Oracle Talari T5200

Hardware Guide

Original Publication Date: Nov 1, 2019

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About This Document

This guide describes the physical characteristics of the Oracle Talari Appliance T5200. It includes instructions for setting up the physical connections on the front and back panels and for mounting these appliances in a rack.

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1. Select 2 for New Service Request.
2. Select 3 for Hardware, Networking, and Solaris Operating System Support.
3. Select one of the following options:
    - For technical issues such as creating a new Service Request (SR), select 1.
    - For non-technical issues such as registration or assistance with My Oracle Support, select 2.

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A critical situation is defined as a problem with the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

- A total system failure that results in loss of all transaction processing capability
- Significant reduction in system capacity or traffic handling capability
- Loss of the system's ability to perform automatic system reconfiguration
- Inability to restart a processor or the system
- Corruption of system databases that requires service affecting corrective actions

- Loss of access for maintenance or recovery operations
- Loss of the system ability to provide any required critical or major trouble notification

Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with Oracle.

Locate Product Documentation on the Oracle Help Center Site

Oracle Communications customer documentation is available on the web at the Oracle Help Center (OHC) site, http://docs.oracle.com. You do not have to register to access these documents. Viewing these files requires Adobe Acrobat Reader, which can be downloaded at http://www.adobe.com.

1. Access the Oracle Help Center site at http://docs.oracle.com.
2. Click Industries.
3. Click the Oracle Communications link.

   Under the SD-WAN header, select a product.
4. Select the Release Number.

   A list of the entire documentation set for the selected product and release appears.
5. To download a file to your location, right-click the PDF link, select Save target as (or similar command based on your browser), and save to a local folder.

Reference Documents

The following documents are available:

- ***Talari Appliance T5200 Getting Started Guide***
- ***Talari Glossary***
- ***Talari Appliance Quick Start Guide***
- ***Talari APN Implementation Guide***
- ***Talari APN Software Configuration File Reference*** **(available for each major/minor release)**
- ***Talari APN Software Release Notes*** **(available for each release)**

Hardware and Software Requirements

The T5200 has the following hardware and software requirements:

Hardware:

The appliances must be mounted in a standard, 19-inch (480mm), four-post rack.

Software:

The Talari Adaptive Private Networking (APN) Software, which comes pre-installed on all Talari Appliances, supports current versions of the following Web browsers with cookies and JavaScript enabled:

- Microsoft IE9 – IE11
- Mozilla Firefox
- Google Chrome

Display:

A minimum screen resolution of 1024 x 960 or greater is recommended.

About the Oracle Talari Appliance

Designed to bring network reliability and increased capacity to enterprise offices and data centers, the 2U rack-mountable T5200 delivers up to 3Gbps across eight WAN Links and connects up to 256 sites.

Oracle SD-WAN Overview

Talari redefined WAN reliability and application performance with its family of Oracle Talari Appliances. By adding Oracle Talari Appliances to existing networks, customers can aggregate and transform affordable broadband connections to deliver enterprise class performance and reliability at consumer prices. An Oracle SD-WAN delivers more bandwidth, reduces WAN operating expenses, and provides greater reliability than any existing single-provider WAN.

Using our patented Adaptive Private Networking (APN) technology, Talari's solution combines disparate, abundant, affordable IP bandwidth sources, and provides reliable, resilient, high-quality connectivity between sites, ensuring application and business continuity. Oracle Talari Appliances deployed at headquarters and remote offices create a network of Conduits. Each Conduit is made up of multiple WAN Links, and data transmitted across the Conduits is optimized to use network resources available across all WAN Links.

Front Panel Configuration

The T5200 front panel incorporates a Liquid Crystal Display (LCD) module with a keypad used to power the unit on and off.

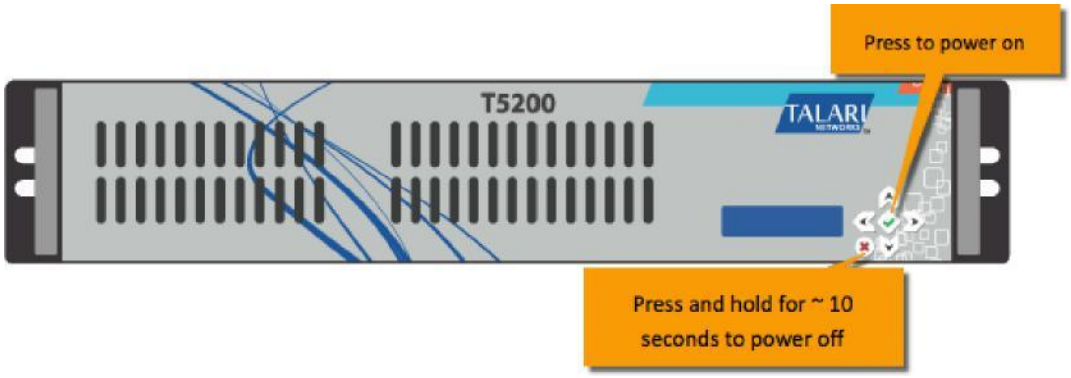

Figure 1: T5200 Front Panel Configuration

Please note that the LCD keypad's arrow keys are reserved for future use.

