



Hitachi Content Platform

Installing an HCP RAIN System — Final On-site Setup

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Preface

This book is the final on-site setup guide for **Hitachi Content Platform (HCP)** systems that run on a redundant array of independent nodes (**RAIN**). It provides all the information you need to deploy an assembled and configured HCP RAIN system at your site. It also contains instructions for assembling the components of an HCP RAIN system that was ordered without a rack. Additionally, it explains how to configure Hi-Track[®] to monitor the nodes in the HCP system.

Intended audience

This book is intended for the people at a customer site who are responsible for the on-site setup of an HCP RAIN system. It assumes you have experience working with computer hardware, as well as a basic understanding of HCP systems.

Product version

This book applies to release 7.1 of HCP.

Related documents

The following documents contain additional information about Hitachi Content Platform:

- *Administering HCP* — This book explains how to use an HCP system to monitor and manage a digital object repository. It discusses the capabilities of the system, as well as its hardware and software components. The book presents both the concepts and instructions you need to configure the system, including creating the tenants that administer access to the repository. It also covers the processes that maintain the integrity and security of the repository contents.

- *Managing a Tenant and Its Namespaces* — This book contains complete information for managing the HCP tenants and namespaces created in an HCP system. It provides instructions for creating namespaces, setting up user accounts, configuring the protocols that allow access to namespaces, managing search and indexing, and downloading installation files for HCP Data Migrator. It also explains how to work with retention classes and the privileged delete functionality.
- *Managing the Default Tenant and Namespace* — This book contains complete information for managing the default tenant and namespace in an HCP system. It provides instructions for changing tenant and namespace settings, configuring the protocols that allow access to the namespace, managing search and indexing, and downloading installation files for HCP Data Migrator. It also explains how to work with retention classes and the privileged delete functionality.
- *Replicating Tenants and Namespaces* — This book covers all aspects of tenant and namespace replication. Replication is the process of keeping selected tenants and namespaces in two or more HCP systems in sync with each other to ensure data availability and enable disaster recovery. The book describes how replication works, contains instructions for working with replication links, and explains how to manage and monitor the replication process.
- *HCP Management API Reference* — This book contains the information you need to use the HCP management API. This RESTful HTTP API enables you to create and manage tenants and namespaces programmatically. The book explains how to use the API to access an HCP system, specify resources, and update and retrieve resource properties.
- *Using a Namespace* — This book describes the properties of objects in HCP namespaces. It provides instructions for accessing namespaces by using the HTTP, WebDAV, CIFS, and NFS protocols for the purpose of storing, retrieving, and deleting objects, as well as changing object metadata such as retention and shred settings. It also explains how to manage namespace content and view namespace information in the Namespace Browser.
- *Using the HCP HS3 API* — This book contains the information you need to use the HCP HS3 API. This S3™-compatible, RESTful, HTTP-based API enables you to work with buckets and objects in HCP. The book introduces the HCP concepts you need to understand in order to use HS3 effectively and contains instructions and examples for each of the bucket and object operations you can perform with HS3.

- *Using the HCP OpenStack Swift API* — This book contains the information you need to use the HCP OpenStack Swift API. This S3™-compatible, RESTful, HTTP-based API enables you to work with containers and objects in HCP. The book introduces the HCP concepts you need to understand in order to use HSwift effectively and contains instructions and examples for each of the container and object operations you can perform with HSwift.
- *Using the Default Namespace* — This book describes the file system HCP uses to present the contents of the default namespace. It provides instructions for accessing the namespace by using the HCP-supported protocols for the purpose of storing, retrieving, and deleting objects, as well as changing object metadata such as retention and shred settings.
- *HCP Metadata Query API Reference* — This book describes the HCP metadata query API. This RESTful HTTP API enables you to query namespaces for objects that satisfy criteria you specify. The book explains how to construct and perform queries and describes query results. It also contains several examples, which you can use as models for your own queries.
- *Searching Namespaces* — This book describes the HCP Search Console (also called the Metadata Query Engine Console). It explains how to use the Console to search namespaces for objects that satisfy criteria you specify. It also explains how to manage and manipulate queries and search results. The book contains many examples, which you can use as models for your own searches.
- *Using HCP Data Migrator* — This book contains the information you need to install and use HCP Data Migrator (HCP-DM), a utility that works with HCP. This utility enables you to copy data between local file systems, namespaces in HCP, and earlier HCAP archives. It also supports bulk delete operations and bulk operations to change object metadata. Additionally, it supports associating custom metadata and ACLs with individual objects. The book describes both the interactive window-based interface and the set of command-line tools included in HCP-DM.
- *Installing an HCP System* — This book provides the information you need to install the software for a new HCP system. It explains what you need to know to successfully configure the system and contains step-by-step instructions for the installation procedure.

- *Deploying an HCP-VM System* — This book contains all the information you need to install and configure an HCP-VM system. The book also includes requirements and guidelines for configuring the VMWare® environment in which the system is installed.
- *Third-Party Licenses and Copyrights* — This book contains copyright and license information for third-party software distributed with or embedded in HCP.
- *HCP-DM Third-Party Licenses and Copyrights* — This book contains copyright and license information for third-party software distributed with or embedded in HCP Data Migrator.
- *Installing an HCP SAIN System — Final On-site Setup* — This book contains instructions for deploying an assembled and configured single-rack HCP SAIN system at a customer site. It explains how to make the necessary physical connections and reconfigure the system for the customer computing environment. It also contains instructions for configuring Hi-Track Monitor to monitor the nodes in an HCP system.

Getting help

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

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



Note: If you purchased HCP from a third party, please contact your authorized service provider.

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. All comments become the property of Hitachi Data Systems.

Thank you!

HCP RAIN system overview

Hitachi Content Platform (HCP) is the distributed, fixed-content, data storage system from Hitachi Data Systems® (HDS). An HCP system consists of both hardware and software.

An HCP RAIN system is delivered to a customer site as either a racked appliance or unracked components. In either case, all the components are preconfigured, and the HCP software is already installed. However, once the system is delivered and, for unracked components, assembled, it needs some final on-site setup.

This chapter contains:

- An introduction to HCP
- A description of the hardware architecture of HCP RAIN systems
- An overview of the final setup activities required to make your HCP RAIN system operational at your site



Note: In this book, a system that delivered in a rack is referred to as **preassembled system**. A system that delivered without a rack is referred to as a **rackless system**, even though, when assembled, it includes a rack.

Introduction to Hitachi Content Platform

HCP is a combination of hardware and software that provides an object-based data storage environment. An HCP repository stores all types of data, from simple text files to medical images to multigigabyte database images.

HCP provides easy access to the repository for adding, retrieving, and, when allowed, deleting the stored data. HCP uses write-once, read-many (WORM) storage technology and a variety of policies and internal processes to ensure the integrity of the stored data and the efficient use of storage capacity.

HCP nodes

An HCP system includes multiple servers, called **nodes**, that are networked together. Nodes are the essential part of an HCP system. They manage the data that resides in the system storage.

Each node runs the complete HCP software. HCP runtime operations are distributed among the nodes. If a node fails, the system adapts by redirecting processing to other nodes.

HCP RAIN and SAIN systems

HDS offers three HCP products: HCP 300, HCP 500, and HCP-VM:

- HCP 300 systems run on a redundant array of independent nodes (RAIN) and use storage that's internal to those nodes.
- HCP 500 systems run on a SAN-attached array of independent nodes (SAIN) and use storage in fibre channel SAN arrays. SAN stands for storage area network.

To optimize performance for certain usage patterns, nodes in an HCP 500 system can have internal storage in addition to being connected to SAN storage.

- HCP-VM systems run on virtual machines in a VMware® environment.

HCP SAIN systems support larger repositories than HCP RAIN systems.

HCP System Management Console

HCP includes a web application called the **System Management Console**. Your HCP system administrator uses this Console to configure, monitor, and manage the system. The Console reports certain hardware problems as they occur, so the system administrator can take appropriate action to initiate repairs.

HCP RAIN system hardware

HCP RAIN system hardware consists of:

- Nodes with internal storage (a typical starter system has four nodes). The nodes are numbered from 101 through 104 for a four-node system. The node numbers increase by one for each additional node.

The nodes in an HCP RAIN system are Hitachi Compute Rack 220S (CR 220S) servers.

- Ethernet switches and cables for networking. The switches in an HCP RAIN system are Dell PowerConnect 2824 switches.
- Additional infrastructure items such as a rack and power distribution units (PDUs).

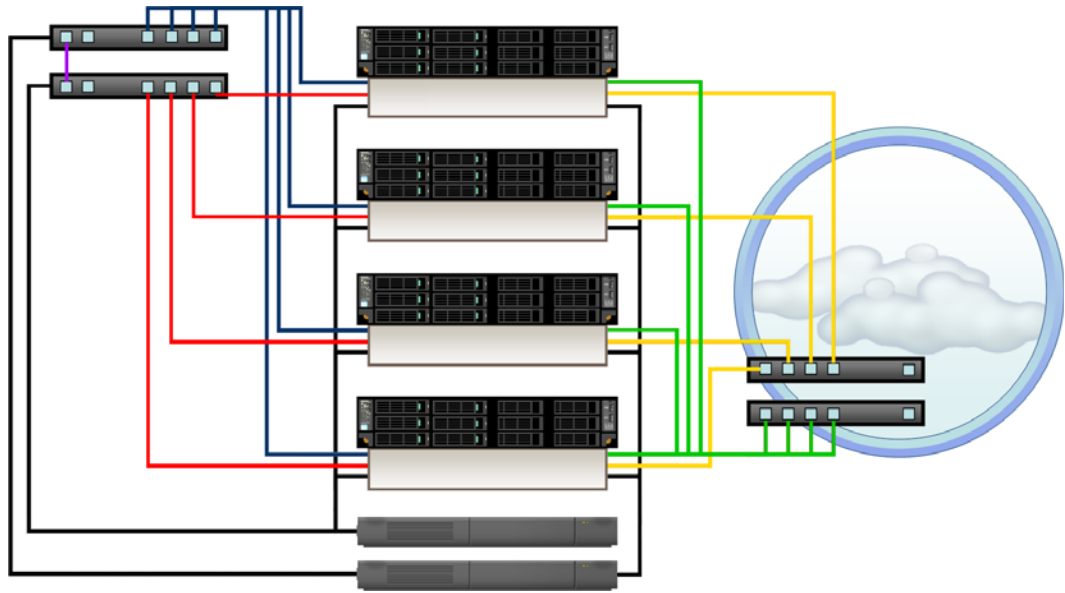
An HCP system uses both back-end and front-end networks. The isolated back-end network connects the HCP nodes to each other through two redundant Ethernet switches. Each node has a pair of bonded Ethernet ports for connecting to these switches.

