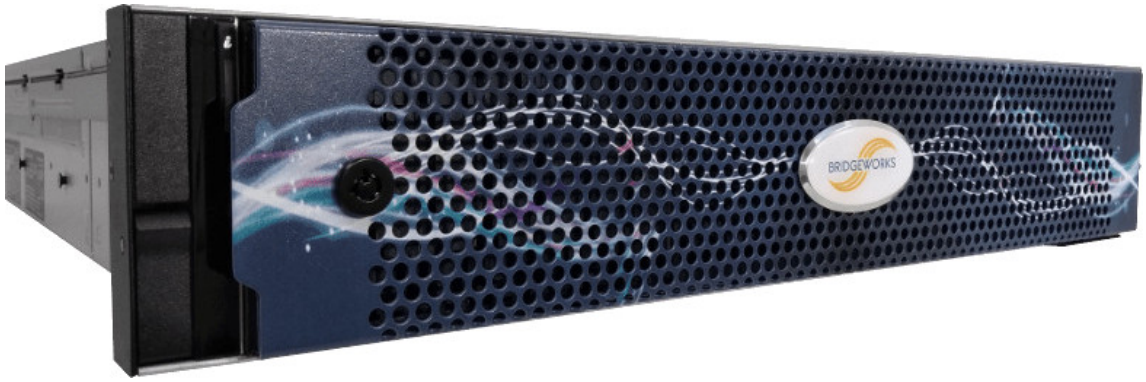
Appliance a204

Hardware Manual

Eli-v6.5.391



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Warning

The Bridgeworks Appliance contains no user serviceable components. Only an Authorised Service Centre should carry out any servicing or repairs. Unauthorised repairs or modifications will immediately void your warranty.

Before you start

There are a number of additional pieces of equipment you will require for the successful installation of your Appliance depending on the feature cards installed:

Ethernet Cable

You will require at least one good quality cable of suitable length to go between your network access point and the Appliance. This should be marked as certified to Cat 5e and have an RJ45 style connector at the Appliance end.

10Gb Ethernet Cable

Depending on the configuration you have purchased, you will require at least one cable from either:

LC Multi-mode Optical Fibre Cable (SFP+)

- Multi-mode Optical Fibre 50/125 OM3 or OM4 Patch Cable (LC), up to 300 meters.

Or Copper Interface Cable (SFP+)

- SFP+ Direct Attach Copper (DAC) Twin-Ax interface cable (passive), up to 7 meters. Bridgeworks Part Number 017/034.

Or 10GBASE-T Category 6/6a Cable (RJ45)

- Category 6 certified cable with an RJ45 style connector, up to 55 meters.
- Category 6a certified cable with an RJ45 style connector, up to 100 meters.

40Gb QSFP Cable

To connect the Appliance to your network for iSCSI transfer, you will require a copper QSFP cable.

100Gb Ethernet Cable

Copper Interface Cable (QSFP28)

- QSFP28 Direct Attach Copper (DAC) Twin-Ax interface cable (passive), up to 5 meters.

6Gb SAS Cable

The Appliance uses a Mini-SAS style connector, also known as an iPASS or SFF-8088 connector, with 4 phys per wide port. You will require a SAS cable that supports this connector at the Appliance end and the type of connector your peripheral device supports at the other end.

12Gb SAS Cable

The Appliance uses a Mini-SAS HD style connector, also known as an SFF-8644 connector, with 4 phys per wide port. You will require a SAS cable that supports this connector at the Appliance end and the type of connector your peripheral device supports at the other end.

Fibre Channel Cable

You will require at least one Multi-mode Optical Fibre 50/125 OM3/OM4 Patch Cable (LC) of suitable length to go between your Appliance and device, host, or Fibre Channel switch.

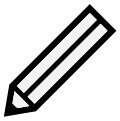
If you are in any doubt, please contact your reseller for assistance.

Table of Contents

1 Introduction

1.1 Manual Layout

Throughout the manual, symbols will be used to quickly identify different pieces of information.

	This icon represents a note of interest about a step or section of information.
	This icon represents an important piece of information.
	This icon represents a warning. Care must be taken and the warning should be read thoroughly.

1.2 Safety Notices

This device should only be installed by suitably trained personnel.

Protection provided by the equipment may be impaired if used in a manner not specified by the manufacturer.

