

**QNAP**

# *TL-R1220Sep-RP*

# *TL-R1620Sep-RP*



12/16-bay SAS 12Gb/s JBOD storage supports multi-path, aggregation, daisy chaining



**SAS-12G2E /**  
**QXP-1620S-B3616W**  
SAS expansion cards available!



# TL-R1220Sep-RP

# TL-R1620Sep-RP



- Enterprise SAS 12Gb/s expander JBOD units: dual usages supporting NAS and Windows / Linux server storage capacity expansion
- Directly expanding NAS storage pool capacity
- Windows Server 2019 certified JBOD hardware. In January 2021 it will officially support Windows Server monitoring utility with QNAP JBOD Manager for Windows and CLI flexible settings.

Windows  
Server  
2019

Certified





# *TL-R1220Sep-RP*

# *TL-R1620Sep-RP*



- Enterprise-grade TL SAS JBODs with maximum 192Gbps via 4 x Mini-SAS HD SFF-8644 ports for the best performance and reliability.
- Compatible with previous-gen QNAP REXP SAS JBOD series for the max. 16 total units combined for up to 4.6PB raw capacity.
- With QTS 4.5.1 / QuTS hero h4.5.1 for the flexible connectivity, fail over, and performance gains.



# SAS full-duplex 12Gb/s Mini-SAS HD SFF-8644 for max 48Gb/s performance

## Single-cable bandwidth

**SAS 12Gb/s**

4 x 12Gb/s

**48Gb/s**

SAS 6Gb/s

4 x 6Gb/s

**24Gb/s**

USB 3.2 Gen 2 x2

**20Gb/s**

USB 3.2 Gen 2

**10Gb/s**

SATA / eSATA

**6Gb/s**

USB 3.2 Gen 1

**5Gb/s**

Cable

QNAP P/N



SAS 12Gb/s SFF-8644 Mini-SAS HD cable

CAB-SAS05M-8644  
CAB-SAS10M-8644  
CAB-SAS20M-8644  
CAB-SAS30M-8644



SAS/SATA 6Gb/s Mini-SAS SFF-8088 cable

CAB-SAS05M-8088  
CAB-SAS10M-8088  
CAB-SAS20M-8088  
CAB-SAS30M-8088



USB 3.2 Gen 1 cable (5Gb/s)

Type A to C:  
CAB-U35G02MAC  
CAB-U35G10MAC



USB 3.2 Gen 2 cable (10Gb/s)

Type A to C:  
CAB-U310G10MAC

Type C to C:  
CAB-U310G10MCC



# Higher reliability, faster performance, and better availability for SAS drives

	<b>SAS SSD</b>	<b>SAS HDD</b>	<b>SATA SSD</b>	<b>SATA HDD</b>
<b>Price per TB</b>	\$\$\$\$	\$\$\$	\$\$	\$
<b>RPM</b>	---	Up to 15000	---	Up to 7200
<b>Capacity</b>	Up to 15.36TB	Up to 18TB	Up to 4TB	Up to 18TB
<b>MTBF</b>	2.5M hours	2.5M hours	2M hours	1.2M hours
<b>Workload</b>	Process-intensive	Process-intensive	Light to normal	Light to normal
<b>Speed</b>	12 Gb/s	12 Gb/s	6 Gb/s	6 Gb/s
<b>Latency</b>	Lowest	Lower	Lower	Higher
<b>Dual-port</b>	Supported	Supported	---	---

# New generation of 12-bay & 16-bay SAS 12Gb/s JBOD Storage expansion



Built with a Broadcom® SAS expander, capable of connecting many drives with a single SAS cable and SAS JBOD enclosures to expand the NAS storage space.

12 Bay



TL-R1220Sep-RP

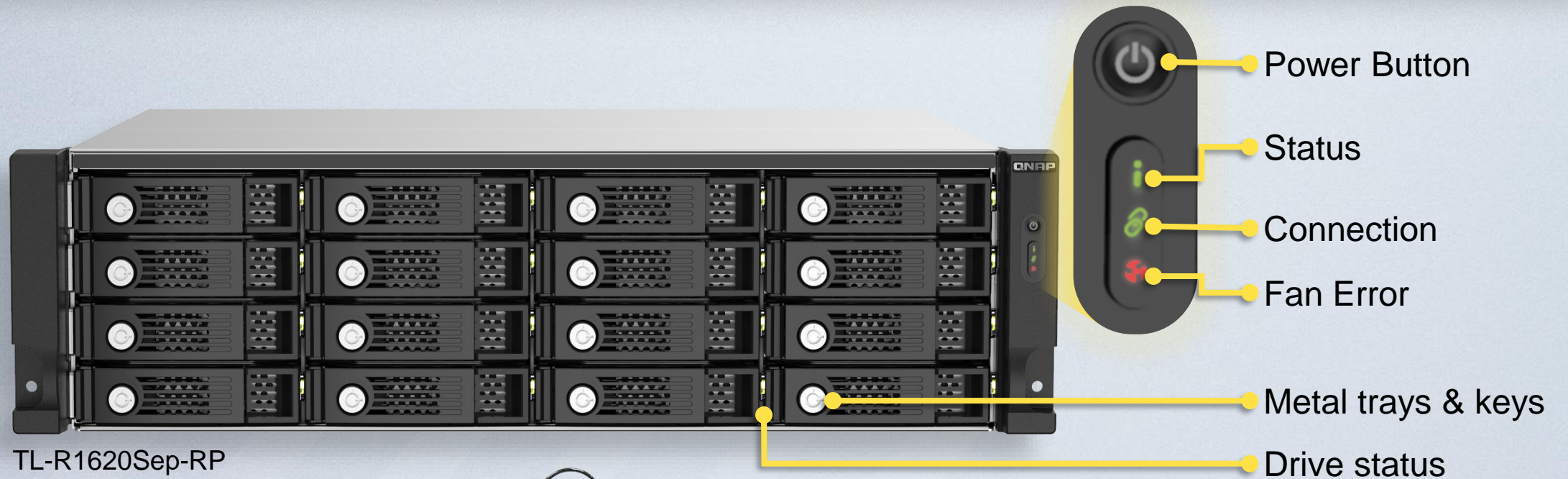
16 Bay



TL-R1620Sep-RP



# TL-R1220Sep-RP / TL-R1620Sep-RP SAS JBOD front view



TL-R1620Sep-RP



TL-R1220Sep-RP



2 Keys in package



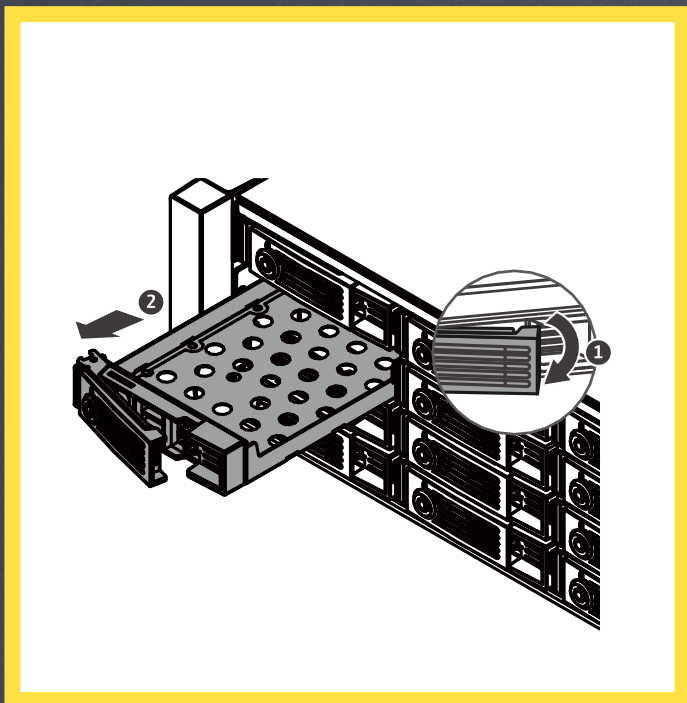
0.5-meter Mini-SAS HD  
cable in package