Each node is configured with an additional pair of bonded Ethernet ports that allows external applications to access the system. The recommended setup includes either two independent Ethernet switches that connect these ports to the front-end network (that is, your corporate network) or one Ethernet switch with both HCP and the switch configured for active-active bonding

As delivered, an HCP RAIN system always includes the Ethernet switches and cables that establish the back-end network. If the system is ordered with the front-end connection package, it also includes the Ethernet switches and cables used for the front-end network. In this case, you need to supply only two cables to connect these switches to switches in your corporate network. If the system is ordered without the front-end connection package, you need to supply two front-end switches and all the cables needed to connect each node to those switches.

For information on the switches and cables you need to supply, see [“Additional components”](#) on page 10.

The figure below shows the architecture of an HCP RAIN system. This system has four nodes, two back-end switches (on the left), and two front-end switches (on the right).




The table below describes the cables in this figure.

Cable	Connects from	Connects to
Red and blue Ethernet	Back-end network interface cards (NICs) in each node	Back-end switches
Green and yellow Ethernet	Front-end NICs in each node	Front-end switches
Purple Ethernet	Back-end switches	Each other
Black power	Each node	Two PDUs
	Each back-end switch	One PDU

Final on-site setup activities

An HCP RAIN system arrives with the HCP software already installed and configured with various default settings.

To get the system up and running, you perform the activities outlined in the table below.

Step	Activity	More information
1	Verify that your site is ready for the HCP system to be installed.	Chapter 2, "Site preparation," on page 7
2	For a preassembled system, remove the racked HCP system from the packing crate and position it in your data center.	N/A
	For a rackless system, assemble the HCP system components in a rack that you supply.	Chapter 3, "Assembling rackless components," on page 11
3	Connect the HCP PDUs to your power sources.	"Connecting to the power sources" on page 36
4	<p>Connect the HCP system to your corporate network.</p> <p> Note: If the preconfigured front-end IP addresses do not work for your environment, perform step 6 below before performing this step.</p>	"Connecting to your corporate network" on page 36
5	<p>Configure the HCP system as a subdomain in the DNS. Be sure to use your site-specific node IP addresses and not the default IP addresses the system arrives with.</p> <p>If you don't use DNS at your site, skip this step.</p>	<i>Administering HCP</i>
6	Reconfigure the HCP system for your environment.	Chapter 5, "Reconfiguring the HCP system for your site," on page 39
7	Optionally, configure Hi-Track Monitor to monitor the HCP nodes.	Chapter 6, "Configuring HCP monitoring with Hi-Track Monitor," on page 53

Site preparation

Before an HCP RAIN system can be deployed, you need to ensure that the intended location for the system meets certain environmental requirements. If the location does not already meet these requirements, you should wait to deploy the system until the necessary changes have been made.

You also need to have on hand the additional components that enable you to complete the connections between the HCP system and your environment.

This chapter describes the conditions and components required for the successful installation and operation of an HCP RAIN system.

Environmental requirements

The table below shows the size and weight of an HCP RAIN system.

Property		Value
External dimensions of a preassembled system, which comes in a 42U rack		Height: 78.8" (2002 mm) Width: 23.7" (602 mm) Depth: 41.2" (1046 mm)
Weight	*Rack	Approximately 310 lbs (140.61 kg)
	Each CR 220S server with six 500GB disks	Approximately 49.4 lbs (22.4 kg)
	Each CR 220S server with twelve 500GB disks	Approximately 59.3 lbs (26.9 kg)
	Each CR 220S server with six 1TB disks	Approximately 49.4 lbs (22.4 kg)
	Each CR 220S server with twelve 1TB disks	Approximately 59.3 lbs (26.9 kg)
	Each CR 220S server with six 2TB disks	Approximately 50.3 lbs (22.8 kg)
	Each CR 220S server with twelve 2TB disks	Approximately 61.1 lbs (27.7 kg)
	Each CR 220S server with six 3TB disks	Approximately 50.3 lbs (22.8 kg)
	Each CR 220S server with twelve 3TB disks	Approximately 61.1 lbs (27.7 kg)
	Two back-end Ethernet switches	Approximately 14 lbs (6.34 kg)
	Two front-end Ethernet switches (only with the front-end connection package)	Approximately 14 lbs (6.34 kg)
	*Each PDU (four total)	Approximately 12 lbs (5.44 kg)
	Four back-end Ethernet cable harnesses	Approximately 40 lbs (18.14 kg)
	Four front-end Ethernet cable harnesses (only with the front-end connection package)	Approximately 40 lbs (18.14 kg)
*These components are not shipped with a rackless system. You need to account for the weight of the components you supply in their place.		

Your data center must be able to compensate for the component characteristics shown in the table below.

Component	Max. power draw in watts	Max. total current draw in amps	Max. cooling in BTUs/hour
Each CR 220S server with six 500GB disks	370.8	2.2	1,300.2
Each CR 220S server with twelve 500GB disks	412.3	2.5	1,445.9
Each CR 220S server with six 1TB disks	370.8	2.2	1,300.2
Each CR 220S server with twelve 1TB disks	412.3	2.5	1,445.9
Each CR 220S server with six 2TB disks	386.8	2.3	1,356.3
Each CR 220S server with twelve 2TB disks	444.3	2.7	1,558.0
Each CR 220S server with six 3TB disks	390.0	2.3	1,367.5
Each CR 220S server with twelve 3TB disks	450.7	2.7	1,580.5
Each Ethernet switch	110.0	0.5	375.3

All measurements in the table above are at 200V.

For power, an HCP RAIN system requires one 220V, 30-amp circuit for each PDU. Each circuit must present the applicable receptacle for the location for which the system was ordered, as indicated in the table below.

Location	Receptacle
United States	NEMA L6-30
EMEA/APAC	IEC 309
Australia	AS 3112

Additional components

To connect an HCP RAIN system to your corporate network, you need to provide:

- If the system includes the front-end connection package:
 - One open port in each of two Ethernet switches in your corporate network. The switches must have a port speed of at least one Gb/s.
 - Two Cat 6 Ethernet cables.
- If the system does not include the front-end connection package:
 - One or two switches in your corporate network, each with a port speed of at least one Gb/s. If you're using a single switch, the switch must have at least twice as many open ports as the number of nodes in the system and must be configured for active/active bonding. If you're using two switches, each switch must have at least as many open ports as the number of nodes in the system.
 - For each node, two Cat 6 Ethernet cables. If possible, half these cables should be one color and half another color. Also, if possible, the cables should be colors other than red and blue.

Assembling rackless components

The components of a rackless HCP RAIN system are delivered configured but unassembled. You need to provide some additional components and assemble the system at your site. This chapter provides instructions for doing this.

Components that come with a rackless system

For a rackless HCP RAIN system, these components are shipped to your site:

- The required numbers of nodes, with the HCP software already installed.
- Two Ethernet switches for the back-end network.
- Four Ethernet cable harnesses for the back-end network — two red and two blue.
- Power cords for the nodes and back-end switches — two per node and one per switch.
- A purple Ethernet cable for connecting the back-end switches to each other.
- Two perforated blanking plates for covering the back-end switches.
- One serial number label. This label is taped to the top of the first node you mount when you assemble the system.
- If the system includes the front-end connection package:
 - Two Ethernet switches for the front-end network
 - Four Ethernet cable harnesses for the front-end network — two red and two blue
 - Two power cords for the front-end switches
 - Two perforated blanking plates for covering the front-end switches
- The license-key packet. If the HCP software was installed with encryption enabled, this packet also includes the Encryption Key form.



Caution: Store the Encryption Key form in a secure location. The key recorded on this form is not retrievable through the HCP System Management Console or management API. Loss of this key will most likely result in unrecoverable data in the case of catastrophic system failure.

Components that you supply

To assemble the system, you need to supply these additional components:

- A rack that meets these requirements:
 - It must be a 19-inch (482.6 mm) EIA-310-E-compliant four-post rack with square or unthreaded round holes.
 - It must support a rail depth between 660.4 and 1,430.4 mm.
 - If it has square holes, it must have a square-hole adjustment range of 692 to 756 mm.
 - It must have clearance of at least 45 inches (1,143 mm) at the front.
 - It must have a sufficient number of contiguous empty rack units to accommodate:
 - The number of nodes in the system. Each node occupies two rack units.
 - The two back-end Ethernet switches and, if the system includes the front-end connection package, two front-end Ethernet switches. Each switch occupies one rack unit.
- PDUs. The number of PDUs required depends on the number of nodes in the system and on whether the system includes the front-end connection package:
 - You need at least two PDUs for:
 - A system that includes fewer than twelve nodes and the front-end connection package
 - A system that includes twelve or fewer nodes and does not include the front-end connection package
 - You need at least four PDUs for:
 - A system that includes twelve nodes and the front-end connection package
 - A system that includes more than twelve nodes with or without the front-end connection package

- Velcro straps and/or cable ties for bundling and securing cables.
- Screws and cage nuts for installing the perforated blanking plates.

Hardware assembly procedure

To assemble the HCP RAIN system, follow the steps outlined in the table below.