Do not block the enclosure's vents. Air enters from the front and is exhausted out the back of the device.

This device requires a connection to AC power in order to operate. Before using the device, please read the instructions carefully, in order to use the device correctly and safely. For the installation instructions, refer to Chapter 2: Installing the Appliance.

Class I Equipment. This equipment must be earthed. The power plug must be connected to a properly wired earthed ground socket outlet. An improperly wired socket outlet could expose hazardous voltages on accessible metal parts.

Do not attempt to service the equipment yourself. Doing so will void the warranty and may damage the system. This unit may contain hazardous voltages and should only be opened by a trained and qualified technician. To prevent electric shock, do not remove the cover. Contact an authorised service center to perform any servicing inside the Appliance, the user should not attempt to service any parts inside the unit themselves.

The power cord is used as a disconnection device, be aware after disconnection of the AC power some internal components may retain charge still and represent a shock hazard.

Do not use the equipment where it can get wet. Protect equipment from liquid intrusion. If your equipment gets wet, disconnect power to the equipment and to any attached devices. If the Appliance is connected to an electrical outlet, turn off the AC power at the circuit breaker before attempting to remove the power cables from the electrical outlet. Disconnect any attached devices.

Use only approved power cables(s) rated for the equipment. The voltage and current rating of the cable should be greater than the ratings marked on the equipment.

If the incorrect cables for your geographical area have been supplied with your unit please contact your supplier.

The mains plug to the rear of the unit is used as the power disconnect device; please ensure that this is kept clear from any obstruction and is visible at all times.

To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.

	Class 1 Laser Product: Certain models will use a Small Form factor Pluggable (SFP) Transceiver module for connection to an optical network. These devices may use a Class 1 Laser device—it is important that you do not stare into the Laser beam.

2 Installing the Appliance

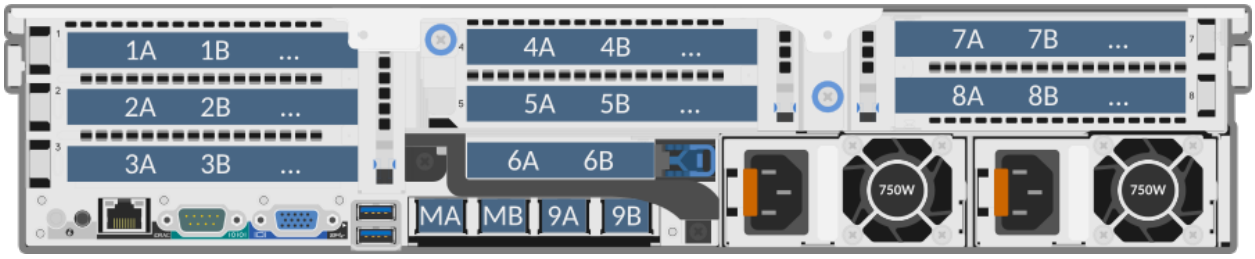
The following are the basic steps to installing the Appliance:

- Connecting the Ethernet Interface
- Connecting the 10Gb Ethernet Cables*
- Connecting the 40Gb QSFP Cables*
- Connecting the 100Gb Ethernet Cables*
- Connecting the 6Gb SAS cables*
- Connecting the 12Gb SAS cables*
- Connecting the Fibre Channel Interface*
- Connecting the Power Supply

**If an appropriate feature card is installed.*

2.1 Appliance Configuration

The following image is a representation of the back of the Appliance and can be used to identify the positions of the various feature cards available on your product.



Product	Onboard Ports MA and MB	Onboard Ports 9A and 9B
WANrockIT 400	Management	WAN
WANrockIT 800	Management	WAN
PORTrockIT 400	Management	WAN
PORTrockIT 800	Management	WAN

All other slots will contain feature cards chosen at time of purchase.

2.2 Connecting the Ethernet Interface

The onboard Ethernet interfaces on the Appliance can be used on the following network configurations:

- 10BASE-T

- 100BASE-T
- 1000BASE-T (Gigabit)

It is not necessary to specify which network type you are connected to, as the Appliance will automatically select the correct network speed.

The onboard Ethernet interfaces can be found at the back of the Appliance and are used for either Management or WAN. See Section 2.1: Appliance Configuration to see interface assignments.

