HP Insight Remote Support Advanced HP StorageWorks P4000 Storage System Migration Guide



HP Part Number: 5900-1089 Published: August 2010, Edition 1 © Copyright 2010 Hewlett-Packard Development Company, L.P.

Legal Notices

Confidential computer software. Valid license from HP required for possession, use or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Acknowledgments

Table of Contents

1	P4000 Storage Systems Migration Procedure	5
	1.1 Requirements	5
	1.1.1 Central Management Server (CMS) Requirements	5
	1.1.1.1 Hardware Requirements	5
	1.1.1.2 Operating System Requirements	6
	1.1.1.3 Software Requirements	7
	11.2 P4000 Storage Systems Requirements	7
	11.21 Software	7
	11.3 Communication Requirements	7
	11.31 Password Management	7
	1132 SNMP Configuration	7
	11.4 CMS Access Requirements	/ Q
	1.2 Installing/Upgrading CMC on the CMS	۵
	1.21 Installing and Configuring CMC	۰0 و
	1.3 Configuring the P1000 Storage Systems	10
	1.3.1 Upgrading the SAN/iO Software on the P4000 Storage Systems	10
	1.3.1 Opgiduling the SARV to Software on the 14000 Storage Systems	10
	1.2.111 Selecting the Type of Upgrade	11
	1.2.1.2 Increases the Size of the OS Disk on the VSAs	11
	1.2.1.2 Increase the Size of the OS Disk of the VSAs	II 10
	1.3.1.3 Upgrade Software on Storage Nodes	10
	1.3.1.4 verify Management Group version	10
	1.3.1.4.1 How to verify Management Group version	10
		Z
	1.3.2 Configuring the P4000 Storage Systems Communications	13
	1.4 Installing and Configuring Insight Remote Support Advanced	10
Δ	SAN/iQ Uparade Flowcharts	23
<i>,</i> ,	A 1 Unaverale Elevente	.20
	A.1 Upgrade Flowcharts	23
		23
	A.1.3 Upgrade from 8.0.00	
	A.I.4 Upgrade from 8.I.UU	26
G	lossary	27
-		•
In	Idex	29

1 P4000 Storage Systems Migration Procedure

In the first half of 2011, the HP Support Center will discontinue support for Service Console (Health Check) as the remote support solution for all P4000 Storage Systems or LeftHand Networks SANs. The HP Insight Remote Support solution will replace the Service Console application. Use this document to migrate to Insight Remote Support, HP's long term remote support solution.

HP Insight Remote Support migration is recommended to be completed as soon as possible for all P4000 Storage Systems or LeftHand Networks SANs that support SAN/iQ 8.5 or higher.

HP Insight Remote Support Advanced software delivers secure remote support for your HP servers, storage, network, and SAN environments, which now includes the P4000 SAN.

For more information on the features and benefits of Insight Remote Support go to <u>http://www.hp.com/go/</u> insightremotesupport.



Figure 1-1 Architecture

To migrate to HP Insight Remote Support Advanced, complete the following steps in order:

- 1. Verify that your CMS meets the minimum system requirements (see "Central Management Server (CMS) Requirements").
- 2. Verify that your P4000 Storage Systems meet the minimum system requirements (see "P4000 Storage Systems Requirements").
- 3. Upgrade or Install CMC on the CMS (see "Installing/Upgrading CMC on the CMS").
- Upgrade SAN/iQ to version 8.5 on the P4000 Storage Systems using CMC (see "Upgrading the SAN/iQ Software on the P4000 Storage Systems").
- 5. Install HP SIM and Insight Remote Support Advanced on the CMS (see "Installing and Configuring Insight Remote Support Advanced").

1.1 Requirements

1.1.1 Central Management Server (CMS) Requirements

1.1.1.1 Hardware Requirements

- Any HP ProLiant x86 system with Insight Management Agent or WBEM Provider support
- Any HP ProLiant x64 system with Insight Management Agent or WBEM Provider support

The Central Management Server (CMS) has the following requirements:

- For small environments managing less than 100 devices:
 - 3 GB memory, 4 GB recommended
 - 2 GB disk space for initial installation of Insight Remote Support components, and 500 MB disk space for normal operation
- For medium environments managing up to 500 devices:
 - 6 GB memory
 - 146 GB disk space
- For large environments managing up to 2000 devices:
 - 12 GB memory
 - 300 GB disk space

Centralized Management Console (CMC) 8.5, Windows version has the following requirements:

- 35 MB disk space for complete install
- 50 MB RAM during run-time

1.1.1.2 Operating System Requirements

The following operating systems are supported on the CMS:

- Microsoft Windows Server 2003 Standard or Enterprise Edition for x86 with SP1 or higher (running on x86 or x64/AMD64 platforms)
- Microsoft Windows Server 2003 R2 Standard or Enterprise Edition for x86 (running on x86 or x64/AMD64 platforms)
- Microsoft Windows Server 2003 for x64
- Microsoft Windows 2003 SMB, with SP1 or higher
- Microsoft Windows 2003 Server with installed Multilingual User Interface Pack (MUI)
- Microsoft Windows 2003 with English, French, Italian, German, Spanish, Dutch, Traditional Chinese, Simplified Chinese, Korean and Japanese International Server
- Microsoft Windows Server 2008 Standard for x64
- Microsoft Windows Server 2008 Enterprise for x64
- Microsoft Windows Server 2008 Datacenter for x64
- Microsoft Windows Server 2008 Standard 32-Bit
- Microsoft Windows Server 2008 Enterprise 32-Bit
- Microsoft Windows Server 2008 Datacenter 32-Bit
- Microsoft Windows Small Business Server 2008
- Microsoft Windows Web Server 2008
- Microsoft Windows Server 2008 R2
- Microsoft Windows Storage Server 2008 Standard edition
- Microsoft Windows Storage Server 2008 Advanced edition

1.1.1.3 Software Requirements

- CMC 8.5
 - Software available at: <u>www.hp.com/go/P4000downloads</u>
 CMC is included in the SAN/iQ Management SW DVD package.
 - Documentation available at: <u>http://www.hp.com/support/manuals</u>
 In the Storage section, click Disk Storage Systems and then select P4000 SAN Solutions.
 - Installation Time: 10 minutes
- HP Systems Insight Manager (HP SIM) 6.0 or higher
 - Software available at: <u>http://h18013.www1.hp.com/products/servers/management/hpsim/</u> <u>download.html</u>
 - Documentation available at: <u>http://h18013.www1.hp.com/products/servers/management/</u> <u>hpsim/infolibrary.html#b2</u>
 - Installation Time: Approximately 1 hour *
- Insight Remote Support Advanced
 - Software available at: <u>http://h20392.www2.hp.com/portal/swdepot/</u> <u>displayProductInfo.do?productNumber=RSADVANCED</u>
 - Documentation available at: www.hp.com/go/insightremoteadvanced-docs
 - Installation Time: Approximately 1 hour *

* Download and installation times will vary for a default install depending on the speed of your network, the size of your network, and how many devices you want to manage.