Rear Panel Configuration

The T5200 rear panel contains the following components:

- One VGA monitor port
- Four USB 2.0 ports
- One DB9 console port
- One management port
- One auxiliary port (limited to 100 Mbps full duplex)
- One dual, hot-swappable AC power supply
- Four multi-mode fiber 10 Gigabit Ethernet ports (SFP+) with bypass
- Four copper Gigabit Ethernet ports with bypass

Note: Running the T5200 with a single power supply is not recommended for standard operation. Connect power to both power supplies when installing this device.

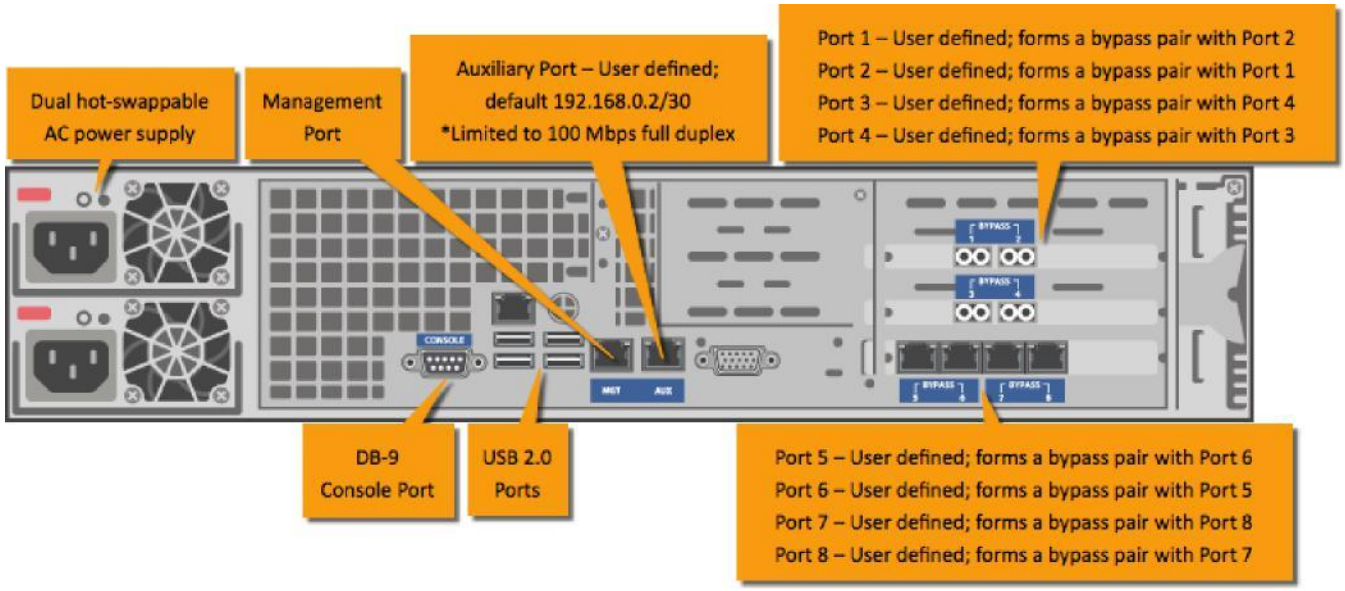

Figure 2: T5200 Rear Panel Configuration

Ethernet Ports

Port	Ethernet Type	Description
MGT	Copper Gigabit	Management port (dedicated – out of band)
1	Multi-mode Fiber 10 Gigabit (SFP+)	User defined; forms a Bypass pair with Port 2
2	Multi-mode Fiber 10 Gigabit (SFP+)	User defined; forms a Bypass pair with Port 1
3	Multi-mode Fiber 10 Gigabit (SFP+)	User defined; forms a Bypass pair with Port 4
4	Multi-mode Fiber 10 Gigabit (SFP+)	User defined; forms a Bypass pair with Port 3
5	Copper Gigabit	User defined; forms a Bypass pair with Port 6
6	Copper Gigabit	User defined; forms a Bypass pair with Port 5
7	Copper Gigabit	User defined; forms a Bypass pair with Port 8
8	Copper Gigabit	User defined; forms a Bypass pair with Port 7
AUX	Copper Gigabit (100 Mbps)	User defined; used for MGT AUX. May be used as an untrusted port

Table 1: Ethernet Ports

NIC Indicator Codes

Ethernet ports on the rear panel have indicator lights for information on network activity and link status.

