

DNS-1600

**4U 24 Bays 6Gb/s SAS JBOD
Dual-path, Dual I/O**



User Manual

Version QS0002

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Safety Measures

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous. Follow these guidelines to avoid damage to the DNS products or injury to yourself.

- Always disconnect power when carrying out work inside the unit.
- If possible, wear a grounded wrist strap when carrying out work inside the unit. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress the circuit board.
- Leave all components inside the static-proof packaging until you are ready to install the component.

Equipment Location

This equipment should only be accessed by SERVICE PERSONNEL or by USERS who have been instructed about the reasons for the restrictions applied to the location. Access is through the use of a TOOL or lock and key, or other means of security, and is controlled by the authority responsible for the location.

About this Guide

This guide describes how to setup and power on the DNS 1600 system. This guide is intended for trained personnel only.

Package content

The DNS-1600 box contains the following items:

- DNS-1600 Storage unit (1)
- Power cord (2)
- CD with user manual and drivers (1)
- Universal Rail Kit(1)
- 6/4 HDD Screws(96)

System requirements

- Servers with supported HBA/Raid adapter, refer to DNS-1600 support matrix reference for complete listing of supported adapters.
- SFF-8088 to SFF-8088 SAS cable.

Model

Model#	DNS-1600SM	DNS-1600DM	DNS-1600S	DNS-1600D
Hard Drive Type	SATA	SATA	SAS	SAS
SAS I/O Module	1	2	1	2
AA Mux Interposer	24	24	0	0

Technical Support

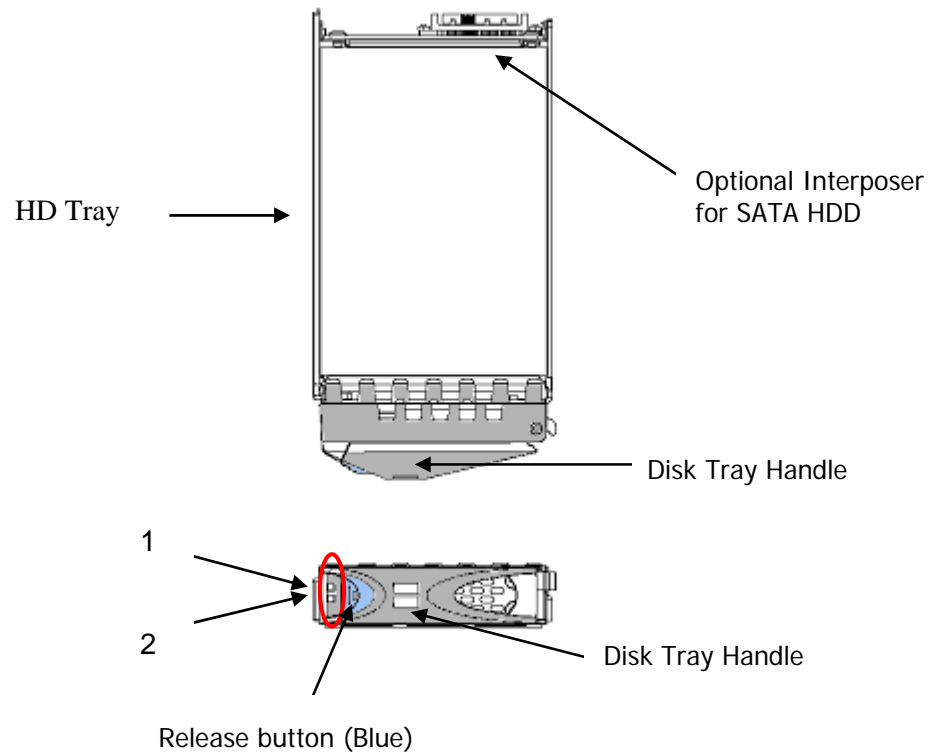
Contact your system supplier.

