

Title: Adding PCI adapters to SAN Volume Controller model DH8 or SV1

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(P) 01YM715A



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Before installation (Sections 1 through 8)

1.0 Machines affected

These feature codes apply to any SAN Volume Controller model 2145-DH8 or 214x-SV1 (2145-SV1 or 2147-SV1) engine for which the upgrade was ordered.

The SAN Volume Controller 2147-SV1 is physically identical to the 2145-SV1, but includes three-year Enterprise Class Support and warranty.

Feature	Description	Maximum per DH8	Maximum per SV1	FRU part number
AH10	4 port 8Gbps Fibre Channel Card with four shortwave SFPs	3 (4 after 7.6.0.3)	0	31P1702
AH11	2 port 16Gbps Fibre Channel Card with two short-wave SFPs	4	0	00RY004
AH12	4 port 10Gbps Ethernet Card with four SFP+	1 (2 at 8.1.1.0)	1	00AR319
AH13	4 port 12Gbps SAS Card. Required for SAS expansion enclosure attachment	1	1	64P8485
AH14	4 port 16Gbps Fibre Channel adapter with four short-wave SFPs	4	4	00WY983
AH16	2 port 25Gbps Ethernet (RoCE) adapter with two SFP28	0	3	01LJ590
AH17	2 port 25Gbps Ethernet (iWARP) adapter with two SFP28	0	3	01LJ591
AH1A	Compression accelerator card. Requires feature AH1B in a DH8.	2	2	00AR065

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2.0 Related bills of material (BOMs) or engineering changes (ECs)

2.1 Prerequisite

The IBM Spectrum Virtualize software on the DH8 must be at the version shown in the following table or newer.

214x-SV1 is not supported on versions of the software prior to 7.7.1.0.

Feature	Description	Minimum Software level
AH10	4 port 8Gbps Fibre Channel Card with four shortwave SFPs	7.3.0.0 (7.6.0.3 for 4)
AH11	2 port 16Gbps Fibre Channel Card with two short-wave SFPs	7.4.0.0
AH12	4 port 10Gbps Ethernet Card with four SFP+	7.3.0.0 for 1 8.1.1.0 for 2
AH13	4 port 12Gbps SAS Card. Required for Model 24F attachment	7.3.0.0
AH14	4 port 16Gbps Fibre Channel adapter with four short-wave SFPs	7.6.0.0
AH16	2 port 25Gbps Ethernet (RoCE) adapter with two SFP28	8.1.1.1
AH17	2 port 25Gbps Ethernet (iWARP) adapter with two SFP28	8.1.1.1
AH1A	Compression accelerator card. Requires feature AH1B in a DH8.	7.3.0.0

Feature code AH1B Additional microprocessor and 32GB memory, must be fitted in the 2145-DH8 node for adapters cards to function in PCI express expansion slots 4 to 6 provided by PCI express riser card assembly 2 (the one nearest to the power supplies). Feature code AH1A Compression accelerator card will only function in PCI express slot 4 and 6 for DH8. All SV1 have the required microprocessors and memory fitted as standard.

Users must either use the localfcportmask/remotefcportmask or be careful with zoning if using more than 4 fabric ports per SVC node. Fabric ports are Fibre Channel (FC) or Fibre Channel over ethernet (FCoE) ports which are *physically* 10 Gbps Ethernet ports.

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2.2 Concurrent

The following table identifies which Feature codes or models can be added at the same time as installing a PCI express adapter feature in a San Volume controller 2145-DH8 or 2145/2147-SV1 up to the maximum number shown.

Feature or Model	Description	Max add to DH8	Max add to SV1
2145-12F	3.5-inch SAS drive expansion enclosure	0 to 20	0 to 20
2145-24F	2.5-inch SAS drive expansion enclosure	0 to 20	0 to 20
214x-92F	92 SAS drive expansion enclosure	0 to 8	0 to 8
AH10	4 port 8Gb FC adapter card with four SW SFPs	4	0
AH11	2 port 16Gbps Fibre Channel Card with two short-wave SFP Transceivers	4	0
AH12	4 port 10Gb Ethernet adapter card with four SFPs	1 (2 at 8.1.1.0)	1
AH13	4 port 12Gb SAS adapter card. Connects up to 2 SAS drive expansion enclosures	1	1
AH14	4 port 16Gbps Fibre Channel Card with four short-wave SFP Transceivers	4	4
AH16	2 port 25Gbps Ethernet (RoCE) adapter with two SFP28	0	3
AH17	2 port 25Gbps Ethernet (iWARP) adapter with two SFP28	0	3
AH1A	Compression accelerator card. Requires feature AH1B for 2145-DH8	2	2
AH1T	Two 8Gbps Fibre Channel long-wave SFP Transceivers		
ACHU	Two 16Gbps Fibre Channel long-wave SFP Transceivers		

2.3 Companion

The other Feature codes that can be used with the PCI adapter card features are:

Feature or Model	Description	Max per DH8	Max per SV1
214x-92F	92 SAS drive expansion enclosure	0 to 8	0 to 8
214x-12F 984x-12F	3.5-inch SAS drive expansion enclosure	0 to 20	0 to 20
2145-24F	2.5-inch SAS drive expansion enclosure (DH8-only)	0 to 20	0 to 20
AH10	4 port 8Gb FC Card with four short-wave SFPs	4	0
AH11	2 port 16Gbps Fibre Channel Card with two short-wave SFP Transceivers	4	0
AH12	4 port 10Gb Ethernet Card with four SFPs	1 (2 at 8.1.1.0)	1
AH13	4 port 12Gb SAS adapter. Required for SAS drive expansion attachment	1	1

AH14	4 port 16Gbps Fibre Channel Card with four short-wave SFP Transceivers	4	4
AH16	2 port 25Gbps Ethernet (RoCE) adapter with two SFP28	0	3
AH17	2 port 25Gbps Ethernet (iWARP) adapter with two SFP28	0	3
AH1A	Compression accelerator card. Requires feature AH1B for 2145-DH8	2	2
AH1B	Additional microprocessor and 32GB memory	1	In base
AH1T	Two 8Gbps Fibre Channel long-wave SFP Transceivers		
ACHU	Two 16Gbps Fibre Channel long-wave SFP Transceivers		

Each pair of DH8 or SV1 with an AH13 4 port 12Gbps SAS adapter fitted can attach up to twenty 2U SAS drive expansion enclosures (24F or 12F) or up to 8 5U 92 SAS drive expansion enclosures (92F).

The Fibre Channel long-wave SFP transceivers can be used for metro mirror and global mirror links between systems on different sites.

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3.0 Bills of Material to be installed

Any number and combination of the following up to the maximum quantity per node shown:

Feature	Description	Maximum per DH8	Maximum per SV1	FRU part number
AH10	4 port 8Gbps Fibre Channel adapter with four Shortwave SFPs	4	0	31P1702
AH11	2 port 16Gbps Fibre Channel adapter with two short-wave SFPs	4	0	00RY004
AH12	4 port 10Gbps Ethernet adapter with four SFPs Used for Fibre Channel over Ethernet (FCoE), iSCSI and IP replication.	2	1	00AR319
AH13	4 port 12Gbps SAS adapter. Required for Model 12F and 24F attachment.	1	1	64P8485
AH14	4 port 16Gbps Fibre Channel adapter with four short-wave SFPs	4	4	00WY983
AH16	2 port 25Gbps Ethernet (RoCE) adapter with two SFP28	0	3	01LJ590
AH17	2 port 25Gbps Ethernet (iWARP) adapter with two SFP28	0	3	01LJ591
AH1A	Compression accelerator. Requires feature AH1B for 2145-DH8	2	2	00AR065

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4.0 Preparation

- ___ 1. Read and understand the purpose of this installation instruction.
- ___ 2. Make sure the customer has provided the following plans with reference to the Planning section of the SAN Volume controller Knowledge Center:

A plan of which PCI express expansion slot each of the PCI express adapter cards should be installed in
A plan of which 10 Gbps Ethernet switch ports should be connected to each port of any new 10Gbps Ethernet adapter card
A plan of what IP addresses will be assigned to each port of any new 10Gbps Ethernet Adapter
A plan of which of his Fibre Channel switch ports should be connected to each port of any new Fibre Channel Adapters
A plan of which WWPN each of the FC or FCoE ports will be able to communicate with
A plan for the Storage Area Network Zoning and the local port mask and remote port mask settings

- ___ 3. Check that the customer's plans are supported by the software level of the system. Make sure that you have the latest level of this document because future versions of the software might support new hardware configuration options such as more Host Interface Cards, more expansion enclosures. Here are the checks to make. Check the following as appropriate:

Is each of the adapter cards supported in the slot planned? See the following table. Note for DH8 an existing Fibre Channel adapter in PCIe slot 2 can be moved to PCIe slot 1 so that a new 10 Gbps Ethernet adapter can be installed in PCIe slot 2. This will only be necessary if PCIe Slot 5 cannot be used because the additional microprocessor will not be fitted. The World Wide Port Names (WWPN) of the Fibre Channel adapter will change if it is moved from PCIe slot 2 to slot 1. The Storage Area Network zoning might need to be changed and a rescan of the multi pathing on each host might be needed.
If there will be more than 4 fabric ports per node (FC and FCoE) then has the customer planned to avoid more than 16 node fabric logins being received by each node from other nodes? See: http://www.ibm.com/support/knowledgecenter/STPVGU_7.5.0/com.ibm.storage.svc.console.750.doc/svc_planning_morethanfourfabricports.html
For DH8 if a compression accelerator will be fitted is the additional microprocessor already fitted or will it be fitted at the same time?
If a SAS adapter will be added and if PCIe slot 3 already contains an adapter card then it must be discarded or moved to slot 5 so that the SAS adapter can be fitted in slot 3.

SVC 2145-DH8 adapter slot placement table

PCIe slot	Cards supported	PCIe slot	Cards supported
1	8 Gbps Fibre Channel or 16 Gbps Fibre Channel	4	Compression Accelerator
2	8 Gbps Fibre Channel or 16 Gbps Fibre Channel or 10 Gbps Ethernet	5	8 Gbps Fibre Channel or 16 Gbps Fibre Channel or 10 Gbps Ethernet
3	12 Gbps SAS or 8 Gbps Fibre Channel or 16 Gbps Fibre Channel	6	Compression Accelerator

To fit the SAS adapter in the only slot that it will work in (slot 3) there might already be an adapter in slot 3 which must be moved to slot 5 or discarded.

These are the WWPNs of the ports of an adapter in slot 3 on DH8.

Port 1	500507680c 31 xxxx
Port 2	500507680c 32 xxxx
Port 3	500507680 133 xxxx
Port 4	500507680 134 xxxx

These are the WWPNs of the ports of an adapter in slot 5 on DH8.

Port 1	500507680c 51 xxxx
Port 2	500507680c 52 xxxx
Port 3	500507680c 53 xxxx
Port 4	500507680c 54 xxxx

If you move a network adapter to slot 5 and the port cabling with it then the customer might need to change the fabric zoning because of the WWPN changes.

See “2.1 Prerequisite” on page 2, for the minimum software level needed to support each type of adapter.

