



QNAP

JBOD 设备

TL-R1220Sep-RP
TL-R1620Sep-RP

用户指南

内容

1. 前言	
关于本指南.....	3
受众.....	3
文档约定.....	3
2. 产品概述	
关于 QNAP JBOD 设备.....	4
硬件规格.....	4
包装内容.....	5
组件.....	5
前面板.....	6
后面板.....	7
硬盘编号.....	8
安全信息.....	8
安装要求.....	10
设置 JBOD 设备.....	10
3. 硬件安装	
安装硬盘.....	12
在 3.5 英寸托盘上安装 3.5 英寸硬盘.....	12
在 3.5 英寸托盘上安装 2.5 英寸硬盘或固态硬盘.....	14
将 JBOD 设备连接到 NAS.....	16
将 JBOD 设备连接到服务器.....	17
网络配置.....	19
多路径 I/O 的网络配置.....	19
链路聚合控制协议的网络配置.....	21
多路径 I/O 和链路聚合控制协议的网络配置.....	23
热插拔冗余电源单元.....	24
导轨套件.....	26
4. 基本操作	
电源按钮.....	27
LED.....	28
警告音.....	29
5. 故障排除	
强制存储与快照总管或 QNAP JBOD Manager 识别 JBOD 设备.....	30
热插拔故障硬盘.....	30
支持和其他资源.....	31
6. 术语表	
QNAP JBOD Manager.....	32
QTS.....	32
QuTS hero.....	32
存储与快照总管.....	32
7. 声明	
有限保修.....	33
免责声明.....	33
GNU Public License.....	33

CE 声明.....	41
FCC 声明.....	41
VCCI 公告.....	41
BSMI 公告.....	42
SJ/T 11364-2006.....	42

1. 前言





关于本指南

本指南提供有关 QNAP TL-R1220Sep-RP 和 TL-R1620Sep-RP SAS JBOD 设备的信息以及有关硬件安装的分步说明。此外，还提供了有关基本操作和故障排除信息的说明。

受众

本文档的目标读者为用户和存储管理员。本指南假定用户已对存储和备份概念有基本了解。

文档约定

符号	描述
	注释，提供默认配置设置和其他补充信息。
	重要注释，提供有关所需配置设置的信息以及其他关键信息。
	提示，提供有关执行任务或配置设置的建议或备选方法。
	警告，提供警告信息，如果忽略此信息，可能会导致潜在损失、伤害甚至死亡。

2. 产品概述

本章提供有关 QNAP JBOD 扩展单元 JBOD 设备的基本信息。

关于 QNAP JBOD 设备

QNAP JBOD 设备旨在提高 NAS 或计算机的容量和实用性，并提供多种存储应用程序。您可以独立管理已安装的硬盘，或者使用主机将其配置为软件 RAID 组。TL-R1220Sep-RP 和 TL-R1620Sep-RP 分别具有 12 和 16 个 3.5 英寸 SATA/SAS 12 Gbps 硬盘架，并配有四个 SFF-8644 端口。

硬件规格



警告


- 如果您的 QNAP 产品有硬件方面的缺陷，请将产品退回 QNAP 或 QNAP 授权的服务中心进行维修或更换。您本人或未经授权的第三方对产品进行的任何维修或维护流程均会使保修失效。
- 对于因未经授权进行的修改和安装不受支持的第三方应用程序而造成的任何损坏或数据丢失，QNAP 概不负责。
- 有关详细信息，请参见 [QNAP 保修条款和条件](#)。



提示

型号规格如有更改，恕不另行通知。要查看最新规格，请转到 <https://www.qnap.com>。

组件	TL-R1220Sep-RP	TL-R1620Sep-RP
存储		
硬盘架	<ul style="list-style-type: none"> • 12 x 3.5 英寸 SAS 12 Gbps • 12 x 3.5 英寸 SAS 6 Gbps • 12 x 3.5 英寸 SATA 6 Gbps 	<ul style="list-style-type: none"> • 16 x 3.5 英寸 SAS 12 Gbps • 16 x 3.5 英寸 SAS 6 Gbps • 16 x 3.5 英寸 SATA 6 Gbps
硬盘兼容性	3.5 英寸硬盘架： <ul style="list-style-type: none"> • 3.5 英寸 SATA 机械硬盘 • 3.5 英寸 SAS 机械硬盘 2.5 英寸硬盘架： <ul style="list-style-type: none"> • 2.5 英寸 SATA 机械硬盘 • 2.5 英寸 SAS 机械硬盘 • 2.5 英寸 SATA 固态硬盘 	
热插拔	支持	
外部 I/O 端口和扩展插槽		
SFF 端口	4 x SFF-8644	
界面		
按钮	电源	
尺寸		
外形规格	2U 机架式	3U 机架式

组件	TL-R1220Sep-RP	TL-R1620Sep-RP
尺寸 (高 x 宽 x 深)	88.65 x 482.2 x 423.8 mm (3.49 x 18.98 x 16.68 英寸)	131.3 x 482.2 x 425.3 mm (5.17 x 18.98 x 16.74 英寸)
净重	9.19 kg (20.26 磅)	11.48 kg (25.30 磅)
其他	RAIL-B02  注 <ul style="list-style-type: none"> 导轨套件未随 NAS 提供，必须单独购买。有关详细信息，请联系授权经销商或转到 http://shop.qnap.com。 	
电源单元	2 x 300W, 100-240V AC, 50/60 Hz	2 x 550W, 100-240V AC, 50/60 Hz
噪声声级	33.9 dB(A)	36 dB(A)
风扇	2 x 80 mm, 12V DC 风扇	3 x 80 mm, 12V DC 风扇
工作温度	<ul style="list-style-type: none"> 无冷凝相对湿度: 5% 至 95% 湿球温度: 27°C (80.6°F) 	



提示

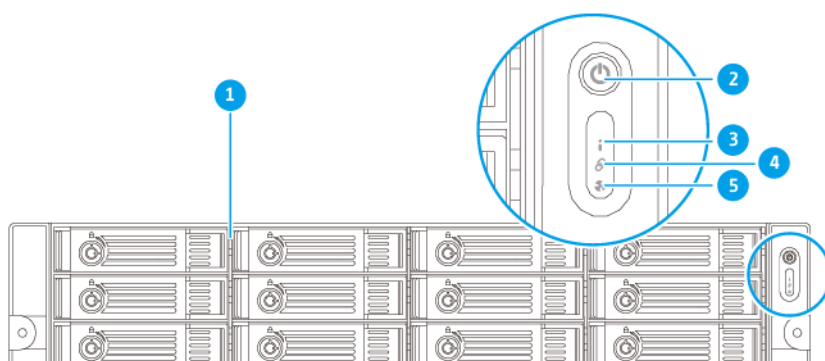
有关兼容硬盘型号的列表，请转到 <https://www.qnap.com/compatibility>。