Step	Activity	More information
1	Prepare the rack for installation of the HCP system components.	“Step 1: Prepare the rack” on page 16
2	Install the PDUs in the rack.	“Step 2: Install the PDUs” on page 16
3	Assemble the server rails and install them in the rack.	“Step 3: Install the server rails” on page 16
4	Mount the servers in the rack.	“Step 4: Mount the servers” on page 19
5	Connect the servers to the PDUs.	“Step 5: Connect the servers to the PDUs” on page 21
6	Mount the Ethernet switches in the rack.	“Step 6: Mount the Ethernet switches” on page 22
7	Connect the Ethernet switches to the PDUs.	“Step 7: Connect the switches to the PDUs” on page 25
8	Install the perforated blanking plates in front of the switches.	“Step 8: Install the perforated blanking plates” on page 25
9	Install the Ethernet cable harnesses for the back-end network.	“Step 9: Install the back-end Ethernet cable harnesses” on page 26
10	Connect the back-end Ethernet cables to the back-end switches.	“Step 10: Connect the back-end Ethernet cables to the back-end switches” on page 27
11	Connect the back-end Ethernet cables to the servers.	“Step 11: Connect the back-end Ethernet cables to the servers” on page 28
12	If the HCP system includes the front-end connection package, install the Ethernet cable harnesses for the front-end network and connect them to the front-end switches and the servers	“Step 12 (conditional): Install and connect the front-end Ethernet cable harnesses” on page 29
13	Reassemble the rack.	“Step 13: Reassemble the rack” on page 33

Server and switch placement

HCP RAIN system nodes are Hitachi CR 220S servers. Each server occupies two rack units.

The back-end and, if included, front-end switches are Dell PowerConnect 2824 Ethernet switches. Each switch occupies one rack unit.

When assembling the system, you need to arrange the servers and switches in the rack in a specific order.

The top of each server has a label that indicates the relative order of the server in the rack. The order is given as an integer followed by a rack unit (for example, 3/U05). The rack units indicate order and may not correlate with the actual units in which you mount the servers.

Within the empty rack units:

1. Mount the first twelve servers (or all the servers if the system includes fewer than twelve) starting with the server labeled 1/U01 in the bottom two empty rack units, the server labeled 2/U03 in the two rack units above those, and so on. Do not skip any rack units.
2. Mount the switches for the back-end network directly above those servers.
3. If the system includes the front-end connection package, mount the switches for the front-end network directly above the back-end switches.
4. If the system includes more than twelve servers, mount the additional servers directly above the switches.

Power cords

Each Ethernet switch comes with one power cord. These power cords provided with the switches require PDUs with NEMA 5-15-P receptacles. The CR 220S servers do not come with their own power cords.

The separate power cords that are shipped with the system for the servers and Ethernet switches require PDUs with C14 IEC receptacles.

If your PDUs are not compatible with either of these types of power cords, you need to provide alternative power cords as applicable. The power cords you provide must have a C13 IEC plug at the end that connects to the server or switch.

Step 1: Prepare the rack

Tools and accessories you need

To assemble an HCP RAIN system, you need these tools:

- #2 Phillips screwdriver
- Cage-nut tool
- Wire cutter for trimming any cable ties you use



Tip: Assembling the server rails is easiest with a magnetic screwdriver.

Step 1: Prepare the rack

To facilitate the system assembly, remove the doors and sides from the rack.

Step 2: Install the PDUs

If the PDUs are not already installed in the rack, install them now. Attach them to the vertical rails at the back of the rack. If you're using two PDUs, attach one to each side of the rack. If you're using four, attach two to each side.

Step 3: Install the server rails

For rack mounting, each server comes with two rail units, one for each side. Each rail unit consists of a slide rail that you install in the rack and an inner rail that you attach to the server.



The rails are marked to indicate their positions as viewed from the front of the rack:

- “Left” or “Right” is stamped into the metal on the outside of the inner rail at the front and on the top of the slide rail at the back.
- “L” or “R” with an up arrow is stamped on the outside of the slide rail at the front.

To install the rails for a server, for each rail, follow the steps outlined in the table below.

Step	Activity	More information
1	From one of the rail kits, separate the inner rail from the slide rail.	“Step 1: Separate the inner rail from the slide rail” below
2	Install the slide rail in the rack.	“Step 2: Install the slide rail in the rack” on page 18



Note: When installing the rails for more than twelve servers, remember to skip the required number of rack units for the switches. For information on this, see [“Server and switch placement”](#) on page 15.

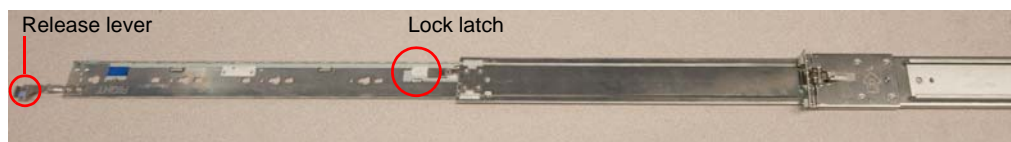


Tip: If the HCP system includes more than twelve servers, first install the rails for and mount the bottom twelve servers, then mount all the switches, and finally, mount the remaining servers.

Step 1: Separate the inner rail from the slide rail

To separate the inner rail from a slide rail:

1. Press the metal release lever with the blue dot at the front of the inner rail and slide the rail out until it stops. This exposes the white lock latch on the inner rail.



2. Pull the white lock latch forward to disengage the inner rail. Then pull the inner rail completely out of the slide rail.
3. Lift the lock lever on the inside of the slide rail and move the slider into the rail. The lock lever is marked with a blue decal and an arrow showing the direction in which to move the lever.

Step 3: Install the server rails

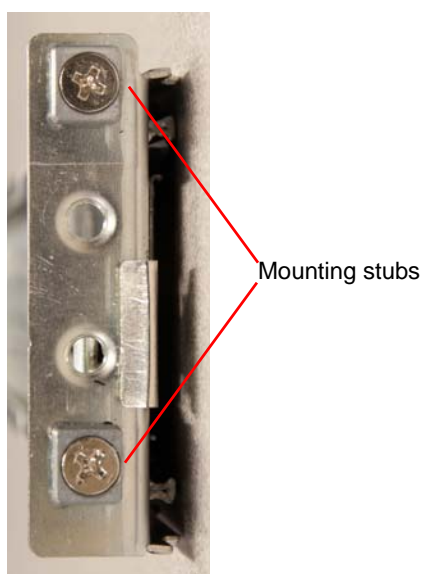


4. Set the inner rail aside. This is the part that you attach to the server in ["Step 2: Attach the inner rails to the server"](#) on page 20.

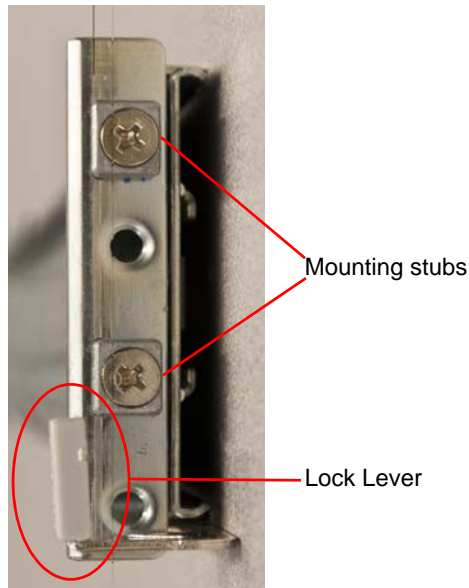
Step 2: Install the slide rail in the rack

You install the slide rail between the two rack units in which the server will be mounted. To install the rail:

1. Fit the square mounting stubs on the front of the slide rail into two holes in the front cage rail on the side of the rack (when viewed from the front) marked on the rail. Align the server rail such that:
 - The slider is facing in
 - The top mounting stub fits into the bottom hole of the upper rack unit and the bottom mounting stub fits into the bottom hole of the lower rack unit



2. Release the lock lever at the rear of the slide rail by pressing it toward the rail.



3. Align the rear mounting stubs such that the top stub aligns with the bottom hole of the upper rack unit and the bottom stub aligns with the middle hole of the lower rack unit.
4. Fit the mounting stubs into the holes by pulling forward on the stub bracket while pressing the lock lever toward the rail.
5. Release the lock lever. Ensure that the lever clicks into place.

Step 4: Mount the servers

The photograph below shows the front of a Hitachi CR 220S server. The power switch is the topmost LED switch in the upper left corner of the server. The other LED switches are used for maintenance.

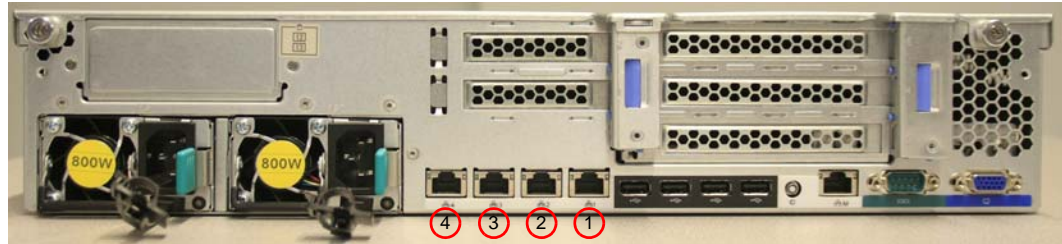


Step 4: Mount the servers

The back of a CR 220S server has five Ethernet ports, four in a row and a separate maintenance port to the right. The four ports are labeled 1 (one) through 4 starting from the right. The maintenance port is labeled M.

The back of the server also has two sockets for power cords on the left plus four USB ports, a serial interface connector, and a VGA connector.

The photograph below shows the back of a Hitachi CR 220S server.



To mount a server, follow the steps outlined in the table below.

Step	Activity	More information
1	Prepare the server to be mounted.	“Step 1: Prepare the server” below
2	Attach the inner rails to the sides of the server.	“Step 2: Attach the inner rails to the server” on page 20
3	Mount the server in the rack.	“Step 3: Mount the server in the rack” on page 21



Important: Be sure to mount the servers in the order indicated by the attached labels. For information on this, see [“Server and switch placement”](#) on page 15.

Step 1: Prepare the server

To prepare the server to be mounted, remove the label that indicates the order in which to mount the server.

If you are installing the first server in a rackless system, remove the system serial number label from the top of the server and place it in a safe location that will be accessible to service personnel.

Step 2: Attach the inner rails to the server

You attach each inner rail to the side of the server (when viewed from the front) that corresponds to the side stamped into the rail.