To connect an onboard interface, insert a Cat 5e cable (or better) into it as shown in the following image. When the plug is in the correct position a “click” should be heard. The other end of the cable should be connected to a network.

Rear Panel of the Appliance Showing Ethernet Cable Connections

2.3 Connecting the 10Gb Ethernet Cables

Depending on the configuration you have purchased, either one of the following cables will be required for your product.

- LC Multi-mode Optical Fibre Cable (SFP+)
- Copper Interface Cable (SFP+)
- 10GBASE-T Category 6 or 6a Cable (RJ45)

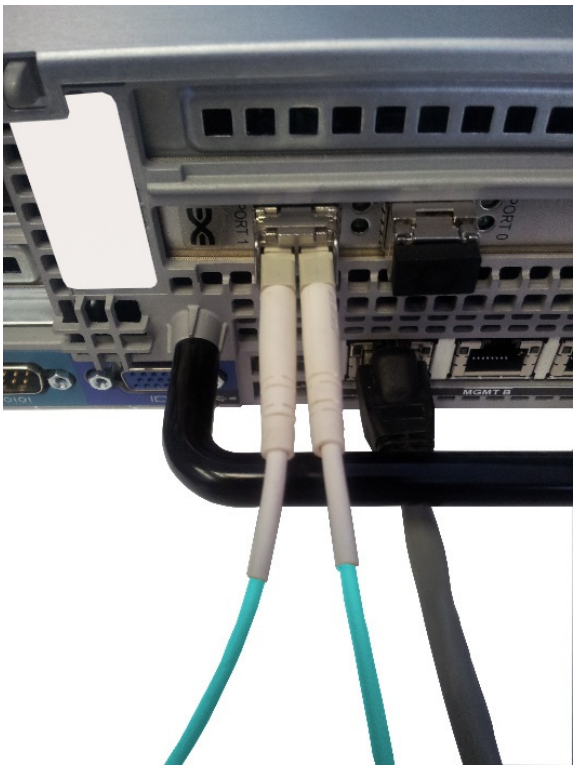
2.3.1 Using a LC Multi-mode Optical Fibre Cable (SFP+)

If you have purchased a 10GBASE-SR feature card, connections up to 300 metres are supported using OM3 or OM4 grade Multi-mode Optical Fibre 50/125 using LC connectors.

To connect the Appliance to an Ethernet network or directly to a device, insert one or two SFPs into the unit.

	Note: SFPs will come pre-installed when a 10GBASE-SR feature card has been purchased with your configuration.

Insert the multi-mode cables in to the SFP as shown below. When the plug is in the correct position a “click” should be heard.



2.3.2 Using a Copper Interface Cable (SFP+)

If you are using a copper based solution, an SFP+ Direct Attach Copper (DAC) Twin-Ax interface cable must be used; the maximum supported length of which is a 7 meter passive cable.

To connect the Appliance directly to a device, insert one or two SFP+ cables in to the connector as shown below. When the plug is connected a “click” should be heard.

	Note: Speeds other than 10Gb/sec may not be supported by your 10Gb NIC.

2.3.3 Using a 10GBASE-T Category 6 or 6a Cable (RJ45)

If you are using a copper based solution using the RJ45 connector, a Category 6 or 6a Ethernet cable is required, with a maximum length of 55 meters for Category 6 and 100 meters for Category 6a.

To connect the Appliance to an Ethernet network or directly to a device, connect one side of the Category 6 Ethernet cable into a RJ45 port located on a 10 Gigabit Ethernet card at the back of the unit. When the plug is in the correct position, a “click” should be heard. Connect the other side of the cable to your Ethernet network or device.

2.4 Connecting the 40Gb QSFP Cables

To connect the Appliance to your network for iSCSI transfer, you will require a copper QSFP cable.

The 40Gb ports are located at the back of the Appliance, as shown below:

To connect the Appliance to your network, insert a QSFP cable into one of the ports as shown below. When fully inserted the cable should ‘click’ and latch securely into place.

Depending on the configuration you have purchased one of two cables will be required for your product.

