NAS Repair Manual

Document version: 1
02/07/2024

Contents

1. Important Information

Original Packaging

Please keep the original packaging and packaging materials. If you want to return the product or send it for repairs, please use the original packaging to avoid damage.

QNAP reserves the right not to provide a refund or warranty service for products that are damaged due to improper packaging.

Hardware Defects

If your QNAP product has hardware defects, return the product to QNAP or a QNAP-authorized service center for maintenance or replacement. Any attempt to repair or perform maintenance procedures on the product by you or an unauthorized third party invalidates the warranty.

QNAP is not responsible for any damage or data loss caused by unauthorized modifications and installation of unsupported third-party applications.

For details, see the QNAP Warranty Terms and Conditions.

Safety information

The following instructions help ensure personal safety and environmental safety. Read these instructions carefully before performing any operation.

General Instructions

- The device should be stored in a secure location with restricted access, controlled through the use of a tool, lock and key, or any means of security.
- Only qualified, skilled, and authorized persons with knowledge of all restrictions, safety precautions, and installation and maintenance procedures should have physical access to the device.

⚠ WARNING

To avoid potential injury or damage to components, ensure that the drives and other internal system components have cooled before touching them.

Observe electrostatic discharge (ESD) procedures to avoid potential injury or damage to components.

Power

⚠ WARNING

To reduce the risk of fire or electric shock, ensure that you only connect the power cord to a properly grounded electrical outlet.

Devices with redundant power supply may have one or more power supply unit (PSU) cords. To avoid serious injuries, a trained service technician must disconnect all PSU cords from the device before installing or replacing system components.

Moving Parts

⚠ WARNING

Moving fan blades: Keep your body parts away from any moving fan blades while the device is connected to a power source.

Moving components: Keep your body parts away from any other moving components.

The device is not suitable for use in locations where children are likely to be present.

System Battery

⚠ WARNING

INGESTION HAZARD

- This product may contain a button battery.
- Keep batteries out of reach of children.
- If swallowed, a lithium button battery can cause severe or fatal injuries within 2 hours.
- If you think batteries may have been swallowed or placed inside any part of the body, seek immediate medical attention.

- To avoid potential battery explosion, causing injury or damage to components, ensure that you replace the existing battery with a battery of the same type.

- Dispose of used batteries properly according to local regulations or the instructions of the battery manufacturer.
- Even used batteries may cause severe injury or death.
- Call a local poison control center for treatment information.
- For information on the type and voltage of the button battery in your device, please see the hardware specification table.
- Non-rechargeable batteries are not to be recharged.
- Do not force discharge, recharge, disassemble, heat, or incinerate. Doing so may result in injury due to venting, leakage, or explosion resulting in chemical burns.
- Ensure the batteries are installed correctly according to polarity (+ and -).
- Do not mix old and new batteries, or different brands or types of batteries, such as alkaline, carbon-zinc, or rechargeable batteries.
- Remove and immediately recycle or dispose of batteries from equipment not used for an extended period of time according to local regulations.
- Always completely secure the battery compartment. If the battery compartment does not close securely, stop using the product, remove the batteries, and keep them away from children.

Rail Kits

Rackmount models may require rail kits for installation onto a server rack or cabinet.

To ensure equipment and personal safety, please carefully read the installation instructions for your rail kit before you install the rail kit and mount your device.

To check if your device is a rackmount unit, see the hardware specification table.

⚠ WARNING

- When the rail kit is installed on the server rack, do not fully extend and unlatch the rails except when mounting or unmounting a device.
- Leaving the rails fully extended out and unlatched may cause heavy equipment to fall. This can cause equipment damage and severe or even fatal injuries.
- Before you prepare the rails for device mounting or unmounting, please carefully read and ensure you understand the installation instructions.
- Do not place any objects or add any extra load onto the device or rails when mounting or unmounting a device.
- When mounting a device, slide the device all the way into the server rack to fully latch the rails and secure the device to the server rack.

2. Introduction

This repair manual provides technical instructions for disassembling and reassembling various NAS models, allowing users to replace major components for their devices.

These instructions are intended for individuals with sufficient hardware knowledge and experience to repair electronic devices. We recommend reading this manual carefully to understand the procedure and the required tools. Only proceed if you feel comfortable performing the tasks instructed in this manual.

Important

Failure to follow the instructions may damage the components or affect the functionality of your device. Damages caused by self-repair are not covered by QNAP warranty service.

NAS model categorization

QNAP NAS models can be divided into the following categories based on their mechanical design.

Important

These model lists are not exhaustive. If you are unable to find your model from the lists, we recommend following the given criteria to classify your model.

Category A

NAS models in this category are small tower NAS models. The power button and LEDs are located on the left side of the front panel.

Representative model: TS-453E

Similar models: TS-216G, TS-253E, TS-431X3, TS-431KX, TS-431K, TS-433

Category B

NAS models in this category are small or medium tower NAS models that have a sliding front cover protecting their drive bays.

Representative model: TS-AI642

Similar models: TS-264, TS-464, TS-664, TS-262, TS-462, TS-432X, TS-632X

Category C

NAS models in this category are medium or large tower NAS models. Many models in this category have an LCD panel above the drive bays.

Representative model: TS-h874T

Similar models: TS-473A, TS-673A, TS-873A, TVS-472XT, TVS-672XT, TVS-872XT, TVS-h474, TVS-h674, TVS-h874, TVS-h674T, TS-832PX, TVS-675,

Category D

NAS models in this category are large tower NAS models that have 2.5-inch drive bays.

Representative model: TVS-h1288X

Similar models: TS-855X, TS-1655, TS-h886, TVS-h1688X

Category E

NAS models in this category are rackmount NAS models, which are usually larger than tower NAS models. Rackmount models are designed to be mounted on server racks.