包装内容

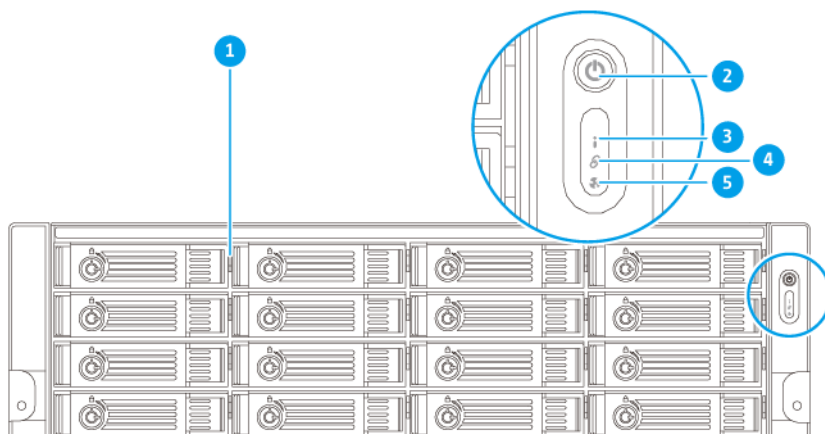
项目	数量
JBOD 设备	1
电源线	1
SF-8644 连接器线缆	1
适用于 3.5 英寸硬盘的螺丝	<ul style="list-style-type: none"> TL-R1220Sep-RP: 48 TL-R1620Sep-RP: 64
适用于 2.5 英寸硬盘的螺丝	<ul style="list-style-type: none"> TL-R1220Sep-RP: 36 TL-R1620Sep-RP: 48
快速安装指南 (QIG)	1

组件

前面板



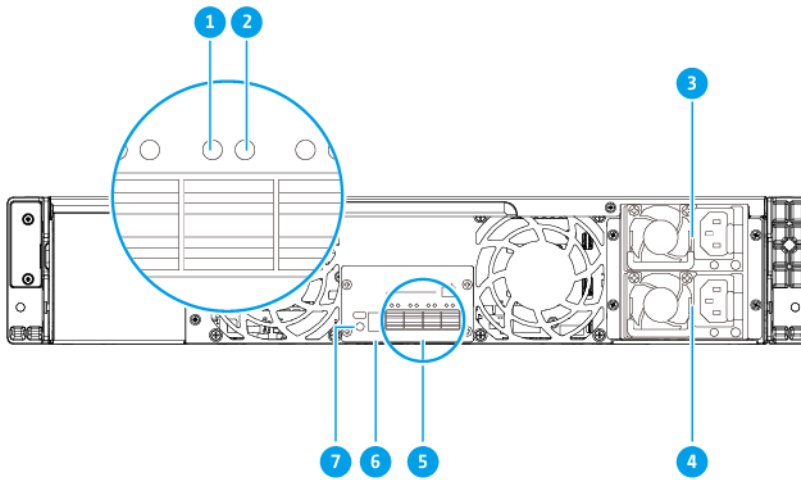
TL-R1220Sep-RP



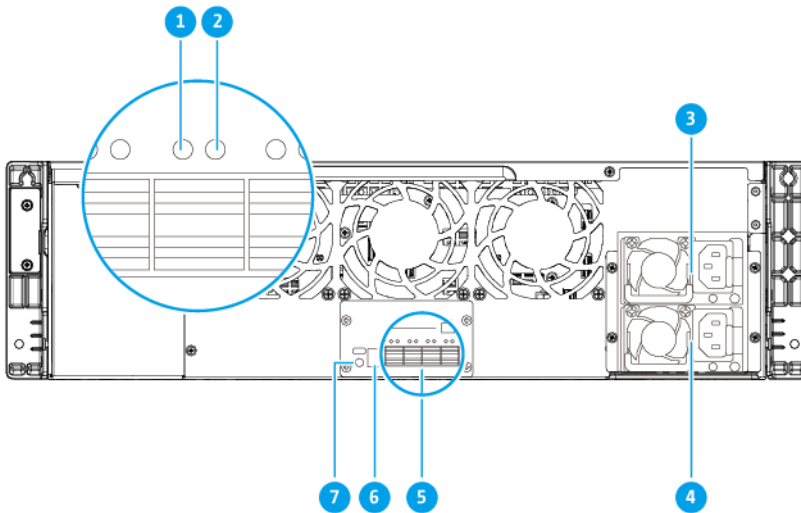
TL-R1620Sep-RP

编号	组件	编号	组件
1	硬盘 LED	4	链路 LED
2	电源按钮	5	风扇错误 LED
3	状态 LED	-	-

后面板



TL-R1220Sep-RP



TL-R1620Sep-RP

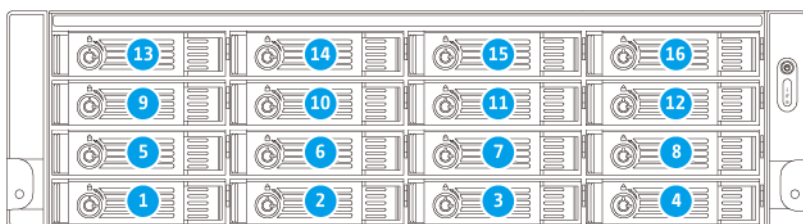
编号	组件	编号	组件
1	SAS 存取 LED	5	SFF-8644 端口
2	SAS 链路 LED	6	设备 ID
			<p>注</p> <p>当 JBOD 连接到操作系统时，设备将为 JBOD 分配一个编号。9 之后，编号将按字母顺序分配字母：A、b、c、d、E、F、g。</p>

编号	组件	编号	组件
3	电源端口 1	7	3.5 mm 线路输出插孔  注 此端口仅供工程使用。
4	电源端口 2	-	-

硬盘编号



TL-R1220Sep-RP



TL-R1620Sep-RP

安全信息

以下说明有助于确保个人安全和环境安全。在执行任何操作之前，请仔细阅读这些说明。

一般说明

- 设备应存放在通过器具、锁和钥匙或任何安保措施限制进入的安全场所。
- 只有经过授权并掌握技能的合格人员才能实际接触设备，相关人员需了解所有限制措施、安全预防措施和安装维护流程。
- 为避免潜在伤害或组件的损坏，请务必等硬盘和其他内部系统组件冷却后再触碰。
- 请执行静电放电 (ESD) 规程，以避免可能的人员受伤或组件受损。

电源

- 为降低失火或触电风险，请确保只将电源线连接到接地良好的电源插座。



配备冗余电源的设备可能有一条或多条电源单元 (PSU) 线。为避免受到严重伤害，安装或更换系统组件前，必须由经培训的维修技师从设备拔下所有 PSU 线。

系统电池

- 为避免潜在的电池爆炸、导致人员受伤或组件受损，请确保使用同型电池更换现有电池。
- 请按当地法规或电池制造商的指示正确处置使用过的电池。

运动的部件



转动的风扇叶片： 在设备连接到电源时，使您的身体各部位远离正在转动的风扇叶片。



运动的组件： 使您的身体各部位远离正在运动的其他组件。

安装要求

类别	项目
环境	<ul style="list-style-type: none"> • 室温：0°C 至 40°C（32 至 104°F） • 无冷凝相对湿度：5% 至 95% • 湿球温度：27°C (80.6°F) • 平坦的防静电表面，无直射阳光、液体或化学药剂 <p>限制进入</p> <ul style="list-style-type: none"> • 设备应存放在通过器具、锁和钥匙或任何安保措施限制进入的安全场所。 • 只有经过培训和授权的合格设备管理员才能实际接触设备，管理员需了解所有限制措施、安全预防措施和安装维护流程。
硬件和外围设备	<ul style="list-style-type: none"> • NAS 或计算机 • 存储硬盘 <p> 提示 有关兼容硬盘型号的列表，请转到 https://www.qnap.com/compatibility。</p> <ul style="list-style-type: none"> • 一个或多个 SF-8644 连接器线缆 • 主机总线适配器 <p> 重要 将 JBOD 设备连接到主机设备时，需要 QXP-820S-B3408、QXP-1620S-B3616W 和 SAS-12G2E 主机总线适配器。第三方主机总线适配器可能与 QNAP JBOD 设备不兼容。</p>
工具	<ul style="list-style-type: none"> • 1 号或 2 号十字螺丝刀 • 防静电腕带