NOTE: For a complete list of CMS prerequisites, please refer to the *HP Insight Remote Support Advanced CMS Configuration and Usage Guide*.

1.1.2 P4000 Storage Systems Requirements

1.1.2.1 Software

Each P4000 Storage System requires SAN/iQ 8.5.

See Section 1.3.1 for details on upgrading SAN/iQ to version 8.5.

1.1.3 Communication Requirements

Usernames, passwords and SNMP must be configured properly so that the CMS and the P4000 Storage Systems can communicate. See the following sections for communication requirements and procedures.

For more information about communication requirements, see the *HP Insight Remote Support Advanced and Remote Device Access Security Overview* at **www.hp.com/go/insightremoteadvanced-docs**.

1.1.3.1 Password Management

HP SIM, RSSWM, and Insight Remote Support should all be installed by the same user with administrator priviledges. P4000 Storage Systems that are not in a Management Group can use any valid 3 character P4000 CLI username and any valid 5 character P4000 CLI password can be used as credentials for P4000 Storage Systems in the available pool to collect Remote Support daily logs and real time events logs. If the password expires or changes, this will cause events to fail to be processed.

1.1.3.2 SNMP Configuration

SNMP on the CMS ProLiant Windows device must be enabled to communicate with the P4000 Storage Systems. Add each P4000 Storage System's IP address to the CMS trap receiver list or allow the CMS to receive traps from all IPs. If you do not modify the SNMP defaults that CMC uses, then communication between the P4000 Storage System and the CMS should work without modification.

1. On the CMS click Start \rightarrow Administrative Tools \rightarrow Services.

NOTE: If Administrative Tools does not display in the options, try Start \rightarrow Control Panel \rightarrow Administrative Tools \rightarrow Services.

- 2. Double click on **SNMP service** to open the Properties window.
- 3. On the **Traps** tab, make sure a community string is listed, and make sure localhost and 127.0.0.1 exists as a trap destination.
- 4. On the Security tab, choose either:

Accept SNMP packets from any host.

or

Accept SNMP packets from these hosts and use the Add feature to add your Managed Systems to the list.

5. Click OK to accept your changes and leave the SNMP properties configuration screen.

1.1.4 CMS Access Requirements

You must have *administrative rights* to Microsoft Windows on the Central Management Server (CMS). HP requires using the same Windows account on the CMS to install *and* configure both HP SIM and Insight Remote Support Advanced components.



IMPORTANT: Due to enhanced security features in Windows 2008 HP recommends that you run the installation as user administrator or as a user in the Administrators Group using the **Run as** Administrator option.

When accessing the CMS remotely using the Windows Remote Desktop Connection client, use the following switches:

 When connecting from a Windows XP, Windows 2000, or Windows 2003 system, use the /console switch:

c:\windows\system32\mstsc.exe /console

• When connecting from a Vista, Windows 2008, or Windows 7 system, use the /admin switch:

c:\windows\system32\mstsc.exe /admin

1.2 Installing/Upgrading CMC on the CMS

You will need to do the complete install of CMC to install the SNMP MIBs. If you do not modify the SNMP defaults that CMC uses, then SNMP should work with Insight Remote Support Advanced without modification.



NOTE: If you have CMC 8.5 already installed on a separate system you do not need to reinstall it on the CMS. CMC does not need to be co-located on the CMS for Insight Remote Support Advanced to work.

1.2.1 Installing and Configuring CMC

Install the centralized management console (CMC) on the computer that you will use to administer the SAN. You need administrative privileges while installing the CMC.

1. Insert the HP StorageWorks Management DVD in the DVD drive. The installer should launch automatically. Or, navigate to the executable (:\GUI\Windows\Disk1\InstData\VM\CMC Installer.exe)

Or download CMC at the following URL: www.hp.com/go/P4000downloads.

Select the Complete install option, which is recommended for users that use SNMP.

HP LeftHand Management Software for Microsoft Windows Home Service License HP LeftHand Management Software for Microsoft Windows	HP LeftHand Management Software for Microsoft Windows						
Home Service License	IP LeftHand Management Software for Microsoft Windows						
HP LeftHand Management Software for Microsoft Windows	Home Service License						
Home Centralized Management Console Failover Manager Service Console CLI Do not install any of the components other than the Centralized Management Console. The CLI is installed with Insight Remote Support. Insight Remote Support will provide the functionality of Service Console.							



NOTE: If you already have Service Console installed, you don't need to disable it. Insight Remote Support can co-exist with Service Console without conflict.

2. Use the Find Nodes wizard to discover the storage systems on the network, using either IP addresses or host names, or by using the subnet and gateway mask of the storage network.

Find Nodes Wizard	×
Search for nodes either globally or individually. Select subnet and mask, or IP address or hostname	Ø
How would you like to search for your nodes?	
 By Subnet and Mask (global broadcast) By IP address or Hostname (individual search) 	
To continue, click Next.	
ABack Next Ciose Can	cel <u>H</u> elp

The found storage systems appear in the available category in the CMC.



1.3 Configuring the P4000 Storage Systems

1.3.1 Upgrading the SAN/iQ Software on the P4000 Storage Systems

You will use CMC to upgrade to SAN/iQ 8.5 on the P4000 Storage Systems. If your P4000 Storage Systems already has SAN/iQ 8.5 installed, you do *not* need to perform this procedure.

When you upgrade the SAN/iQ software on a storage node, the version number changes. Check the current software version by selecting a storage node in the navigation window and viewing the Details tab window.

See Appendix A for flowcharts that describe how to upgrade from different versions of SAN/iQ.



NOTE: When installing/upgrading SAN/iQ 8.5, do not modify the default SNMP settings. The default settings are used by Insight Remote Support, and communication between the P4000 Storage System and the CMS will not function properly if the SNMP settings are modified.