Representative model: TS-h1677AXU-RP

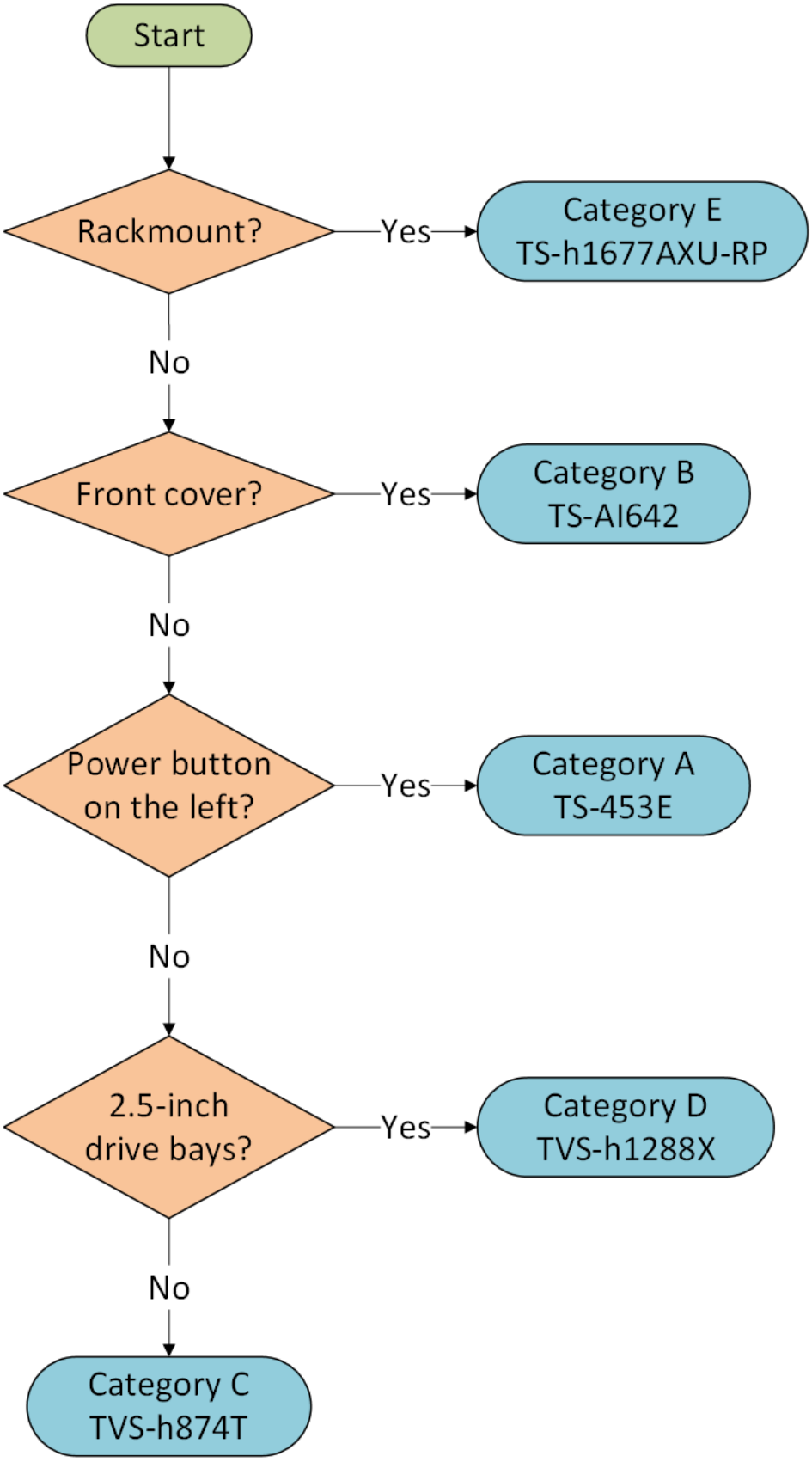
Similar models: TS-873AeU, TS-873AeU-RP, TS-832PXU, TS-832PXU-RP, TS-855eU, TS-855eU-RP, TS-1232PXU-RP, TS-877XU-RP, TS-h1277XU-RP, TS-1283XU-RP, TS-h1277AXU-RP

Categorization criteria and flow chart

To categorize a NAS model, follow these steps:

1. Check whether your NAS is a rackmount model. If so, it belongs to Category E.
   If not, proceed to the next step.
2. Check whether your NAS has a sliding front cover that protects drive bays. If so, it belongs to Category B.
   If not, proceed to the next step.
3. Check whether the power button of your NAS is located on the left side of the front panel. If so, it belongs to Category A.
   If not, proceed to the next step.

4. Check whether your NAS has 2.5-inch drive bays. If so, it belongs to Category D. If not, it belongs to Category C.


Start
Rackmount?
Yes
Category E
TS-h1677AXU-RP
No
Front cover?
Yes
Category B
TS-AI642
No
Power button
on the left?
Yes
Category A
TS-453E
No
2.5-inch
drive bays?
Yes
Category D
TVS-h1288X
No
Category C
TVS-h874T

Repair requirements

Category	Item
Environment	• Room temperature: 0˚C to 40˚C (32˚F to 104˚F) • Non-condensing relative humidity: 5% to 95% • Wet-bulb temperature: 27˚C (80.6˚F) • Flat, anti-static surface without exposure to direct sunlight, liquids, or chemicals
Tools	• Phillips #2 screwdriver • Phillips #1 screwdriver • Anti-static wrist strap

Resources

QNAP provides the following resources:

Resource	URL
Self-Repair Portal	https://www.qnap.com/go/service/self-repair
Documentation	https://download.qnap.com
Compatibility List	https://www.qnap.com/compatibility
Service Portal	https://service.qnap.com
Product Support Status	https://www.qnap.com/go/product/eol.php
Downloads	https://download.qnap.com
Community Forum	https://forum.qnap.com
QNAP Accessories Store	https://shop.qnap.com

3. Category A NAS Models

This chapter uses the TS-453E as the representative NAS model for category A. The disassembly and reassembly instructions, and the list of components and screws, are based on the representative model.

For details on category A NAS models, see NAS model categorization.

Note

While all NAS models in the same category share the same general structural design, different models may have certain differences in their parts and components in terms of size, quantity, and other specifications. For non-representative models in this category, please use the following topics as a point of reference.

Disassembling the TS-453E

Before you start, make sure you read the Repair requirements.

Warning

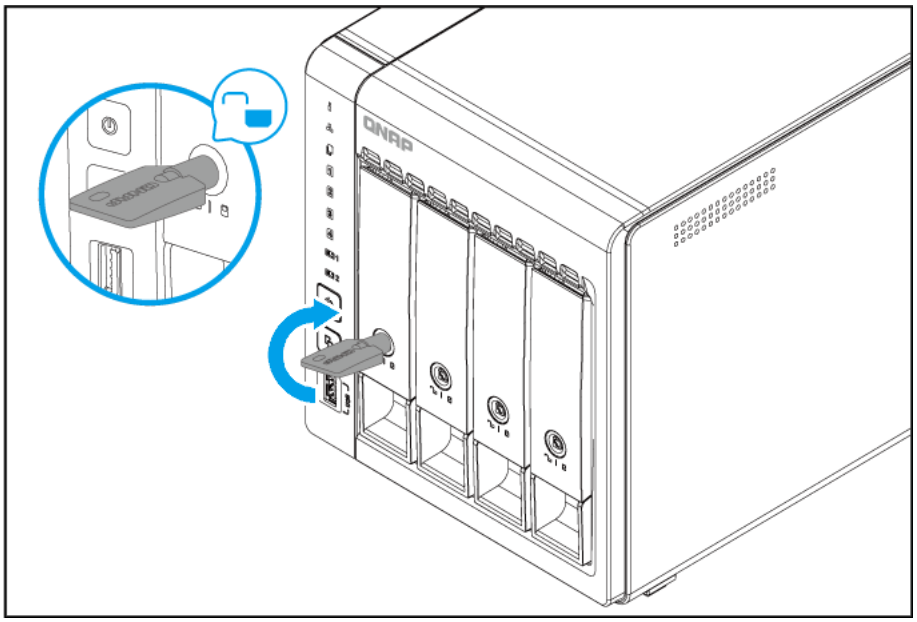
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.
- 