2.5 Connecting the 100Gb Ethernet Cables

- Copper Interface Cable (QSFP28)

2.5.1 Using a Copper Interface Cable (QSFP28)

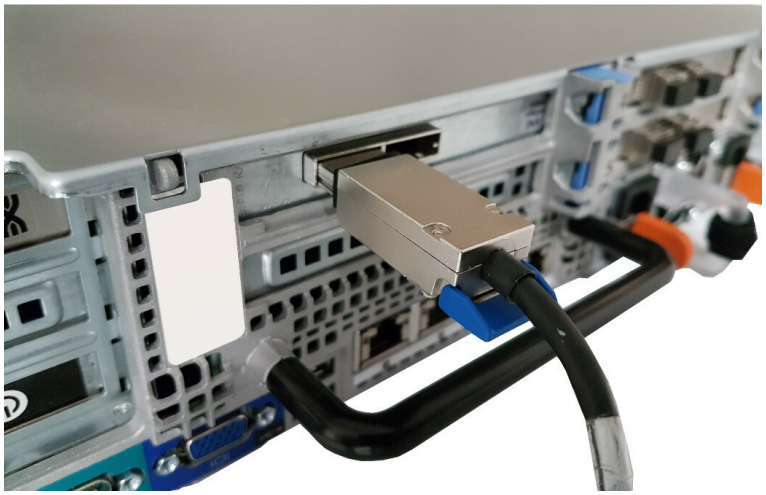
If you are using a copper based solution, an SFP28 Direct Attach Copper (DAC) Twin-Ax interface cable must be used; the maximum supported length of which is a 5 meter passive cable.

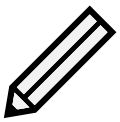
To connect the Appliance directly to a device, insert one or two QSFP28 cables in to the connector as shown below. When the plug is connected a “click” should be heard.

2.6 Connecting the 6Gb SAS cables

The SAS bus on the Appliance is capable of running at speeds of up to 6Gbits/s. However, devices that operate at slower speeds (1.5 Gbits/s and 3Gbits/s) can still be connected to this SAS bus. The Appliance will automatically negotiate with these devices to obtain their optimal operating speed upon power up. Each SAS wide port can support up to 4 phys.

Connect the SAS cable(s) to the Appliance as shown below, ensuring that connector is the correct way up.

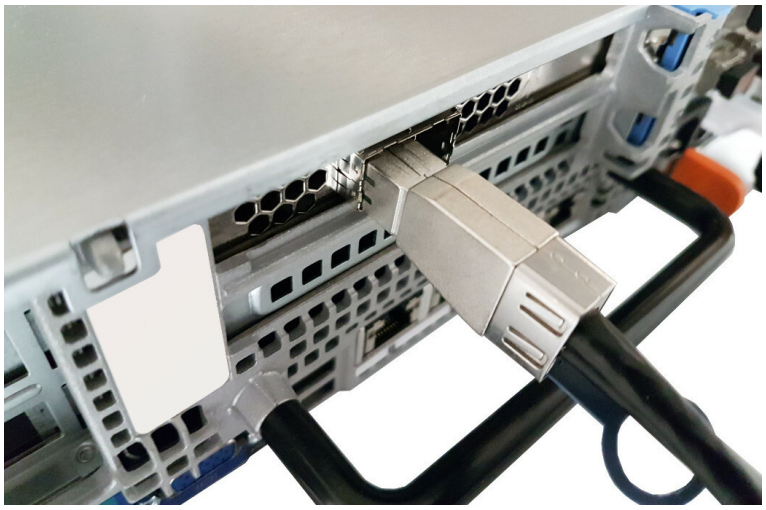


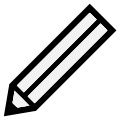
	Note: Each SAS wide port supports 4 independent SAS channels or phys. You can use either wide port as the initial port.

2.7 Connecting the 12Gb SAS cables

The SAS bus on the Appliance is capable of running at speeds of up to 12Gbits/s. However, devices that operate at slower speeds (3 Gbits/s and 6Gbits/s) can still be connected to this SAS bus. The Appliance will automatically negotiate with these devices to obtain their optimal operating speed upon power up. Each SAS wide port can support up to 4 phys.

Connect the SAS cable(s) to the Appliance as shown below, ensuring that connector is the correct way up.





Note: Each SAS wide port supports 4 independent SAS channels or phys. You can use either wide port as the initial port.

2.8 Connecting the Fibre Channel Interface

The supported link speeds are dependent on the Fibre Channel card that is installed. The supported link speeds for each card are listed below.

