data**ON**™

Windows
Server 2012 R2
Certified

DNS-2670
User Manual Version Dec. 2015

Warning!

Before opening the chassis
cover, remove all power cords to
completely disconnect power
from the system.

Contents

Chapter 1

Introduction

DNS-2670 Overview

Form Factor	4U 70-bay 3.5"
Drive Support	12Gb/s & 6Gb/s SAS 3.0 HDD and SSD
Drive Form Factor	3.5" Disk Device (2.5″ Optional)
I/O Controller	Dual Redundant 12Gb/s SAS 3.0 Controller Module
Host Interface	**Eight** 12Gb/s SAS 3.0 SFF-8644 connections per I/O
SAS Expander	Avago|LSI 12Gb/s SASx48 48-port expander
Controller Support	12Gb/s SAS HBA
Server Host Support	Supports up to Eight Server/Host with eight host interface
Disk Drive	70 x 12Gb/s or 6Gb/s dual-ported SAS SSD & HDD
Enclosure Cooling	Twelve Cooling Fan Module built-in Power Module
Power Supply	1023W Lite-On® 2+2 Redundant Power Supply
LED Indicators	*Identify Enclosure *Power On & Activity *Drive Fault *Identify Drive *Drive Rebuild
Enclosure Dimensions	7″ H x 19″ W x 37.5″ D
Weight	Enclosure only: 110lbs with 70 drives: 275lbs
Failure Notification	SCSI Enclosure Services (SES-3) over in-band & LEDs

1

1 Introduction

The DNS-2670 configuration server system can support two SIM (SAS IO Module) nodes.

1.1 System Overview

1.1.1 System Top View
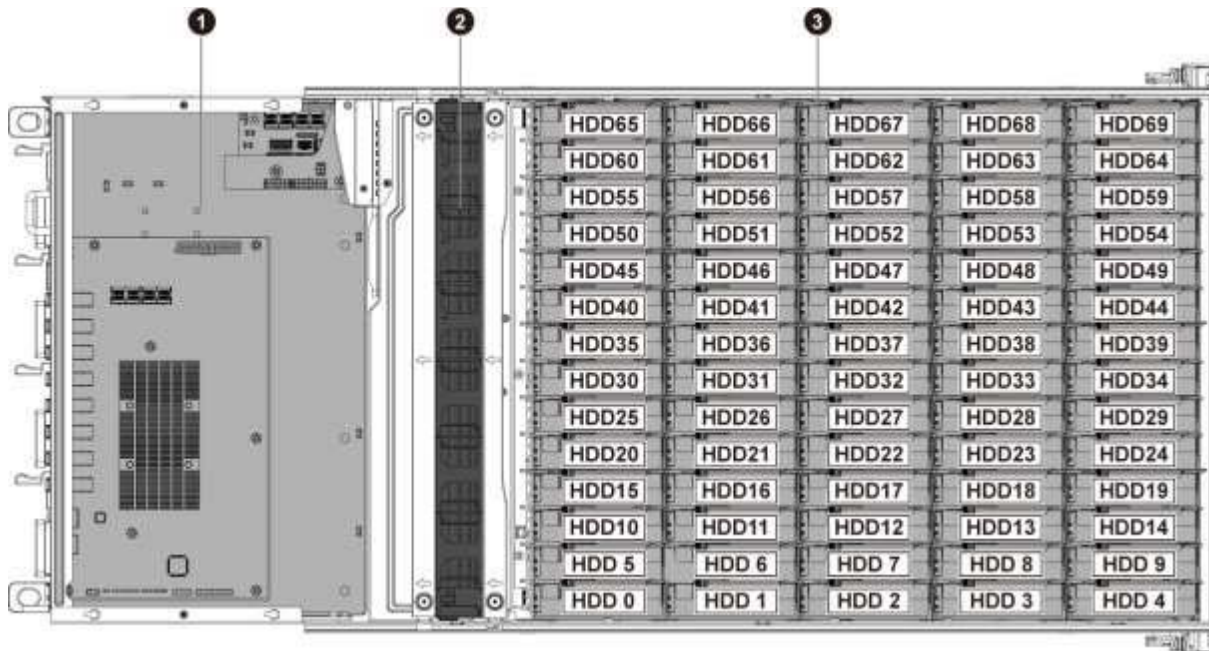
Figure 1-1   System Top View

1	SIM Nodes 1&2 (Upper & Lower)
2	System Fan Module
3	HDDs for SIM Nodes 1&2

1.1.2   Front View

The front view of this DNS-2670 allows easy access to seven HDD backplanes. In addition, seven backplanes with HDD LEDs are located on the front.
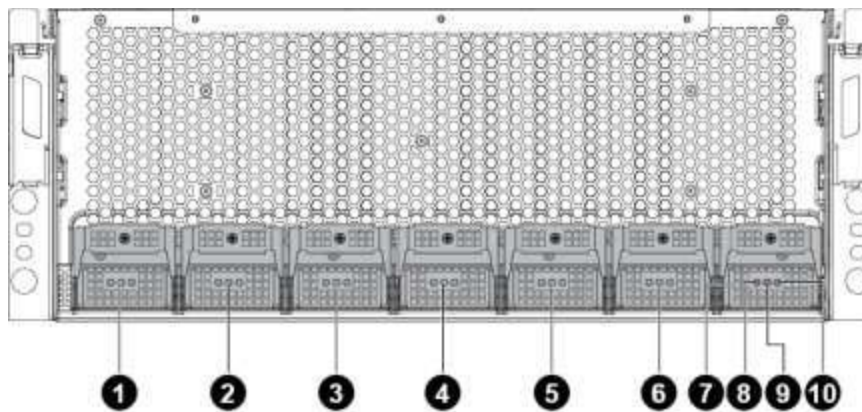
Figure 1-2   System Front View