DNS-1600 Front View



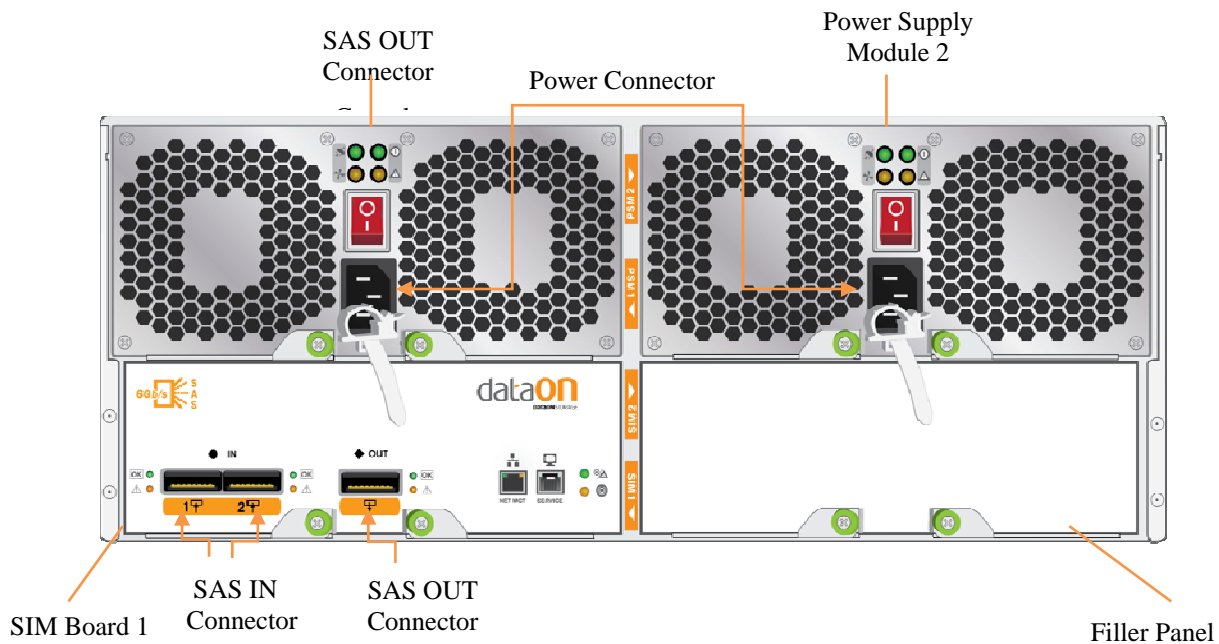
Important: The button at the front of DNS-1600 is only used for locating for DNS-1600 storage with management software and it does not power on/off the system.

Disk Drives Front Panel and Tray

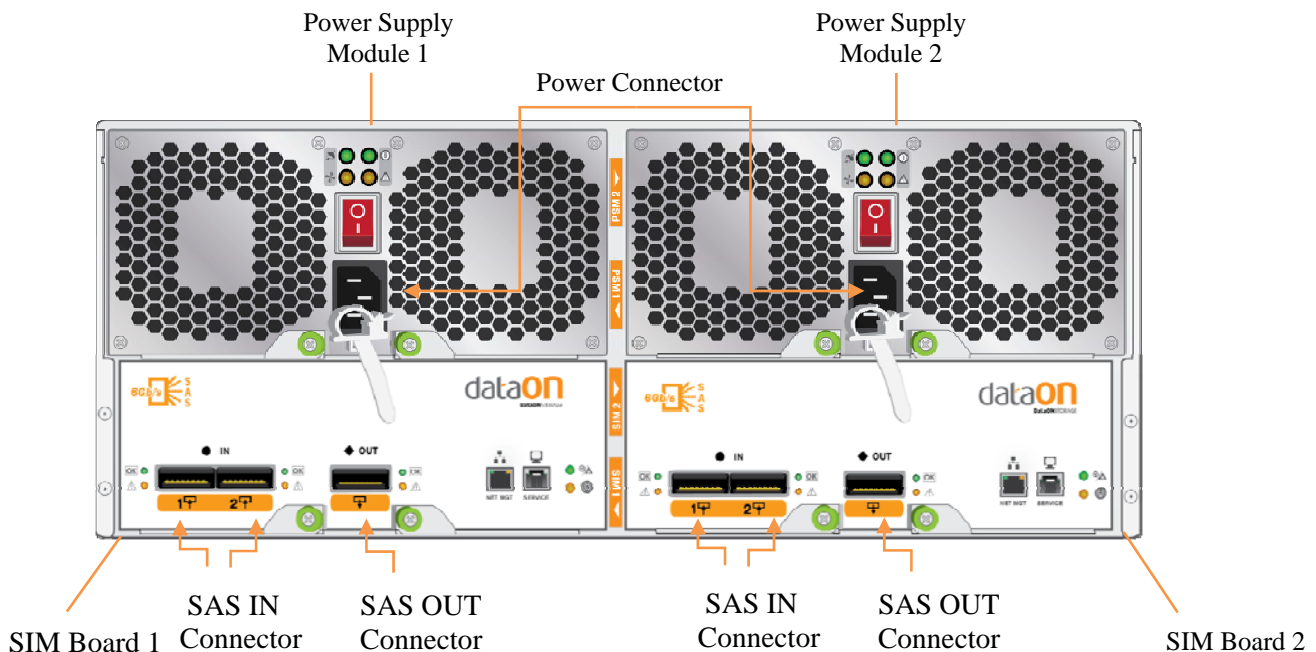


No	Component	Color	Description
1	HDD Activity LED	Solid Blue	HDD is ready
		Blinking Blue	Spin up /Accessing
2	HDD status	Blinking Green	Identify HDD
		Solid Red	HDD fault
		Blinking Orange	RAID Resilver/Rebuild
		Solid Orange	Hot Spare
		Alternate Green/Orange	Scrub/Consistency Check