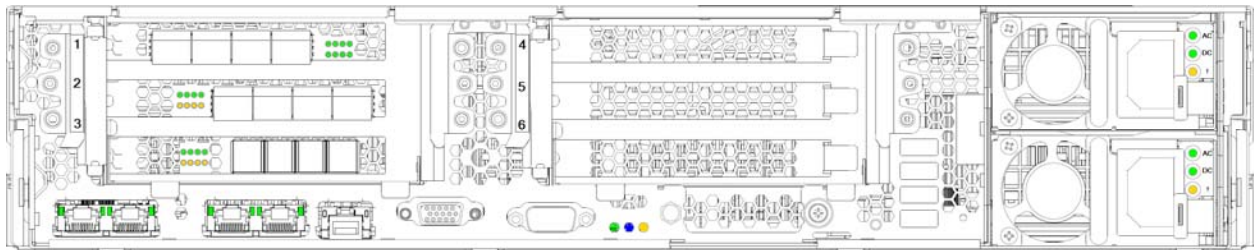


Figure 1. DH8 – Rear view showing the PCI express expansion slots 1 to 6

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SVC 214x-SV1 node adapter slot placement table

PCIe slot	Cards supported	PCIe slot	Cards supported	PCIe slot	Cards supported
1	Unused	3	16 Gbps Fibre Channel or 10 Gbps Ethernet or 25 Gbps Ethernet	6	16 Gbps Fibre Channel or 10 Gbps Ethernet or 25 Gbps Ethernet
2	12 Gbps SAS	4	16 Gbps Fibre Channel or 10 Gbps Ethernet or 25 Gbps Ethernet	7	16 Gbps Fibre Channel or 10 Gbps Ethernet or 25 Gbps Ethernet
		5	Compression Accelerator or 12 Gbps SAS	8	Compression Accelerator

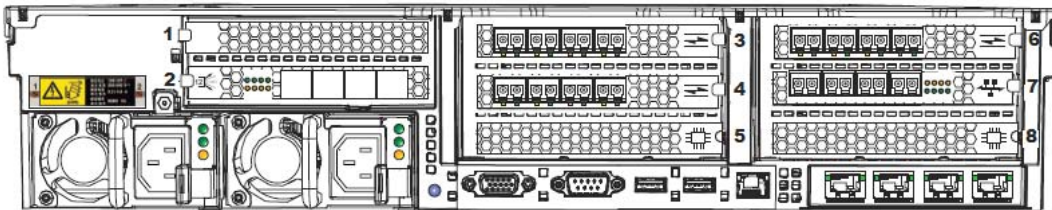


Figure 2. SV1 – Rear view showing the PCI express expansion slots

___ 4. For DH8 additional care is needed if a 4-port adapter is to be replaced by a 2-port adapter in the same PCIe expansion slot, or if a 2-port adapter is to be replaced by a 4-port adapter. For more information search ibm.com/support for the following documents:

Upgrading From a 8Gbps SVC Node to a 16Gbps SVC 2145-DH8 node

Upgrading a 2-port 16Gbps HBA to a 4-port 16Gbps HBA on a SVC 2145-DH8 node with a legacy WWNN

___ 5. Care is needed when adding **another** Ethernet adapter to nodes that have already been used with Ethernet adapters. Use the appendix at the end of this document: [Adding another Ethernet adapter non-disruptively](#)

___ 6. **Important:** The customer has ordered upgrades for one or more DH8 or SV1. Install the upgrades only to those machines that are listed by serial number in the order.

___ 7. It is probable that more than one DH8 or SV1 in the system is being upgraded. If so, plan the order in which you upgrade the nodes so that the two nodes in an I/O group are not upgraded one immediately after the other. This allows more time for the host systems to recover their connections to the system and reduces the chance of loss of access to volumes. Allow at least 30 minutes between finishing upgrading the first node in an input output group (I/O group) until starting to upgrade the second node in the same I/O group.

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__ 8. The customer might also have ordered SAS drive expansion enclosures to attach to a node pair and some SAS drive features.

__ 9. The customer provides access to the management GUI and command line.

Note: Cooperate with any customer who might want to supervise the use of the management GUI.

__ 10. Wear an anti-static wrist strap during any procedure that involves removing or replacing parts inside the node. In addition, use a static-protected mat or work surface, when possible.

5.0 Program Updates

None

6.0 Purpose and Description

6.1 Purpose

The purpose of these installation instructions is to install and test one or more PCI express adapter features as shown in this table.

Feature	Description	Maximum add per DH8	Maximum add per SV1
AH10	4 port 8Gbps Fibre Channel adapter with four short-wave SFPs	4	0
AH11	2 port 16Gbps Fibre Channel adapter with two short-wave SFPs	4	0
AH12	4 port 10Gbps Ethernet adapter with four SFPs	2	1
AH13	4 port 12Gbps SAS adapter. Required for Model 24F attachment	1	1
AH14	4 port 16Gbps Fibre Channel adapter with four short-wave SFPs	4	4
AH16	2 port 25Gbps Ethernet (RoCE) adapter with two SFP28	0	3
AH17	2 port 25Gbps Ethernet (iWARP) adapter with two SFP28	0	3
AH1A	Compression accelerator. Requires feature AH1B for 2145-DH8	2	2

6.2 Description

Use these installation instructions to upgrade a DH8 or SV1 by installing one or more PCI express adapter card features.

7.0 Installation time

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Concurrent Installation

SSR Hours	Machine (Subsystem) Hours	System Hours	No. of SSRs
1.2 for 1 card	0.0	0.0	1
1.4 for 2 cards	0.0	0.0	1
1.6 for 3 cards	0.0	0.0	1
1.8 for 4 cards	0.0	0.0	1
2.0 for 5 cards	0.0	0.0	1
2.2 for 6 cards	0.0	0.0	1

Subsystem hours means the estimated total outage time that the customer does not have access to the data.

8.0 Special tools and/or materials required

None.

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Installation (Sections 9 through 12)

9.0 Safety

Observe all normal safety precautions. Read any safety notices provided with the adapter card feature.

10.0 Details of installation

Use these instructions to upgrade a DH8 or SV1 node by installing PCI express adapter cards.

If adding another Ethernet adapter, then use the appendix at the end of this document: [Adding another Ethernet adapter non-disruptively](#)

The upgrade procedure involves several steps:

1. Prepare for the installation.
2. Before powering off the node.
3. Powering off a node which has software level 8.1.0.0 or after. This must be performed without disrupting the operation of the clustered system.
4. Powering off a node which has software level older than 8.1.0.0.
5. Optionally remove the node from the rack.
6. Install the PCI express adapter cards.
7. Replace the node in the rack.
8. Cable up new ports if required.
9. Test the new configuration.
10. Return the node to the customer.

10.1 Preparing for the installation

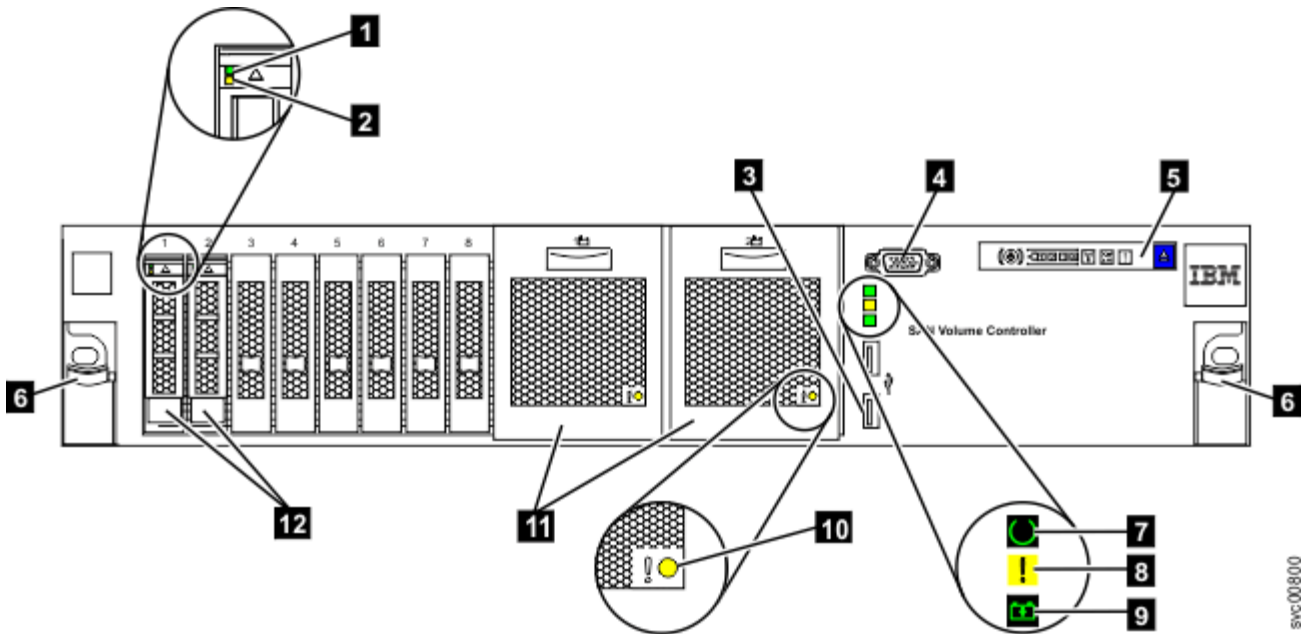
___ 11. If the DH8 or SV1 node has not been installed in a rack and powered on yet, go to section 10.6 Installing the PCI adapter cards.

___ 12. Do not continue with this upgrade on a node that has an existing problem. If the node fault LED is on solid in the front panel, follow the procedures in the *Troubleshooting Guide* to fix the problem before continuing with these instructions.

Figure 3 shows the controls and indicators on the front panel of the DH8.

Figure 4 shows the controls and indicators on the front panel of the SV1.