  Moving fan blades: Keep your hands and other body parts away from moving fan blades.
- 

  Other moving components: Keep your hands and other body parts away from other moving components.

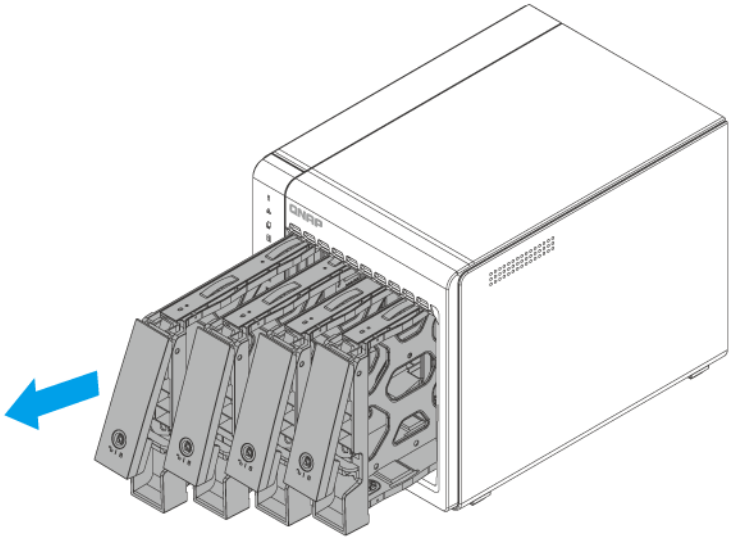
1. Power off the NAS.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.

4. Unlock the drive trays.



5. Remove all drive trays.

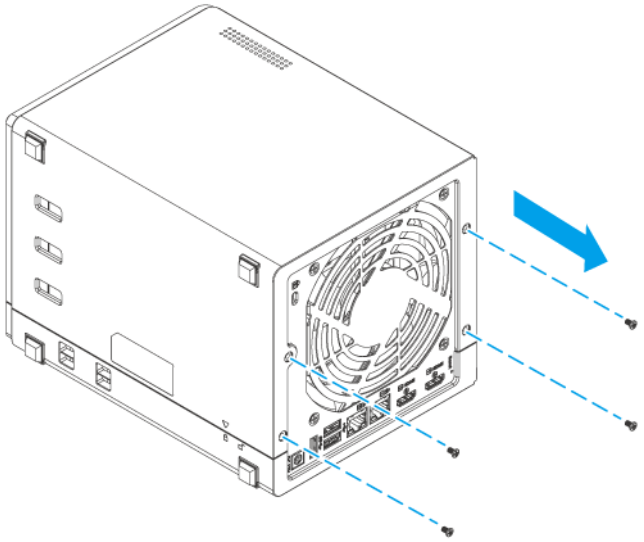
> **Important**
> Remember the number of each drive. Each drive will need to be returned to their original bay.



6. Remove the case cover.

   a. Position the NAS on its left side.

b. Remove the screws on the rear panel.

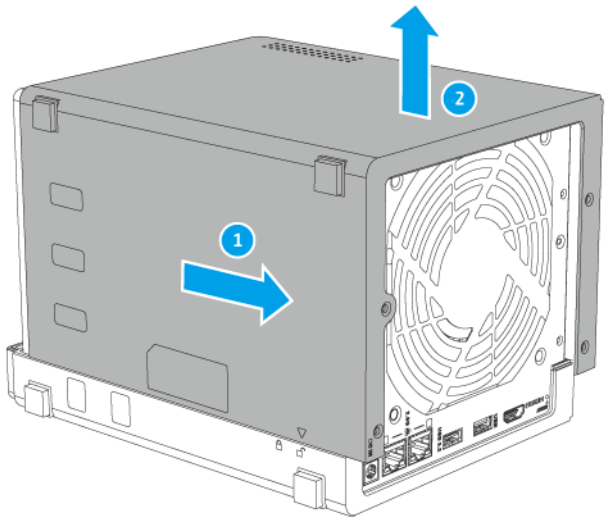


Note

- The pan head M3x5 screws require a Phillips #1 screwdriver.
- A torque of 2.75 kgf.cm (2.39 lbf.in) ± 0.25 kgf.cm (0.22 lbf.in) is recommended for electric screwdrivers.

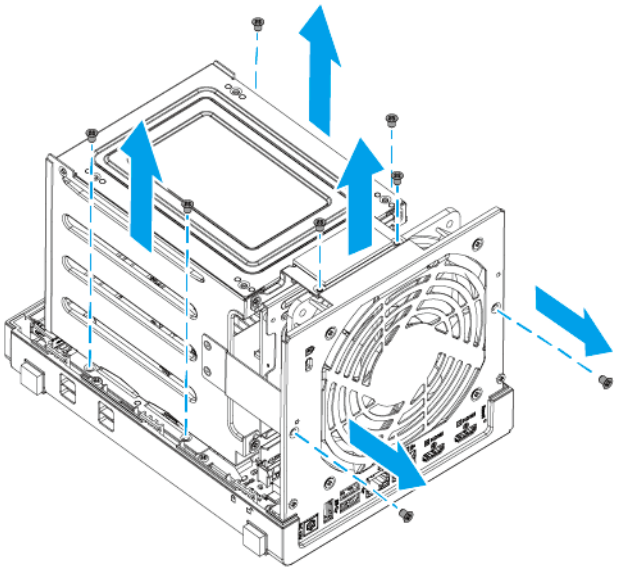
c. Slide the cover back.

d. Lift the cover until it is completely detached from the chassis.



7. Remove the drive cage.

   a. Remove the screws that secure the drive cage to the system board.