1~7	HDD Backplane
8	HDD Activity LED
9	HDD Fail LED
10	HDD Online LED

1.1.3 Rear View

The server back view includes the upper and lower SIM nodes, the back panels with system buttons and LEDs, and four power supplies.
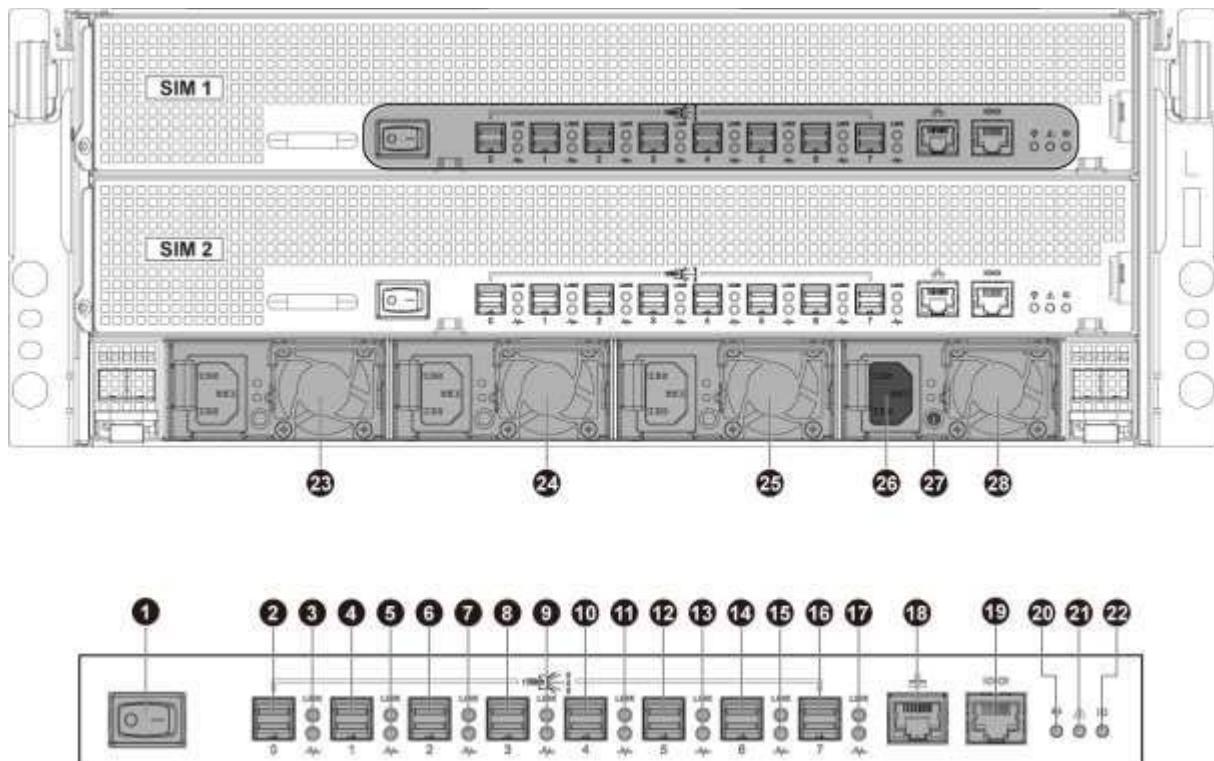
Figure 1-3　System Back View

1	Power Button (SW)
2,4,6,8,10,12,14,16	Mini-SAS HDD Connector
3,5,7,9,11,13,15,17	SAS Port **Link**/**Status** LED
18	Expander RJ45 Network Connector
19	Expander RJ45 UART Debug Connector
20	System Power LED
21	System Fail LED
22	System UID LED

23, 24, 25, 28	Power Supply
26	Power Connector
27	Power Supply Status LED

1.2 System LEDs Description
1.2.1 Front View LEDs

The detailed LED information on the front is shown below:

Table 1-1   LED Information

Type of LED	Color	Status	Function
HDD Activity	Green	On	SAS HDD is installed
		Off	No HDD is installed or SATA HDD is installed but no data is accessed (RAID is optimal)
		Blinking	HDDs are accessing data (RAID is optimal) or RAID is rebuilding.
HDD Fail	Red	On	HDDs are failed or HDD backplane power fails.
		Blinking	HDD is locating or RAID is rebuilding.
HDD Online	Green	On	HDD is installed.
		Off	No HDD.

1.2.2 Back View LEDs

The detailed LED information on the back is shown below:

Table 1-2   LED Information

Type of LED	Color	Status	Function
Mini-SAS HDD Link/ Status LEDs	Green /Red	Green: on, Red: off	Mini-SAS HDD's link successful.
		Green: off, Red: off	Mini-SAS HDD's link failed.
		Green: blinking, Red: off	Mini-SAS HDD's link with activities
		Green: blinking, Red: on	Mini-SAS HDD's link with activities but physical link fail
System Power LED	Green	On	DC Power is on.
		Off	DC power has been turned off or no AC power.
System Fail	Red	On	SIM is failed.