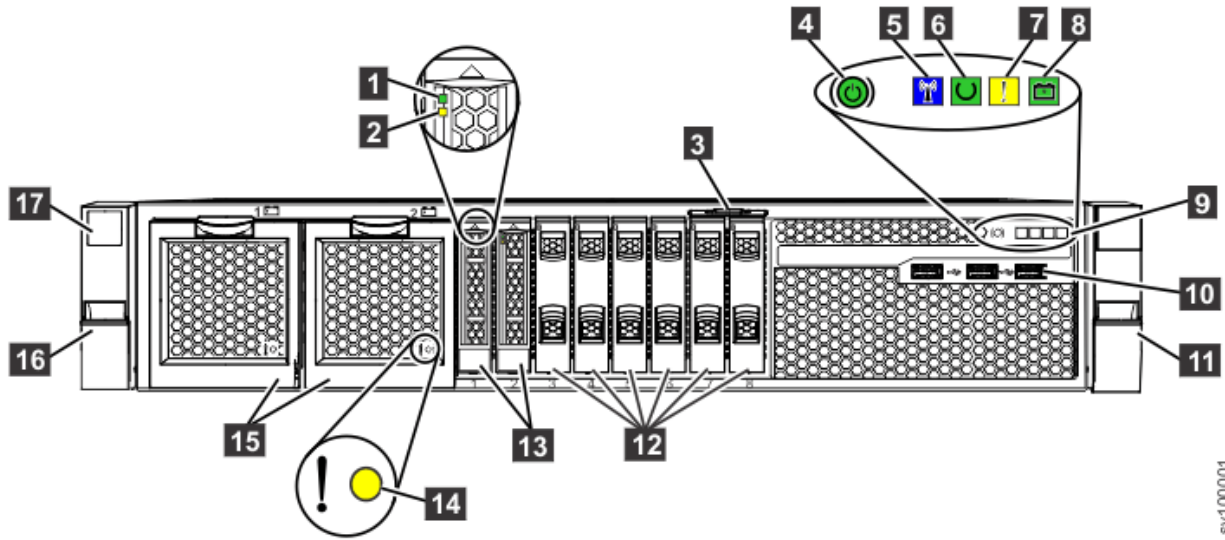
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svc00800

Figure 3. DH8 front panel

- [1] Hard disk drive activity LED
- [2] Hard disk drive status LED
- [3] USB port
- [4] Video connector
- [5] Operator-information panel
- [6] Rack release latch
- [7] Node status LED
- [8] Node fault LED
- [9] Battery status LED
- [10] Battery fault LED
- [11] Batteries
- [12] Hard disk drives (boot drives)



sv100001

Figure 4. SV1 front panel

- [1] Boot drive activity LED
- [2] Boot drive status LED

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- [3] Pullout tab showing 11S serial number
- [4] Power-control button and power-on LED
- [5] Identify LED
- [6] Node Status LED
- [7] Node fault LED
- [8] Battery Status LED
- [9] Operator-information panel
- [10] Front USB ports 1-3
- [11] Right side latch (releases chassis to slide out on rails)
- [12] Drive slot fillers (no empty slots permitted)
- [13] Boot drives
- [14] Battery fault LED
- [15] Batteries
- [16] Left side latch (releases chassis to slide out on rails)

___ 13. If the number of FC ports will change or the PCIe expansion slots that the FC adapters are in will change then it is best to check if the local FC port mask or remote FC port mask for the nodes is anything other than all on. Then set those port masks to all on, before you power off the first node, if they are not already so. This will prevent a loss of node to node communications should FC port numbering change. (Use the CLI commands `lssystem`, and `chsystem` with the `-localfcportmask` or `-remotefcportmask` command line switch.)

___ 14. If the customer has already powered the node off, determine the state of the node before it was powered off, and decide if any problems must be fixed before continuing with the upgrade.

10.2 Before powering off the node

___ 15. To determine if the node is a member of a system, look at the node status LED on the front panel (**7** in Figure 3 for DH8 and **6** in Figure 4 for SV1). If the **Node status LED** is not on solid then the node is not a member of a system.

If the node is not a member of a system, turn off the node by pressing the power button on the operator panel and immediately releasing it; then continue with section “10.5 Removing the node from the rack”.

If the node is a member of an active clustered system, you must ensure that turning off the node that you are upgrading will not disrupt access from the host applications to the volumes.

Note: An I/O group continues to operate and to service all I/O requests when a single node is offline. The system operates in a degraded state, however, with reduced performance and reduced resilience to failures. Do not continue this procedure if any nodes in the system are offline, if any node errors are displayed, or node fault LEDs are on or if unfixed errors are in the system event log. Continuing the installation in such instances might result in data loss or loss of service.

Important: Do not turn off a node if any of the volumes are not online. Turning off a node when

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its volumes are not online might lead to loss of access to those volumes. One reason that volumes might not be online is because the partner node in the I/O group was recently turned off and this node has not yet had time to write all of its cached data. Therefore, following this procedure to verify that the volumes are online is important.

Work with the customer to check the volume status using the management GUI.

Important: Look at the front panel of the node, and confirm that the node fault LED is not lit. If the node fault LED is on then find the node error code and error data using the service assistant GUI via the technician port of the node and look up the user action for that node error in the Knowledge Center. This is important as the error might mean that the system is not able to maintain access to the backend data when the node is powered off.

The customer should open the management GUI for the system in a browser and sign on with their user name and password.

___ 16. Click **Monitoring > System** in the management GUI. A picture that shows the nodes in the system and which I/O group they are in is displayed. Confirm that the status of every node is Online. If any node is not online, follow the procedures in the *Troubleshooting Guide* to bring each node online.

___ 17. Click **Monitoring > System**. Select the node that you intend to shutdown and write down the node name and the name of the I/O group to which the node belongs. Then select **Actions** and click **Show Dependent Volumes**.

___ 18. There should not be any volumes listed as dependent on this node but if there are then investigate the dependencies to resolve any problems before continuing with this installation.

___ 19. If possible, have the customer confirm that the multi-pathing device driver on each of the hosts accessing volumes managed by this I/O group is able to failover to the partner node in the I/O group when this node is turned off. This check must be performed on each of the connected hosts; the check performed varies depending on the multi-pathing device driver being used on the host.

If it is not feasible to check the status of each host, check if the partner node in the I/O group of the node being upgraded was last started less than 30 minutes ago. If so, wait until at least 30 minutes after the partner node was restarted to continue. Waiting gives the host system multi-pathing device drivers time to re-establish connections through the partner node. If the drivers have not had time to re-establish connections, hosts lose access to the backend data.

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10.3 Powering off a node which has software level 8.1.0.0 or after

__ 20. Select the node in the management GUI and choose the action to service the node. Or use this command on the system cli:

```
swapnode -service <node_id>
```

__ 21. It takes up to a minute for the node to go to service status. If there is a suitable spare node then this will take over from the service status node and change to online_spare status.

__ 22. **Power off the Node** using the service assistant GUI or by pressing the power button and releasing it immediately.

__ 23. Wait until the node power-on LED is either flashing or off. See **1** in Figure 5 for DH8 and **1** in Figure 6 for SV1.

10.4 Powering off a node which has software level older than 8.1.0.0

__ 24. Use the service assistant GUI to put the node into service status or use this command on the service cli:

```
startservice <panelname>
```

__ 25. It takes up to a minute for the node to go to service status. The node status LED will change from on to blinking.

__ 26. **Power off the Node** using the service assistant GUI or by pressing the power button and releasing it immediately.

__ 27. Wait until the node power-on LED is either flashing or off. See **1** in Figure 5 for DH8 and **1** in Figure 6 for SV1.

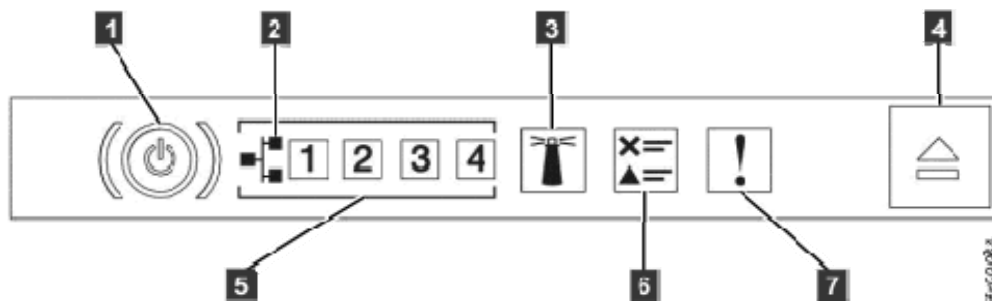


Figure 5. Power LED location on DH8 operator information panel

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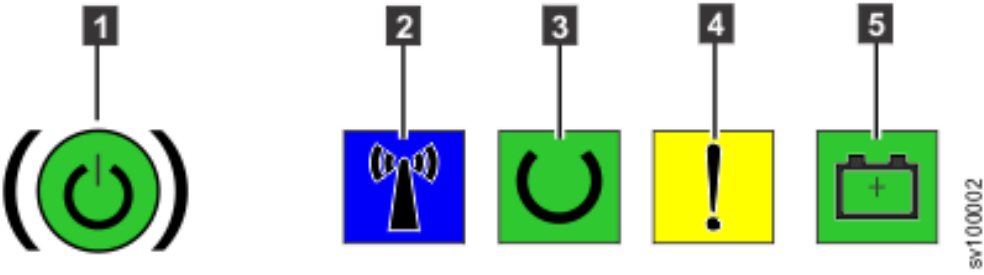


Figure 6. Power LED location on SV1 operator information panel

10.5 Removing the node from the rack

You can perform this procedure without removing the node from the rack, if the cable management arm, or similar, has been used and there is sufficient access to work on the node when it is extended from the rack.

To perform this action on the node without removing it from the rack, carefully extend the node out of the rack on its rails, disconnect the power cable, and go to section [10.6 installing the PCI adapter cards](#).

28. If you are going to remove the node from the rack then carefully label the port number position of each Fibre Channel cable, Ethernet cable and SAS cable; then disconnect the Fibre Channel cables, Ethernet cables and SAS cables from the rear panel. See Figure 7. DH8 rear view of connectors Figure 7. DH8 rear view of connectors or Figure 8. SV1 rear view of connectors.

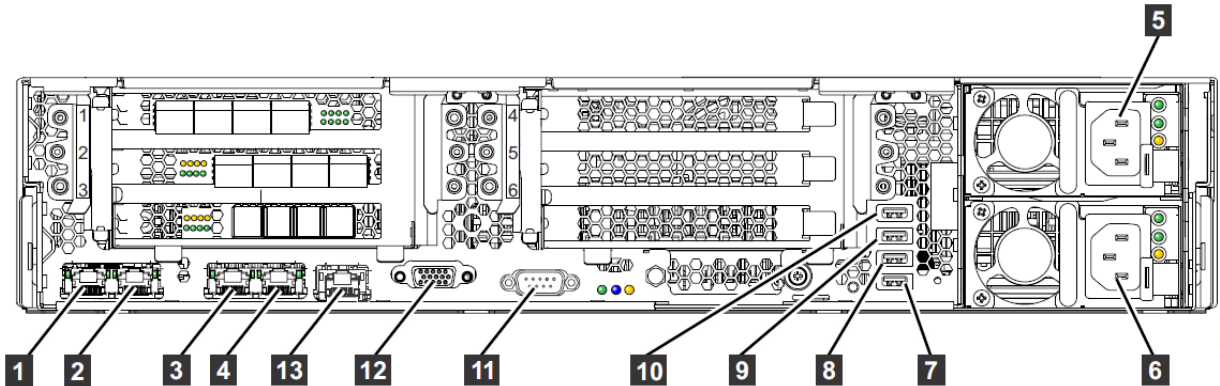


Figure 7. DH8 rear view of connectors

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- 1** 1 Gbps Ethernet port 1
- 2** 1 Gbps Ethernet port 2
- 3** 1 Gbps Ethernet port 3
- 4** Technician port (Ethernet)
- 5** Power supply 2
- 6** Power supply 1
- 7** USB 6
- 8** USB 5
- 9** USB 4
- 10** USB 3
- 11** Serial
- 12** Video
- 13** Unused Ethernet port

