TrueNAS® X-Series Unified Storage Array
Basic Setup Guide

Version 1.7
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The TrueNAS X-Series Unified Storage Array is a 2U, 12-bay, hybrid unified data storage array.

1 Unpacking the Unit

TrueNAS units are carefully packed and shipped with trusted carriers to arrive in perfect condition. If there is any shipping damage or any parts are missing, please take photos and contact iXsystems support immediately at support@ixsystems.com or 855-GREP-iX (855-473-7449) or 408-943-4100.

Please locate and record the hardware serial numbers on the back of each chassis for quick reference.

Carefully unpack the shipping boxes and locate these components:

- X-Series Unified Storage Array
- X-Series Bezel
- Set of rackmount rails. The rails have a specific front end, identified by a label visible on the left above. The front ends of the rails must be installed facing the front of the rack.
- A total of 12 populated or empty “air baffle” drive trays. Trays must be installed in all bays to maintain proper airflow for cooling. Up to ten drive trays are packed in a cardboard tray. Additional drive trays are packed with the accessory kit.
- Accessory kit with 2 IEC C13 to NEMA 5-15P power cords, 2 IEC C13 to C14 cords, and a set of velcro cable ties.
- Black USB to 3.5mm, 3.3V serial cable
- Rail Extenders for racks over 30” (762mm) deep
2 Become Familiar with the X-Series System

The X-Series has front panel indicators for power, locate ID, and fault. The fault indicator is on during the initial power-on self-test (POST) and turns off during normal operation. It turns on if the TrueNAS software issues an alert.

The X-Series has one or two storage controllers in a side-by-side configuration.

1. Gigabit Ethernet connector
2. Gigabit Ethernet connector
3. USB device (reserved, do not remove)
4. USB 2.0 connector
5. Out-of-Band (OOB) serial port (3.5mm)
6. Out-of-Band Management Ethernet connector
7. HD mini SAS3 connector 1
8. HD mini SAS3 connector 2
9. PCIe x8 expansion port
10. System console port (reserved)
11. MAC address label
12. Redundant power supply
13. Redundant power supply
### 3 Rail Kit Assembly

On racks that are 30 inches deep or less, skip to “3.2 Rail Spring”.

#### 3.1 Rail Extenders

Racks from 31 to 36 inches deep require installation of the included rail extenders. For these deeper racks, install cage nuts on the outside rear of the rack. **The tabs on the cage nuts must be horizontal as shown.**

![Rail Extender Installation](image)

Using the included bolts, install the rail extender inside the rear of the rack. Repeat the process for the second extender, which is a mirror image of the first.

#### 3.2 Rail Spring

If not already present, install a spring on the silver posts in the side of each rail.

![Rail Spring Installation](image)
3.3 Attaching Rails to the Rack

Chassis rails are configured to attach to round hole racks. Additional pins are included in the accessory kit to configure the rails for square or 4mm hole racks. To reset the rails to fit a square or 4mm hole rack, unscrew the pins at each end of the rails and replace them with the correct pins.

To secure a rail to the rack, open the clamp latches on the ends of each rail. Place the rail in the rack with the front end toward the front of the rack, aligning the pins on both ends of the rail with the mounting holes in the rack. Swing the clamp latch closed to hold the rail in place. Use two of the supplied screws to secure the back end of the rail in place. Repeat the process for the second rail.

**Caution:** Two people are required to safely lift the chassis for rack installation or removal. Do not install drives until after the chassis has been installed in the rack, and remove all drives before removing the chassis from the rack. Carefully place the chassis onto the rails mounted in the rack. Push the chassis in until the ears are flush with the front of the rack. If needed, attach the bezel. Use two of the supplied screws to secure each ear to the rack.
4 Install Drive Trays

TrueNAS appliances only support qualified hard drives and SSDs. Contact the Sales Team if you need more drives or replacements. Adding unqualified drives to the system voids the warranty. Call Support if drives are improperly installed in trays.

Drive trays are used to mount drives in the chassis. Each drive tray has a status LED which is blue when the drive is active or a hot spare. The LED changes to amber if a fault has occurred.

A tray must be placed in each drive bay to maintain proper airflow for cooling. If fewer than twelve drives are connected, empty “air baffle” trays must be placed in the empty bays.

A standard drive tray installation order simplifies support and is strongly recommended:

- SSD drives for write cache (W), if present
- SSD drives for read cache (R), if present
- Hard drives or SSD drives for data storage
- Air baffle filler trays to fill any remaining empty bays

Install the first drive tray in the top left drive bay. Install the next drive tray to the right of the first. Install remaining drive trays to the right across the row. After a row is filled with drives, move down to the next row and start again with the left bay.