Fibre Channel Card Speed	Supported Link Speeds
8Gb	2Gb, 4Gb, 8Gb
16Gb	4Gb, 8Gb, 16Gb
32Gb	8Gb, 16Gb, 32Gb

It is not necessary to specify which link speed you are using as the Appliance will automatically negotiate the best speed when first powered up.

To connect to the Fibre Channel network, a Small Form-factor Pluggable (SFP) interface module must be inserted into the SFP receptacle at the back of the Appliance as shown in the following image.

	Note: Only use SFP transceivers that meet or exceed the following standards: EU: IEC/EN 60825-1, North America: FCC, CDRH

	Note: SFPs will come pre-installed when a Fibre Channel card has been purchased with your configuration.

The following multi-mode optical fibre cables are supported up to the lengths given:

Fibre Channel Speed	OM1	OM2	OM3	OM4
2Gb/s	150m	300m	500m	
4Gb/s	70m	150m	380m	400m
8Gb/s	21m	50m	150m	190m
16Gb/s	15m	35m	100m	125m
32Gb/s		20m	70m	100m

Connect your host to a target port and your device (such as a tape drive) to an initiator port.

	Note: By default WANrockIT units have the left hand port (Port A) as the target port and the right hand port (Port B) as the initiator port.

When the multi-mode cables are inserted in to the SFP, a “click” should be heard.

2.9 Connecting the Power Supply

	Important: Before connecting the power cord, ensure that the wall or rack plug is removed or is switched off.

With a redundant power supply configuration, the system evenly distributes power across both

power supplies to maximise efficiency. In order to utilise this feature, please ensure that both power supplies are connected.

Connect the power supply to the rear of the Appliance as shown below and turn on the power from the wall socket.

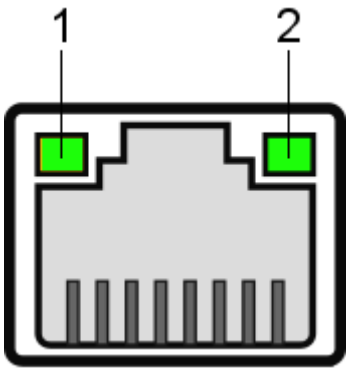
	Note: Before powering up the Appliance, ensure that all peripherals and interfaces are properly connected and are powered up.

To turn on the Appliance push the switch on the front , as shown below.

Whenever the Appliance is powered on, the switch will be illuminated in the colour green and system fans will be easily heard.

Appendix A: Visual Indicators

A.1 Ethernet



1. Link indicator
2. Activity indicator

Link	Activity	Description
Off	Off	Not connected.
Amber		Connected at less than maximum speed.
Green		Connected at maximum speed.
	Flashing Green	Data is being sent or received.

Appendix B: Technical Specifications

Physical	
Form Factor	19″ 2U rack mount
Overall Depth	751.3mm with bezel
Rack Depth Required	715.5mm
Height	86.8mm
Width	482.0mm with rack latches
Weight	26.3kg at maximum configuration
Recommended minimum clearance for cooling	100mm on front and rear faces
Electrical	
Input voltage	100–240V autoranging
Frequency	50–60Hz
Input current (750W)	10A–5A
Input current (1100W)	12A–6.5A
Maximum power consumption	750W/1100W approx.
Environmental	
Operational temperature	10°C to 35°C
Non-operational temperature	-40°C to 65°C
Humidity	10–80% non-condensing
Onboard Management Interface	
No. of interfaces	2
Physical	RJ45 (8P8C)
Speed	Auto-sensing 10 / 100 / 1000Mb/s
Standards	IPv4, IPv6, NTP, SNMP, DHCP
Onboard WAN Interface	
No. of interfaces	2
Physical	RJ45 (8P8C)
Speed	Auto-sensing 10 / 100 / 1000Mb/s.
Feature Cards	
No. of feature cards	Up to 8
Supported feature cards	WAN 1GbE
	WAN 10GbE
	WAN 40GbE
	WAN 100GbE
	iSCSI 1GbE
	iSCSI 10GbE
	iSCSI 40GbE
	iSCSI 100GbE
	Fibre Channel 8Gb
	Fibre Channel 16Gb