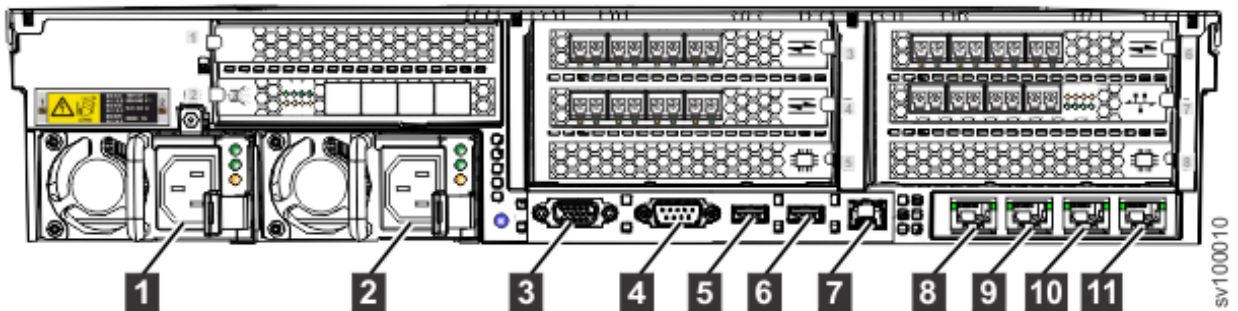


Figure 8. SV1 rear view of connectors

- 1** Power supply 1
- 2** Power supply 2
- 3** Video port
- 4** Serial port
- 5** Rear USB port 1
- 6** Rear USB port 2
- 7** Unused Ethernet port
- 8** 10 Gbps Ethernet port 1
- 9** 10 Gbps Ethernet port 2
- 10** 10 Gbps Ethernet port 3
- 11** Technician port (Ethernet)

Note: There could be 8 Gbps Fibre Channel, 16 Gbps Fibre Channel, 10 Gbps Ethernet, **25 Gbps Ethernet (OM3)** and 12 Gbps SAS adapter cards in the PCI express expansion slots with cables connected to the ports on them. You must ensure that the Fibre Channel cables and the Ethernet cables and any SAS cables that you unplugged from the rear of the node are plugged back into the same port at the end of the procedure. Otherwise, unexpected problems might occur.

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__ 29. Disconnect the power cords from the rear panel. See Figure 7. DH8 rear view of connectors or Figure 8. SV1 rear view of connectors.

Note: Be careful not to dislodge any cables or power cords from any other DH8 or SV1 nodes in the clustered system during this process or when sliding the node out of the rack.

__ 30. Depress the blue tabs on either side of the DH8 or SV1 and carefully pull the node forward until the rails click into a locked position.

__ 31. Optionally, remove the DH8 or SV1 from its rails.

Position yourself, or a mechanical lift, to support the weight of the node when it is no longer held by the slides; then push forward the locking levers (Figure 9. Removing the DH8 from the rack or Figure 10. Removing the SV1 from the rack) on both sides of the node.

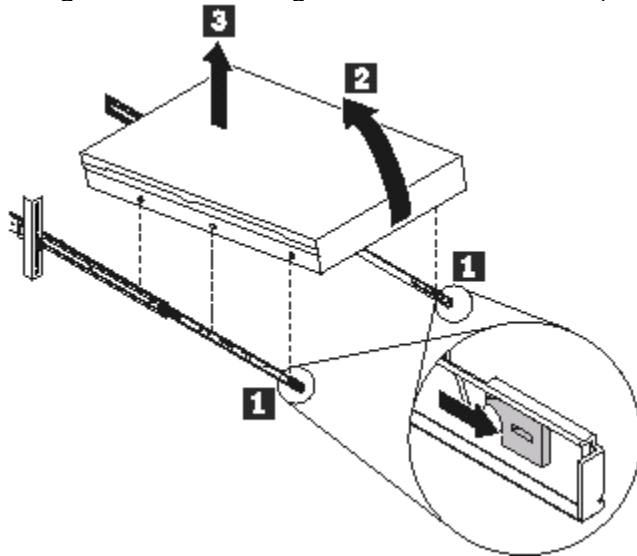


Figure 9. Removing the DH8 from the rack

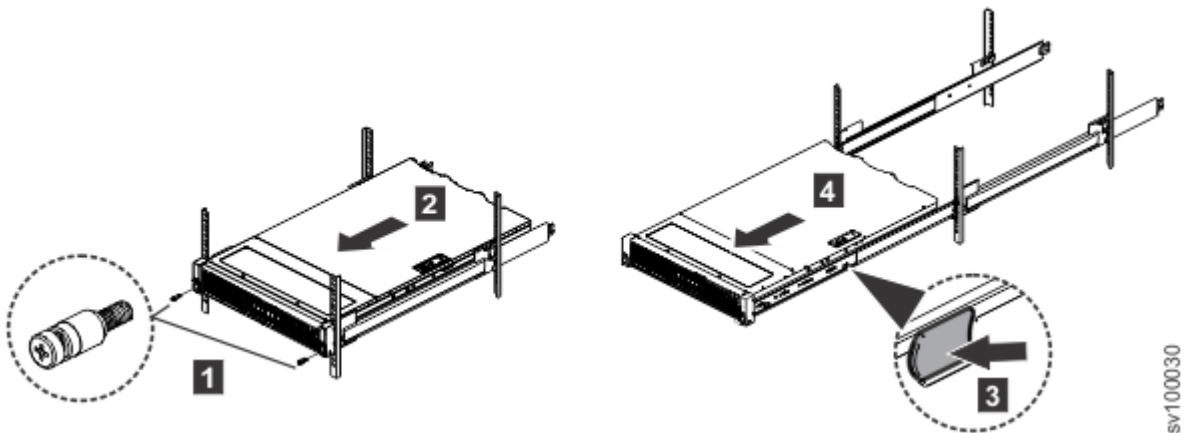


Figure 10. Removing the SV1 from the rack

Lift up the front of the node, and then pull the node out of the rack.

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10.6 Installing the PCI adapter cards

___ 32. If you did not remove the DH8 or SV1 node from the rack then you must now unplug both power cables from the power supply units at the rear of the DH8 or SV1 and unplug any signal cables that are connected to any existing PCI Express adapter cards in the PCI express riser card assemblies that you need to install new adapter cards in.

Note: There could be 8 Gbps Fibre Channel, 16 Gbps Fibre Channel, 10 Gbps Ethernet, 25 Gbps Ethernet (OM3) and 12 Gbps SAS adapter cards in the PCI express expansion slots with cables connected to the ports on them. You must ensure that the Fibre Channel cables and the Ethernet cables and any SAS cables that you unplugged from the rear of the node are plugged back into the same port at the end of the procedure. Otherwise, unexpected problems might occur.

___ 33. While wearing your ESD wrist strap, press down firmly on the blue tab on the top (near the front of the DH8) or release the black latch (near the front of the SV1) of the cover, lift the latch and slide the cover toward the rear of the DH8 or SV1 until the cover has disengaged from the chassis. See Figure 11. Removing the cover from the DH8 or Figure 12. Removing the cover from the SV1.

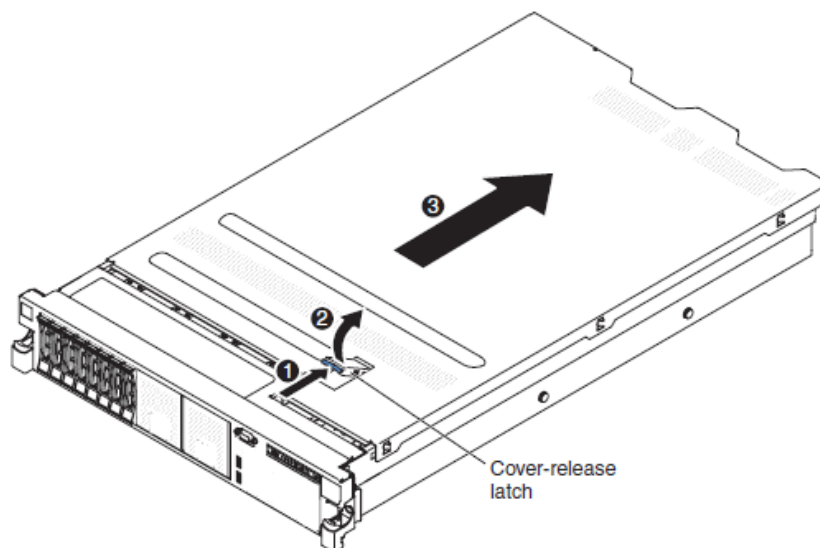


Figure 11. Removing the cover from the DH8



Figure 12. Removing the cover from the SV1

- ___ 34. Lift the cover off the DH8 or SV1 and put it in a safe place. Note that for DH8 there is a servicing information label on the inside of this top cover that you may find useful for quick reference.
- ___ 35. Remove one or more of the riser card assemblies as needed.
 1. Grasp the riser-card assembly at the front tab and rear edge and lift it to remove it from the slot.
 2. Place the riser-card assembly on a flat, static-protective surface.

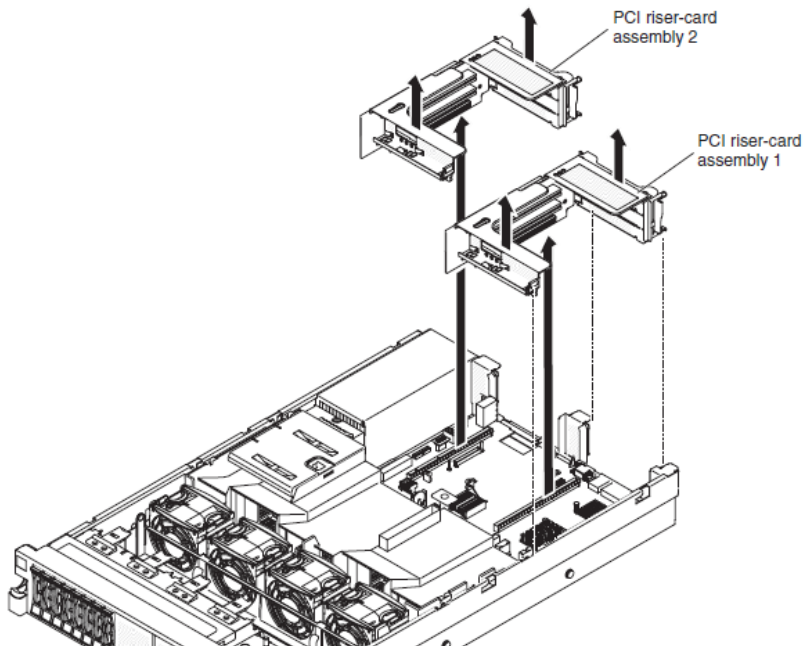


Figure 13. Removing the PCI riser-card assemblies from the DH8

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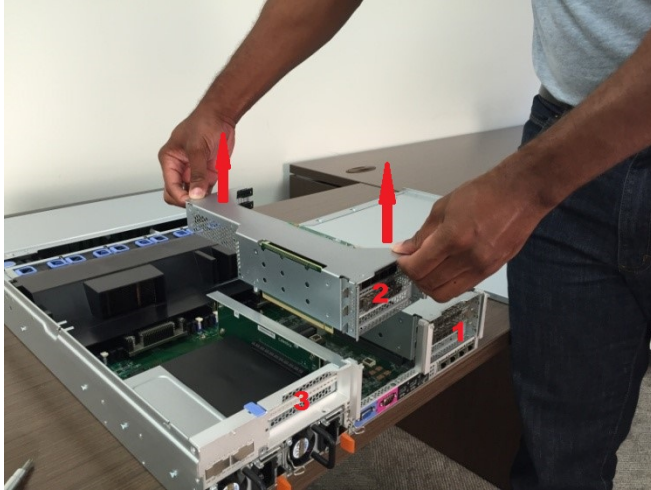



Figure 14. Removing the riser-card assemblies from the SV1

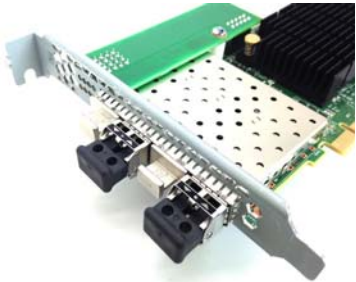



36. For DH8 if you need to move an existing Fibre Channel adapter from PCIe slot 2 to PCIe slot 1 so that a new 10 Gbps Ethernet adapter can be installed in PCIe slot 2, then move it now. This will only be necessary if PCIe Slot 5 cannot be used because the additional micro-processor is not fitted. Note that the World Wide Port Names (WWPN) of the Fibre Channel adapter will change if it is moved from PCIe slot 2 to slot 1. See *Table 1. Port numbers and corresponding WWPNs*, at the end of this document.