DNS-1600 (Single SIM) Rear View



DNS-1600 (Dual SIM) Rear View



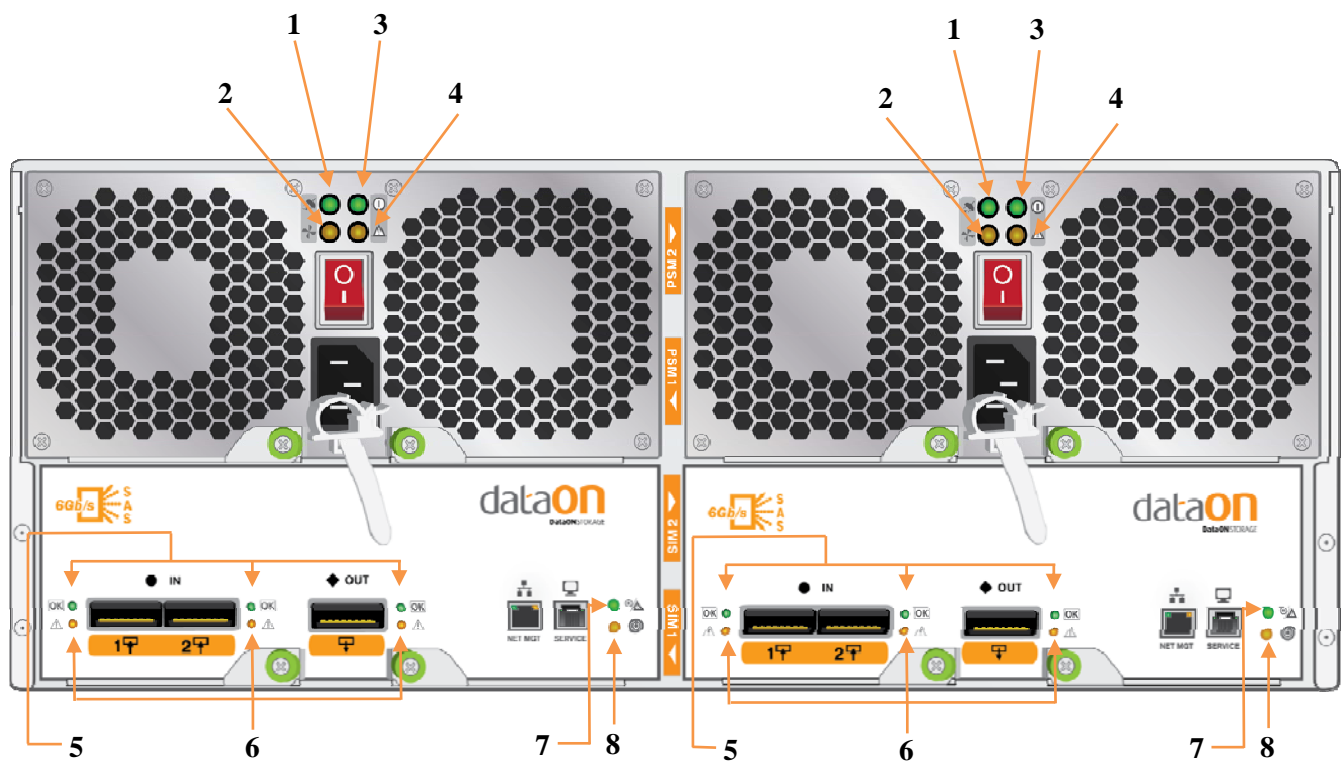
Important:

Note the direction of the power supply unit. Insert the power supply with the label and gold finger on the top.

All SAS IN & OUT connectors are SFF-8088

NET MGT ports are for FW upgrade. Service port is for manufactory use only.