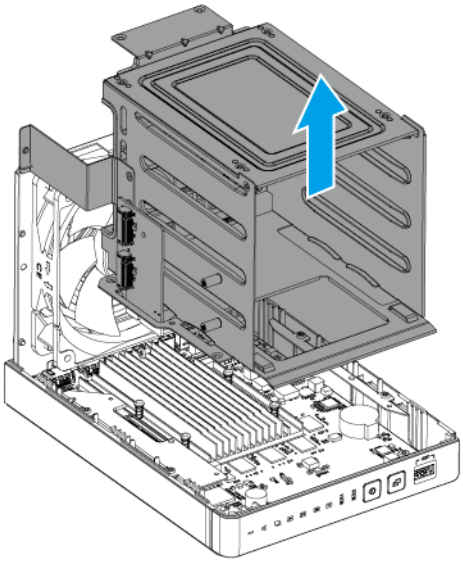


Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Lift the drive cage until it is completely detached.

> **Note**
> Detaching the drive cage also detaches the riser card and the backplane, which are screwed to the drive cage, from their slots on the system board.



8. Position the drive cage on its bottom side by rotating clockwise 90 degrees.

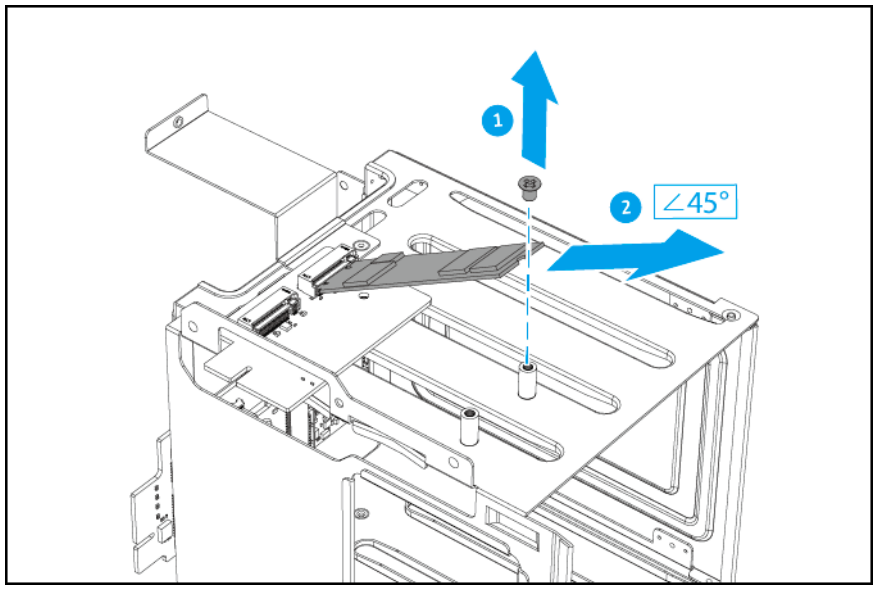
9. Remove M.2 SSDs from the riser card.

> **Note**
> This step is necessary if you want to remove the riser card and there are M.2 SSDs installed.

a. Remove the screw that secures the M.2 SSD to the drive cage.

> **Note**
>
> - The pan head M2.5x3 screw requires a Phillips #2 screwdriver.
> - A torque of 3 kgf.cm (2.60 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Remove the M.2 SSD.



c. Remove the other M.2 SSD.

10. Remove the riser card.

Warning

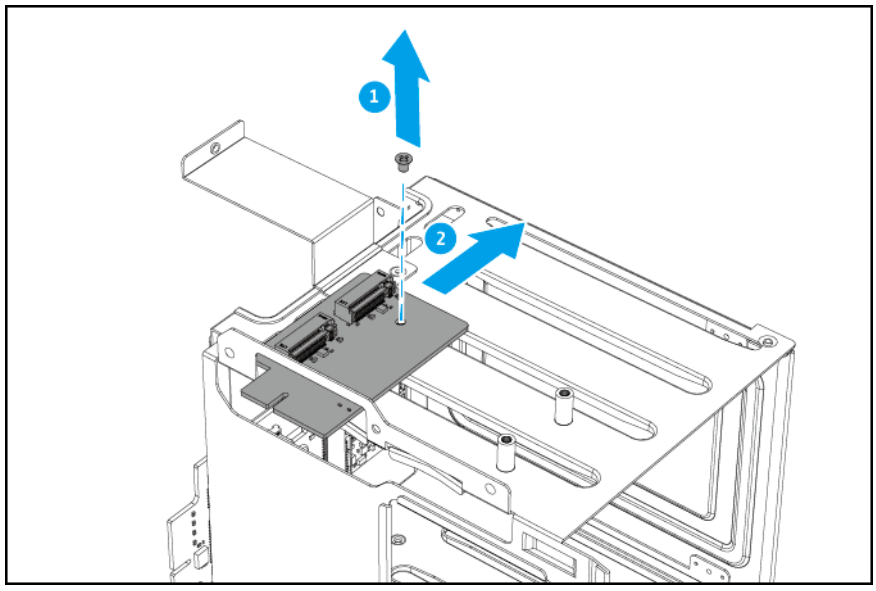
Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

a. Remove the screw that secures the riser card to the drive cage.

Note

- The pan head M3x5 screw requires a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

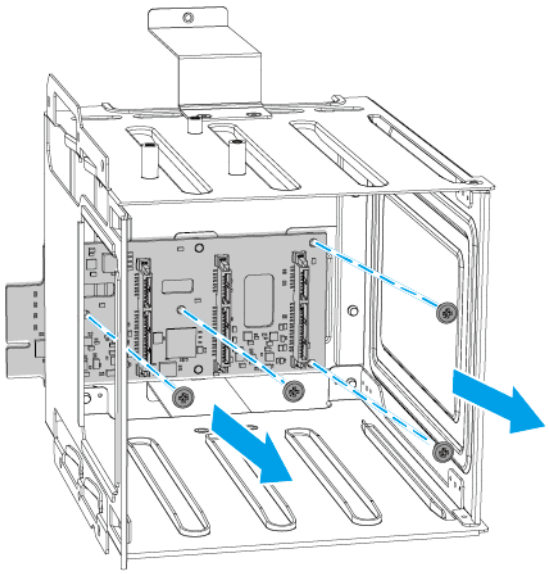
b. Remove the riser card.



11. Remove the drive backplane.

Warning
Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

a. Remove the screws that secure the backplane to the drive cage.