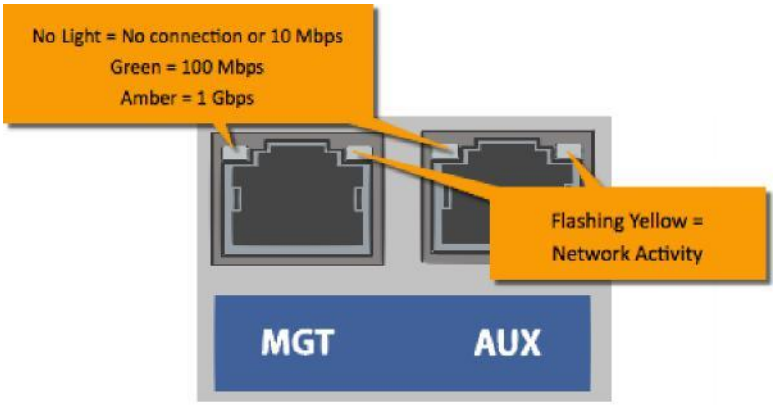

Figure 3: Management Interfaces

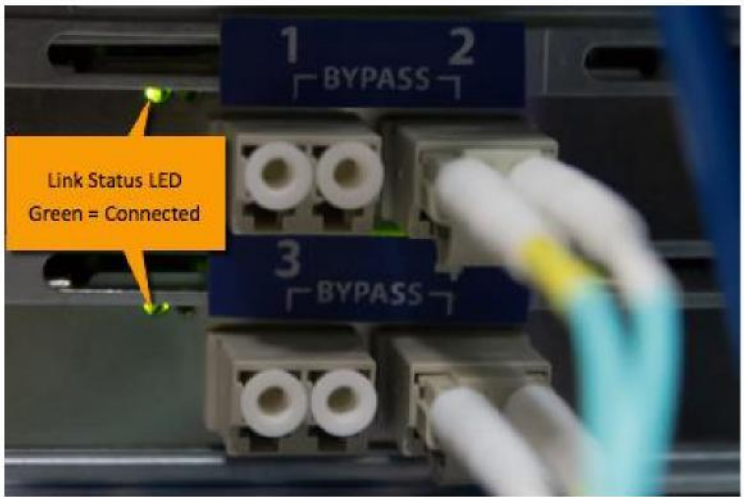

Figure 4: 10 Gigabit Bypass Interface

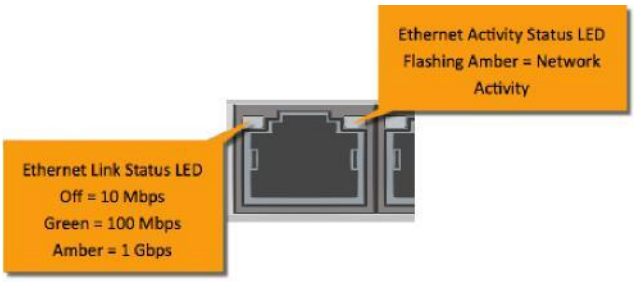

Figure 5: 1 Gigabit Bypass Interfaces

LAN/WAN Port Connectivity

Connect a configured Ethernet LAN port to the LAN side of your network. Connect the corresponding configured WAN port to the WAN side of your network. As illustrated in Figure 6, ports 1 and 2 create a LAN/WAN bypass pair, ports 3 and 4 create a LAN/WAN bypass pair, ports 5 and 6 create a LAN/WAN bypass pair, and ports 7 and 8 create a LAN/WAN bypass pair.