37. For DH8 if you need to move an existing fabric adapter from PCIe slot 3 so that a 12 Gbps SAS adapter can be fitted in PCIe slot 3, then move it now. Note that the World Wide Port Names (WWPN) of the fabric adapter will change if it is moved from PCIe slot 3 to another slot (e.g. PCIe slot 5)




38. Locate the new parts to be installed.

31P1702	8 Gbps Fibre Channel adapter With 4 short-wave SFP	 <p>Figure 15. 8 Gbps Fibre Channel adapter card</p>
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00RY004	2 port 16Gbps Fibre Channel adapter with two short-wave SFPs	 <p>Figure 16. 2 port 16 Gbps Fibre Channel adapter</p>
00WY983	4 port 16Gbps Fibre Channel adapter with four short-wave SFPs	 <p>Figure 17. 4 port 16 Gbps Fibre Channel adapter</p>
64P8485 or 01AC573	SAS adapter	 <p>Figure 18. 12 Gbps SAS adapter card</p>
00AR319	10 Gbps Ethernet adapter With 4 SFP	 <p>Figure 19. 10 Gbps Ethernet adapter card</p>

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01LJ590	2 port 25Gbps Ethernet (RoCE) adapter with two SFP28	
01LJ591	2 port 25Gbps Ethernet (iWARP) adapter with two SFP28	
00AR065 or 01EJ490	Compression Accelerator	 <p data-bbox="1036 995 1419 1050">Figure 20. Compression accelerator card</p>

39. Put each new PCI adapter card in the PCI express slot as required by the customer. For DH8, PCI expansion slots 1, 2, and 3 are in PCI riser-card assembly 1, and slots 4, 5, and 6 are in PCI riser-card assembly 2. For SV1, PCI expansion slots 1 and 2 are in PCI riser-card-assembly 3, 4 and 5 are in PCI riser-card assembly 2 and PCI expansion slots 6, 7 and 8 are in PCI riser-card assembly 3.

- a) It is best to fit the adapter without SFP modules fitted.
- b) Align the adapter with the PCI connector on the riser card and the guide on the external end of the riser-card assembly.
- c) Press the adapter firmly into the PCI connector on the riser card.
- d) Fit the SFP modules if need.

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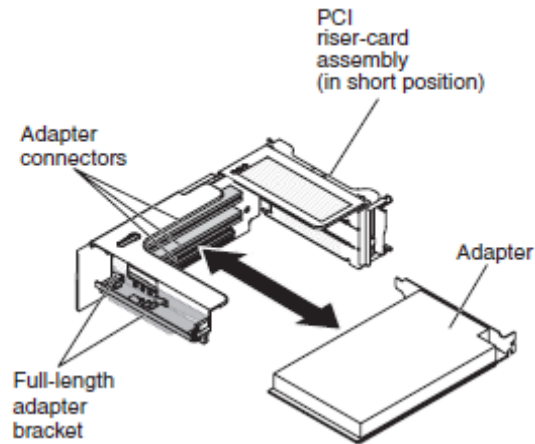


Figure 21. Installing a card in a PCI riser-card assembly

- ___ 40. Align the PCI riser-card assembly with the selected PCI connector on the system board:
- ___ 41. Carefully fit the two alignment slots on the side of the assembly onto the two alignment brackets on the side of the chassis; align the rear of the assembly with the guides on the rear of the DH8 or SV1.
- ___ 42. Press down on the assembly. Make sure that the riser-card assembly is fully seated in the riser-card connector on the system board.

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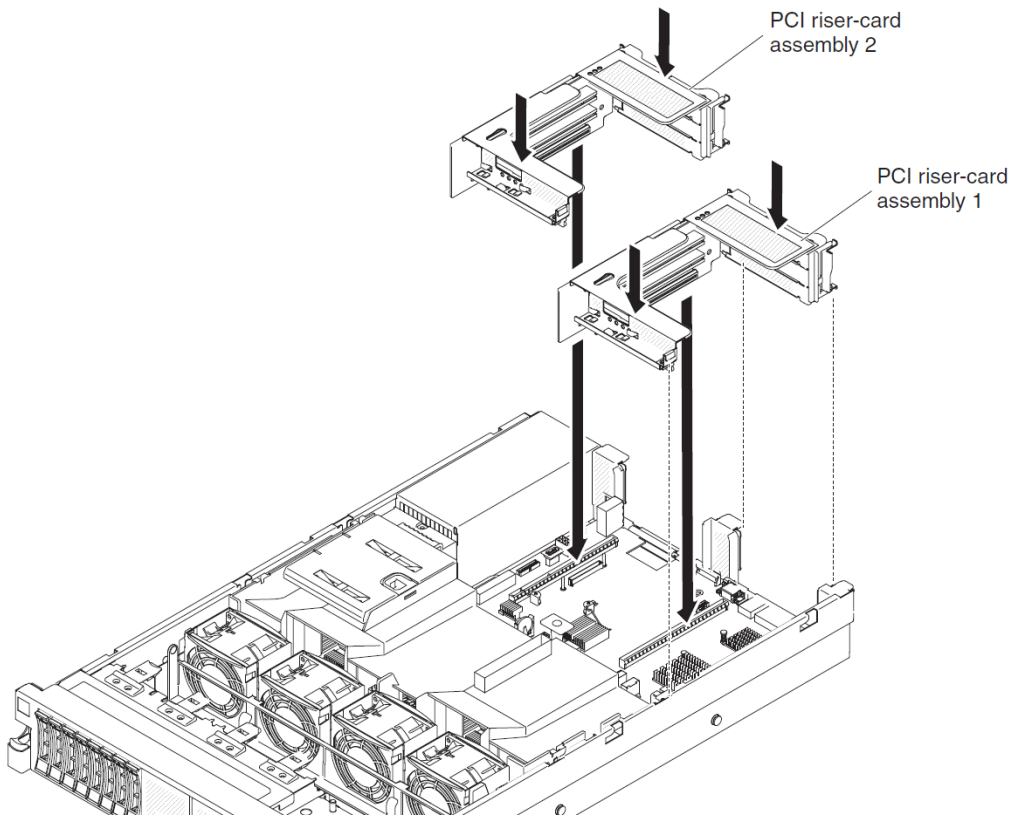


Figure 22. Replacing the DH8 PCI riser-card assemblies

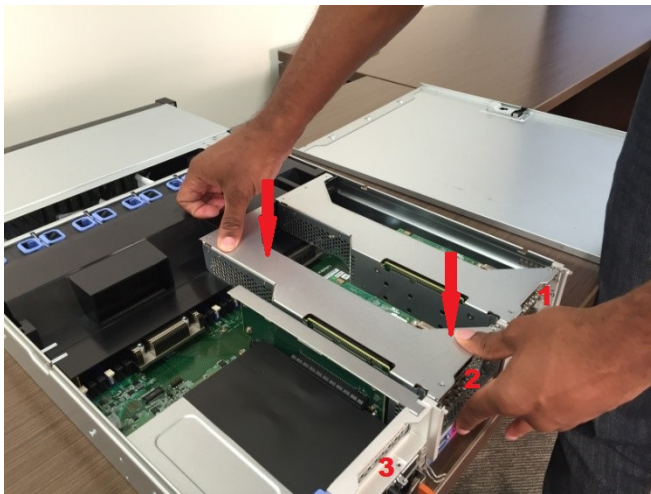


Figure 23. Replacing the SV1 PCI riser-card assemblies

43. Position the cover on top of the DH8 or SV1 and slide it forward. Make sure that the cover correctly engages all the inset tabs on the DH8 or SV1. See Figure 24. Replacing the

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DH8 cover or Figure 25. Replacing the SV1 cover.

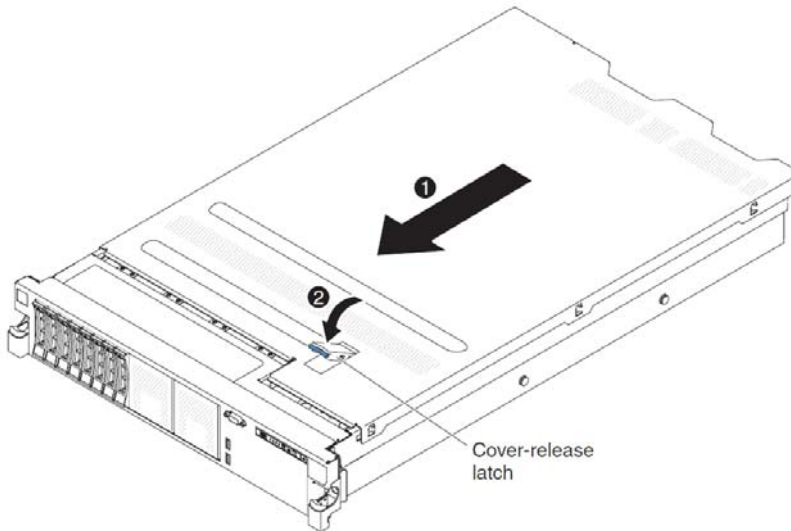


Figure 24. Replacing the DH8 cover



Figure 25. Replacing the SV1 cover

10.7 Replacing the node in the rack

- __ 44. Install the DH8 or SV1 onto the rails if you removed it from the rails to perform this procedure.
- __ 45. Lift the blue tabs on the sides of both rails and slide the node fully into the rack.
- __ 46. Reconnect the cables to the DH8 or SV1 node, ensuring that each data cable is reconnected to the same port from which it was removed. See Figure 7. DH8 rear view of connectors or Figure 8. SV1 rear view of connectors.