This example shows the proper order for a write cache (W) SSD, a read cache (R) SSD, eight hard drives, and two empty air baffle trays.

To load an individual drive tray into a bay, press the blue button to open the latch. Carefully slide the tray into a drive bay until the left side of the latch touches the metal front edge of the chassis, then gently swing the latch closed until it clicks into place.
5 Connect Expansion Shelves

Expansion shelves connect to the HD mini SAS3 connectors on the X-Series. For detailed connection instructions and diagrams, refer to the Basic Setup Guide included with your iXsystems TrueNAS expansion shelf or see the online SAS Connections Guide.

6 Connect Network Cables

Network cables vary by configuration and are not included. Please contact iX Support with any questions.

Connect network cables to the Ethernet ports and Out-of-Band (OOB) management port before attempting to power on and configure the X-Series for the first time.

The Out-of-Band management port on the X-Series must be connected with a shielded Ethernet cable.

7 Connect Power Cord

If any TrueNAS expansion shelves are connected to the X-Series, power on the expansion shelves and wait at least two minutes before connecting power cables to the X-Series.

Do not plug the power cords into a power outlet yet.

Connect a power cord to the back of one power supply, pressing it into the plastic clamp and pressing on the tab to lock it in place. Repeat the process for the second power supply and cord.

After both power cords have been connected to the X-Series, they can be plugged into power outlets. The system is configured to automatically power on when connected to a power outlet. This design ensures that the X-Series comes back on when power is restored after a power failure.

If remote physical power disconnection is desired, the X-Series can be connected to a remotely-managed Power Distribution Unit (PDU).

8 Install Bezel (Optional)

The included bezel is not required for operation. If desired, install the bezel by unscrewing the two screws securing the chassis ears to the rack. Aligning the bezel with the pins on the bezel ears and press it into place. Reattach the two screws through the chassis ears to resecure the X-Series to the rack.
9 Logging in to the TrueNAS Web Interface

Your system is equipped with the optimal BIOS and IPMI firmware out of the box. DO NOT UPGRADE your system's BIOS and IPMI firmware.

The IP address of the TrueNAS graphical web interface is on the TrueNAS hardware sales order or configuration sheet. The system console also displays it after powering on. Please contact iX Support if the TrueNAS web interface IP address was not provided with these documents or cannot be identified from the TrueNAS system console.

Enter the IP address into a browser on a computer on the same network to access the web interface. To log into the TrueNAS web interface, enter the default credentials:

Username: root
Password: abcd1234

10 Out of Band Management

We recommend immediately configuring the Out of Band IP address and testing the network connection. Remote support requires a functioning Out-of-Band Ethernet port IP address.

10.1 Finding the Current Out of Band IP Address

Several methods are available to determine the IP address assigned to the X-Series Out-of-Band management interface.

10.1.2 Preconfigured IP Address

If iXsystems preconfigured the system, the Out-of-Band management interfaces are already configured with the user's requested IP addresses. Otherwise, the Out-of-Band management IP addresses default to static addresses:

- TrueNAS Controller 1: 192.168.100.100, subnet mask 255.255.255.0
- TrueNAS Controller 2 (if present): 192.168.100.101, subnet mask 255.255.255.0

10.1.3 Using the Serial Cable

You can identify or change the Out-of-Band management IP address by temporarily connecting the included black serial cable to the Out-of-Band serial port on the back of the system. Connect the USB end of the black cable to a computer running serial terminal software.

Warning: The black USB serial cable is only for use with the Out-of-Band serial port on the X-Series. Do not attempt to use it with any other equipment.

Do not use the serial port for any purpose except checking the initial X-Series Out-of-Band management IP address or setting that address to be obtained by a different method. After use, disconnect the black USB serial cable from the X-Series.
**Serial Port Device Names:**
The name of the serial port varies with operating systems. These are some typical examples:

- **Windows:** COM{4}
- **macOS:** /dev/tty.usbserial{xynnn}
- **FreeBSD:** /dev/cuaU{0}
- **Linux:** /dev/ttyUSB{0}

**Serial Port Communication Parameters:**
Set the serial terminal program to use the appropriate port with these parameters:

- 38400 baud, 8 data bits, 1 stop bit, no parity, no flow control

Log in to the serial console with:
- **Username:** ADMIN
- **Password:** Please see the asset list that is attached to your welcome letter.