设置 JBOD 设备



重要

在设置 JBOD 设备或安装 JBOD 设备组件之前，请仔细阅读[安全信息](#)中的所有安全要求和信息。

1. 将 JBOD 设备置于符合要求的环境中。
有关详细信息，请参见[安装要求](#)。
2. 将 JBOD 设备安装在机架上。
有关详细信息，请参见[导轨套件](#)。
3. 安装硬盘。
有关详细信息，请参见以下主题：
 - [在 3.5 英寸托盘上安装 3.5 英寸硬盘](#)

- [在 3.5 英寸托盘上安装 2.5 英寸硬盘或固态硬盘](#)
4. 连接电源线。
 5. 将 JBOD 设备连接到您的 NAS 或服务器。
有关详细信息，请参见以下主题：
 - [将 JBOD 设备连接到 NAS](#)
 - [将 JBOD 设备连接到服务器](#)
 6. 启动 JBOD 设备电源。

3. 硬件安装

本节提供有关安装硬盘、将 JBOD 设备连接到 NAS 或服务器、网络配置和热插拔冗余电源单元的信息。

安装硬盘

QNAP JBOD 设备兼容 3.5 英寸硬盘、2.5 英寸硬盘以及 2.5 英寸固态硬盘。

在 3.5 英寸托盘上安装 3.5 英寸硬盘



警告

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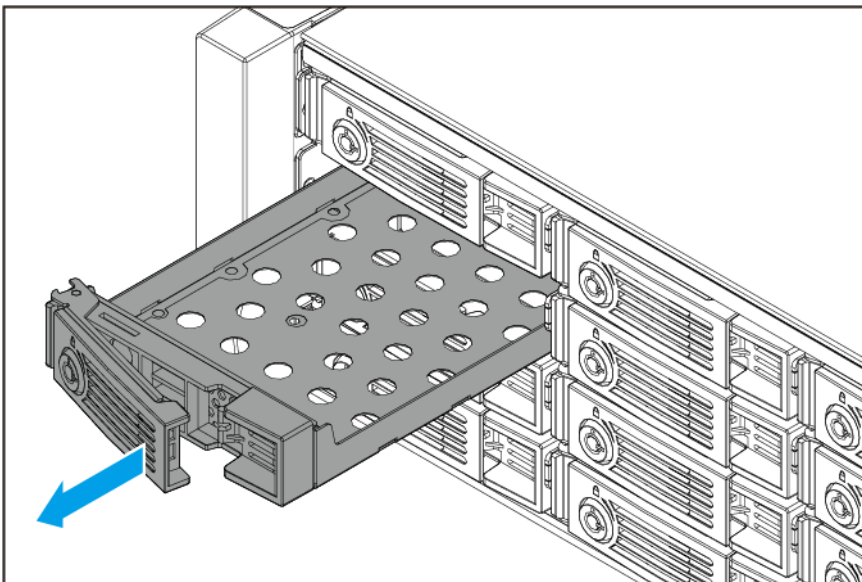
转动的风扇叶片：使您的双手和身体其他部位远离正在转动的风扇叶片。

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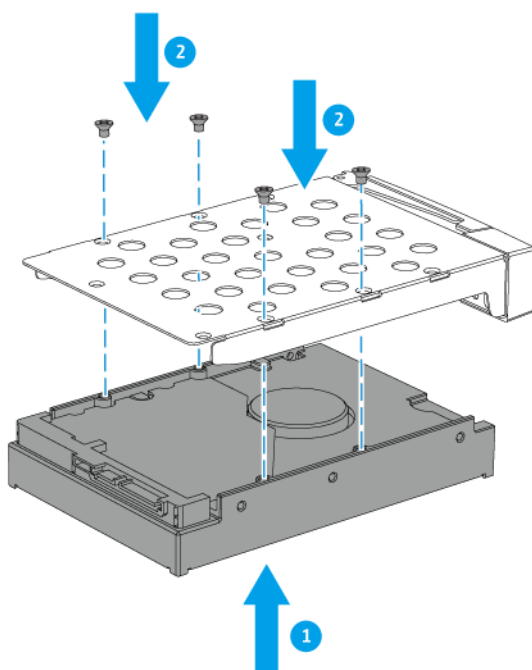
其他运动的组件：使您的双手和身体其他部位远离正在运动的其他组件。

1. 关闭 JBOD 设备电源。
2. 取下硬盘托盘。
 - a. 拉动手柄以松开托盘。
 - b. 拉出托盘。



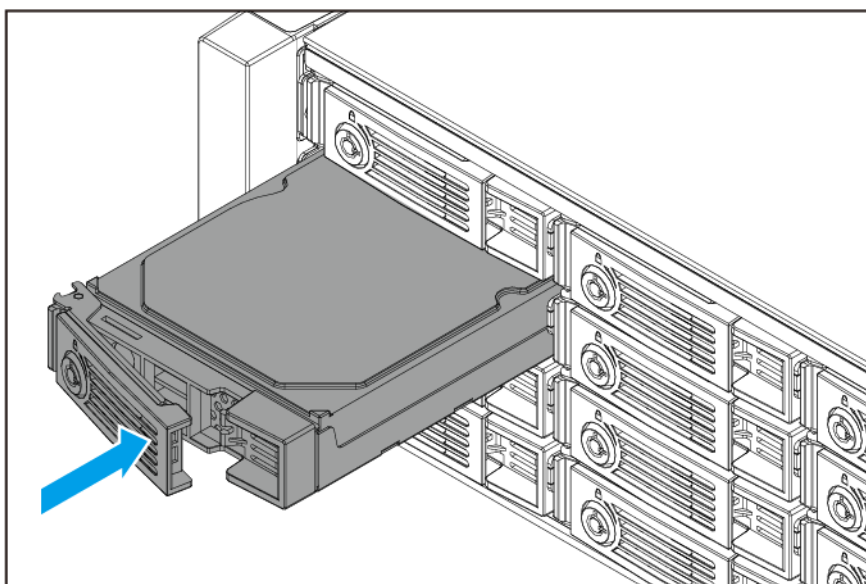
3. 将硬盘安装到托盘上。
 - a. 将硬盘放在托盘上，使硬盘底部的孔与托盘底部的孔对齐。