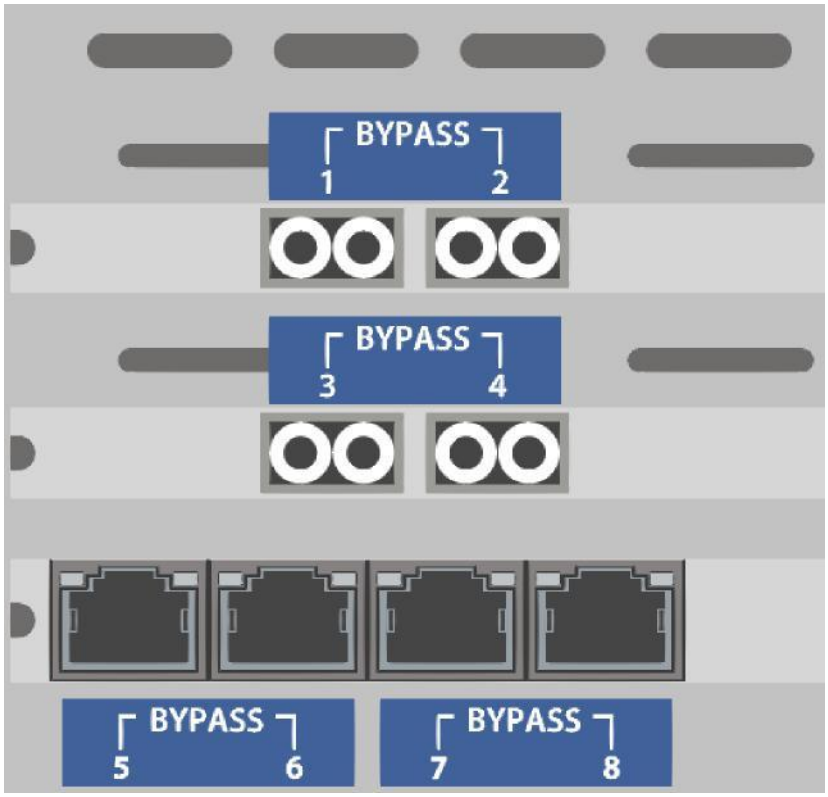

Figure 6: LAN/WAN Ports and Bypass Pairs

The aforementioned port pairs can operate in bypass mode. This bypass capability allows the Talari Appliance to forward Ethernet frames between the bypass port pairs in the event of power loss or if the Talari Service is disabled.

The T5200 ships with the assigned, default IP address of 192.168.0.2/30. The appliance is accessible via the AUX port using the default IP address until the management IP address is

changed via the web console. Follow the instructions in the *Talari Appliance Quick Start Guide* to configure the T5200.

Untrusted Interfaces

Ethernet ports may be configured as untrusted interfaces. Untrusted interfaces connect to untrusted zones that the administrator does not want to place within the normal switched or routed enterprise network because of security or convenience. Non-Conduit traffic from the WAN to an untrusted interface is unable to communicate to any network point inside of the Talari WAN. For example, a user on the enterprise LAN cannot ping, or otherwise communicate with, any entity on the Ethernet domain attached to an untrusted interface through the Talari Appliance or vice-versa. An untrusted segment is entirely isolated from the rest of the network with the exception of the Talari WAN's own AES encrypted paths.

Hardware Specifications

The T5200 has the following hardware specifications:

	Specification
Power	100-240 volts 50-60 Hz, 9-3.5 Amp Redundant 740W ATX AC power supply UL approved, FCC compliant
Physical Dimensions	EIA RS-310 standards 2U 437mm (W) x 648mm (D) x 89mm (H) (17.2" x 25.5" x 3.5")
Mounting Options	Rack mount Universal 2U rail kit (included)
Link LEDs	Link activity Link speed
LCD	Six button LCD
Operating Temperature	0 to 40° C (32 to 104° F)
Storage Temperature	-20 to 80° C (-4 to 176° F)
Relative Humidity	10% to 90% non-condensing
Network Interfaces	4 multi-mode fiber 10 Gigabit Ethernet ports (SFP+) with bypass 4 copper Gigabit Ethernet ports with bypass 2 copper Gigabit Ethernet ports on motherboard (one limited 100 Mbps to full duplex)
Other Interfaces	1 VGA port 4 USB 2.0 ports 1 DB9 console port
Mean Time Between Failure (MTBF)	31,816 hours

Table 2: Hardware Specifications

Installing the Talari Appliance

Rack Installation

Prior to installing the system in a rack, adhere to the following rack installation guidelines:

- Ensure that there is adequate airflow through the rack, because restricted airflow can lead to equipment damage.
- Leave at least 1U of vertical space between the systems you install in a rack.
- Ensure that the rack width and depth allows for proper serviceability and cable management.
- Ensure that the rack is properly secured to the floor or ceiling and is grounded.
- Load the rack from the bottom up.
- Load the heaviest component in the rack first.
- Ensure that the rack is level and stable before removing components.
- Do not move racks by yourself. At least two people are required to safely move racks and stage equipment.
- Ensure that cables are easily identifiable.

Installing the Rack Mount Brackets and Rails

The T5200 ships with a rack mounting kit included. This appliance requires a four-post rack for safe installation. Additionally, the outer rails extend from 27 inches to 36.4 inches. Follow the steps below to install the rack-mount brackets.

Separate the Inner and Outer Rails

Separate the inner rail from the outer rail by pressing the locking tab on the inner rail. Please see Figure 7.