LED			Off	Power is off or disable by other SIM.
System UID LED	Blue	●	Blinking	SIM is identifying.
			Off	SIM is normal.

1.3 Key Parts for Replacement

SAS I/O Module
Part #: DNS-2670-IOM
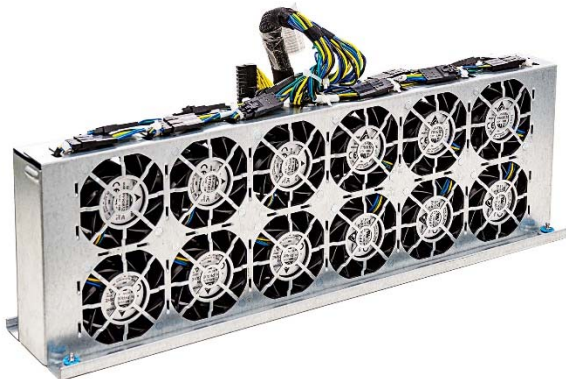
Fan Module
Part #: DNS-2670-CFK
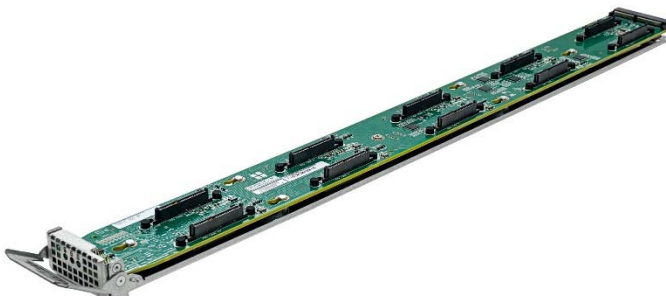
Drive Blade
Part #: DNS-2670-DB10

2.5" Drive Tray
Part #: DNS-2670-DB2

3.5" Drive Tray
Part #: DNS-2670-DB3

Power Supply
Part #: DNS-2670-PSM

1.4 DNS-2670 Block Diagram

SAS I/O Module 1

SAS I/O Module 2

SAS port:
1 2 3 4 5 6 7 8

SAS port:
1 2 3 4 5 6 7 8

x4 x4 x4 x4 x4 x4 x4 x4

x4 x4 x4 x4 x4 x4 x4 x4

48-port SAS Expander SIO #1

48-port SAS Expander SIO #2

x4 x4 x4 x4

x4 x4 x4 x4

1 48-port SAS Expander

2 48-port SAS Expander

3 48-port SAS Expander

4 48-port SAS Expander

35-path

35-path

35-path

35-path

0	5	10	15	20	25	30	35	40	45	50	55	60	65
1	6	11	16	21	26	31	36	41	46	51	56	61	66
2	7	12	17	22	27	32	37	42	47	52	57	62	67
3	8	13	18	23	28	33	38	43	48	53	58	63	68
4	9	14	19	24	29	34	39	44	49	54	59	64	69

SAS Device 0-34

SAS Device 35-69

Chapter 2

Removing and Installing Hardware

2   Hardware Operations

This chapter describes the hardware setup procedures that you have to perform when replacing system components. It also gives detailed information on the internal components and how to replace them.

> The components shown in this chapter are mainly for your reference. Please take the actual shipment as standard.

> Since the chassis weight with all the HDDs installed is over 100kg, it requires two more persons to lift with suitable tools.

2.1 Before You Start

Take note of the following operations before you start to remove or install internal components.

> To reduce the risk of injury from electric shock, remove the power cord to completely disconnect power from the system.

> Moving the Power On/Off switch to the Off position does not completely remove power from the system. Some portions of the power supply and some internal circuitry remain active. Disconnect all power cords from the server to completely remove power from the system.

2.2 Chassis Cover

The DNS-2670 form factor designed for easy assembly and disassembly, making the replacement of internal components very convenient.

💡 **Reminder**

Before you remove or install the top front cover chassis cover, please follow the step below:
Step 1: *Make sure all of the SIM nodes are not turned on and the server is not connected to AC power.*

2.2.1 To remove the chassis cover

❶ Release the screw on the top front chassis cover.
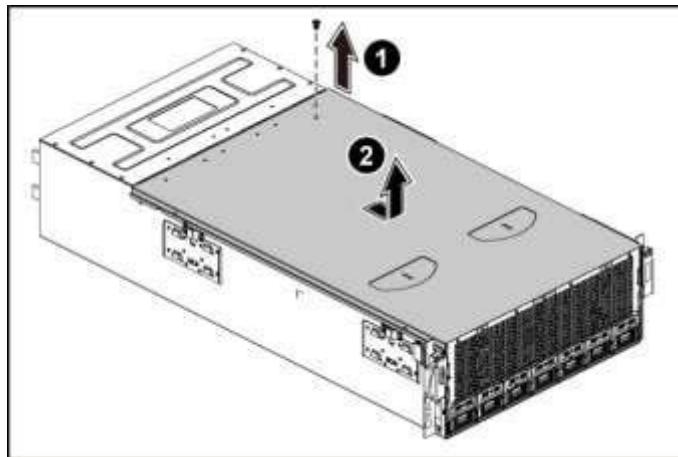❷ Slide the front cover horizontally to the front and remove it along the direction of the arrow.

Figure 2-2   Removing the Top Front Chassis Cover

2.3 Power Supplies

This server is designed with four 1200W power supplies.