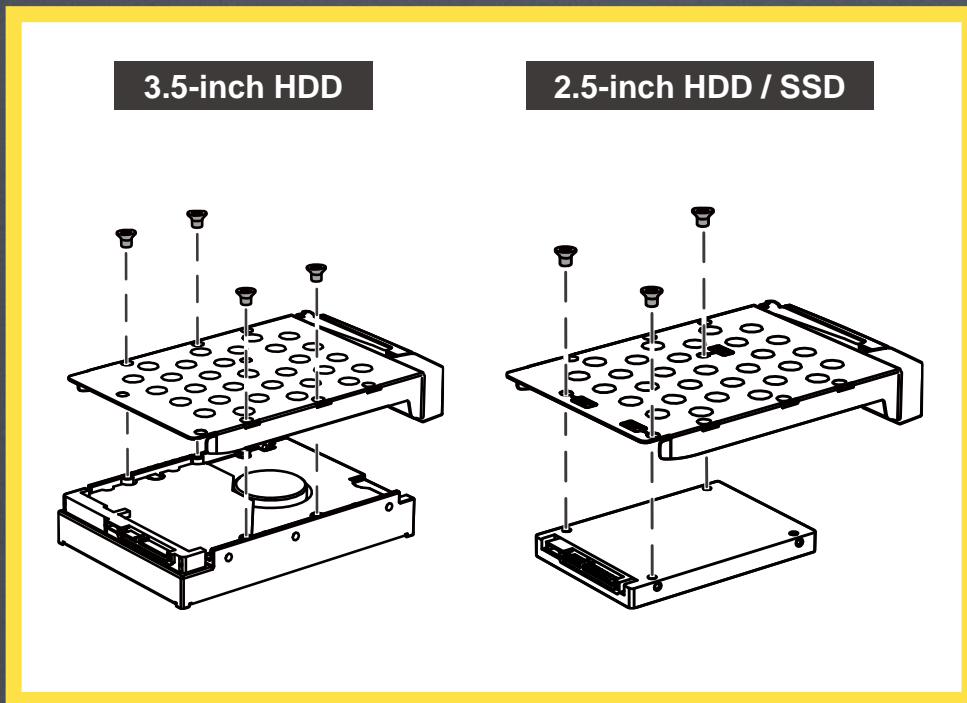
Bulit-in warning  
buzzer

# Support 3.5-inch and 2.5-inch SAS & SATA HDD / SSD

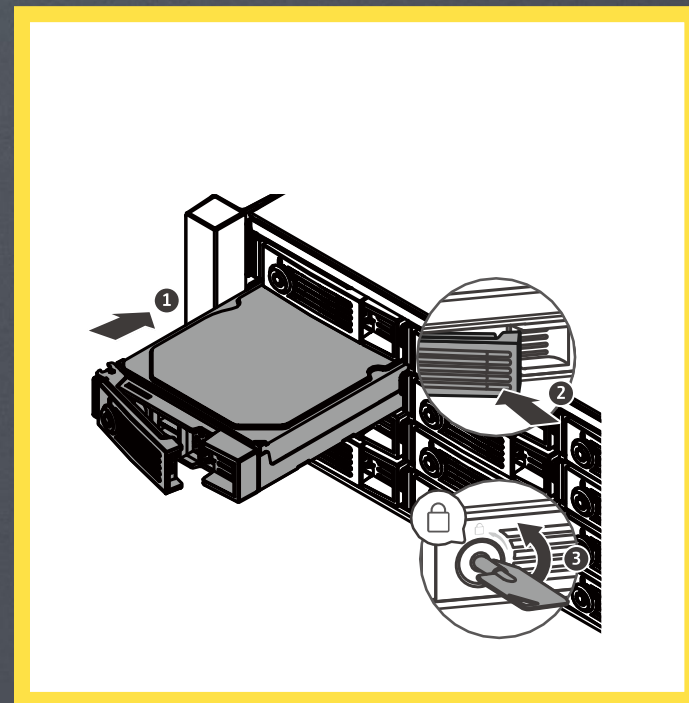
## STEP 01



## STEP 02

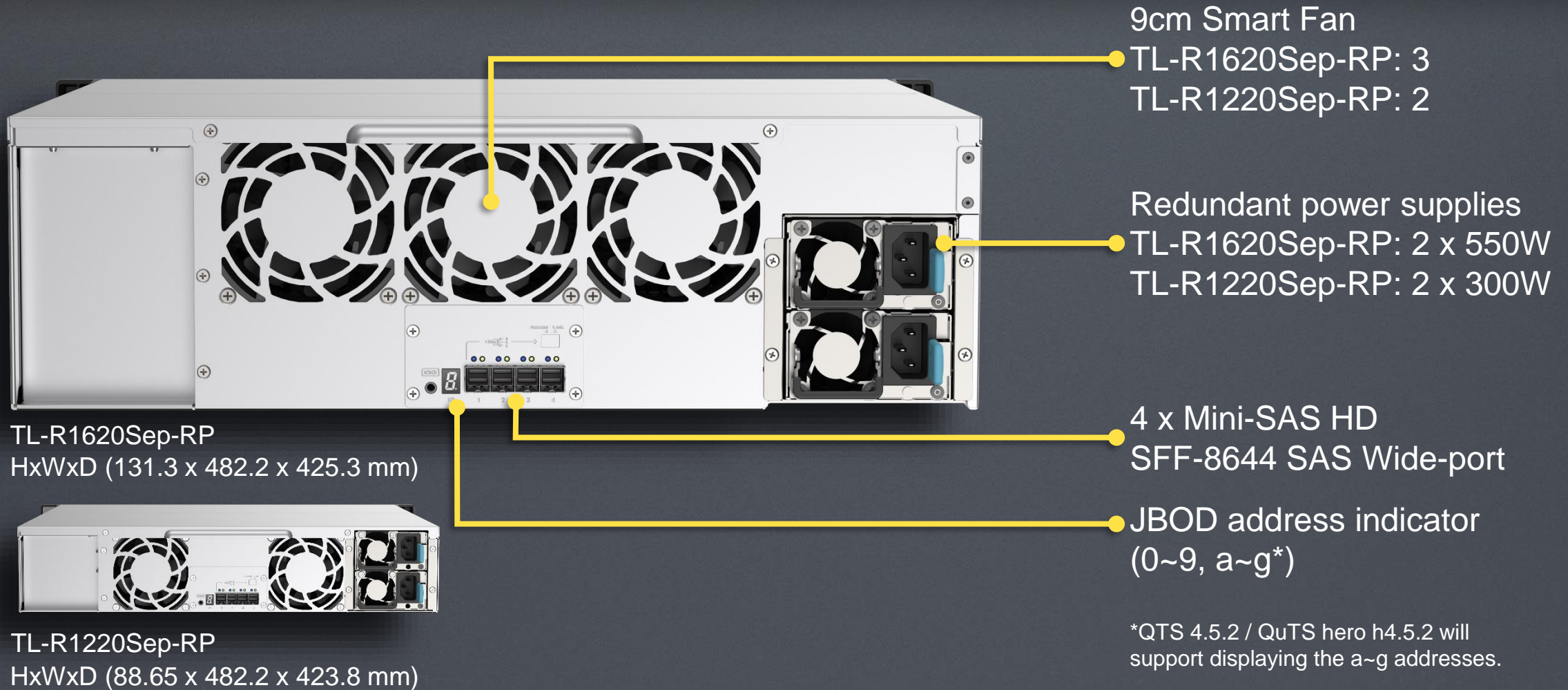


## STEP 03





# TL-R1220Sep-RP / TL-R1620Sep-RP SAS JBOD rear view



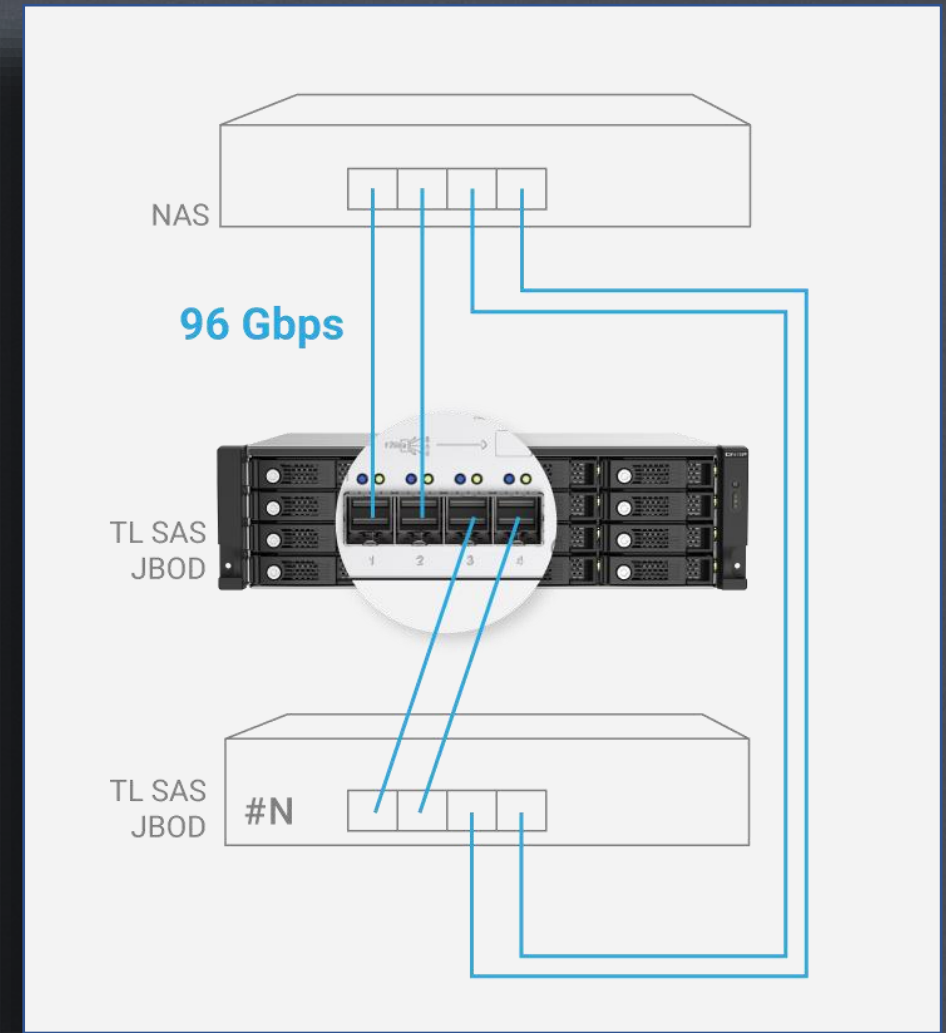
\*QTS 4.5.2 / QuTS hero h4.5.2 will support displaying the a~g addresses.