DNS 1600 Rear LED Descriptions



No	Component	Color	Description
1	AC Power Status	Solid Green	PS is ON
		Off	No AC Power
2	Cooling Fan Power Fault	Off	Normal
		Solid Amber	Cooling Fan Failure
3	DC Power Status	Solid Green	Normal
		Off	No DC Power
4	Power Supply Status	Off	No failure
		Solid Amber	Power Supply Failure
5	SAS Link Power	Solid Green	Connected No activity
		Blinking Green	Accessing SAS
		OFF	Not connected
6	SAS Link Status	OFF	Normal
		Solid Amber	Fault SAS
7	SIM Power	Green	SIM is ON
		Blinking Green	SIM is booting
		Solid Amber	Fault SIM
8	SIM Locate	Off	Normal
		Blinking White	Identify SIM

Install/Replace HDD

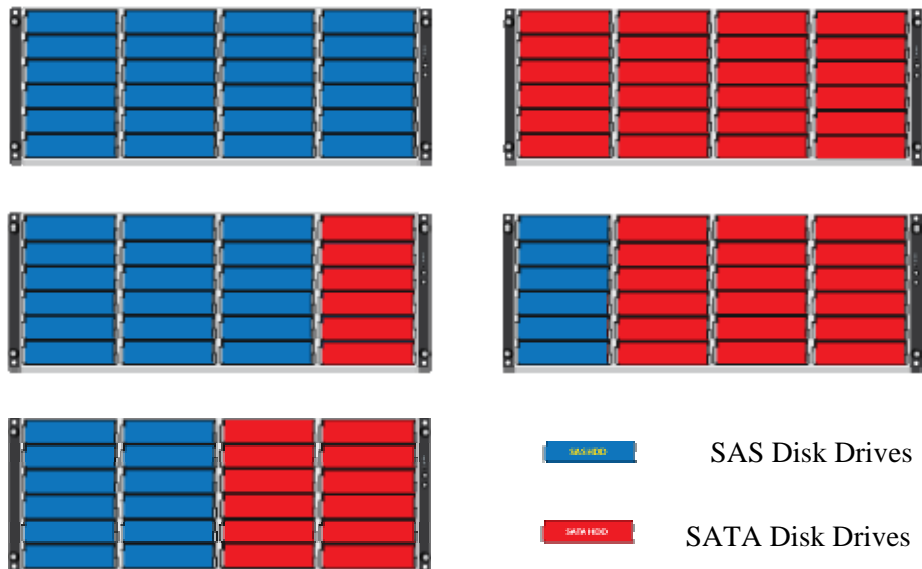
Before You Begin

It is not recommend mixing SAS and SATA HDD in the same DNS-1600 system. If you have to, please use the following figures below to plan where you will be placing the disk drives.

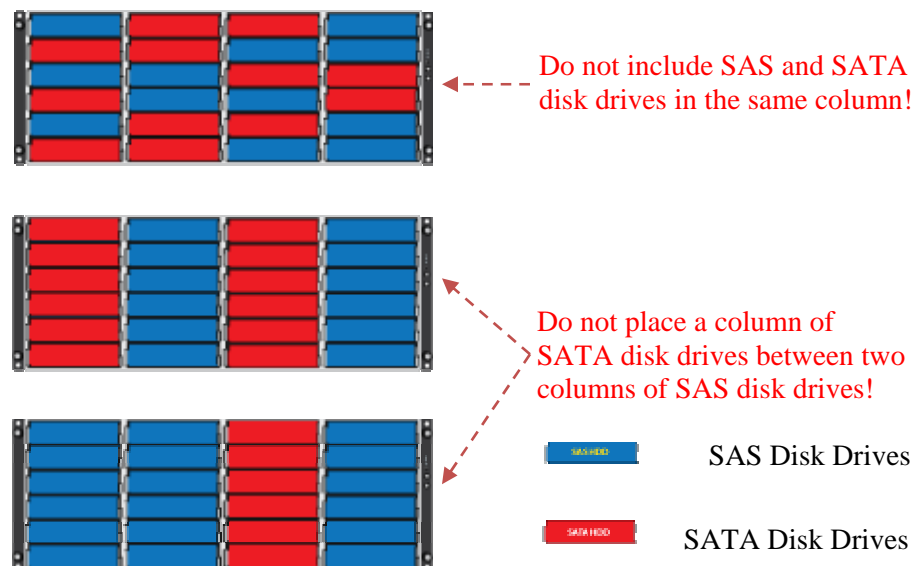
These figures represent fully-loaded DNS-1600 system with HDD.

However, the same guidelines apply even if you are filling some of the HDD slots with blank disk trays in the mixing HDD setting.

Recommended Disk Drive Configurations



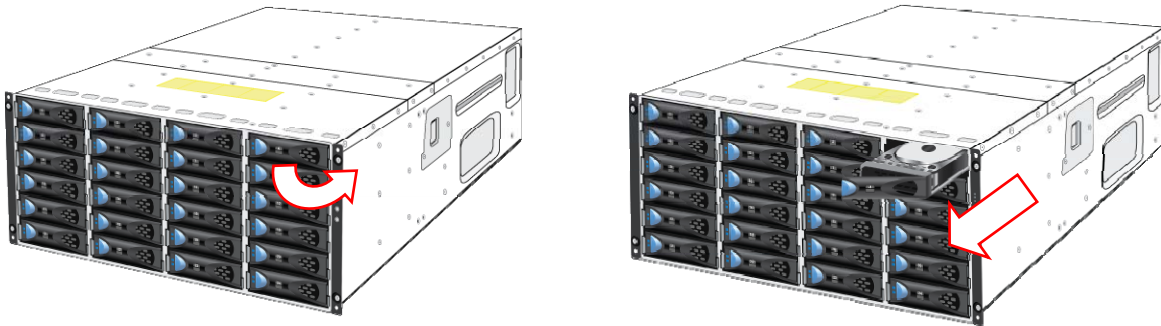
Unsupported Disk Drive Combinations



Follow these steps below to Install/Replace HDD in the disk tray.