1. Locate the rail assembly in the chassis packaging.

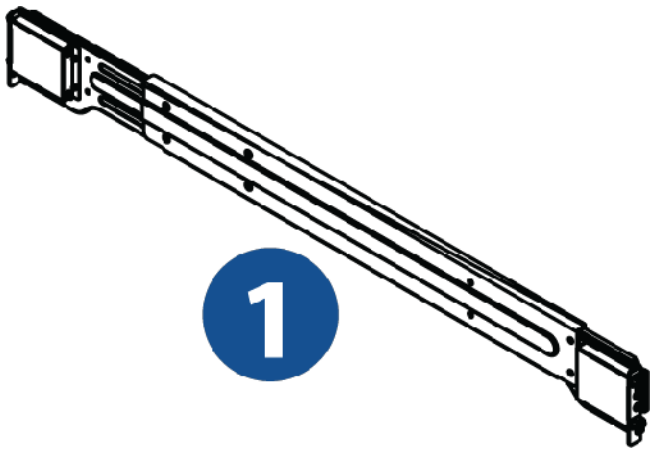

Figure 7: Rail Assembly

2. Extend the rail assembly by pulling it outward.

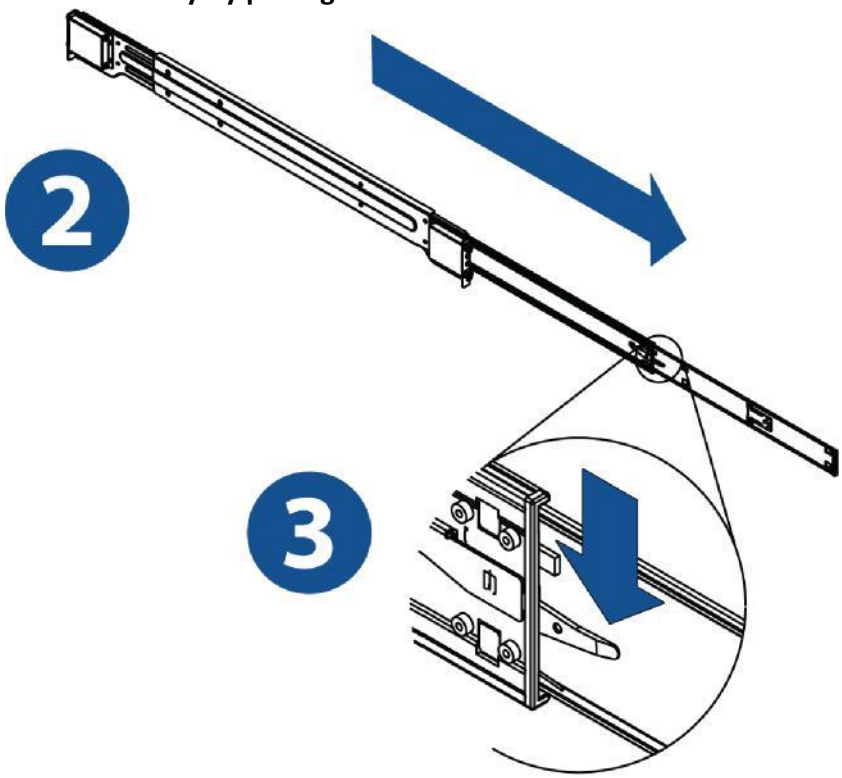

Figure 8: Extend Rail Assembly

3. **Press the quick-release tab as illustrated in Figure 8.**
1. **Separate the inner rail extension from the outer rail assembly.**

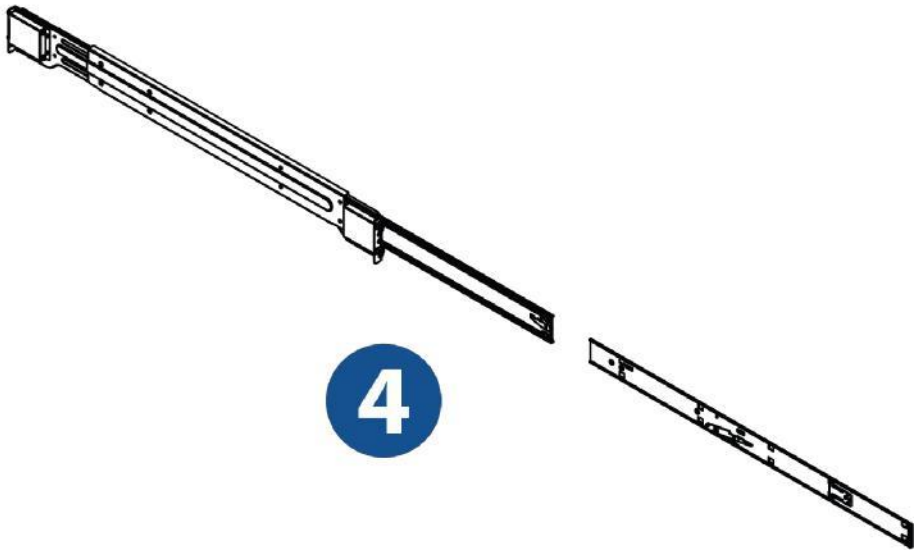

Figure 9: Separate Inner Rail Extension from Outer Rail

Attaching Inner Rails

1. Attach one inner rail to each side of the appliance by aligning the holes in the bracket with the corresponding hooks on the appliance.
2. Slide the rails into place on the appliance.
3. Secure the inner rail to the appliance using the screws provided.