# Up to 192Gbps with 4 Mini-SAS HD ports for intensive workloads in business storage

## TL-R1220S-RP/TL-R1620Sep-RP

- Low power **Broadcom SAS35x28R SAS Expander IC**
- **12 or 16** x 12/ 6Gbps SAS/SATA HDD or SSD
- **4** x 12 Gb/s SAS 3.0 (x4 Lane) SFF-8644 SAS wide ports, each port maximum 48Gb/s, totaling **192Gbps**

Install 1 or more SAS expansion PCIe cards in the NAS and aggregate two ports and connect multiple TL SAS JBOD units with up to 96Gbps.



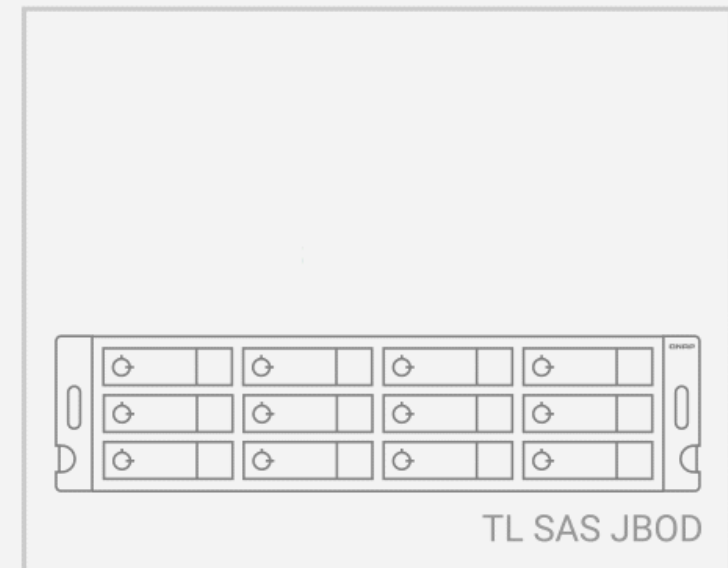
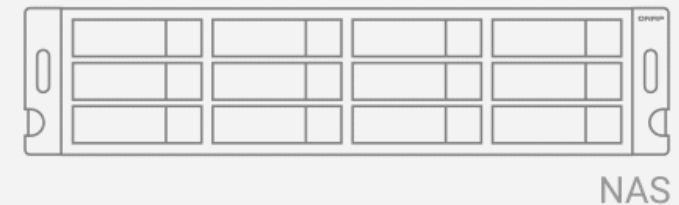