To attach the rails:

1. Fit the stubs on the side of the server into the guide holes in the rail.



2. Slide the rail toward the rear of the server. Ensure that the rail locks into place.
3. Repeat steps 1 and 2 with the remaining inner rail on the other side of the server.

Step 3: Mount the server in the rack

To mount the server in the rack:

1. Optionally, slide the slide rails out until they lock.
2. On each side of the server, align the inner rails on the server with the slide rails in the rack.
3. While supporting the server from the bottom, gently slide the inner rails into the slide rails as far as possible. If you did not perform step 1, the server is now locked into place.
4. If you performed step 1, pull the blue locking latches on the inner rails toward you and gently slide the server all the way into the rack. The server is now locked into place.



Note: To avoid damaging the slide rails, be careful not to apply too much force while sliding the server.

Step 5: Connect the servers to the PDUs

Each server connects to two PDUs — one on the left side of the rack and one on the right. You can connect up to twelve servers to one PDU, with no more than six servers per circuit.

Step 6: Mount the Ethernet switches

When connecting the servers to the PDUs, start with the bottom server and continue up the rack. If you're using more than two PDUs, use the bottom one on either side first. Connect the first server to the bottommost of the receptacles you plan to use and continue up the PDUs. The receptacles you use do not need to be contiguous.

Reserve one receptacle at the top of the bottom (or only) PDU on either side for the back-end switch connections. If the HCP system includes the front-end connection package and has:

- Twelve or fewer servers, reserve a second receptacle at the top of the bottom (or only) PDU on either side for the front-end switch connections
- More than twelve servers, reserve one receptacle at the bottom of the top PDU on either side for the front-end switch connections

What you need

To connect the servers to the PDUs, you need two power cords for each server. For information on the type of power cords you need, see [“Power cords”](#) on page 15.

What you do

To connect the servers to the PDUs, for each server:

1. Connect a power cord from the left socket in the server to the applicable PDU on the left side of the rack.
2. Connect a power cord from the right socket in the server to the applicable PDU on the right side of the rack.

Step 6: Mount the Ethernet switches

An HCP RAIN system uses two Ethernet switches for the back-end network. If the system includes the front-end connection package, it uses two more of the same type of switch for the front-end network. For information on where in the rack to put the switches, see [“Server and switch placement”](#) on page 15.

The front of each switch has 24 ports in two rows of 12. The ports are numbered starting from the top left. The odd-numbered ports are the ones in the top row. The even-numbered ports are the ones in the bottom row.

The back of each switch has the socket for the power cord.

The photographs below show the front and back of a Dell 2824 Ethernet switch.



What you need

To mount the switches in the rack, you need:

- The mounting hardware that comes with each switch, which includes brackets, screws, and cage nuts.

You need only the larger two of the four brackets included in this hardware. Of the silver screws, you need only the ones with the bushings and washers. You need all eight of the small black screws.

- A #2 Phillips screwdriver.
- A cage-nut tool.
- The purple Ethernet cable.

What you do

To mount an Ethernet switch in the rack:

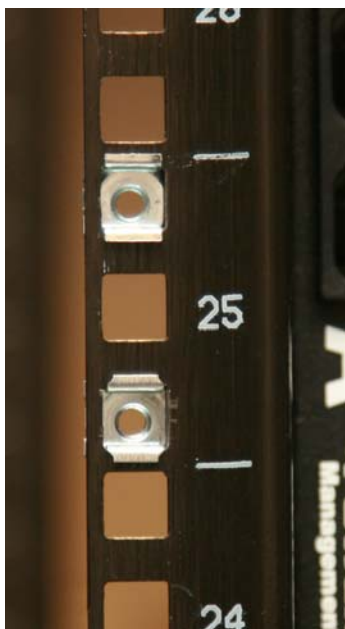
1. Attach one mounting bracket to each side of the switch. To attach a mounting bracket:
 - a. Position the bracket so that the side with the four holes lines up with the four holes on the side of the switch and the side with the two holes is flush with the front of the switch.

Step 6: Mount the Ethernet switches

- b. Use four of the small black screws to attach the bracket to the switch.



2. On the cage rails, clip the four cage nuts to the top and bottom holes in the rack unit in which you're mounting the switch (two on the left and two on the right).



3. Position the switch in the rack so that the two holes in the bracket on each side of the switch align with the holes with the cage nuts.
4. Using two of the silver screws on each side, attach the switch to the cage rails.

After mounting both back-end Ethernet switches, use the purple Ethernet cable to connect the two switches to each other. Use port number 24 in each switch.

Step 7: Connect the switches to the PDUs

Each Ethernet switch connects to one PDU. In the PDUs, you use the receptacles you reserved in [“Step 5: Connect the servers to the PDUs”](#) on page 21. If you reserved two receptacles at the top of the bottom (or only) PDUs, use the lower receptacle on each side for the back-end switches and the upper one for the front-end switches.

What you need

To connect the switches to the PDUs, you need one power cord for each switch. For information on the type of power cords you need, see [“Power cords”](#) on page 15.

What you do

To connect the switches to the PDUs:

1. Connect a power cord from the bottom back-end switch to the applicable PDU on the right side of the rack.
2. Connect a power cord from the top back-end switch to the applicable PDU on the left side of the rack.
3. If the system includes the front-end connection package:
 - a. Connect a power cord from the bottom front-end switch to the applicable PDU on the right side of the rack.
 - b. Connect a power cord from the top front-end switch to the applicable PDU on the left side of the rack.

Step 8: Install the perforated blanking plates

One perforated blanking plate covers each rack unit where an Ethernet switch is installed.

What you need

To install the perforated blanking plates in the rack, you need:

- For each blanking plate, two screws and two cage nuts
- A #2 Phillips screwdriver

Step 9: Install the back-end Ethernet cable harnesses

- A cage-nut tool

What you do

To install a perforated blanking plate in the rack:

1. On each of the front cage rails, clip one of the cage nuts to the middle hole for the applicable rack unit.
2. Using two of the screws, secure the blanking plate to the rack.

Step 9: Install the back-end Ethernet cable harnesses

Each server in an HCP RAIN system is connected to both back-end Ethernet switches. To make these connections, the system includes blue and red cable harnesses. The blue cables connect to one back-end switch; the red cables to the other back-end switch.

If the HCP system has twelve or fewer servers, you need to install one blue and one red cable harness for the back-end network. If the system has more than twelve servers, you need to install two blue and two red cable harnesses for the back-end network.

The exposed ends of the cables are different lengths at different ends of the harness. The longer ends connect to the servers; the shorter ends to the switches.

What you need

To install the back-end Ethernet cable harnesses in the rack, you need Velcro straps and/or cable ties.

What you do

To install the back-end Ethernet cable harnesses in the rack:

1. Using as many Velcro straps and/or cable ties as needed, attach one blue cable harness and one red cable harness to the left side of the rack (when viewed from the rear) next to the servers that are below the switches.

Orient the harnesses so that the shorter exposed cable ends are at the top and can easily reach the back-end switches.

2. If the system includes more than twelve servers, attach the other blue and red cable harnesses to the rack above the first one.

Orient the harnesses so that the shorter exposed cable ends are at the bottom and can easily reach the back-end switches.

Step 10: Connect the back-end Ethernet cables to the back-end switches

The red back-end Ethernet cables connect to the top back-end switch. The blue back-end Ethernet cables connect to the bottom back-end switch.

Each cable harness contains 13 cables. Twelve of the cables are labeled at both ends with the numbers 01 through 12. One cable is labeled at both ends with the word *EXTRA*. All twelve numbered cables from each bottom harness and the first eleven cables from each top harness, if present, connect to the switches, even if they are not connected to servers at the other end.

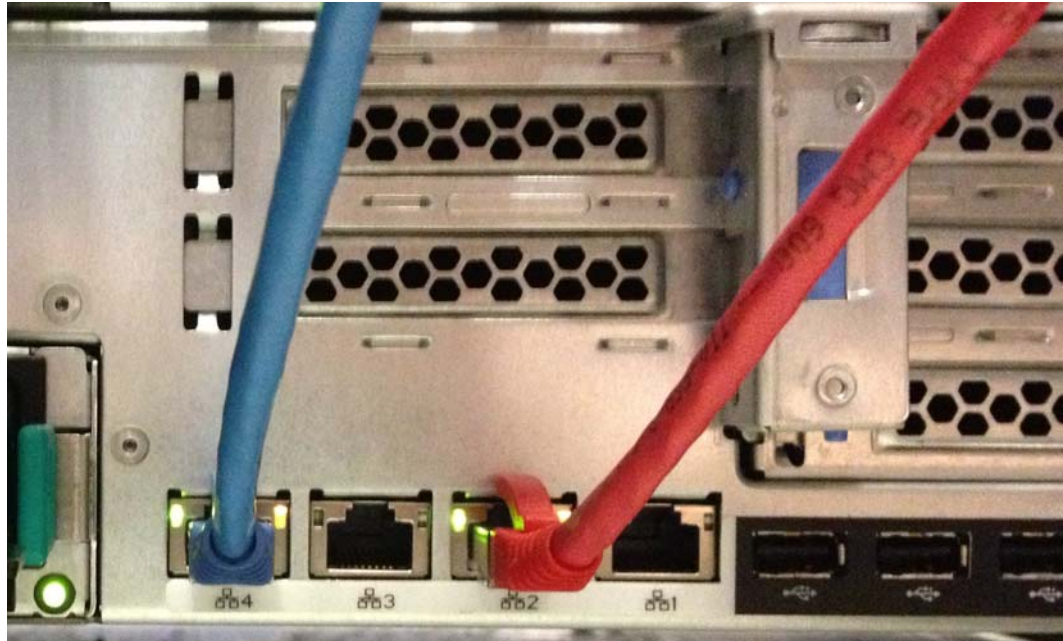
To connect the back-end Ethernet cables to the back-end switches:

1. Using the shorter exposed ends of the cables in the bottom (or only) blue Ethernet harness, connect each of the twelve numbered cables to a port in the bottom back-end switch. Connect cable number one to port number one, cable number two to port number two, and so forth. Do not use the cable labeled *EXTRA*.
2. If you installed the second blue Ethernet cable harness for the back-end network, using the cables in that harness, continue connecting the cables to the bottom back-end switch. Connect cable number one to port number 13, cable number two to port number 14, and so forth up to port number 23.
3. Using the shorter exposed ends of the cables in the bottom (or only) red Ethernet harness, connect each of the twelve numbered cables to a port in the top back-end switch. Connect cable number one to port number one, cable number two to port number two, and so forth. Do not use the cable labeled *EXTRA*.
4. If you installed the second red Ethernet cable harness for the back-end network, using the cables in that harness, continue connecting the cables to the top back-end switch. Connect cable number one to port number 13, cable number two to port number 14, and so forth up to port 23.