The current Out-of-Band management IP address is displayed with:

```
ifconfig eth0 | grep 'inet addr'
inet addr:10.20.1.227  Bcast:10.20.1.255  Mask:255.255.254.0
```

All Out-of-Band network configuration settings are displayed with:

```
ipmitool -H 127.0.0.1 -U admin -P admin lan print
```

The Out-of-Band management system can be set to obtain an IP address from DHCP with:

```
ipmitool -H 127.0.0.1 -U admin -P admin lan set 1 ipsrc dhcp
```

The Out-of-Band management system can be set to use a static IP address and netmask. This example shows setting the IP address to 192.168.100.100 with a netmask of 255.255.255.0, and a default gateway of 192.168.100.1:

```
ipmitool -H 127.0.0.1 -U admin -P admin lan set 1 ipsrc static
    ipmitool -H 127.0.0.1 -U admin -P admin lan set 1 ipaddr 192.168.100.10
    ipmitool -H 127.0.0.1 -U admin -P admin lan set 1 netmask 255.255.255.0
    ipmitool -H 127.0.0.1 -U admin -P admin lan set 1 defgw ipaddr 192.168.100.1
```

To reset the Serial Over LAN system using the Out-of-Band serial port, use the **eth0** IP address. In this example, the IP address is shown as **eth0ipaddress** and **admin** is the password:

```
ipmitool -H eth0ipaddress -U admin bmc reset cold
```

Log out of the Out-of-Band management system by typing **exit** and pressing **Enter**. After use, disconnect the black USB serial cable from the X-Series.
10.1.4 DHCP

We do not recommend configuring the Out-of-Band management IP address with DHCP. However, you can configure the local DHCP server to provide a fixed IP address for the X-Series Out-of-Band management using the MAC address. When the Out-of-Band management IP address is configured to be assigned by DHCP, the assigned IP address is found by checking the local DHCP server logs for the MAC addresses printed on the back panel of each X-Series TrueNAS controller.

10.2 Connecting to the X-Series Console

10.2.1 IPMI

The IPMItool remote management utility must be installed on the computer used to manage the X-Series remotely, and that computer must have access to the same network as the X-Series. FreeBSD, macOS, and Linux have package systems which can be used to install IPMItool. For Windows, a simple option is to install IPMItool through Cygwin.

Only use IPMItool for remote IPMI management on the X-Series. Other IPMI utilities may not work correctly or even damage the X-Series system.

When the Out-of-Band management IP address has been determined, the X-Series console is accessible through IPMI. In this example, 192.168.100.100 is the IP address assigned to the Out-of-Band management interface and admin is the password:

   ipmitool -I lanplus -H 192.168.100.100 -U admin -a sol activate

SOL on another session is displayed when a Serial Over LAN connection is already in use. To reset the Serial Over LAN system from the remote laptop or desktop computer, use:

   ipmitool -H 192.168.100.100 -U admin bmc reset cold

and enter admin for the password. The Serial Over LAN system is reset.

Note: the Serial Over LAN system can also be reset with the Out-of-Band serial port.

Repeat the sol activate command above and enter admin to connect to the X-Series console.

10.2.2 Serial Cable

A serial terminal program is able to connect directly to the X-Series console. Disconnect the gray serial cable from the system console serial port, and temporarily connect the black USB serial cable to that port.

Connect the USB end of the black USB serial cable to a laptop or desktop computer running serial terminal software. Section 2.2.1 lists many typical names for the serial device name. Set the terminal software to:

   115200 baud, 8 data bits, 1 stop bit, no parity, no flow control

Wait two minutes after connecting the X-Series to power, then press Enter to display the console menu. Find the message starting with The web user interface is at: and write down the IP address. Once you're finished, disconnect the black USB serial cable and reconnect the gray System Management cable to the system serial console port.
10.3 Using the X-Series Console

The X-Series console has two modes: SES (SCSI Enclosure Services) mode, and the standard x86 console mode.

If **ESM A =>** or **ESM B =>** is displayed, the X-Series is in SES mode. Switch to the X86 console mode by typing these characters:

```
$%^0
```

Press Enter twice after typing the characters. The normal x86 console is displayed.

To switch back to the SES console, enter these characters:

```
$%^2
```

11 User Guide

The TrueNAS Documentation Hub has software configuration and usage articles. They are available by clicking **Guide** in the TrueNAS web interface or going directly to [https://www.truenas.com/docs](https://www.truenas.com/docs).

12 Contacting iXsystems

For assistance, please contact iX Support:

<table>
<thead>
<tr>
<th>Contact Method</th>
<th>Contact Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web</td>
<td><a href="https://support.ixsystems.com">https://support.ixsystems.com</a></td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:support@ixsystems.com">support@ixsystems.com</a></td>
</tr>
</tbody>
</table>
| Telephone      | Monday-Friday, 6:00AM to 6:00PM Pacific Standard Time:  
  • US-only toll-free: 855-473-7449 option 2  
  • Local and international: 408-943-4100 option 2 |
| Telephone      | Telephone After Hours (24x7 Gold Level Support only):  
  • US-only toll-free: 855-499-5131  
  • International: 408-878-3140  
  (International calling rates will apply) |