# SAS DataBolt™ bandwidth optimizer providing up to 12Gbps for 6Gbps SSD/HDD system configuration

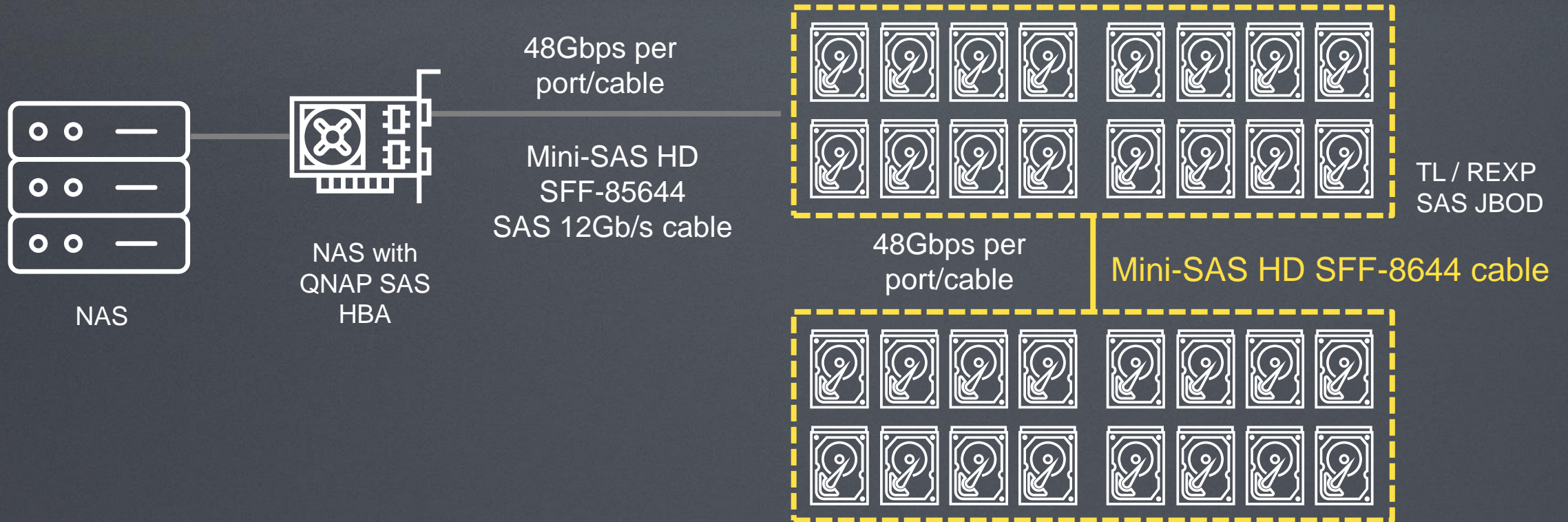
“DataBolt bandwidth optimizer technology aggregates bandwidth to provide 12Gb/s SAS performance to the host when using 6Gb/s and 3Gb/s SATA end devices, making it ideal for high-capacity and other storage applications.” - Broadcom

Broadcom DataBolt™ technology aggregates the performance of two 6Gb/s HDD/SSD and passes the performance back along one 12Gb/s lane.

Note: The QNAP NAS requires QTS 4.5.1 / QuTS hero h4.5.1 (or later) with a PCIe SAS storage expansion card installed.



# MiniSAS HD SFF-8644 cable for max 48Gbps connection, up to 16 JBOD devices in total



QTS 4.5.1 /QuTS hero h4.5.1 supporting max **16** TL or REXP SAS JBOD series

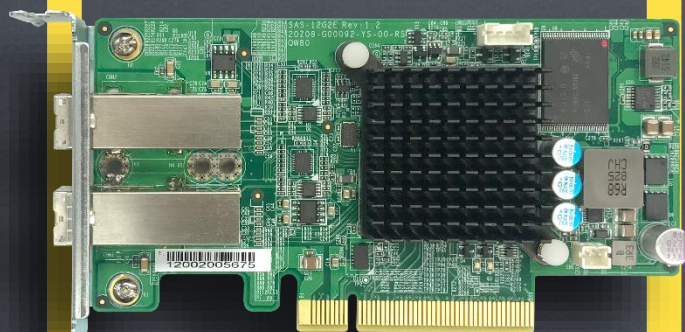


# QNAP dual-port/quad-port SAS 12Gb/s expansion cards



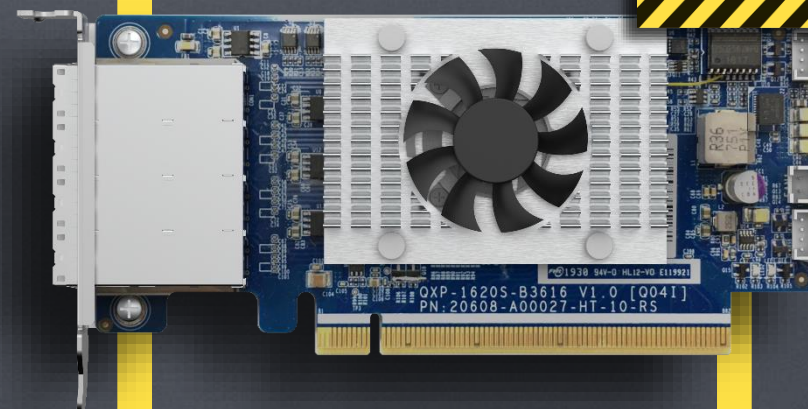
Broadcom®  
SAS controller

Dual-port  
SAS 12Gb/s



SAS-12G2E  
PCIe Gen3 x8

Quad-port  
SAS 12Gb/s

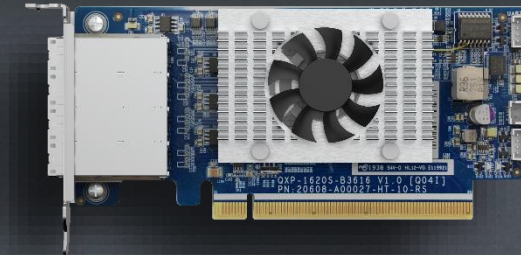


QXP-1620S-B3616W  
PCIe Gen3 x16

# Dual/Quad-port SAS-3 12Gb/s Expansion card specifications



**SAS-12G2E**



**QXP-1620S-B3616W**

<b>SAS Controller</b>	Broadcom SAS3008	Broadcom SAS3616W
<b>Support mode</b>	12Gb/s SAS, 6Gb/s SAS/SATA	
<b>SAS port</b>	8 x SAS 12Gb/s	16 x SAS 12Gb/s
<b>Connector Interface</b>	Two external Mini-SAS HD (SFF-8644)	Four external Mini-SAS HD (SFF-8644)
<b>Host PCIe bandwidth</b>	PCIe Gen 3 x8	PCIe Gen 3 x16
<b>Dimension</b>	129.65 x 68.9 mm; Low-profile	149.65 x 68.9 mm; Low-profile