Step 11: Connect the back-end Ethernet cables to the servers

Step 11: Connect the back-end Ethernet cables to the servers

One blue back-end Ethernet cable and one red back-end Ethernet cable connect to each server. The red cables connect to Ethernet port number 2 on each server. The blue cables connect to port number 4.



What you need

To connect the back-end Ethernet cables to the servers, you need Velcro straps and/or cable ties for bundling and securing the cables.

What you do

To connect the back-end Ethernet cables to the servers:

1. Using the longer exposed ends of the cables in the bottom (or only) blue Ethernet harness, connect cable number one to Ethernet port number 2 on the bottom server, connect cable number two to Ethernet port number 2 on the second server from the bottom, and so forth going up the rack.

If the HCP system includes fewer than twelve servers, some of the cables will be unused. Do not use the cable labeled *EXTRA*.

Step 12 (conditional): Install and connect the front-end Ethernet cable harnesses

If the HCP system includes more than twelve servers, continue with the next step. Otherwise, skip the next step and continue with [step 3](#).

2. Using the longer exposed ends of the cables in the top blue Ethernet harness, connect cable number one to Ethernet port number 2 on the thirteenth server from the bottom, connect cable number two to Ethernet port number 2 on the fourteenth server from the bottom, and so forth.

Because an HCP RAIN system can have at most 20 servers, some of the cables will be unused.

3. Using the longer exposed ends of the cables in the bottom (or only) red Ethernet harness, connect cable number one to Ethernet port number 4 on the bottom server, connect cable number two to Ethernet port number 4 on the second server from the bottom, and so forth going up the rack.

If the HCP system includes fewer than twelve servers, some of the cables will be unused. Do not use the cable labeled *EXTRA*.

If the HCP system includes more than twelve servers, continue with the next step. Otherwise, skip the next step and continue with [step 5](#).

4. Using the longer exposed ends of the cables in the top red Ethernet harness, connect cable number one to Ethernet port number 4 on the thirteenth server from the bottom, connect cable number two to Ethernet port number 4 on the fourteenth server from the bottom, and so forth.

Because an HCP RAIN system can have at most 20 servers, some of the cables will be unused.

5. Using Velcro straps and/or cable ties, coil the unused cables at the end of each harness and secure them to the rack. The cables should be secure but not strained or pinched.

Step 12 (conditional): Install and connect the front-end Ethernet cable harnesses

If the HCP system includes the front-end connection package, you need to install the front-end Ethernet cable harnesses and connect the cables both to the front-end switches and to the servers.

Step 12 (conditional): Install and connect the front-end Ethernet cable harnesses

What you need

To install the front-end Ethernet cable harnesses and connect the cables to the switches and servers, you need:

- A permanent marker such as a Sharpie®
- Velcro straps and/or cable ties

What you do

To install the front-end Ethernet cable harnesses and connect the cables to the switches and servers:

1. Install the front-end Ethernet cable harnesses in the rack (see [“Step 1: Install the front-end Ethernet cable harnesses”](#) on page 30).
2. Connect the front-end Ethernet cables to the front-end Ethernet switches (see [“Step 2: Connect the front-end Ethernet cables to the front-end switches”](#) on page 31).
3. Connect the front-end Ethernet cables to the servers (see [“Step 3: Connect the front-end Ethernet cables to the servers”](#) on page 32).

Step 1: Install the front-end Ethernet cable harnesses

The front-end connection package includes blue and red cable harnesses. The blue cables connect to one front-end switch; the red cables to the other front-end switch.

If the number of nodes is twelve or less, you need to install one blue and one red cable harness for the front-end network. If this number is greater than twelve, you need to install two blue and two red cable harnesses for the front-end network.

The exposed ends of the cables are different lengths at different ends of the harness. The longer ends connect to the servers; the shorter ends to the switches.

To install the front-end Ethernet cable harnesses in the rack:

1. Using the permanent marker, write the words FRONT END on the white label at each end of each cable harnesses at the point where the binding ends.

Step 12 (conditional): Install and connect the front-end Ethernet cable harnesses

2. Using as many Velcro straps and/or cable ties as needed, attach one blue cable harness and one red cable harness to the left side of the rack (when viewed from the rear) next to the servers that are below the switches.

Orient the harnesses so that the shorter exposed cable ends are at the top and can easily reach the front-end switches.

3. If you need the second blue and red cable harnesses, attach them to the rack above the first ones.

Orient the harnesses so that the shorter exposed cable ends are at the bottom and can easily reach the front-end switches.

Step 2: Connect the front-end Ethernet cables to the front-end switches

The red front-end Ethernet cables connect to the top front-end switch. The blue front-end Ethernet cables connect to the bottom front-end switch.

Each cable harness contains 13 cables. Twelve of the cables are labeled at both ends with the numbers 01 through 12. One cable is labeled at both ends with the word *EXTRA*. All twelve numbered cables from each installed harness connect to the switches, even if they will not be connected to servers at the other end.

To connect the front-end Ethernet cables to the front-end switches:

1. Using the shorter exposed ends of the cables in the bottom (or only) blue Ethernet harness, connect each of the twelve numbered cables to a port in the bottom front-end switch. Connect cable number one to port number one, cable number two to port number two, and so forth. Do not use the cable labeled *EXTRA*.
2. If you installed the second blue Ethernet cable harness for the front-end network, using the cables in that harness, continue connecting the cables to the bottom front-end switch. Connect cable number one to port number 13, cable number two to port number 14, and so forth.
3. Using the shorter exposed ends of the cables in the bottom (or only) red Ethernet harness, connect each of the twelve numbered cables to a port in the top front-end switch. Connect cable number one to port number one, cable number two to port number two, and so forth. Do not use the cable labeled *EXTRA*.

Step 12 (conditional): Install and connect the front-end Ethernet cable harnesses

4. If you installed the second red Ethernet cable harness for the front-end network, using the cables in that harness, continue connecting the cables to the top front-end switch. Connect cable number one to port number 13, cable number two to port number 14, and so forth.

Step 3: Connect the front-end Ethernet cables to the servers

One blue front-end Ethernet cable and one red front-end Ethernet cable connect to each server. The blue cables connect to Ethernet port number 1 on each server. The red cables connect to port number 3.

To connect the front-end Ethernet cables to the servers:

1. Using the longer exposed ends of the cables in the bottom (or only) blue front-end Ethernet harness, connect cable number one to Ethernet port number 1 on the bottom server, connect cable number two to Ethernet port number 1 on the second server from the bottom, and so forth going up the rack.

If you're connecting fewer than twelve servers to the front-end network, some of the cables will be unused. Do not use the cable labeled *EXTRA*.

If you're connecting more than twelve servers to the front-end network, continue with the next step. Otherwise, skip the next step and continue with [step 3](#).

2. Using the longer exposed ends of the cables in the top blue front-end Ethernet harness, connect cable number one to Ethernet port number 1 on the thirteenth server from the bottom, connect cable number two to Ethernet port number 1 on the fourteenth server from the bottom, and so forth.

Because an HCP RAIN system can have at most 20 servers, some of the cables will be unused.

3. Using the longer exposed ends of the cables in the bottom (or only) red front-end Ethernet harness, connect cable number one to Ethernet port number 3 on the bottom server, connect cable number two to the Ethernet port number 3 on the second server from the bottom, and so forth going up the rack.

If you're connecting fewer than twelve servers to the front-end network, some of the cables will be unused. Do not use the cable labeled *EXTRA*.

If you're connecting more than twelve servers to the front-end network, continue with the next step. Otherwise, skip the next step and continue with [step 5](#).

4. Using the longer exposed ends of the cables in the top red front-end Ethernet harness, connect cable number one to Ethernet port number 3 on the thirteenth server from the bottom, connect cable number two to Ethernet port number 3 on the fourteenth server from the bottom, and so forth.

Because an HCP RAIN system can have at most 20 servers, some of the cables will be unused.

5. Using Velcro straps and/or cable ties, coil the unused cables at the end of each harness and secure them to the rack. The cables should be secure but not strained or pinched.

Step 13: Reassemble the rack

Using Velcro straps and/or cable ties, bundle any excess length of the cable harnesses and power cords and secure them to the rack. Then replace the doors and sides on the rack.

Step 13: Reassemble the rack

Connecting the HCP system at your site

A preassembled HCP RAIN system arrives with its internal physical connections complete:

- The nodes are connected to the back-end switches.
- If the system includes the front-end connection package, the nodes are also connected to the front-end switches.
- The back-end switches are connected to each other.
- All the components are plugged into the PDUs.

For a system ordered without a rack, the instructions in [Chapter 3, “Assembling rackless components,”](#) on page 11, tell you how to make all the internal connections.

To get the system up and running in your environment, you need to make the external physical connections. You need to connect:

- The PDUs to the power sources
- The HCP system to your corporate network

This chapter provides instructions for these activities.

Connecting to the power sources

A preassembled HCP RAIN system includes four PDUs. Each PDU has one 220V, 30-amp plug of the applicable type for the location for which the system was ordered.

A system that includes twelve or fewer nodes and that does not include the front-end connection package uses only the bottom two of the four PDUs. A system that includes more than twelve nodes or that includes the front-end connection package uses all four PDUs.



Note: Depending on the components included in an HCP RAIN system that you assemble yourself, you may choose to have only two PDUs in the rack.

Each node in an HCP RAIN system is connected to two PDUs. The switches are each connected to one PDU.

You need to connect each PDU to a different power source at your site. If possible, these should be uninterruptible power sources (UPSs).



Important: Before connecting the PDUs in a preassembled system to the power sources, ensure that all the power cables connecting the system components to the PDUs are firmly seated at both ends. These can sometimes come loose during shipping.