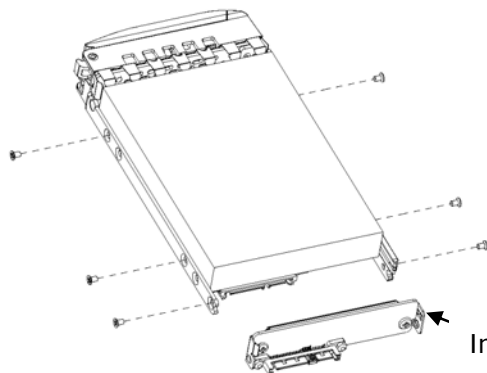
Step 1

- Press the release button to right and open the disk tray handle.
- Remove HDD carrier by pulling the disk tray handle out.

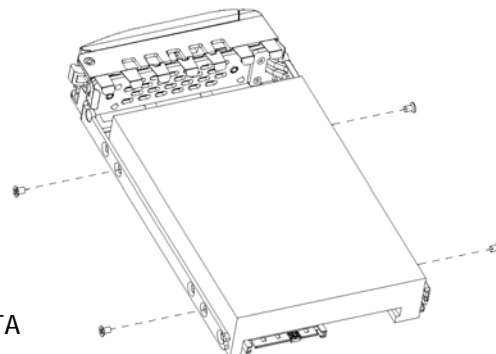


Step 2 Insert the HDD inside the tray and tighten the four 6/4 screws on the SATA/SAS disks.

SATA disk



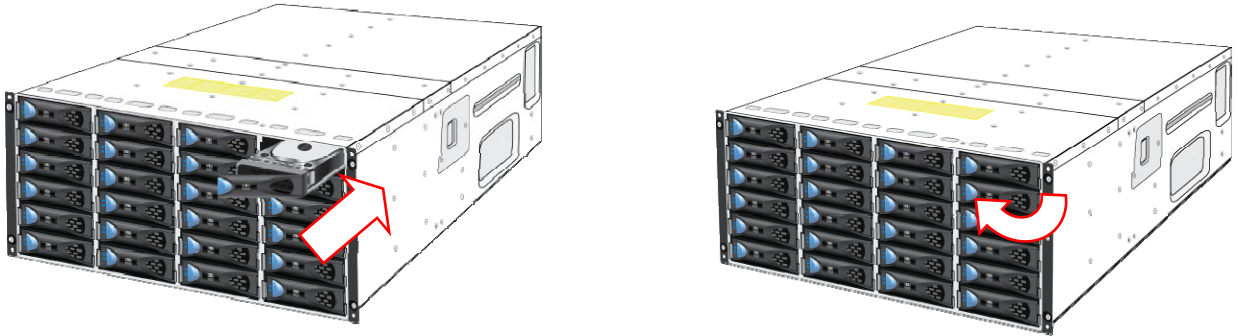
SAS disk



Important:

If using SATA HDD, please make sure having Interposer card installed on the back of HDD tray

Step 3 Slide in the HD tray back in the disk slot and close the disk tray handle.



Step 4 Repeat Step 1 though 4 if you wish to install more HDD into the DNS-1600 storage.

Before You Begin

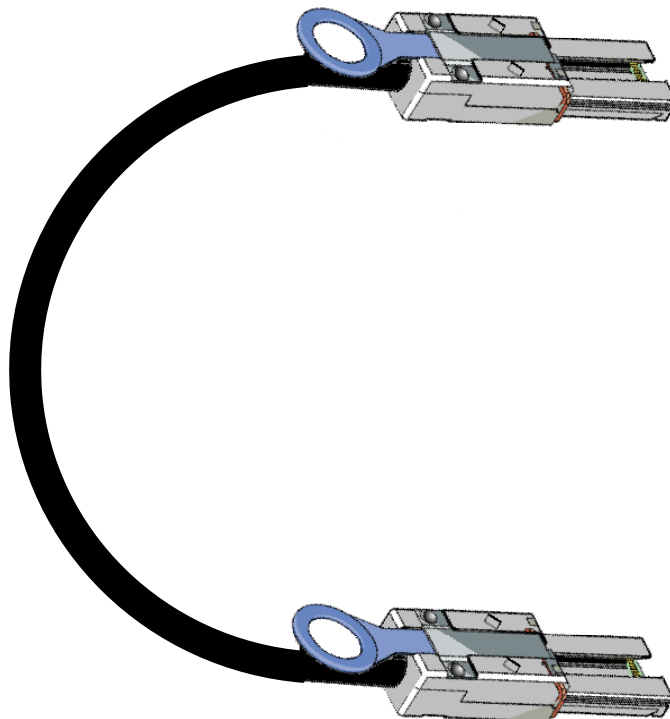
Important: Before you set up the DNS 1600 system, be sure your facility meets the following conditions.