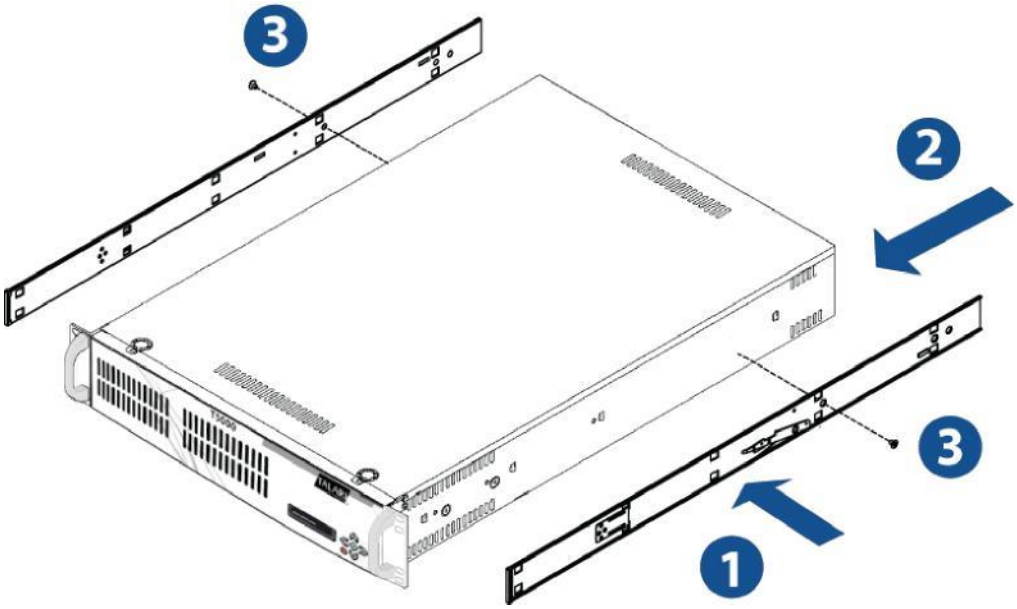

Figure 10: Secure Rails to the Appliance

Attaching Outer Rails to the Rack

4. Secure the back end of the outer rail to the rack by placing the hooks of the rails into the rack holes and securing the outer rail with the screws included in the rack mounting kit.
5. Press the button where the two outer rails are joined to retract the smaller outer rail as illustrated in Figure 11 steps 1 and 2.
6. Secure the front end of the outer rail to the rack by hanging the hooks of the rails to the rack holes and securing with screws as illustrated in Figure 11 step 3.

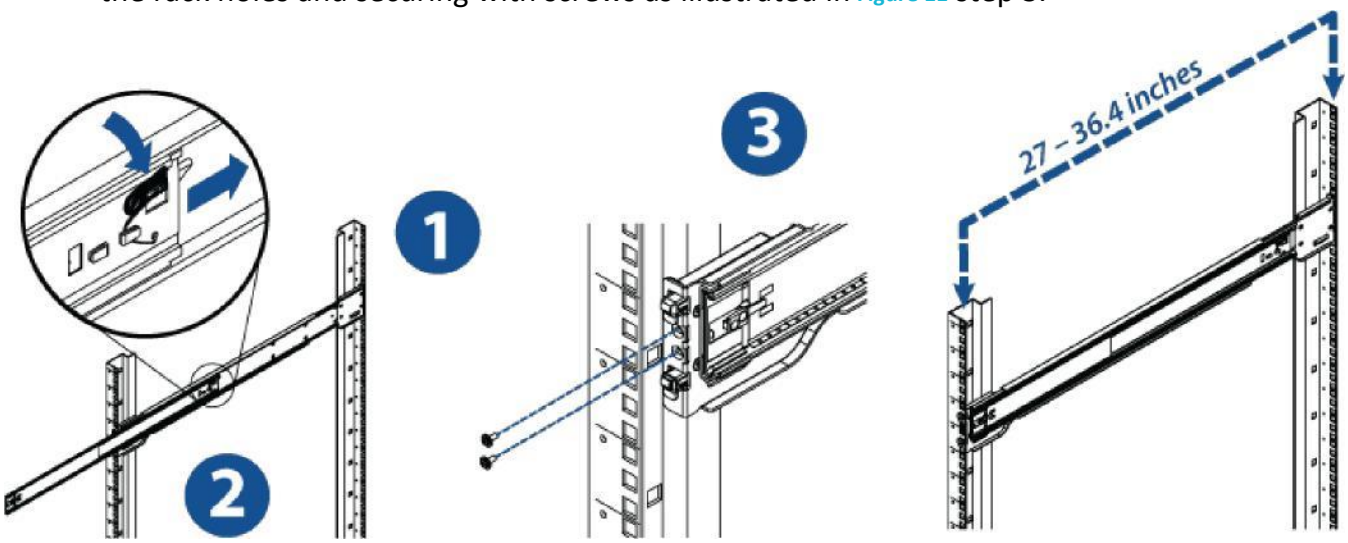

Figure 11: Attach Outer Rails to the Rack

Note: The T5200's outer rails require a minimum of 27 inches for rack installation. The outer rails extend from 27 inches to 36.4 inches. Screw the handles into the outer rails for additional security if necessary.