b. 安装螺丝。



4. 将托盘装入硬盘架。

- a. 将托盘插入硬盘架。**
- b. 推动手柄。**



5. 启动 JBOD 设备电源。



注
JBOD 设备最长可能需要 30 秒才能检测到新设备。

在 3.5 英寸托盘上安装 2.5 英寸硬盘或固态硬盘



警告

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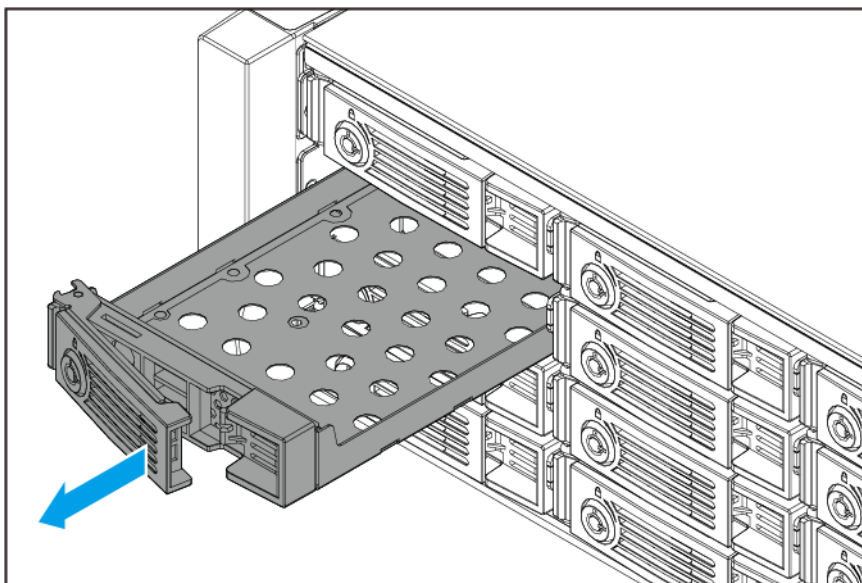
转动的风扇叶片：使您的双手和身体其他部位远离正在转动的风扇叶片。

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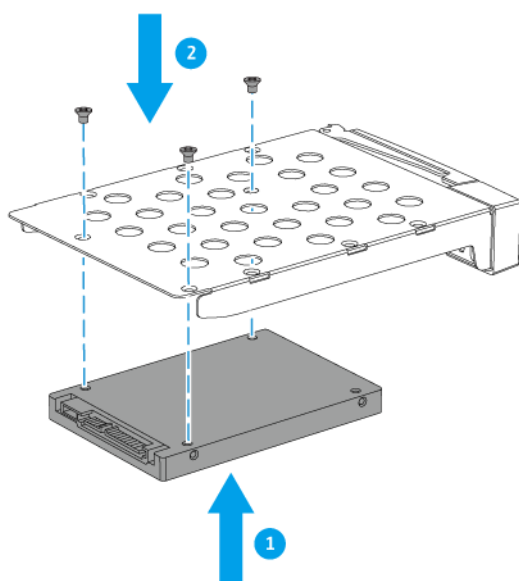


其他运动的组件：使您的双手和身体其他部位远离正在运动的其他组件。

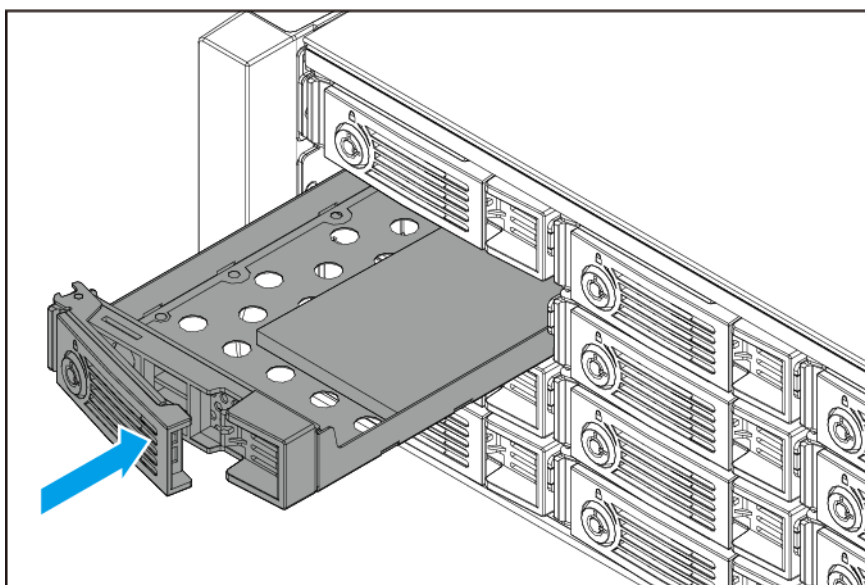
1. 关闭 JBOD 设备电源。
2. 取下硬盘托盘。
 - a. 拉动手柄以松开托盘。
 - b. 拉出托盘。



3. 将硬盘安装到托盘上。
 - a. 将硬盘放在托盘上，使硬盘底部的孔与托盘底部的孔对齐。
 - b. 安装螺丝。



4. 将托盘装入硬盘架。
 - a. 将托盘插入硬盘架。
 - b. 推动手柄。



5. 启动 JBOD 设备电源。

**注**

JBOD 设备最长可能需要 30 秒才能检测到新设备。

将 JBOD 设备连接到 NAS

QTS 最多可以支持八个 JBOD 设备。

NAS 必须运行 QuTS hero h4.5.1 或 QTS 4.5.1（或更高版本）。

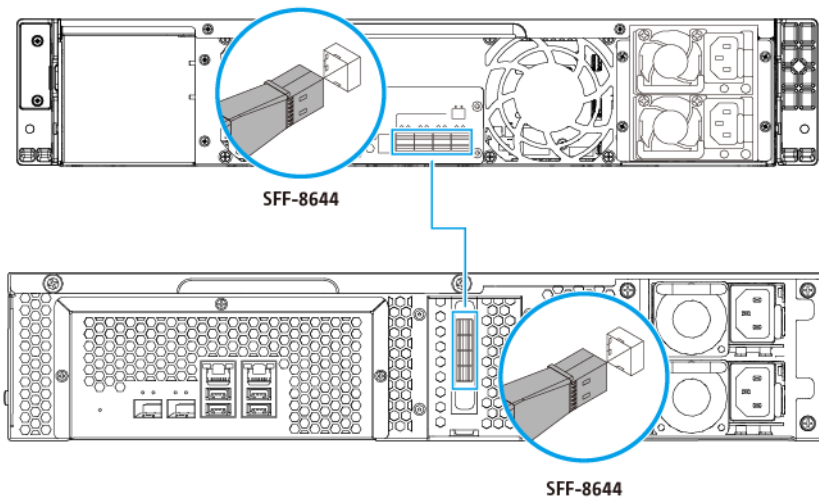
1. 关闭 NAS 电源。
2. 关闭 JBOD 设备电源。
3. 将 JBOD 设备连接到 NAS。
 - a. 将一条或多条 SFF-8644 连接器线缆连接到 JBOD 设备上的 SFF-8644 端口。
 - b. 将一条或多条 SFF-8644 连接器线缆连接到安装在 NAS 中的主机总线适配器上的 SFF-8644 端口。

**注**

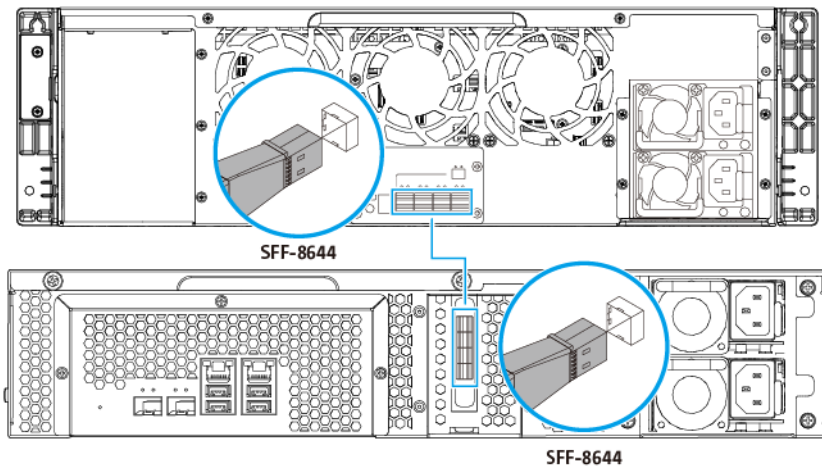
- 请参阅 NAS 用户指南的硬件安装部分，了解安装扩展卡的说明。
- 建议的 SFF 线缆最大长度为 1 米。使用超出此长度的线缆会影响信号或使性能下降。