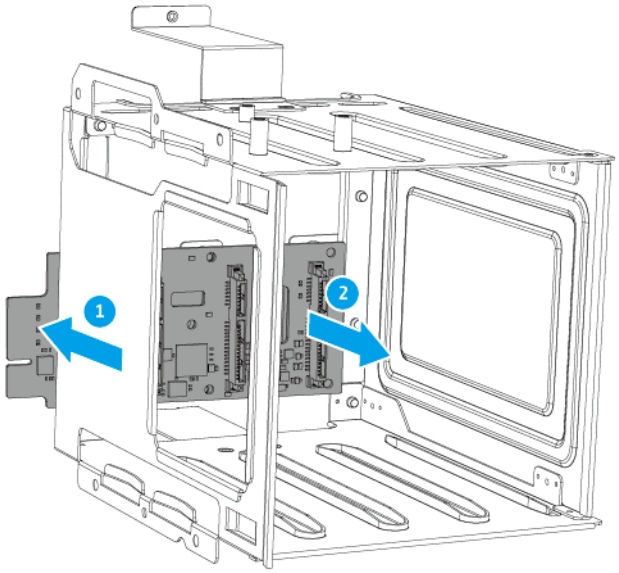


Note

- The pan head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Lightly push back the connector end of the backplane so that the other end of the backplane is lifted off of the drive cage surface.

c. Carefully remove the backplane from the drive cage.

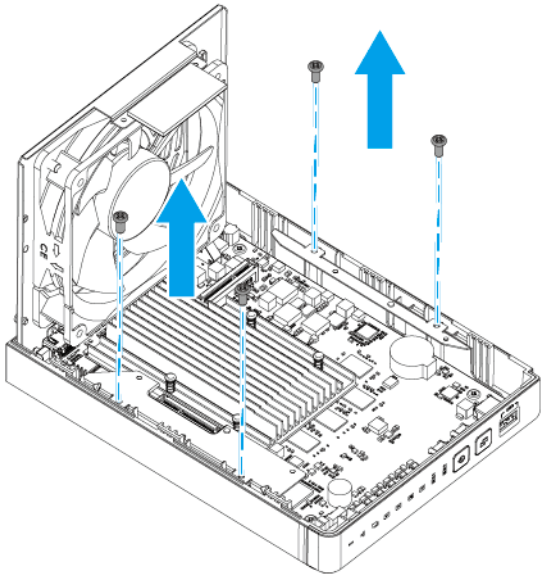


12. Remove the system board tray.

Note

The system board tray and the rear panel are connected as a single component.

a. Remove the screws that secure the tray to the left panel.

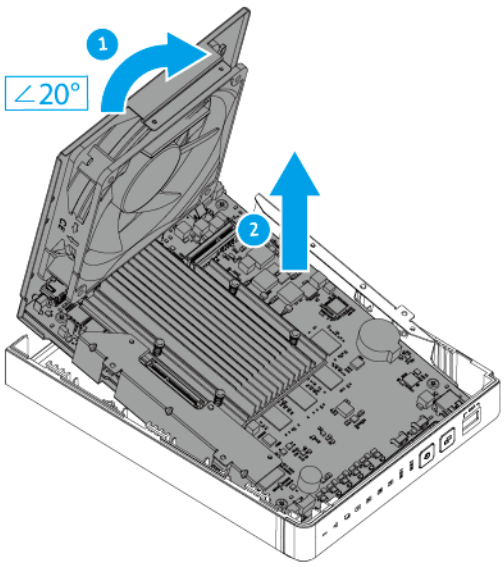


Note

- The pan head self-tapping D3x6 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

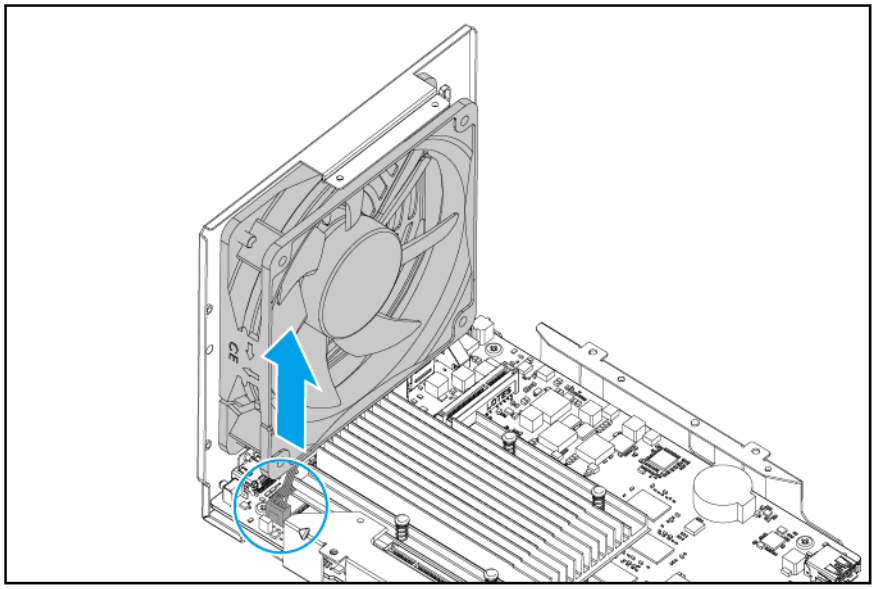
b. Tilt the rear end of the tray up by about 20 degrees.

c. Lift the tray out of the left panel.

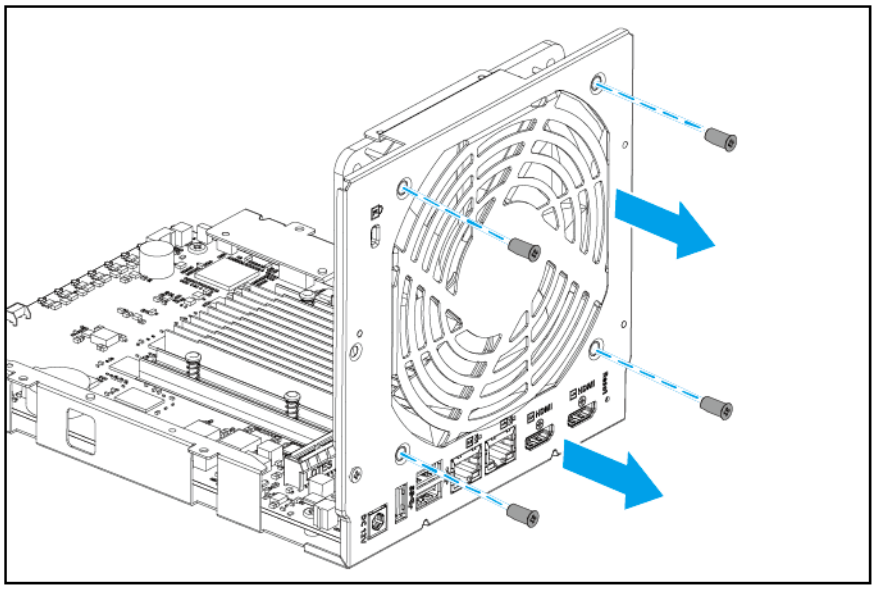


13. Remove the system fan.

a. Disconnect the fan cable from the system board.



b. Remove the screws that secure the fan to the tray.