1.3.1.1 Best Practices

- **LSMD upgrade** LSMD upgrade is required for upgrading from 7.x to 8.5.
- Virtual IP addresses If a Virtual IP (VIP) address is assigned to a storage node in a cluster, the VIP storage node needs to be upgraded last. The VIP storage node is shown on the cluster iSCSI tab, shown in Figure 1-2 "Find the Storage Node Running the VIP".
 - 1. First upgrade the non-VIP storage nodes that are running managers, one at a time.
 - 2. Then upgrade the non-VIP non-manager storage nodes.
 - 3. Lastly, upgrade the VIP storage node.

Figure 1-2 Find the Storage Node Running the VIP

<u>F</u> ile Find <u>T</u> asks <u>H</u> elp			
Configuration Started → Configuration Stummary → Available Nodes (2) → Sechange → Servers (1) → Servers (1)	Virtual IP Virtual IP Virtual IV is required for fault tolerance or Virtual IV is advress for this clust	Node Use SISCSI Sessions Rem load balanced ISCSI access.	note Snapshots / ISCSI /
- Bites	Virtual IP	Subnet Mask	Storage Node
ExchLogs	10.0.14.88	255.255.0.0	Denver-3
Performance Monitor			

 Remote Copy – If you are upgrading management groups with Remote Copy associations, you should upgrade the remote management groups first. If you upgrade the primary group first, Remote Copy may stop working temporarily, until both the primary management group and the remote group have finished upgrading. Upgrade the primary site to 8.5 immediately after upgrading the remote site to 8.5. Refer to How to verify management group version.

1.3.1.1.1 Selecting the Type of Upgrade

The release 8.5 CMC supports two methods of upgrades, as shown in Figure 1-3 "Viewing the CMC Upgrade/Installation Window".

- One-at-a-time (recommended) this is the **default and only method that should be used if the storage** nodes exist in a management group.
- Simultaneous (advanced) this allows you to upgrade multiple storage nodes at the same time if they are not in a management group. Use this only for storage nodes in the Available pool.

CAUTION: Do not select "Simultaneous (advanced)" if your storage nodes are in a production cluster.

Figure 1-3 Viewing the CMC Upgrade/Installation Window

	Install Software							
Select the software package to install on the node(s)								
File Name:	le Name: C:/Downloads/SANiQ_8.1.00.0027_20090212_all.upgrade Browse							
Version:	ersion: 8.1.00.0027							
-Read all the r	directions before con	tinuina						
This will upgr REQUIREMEN REQUIREMEN WARNING: Th	Read all the directions before continuing This will upgrade the software on the storage node to version 8.1.00.0027. REQUIREMENTS: The storage node must be running version 7.0.00 or later. REQUIREMENTS: The Centralized Management Console must be running version 8.1.00 or later. WARNING: The storage node will be rebooted during installation.							
nstall software on nodes selected in the table below:							100	
Mada	Node IP Address Software Version Management Gr Cluster Manager Special Manager VIP							
Node	IP Address	Software Version 8.0.00.1714.0	Management Gr Available Nodes	Cluster	Manager	Special Manager	VIP	
Node	IP Address -19 10.0.61.19 10.0.61.16	Software Version 8.0.00.1714.0 8.1.00.0018.0	Management Gr Available Nodes Available Nodes	Cluster	Manager	Special Wanager	4IV	
Node Node Solden-2 Node Node Node	IP Address -19 10.0.61.19 10.0.61.16 5 10.0.61.15	Software Version 8.0.00.1714.0 8.1.00.0018.0 8.1.00.0047.0	Management Gr Available Nodes Available Nodes Available Nodes	Cluster	Wallager	Special Manager	VIP .	
Node Node Solden-2 Node Node Node Node Node Node Node Node Node Node Solden-2 Solden-2 Solden-1 Solden-1 Solden-1	IP Address -19 10.0.61.19 10.0.61.16 5 10.0.61.15 10.0.61.17	Software Version 8.0.00.1714.0 8.1.00.0018.0 8.1.00.0047.0 8.1.00.0018.0	Management Gr Available Nodes Available Nodes Available Nodes Exchange	Log in to view	Yes	Special Mahager	VIP	
Node Node Solden-2 Solden-2 Solden-2 Solden-1 Solden-3	IP Address 19 10.0.61.19 10.0.61.16 10.0.61.15 10.0.61.17 10.0.60.24	Software Version 8.0.00.1714.0 8.1.00.0018.0 8.1.00.0047.0 8.1.00.0018.0 8.1.00.0018.0	Management Gr Available Nodes Available Nodes Available Nodes Exchange ExchangeBackup	Log in to view	Yes Yes	Speciariwanager		
Node Node Note	IP Address 19 10.61.19 10.0.61.16 10 5 10.0.61.15 10.0.61.17 10.0.60.24	Software Version 8.0.00.1714.0 8.1.00.0018.0 8.1.00.0018.0 8.1.00.0018.0 8.1.00.0018.0	Management Gr Available Nodes Available Nodes Exchange Exchange ExchangeBackup	Log in to view.	Yes Yes			
Node Solden-2 Colden-2 Solden-1 Solden-1 Solden-3 Solden-3	IP Address 19 10.0.61.19 10.0.61.16 5 10.0.61.15 10.0.61.17 10.0.60.24	Software Version 8.0.00.174.0 8.1.00.0018.0 8.1.00.0047.0 8.1.00.0018.0 8.1.00.0018.0 8.1.00.0018.0	Management Gr., A vailable Nodes A vailable Nodes A vailable Nodes Exchange ExchangeBackup mended)	Log in to view.	Yes Yes	Jupevan manager		
Node Node Science	IP Address 19 10.61.19 10.61.61 5 10.61.15 10.61.17 10.60.24	Software Version 80.00.1714.0 81.00.0018.0 81.00.0047.0 81.00.0048.0 81.00.0018.0 81.00.0018.0 81.00.0018.0	Management Gr., A vailable Nodes A vailable Nodes A vailable Nodes Exchange Exchange ExchangeBackup mended) anced)	Log in to view.	Yes Yes	Jyrcual marager	VIP	

1.3.1.2 Increase the Size of the OS Disk on the VSAs

Due to changes in the size of the VMware tools that get installed during this software upgrade, you must increase the size of the OS disk before upgrading the VSA. Additional space requirements are necessary for future software releases, as well. Therefore, we recommend increasing the size of the OS disk to accommodate both requirements at this time.

NOTE: These instructions apply to VMware ESX Server. Other VMware products have similar instructions for extending a virtual disk. Please consult the appropriate VMware documentation for the product you are using.