Once you've connected the PDUs to the power sources, you can power on the nodes. The switches power on automatically when the PDUs are connected to the power sources.

Connecting to your corporate network

An HCP RAIN system should be connected to your corporate network through two front-end switches or through a single front-end switch using active/active bonding. The procedure for making these connections differs depending on whether the system includes the front-end connection package.



Important: The default front-end IP addresses for the HCP nodes are 192.168.100.101, 192.168.100.102, and so forth. If these IP addresses don't work for your computing environment, you need to change them *before* you connect the HCP nodes to your corporate network. For information on doing this, see [Chapter 5, "Reconfiguring the HCP system for your site,"](#) on page 39.

HCP systems with the front-end connection package

An HCP RAIN system that includes the front-end connection package has two front-end switches installed in the system rack. You need to use the Ethernet cables you supply to connect each of these switches to a separate Ethernet switch in your corporate network.

In a preassembled HCP RAIN system, the front-end switches are located in rack units 41 and 42. The switches in rack units 25 and 26 are the back-end switches. Do *not* connect those switches to your corporate network.

In each supplied front-end switch, you can use any one of the ports numbered 21 through 24. Do not use the ports numbered 1 (one) through 20.

HCP systems without the front-end connection package

For an HCP RAIN system that does not include the front-end connection package, you need to supply either one or two Ethernet switches and the Ethernet cables to connect those switches to the system nodes. This section provides instructions for using two switches. If you're using a single switch, follow the same instructions, connecting each node to a pair of bonded ports in that switch instead of to the two switches.

With two front-end switches, each node in the system should be connected to both switches. Use cables of one color to connect the nodes to one of the switches and cables of another color to connect the nodes to the other switch.



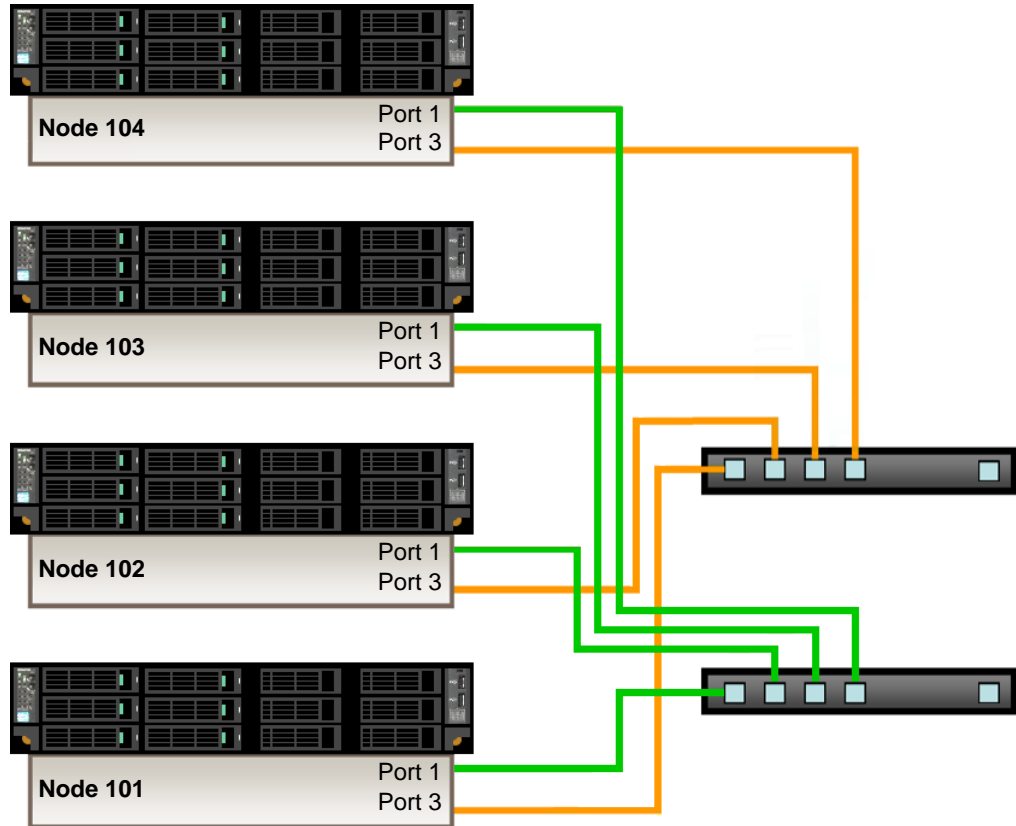
Note: Do *not* mount the switches you provide in the rack holding a preassembled HCP system.

To connect the HCP system to your corporate network:

1. Label each cable at both ends. Then connect the cables to the nodes and front-end switches:
 - Connect all the cables for one switch to port 1 (one) on each node. This becomes the primary switch.
 - Connect all the cables for the other switch to port 3 on each node. This becomes the secondary switch.

- Connect the cables to the switches in sequential order by node number. That is, connect node 101 to one port in each switch, node 102 to another port, and so on.

The figure below shows these connections.



2. Bundle the cables separately for each switch and use cable ties to secure them to the rack that holds the HCP system. The cables should be secure but not strained or pinched.

Reconfiguring the HCP system for your site

To reconfigure an HCP system for your computing environment, you need to:

- Verify that the serial number is correct in the system and, if it isn't, correct it
- Change the HCP network settings to match your computing environment
- Change the HCP DNS settings to match your computing environment
- Change the time settings for the HCP system to match your computing environment
- Make the back-end switches known to HCP

To perform these activities, you use the HCP System Management Console. You can do them in any order.

This chapter explains how to:

- Give yourself a System Management Console user account with the service role
- Perform the reconfiguration activities listed above



Note: To perform the reconfiguration activities in this chapter before connecting the HCP system to your corporate network, you need to use a computer directly connected to one of the back-end switches.



Important: This chapter describes activities to be performed when you first set up the HCP system at your site. Before performing these activities at any other time, be sure to consult your authorized HCP service provider.

Preparing to reconfigure the system

To reconfigure an HCP system for your computing environment, you first need to create a user account that has the service role. To do this, follow the steps outlined in the table below.

Step	Activity	More information
1	Connect a client computer to the HCP default back-end network.	“Step 1: Connect to the HCP default back-end network” below
2	Log into the System Management Console with the initial user account.	“Step 2: Log in with the initial user account” on page 41
3	Check the health of the HCP system.	“Step 3: Check the health of the HCP system” on page 42
4	Create a new user account with the service role.	“Step 4: Create a service account” on page 42
5	Log into the System Management Console with the new user account.	“Step 5: Log in with the service account” on page 43



Tip: Do not create additional user accounts until you’re sure the HCP system is fully operational.

For more information on user accounts and roles, see *Administering HCP*.

Step 1: Connect to the HCP default back-end network

For you to use the HCP System Management Console, you need a client computer with connectivity to the default back-end subnet to which the HCP nodes belong. To connect a client computer to this subnet:

1. Ensure that the client computer has a physical connection to one of the back-end switches used by the HCP system.
2. If the client computer is not in the HCP default back-end subnet:
 - a. Make a note of the current IP address and subnet mask for the client computer so you can reset them after you change the network settings for the HCP system.

- b. On the client computer, set the IP address for the local area network to 10.1.1.100.
- c. On the client computer, set the subnet mask to 255.255.255.0.

Step 2: Log in with the initial user account

To log into the HCP System Management Console for the first time:

1. On a computer connected to the HCP back-end network, open a browser window.
2. In the address field, enter:

`https://10.1.1.101:8000`

The IP address in this URL is the preconfigured back-end IP address of one of the nodes in the HCP system.

3. When prompted, accept the HCP SSL server certificate temporarily for the current session.

The System Management Console login page appears.

4. In the **Username** field, type this case-sensitive username: *security*
5. In the **Password** field, type this case-sensitive password: *Chang3Me!*
6. Click on the **Log In** button.

The Console displays the **Change Password** page.

7. On the **Change Password** page:
 - In the **Existing Password** field, type: *Chang3Me!*
 - In the **New Password** field, type a new password for the *security* account.

Passwords must be from six through 64 characters long, are case sensitive, and can contain any valid UTF-8 characters, including white space. The minimum password length is six characters.

To be valid, a password must include at least one character from two of these three groups: alphabetic, numeric, and other.

- In the **Confirm New Password** field, type the new password again.



Tip: Remember this password. You will need it later to set up additional user accounts. For more information on setting up user accounts, see *Administering HCP*.

8. Click on the **Update Password** button.

Step 3: Check the health of the HCP system

At this point, you need to ensure that the HCP system is running properly. To do this:

1. In the top-level menu in the HCP System Management Console, click on **Hardware**.
2. On the **Hardware** page, for each node, check that:
 - The node status is **Available**
 - The status of each logical volume is **Available**



Tip: To see the status of a logical volume, mouse over the volume icon.

If all the nodes and logical volumes are available, you can safely continue with the HCP system reconfiguration.

If any nodes have a status other than **Available** or if any logical volumes for available nodes have a status other than **Available**, please contact your authorized HCP service provider for help. Also contact your service provider if the number of logical volume icons for each node does not match your expected number of logical volumes for the node.

Step 4: Create a service account

To create a user account that you can use to reconfigure the HCP system, in the System Management Console:

1. In the top-level menu, mouse over **Security** to display a secondary menu.
2. In the secondary menu, click on **Users**.
3. On the **Users** page, click on **Create User Account**.

4. In the **Create User Account** panel:

- In the **Username** field, type a username for the user account. Usernames must be from one through 64 characters long and can contain any valid UTF-8 characters, but cannot start with an opening square bracket ([). White space is allowed.
- In the **Full Name** field, type a full name for the user account. This name must be from one through 64 characters long and can contain any valid UTF-8 characters, including white space.
- In the **Password** field, type a password for the user account. Passwords must be from six through 64 characters long, are case sensitive, and can contain any valid UTF-8 characters, including white space. The minimum password length is six characters.

To be valid, a password must include at least one character from two of these three groups: alphabetic, numeric, and other.

- In the **Confirm Password** field, type the password again.



Note: Remember this password. You will need it for the reconfiguration activities in this chapter.