**重要**

将 JBOD 设备连接到主机设备时，需要 QNAPQXP-820S-B3408、QXP-1620S-B3616W 和 SAS-12G2E 主机总线适配器。



TL-R1220Sep-RP



TL-R1620Sep-RP

4. 启动 JBOD 设备电源。
5. 启动 NAS 电源。
6. 确认 NAS 能够识别 JBOD 设备。
 - a. 以管理员身份登录 QTS。
 - b. 转到主菜单 > 存储与快照总管 > 总览 > 存储。
 - c. 确认 JBOD 设备已列出。



注
NAS 最长可能需要 30 秒才能检测到 JBOD 设备和安装的硬盘。

将 JBOD 设备连接到服务器

Windows 或 Linux 服务器不限制可以支持的 JBOD 设备数量。

1. 关闭服务器电源。
2. 关闭 JBOD 设备电源。
3. 将 JBOD 设备连接到服务器。
 - a. 将一条或多条 SFF-8644 连接器线缆连接到 JBOD 设备上的 SFF-8644 端口。
 - b. 将一条或多条 SFF-8644 连接器线缆连接到安装在 NAS 中的主机总线适配器上的 SFF-8644 端口。



注

- 请参阅 NAS 用户指南的硬件安装部分，了解安装扩展卡的说明。
- 建议的 SFF 线缆最大长度为 1 米。使用超出此长度的线缆会影响信号或使性能下降。



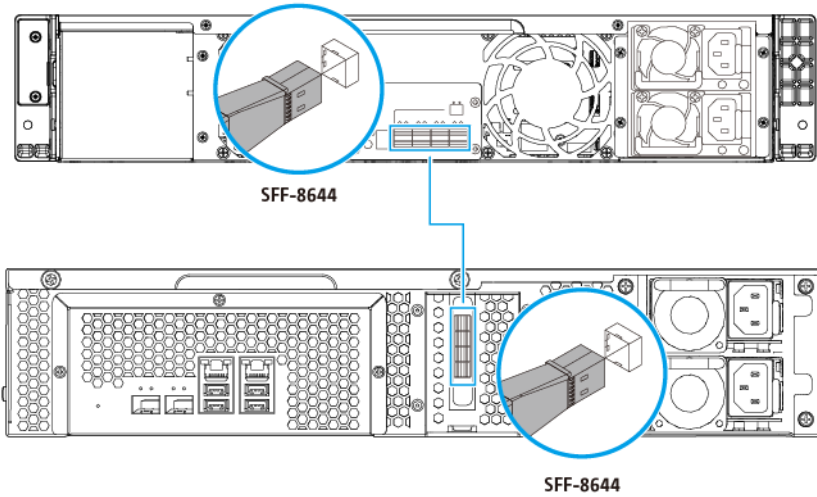
重要

将 JBOD 设备连接到主机设备时，需要 QNAPQXP-820S-B3408、QXP-1620S-B3616W 和 SAS-12G2E 主机总线适配器。

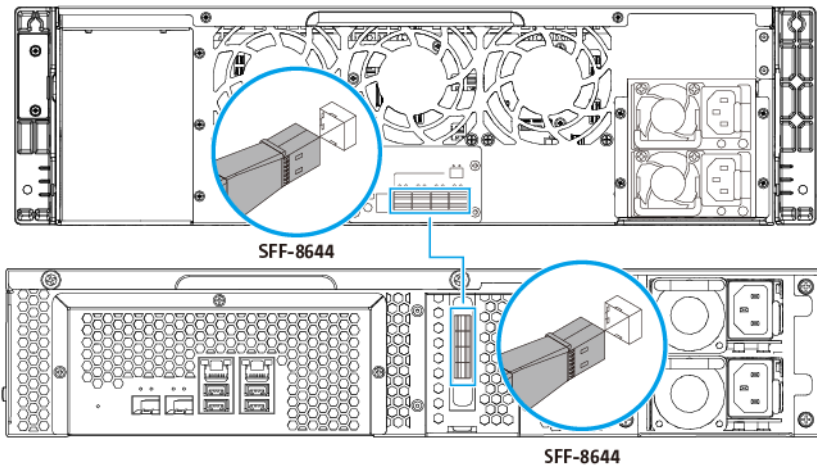


注

第三方主机总线适配器与 QNAP JBOD 设备兼容。有关详细信息，请转到 <https://www.qnap.com/en/compatibility/>。



TL-R1220Sep-RP



TL-R1620Sep-RP

- c. 将其他 JBOD 设备连接到服务器。
- 4. 启动 JBOD 设备电源。
- 5. 启动服务器电源。

6. 确认服务器能够识别该 JBOD 设备。
 - a. 转到服务器的磁盘管理实用程序或在 Windows 或 Linux 中打开 QNAP External RAID Manager。