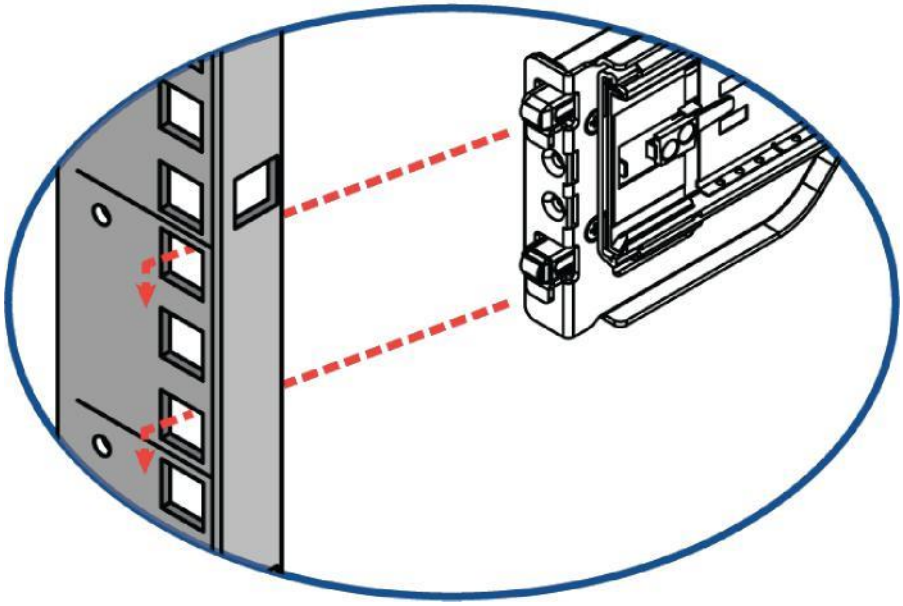

Figure 12: Attach Handles to Outer Rails

Adding Your T5200 to the Rack

1. Extend the outer rails as illustrated in Figure 13.
2. Align the inner rails attached to the chassis with the outer rails attached to the rack.
3. Slide the inner rails into the outer rails, keep the pressure even on both sides, and push the chassis into the rack. When the chassis is pushed completely into the rack, it should click into the locked position.
4. Optional: Use the screws included in the mounting kit to secure the front of the chassis to the rack.

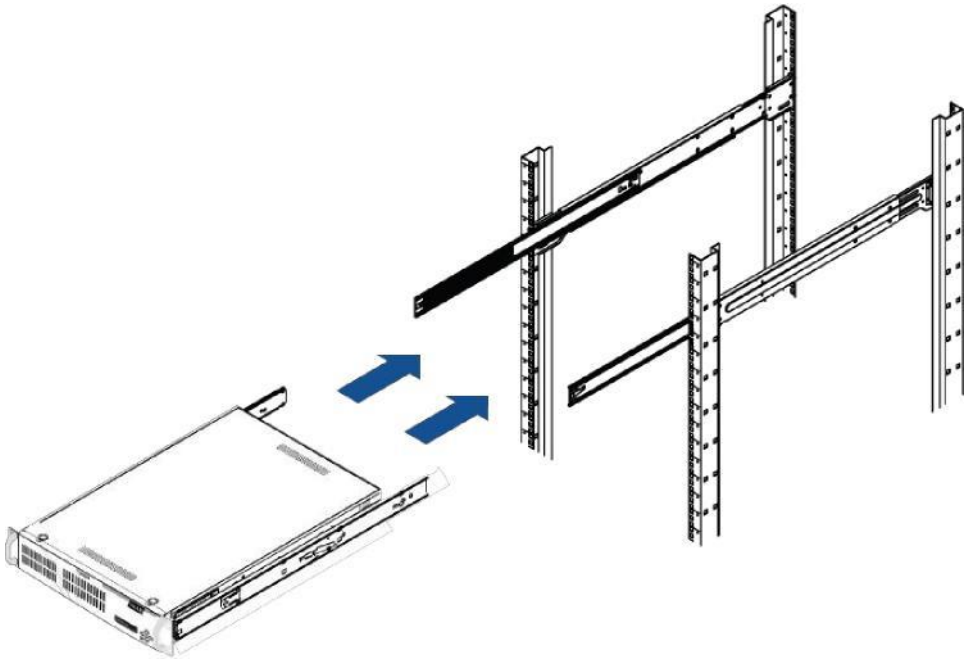

Figure 13: Slide Appliance Chassis into Rack Using Installed Rails

LAN/WAN Connections

When connecting each Ethernet (LAN or WAN) cable to the appropriate connector on the T5200:

- Position the cables carefully so that they do not put strain on the connectors.
- Organize cables in bundles so that cables do not intertwine.
- Inspect the cables to make sure that the routing and bend radii are satisfactory. Reposition cables if necessary.
- Install cable ties in accordance with site requirements.