- In the **Roles** section, select **Service**.

5. Click on the **Create User Account** button.6. In the upper right corner of the Console, click on **Log Out**.

The Console returns to the login page.

Step 5: Log in with the service account

Now that you've created a user account with the service role, you can use that account to log into the HCP System Management Console and perform system reconfiguration activities. This time, when you log in, the Console displays the **Overview** page.



Caution: The service role lets you take additional actions that are not described in this book. Some of these actions can have a significant impact on the HCP system. Before taking any other service role actions, be sure you understand their consequences.



Tip: After you complete the last reconfiguration activity, log out of the System Management Console and close the browser window to ensure that no one can return to the Console on your computer without a fresh login.

Verifying the serial number

Each HCP system is assigned a unique five-digit serial number. With a preassembled system, this number is on a label that's attached to the side of the system rack at the bottom, just inside the left rear door. With a rackless system, this number is on a label taped to the top of the first node you mount when you assemble the system.

When the HCP system software is installed, the serial number is entered as part of the system configuration. You need to verify that the serial number in the system configuration matches the serial number of the label attached to the rack. If the serial numbers don't match, you need to change the serial number in the system configuration.

To verify and, if necessary, change the serial number in the HCP system configuration:

1. In the top-level menu in the System Management Console, mouse over **Configuration** to display a secondary menu.
2. In the secondary menu, click on **Miscellaneous**.
3. Verify that the serial number in the **Serial Number from Rack Label** field is the same as the serial number on the label delivered with the system.
4. If the serial numbers are not the same:
 - a. In the **Serial Number from Rack Label** field, type the serial number from the label attached to the rack.
 - b. Click on the **Update Settings** button.

Changing network settings

The HCP system is installed with default network settings. You need to change these settings to match your computing environment. Before you can do this, you need to know:

- The IP address to use for the front-end gateway router. Typically, the first three octets in this address are the same as the first three octets in the IP address of the front-end network.
- The subnet mask for the front-end IP addresses.
- If the corporate network is configured to support virtual networking and you want to tag the HCP front-end network, the VLAN ID to use for that network. For information on virtual networking, see *Administering HCP*.
- The front-end IP address to use for each HCP node.



Note: Node numbers don't change when you change IP addresses.

- Whether HCP should hide the IP addresses of the master name servers for the front-end network and allow client access to HCP over the network only through specified downstream DNS servers. A DNS configuration that functions in this way is called **hidden master**.

A **downstream DNS server** is a DNS server through which client requests are routed to HCP.

For more information on this and the next two properties, see *Administering HCP*.

- Whether HCP should notify specified downstream DNS servers about changes to the zone definition for the front-end network.
- The rate at which the downstream DNS servers should query HCP for updates to the zone definition for the front-end network domain. The default is three hours.

For the refresh rate for the [hcp_system] network, you can specify any combination of weeks (W), days (D), hours (H), minutes (M), and seconds (S), using this syntax:

```
#W#D#H#M#S
```

These considerations apply to specifying the refresh rate:

- In each case, # must be an integer greater than or equal to one.
 - If an integer is specified without a time unit, the time unit is assumed to be seconds.
 - Time units can be specified in any order.
 - Any given time unit can be specified only once.
 - Time units are not case sensitive.
 - The total time specified must be in the range one through 2,147,483,647 seconds.
- The back-end IP address to use for each HCP node. You can change only the first three octets of the back-end IP addresses. You cannot change the fourth octet.



Important: Change the default back-end IP addresses only if they conflict with existing front-end IP addresses at your site.

After you've made all the necessary changes to the front-end and back-end network settings, you can safely connect the HCP system to your corporate network.

Changing the front-end network settings

To change the HCP front-end network settings:

1. In the top-level menu in the System Management Console, mouse over **Configuration** to display a secondary menu.
2. In the secondary menu, click on **Networks** to display the **Networks** page.
3. In the list of networks, click on [hcp_system].
4. In the panel for the [hcp_system] network:
 - To change the gateway IP address, in the **Gateway** field, type the new IP address.

- To change the subnet mask, in the **Netmask** field, type the new subnet mask.
- To make the front-end network tagged, select the **Make tagged network** option. Then, in the **VLAN ID** field, type a unique VLAN ID for the network. Valid values are integers in the range one through 4,095.
- To change the DNS settings for the network, click on the **Downstream DNS Configuration** link. Then:
 - To enable or disable hidden master, select or deselect, respectively, the **Enable hidden master** option.
 - To enable or disable notify, select or deselect, respectively, the **Enable notify** option.
 - If you are enabling hidden master or notify, in the **Downstream DNS Servers** field, type a comma-separated list of the IP addresses of one through ten downstream DNS servers. Spaces are not allowed.
 - To change the refresh rate, in the **Refresh Rate** field, type the new refresh rate. For valid values for the refresh rate, see [“Changing network settings”](#) above.
- To change the node IP addresses, in the **Node IP Addresses** section, type new front-end IP addresses for the nodes in the HCP system.



Important: Do not change the value in the **MTU** field.

5. Click on the **Update Settings** button.

A warning message appears asking you to confirm the changes you've made.

6. In the field in the message window, type *YES*. This is case sensitive.
7. Click on the **Update Settings** button.

The HCP system restarts with the new settings. This takes a few minutes.

8. If you do not need to change the back-end settings, you can now safely connect the HCP system to your corporate network.

9. Log back into the System Management Console after the system restarts. Then proceed to the next configuration activity.

Changing the back-end network settings

To change the HCP back-end network node IP address settings:

1. In the top-level menu in the System Management Console, mouse over **Configuration** to display a secondary menu.
2. In the secondary menu, click on **Networks** to display the **Networks** page.
3. In the list of networks, click on [hcp_backend].
4. In the **Node IP Addresses** section in the [hcp_backend] panel, type new backend IP addresses for the nodes in the HCP system.



Important: Do not change the values of the **Multicast Address** or **Netmask** field.

5. Click on the **Update Settings** button.

A warning message appears asking you to confirm the changes you've made.

6. In the field in the message window, type *YES*. This is case sensitive.
7. Click on the **Update Settings** button.

The HCP system restarts with the new settings. This takes a few minutes.



Note: If you changed the back-end IP addresses of the HCP nodes:

1. Change the IP address of the client computer to match the new HCP back-end subnet.
 2. Log into the System Management Console again after the system restarts. Remember to use one of the new back-end IP addresses in the Console URL.
-

Changing DNS settings

For the HCP system to use DNS services, you need to enable the use of DNS in HCP and specify the IP addresses of all the DNS servers in your environment that are upstream from HCP. An **upstream DNS server** is a DNS server to which HCP routes the outbound communications it initiates (for example, for sending log messages to syslog servers or for communicating with Active Directory).

Specifying all the DNS servers ensures that the HCP system can be addressed by hostname as long as at least one of those servers is available. To specify the DNS servers, you need to know their IP addresses.



Note: If you have not yet configured HCP as a subdomain in the DNS, do so now. For information on doing this, see *Administering HCP*.

When changing DNS settings, you can also change the hostname prefix used to name the nodes in the HCP system. You need to do this if you have two HCP systems and:

- You use Active Directory[®] authentication for access to HCP
- The two systems have one or more node numbers in common

If you don't use DNS at your site, you need to disable the use of DNS in HCP.

To change the HCP system DNS settings:

1. In the top-level menu in the System Management Console, mouse over **Configuration** to display a secondary menu.
2. In the secondary menu, click on **DNS**.
3. On the **DNS Settings** page:
 - Do either of these:
 - If you want to use DNS with HCP, select the **Use DNS** option.
 - If you don't want to use DNS with HCP, deselect the **Use DNS** option and skip to [step 4](#).

- Optionally, in the **Hostname Prefix** field, type a new hostname prefix. The hostname prefix can be from one through 12 characters long and can contain only lowercase letters, numbers, and hyphens (-).



Tip: To make node names easier to read, end the hostname prefix with a hyphen (-).

- In the **Upstream DNS Servers** field, type a comma-separated list of the IP addresses of all the upstream DNS servers. Spaces are not allowed.

4. Click on the **Update Settings** button.

A warning message appears asking you to confirm the changes you've made.

5. In the field in the message window, type *YES*. This is case sensitive.
6. Click on the **Update Settings** button.

The Console confirms that you have successfully updated the DNS settings, and HCP restarts. Wait a few minutes for the system to finish restarting. Then proceed to the next reconfiguration activity.

Changing time settings

The internal time of the delivered HCP system may not exactly match the time in your computing environment. You can choose to leave the HCP time as is, reset it to match your environment and still have the system use its own internal time, or use one or more external time servers.

If you choose to use external time servers, you need to know the IP addresses or hostnames of those servers.



Note: For you to specify an external time server, the HCP system must have connectivity to the time server through the front-end network.

In any case, you need to know the time zone you want HCP to use. HCP stores all times (such as creation dates and retention settings) in Coordinated Universal Time (UTC) and uses its time zone setting only for presentation purposes.



Note: HCP systems can be configured not to allow changes to time settings through the System Management Console. If your system is configured this way, you cannot make the changes described in this section.

To change the time settings for the HCP system:

1. In the top-level menu in the System Management Console, mouse over **Configuration** to display a secondary menu.
2. In the secondary menu, click on **Time**.
3. On the **Time Settings** page:

- Optionally, in the **Time Servers** field, type a comma-separated list of the IP addresses or hostnames of one or more time servers. Spaces are allowed.
- Optionally, if the time source is internal, in the **Current Time** field, type the current time. The format for the time is *MMDDhhmmYYYY*, where *MM* is the two-digit month, *DD* is the two-digit day, *hh* is hours on a 24-hour clock, *mm* is minutes, and *YYYY* is the four-digit year. The time you specify cannot be more than one year in the future or 23 hours and 45 minutes in the past.

If the time source is internal and you leave this field blank, the current system time doesn't change.

- Optionally, in the **Time Zone** field, select the new time zone.
4. Click on the **Update Settings** button.

A warning message appears asking you to confirm the changes you've made.

5. In the field in the message window, type *YES*. This is case sensitive.
6. Click on the **Update Settings** button.

The Console confirms that you have successfully updated the time settings, and HCP restarts. Wait a few minutes for the system to finish restarting. Then proceed to the next reconfiguration activity.