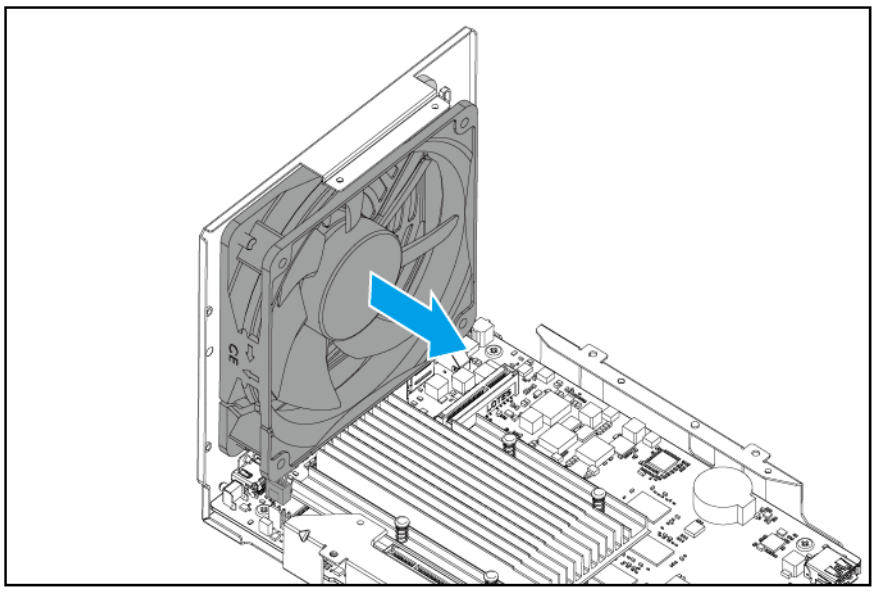


Note

- The flat head self-tapping M5x10 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

c. Remove the fan.

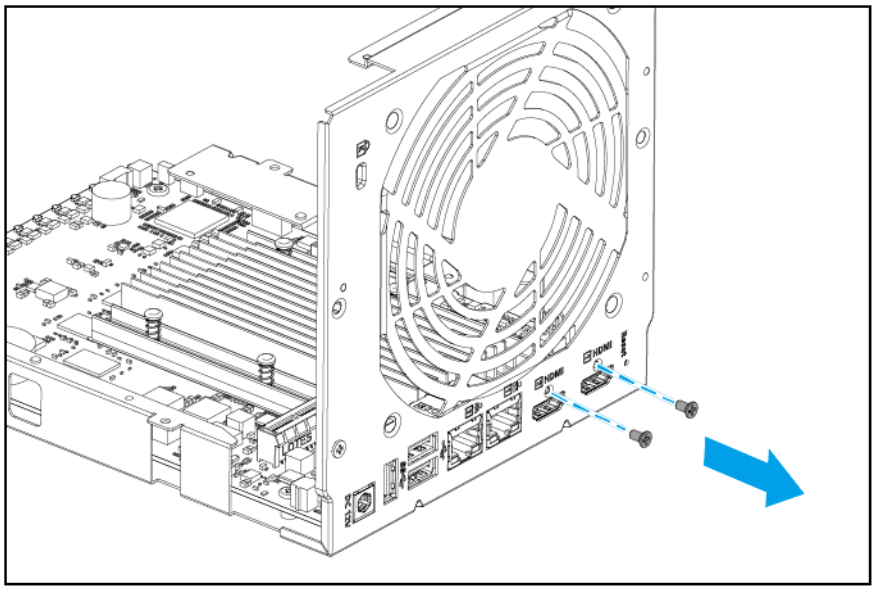
> **Important**
> Remember which side of the fan is attached. To ensure proper cooling, the correct side must be reattached so that the airflow is directed out of the rear panel. There may be an arrow on the side of the fan that indicates the airflow direction.



14. Remove the system board.

> **Warning**
> Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

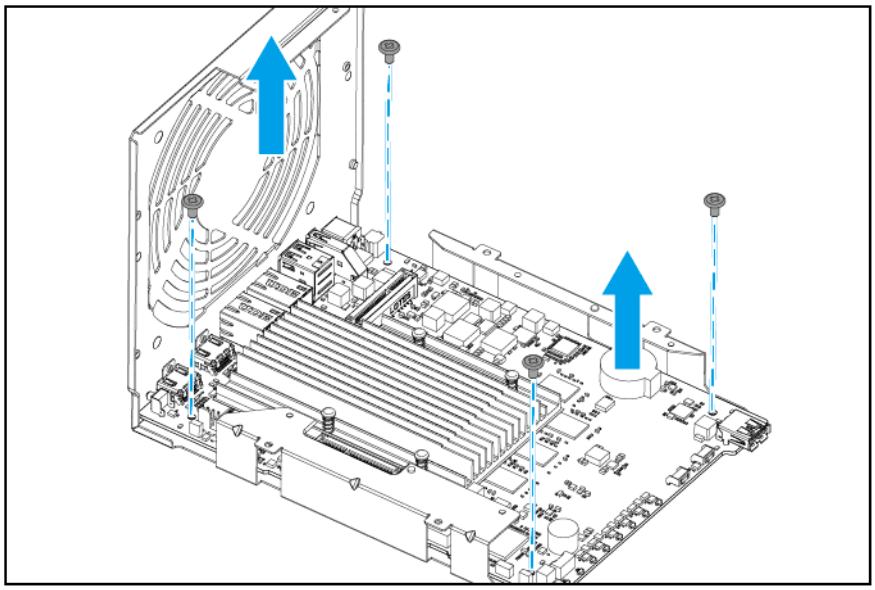
a. Remove the screws that secure the HDMI ports on the system board to the rear panel of the tray.



Note

- The flat head M2x4 screws require a Phillips #1 screwdriver.
- A torque of 2 kgf.cm (1.74 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Remove the screws that secure the system board to the tray.