Connecting Power to the Appliance

When connecting power to the T5200:

- Plug both AC power cords into the appliance.
- Plug both AC power cords into an uninterrupted AC power source.
- The appliance will start automatically.

Note: Running the T5200 with a single power supply is not recommended for standard operation. Connect power to both power supplies when installing this device.

The appliance power connectors are shown below. The T5200 uses 120/240 VAC.

Figure 14: Connect Power Cables to Appliance

Important Note about Cabling and Bypass Mode

When your Oracle Talari Appliance is operating in bypass mode (e.g., when it is powered off), the appliance acts like a crossover cable. This may cause a loss of the link between the appliance and older network devices that do not support Auto MDI-X when straight-through cables are used to connect the LAN and WAN ports of the appliance. In such a case, a crossover cable is required from the Oracle Talari Appliance's WAN port to the older network device.

If your network devices support Auto MDI-X capability, the link should be automatically established when the device enters bypass mode and there should be no need for crossover cables. Talari recommends testing and verifying this capability with the appliance powered off.

For assistance, please contact the Talari Support team.

Powering Up the Appliance

Checklist for Power Up

Power up the T5200 by performing the following steps:

5. Determine the IP address for the Ethernet management interface.
6. Confirm that the chassis is securely mounted.
7. Confirm that the power and Ethernet cables are connected.

The appliance powers up automatically when first plugged in.

If you encounter problems when you power up the appliance, please see the **Troubleshooting** section of this document.

Configuring the Talari Appliance

The T5200 ships with a default management IP address of 192.168.0.2/30. In order to access your appliance remotely, you must first connect to it directly via the Management Auxiliary interface (AUX) and configure a management IP address for the appliance.

Figure 15: Configuring the Appliance

Use an Ethernet cable to connect from a PC to the interface labeled AUX, then refer to the *Talari Appliance T5200 Getting Started Guide* (included in the shipping box) or to the *Talari Appliance Quick Start Guide* for instructions on how to access and use the web console to configure the management IP address.

Troubleshooting

The following section outlines some troubleshooting steps and guidelines for the T5200.

Basic Troubleshooting

The key to problem solving is to isolate the problem to a specific subsystem by comparing what the appliance is doing to what it should be doing. The T5200 has LEDs and NIC indicators on the rear panel for the indication of power, disk activity, Ethernet activity, etc. These indicators can assist in isolating the problem to a specific subsystem.

Appliance Troubleshooting Basics

Problem	Resolution
Cannot ping the T5200	Make sure the appliance has power. Confirm that the device has a management IP address assigned. Verify that the management port has connectivity from the appliance and switch.
Ethernet port not forwarding traffic	Verify that the switch has auto-negotiation enabled. Verify that the port is enabled on the switch. Confirm that you are connected to the correct port on the Talari Appliance.
Cannot access the Talari Web Console	Confirm that you are using the correct IP address. Confirm that the management port of the T5200 is connected to a switch and there is activity.
LEDs do not turn on	Check the AC power source. Check the appliance's On/Off buttons.

Table 3: Troubleshooting Basics

Troubleshooting Bypass Mode (Fail-to-Wire)

The T5200 is equipped with a capability known as "bypass mode" or "fail-to-wire." This capability is designed to prevent a single point of failure. If there is a serious problem with the Talari Appliance, the bypass pair enters bypass mode and forwards traffic through as though the appliance were a wire.

A bypass pair may be configured as either "fail-to-wire" or "fail-to-block." If a bypass pair is configured for "fail-to-block," bypass mode is not activated even if power is lost. Bypass pairs are configured as "fail-to-wire" by default.

Bypass mode is used when the appliance is not powered on, when the Talari Appliance is powered on but is not configured, or when the appliance is powered on and configured but the Talari Service is disabled. When the T5200 is in bypass mode, one or both of the bypass LEDs will stop blinking green.

Please also see **Important Note about Cabling and Bypass Mode** for additional information.

Problem	Resolution
Bypass mode blocking traffic	Verify that the T5200 has connectivity to the L2/L3 devices on its LAN/WAN ports. Verify that the correct cables are used and that the networking devices have auto-negotiate set for their ports.
T5200 stays in bypass mode	Confirm that the T5200 Appliance is configured properly and that the Talari Service is enabled.

Table 4: Troubleshooting Bypass Mode