注
要下载 QNAP JBOD Manager，请转到 <https://download.qnap.com>。

- b. 确认 JBOD 设备已列出。

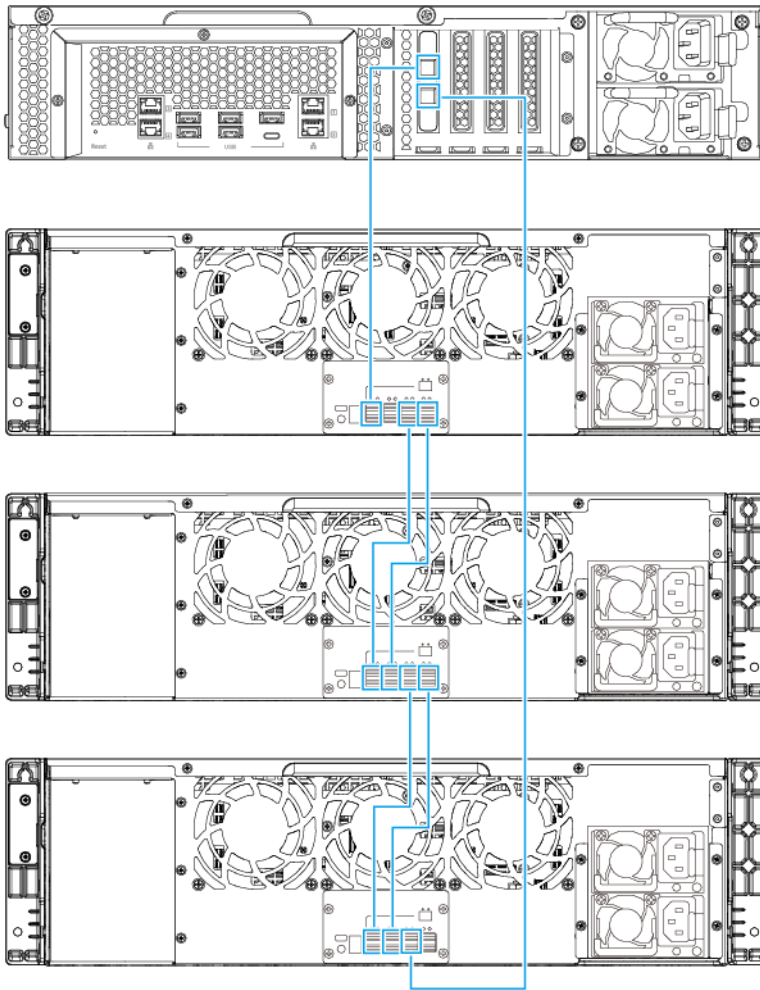
网络配置

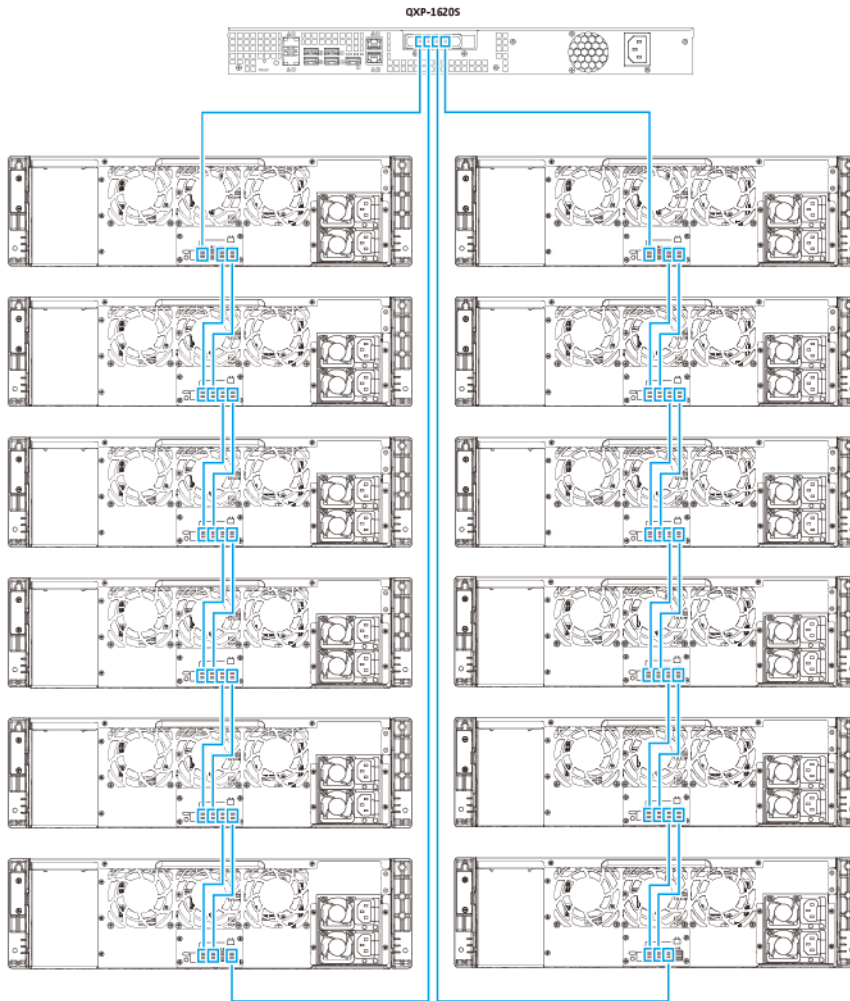
本章提供有关 QNAP JBOD 设备的多网络配置的信息。

多路径 I/O 的网络配置

多路径 I/O (MPIO) 是一种容错技术，可在服务器与存储设备（例如 NAS）之间创建多个物理网络路径。如果任何一个网络路径由于交换机、线缆或网卡故障而出现故障，服务器可以通过其余网络路径来传送 I/O，而不会出现存储停机。部署多路径 I/O 可实现更高的可用性。