\*SAS connector is a Wide-port, contain four SAS signals

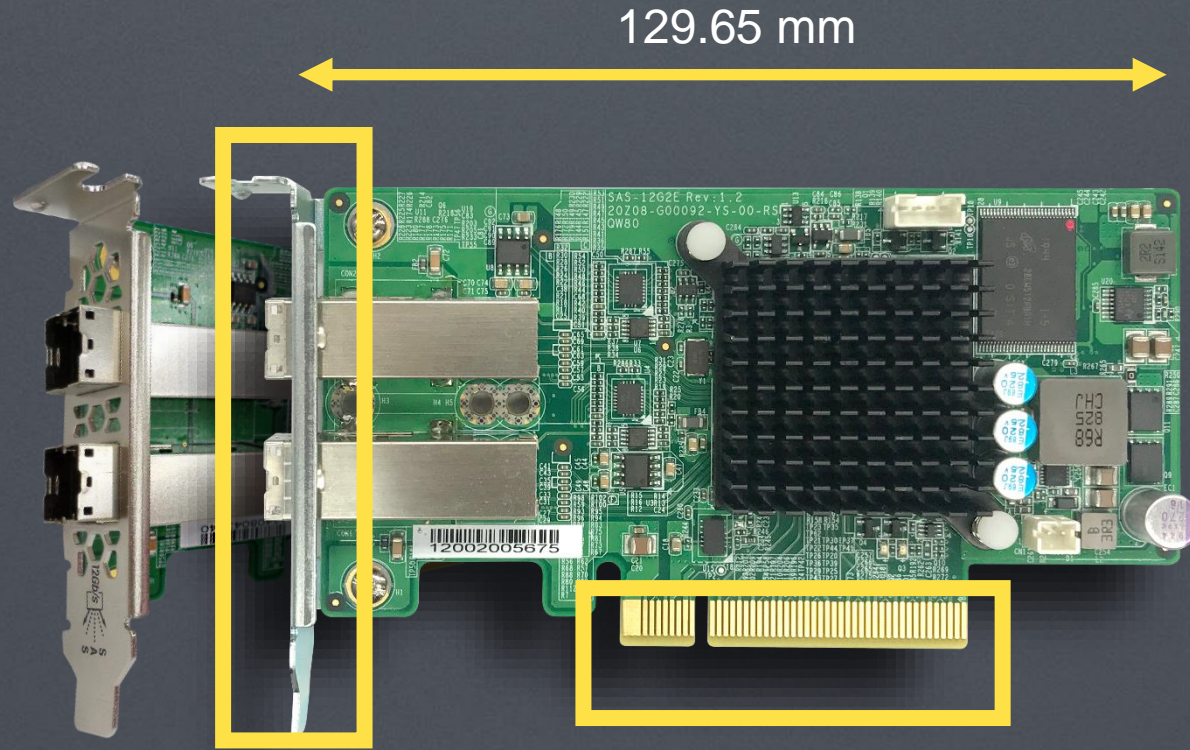
\*\*Only been validated with passive cable, we offer different cable optional purchase selection of 0.5M/1M/2M/3M



# Low-profile design for various QNAP NAS models

## SAS-12G-2E

Additional brackets are included for various NAS models



Pre-installed  
Half-height bracket

PCIe Gen 3 x8 bandwidth (64Gbps)

# Low-profile design for various QNAP NAS models

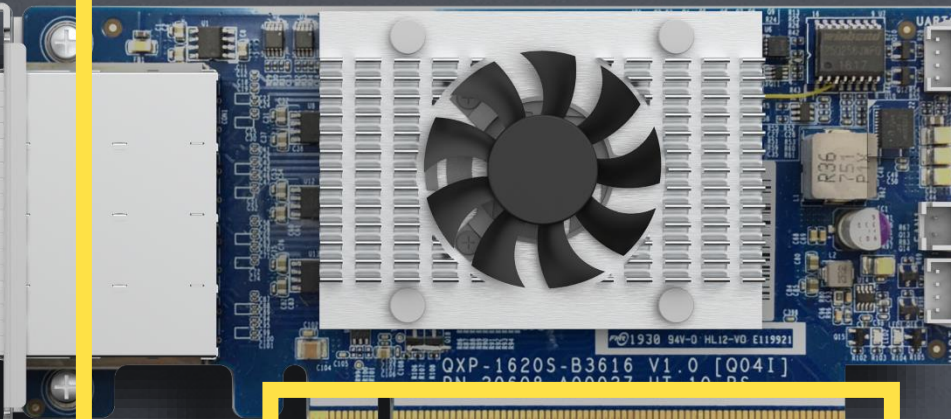
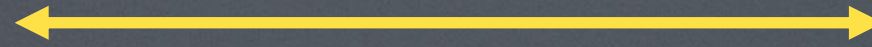
QXP-1620S-B3616W

Additional brackets are included for various NAS models



Pre-installed Half-height bracket

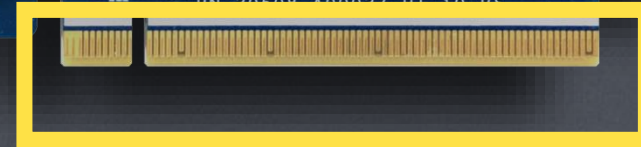
149.65 mm



68.9 mm



PCIe Gen 3 x16 bandwidth (128Gbps)