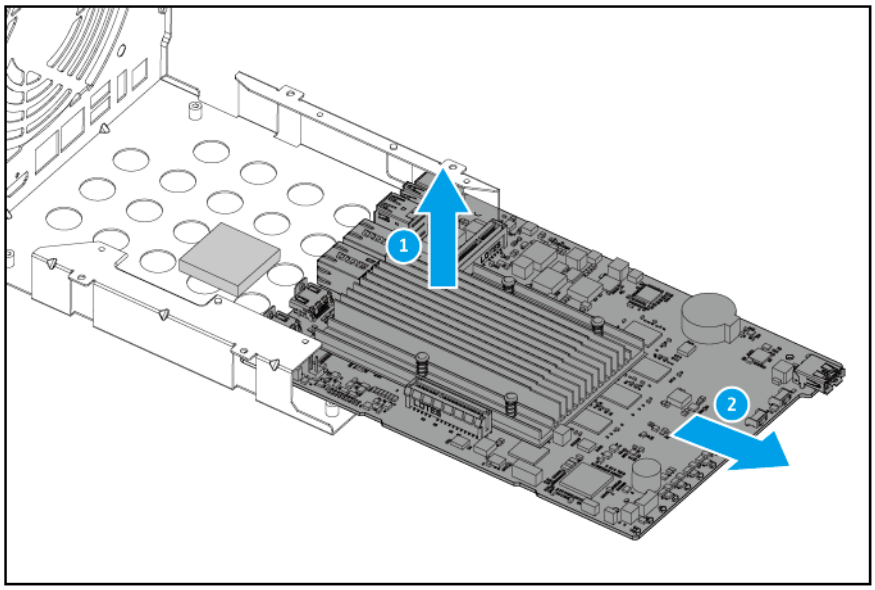


Note

- The pan head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

c. Lift the system board by approximately 3 mm.

d. Slide the system board out of the tray.



Reassembling the TS-453E

Before you start, make sure you read the Repair requirements.

Warning

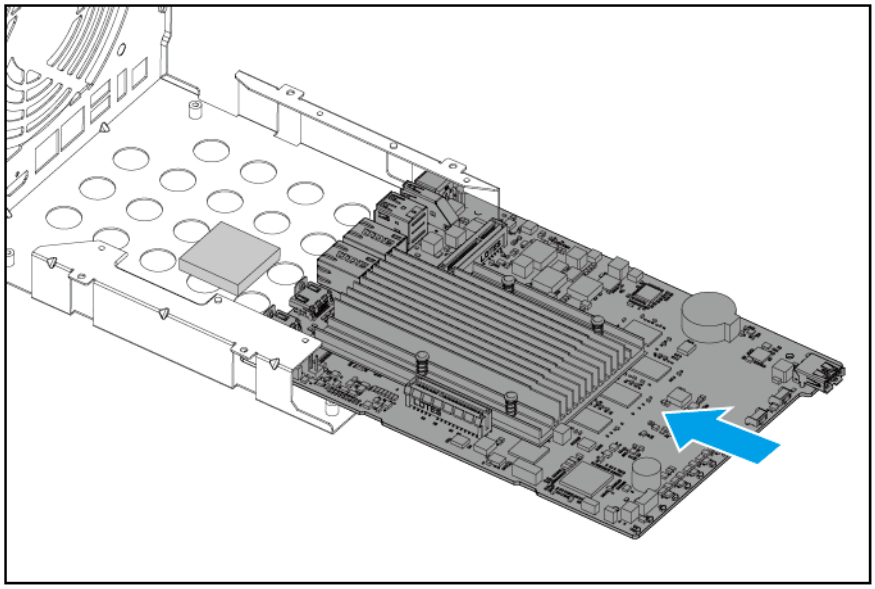
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.
- 
  Moving fan blades: Keep your hands and other body parts away from moving fan blades.
- 
  Other moving components: Keep your hands and other body parts away from other moving components.

1. Install the system board.

Warning

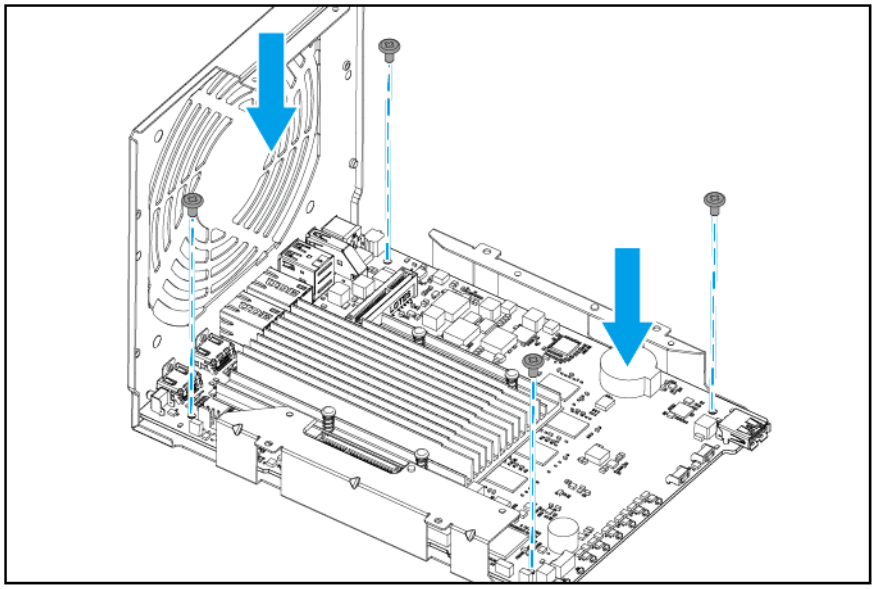
Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

a. Slide the system board into the system board tray.



b. Align the mounting holes on the system board to the screw holes on the tray.

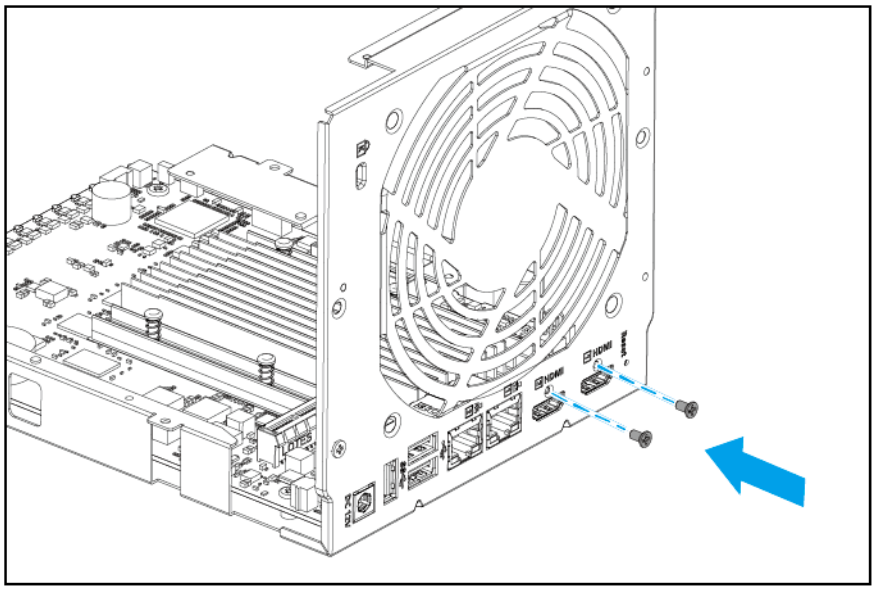
c. Attach the screws that secure the system board to the tray.