💡 **Reminder**

Before you remove or install the power supply, please follow the steps below:
Step 1: *Disconnect all necessary cables.*

2.3.1 To remove the power supply

❶ Pull down the handle.
❷ Press the retaining clip to the right side along the direction of the arrow.
❸ At the same time, pull out the power supply. (The power supply takes considerable force to remove.)
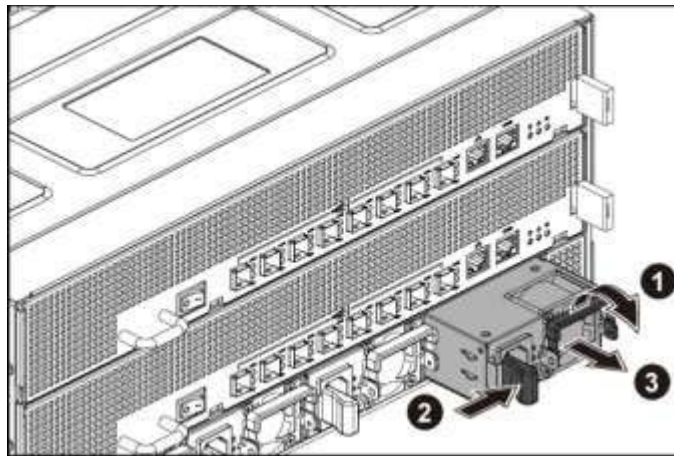

Figure 2-8   Removing the Power Supply

2.3.2 To install the power supply

Insert the replacement power supply firmly into the bay. The retaining clip should snap. Connect the AC power cord to the replacement power supply.
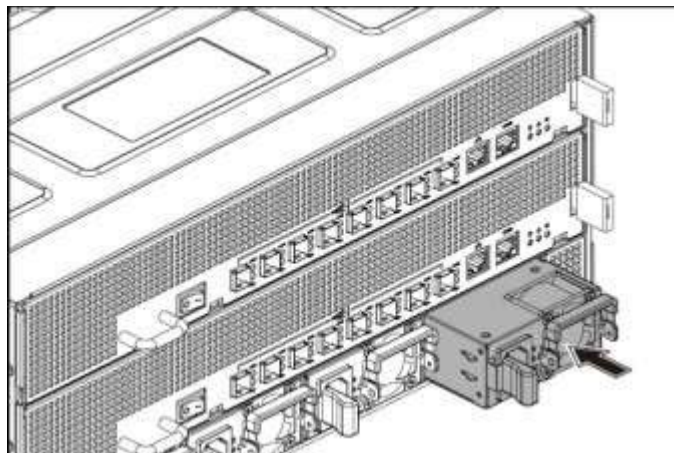

Figure 2-9   Installing the Power Supply

2.4 3.5″ SATA/SAS HDDs

DNS-2670 can support 70 x 3.5" hot-pluggable SATA/SAS HDDs.

🔅 **Reminder**

Before you remove or install the 3.5" SATA/SAS HDDs, please follow the steps below:

Step 1: *Make sure all of the SIM nodes are not turned on and the server is not connected to AC power.*

Step 2: *Remove the chassis cover. To remove the chassis cover, see "0*
To remove the chassis cover.

Step3: *Disconnect all necessary cables.*

- Take note of the drive tray orientation before sliding it out.
- The tray will not fit back into the bay if inserted incorrectly.

2.4.1 To remove a Disk

❶ Push the release button.
❷ Pull the lever open.
❸ Slide the Disk assembly out of the Disk bay.
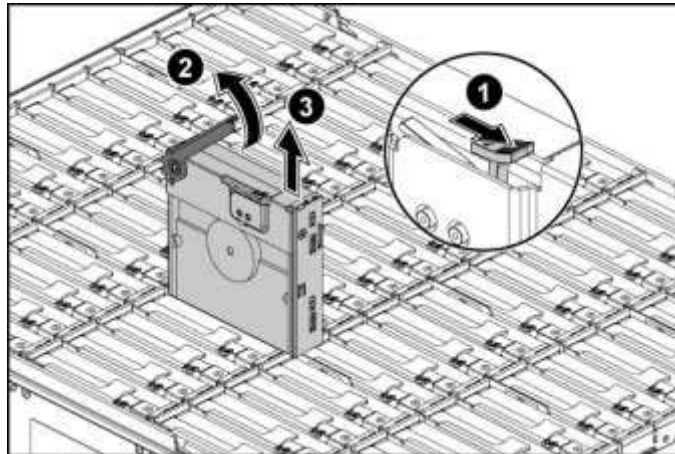
Figure 2-10   Removing the Disk Assembly

❹ Loosen the four screws that secure the Disk.
❺ Lift the Disk out of the Disk tray.
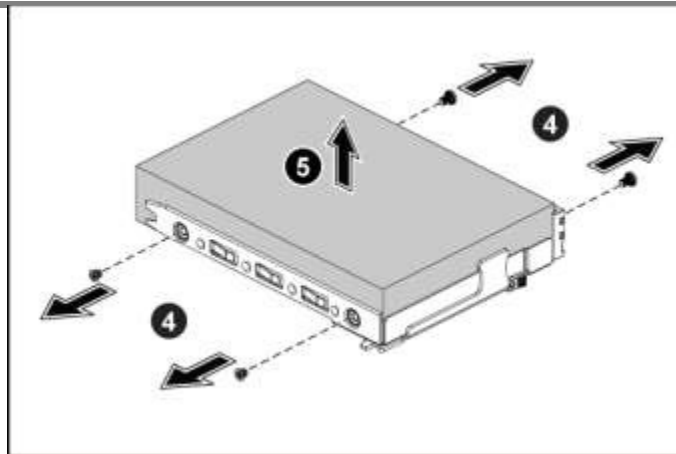
Figure 2-11   Removing the Disk

