed and configured prior to UCP installation.
- Configuration requirements
 - The storage system must have at least 64GB of cache memory and at least 24GB of it allocated to support Hitachi Dynamic Provisioning (HDP).
 - An administrator-level user account is required for UCP management to enable UCP Director to provision and monitor storage on the storage system.
 - The storage system must be managed by HDvM, and HDvM must be configured to relay SNMP traps to UCP Director for alerts to properly function. An existing instance of HDvM can be used or, if there is no pre-existing HDvM instance, the HDvM VM on the management block can be used. If a pre-existing HDvM instance is used, it must be upgraded to the appropriate version.
 - Two resource groups need to be defined in HDvM. The first resource group is used for management resources and the second is for compute resources.

- The management resource group must contain the four management ports, the management parity group, the LDEVs carved from the parity group, the HDP pool, the VVOLS carved from the management HDP pool, and all of the host groups for each of the management ports.
- The compute resource group must contain the non-management compute ports on the storage system, the parity groups and LDEVs allocated to the compute capacity, the pre-defined compute pools, a pre-allocated range of control unit (CU) numbers and their volume numbers pre-assigned so UCP Director can allocate virtual volumes (VVols) from the compute pools and pre-allocated host group entries on the compute ports. No other manually defined customer configuration should be created on any dedicated UCP resource on the storage system.
- Networking requirements
 - If an existing instance of HDvM is used, then routing needs to be enabled between the HDvM subnet and the UCP management subnet.
 - If HDvM is used on the management block in UCP is used, then routing needs to be enabled between the storage system management subnet and the UCP element management subnet.
 - The HCS HTTP service on TCP port 22015 needs to be open inbound to the HCS VM. For more information on firewall port exceptions, see [Appendix I, “Network firewall security,”](#) on page 43.
- Third-party backup
 - Third party backup environments are supported as long as they are connected directly to the storage system or the Fibre Channel management switches.
 - Additional FED ports would be required to support the additional SAN workload.



Network firewall security

Security administrators use firewalls to protect the network or selected components in the network from intrusion. A firewall might lie between UCP and your management environment, depending on your deployment.

For a comprehensive list of TCP and UDP ports, see the following tables.

Required firewall port exemptions

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

Source	Destination	Service name	Direction	Protocol / port
vSphere Client / Web browser	vCenter VM	HTTP & HTTPS	Inbound	TCP / 80 & 443
	vCenter VM	VSphere Web Client HTTPS	Inbound	TCP / 9443
	UCPManagement VM	HTTPS	Inbound	TCP / 443
vSphere Client	vCenter VM	VM Console	Inbound	TCP / 902 & 903
	ESXi on Compute Blades	VM Console	Inbound	TCP / 902 & 903
	ESXi on CR210	VM Console	Inbound	TCP / 902 & 903
SCVMM Console	VMM management server	VMM Console		WCF 8100
	VMM management server	VMM Console		WCF 8101 (HTTPS)

Optional firewall port exemptions

The following ports are used for UCP Director management traffic, element management traffic and system integration traffic (Ex. DNS, NTP and Active Directory). The security administrator can configure firewall port exemptions.

Scenario	Source	Destination	Direction	Protocol / port
Element Manager GUI access	Web browser	CR210HM BMC	Inbound	TCP / 80 & 443 for Server console
		CB500 SVP	Inbound	TCP / 80 & 443 for Chassis administration
		CB520 BMC	Inbound	TCP / 80 & 443 TCP / 5001 (default) for Blade console
		HCS VM	Inbound	TCP / 22015 (default) for HCS HTTP
Direct SSH access to hardware components	SSH Client	CB500 SVP	Inbound	TCP / 22 for Chassis administration
		Ethernet/ FibreChannel Switches	Inbound	TCP / 22 for Switch administration
RDP access to UCP mgmt. VMs	RDP Client	UCP mgmt. VMs	Inbound	TCP / 3389 for RDP
External email server integration	vCenter VM, UCP Management VM, HCS VM, UCP Utility VM	External Mail Server	Outbound	TCP / 25 for SMPT
External NTP server integration	All UCP elements	External NTP Server	Outbound	UDP / 123 for Sync time
External SNMP monitoring system integration	SNMP Client	All elements	Inbound	UDP / 161 for SNMP Poll
	All UCP elements	External Monitoring System	Outbound	UDP / 162 for SNMP Trap
External Syslog server integration	UCP Utility VM	External Syslog Server	Outbound	UDP / 514 for Syslog

Optional firewall port exemptions

External AD server integration	vCenter VM, UCP Management VM, HCS VM, SQL VM	External AD Server	For a list of ports refer to http://support.microsoft.com/kb/179442 Note: 137/udp, 138/udp, 139/tcp for domain trust (NetBIOS) are tested by HDS.	
UCP Datacenter Operations Center (DOC) integration	UCP DOC	UCP Management VM	Inbound	TCP / 5671 for AMQP
VMware SRM integration	SRM VM	SRM VM (Remote Site)	Outbound	UDP / 10000, UDP / 10001 for CCI
	SRM VM (Remote Site)	SRM VM	Inbound	UDP / 10000, UDP / 10001 for CCI
	SRM VM	vCenter VM (Remote Site)	Outbound	TCP / 80, 443, 902 for SRM
	SRM VM (Remote Site)	vCenter VM	Inbound	TCP / 80, 443, 902 for SRM
External DNS	UCP mgmt. VMs	External DNS server	Outbound	UDP / 53 for DNS Lookups
vCenter Single Sign-On	Web browser	vCenter VM	Inbound	TCP / 7444 for vSphere Web Client HTTPS

When UCP is configured to use an existing storage system, HDvM is likely already installed. HTnM is also required and may be installed either in the production environment or within the UCP management stack. For integration with UCP, the following ports must be opened.

Scenario	Source	Destination	Direction	Protocol / port
External HDvM and HTnM server integration with UCP	UCP Management VM	External HDvM server	Outbound	TCP / 2001 for HCS HTTP
	UCP Management VM	External HTnM Server	Outbound	TCP / 5985, 5986 for Remote PowerShell

Scenario	Source	Destination	Direction	Protocol / port
External HDvM integration with internal HTnM	UCP Management VM	External HDvM Server	Outbound	TCP /2001 for HCS HTTP
	HTnM VM inside UCP	External HDvM server	Outbound	TCP / 22015 for HTTP, 22016(default) for HTTPS
	HTnM VM inside UCP	External HDvM server	Outbound	TCP / 24230(default) for HCS HTTP
	External HDvM server	HTnM VM inside UCP	Inbound	TCP /22286, 22900-22999
Existing storage	External (existing) storage system	UCP Management VM	Inbound	UDP / 162 for SNMP Traps
	External (existing) storage system	UCP Management VM	Inbound	UDP / 514 for Syslog

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