下图为应如何实施多路径 I/O 的示例：

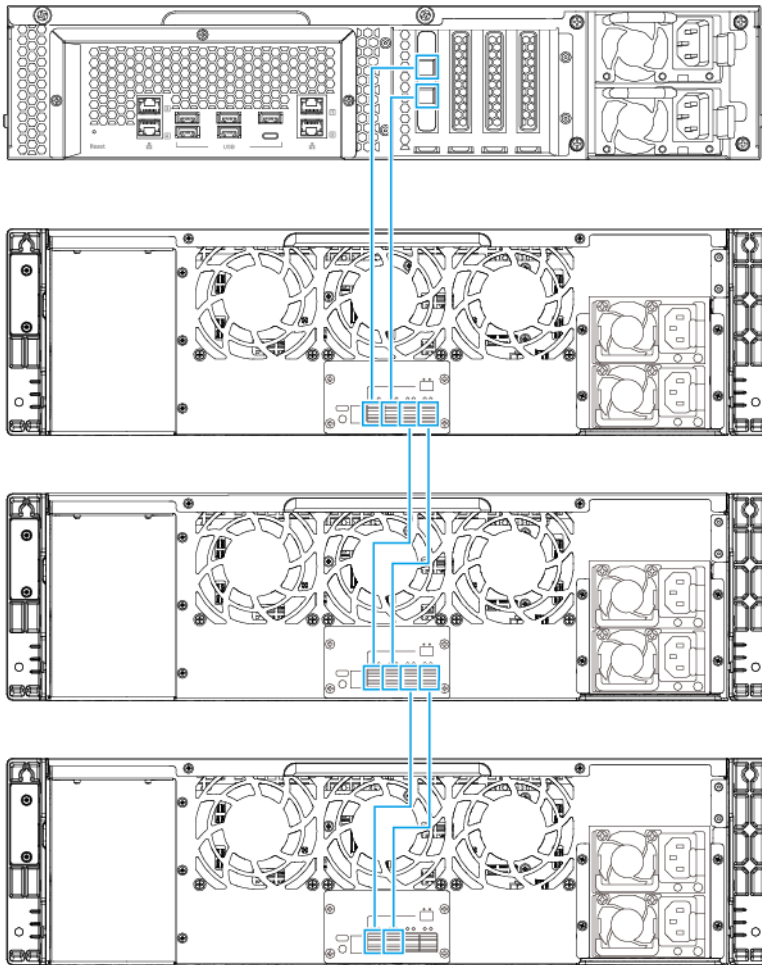


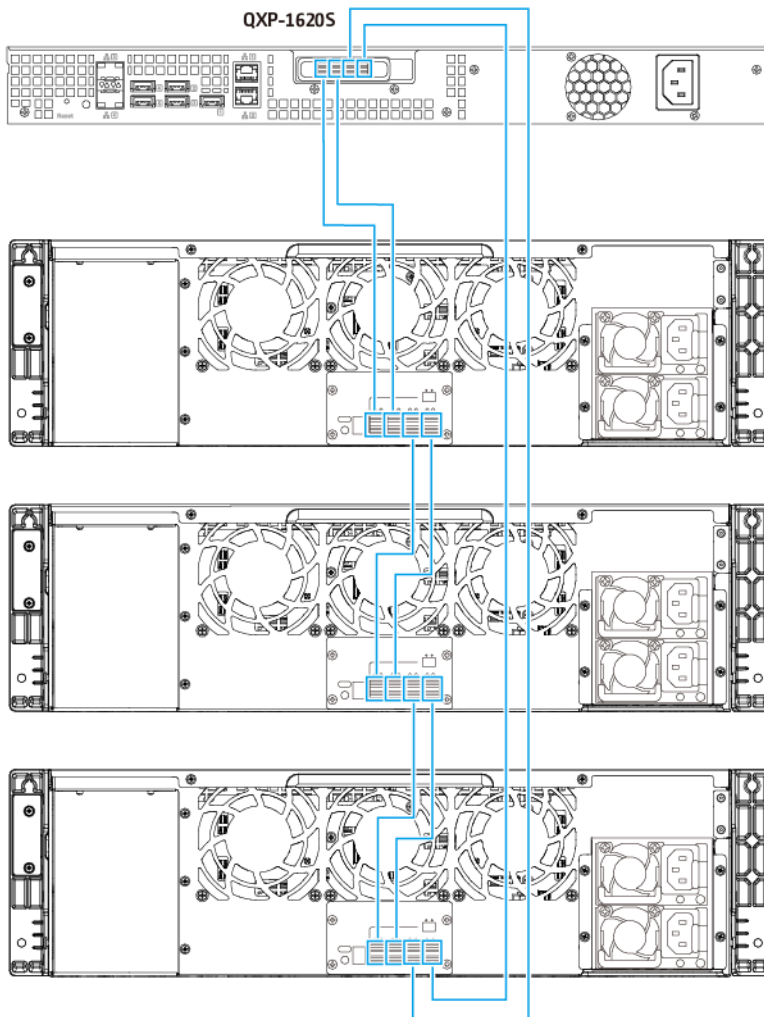


链路聚合控制协议的网络配置

链路聚合控制协议 (LACP) 是一种容错技术，可将多个物理端口组合在一起以形成一个通道。如果一个端口发生故障，使用链路聚合可提供快速、透明的恢复，因为所有 I/O 流量将继续运行，直到所有物理端口发生故障。部署链路聚合可获得更好的网络性能。

下图为应如何实施多路径 I/O 的示例：

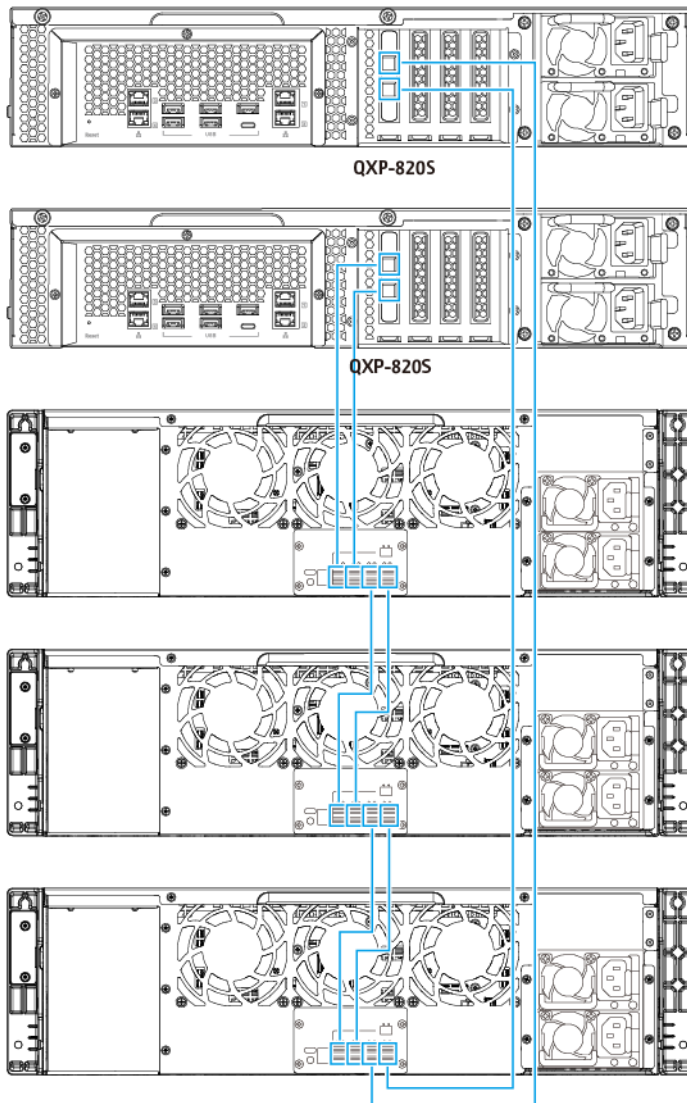




多路径 I/O 和链路聚合控制协议的网络配置

多路径 I/O 和链路聚合是相互补充的两种不同的技术。可以同时部署两者，获得网络可用性和网络性能兼而有之的好处。

下图为应如何实施多路径 I/O 和链路聚合的示例：



热插拔冗余电源单元

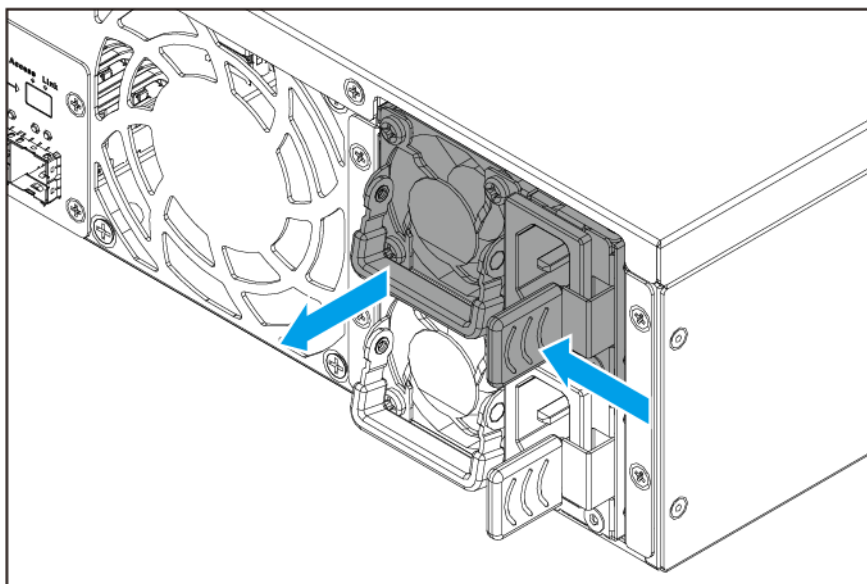


警告

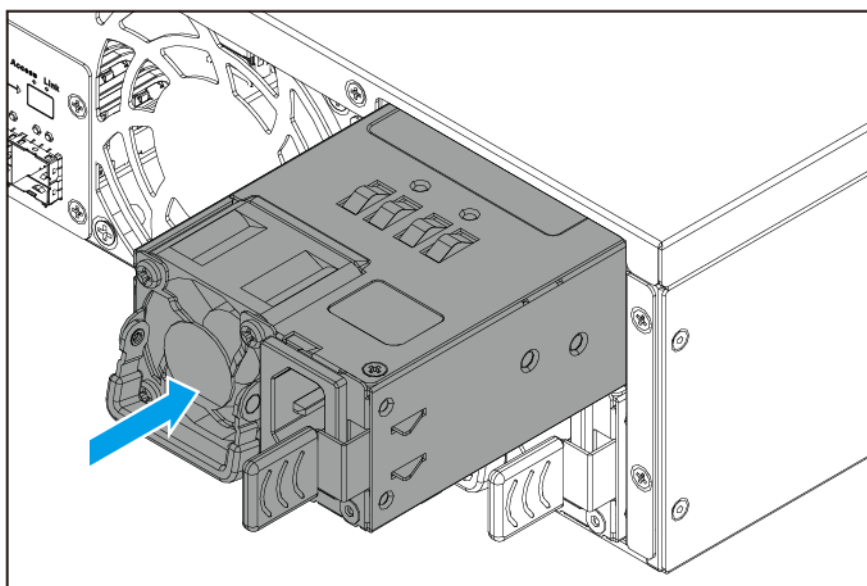


NAS 可能有一条或多条冗余电源单元 (PSU) 线。为避免受到严重伤害，安装或更换系统组件前，必须由经培训的维修技师拔下所有 PSU 线。

1. 关闭 JBOD 电源。
2. 从插座和要更换的 PSU 上拔下电源线。
3. 向手柄方向紧按闩锁并拉出 PSU。



4. 插入新 PSU。



5. 将电源线连接到 PSU 和插座。

6. 启动 JBOD 电源。

7. 启用 PSU 故障警报。

- a. 以管理员身份登录 QTS。
- b. 转到**控制台 > 系统 > 硬件 > 一般设置**。
- c. 选择**启用冗余电源模式**。
- d. 单击**应用**。