To increase the OS disk size on the VSA:

- 1. Using the CMC, power off the VSA.
- 2. Open the VI Client and select $\textbf{VSA} \rightarrow \textbf{Edit Settings} \rightarrow \textbf{Hardware}.$
- 3. Select Hard disk 1 (verify that the Virtual Device Node is SCSI (0:0)).
- 4. Under Disk provisioning, changed the provisioned size to 8 GB.
- 5. Click **OK**.

74

- 6. Repeat these steps for Hard disk 2 (verify the Virtual Device Node is SCSI (0:1))
- 7. Using the VI Client, power on the VSA.
- 8. Find the VSA in the CMC and apply the 8.5 upgrade.

1.3.1.3 Upgrade Software on Storage Nodes

- 1. Right-click the first storage node to upgrade and select **Install Software**. The Install Software window opens.
- 2. Select from the list which storage nodes to upgrade.
- 3. Select the upgrade.
- 4. Click Install.

1.3.1.4 Verify Management Group Version

- When upgrading from version 7.x to release 8.5, the management group version will not move to release 8.5 until all storage nodes in the management group (and in the remote management group if a Remote Copy relationship exists) are upgraded to release 8.5 SAN/iQ.
- When upgrading from version 7.x to release 8.5, the upgrade process validates the hardware identity of all of the storage nodes in the management group. If this validation fails for any reason, the management group version will not be upgraded to 8.5. For example, if a management group has a mix of platforms, some of which are unsupported by a software release; then only the supported platforms get upgraded successfully, the management group version will not be upgraded if the unsupported platforms remain in that management group.

1.3.1.4.1 How to Verify Management Group Version

In the CMC navigation window, select the management group, and then select the Registration tab.

The management group version number is at the top of the Registration Information section, as shown in Figure 1-4 "Verifying the Management Group Version Number".

Figure 1-4 Verifying the Management Group Version Number

ralized Management Console				
Details Remote Snapshots Time Registration				
	?			
Registration Information				
Management group version is 8.0.00, Manager auto upgrade is on ⊂ Communications protocol version is 6 ➡ ≪ Node Denver-1 → Provisioning server version is 8.0.00.1643.0 → Management server version is 8.0.00.1643				
Storage server version is 8.0.00.1643, LSMD (no replication, no J+M space) GLicensed for Managed Snapshot GLicensed for Multi-Node Virtualization and Clustering GLicensed for Multi-Site SAN Storage Storage Convector				
P Node Denver-3	•			

1.3.1.5 Check for Patches

After you have upgraded to release 8.5, go to **<u>www.hp.com/support</u>** and check for applicable patches required for your storage node.

1.3.2 Configuring the P4000 Storage Systems Communications

Use the following procedure to verify your SNMP settings. If you did not modify the SAN/iQ SNMP settings when you installed/upgraded SAN/iQ 8.5 then you should not need to make any updates during the following procedure.

Perform the following steps to verify and/or update your SNMP settings:

- **1.** Open the CMC application.
- 2. Verify that SNMP is enabled for each storage system:

NOTE: SAN/iQ 8.5 ships by default with SNMP enabled for all storage systems and configured with the "Default" Access Control list.

- a. Select SNMP in the left menu tree and open the SNMP General tab.
- **b.** Verify that the Agent Status is enabled.
- c. In the Access Control field, verify that either Default is listed or the CMS host IP address is listed. The Default option configures SNMP to be accessed by the public community string for all IP addresses.

NOTE: The SNMP settings on the P4000 Storage Systems need to match the SNMP settings on the CMS.

HP LeftHand Networks Centralized M	lanagement Console	
- <u>F</u> ile Find <u>I</u> asks <u>H</u> elp		
Getting Started	SNMP General SNMP Traps	
🕞 💿 Available Nodes (1)	General Settings	2
🖻 🐨 NSM260-17	Agent Status: Enabled, running	
Alerts	Community String: nublic	
- i Storage	System Location:	
TCP/IP Network	System Contact:	
E-Boulder-SAN85		
E Servers (1)	Access Control	Marali
Administration	IP / Hostname	Mask
B webes-Ihnsm5		
Alerts		
Hardware		
- SNMP		
TCP/IP Network		
Performance Monitor		
🗗 💿 Storage Nodes (3)		
D 🗘 🔍 NSM185-59		
Alerts		
- Gil Storage	SNMP General Tasks 🔻	
TCP/IP Network		
🛛 🗘 🗢 NSM2060-9	0 Alerts Remaining	
Alerts	# Date/Time Hostname IP Address	Alert Message
Hardware		
- Strage		
TCP/IP Network		
🖻 🗣 NSM4150-4		
Alerts	L	
Hardware	Alert Tasks 🔻	
	_ _	

3. Select **Alerts** in the left menu tree, and verify that alerts are configured with the "trap" option for each storage system.



NOTE: SAN/iQ 8.5 ships by default with traps set for all alert cases.

📊 HP LeftHand Networks Centralized Management Console					
File Find Tasks Help					
Cetting Started Configuration Summary Conf	Alert Setup Email Server Setup A To receive email alerts, set up the monitor the email server information on the Email S	lert Log File ed variables below and set up server Setup tab.	2		
- Alerts - Mardware - SNMP	Monitored Variables Boot Device Status	Frequency 1 minute	Actions Value changes: alert, trap		
TCP/IP Network	Cache Status	1 minute	Value does not equal normal: alert, trap Value changes: alert, trap Value does not equal normal: alert, trap		
B Servers (1)	Cluster Utilization	15 minutes	Value exceeds 90: alert, trap Value exceeds 95: alert, trap Value equals 100: alert, trap		
Alerts	Cluster Virtual IP Status Drive Heatth	1 hour 1 minute	Value does not equal normal: alert, trap Value equals critical: alert, trap, shut down Value changes: alert, trap		
- SNMP - I Storage	Drive Status Fan Status	1 minute 1 minute	Value changes: alert, trap Value does not equal normal: alert, trap		
	LogPart Utilization	2 minutes	Value exceeds 95: alert, trap Value exceeds 80:		
E Storage Nodes (3)	Management Group Maintenance Mode	15 minutes	Value equals true: alert, trap		
D Storage Notices (3)	Memory Utilization	1 minute	Value exceeds 90: alert, trap		
Alerts	Network Interface Status	1 minute	Value changes: alert, trap		
Hardware	Power Supply Status	1 minute	Value changes: alert, trap		
SNMP - Gill Storage - StorAP Network - NSM2060-9 - Alerts - Mardware - Gill Storage - Gill Storage	Alert Setup Tasks O Alerts Remaining Date/Time Hostname IP Address	Aler	Message		
I CPJP Network □ SM4150-4 → Alerts → Hardware ▼	Alert Tasks ▼				

- 4. Add the CMS IP address to the P4000 Storage System's SNMP trap send list. The CMS IP address is needed to configure SNMP traps on each storage system.
 - a. Select SNMP in the left menu tree and open the SNMP Traps tab.
 - **b.** Open the Edit SNMP Traps dialog by browsing to **SNMP Trap Tasks** \rightarrow **Edit SNMP Traps**.