Important: Make sure that SAS cables are properly latched on to the SAS ports. You might need to push the SAS cable latch closed with your finger on SV1.

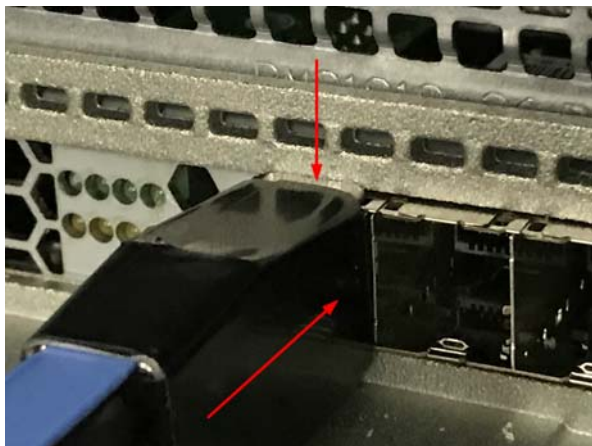


Figure 16. Pushing the SAS cable latch closed on SV1.

10.7 Power on the node

__ 47. Turn on the DH8 or SV1 node by pressing and releasing the power button once. See **1** in Figure 5. Power LED location on DH8 operator information panel or Figure 6. Power LED location on SV1 operator information panel.

__ 48. Allow a few minutes for the node to come online. If the node status LED comes on solid then jump to 10.8 Testing the new adapters.

__ 49. If node status LED is not on solid and the node error LED is on then access the service assistant GUI via the technician port of that node to see the node error code.

__ 50. If the node error is 550 which means **A clustered system cannot be formed because of a lack of clustered system resources** then refer to Recovering from node error 550 when the software level is 8.1.0.0 or after or Recovering from node error 550 when the software level is older than 8.1.0.0 in the Appendix.

__ 51. Look up any other node error in the knowledge center to see what you need to do.

10.8 Testing the new adapters

__ 52. Use the management GUI to complete the next 3 steps.

__ 53. Confirm that the new PCI adapter cards have been detected by selecting **Monitoring > System** in the management GUI, clicking on the node that has just been added, selecting the **Hardware** tab, then scrolling down to the **Adapters** section. Each adapter should be listed and the value **valid** should be shown as **yes**.

__ 54. For SV1 only: Note that if the default port mapping values for the SV1 have ever been changed, and a card is inserted into a slot that is not currently mapped you will get a node error 842. Follow the instructions in the Knowledge Center to map the new ports to the desired WWPNs using the `satask chvpd -fcportmap` command on the CLI.

__ 55. There might be a **1199** error code in the event log which shows that the hardware configuration has changed and is valid. If so, then right mouse click on the 1199 error code and se-

lect **Run Fix Procedure**. This will allow you to verify that the configuration change is as expected so that the hardware can be initialized.

__ 56. If this is the second node to be upgraded in an IO group, and there is a new SAS drive expansion enclosure to be connected to it, then connect the expansion enclosure now. See *Installing an optional SAS expansion enclosure* in the Information Center or the *Hardware Installation Guide*.

10.9 Return the DH8 or SV1 to the customer

__ 57. Return the DH8 or SV1 to the customer. Explain to the customer that the adapters (and optionally drives) are installed, but they need to configure any drives into arrays and storage pools.

For DH8, the World Wide Port Names (WWPN) of the Fibre Channel adapter will have changed if it was moved from one PCIe slot to another. See *Table 1. Port numbers and corresponding WWPNs*, at the end of this document. The Storage Area Network zoning might need to be changed and a rescan of the multi pathing on each host might be needed.

The local FC port mask and partner FC port masks might need to be set after all nodes in the system have been serviced, if FC port numbering has changed. Refer them to “**Planning for more than four fabric ports**” in the Knowledge Center.

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After installation (Sections 11 through 12)

11.0 Parts disposition

__ 58. All removed parts remain the property of the customer. Give all removed parts to the customer for disposition, including the riser card and the blanking plate that were removed prior to the installation of the adapters.

Important: Ask the customer to keep the old riser card safe as it must be reinstalled if the SAS adapter assembly is removed without another adapter assembly replacing it. Otherwise the node may not initialize correctly after booting up.

12.0 Machine records

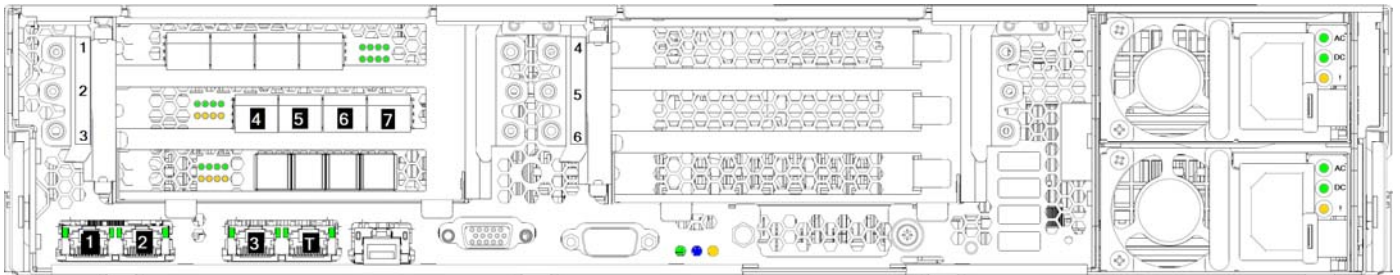
__ 59. Report any installation or quality problems according to existing procedures.

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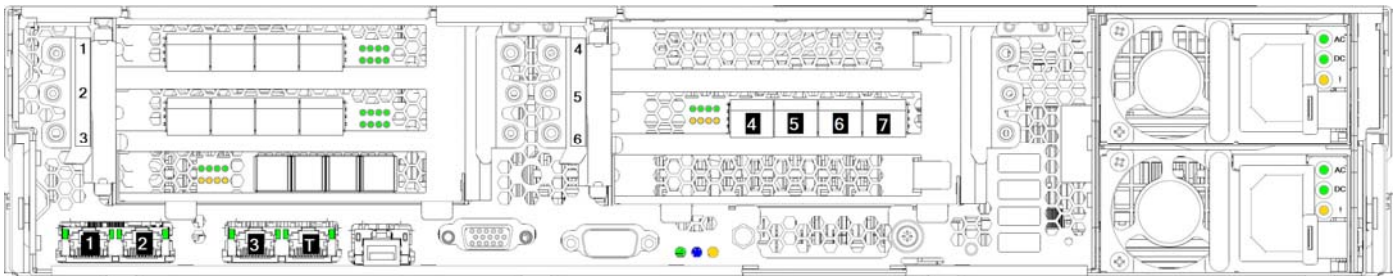
Appendix

DH8 Ethernet port numbers

When the 10 Gbps Ethernet adapter card is in PCI express expansion slot 2:



When the 10 Gbps Ethernet adapter card is in PCI express expansion slot 5:



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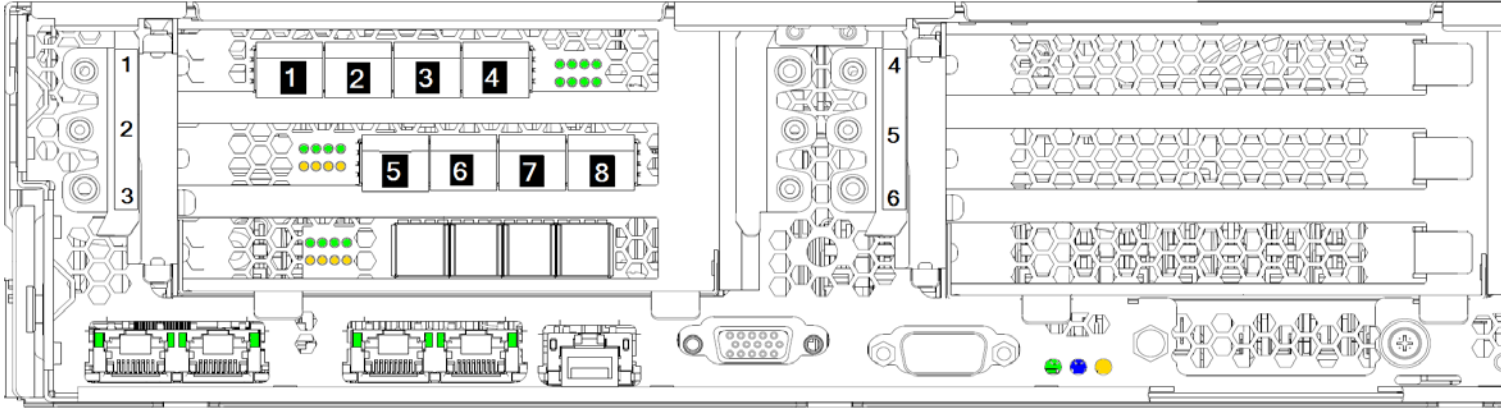
EC P45589 20180202

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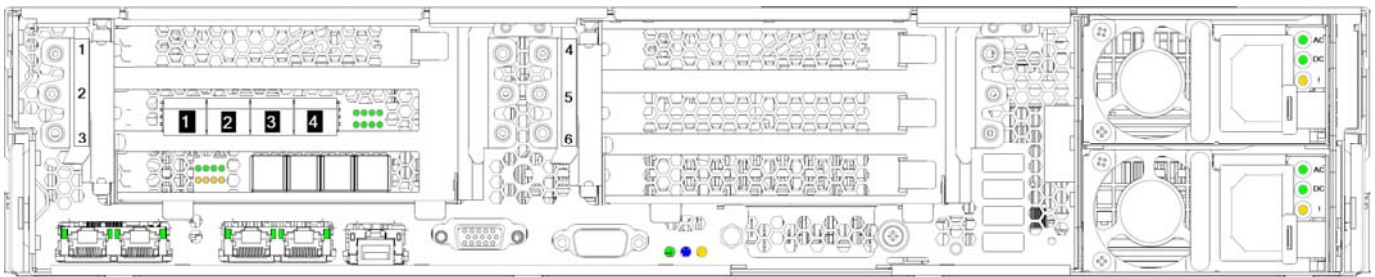
Copyright IBM Corp.2018

DH8 Fibre Channel port numbers

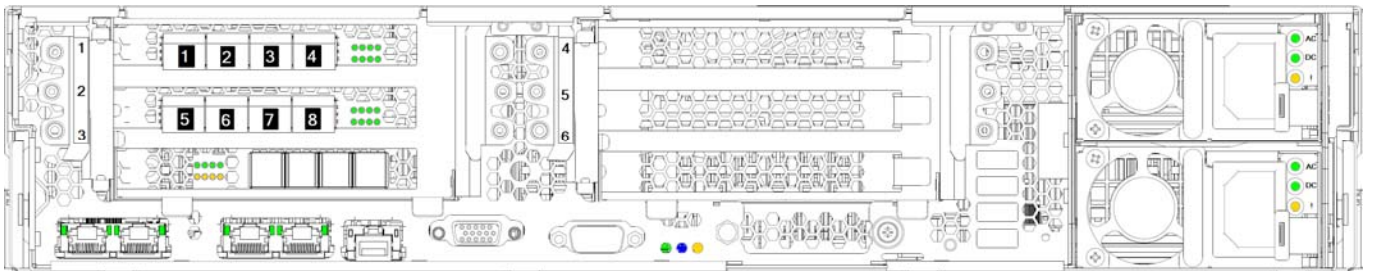
When a 8 Gbps Fibre Channel adapter card is in PCI express expansion slot 1 and a 10 Gbps Ethernet adapter in slot 2 which can be used for Fibre Channel over Ethernet (FCOE):