2.4.2 To install a Disk

❶ Place the Disk to the Disk tray.
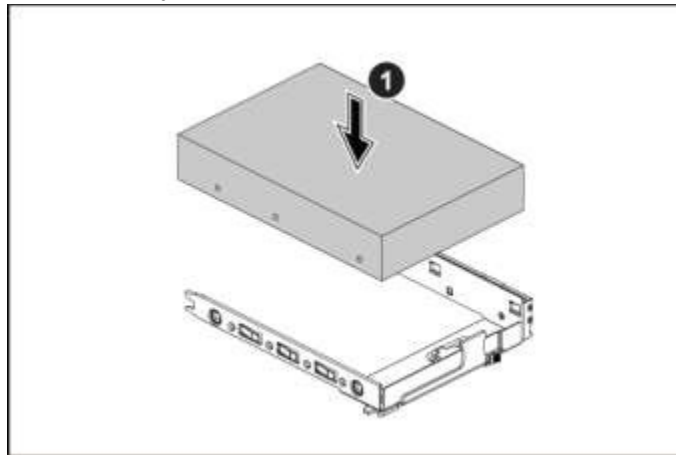
Figure 2-12   Placing the Disk to the Disk Tray ❷

Secure the Disk to the Disk tray with four screws.
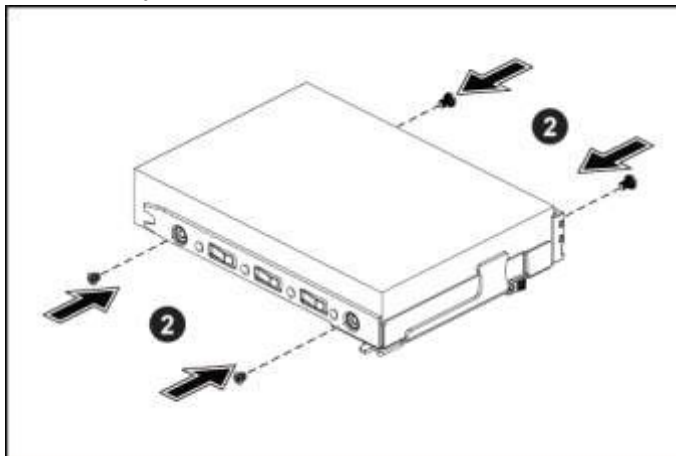
Figure 2-13   Fastening the Screws

❸ Carefully insert the Disk assembly into the Disk bay with the lever lifted until it completely enters the Disk bay.

❹ Push the lever back in place.
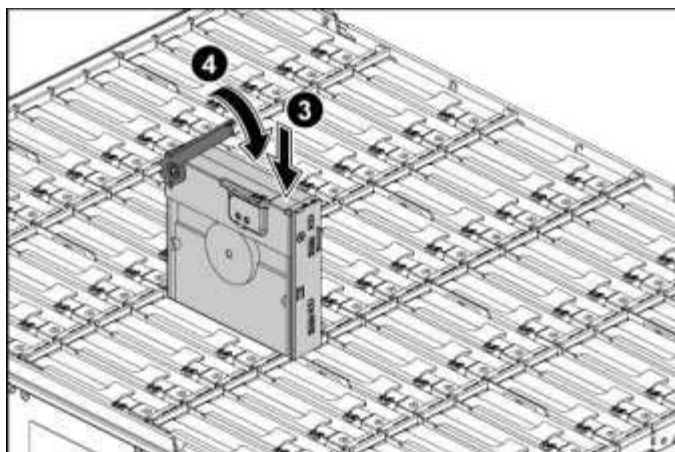
Figure 2-14   Installing the Disk Assembly

Make sure that the Disk is connected to the Disk connector on the backplane.

2.5 3.5″ SATA/SAS HDD Backplanes

DNS-2670 (SIM) 70-70 configuration system supports seven 3.5" SATA/SAS HDD backplanes, which support up to 70 x 3.5" SATA/SAS HDDs in the system.

Reminder

Before you remove or install the 3.5" SATA/SAS HDD bakcplane, please follow the steps below:

Step 1:   *Make sure all of the SIM nodes are not turned on and the server is not connected to AC power..*

Step 2:   *Remove the chassis cover. To remove the chassis cover, see "0*
            To remove the chassis cover.

Step 3:   *Remove the HDDs. To remove the HDDs, see "2.5.1 To remove a HDD".*

Step 4:   *Disconnect all necessary cables.*

2.5.1 To remove the backplane

❶ Remove the screw that secures the backplane assembly.

Figure 2-15   Loosening the Screw

❷ Pull down the backplane assembly handle.