Making the back-end switches known to HCP


You can choose to have HCP report the status of the back-end switches in the System Management Console. For HCP to do this, you need to make each switch known to HCP. You do this by telling HCP about the model and IP address of the switch.

By default, the IP addresses of the back-end switches are 10.1.1.252 and 10.1.1.253. If you changed the back-end IP addresses of the HCP nodes, the switch IP addresses need to change as well. For help with this, contact your authorized HCP service provider.

To make the back-end switches known to HCP:

1. In the top-level menu in the System Management Console, mouse over **Configuration** to display a secondary menu.
2. In the secondary menu, click on **Monitored Components**.
3. On the **Monitored Components** page, for each switch:
 - a. Click on **Add**.

A new row appears in the **Components** list. The row is highlighted in green.

If you inadvertently add an extra row, click on the delete control () for the row to remove it.

- b. In the **Model** field in the new row, select the model of the switch that's supplied with the system.
 - c. In the **IP Address** field, type a valid IPv4 address for the switch.
4. Click on the **Update Settings** button.

Configuring HCP monitoring with Hi-Track Monitor

Hi-Track Monitor is an HDS product that enables remote monitoring of the nodes in an HCP RAIN system. With Hi-Track Monitor, you can view the status of these components in a web browser. You can also configure Hi-Track Monitor to notify you by email of error conditions as they occur. Additionally, you can configure Hi-Track Monitor to report error conditions to HDS support personnel.

Hi-Track Monitor is for monitoring and error notification purposes only. It does not allow any changes to be made to the system.

Hi-Track Monitor is installed on a server that is separate from the HCP system. The program uses SNMP to retrieve information from HCP, so SNMP must be enabled in HCP.



Note: HCP supports IPv4 and IPv6 network connections to Hi-Track servers. However, Hi-Track support for IPv6 network connections varies based on the Hi-Track server operating system. For information on requirements for Hi-Track servers that support IPv6 networks, see the applicable Hi-Track documentation.

This chapter explains how to set up monitoring of HCP nodes with Hi-Track Monitor. The chapter assumes that Hi-Track Monitor is already installed and running according to the documentation that comes with the product.

Enabling SNMP in HCP

To enable Hi-Track Monitor to work with HCP, you need to enable SNMP in the HCP System Management Console. When you enable SNMP, you can select version 1 or 2c or version 3.

By default, Hi-Track Monitor is configured to support SNMP version 1 or 2c with the community name *public*. If you change the community name in HCP or if you select version 3, you need to configure a new SNMP user in Hi-Track Monitor to match what you specify in HCP. For more information on this, see the Hi-Track Monitor documentation.

To enable SNMP in HCP for use with Hi-Track Monitor:

1. Log into the HCP System Management Console using the initial user account, which has the security role.
2. In the top-level menu in the System Management Console, mouse over **Monitoring** to display a secondary menu.
3. In the secondary menu, click on **SNMP**.
4. In the **SNMP Settings** section on the **SNMP** page:
 - Select the **Enable SNMP at snmp.hcp-domain-name** option.
 - Select either **Use version 1 or 2c** (recommended) or **Use version 3**.

If you select **Use version 3**, specify a username and password in the **Username**, **Password**, and **Confirm Password** fields.
 - Optionally, in the **Community** field, type a different community name.
5. Click on the **Update Settings** button.
6. In the entry field in the **Allow** section, type the IP address that you want HCP to use to connect to the server on which Hi-Track Monitor is installed. Then click on the **Add** button.
7. Log out of the System Management Console and close the browser window.

Configuring Hi-Track Monitor

To configure Hi-Track Monitor to monitor the nodes in the HCP system, follow the steps outlined in the table below.

Step	Activity	More information
1	Log into Hi-Track Monitor.	“Step 1: Log into Hi-Track Monitor” below
2	Set the Hi-Track Monitor base configuration, including the email addresses to which email about error conditions should be sent.	“Step 2: Set the base configuration” below
3	Optionally, configure transport agents for reporting error conditions to HDS support personnel.	“Step 3 (optional): Configure transport agents” on page 57
4	Identify the HCP system to be monitored.	“Step 4: Identify the HCP system” on page 58

Step 1: Log into Hi-Track Monitor

To log into Hi-Track Monitor:

1. Open a web browser window.
2. In the address field, enter the URL for the Hi-Track Monitor server (using either the hostname or a valid IP address for the server) followed by the port number 6696; for example:

`http://hitrack:6696`

3. In the **Select one of the following UserIds** field, select **Administrator**.
4. In the **Enter the corresponding password** field, type the case-sensitive password for the Administrator user. By default, this password is *hds*.

If Hi-Track Monitor is already in use at your site for monitoring other devices, this password may have been changed. In this case, see your Hi-Track Monitor administrator for the current password.

5. Click on the **Logon** button.

Step 2: Set the base configuration

The Hi-Track Monitor base configuration specifies information such as the customer site ID, how frequently to scan devices, and whether to report communication errors that occur between Hi-Track Monitor and monitored devices. The base configuration also specifies the addresses to which Hi-Track Monitor should send email about error conditions.

If Hi-Track Monitor is already in use at your site, the base configuration may already be set. In this case, you can leave it as is, or you can make changes to accommodate the addition of HCP to the devices being monitored.

To set the Hi-Track Monitor base configuration:

1. In the row of tabs at the top of the Hi-Track Monitor interface, click on **Configuration**.

The **Base** page is displayed by default. To return to this page from another configuration page, click on **Base** in the row of tabs below **Configuration**.

2. In the **Device Monitoring** section:
 - In the **Site ID** field, type your HDS customer ID. If you don't know your customer ID, contact your authorized HCP service provider for help.
 - Optionally, specify different values in the other fields to meet the needs of your site. For information on these fields, click on the **Help on this table's entries** link above the fields.
3. In the **Notify Users by Email** section:
 - In the **eMail Server** field, type the fully qualified hostname or a valid IP address of the email server through which you want Hi-Track Monitor to send email about error conditions.
 - In the **Local Interface** field, select the Ethernet interface that has connectivity to the specified email server. (This is the interface on the Hi-Track Monitor server.)
 - In the **User List** field, type a comma-separated list of the email addresses to which Hi-Track Monitor should send email about error conditions.

- In the **Sender's Email Address** field, type a well-formed email address to be used in the From line of each email.

Some email servers require that the value in the From line be an email address that is already known to the server.

4. Click on the **Submit** button.
5. Optionally, to send a test email to the specified email addresses, click on the **Test Email** button.

Step 3 (optional): Configure transport agents

A Hi-Track Monitor transport agent transfers notifications of error conditions to a target location where HDS support personnel can access them. The transfer methods available are HTTPS, FTP, or dial up. For the destinations for each method, contact your authorized HCP service provider.

You can specify multiple transport agents. Hi-Track tries them in the order in which they are listed until one is successful.

To configure a transport agent:

1. In the row of tabs below **Configuration**, click on **Transport Agents**.
2. In the field below **Data Transfer Agents**, select the transfer method for the new transport agent.
3. Click on the **Create** button.

The new transport agent appears in the list of transport agents. A set of configuration fields appears below the list.

4. In the configuration fields, specify the applicable values for the new transport agent. For information on what to specify, see the Hi-Track Monitor documentation.
5. Click on the **Submit** button.

You can change the order of multiple transport agents by moving them individually to the top of the list. To move a transport agent to the top of the list:

1. In the **Move to Top?** column, select the transport agent you want to move.

2. Click on the **Submit** button.

Step 4: Identify the HCP system

To identify the HCP system to be monitored:

1. In the row of tabs at the top of the Hi-Track Monitor interface, click on **Summary**.

The **Summary** page displays up to four tables that categorize the devices known to Hi-Track Monitor — Device Errors, Communication Errors, Devices Okay, and Not Monitored. To show or hide these tables, click in the checkboxes below the table names at the top of the page to select or deselect the tables, as applicable. Then click on the **Refresh** button.

While no tables are shown, the page contains an **Add a device** link.

2. Take one of these actions:
 - If the **Summary** page doesn't display any tables, click on the **Add a device** link.
 - If the **Summary** page displays one or more tables, click on the **Item** column heading in any of the tables.
3. In the **Select Device Type** field, select **Hitachi Content Platform (HCP)**.

A set of configuration fields appears.

4. Optionally, in the **Name** field, type a name for the HCP system. The name can be from one through 40 characters long. Special characters and spaces are allowed.

Typically, this is the hostname of the system.

5. Optionally, in the **Location** field, type the location of the HCP system. The location can be from one through 40 characters long. Special characters and spaces are allowed.
6. Optionally, in the **Group** field, type the name of a group associated with the HCP system (for example, Finance Department). The group name can be from one through 40 characters long. Special characters and spaces are allowed.
7. In the **Site ID** field, type your HDS customer ID. If you don't know your customer ID, contact your authorized HCP service provider for help.

8. In the **IP Address or Name (1)** field, type a valid front-end IP address for the lowest-numbered storage node in the HCP system. In the **Local Interface** field, leave the value as **-any-**.
9. In the **IP Address or Name (2)** field, type a valid front-end IP address for the highest-numbered storage node in the HCP system. In the **Local Interface** field, leave the value as **-any-**.
10. In the **SNMP Access ID** field, select the SNMP user that corresponds to the SNMP configuration in HCP. Typically, this is **public**.

For information on configuring SNMP in HCP, see [“Enabling SNMP in HCP”](#) on page 54.

11. In the **Comms Error Reporting?** field, select one of these options to specify whether Hi-Track should report communication errors that occur between Hi-Track Monitor and the HCP system:
 - **Yes** — Report communication errors.
 - **No** — Don't report communication errors.
 - **Local** — Report communication errors only to the email addresses specified in the base configuration and not through the specified transport agents.
 - **Default** — Use the setting in the base configuration.
12. Leave **Enabled?** selected.
13. Leave **Trace?** unselected.
14. Click on the **Add** button.

If the operation is successful, the interface displays a message indicating that the HCP system has been added. Do not click on the **Add** button again. Doing so will add the system a second time.

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MK-98ARC016-18