When the 8 Gbps Fibre Channel adapter card is in PCI express expansion slot 2:

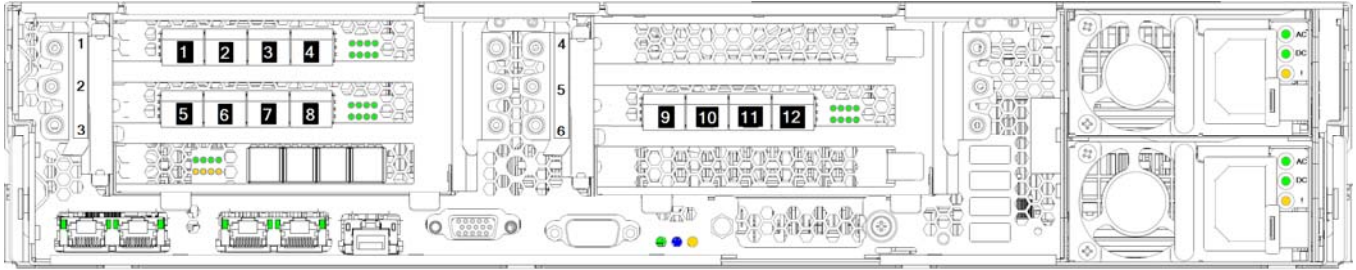


When the 8 Gbps Fibre Channel adapter cards are in PCI express expansion slots 1 and 2:

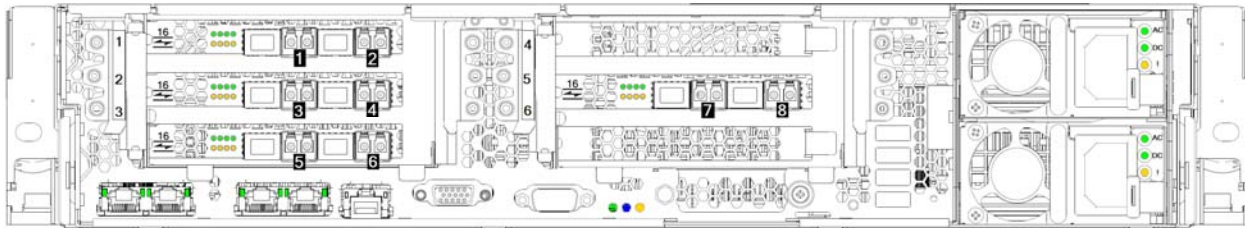


When the 8 Gbps Fibre Channel adapter cards are in PCI express expansion slots 1,2 and 5:

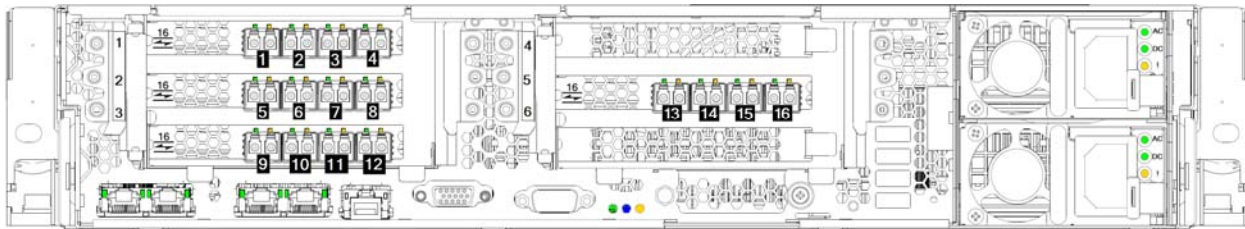
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The 2 port,16 Gbps Fibre Channel adapter cards are in PCI express expansion slots 1,2,3 and 5:



The 4 port,16 Gbps Fibre Channel adapter cards are in PCI express expansion slots 1,2,3 and 5:



DH8 World Wide Port Names (WWPN)

When the World Wide Node Name (WWNN) has not been changed since it was set at IBM manufacturing:

WWPNs are in the 500507680cSPXXXX format, where

- S is the hexadecimal slot number,
- P is the hexadecimal port number, and
- XXXX is the sequence number of the SAN Volume Controller 2145-DH8 node assigned during manufacture.

As slots 1, 2, 3 and 5 are the only slots in a DH8 that can have an I/O card installed in them, and each I/O card has 4 ports, 16 WWPNs are possible. [Table 1](#) lists these WWPNs.

Table 1. Port numbers and corresponding WWPNs

PCI slot number	Adapter port number	WWPN
1	1	500507680c11xxxx

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Table 1. Port numbers and corresponding WWPNs

PCI slot number	Adapter port number	WWPN
1	2	500507680c12xxxx
1	3	500507680c13xxxx
1	4	500507680c14xxxx
2	1	500507680c21xxxx
2	2	500507680c22xxxx
2	3	500507680c23xxxx
2	4	500507680c24xxxx
3	1	500507680c31xxxx
3	2	500507680c32xxxx
3	3	500507680133xxxx
3	4	500507680134xxxx
5	1	500507680c51xxxx
5	2	500507680c52xxxx
5	3	500507680c53xxxx
5	4	500507680c54xxxx

When upgrading to a DH8 node from an older node model and when the WWNN of the DH8 is set to the WWNN of the replaced node then the legacy WWPN will be used so that there is no need for cabling, zoning or host configuration changes.

The I/O adapter in the new node must be the same as those in the older node. Because a 4-port Fibre Channel I/O adapter is installed in slot 1 of all nodes in previous versions of SAN Volume Controller, the same 4-port adapter must also be installed in the first slot of the SAN Volume Controller 2145-DH8 node. If a second I/O card is installed in the legacy node, the same adapter must be installed in slot 2 of the SAN Volume Controller 2145-DH8 node.

Table 2. Port numbers and corresponding WWPNs with a legacy WWNN (801)

PCI slot number	Adapter port number	WWPN
1	1	500507680140xxxx
1	2	500507680130xxxx
1	3	500507680110xxxx
1	4	500507680120xxxx
2	1	500507680150xxxx
2	2	500507680160xxxx
2	3	500507680170xxxx
2	4	500507680180xxxx

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Table 2. Port numbers and corresponding WWPNs with a legacy WWNN (801)

PCI slot number	Adapter port number	WWPN
3	1	500507680190xxxx
3	2	5005076801a0xxxx
3	3	5005076801b0xxxx
3	4	5005076801c0xxxx
5	1	500507680158xxxx
5	2	500507680168xxxx
5	3	500507680178xxxx
5	4	500507680188xxxx

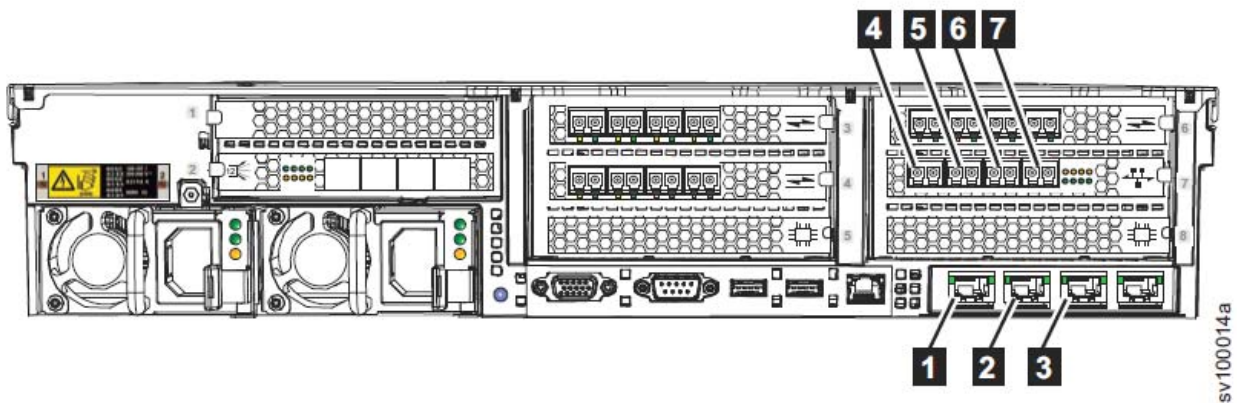
Important: Avoid using a 2 port adapter in PCIe expansion slot 1 because that will cause the third and fourth Fibre Channel ports to have an unexpected WWPN as shown in table 3.

Table 3. Port numbers and corresponding WWPNs with a legacy WWNN (801) when the adapter in slot 1 has only 2 ports

PCI slot number	Adapter port number	WWPN
1	1	500507680140xxxx
1	2	500507680130xxxx
2	1	500507680180xxxx
2	2	500507680170xxxx
2	3	500507680170xxxx
2	4	500507680180xxxx

SV1 Ethernet port numbers

When the 10 Gbps Ethernet adapter card is in PCI express expansion slot 7 (example only – see 4.0 Preparation for details of supported slots in SV1):

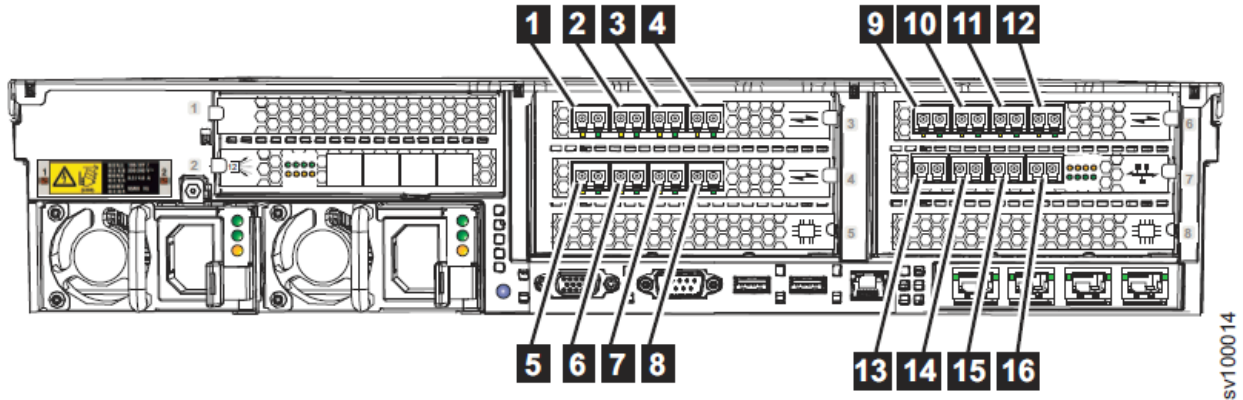


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Figure 26. Ethernet port numbers for iSCSI communication

SV1 Fibre Channel port numbers

When the 4 port, 16 Gbps Fibre Channel adapter cards are in PCI express expansion slots 3, 4 and 6. A 10Gbps Ethernet adapter is in PCI express expansion slot 7 (example only, see 4.0 Preparation for details of supported slots in SV1):



SV1 WWPNs

When the World Wide Node Name (WWNN) has not been changed since it was set at IBM manufacturing:

The WWNN has the following format, where xxxx is a unique number that was assigned when the node was manufactured:

500507680f00xxxx.