🕞 HP Left Hand Networks Centralized Management Console				
<u>Fi</u> le Find <u>T</u> asks <u>H</u> elp				
Getting Started	SNMP General SNMP Trap Traps Settings Trap Community String: Trap Recipiente:	s public	Transformion	?
Hardware Show Sho	SNMP Trap Tasks 💌	IP / Hosthame	irap version	
TCP/IP Network	Edit SNMP Traps			
Star Technol S	Send Test Trap	Address	Alert Message	
Image: Second	Alert Tasks 🔻			

- c. In the Edit SNMP Traps dialog, click Add.
- **d.** In the Add IP or Hostname dialog, enter the IP address or hostname into the **IP or Hostname** field. Verify that the **Trap Version** is v1, and click **OK**.

Edit SNMP Traps		×	
SNMP Traps		?	
Trap Community Stri	ng: public		
Trap Recipients:	IP / Hostname	Version	
Add IP o	r Hostname	×	
IP or Ho	stname: 255.255.255.255		
Trap Ve	Trap Version: Ov2c Ov1		
	For integration with HP Ins Support, use	ight Remote ps.	
ок]	Cancel	
	Add Ed	t Remove	
ок		Cancel	

Repeat steps 3 to 4 for each P4000 Storage System. Alternatively, you could also configure one node using steps 3 to 4, then use the CMC copy node configuration option to copy the configuration to all other nodes.

- 5. Add an additional CMC user with read-only credentials. This is recommended if you don't want to have the CMS system administrator to have create/delete control of the storage systems.
 - a. Select Administration in the left menu tree.

🕞 HP LeftHand Networks Centralized Management Console					
<u>F</u> ile Find <u>T</u> asks <u>H</u> elp					
Getting Started			2		
—∑ ⁺ Configuration Summary	Users:				
Available Nodes (1)	User	Member of Groups	Description		
□ □ · • • • • • • • • • • • • • • • • •	6 AdminSAN	full_administrator			
Alerts					
Hardware					
SIMP Careero					
E Boulder-SAN85					
E Servers (1)					
Administration					
- Sites					
🗗 🞯 webes-Ihnsm5	🎥 Groups:				
Alerts	Group	Contains Users	Description		
Hardware	🕖 full_administrator	AdminSAN	Manage all Functions		
SNMP	🖸 view_only_administrator		View-only all Functions		
TCD4D Network					
Performance Monitor					
🕀 🐱 Storage Nodes (3)					
🔁 🖘 NSM185-59					
- 🖻 Alerts					
Hardware					
- SNMP	Administration Tasks 🔽				
-up Storage	Name Lines				
TCP/IP Network	s new user				
Alarts					
- Monto	Delete User stname IP Address	Alert Me	ssage		
SNMP	New Group				
- 🗊 Storage	Edit Group				
TCP/IP Network	Delete Group				
I □ I I I I I I I I I I I I I I I I I I	Help				
Alerts					
Hardware 💌	Alert Tasks 🔻				
	3				

b. Create a user group with read only access, if one does not already exist. Browse to Administrative Tasks \rightarrow New Group.

New Group				×
				?
Group Name:	read_only			
	3-40 characters. Must be numbers or lower case letters.			
Description:				
	0-40 characters. Must not beg	jin with a spa	ace.	
Group Permiss	ions			
		Read-Only	Read-Modify	Full
Change Passv	vord	۲	0	0
Management C	Groups, RAID, Drive Hot Swap	۲	0	0
Network (TCP.	Network (TCP/IP, SNMP, DNS, Time)		0	0
Storage Node	Storage Node Administration, Boot, Upgrade		0	0
System and Di	isk Report	۲		
This group cor	tains the following user(s)			
Add			Remov	
				-
ок			Car	icel

c. Create a new user. First select the group you created in the previous step, then go to Administrative Tasks → New User. Enter the User Name, Password, and click the Add button to add this user to the read only user group you created.

New User	×
	?
User Name:	user1 3-40 characters. Must begin with a letter
Description:	
	0-40 characters. Must begin with a letter.
Password:	•••••
	5-40 characters, no "/" or ":" allowed.
Confirm Password:	•••••
This user is a member	r of the following group(s)
Add	Remove
ок	Cancel

1.4 Installing and Configuring Insight Remote Support Advanced

NOTE: Please note that the following procedure does not detail every step in the installation procedure. It only highlights the steps necessary to successfully manage P4000 Storage Systems with Insight Remote Support Advanced. For the complete installation procedure please refer to the *HP Insight Remote Support Advanced CMS Configuration and Usage Guide*.

- 1. Install HP SIM. Accept all defaults.
- 2. Once the HP SIM installation completes, run the HP SIM First Time Wizard.
 - a. On the Credentials page, add public as the **Read community string** in the **SNMP Credentials** section.



NOTE: Do not add HP SIM sign-in credentials during discovery for P4000 Storage Systems/Management group at this point because they can't be used by Insight Remote Support to capture P4000 Storage System data.

🦉 First Time Wizard - Windows Intern	et Explorer			
First Time Wizard Configure HP Systems Insight Manager setti	ings			2
Step 4 of 9 ✓ Introduction ✓ Managed Environment ✓ Discovery Credentials Configure Managed Systems WBEM / WMI Mapper Proxy	Credentials Options → Security → Crede You can specify Sign-in and S Sign-in Credentials	entials NMP credentials to be used for the	System Automatic Discovery Task	
Privilege Elevation E-mail Summary	Sign-in credentials may be use Use these Sign-in credentials f	d for WBEM / WMI, SSH, and WS-M or the System Automatic Discover	MAN protocols. y Task	
	User name:	Password:	Contirm password:	<< Relate
	☐ If these credentials fail, tr	, y others that may apply. This may i	mpact performance. Learn more	<< Add
	SNMP Credentials	r the System Automatic Discovery	Task	
	Read community string: public	Selete		
	If these credentials fail, try	y others that may apply. This may i	mpact performance. Learn more < Previous	Next >
Done			lnternet	🔍 100% 🔻 //.

b. On the Configure Managed Systems page, in the **Configure SNMP** section, select the **Set read community string** box and add public to the text area if it is not already listed.