# Compatible with QNAP REXP SAS JBOD series

NAS supports connecting multiple TL and REXP SAS JBOD enclosures together

## SAS 6Gb/s JBOD enclosures

REXP-1210U-RP



REXP-1610U-RP



## SAS 12Gb/s JBOD enclosures

REXP-1220U-RP



REXP-1620U-RP



# Comparing the QNAP SAS JBOD generations



**TL-R1620Sep-RP**



**REXP-1620U-RP**



**REXP-1610U-RP**



**TL-R1220Sep-RP**



**REXP-1220U-RP**



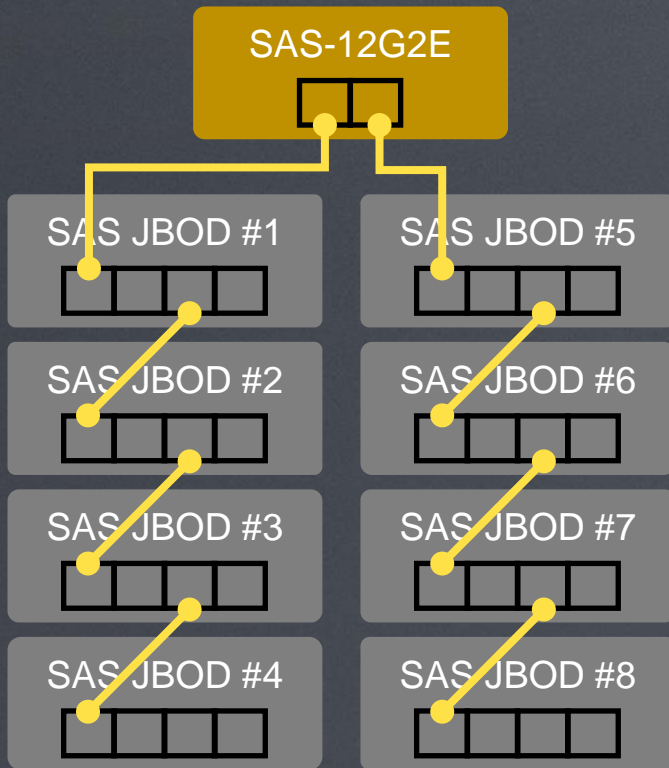
**REXP-1210U-RP**

<b># of bays</b>	16	16	16	12	12	12
<b>Drive interface</b>	2.5"/3.5" SAS 12Gbps, SAS/SATA 6Gbps	2.5"/3.5" SAS 12Gbps, SAS/SATA 6Gbps	2.5"/3.5" SATA 6Gbps	2.5"/3.5" SAS 12Gbps, SAS/SATA 6Gbps	2.5"/3.5" SAS 12Gbps, SAS/SATA 6Gbps	2.5"/3.5" SATA 6Gbps
<b>SAS ports</b>	4 x SAS 12Gbps wide ports (Mini-SAS HD SFF-8644)	3 x SAS 12Gbps wide ports (Mini-SAS HD SFF-8644)	3 x SAS 6Gbps wide ports (Mini-SAS HD SFF-8644)	4 x SAS 12Gbps wide ports (Mini-SAS HD SFF-8644)	3 x SAS 12Gbps wide ports (Mini-SAS HD SFF-8644)	3 x SAS 6Gbps wide ports (Mini-SAS HD SFF-8644)
<b>Dimension (HxWxD)</b>	3U, 131.3 x 482.2 x 425.3 mm	3U, 130 x 442.4 x 528.3 mm	3U, 130 x 442.4 x 528.3 mm	2U, 88.65 x 482.2 x 423.8 mm	2U, 88 x 439 x 520 mm	2U, 88 x 439 x 520 mm
<b>Key-lock tray</b>	Key lock	---	---	Key lock	---	---
<b>Optional rail kit</b>	RAIL-B02	RAIL-A03-57	RAIL-A03-57	RAIL-B02	RAIL-A03-57	RAIL-A03-57