导轨套件

导轨套件未随设备提供，必须单独购买。有关详细信息，请联系授权经销商或转到 <http://shop.qnap.com>。

型号	兼容的导轨套件
TL-R1220Sep-RP	RAIL-B02
TL-R1620Sep-RP	

安装信息位于导轨套件包中。

4. 基本操作

本章介绍 JBOD 设备的基本操作。

电源按钮


操作	用户操作	结果
启动电源	按下此按钮一次。	设备开机。
关闭电源	按住此按钮 1.5 秒钟。	设备关机。
强制关机	按住此按钮 5 秒钟。	设备关机。  重要 仅当设备无响应时才能使用此方法。

LED

LED	状态	描述
系统状态	红绿交替闪烁，间隔 0.5 秒	<ul style="list-style-type: none"> • 硬盘正在格式化。 • JBOD 正在初始化。 • 操作系统正在更新。 • RAID 正在重建。 • 正在进行在线 RAID 容量扩展。 • 正在进行在线 RAID 级别迁移。
	红色	<ul style="list-style-type: none"> • 硬盘无效。 • 磁盘卷的容量已满。 • 磁盘卷的容量即将被占满。 • 系统风扇故障。 • 访问（读/写）数据时出错。 • 在硬盘上检测到坏扇区。 • NAS 处于降级只读模式（RAID 5 或 RAID 6 中的两个成员硬盘出现故障，但仍可读取数据）。 • 硬件自检发生错误。 • 系统温度超过 65°C。 • 一个或多个电源单元异常。
	闪烁红色，间隔 2 秒	JBOD 处于降级模式（RAID 1、RAID 5 或 RAID 6 中的一个成员硬盘出现故障）。
	闪烁红色一次	JBOD 收到遥控器的命令。
	闪烁绿色，间隔 2 秒	<ul style="list-style-type: none"> • JBOD 未配置。 • 硬盘未格式化。
	绿色	JBOD 准备就绪。
	熄灭	<ul style="list-style-type: none"> • 所有硬盘都处于待机模式。 • JBOD 已关机。
硬盘	绿色	<ul style="list-style-type: none"> • JBOD 设备已开机。 • 硬盘可供访问。
	闪烁绿色	正在访问硬盘。
	红色	发生硬盘读/写错误。
	闪烁红色，每秒 5 次	操作系统正在定位硬盘。
	熄灭	未检测到硬盘。

LED	状态	描述
链路	绿色	连接的端口已完全连接。
	熄灭	未连接任何线缆。
SAS 连接器链路	绿色	设备已完全连接。
	橙色	设备未完全连接。
	熄灭	<ul style="list-style-type: none"> 设备未连接。 设备没有线缆连接。
SAS 连接器存取	蓝色	正在访问数据。
	熄灭	<ul style="list-style-type: none"> 未访问数据。 未链接硬盘。
风扇错误	红色	系统风扇故障。
	熄灭	系统风扇运行正常。

警告音

时长	频率	描述
短提示音 (0.5 秒)	1	<ul style="list-style-type: none"> JBOD 硬盘托盘架链路已连接。 JBOD 硬盘托盘架链路已断开连接。
长提示音 (2 秒)	3 (每 5 分钟)	<ul style="list-style-type: none"> 系统风扇故障。 系统温度超过阈值。 <p> 注 默认的温度警告阈值为 65°C。您可以使用 QNAP JBOD Manager 将该阈值设置为介于 55°C 至 69°C 之间的温度。</p>

5. 故障排除

本章介绍基本故障排除信息。

强制存储与快照总管或 QNAP JBOD Manager 识别 JBOD 设备

如果“存储与快照总管”或 QNAP JBOD Manager 在运行期间找不到 JBOD 设备，则硬盘或数据可能有故障。

1. 关闭 JBOD 设备电源。
2. 取下所有硬盘。
3. 启动 JBOD 设备电源。
4. 使用“存储与快照总管”或 QNAP JBOD Manager 找到 JBOD 设备。
5. 重新插入硬盘。
6. 继续操作。

热插拔故障硬盘

连接到 QTS 或 QuTS hero NAS 时，JBOD 设备支持在以下情况下热插拔硬盘：

RAID 类型	情形
RAID 1	一个成员硬盘有故障。
RAID 5	一个成员硬盘有故障。
RAID 6	一个或两个成员硬盘有故障。
RAID 10	处于两个不同对中的一个或两个成员硬盘有故障。
RAID 50	每个子组的一个磁盘有故障。
RAID 60	每个子组的两个磁盘有故障。

1. 登录 QTS。
2. 转到主菜单 > 存储与快照总管 > 存储 > 外部存储。
3. 找到发生故障的硬盘。
4. 准备一个与故障硬盘具有相同或更大容量的新硬盘。
5. 从 JBOD 设备中取下故障硬盘。
6. 等待 30 秒或 JBOD 设备发出两次提示音。
7. 从硬盘托盘中取下故障硬盘。
8. 将新硬盘插入硬盘托盘中。
9. 安装新硬盘。
JBOD 设备发出两次提示音。
10. 等待 30 秒或 JBOD 设备发出两次提示音。
11. 转到主菜单 > 存储与快照总管 > 存储 > 存储/快照

12. 找到包含新硬盘的卷，然后确认状态为正在重建。

支持和其他资源

QNAP 提供了以下资源：

资源	URL
文档	https://download.qnap.com
兼容性列表	https://www.qnap.com/compatibility
NAS 迁移兼容性	https://www.qnap.com/en/nas-migration
扩展单元兼容性	http://www.qnap.com/go/compatibility-expansion
服务门户	https://service.qnap.com
产品支持状态	https://www.qnap.com/product/eol.php
下载	https://download.qnap.com
社区论坛	https://forum.qnap.com
QNAP 配件商店	https://shop.qnap.com

6. 术语表

QNAP JBOD Manager

适用于 Windows、Linux 和 macOS 的软件实用程序，可用于查看和配置 QNAP JBOD 设备

QTS

QNAP NAS 操作系统

QuTS hero

采用 ZFS 文件系统的 QNAP NAS 操作系统

存储与快照总管

可用于查看和配置连接到 QNAP NAS 的 QNAP JBOD 设备的 QTS 实用工具

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Version 3, 29 June 2007

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“Copyright” also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

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The “System Libraries” of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A

“Major Component”, in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The “Corresponding Source” for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

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You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

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- a. Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.
- b. Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.
- c. Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.
- d. Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

- e. Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

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