🖉 First Time Wizard - Windows Internet Explorer	
First Time Wizard	?
Configure HP Systems Insight Manager settings	-
Configure SNMP Learn more	_
Set read community string public	
Set traps to refer to this instance of HP Systems Insight Manager	
Here Send a test SNMP trap to this instance of HP Systems Insight Manager to make the HP Systems Insight Manager events lists	sure events appear in
Configure secure shell (SSH) access Learn more	
O Host based authentication	
\tilde{C} Each user has to be authenticated on the managed system	
Set trust relationship to "Trust by Certificate" Learn more	
< P r	evious Next > 🖵

- **3.** Discover the CMS and add warranty information for the CMS. This will entitle the CMS so that it can be monitored.
 - a. Select Options \rightarrow Discovery.
 - **b.** Click the **New** button to add a new discovery task.
 - c. Select the Discover a single system radio button and enter the IP address for the CMS.

Tools -	Deploy 🔻	Configure 🔻	Diagnose 👻	Optimize 🔻	Reports 👻	Tasks & Logs 🔻	Options 👻	Help 👻		
Disco Sign-in Sy Go back to	VERY stem Credentia Microsoft Win	ls dows Vista								
Configure	and run autom	atic system disco	very. Be sure to c	configure the set	tings prior to exe	ecuting automatic disc	overy for the ma	st accurate informatio	n.	
Note: To discovery	discover syste. (task. Or they)	ms properly, HP S can be added late	SIM must have cre r for each specifi	dentials with wi ic system using	oich to access th Options ⇒Secu	e systems. These ca rity ⇔Credentials ⇔S	n be configured System Credentia	here on this page by o Is. <i>Learn more</i>	clicking the "Credentials" butto	on on a new or edited
Note: Dis	scovery works	: best if systems	are discovered i	in a specific o	r der Learn more	9				
For all au Configu Manage Configu	itomatic disc i ire general sett e hosts files ire global proto	overies: ings col settings								
	Name			Υ T	Last Run	5	chedule		Comme	ents
•	System Au	tomatic Discovery			4/12/10 7:08 AM	1	'ask is Disable	d - Periodic		
					New	Edit	Enable	Delete	View Task Results	Run Now
New D	iscovery									
C Disc	cover a group o	of systems								
O Disc	cover a single s	system								
Required	field *									
Name: *	New Discover	y Task 1								
Schedule	e: utomatically exe days	eute discovery ev at 11:00 At	very:							
Enter the	e system's na	ame or IP addre	ss:*							
	nts:			* *	_					
					Cred	lentials C	onfigure/Repai	System	Types Save	Cancel

d. Click the Credentials button, add the Sign In and SNMP credentials, and click OK, then the Save button.

Sign In	SNMP			Show advanced protocol credentia
Sign-in Sy	stem Credentials:			
Sign-in credent	tials may be used for VVBE	M / WMI, SSH, and WS-MAN proto	ocols.	
Use these cr	redentials			
User	name:	Password:	Confirm Password:	
If these sy	vstem credentials fail. trv o	ther credentials that may apply. T	This may impact performance. Learn more	
				ок

- e. Select the discovery task created above and click the **Run Now** button.
- f. After discovery, if the contract and warranty status is unknown, select the system and browse to Options → System Properties → Set System Properties and fill out the information in the Contract and Warranty Information section.
- 4. Install Insight Remote Support Advanced. Follow the installation wizard and use the default settings.
- 5. Discover P4000 Storage System(s) by using Options → Discovery. Add IP ranges or add each node individually. If this doesn't work, verify that HP SIM global credential for SNMP matches SNMP General Settings of each P4000 Storage System(s) as shown in CMC.

When discovering new P4000 devices, do not include any P4000 Management Group Virtual IP (VIP) addresses. VIP addresses are created when you create and configure P4000 clusters. Instead, discover P4000 devices using individual IP addresses, or create IP discovery ranges excluding all P4000 VIP addresses.

If you do discover a P4000 VIP address, you should delete the managed entity for the VIP address from Insight Remote Support Advanced before running any collections or capturing any test traps. After deleting the VIP address entity, re-discover the node using the actual IP address for the P4000 device.

6. From HP SIM, select each P4000 Storage System(s) and browse to Options → System Properties → Set System Properties to add site, contact and entitlement information to each device.

Contract and Warranty Info	ormation				
Entitlement Information					
Customer-Entered serial number:					
Customer-Entered product number:					
System Country code:	[Choose a country]		•		
Entitlement type:					
Entitlement ID:					
Obligation ID:					
Custom Delivery ID:					
System Site Information					
Site name: *	[None selected]	Manage Sites	1		
Customer Contact					
Primary customer contact: *	[None selected]	Manage Contacts			
Secondary customer contact:	[None selected]				
Primary service contact:	[None selected]				
				ок	Cancel

Once you add these three items to a node, the node should be listed in the HP SIM left panel under **Insight Remote Support Services** and **System is Remote Support Eligible**. This list can take a few minutes to update.

- 7. From HP SIM, check entitlement for P4000 Storage System(s) as follows:
 - a. Options \rightarrow Remote Support Configuration and Services.
 - **b.** Select the **Entitlement** tab.
 - c. Select each new P4000 Storage System(s) with check box on left of Remote Support System List screen.
 - **d.** Select **Entitle Checked** from the **Action List** dropdown menu at the bottom of the screen. Select the **Run Action** button, and once the progress shows as complete, select the **Refresh** button. The node selected should show all green checks in the left size status fields.

ols – Deploy – Configure – Dia	gnose 👻 Optimize 👻	Reports 👻 Task	s & Logs 👻 Option	s + Help +		
emote Support Configurat	ion and Service	S				
back to						
Service Health Settings Entitlem	ent Service Provider:	s Data Services	SAN SERVICES	Server Services	Components	Storage Services
Pomoto Support System	liet					
Kennote Support System	List					
Action Status Message:				Progres	s:	
TE RS ENT CP	System Name	Serial #	Product #	cc	Ent Tyme	Ent ID OID
	outon porto	oorioloumbor	productoumbor			
	system-nume	Schandmoor	productriamper			
Page 1						displaying systems 1-1 o
Search By System Name:		Action List Se	lect an Action	Run Action	Refresh Show	v All Synchronize RSE
		Se	ect an Action			
		Re-Er	titlement tile Checked			
		Er	title All			
		Trans	port Enablement			
		Di	able Checked			
		En	able All			
		Di	able All			

IMPORTANT: You will need to fix any status items that are not green before going to the next steps.