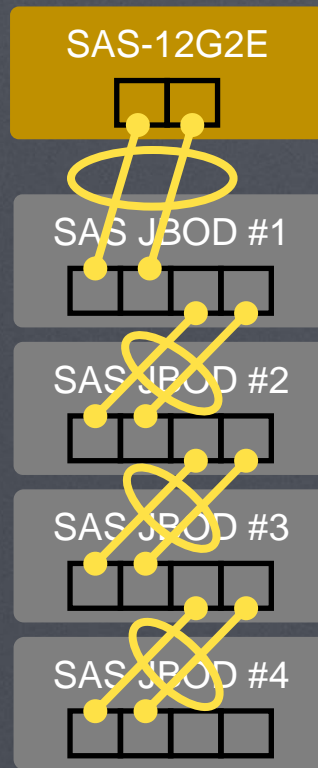


# TL SAS JBOD with 2 wide-port SAS-12G2E expansion cabling suggestion for multi-path & aggregation

**X Multi-path**  
**X Aggregation**



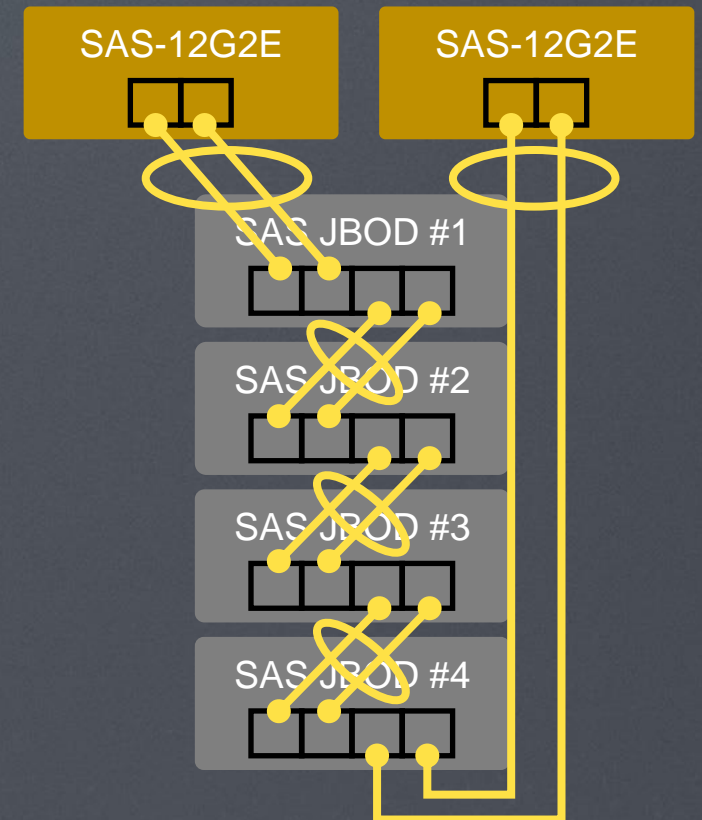
**X Multi-path**  
**V Aggregation**



**V Multi-path**  
**V Aggregation**

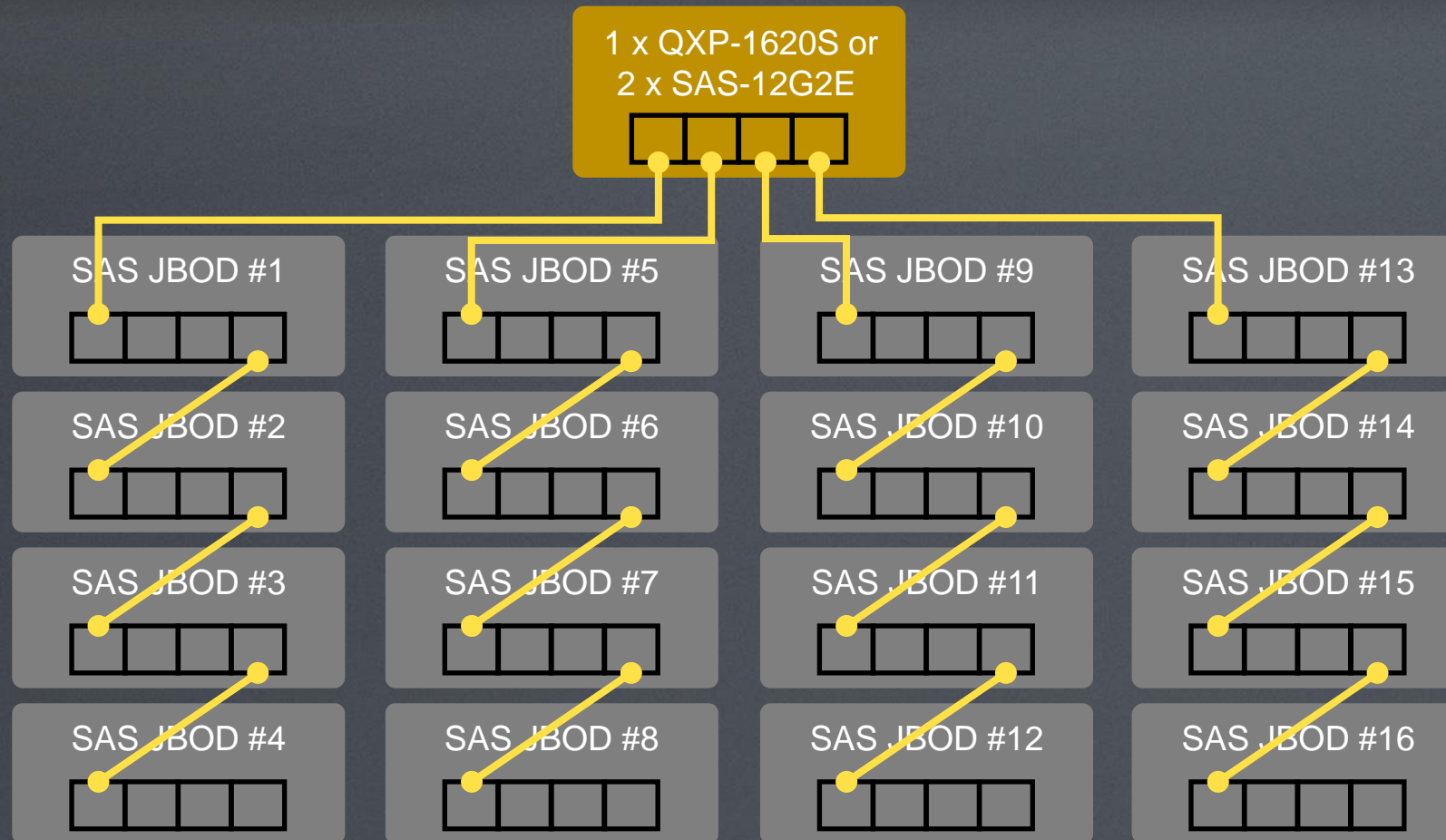


**V Multi-path**  
**V Aggregation**



\*QTS/QuTS hero only support 4-layers vertically

# With a QXP-1620S or two SAS-12G2E connect up to 16 JBODs for 4.6PB raw capacity



## X Multi-path X Aggregation

QNAP NAS could connect up to **16 JBODs** with a QXP-1620S-B3616W or two SAS-12G2E for maximum **4.6PB** of raw capacity

\*raw capacity is calculated with 18TB x 16JBOD x 16bay = 4.6PB

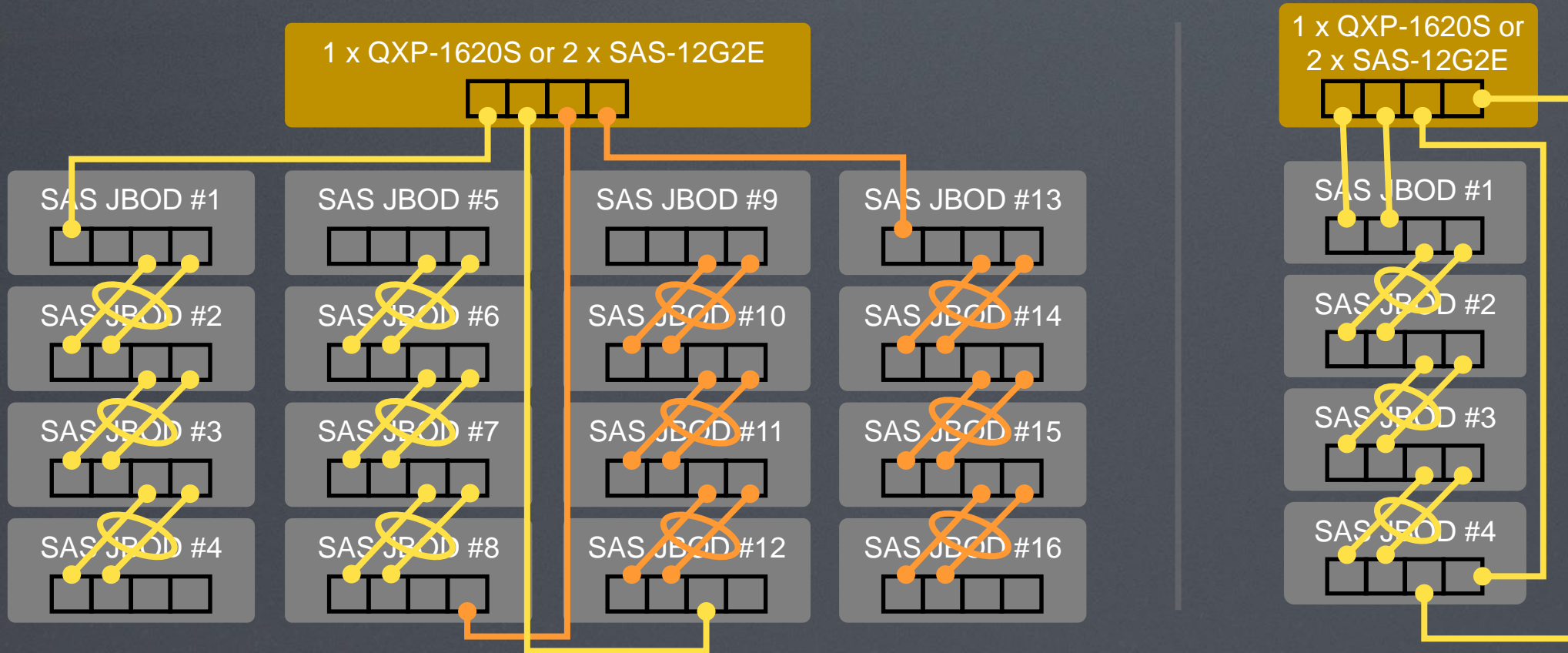
\*QTS/QuTS hero only support maximum 4-layer vertically.



# TL SAS JBOD with QNAP SAS HBA expansion cabling suggestion for multi-path & aggregation

✓ Multi-Path  
✓ Aggregation

✓ Multi-Path  
✓ Aggregation



# NAS QTS 4.5.1 / QuTS hero 4.5.1 are required for TL SAS JBOD support

TL SAS JBOD can be monitored and managed in the Storage and Snapshots manager. Advanced QTS / QuTS hero local disk management features are supported.

## Enclosure & QTS Disk related features:

- S.M.A.R.T test
- Seagate IHM
- Disk Scan
- Disk Erase
- Disk performance test

Compatible NAS for TL SAS JBOD  
<https://www.qnap.com/compatibility-expansion>

The screenshot displays the 'Storage & Snapshots' management interface. On the left, a navigation menu includes 'Overview', 'Storage', 'Snapshot', 'Storage/VJBOD', 'Storage/Snapshots', 'Cache Acceleration', 'External Storage', 'Snapshot Backup', 'Snapshot Replica', 'Snapshot Vault', 'iSCSI & Fibre Channel', and 'HybridMount'. The main area shows a list of storage enclosures under 'NAS Host', including 'TL-R1220Sep-RP-N219', 'TL-R1220Sep-RP-N228', 'TL-R1620Sep-RP-N025', and 'TL-R1620Sep-RP-N422'. The 'TL-R1620Sep-RP-N422' enclosure is selected, showing a detailed view of its 14 disks. Disks 1 through 4 are marked as 'Good' with green checkmarks, while disks 5 through 14 are marked as 'None' with empty circles. Below the disk list, there are legends for 'Disk Type' (SSD, Disk, Adapter) and 'Used Type' (Data, Spare, Free, Cache, None). The right side of the interface shows a detailed view of the selected enclosure, 'TL-R1620Sep-RP-N422', with a 'Performance test' button and a 'VJBOD' dropdown. Below this, there are buttons for 'Disk Info', 'Disk Health', 'Action', and 'RAID Group'. The 'Disk Information' section shows a 'Good' status with a green checkmark. The 'Disk Health' section shows 'Current Speed: 12 Gbps', 'Maximum Speed: 12 Gbps', 'Temperature: 33°C / 91°F', 'Disk Access History (I/O): Good', 'Disk SMART Information: Good', and 'Estimated Life Remaining: Not Supported'.