Confirm that there is adequate power at your facility to support the high-availability features of the system. It is recommended to connect each power connector to separate power circuit.

If necessary refer to the documentations shipped with the 6Gb/s SAS HBA/RAID card for hardware and driver installation instructions.

There are several types of SAS Cables in the market, make sure that you order the right one.

For DNS-1600, it all uses SFF-8088 to SFF-8088 SAS Cable when connecting DNS-1600 to host and when daisy chain to another DNS-1600.



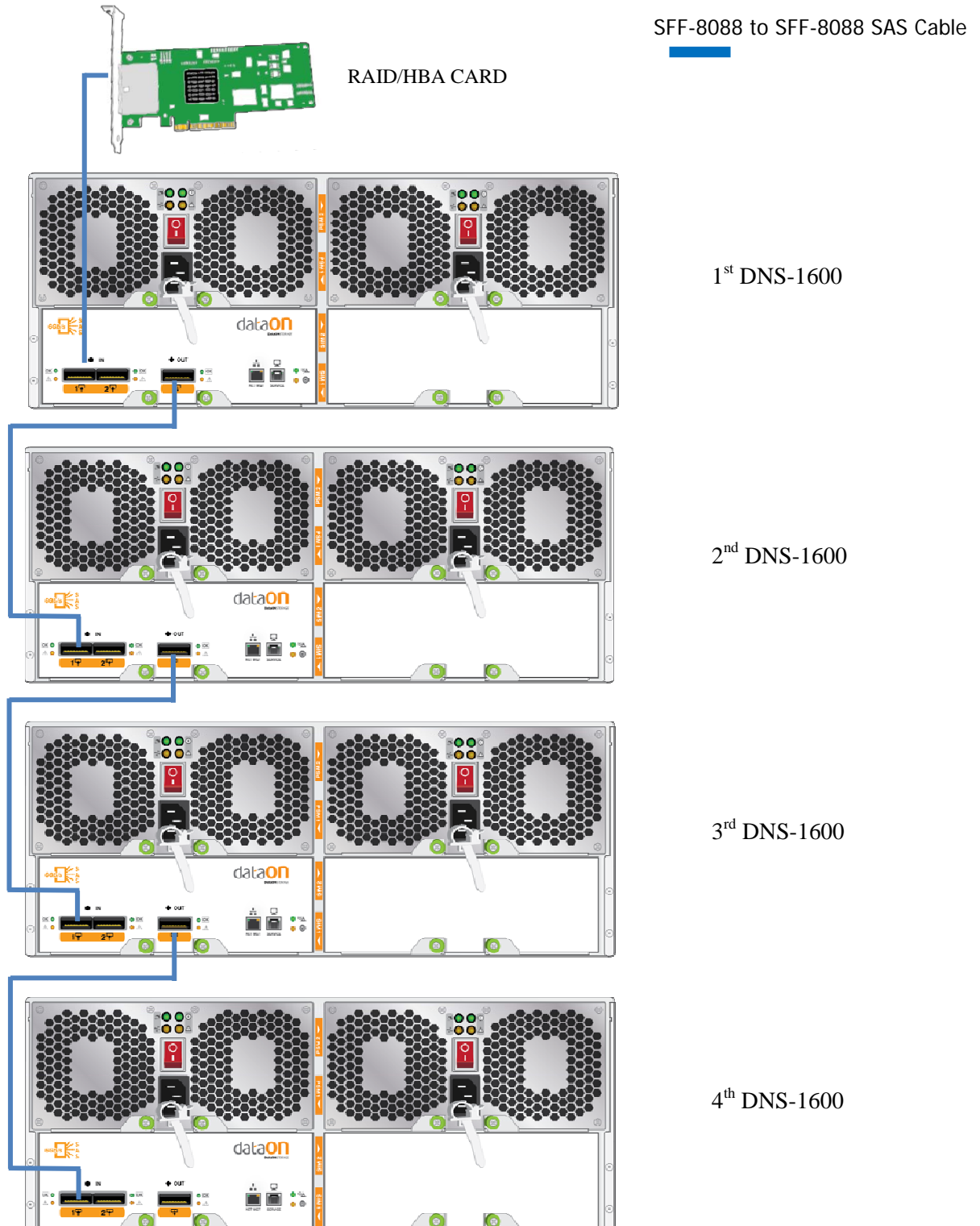
SFF-8088 SAS Connector

SFF-8088 SAS Connector

Setting up DNS-1600 System

Connection type 1(Single SIM)

This illustration shows one host with a HBA/RAID card connected to four DNS-1600 with single SIM.