Once you complete these tasks, each the node should be listed in the HP SIM left panel under **Insight Remote Support Services**, **System is Remote Support Eligible** and **System is Remote Support Enabled**. This list can take a few minutes to update. Repeat steps 6 and 7 for each new P4000 Storage System added to the Remote Support eligible systems list.

- 8. From HP SIM, add the P4000 Storage System collection credentials to Remote Support as follows:
 - a. Options \rightarrow Remote Support Configuration and Services.
 - **b.** Select the **Storage Services** tab and then select the **P4000 Family Configuration Collections** tab.
 - c. Select New Credential Group button.

Servi	ce H	lealth	Se	ttings En	itleme	ent Service	Providers	Data Servi	ices	SAN Service	s S	erver Services	Compor	ents Storage	Services					
Stora	je Co	ollection	P40	999 Family Configur	ition C	ollections														
Statu	Mes	ssage: <mark>M</mark>	led May 26	6 11:54:18 2010 - P40	10 Fami	ly Services Loaded														
S	amma	ary Cr	edential G	iroups Status Me	sage H	fistory Configure	tion Assist	ant Support	Fools											
н	ere a	re the def	ault crede	ntial groups																
	Grou	ıp	Descripti	ion	SNM	P Read	SN	MP Write		Username		Pass	word	SU User			SU Pass	E)elete Grou	ip.
		1																	Dele	ate
ок	¢	RSC ¢	CC ¢	Device Name	•	IP Address 🛛 🕸	Device T	vpe ¢	Connecti	on Protocol	•	Credential G	roup	Ø Username (SN)	MP Read)	¢ Pa	assword (SNMP Write)	\$	Addi ¢	Test ¢
C		1	0	example		255.255.255.255	P4000		SANG	2	•	None	•	Admin			•••••		Edit	Test 📀
0		•	0	example		255.255.255.255	P4000		SANG	2	•	None	•	Admin			•••••		Edit	Test 📀
ø		•	0	example		255.255.255.255	P4000		SANG	2	•	None	•	Admin			•••••		Edit	Test 😣
B (•	B																	Displayin	ig devices 1-3 of 3
														New	Credential	Group	Clear All Changes	ş	Save A	II Changes



NOTE: HP recommends that users create one or more credential groups for devices:

- One for each management group, and associate it with the proper devices.
- One for devices not in a management group, and associate it with the proper devices.
- **d.** Enter the **Description**, **UserName** and **Password**. These credentials are the Username and Password when the Management Group was created in CMC.

NOTE: The **SU User**, **SU Pass**, **SNMP Read**, and **SNMP Write** fields are not required for P4000 Family Configuration Collections or real time event logging.

- e. In the device list, edit each P4000 Storage System so that the **Cred Group** uses the credential group created in the previous step. Note that the **Connection** type should be *SANIQ* for each P4000 Storage System, and **Type** should be shown as *P4000*.
- f. Test the connection to each P4000 Storage System by selecting the Test button on the right side. The text of this button will change to "running" while it checks the credentials. Once the test completes, the Test button's text color will change to green if the connection succeeded and red text if the connection failed.

NOTE: P4000 Storage Systems that are not in a Management Group can use any valid 3 character P4000 CLI username and any valid 5 character P4000 CLI password can be used as credentials for P4000 Storage Systems in the available pool to collect Remote Support daily logs and real time events logs.

g. Click Save All Changes.

There is no need to repeat this step for each P4000 Storage System if the new P4000 Storage System(s) have the same Management Group credentials already added to Insight Remote Support.

 Add each device to the daily Collection Schedule. Select Tasks & Logs → View All Scheduled Tasks. Select the P4000 Family Configuration Collection radio button and click the Edit button. Select the Add Targets button, select your systems, and then click the Run Now button.

Tools	- Deploy -	Configure 👻	Diagnose 👻	Optimize 👻	Reports 👻	Tasks & Logs 👻	Options 👻	Help 🛨				
All S View, r Go bac	Scheduled naintain and contro k to	Tasks	5									
Click a	row to select and	view task results									Total: 21	
	Name				↑ Tool			Last Run	Sch	nedule		
0	Daily System Ider	ntification			Identify Sys	stems		4/11/10 4:	05 PM Per	iodic - Next Run: 4/12	/10 4:05 PM	•
0	Delete Events Oli	der Than 90 Days			Delete Ever	nts		Never	Tas	sk is Disabled - Peri	odic	
0	Delete Old Noisy	Events			Delete Ever	nts		Never	Tas	sk is Disabled - Peri	odic	
0	Hardware Status	Polling for non S	ervers		Hardware	Status Polling		4/12/10 9:	41 AM Per	iodic - Next Run: 4/12	/10 9:51 AM	
0	Hardware Status	Polling for Serve	rs		Hardware :	Status Polling		4/12/10 9:	41 AM Per	iodic - Next Run: 4/12	/10 9:46 AM	
0	Hardware Status	Polling for System	ms no Longer Dis	abled	Hardware 3	Status Polling		Never	Sys	tem/Event Driven		
0	Initial Contract an	d Warranty Collec	ction		Contract an	nd Warranty Data Colle	ction	4/12/10 7:	12 AM Sys	tem/Event Driven		
0	Initial Data Collect	tion			Data Collec	tion		4/5/10 9:4	0 AM Sys	tem/Event Driven		
0	Initial Hardware S	Status Polling			Hardware	Status Polling		4/12/10 7:	12 AM Sys	tem/Event Driven		
0	Monthly Contract	and Warranty Co	ollection		Contract an	nd Warranty Data Colle	ction	4/5/10 10:	38 AM Per	iodic - Next Run: 5/5/	10 10:38 AM	
•	P4000 Family Cor	nfiguration Collect	ion		HP Service	P4000 Family Configu	ation Collection	4/12/10 1:	30 AM Per	iodic - Next Run: 4/13	/10 1:30 AM	
0	SAN Configuration	n Collection			HP Service	SAN Configuration Co	lection	4/11/10 1:	00 AM Per	iodic - Next Run: 4/18	/10 1:00 AM	•
								Due Heur	Diss. bis		D-1-4-	

 Run the configuration collection by selecting Options → Status Polling → HP Service P4000 Family Configuration Collection. Click Add Targets to select your systems, and then click the Run Now button.