❸ Remove the backplane assembly out of the cage.
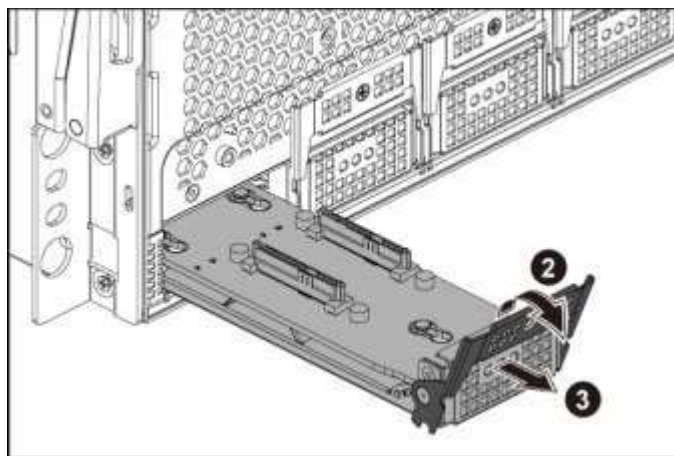
Figure 2-16   Removing the Backplane Assembly

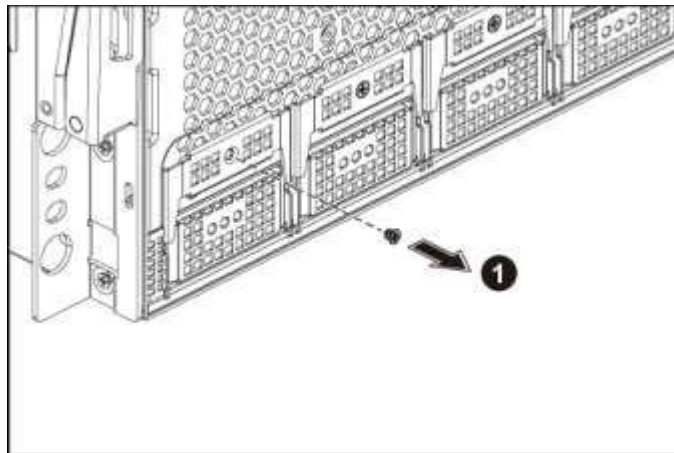Loosen the screws that secure the backplane.

2.5.2 To install the backplane

Reverse the steps above to install the backplane.

2.6 SAS IO Module

Reminder

Before you remove or install the SIM node, please follow the steps below:

Step 1: *Make sure the SIM node is not turned on.*

Step 2: *Disconnect all necessary cables.*

Please make sure the top rear chassis cover is installed when removing or installing any SIM nodes to prevent the docking board connectors on the interposer board from damage.

2.6.1 To remove the SIM node

❶ Press the retaining latch.

❷ Slide the SIM node out of the chassis by using the handle.

Figure 2-18   Removing the Node

2.6.2 To install the SIM node

Push the SIM node into the chassis until it's completely seated in place.
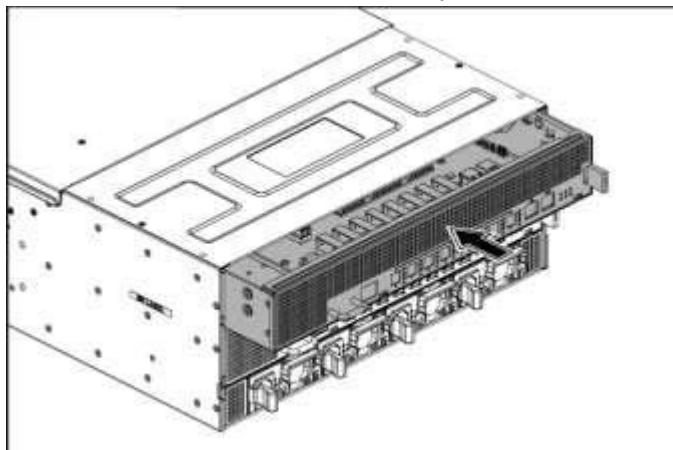
Figure 2-19   Installing the SIM Node

2.7 System Fans

Subdividing the SIM board area and the backplane area is a metal cage that holds the system fans. This server contains 12 system fans which are located inside the chassis. These system fans maintain the ideal temperature for the SIM boards, backplanes and disk drives.
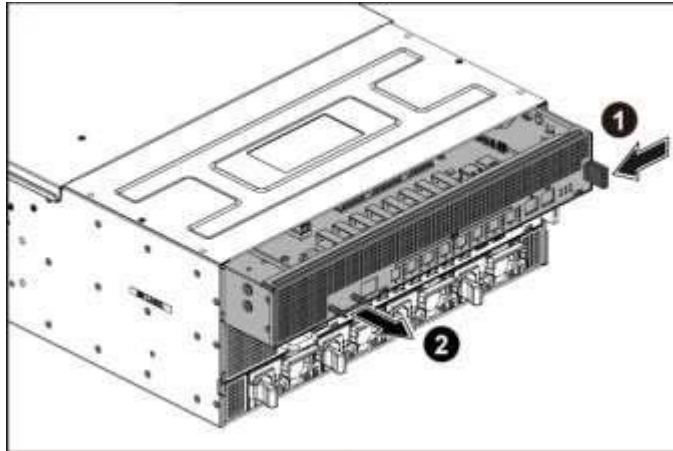
The sequence of system fans is shown below for your reference:
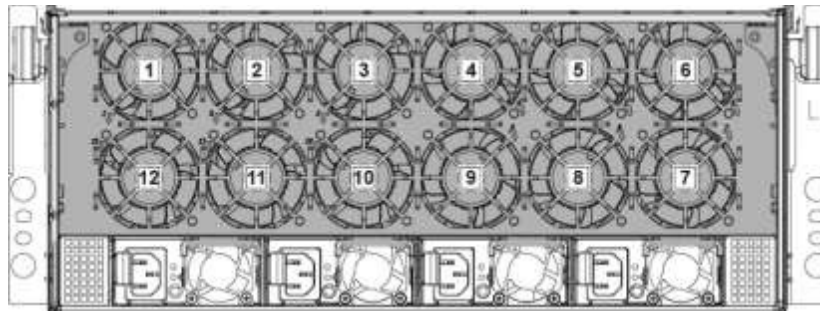
Figure 2-20   System Fan Sequence