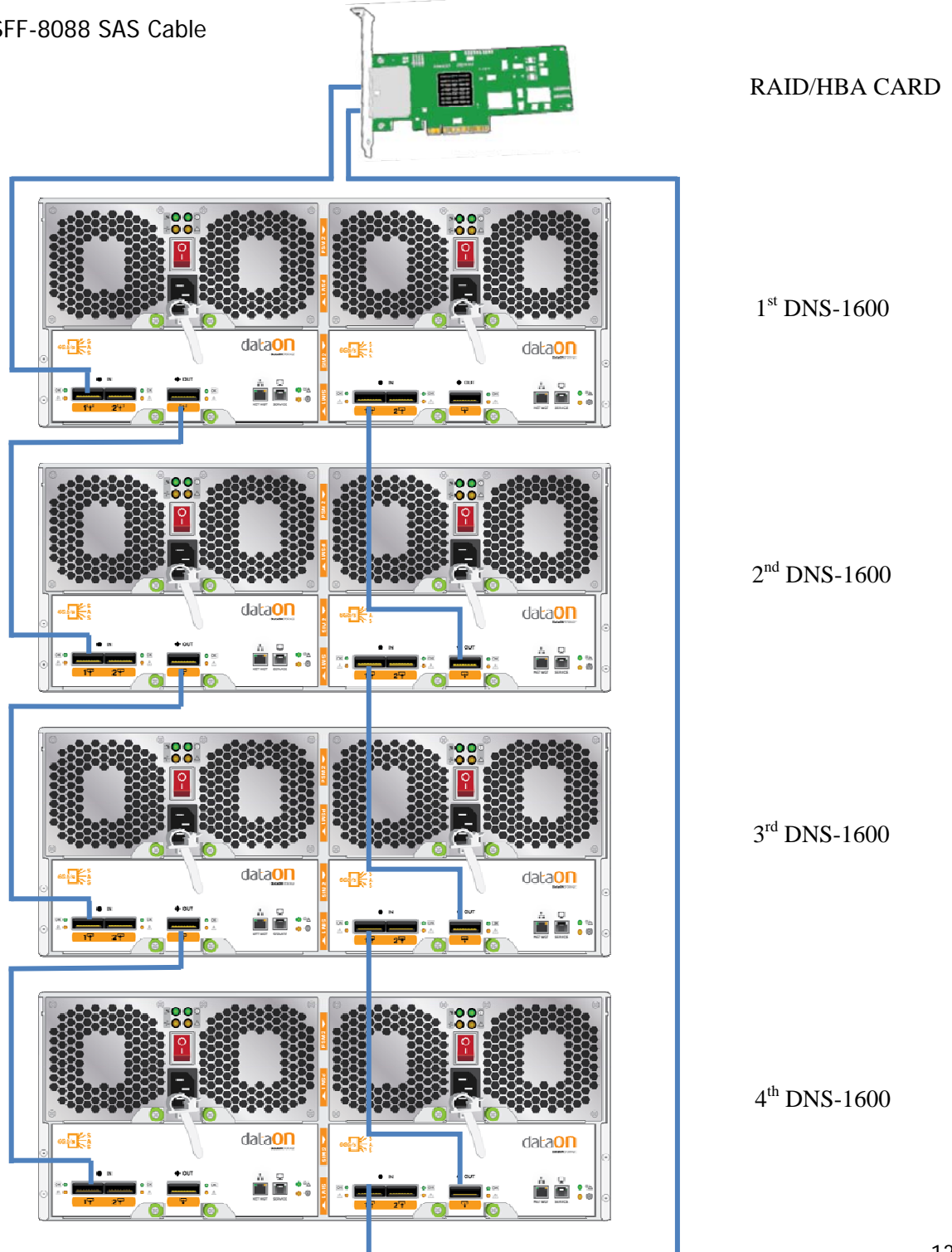


Connection type 2(Dual SIM)

This illustration shows one host with a HBA/RAID card connected to four DNS-1600 with dual SIM.

Important: Not All HBA/RAID card support this type of connection please refers to DNS-1600 support matrix reference for complete listing of supported dual port 6Gb/s HBA/RAID cards.