The worldwide port names (WWPNs) are derived from the WWNN of the node in which the ports are installed. The WWPNs are also derived from Fibre Channel IO port ID of the port. Each Fibre Channel IO port ID can be assigned to any Fibre Channel or Fibre Channel over Ethernet port using the `satask chvpd -fcportmap` command. The default assignment is shown in the table below. Note that the WWPN for a particular FC IO port ID is fixed, only the physical location of that FC IO port ID can be changed.

FC IO port ID	Physical WWPN	NPIV WWPN	Default Mapping	
			PCI slot	Adapter port ID
1	500507680f01xxxx	500507680f81xxxx	3	1
2	500507680f02xxxx	500507680f82xxxx	3	2
3	500507680f03xxxx	500507680f83xxxx	3	3
4	500507680f04xxxx	500507680f84xxxx	3	4
5	500507680f05xxxx	500507680f85xxxx	4	1
6	500507680f06xxxx	500507680f86xxxx	4	2
7	500507680f07xxxx	500507680f87xxxx	4	3

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8	500507680f 08 xxxx	500507680f 88 xxxx	4	4
9	500507680f 09 xxxx	500507680f 89 xxxx	6	1
10	500507680f 0a xxxx	500507680f 8a xxxx	6	2
11	500507680f 0b xxxx	500507680f 8b xxxx	6	3
12	500507680f 0c xxxx	500507680f 8c xxxx	6	4
13	500507680f 0d xxxx	500507680f 8d xxxx	7	1
14	500507680f 0e xxxx	500507680f 8e xxxx	7	2
15	500507680f 0f xxxx	500507680f 8f xxxx	7	3
16	500507680f 10 xxxx	500507680f 90 xxxx	7	4

Note that if the default port mapping values for the SV1 have ever been changed, and a card is inserted into a slot that is not currently mapped you will get a node error 842. Follow the instructions in the Knowledge Center to map the new ports to the desired WWPNs using the `satask chvpd -fcportmap` command on the CLI.

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Recovering from node error 550 when the software level is 8.1.0.0 or after

If an updated node has node error 550 shown in the Service Assistant GUI via the technician port, and the fiber channel cabling is correct then this might be because the adaptor that was being used to communicate with the other nodes has just been replaced with a different type of adaptor. e.g. when an AH11 was replaced by an AH14.

- Use the service assistant GUI to put this node back to candidate status
 - by selecting **Remove System Data** in the **Manage System** page.
 - or use the following command in the service CLI of the node
 - `satask leavecluster -force <panelname>`
- check that the node status is candidate.
- Make the candidate node take over from the offline node:
 - Select the offline node in the management GUI and chose the action to replace this node.
 - Or use this command on the system CLI
 - 1. `swapnode -replace <offline node_id/name>`
 - The candidate status node should change to online status after five minutes or more. If it does not then the old procedure can be used with a new *-deactivatespare* switch if a spare node, which has `online_spare` status, has taken over from the offline node.
 - 1. `rmnode [-deactivatespare] <offline node id>`
 - 2. `addnode -panelname <panelname of candidate> -iogrp X [-site n]`

Recovering from node error 550 when the software level is older than 8.1.0.0

If an updated node has node error 550 shown in the Service Assistant GUI via the technician port, and the fiber channel cabling is correct then this might be because the adaptor that was being used to communicate with the other nodes has just been replaced with a different type of adapter. e.g. when an AH11 was replaced by an AH14.

- use the service assistant GUI to put this node back to candidate status
 - by selecting **Remove System Data** in the **Manage System** page.
- or use the following command in the service CLI of the node:
 - `satask leavecluster -force <panelname>`
- check that the node has candidate status.
- Make the candidate node take over from the offline node:
 1. `rmnode <offline node id>`
 2. `addnode -panelname <panelname of candidate> -iogrp X [-site n]`

Adding **another** Ethernet adapter non-disruptively

The following procedures describe how to non-disruptively add another Ethernet adapter to an I/O group. This means that iSCSI hosts and any FCoE hosts will not lose access to any volume presented by the SVC system during the procedure.

The procedure is non-disruptive because:

While one node is offline having a second 10Gbps Ethernet adapter added, the other node in the I/O group is maintaining host access to volumes via the ethernet ports. When the node with a second 10Gbps Ethernet adapter comes back online then this should not disrupt the other node in the I/O group from maintaining host access to volumes via the ethernet ports.

- Moving the ethernet ports out of the default host port can be done non-disruptively by re-enabling the host attach parameter value of the port.

Tools:

You can use the management GUI to see the configuration of each port on each I/O group and each node in the system or you can use the `lspportip` CLI command.

You can use the management GUI to select a port on a node and modify iSCSI Hosts, to disable or enable IPv4 iSCSI hosts or IPv6 iSCSI host. Alternatively, you can use the `cfgportip` CLI command.

To upgrade the system software:

- __ 1. If the system software level is older than 8.1.1.1 then update the software. Updating the software to 8.1.1.1 or newer so that **another** Ethernet adapter is supported. This will apply a new `host_port_grp_id` parameter to each ethernet port and set this to 0 (zero) on each ethernet port that has `host` or `host_6` parameter set to yes.
- __ 2. Use the management GUI to run the upgrade checker utility and to upgrade the system software.

To add more ethernet ports:

- __ 3. When the system software level is 8.1.1.1 or newer then. you can begin the process of adding more ports.
- __ 4. Starting with a node that is not currently the main configuration node. Use the management GUI to check that no volumes are dependent on that node. If possible, check that each host can access each volume via the ethernet ports of the other node in the I/O group.
- __ 5. If no volumes will go offline by powering off this node and all hosts can access the volumes via the ethernet ports of the other node, then it is safe to power off this node.

- Select the node in the management GUI and choose the action to service the node. Or use this command on the system cli:
 - `swapnode -service <node_id>`
- It takes up to a minute for the node to go to service status. If there is a suitable spare node, then this will take over from the service status node and change to online_spare status.
- **Power off the Node** using the GUI or by pressing the power button and releasing it immediately.
- Wait until the node power-on LED is either flashing or off. See **1** in Figure 5 for DH8 and **1** in Figure 6 for SV1.

___ 6. Depress the blue tabs on either side of the node and carefully pull the node forward until the rails click into a locked position.

___ 7. Remove the power cords from the back of the node.

___ 8. Remove the top cover from the node.

___ 9. Locate the riser which contains the slot into which the second 10Gbps Ethernet adapter will be fitted. Lift out that riser so that the adapter can be fitted and replace the riser.

___ 10. Replace the top cover on the node.

___ 11. Reconnect the power cables to the node

___ 12. Push the node back into the rack.

___ 13. Power on the node.

___ 14. Wait for the node status LED to be on solid. If the node error LED is on, then find the node error code and error data using the service assistant GUI via the technician port of the node and look up the user action for that node error in the Knowledge Center.

___ 15. When the node status LED is on, look at Events in the management GUI.

___ 16. Select the event which has error code 1199 and select the action to run the fix procedure. This should initialize the new adapter without affecting the ports that hosts are currently using to access volumes.

___ 17. Check that hosts can access volumes via the old ethernet ports on this node.

- If a new 10Gbps Ethernet adapter is in a lower PCIe expansion slot than the old Ethernet adapter, then the new ethernet adapter will be providing the FCoE ports and you will need to move the ethernet cables over from the old ethernet adapter to the new ethernet adapter. You might need to change SAN zoning because the WWPN of the Ethernet ports connected to the switch might be different. See the Appendix sections about World Wide Port Names (WWPN) above. You might need to change the configuration of the hosts so that they can again access the volumes via ethernet ports on this node.
- If an Ethernet adapter has been inserted in a lower slot number than an existing Ethernet adapter then the ethernet port numbers on the old adapter will change.

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- You might need to set or change the IP address on the ethernet ports provided by the old adapter and configure them as iSCSI ports, so that the links to the hosts are restored.

__ 18. When the hosts can access the volumes via ethernet ports on the first node with additional Ethernet adapters then it is safe to proceed to adding the adapter to the other node in the I/O group.

__ 19. Use the management GUI to check that no volumes are dependent on the second node. If possible, check that each host can access each volume via the ethernet ports of the other node in the I/O group.

__ 20. If no volumes will go offline by powering off this node and all hosts can access the volumes via the ethernet ports of the other node, then it is safe to power off this node in the same way as before.

__ 21. Add the additional Ethernet adapters to this node and power the node back on in the same way as before.

__ 22. Repeat steps 14 to 17 so that hosts can again access volumes via this node.

To move the old iSCSI host ports out of the default host port group:

__ 23. Use the management GUI or the output from the lspportip CLI command to fill in the Ethernet port worksheet below.

Ethernet port worksheet

Ethernet Port ID	host=yes or host_6=yes	host_port_grp_id	storage=yes or storage_6=yes	Port IP address On first node	Port IP address on second node
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					

__ 24. Look at the host_port_grp_id parameter on each iSCSI host port.

__ 25. If the ethernet ports are in the default host port group (group ID=0) then they must be non-disruptively moved to group ID that is not zero before a second 10Gbps Ethernet adapter is fitted.

__ 26. Make sure that each host has access to each volume via more than one ethernet port. So that each ethernet port can be moved from host port group ID 0 to a non-zero host port group ID while the host continues to access the volume via a different ethernet port.

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__ 27. Starting with the first ethernet port in the IO group which has host=yes or host_6=yes. Set the host flag to no and then to yes to assign host port group ids to port 1 of each node in the I/O group.

For example, if port 4 was the first with host=yes and host_port_grp_id=0

```
cfgportip -node 1 -host no 4
```

```
cfgportip -node 1 -host yes 4
```

```
cfgportip -node 2 -host no 4
```

```
cfgportip -node 2 -host yes 4
```

The ethernet port should now have a new host_port_grp_id. The customer might need to do something on each host so that it will start using this port again to access each volume. When each host is reconnected to each volume via this port of both nodes, then it is safe to change the next port. Repeat this step for each iSCSI host port.

There can be up to 4 ports of the same speed in a host port group except for the default host port group.

__ 28. When hosts can access the volumes again via ethernet ports on both nodes in the I/O group and all I/O groups have been updated as required, then return control of the system back to the customer or IBM Lab Services so that they can cable the new Ethernet ports and configure the SVC system, network and hosts so that hosts can access volumes via the new ethernet ports or SVC can access storage via the new ethernet ports.

If a new port is configured to be an iSCSI host port, it will automatically be given a non-zero host port group ID.