🔆 Reminder

Before you remove or install the system fans, please follow the steps below:

Step 1:   *Make sure all of the SIM nodes are not turned on and the server is not connected to AC power.*

Step 2:   *Remove the chassis cover. To remove the chassis cover, see "0*
    To remove the chassis cover

Step 3:   *Disconnect all the necessary cables.*

2.7.1 To remove the system fans

❶ Loosen the screws that secure the interposer-board assembly support.

❷ Remove the interposer-board assembly support out of the chassis. ❸
Loosen the screws that secure the system fan cage.

❹ Remove the system fan cage out of the chassis along the direction of the arrow.
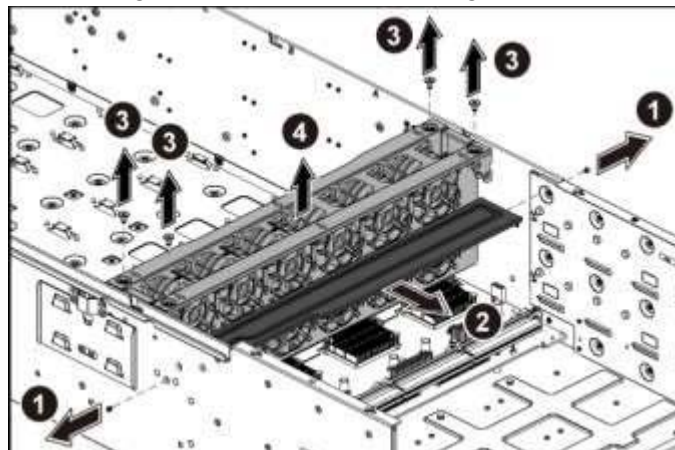
Figure 2-21   Removing the System Fan Cage

❺ Loosen the screws that secure the back cover.

❻ Remove the back cover out of the system fan cage.
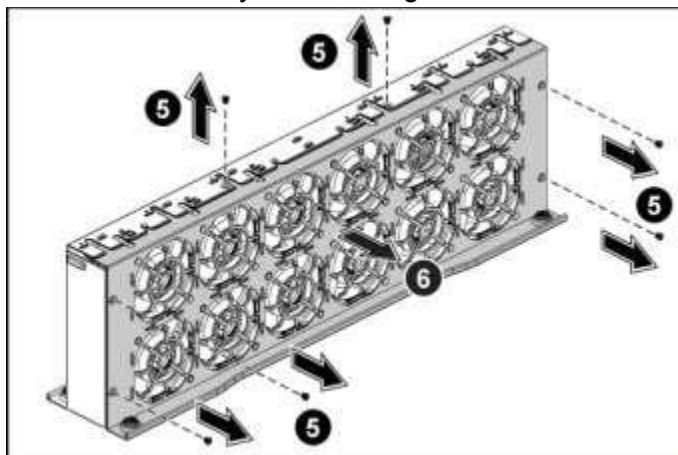
Figure 2-22   Removing the Back Cover

❼ Remove the single fan from the system fan cage.
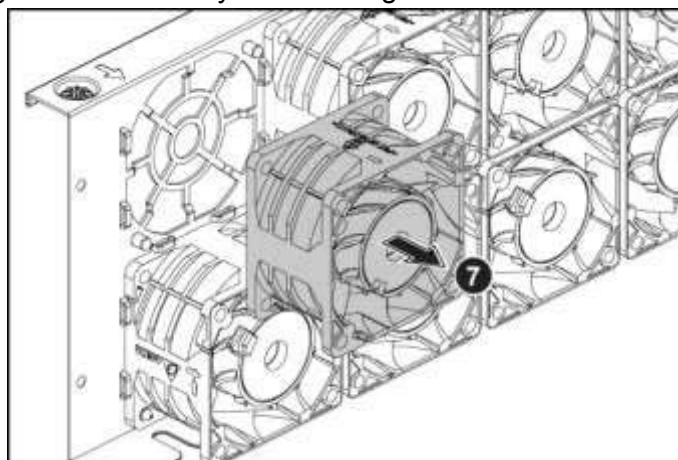
Figure 2-23   Removing the System Fan

2.7.2 To install the system fans

Reverse the steps above to install the system fans.

- When installing the system fan cage into the chassis, the arrows on the system fan cage must point to the direction of power supplies.

- When installing the system fans, recommend to install them in the order of system fan 1 and system fan 12 from left to right.

Appendix

Appendix A: Support

Before you Begin

Before removing the chassis cover, disconnect all power. Unplug the AC power cord; disconnect all peripherals, and all LAN lines.