SFF-8088 to SFF-8088 SAS Cable



4. Connect the power cables from the cabinet to separate power circuits in your facility.

Note: Cabinet is not included in the package. Only the universal rails kit for the cabinet are provided.

Power on the DNS-1600

1. Verify that all connections are correct.
2. Turn on both circuit breakers on cabinet.
3. Make sure that power-on LED on all DNS-1600 are steady blue.
4. Power on the server lastly.

Important: Please make sure power on all DNS-1600 first before the server

Features and Specifications

DNS 1600 is a high-availability, cost-effective 4U 6Gb/s SAS (Serial Attached SCSI) to SAS/SATA JBOD, which provides 24 pcs 3.5" hard drive carriers to support various types of hard drive, including 6G SAS hard drive, and 3G SATA II hard drive with interposer card. In addition to 24 pcs hard drive carriers, DNS 1600 system supports two 764W Full Redundant Power Supplies and two SIM modules.

High Reliability: Redundant SIM modules, power supplies and FAN modules design secure "No Single-Point Failure". Active-Active Dual SAS I/O Module Architecture, hot-swappable hard disk, and dual SAS and SATA II paths with Interposer Card ensure that DNS 1600 has high reliability and achieves 24x7 availability.

High Scalability: Each DNS 1600 system supports a maximum of 24 SAS/SATAII hard disks per system, and up to 96 drives by daisy-chaining JBOD.

High Flexibility: DNS 1600 system supports both SAS and SATA II disks depending on customer's needs. This feature provides the most cost-effective storage pools for different kinds of data and provides a better management for ILM (Information Life Cycle Management) applications.

High Performance: The Active-Active Dual 6Gb/s SAS I/O Module Architecture ensures high system performance.

Features:

- Redundant SIM Modules and Power Supplies
- Active-Active Dual 6Gb/s SAS I/O Module Architecture
- Support full path fail-over function which provides data redundancy
- Support Drive Auto Detection and Hot Swap
- Integrated RAID card management tool via SES2

Connectivity Features:

- Two 6Gb/s SAS ports in each SIM module provides host connectivity
- Support up to 96 drives by daisy-chaining 4x DNS-1600 6G/s SAS JBODs.
- Connected and managed by 6Gb/s RAID controller
- Connect to 6Gb/s SAS Expander
- Support Direct Attach
- Support daisy-chain of JBODs

<p>Host Interface:</p> <ul style="list-style-type: none"> ■ Three 6G SAS ports on each SIM module <p>Hard Disk Interface:</p> <ul style="list-style-type: none"> ■ 24 x dual ported SAS (6Gb/s) or SATAII hard disks with interposer card (3Gb/s) ■ Up to a maximum of 24 disks per JBOD. ■ By daisy-chaining JBODs, up to 96 disk drives supported <p>Redundant, Hot Swappable Components:</p> <ul style="list-style-type: none"> ■ 2 SIM Modules ■ 2 Power Supply Modules ■ up to 24 SAS/SATAII hard disks <p>Form Factor:</p> <ul style="list-style-type: none"> ■ Internal Bays: 24 Hard Disks ■ Rack Mount: 23 inch (D) <p><i>Dimensions: The chassis dimensions measured at 17.5" (W) X 6.875" (H) X 23" (D) (Sheet metal case only, not including bezel and rear module handle).</i></p> <p>Management Features:</p> <ul style="list-style-type: none"> ■ Integrated with 6Gb/s RAID Card management tool via SES2 ■ LED Indicators for SM Modules, Hard Drives, Power Supplies and FAN Status. 	<p>AC Power:</p> <ul style="list-style-type: none"> ■ Input Voltage: 88-264 V AC ■ Input Frequency: 47-63Hz ■ Output Power: 746 W <p>Operating Environment:</p> <ul style="list-style-type: none"> ■ Operating Temperature: 0 to 35 degree Celsius ■ Operating Humidity: 20% to 95% (non-condensing) ■ Altitude: -50 to 10,000 feet ■ Shock: 31G @ 2.6ms, ½ sine wave pulse ■ Vibration: 0.25G @ 3Hz to 200Hz <p>Electromagnetic Emissions Standards:</p> <p>FCC- class A under 3dB</p> <p>CE- Specifically requirements in effect July 1, 2001</p> <p>VCCI- for Japan</p> <p>CCC- for China</p> <p>BSMI- for Taiwan/CNS/3438</p> <p>C-TICK- for Australia and New Zealand</p> <p>Safety Standards:</p> <p>UL/CUL: for U.S. with Canada / UL60950-1</p> <p>TUV: for Germany / EN60950-1</p> <p>CB (by TUV): IEC60950-1</p> <p>BSMI: Taiwan / CNS14336</p> <p>CCC: for China</p>
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