# Expand NAS storage pool capacity

## RAID & Storage Pool

All disks of TL SAS JBOD would be identified by Storage & Snapshots manager, then configure as a RAID within a storage pool.

The screenshot displays the 'Storage & Snapshots' management console. The main view shows 'Storage Space' with three storage pools: Storage Pool 1 (102.02 GB), Storage Pool 2 (195.28 GB), and Storage Pool 3 (138.71 GB). A modal window titled 'Storage Pool 2 Management' is open, showing details for 'Storage Pool 2' with a capacity of 138.71 GB and a status of 'Ready'. It includes a progress bar for 'Snapshot used' (0.00%), 'Guaranteed Snapshot Space' (0.00%), and 'Volume/LUN' (100.00%). Below this, a 'RAID Group of Storage Pool 2' table is visible:

Name/Alias	Capact.	Status	Hot	Hotspg	RAID Type	Resync Speed	Priority
RAID Group 2	138.71..	Ready	No	Disabled	RAID-5	Not Supported	-
TL-C8005-R2W	238.47..	Good					
TL-C8005-R2W	118.24..	Good					



# Easily create storage in QTS / QuTS hero

Different from the TR RAID series, TL SAS JBOD series is based on QNAP software RAID: supports all local RAID operations as well as RAID migration and RAID expansion. TL-R1220Sep-RP/TL-R1620Sep-RP can even be configured as RAID 50 / 60.

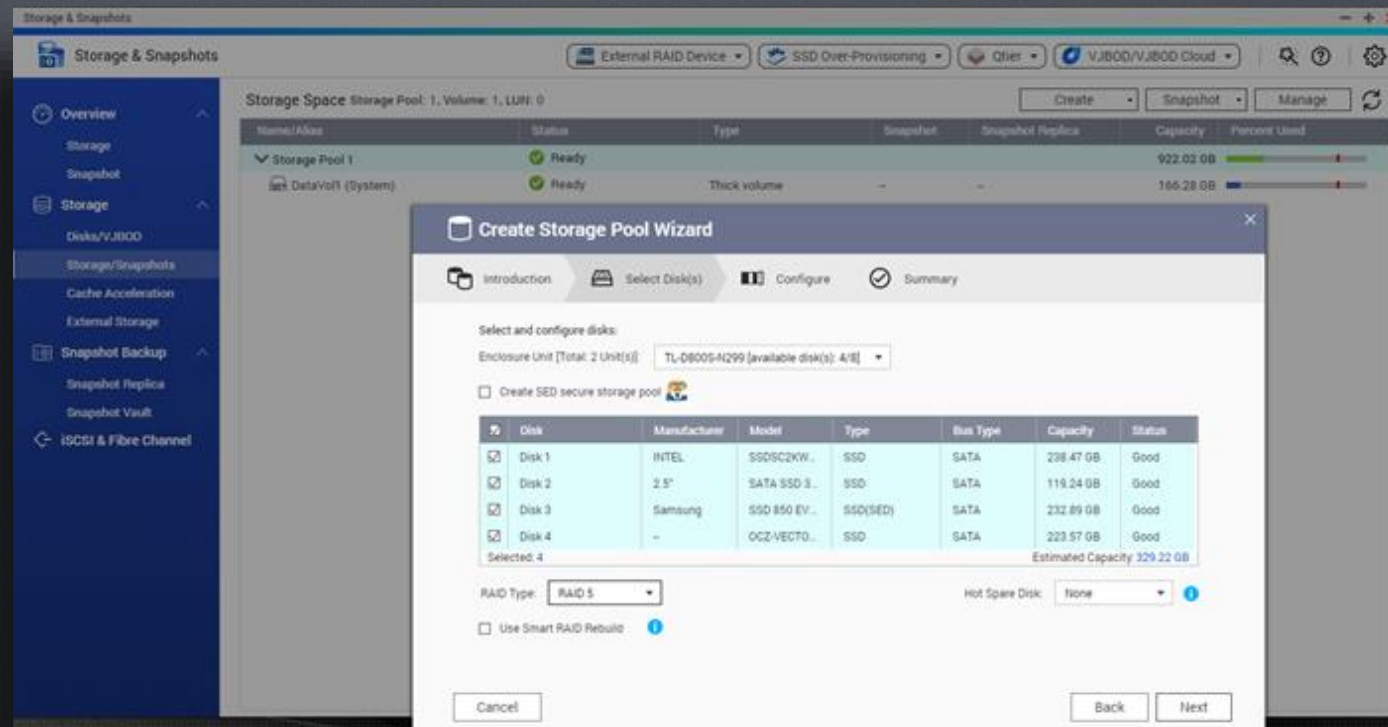
**01** [ Storage & Snapshot Manager ] > [ Storage / Snapshots ]

**02** Expand the [Storage Pool]

**03** Select TL JBOD and set up the RAID type



TL SAS JBOD allows you to create pool across NAS and JBOD.





# Flexible Storage Expansion or as a backup space

TL SATA JBOD can expand QNAP NAS storage capacity. It supports either the configurations of the storage pool, or the snapshots storage from volume and LUN.

Based on the structure of software RAID, TL JBOD units are more suitable for expansion devices than TR series.

Be the Snapshot  
Vault



Be the Storage  
Expansion



TL-R1620Sep-RP

QuTS hero  
edition  
TS-h1683XU-RP



TS-h1683XU-RP

QNAP

LIVE  
DEMO

*TL-R1220Sep-RP*  
*TL-R1620Sep-RP*





# Optional QNAP SAS 12Gb/s cables of different lengths

Mini-SAS HD SFF-8644 to 8644 SAS 12Gb/s cable



**CAB-SAS05M-8644**

- SFF 8644-8644
- 0.5-meter
- SAS 12Gb/s



**CAB-SAS10M-8644**

- SFF 8644-8644
- 1-meter
- SAS 12Gb/s



**CAB-SAS20M-8644**

- SFF 8644-8644
- 2-meter
- SAS 12Gb/s



**CAB-SAS30M-8644**

- SFF 8644-8644
- 3-meter
- SAS 12Gb/s

# TL-R1220Sep-RP

# TL-R1620Sep-RP

## 5-year standard warranty included!



### 5-Year Standard Warranty

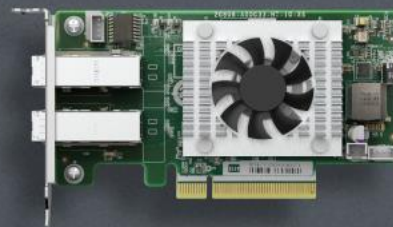
- TL-R1220Sep-RP/TL-R1620Sep-RP include 5-Year Standard warranty.
- Warranty service that comes in effect at the time of purchase.
- Free repair and part replacement for products under normal use during warranty period. (Spare parts and consumables are excluded)



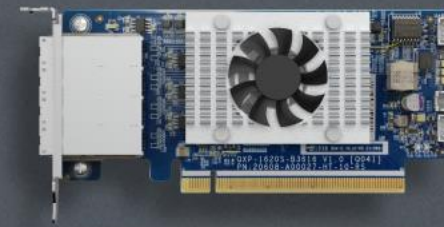


**QNAP**

*TL-R1220Sep-RP*  
*TL-R1620Sep-RP*



SAS-12G2E



QXP-1620S-B3616W



**Expand NAS  
capacity flexibly  
with ease.**

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