Make sure you have a stable, clean working environment. Dust and dirt can get into computer components and cause a malfunction. Many of the screws on the server are different sizes; use containers to keep screws and small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging internal components. Most of the following procedures require only a few simple tools, including the following:

- Philips screwdriver
- flat-tipped screwdriver
- set of jewelers screwdrivers
- grounding strap
- anti-static pad

Troubleshooting Sequence

Installation Problem

Perform the following checks if you are troubleshooting an installation problem:

- Check all cable and power connections (including all rack cable connections).
- Unplug the power cord, and wait one minute. Then reconnect the power cord and try again.
- Remove all added options, one at a time, and try to power up the system. If after removing an option the server works, you may find that it is a problem with the option or a configuration problem between the option and the server. Contact the option vendor for assistance.

If the system doesn't power on, check the LED display. If the power LED is not on, you may not be receiving AC power. Check the AC power cord to make sure that it is securely connected.

Troubleshooting External Connectors

Loose or improperly connected cables are the most likely source of problems for the system, monitor, and other peripherals (such as a printer, keyboard, mouse, or other external device). Ensure that all external cables are securely attached to the external connectors on your system. See *1.1 System Overview* for the front- and back-panel connectors on your system.

Troubleshooting System Boot Issues

This document lists troubleshooting tips if your server does not boot up properly.

Contents:

System Does Not Boot up at First Integration
System Used to Boot up and Now Does Not
Examples of troubleshooting system boot issues

System Does Not Boot up at First Integration

Board-to-Board Power Connector Not Plugged In
Check the connection between the SIM board and the docking board, and the connection between the docking board and the middle plane. If one of them is not connected fully in place, the system will not boot up. Please ensure that they are fully connected.

Power Supply and Chassis Issues
No boot situations can be caused by any of the following power supply, chassis or fan issues:
- Verify that your chassis and power supply is appropriate for the frequency and the SIM boards you have.
- Verify that the power supply has the capacity to power all the devices used in your system.
- Ensure the power cord is firmly connected to the power supply and the AC outlet.
- If the power supply or the AC outlet has an on/off switch, make sure that it is on.

Cable Issues
No boot situations can be caused by any of the following cabling issues:
- Make sure the drive ribbon cables inside the computer are attached correctly and securely.
- Check that the cables connecting the chassis back panel to the SIM boards are plugged in properly to the onboard headers.

Electrical Short or Overload
An electrical short or overload may cause a system not to boot.

Check for shorts and overloads by removing non-essential items such as extra controller cards. Keep only the SIM boards, power supply installed. If the system boots, it is possible there is a short or overload with one of the components that you removed or one of those components is faulty. Replace each of non-essential items one at a time until you isolate

which one is causing the problem.

If the problem occurs even after removing the non-essential components, the problem has to be with the SIM boards, power supply.

System Used to Boot up and Now Does Not

Changes to your computer's configuration can cause your system to not boot properly.

New Drive was Installed

If you added a new drive and now the system won't boot:

- Make sure the new drive is supported for your SIM boards. To find the tested hard drive list for your board, please contact your field representatives.
- Make sure all drive cables are properly connected.
- Make sure the correct power cable is connected to the new drive.
- Make sure other devices and cables inside the chassis were not disturbed or loosened when you added the new drive.

Examples of troubleshooting system boot issues

Below are some examples on how to troubleshoot system boot issues.

Fans don't spin when power button pressed

Is at least one power supply fan spinning?

- If it is yes, there is good power to the modules. Verify all required power cables are correctly plugged into the SIM boards. Verify back panel cables are fully seated.
- If it is no, there is potential lack of clean power to the module. Swap power cable. Try different wall circuit or port on UPS.

Appendix B: Specifications

Dimensions	➢ Height: 174.75mm
	➢ Width: 430mm
	➢ Length: 950mm
System Fan	➢ 12 x 6038 fans
Power Supply	➢ 4 x1200W power supplies
Weight	➢ Maxi-weight: 102kg
Temperature	➢ Operating System: +5°C ~ +35°C
	➢ Non-operating System: -40°C ~ +70°C
Humidity	➢ Operating System: +20% ~ +80%
	➢ Non-operating System: +10% ~ +90%
Voltage	➢ 100/240VAC input, 50/60Hz
Current	➢ 9.5/5A

Appendix C: China RoHS Regulations

产品中有毒有害物质或元素的名称及含量标识表

零 部 件 名 称	有 毒 有 害 物 质 或 元 素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr^{6+})	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
金属机构件	X	O	O	O	O	O
塑料机构件	O	O	O	O	O	O
芯片	X	O	O	O	O	O
内存模组	X	O	O	O	O	O
电路板组件 *	X	O	O	O	O	O
LCD显示模组	X	O	O	O	O	O
钮扣电池	O	O	O	O	O	O
充电电池组件	O	O	O	O	O	O
电源供应器	X	O	O	O	O	O
电源线	O	O	O	O	O	O
信号连接线	O	O	O	O	O	O
风扇	X	O	O	O	O	O
散热模块	X	O	O	O	O	O
光驱	X	O	O	O	O	O
硬盘	X	O	O	O	O	O
软驱	X	O	O	O	O	O
带式磁盘驱动器	X	O	O	O	O	O

＊：电路板组件包括印刷电路板及其构成的零部件，如电阻、电容、集成电路、连接器等。

O：表示该有毒有害物质在该部件所有均质材料中的含量均在《电子信息产品中有毒有害物质的限量要求标准》规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出《电子信息产品中有毒有害物质的限量要求标准》规定的限量要求；但是上表中打"×"的部件，其含量超出是因为目前业界还没有成熟的可替代的技术。

除非另有标明，此电子信息产品污染控制标记适用存储和服务器产品。

Figure I   China RoHS Regulations