Tools 🔻	Deploy 👻	Configure 🔻	Diagnose 🔻	Optimize 🔻	Reports 🔻	Tasks & Logs 👻	Options 👻	Help 👻			
HP Se This tool co Go back to	ervice P4 Intacts the RSC	DOO Fami	ly Configu ects it to collect f	rom devices in th	Ilection he SIM collectio	n P4000 Family Configu	ration Collection	ı			
Step 1:	Verify Tar	jet Systems									
The tool w	ill run on the fol	owing systems.	lf you are happy	with this selectic	n, click "Sched	dule" or "Run Now".					
Name						os	Турс	e Tool lau	inch OK?		†
P4000 Fa	mily Configur	ation Collection	n					Yes			
				Add T	argets	Remove Target	Add Fue	nt Filter Rem	noue Eilfer	Schedule	Pup Now

11. To verify that the P4000 Storage System(s) are communicating with the CMS, open CMC and select at least one storage node and send a test trap to the CMS. Select **SNMP** in the left menu tree and open the **SNMP Traps** tab. In the **SNMP Trap Tasks** dropdown menu, select **Send Test Trap**.

I HP LeftHand Networks Centralized N	1anagement Console			_ 🗆 🗙				
<u>F</u> ile Find <u>T</u> asks <u>H</u> elp								
Configuration Summary → Configuration Summary → Available Nodes (1) → NSW250-17 → Alerts	SNMP General SNMP Traps Traps Settings Trap Community String: v1							
Hardware	Trap Recipients:	IP / Hostname	Trap Version	-				
- Storage		255 255 255 255	v1					
TCP/IP Network		255.255.255.255	v1					
🕀 🔯 Boulder-SAN85		255.255.255.255	v1					
	SNMP Trap Tasks V Edit SNMP Traps Send Test Trap Help Alert Tasks V	IP Address	Alert Message					

Go to CMS configurations to verify that the test event was posted to the CMS logs. The CMC read-only credentials were verified during device discovery when each SAN/iQ device was added to CMS monitored listed.

A SAN/iQ Upgrade Flowcharts

This appendix contains flowcharts that show the necessary steps to upgrade SAN/iQ to version 8.5 from previous versions of SAN/iQ.

A.1 Upgrade Flowcharts

A.1.1 Upgrade from 7.0.00

If you are upgrading to SAN/iQ 8.5 from version 7.0.00, Figure A-1 shows the steps you need to perform.

Figure A-1 Upgrade from 7.0.00



A.1.2 Upgrade from 7.0.01

If you are upgrading to SAN/iQ 8.5 from version 7.0.01, Figure A-2 shows the steps you need to perform.





A.1.3 Upgrade from 8.0.00

If you are upgrading to SAN/iQ 8.5 from version 7.0.01, Figure A-3 shows the steps you need to perform.

Figure A-3 Upgrade from 8.0.00



A.1.4 Upgrade from 8.1.00

If you are upgrading to SAN/iQ 8.5 from version 7.0.01, Figure A-4 shows the steps you need to perform.





Glossary

Central Management Server (CMS)	A system in the management domain that executes the HP Systems Insight Manager (HP SIM) software. All central operations within HP SIM are initiated from this system.
Centralized Management Console (CMC)	The CMC is used to configure and manage the P4000 Storage Systems.
CLIQ	Legacy term for the SAN/iQ command line interface. See P4000 CLI.
Cluster	A cluster is a grouping of storage nodes that create the storage pool from which you create volumes.
Health Check	The LeftHand Networks Health Check Utility is used to send monitoring log file information from customer sites to LeftHand Networks for troubleshooting and proactive health monitoring. See Service Console.
HP Systems Insight Manager (HP SIM)	HP SIM is a unified server and storage management platform. From a single management console, administrators can manage their complete HP server and storage environment with a secure management tool set.
Login Credentials	Login and password parameters passed to the command line interface (P4000 Integration Module) to authenticate the Centralised Management System with the P4000 Storage System Management Group.
Managed System	Any system managed by Insight Remote Support, such as servers, desktops, storage systems, and Remote Insight Boards (RIBs).
Management Group	A collection of one or more storage nodes which serves as the container within which you cluster storage nodes and create volumes for storage.
Node	A P4000 SAN is a cluster of Storage Nodes that create the storage pool from which virtualized volumes are created.
P4000 CLI	The P4000 CLI is the command line interface that is used to interface with the P4000 Storage Systems from the CMS . The P4000 CLI is installed with Insight Remote Support Advanced. Note that the P4000 CLI is sometimes referred to as $cliq$, which is the name of the command used within the P4000 CLI.
Service Console	The Service Console is the legacy software that enabled remote hardware and software support for P4000 Storage Systems. This functionality is now provided by Insight Remote Support. See Health Check.
Virtual Node	The P4000 Virtual SAN Appliance uses captive server disk drives to build a virtual iSCSI SAN consisting of Virtual Nodes that create the storage pool from which virtualized volumes are created. Virtual Nodes can be discovered and managed in the same manner as physical Storage Nodes.
Volume	A logical entity that is made up of storage on one or more storage nodes. It can be used as raw data storage or it can be formatted with a file system and used by a host or file server.

Index

A

Access Requirements, 8

С

CMC Installing, 8 CMS Access Requirements, 8 CMS System Requirements Hardware, 5 Operating System, 6 Software, 7 Communication Requirements Password Management, 7 SNMP, 7 Configuring SNMP On the CMS, 7 On the P4000 Storage Systems, 13

Η

Hardware Requirements, 5

I

Insight Remote Support Advanced Installing, 16 Installing CMC, 8 Installing Insight Remote Support Advanced, 16

0

Operating System Requirements, 6

Ρ

P4000 Storage System Requirements Software, 7 Password Management, 7

S

SAN/iQ Upgrading, 10 Software Requirements CMS, 7 P4000 Storage Systems, 7

U

Upgrading SAN/iQ Flowchart from version 7.0.00, 23 Flowchart from version 7.0.01, 24 Flowchart from version 8.0.00, 25 Flowchart from version 8.1.00, 26 Procedure, 10