	Fibre Channel 32Gb SAS 6Gb SAS 12Gb
WAN 1GbE Feature Card	
No. of interfaces	2 / 4
Physical	RJ45 (8P8C)
Speed	Auto-sensing 10 / 100 / 1000Mb/s.
WAN 10GbE Feature Card	
No. of interfaces	2
Physical	SFP+ Twin-Ax, 10GBase-SR Laser LC, RJ45 (8P8C)
Speed	Auto-sensing 1000 / 10000Mb/s.
WAN 40GbE Feature Card	
No. of interfaces	2
Physical	QSFP+
Speed	Auto-sensing 10000 / 40000Mb/s
WAN 100GbE Feature Card	
No. of interfaces	2
Physical	QSFP28 100GBASE-CR4, 100GBASE-SR4
Speed	Auto-sensing 1 / 10 / 25 / 40 / 50 / 100Gb/s
iSCSI 1GbE Feature Card	
No. of interfaces	2 / 4
Physical	RJ45 (8P8C)
Speed	Auto-sensing 10 / 100 / 1000Mb/s
Error Recovery	ERL0, ERL1, ERL2
Standards	IPv4, IPv6, iSCSI, iSNS, CHAP, DHCP
iSCSI 10GbE Feature Card	
No. of interfaces	2
Physical	SFP+ Twin-Ax, 10GBASE-SR Laser LC, 10GBASE-T RJ45 (8P8C)
Speed	Auto-sensing 1000 / 10000Mb/s
Error Recovery	ERL0, ERL1, ERL2
Standards	IPv4, IPv6, iSCSI, iSNS, CHAP, DHCP
iSCSI 40GbE Feature Card	
No. of interfaces	2
Physical	QSFP+
Speed	Auto-sensing 10000 / 40000Mb/s
Error Recovery	ERL0, ERL1, ERL2
Standards	IPv4, IPv6, iSCSI, iSNS, CHAP, DHCP
iSCSI 100GbE Feature Card	
No. of interfaces	2
Physical	QSFP28 100GBASE-CR4, 100GBASE-SR4
Speed	Auto-sensing 1 / 10 / 25 / 40 / 50 / 100Gb/s
Error Recovery	ERL0, ERL1, ERL2

Standards	IPv4, IPv6, iSCSI, iSNS, CHAP, DHCP
Fibre Channel 8Gb Feature Card	
No. of interfaces	2
Physical	SFP mini GBIC
Speed	Auto-sensing 2 / 4 / 8Gb/s
Standards	FC-AL, FC-PLDA, FC-TAPE, FC-PH, FC-FLA, FCP-SCSI, FC-FS
Topology	NL_port, FL_port, N_port, F_port
Fibre Channel 16Gb Feature Card	
No. of interfaces	2 / 4
Physical	SFP mini GBIC
Speed	Auto-sensing 4 / 8 / 16Gb/s
Standards	FC-AL, FC-PLDA, FC-TAPE, FC-PH, FC-FLA, FCP-SCSI, FC-FS
Topology	NL_port, FL_port, N_port, F_port
Fibre Channel 32Gb Feature Card	
No. of interfaces	2 / 4
Physical	32GFC Short Wave Optical LC SFP+
Speed	Auto-sensing 8 / 16 / 32Gb/s
Standards	FC-DA, FC-DA-2, FC-FS, FC-FS-3, FC-FS-4, FC-FS-5, FC-GS-2/3/4/5, FC-GS-6, FC-GS-7, FC-LS-2, FC-LS-3, FC-MI, FC-NVMe, FC-NVMe/AM1, FC-PH, FC-PH-2, FC-PH-3, FC-PI, FC-PI-2, FC-PI-3, FC-PI-4, FC-PI-5, FC-PI-6, FC-PI-7, FC-TAPE, FCP-2/3, FCP-4, FC-PH, SBC-3, SPC-3, SPC-4, SSC-2, SSC-3, SSC-4
Topology	N_port, F_port
SAS 6Gb Feature Card	
No. of wide ports	2
Physical	SFF-8088 External Mini-SAS
Phys per wide port	4
Speed	Auto-sensing 1.5 / 3 / 6Gb/s
Protocol	SAS 2.0
SAS 12Gb Feature Card	
No. of wide ports	2 / 4
Physical	SFF-8644 External Mini-SAS HD
Phys per wide port	4
Speed	Auto-sensing 3 / 6 / 12Gb/s
Protocol	SAS 3.0
Visual Indicators	
	Power
	Network Link, Activity & Speed
	Fibre Channel Link & Speed
	SAS Link & Activity