Note

- The pan head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

d. Attach the screws that secure the HDMI ports on the system board to the rear panel of the tray.



Note

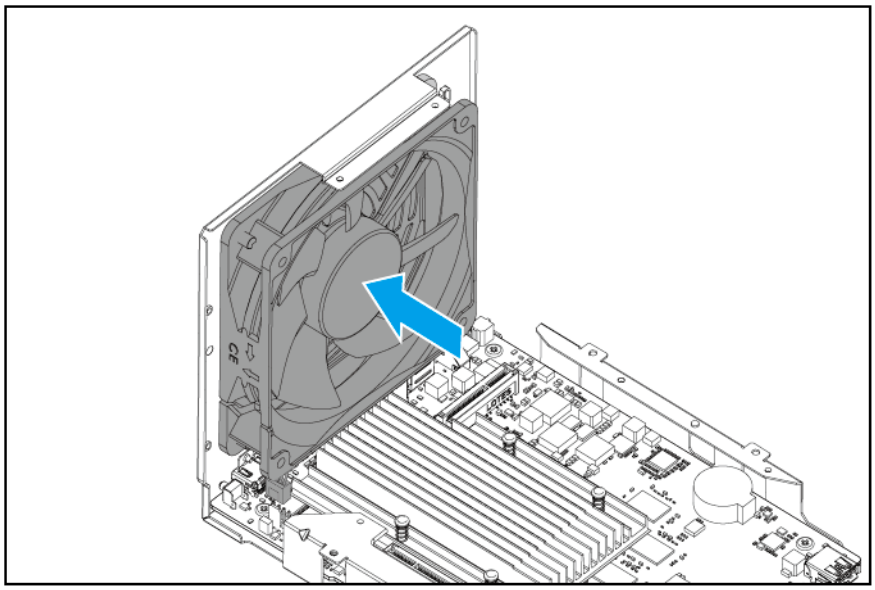
- The flat head M2x4 screws require a Phillips #1 screwdriver.
- A torque of 2 kgf.cm (1.74 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

2. Install the system fan.

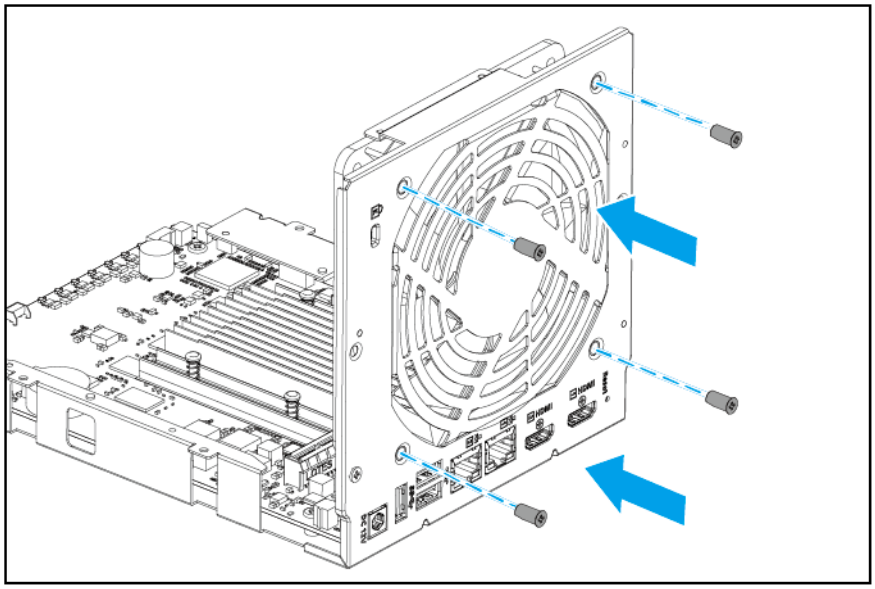
   a. Align the holes on the fan to the screw holes on the tray.

   Important

   To ensure proper cooling, the correct side of the fan must be reattached so that the airflow is directed out of the rear panel. There may be an arrow on the side of the fan that indicates the airflow direction.



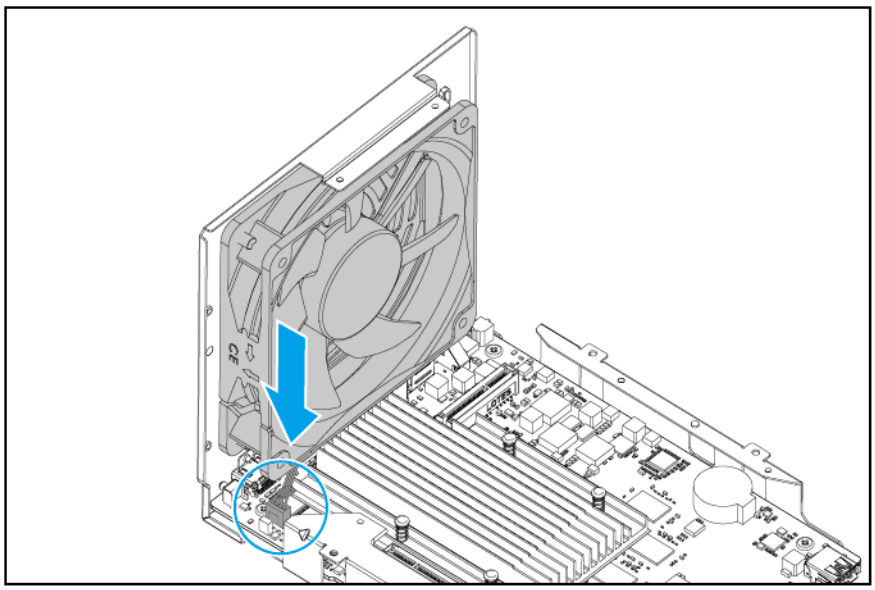
   b. Attach the screws that secure the fan to the tray.



Note

- The flat head self-tapping M5x10 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

c. Connect the fan cable to the system board.

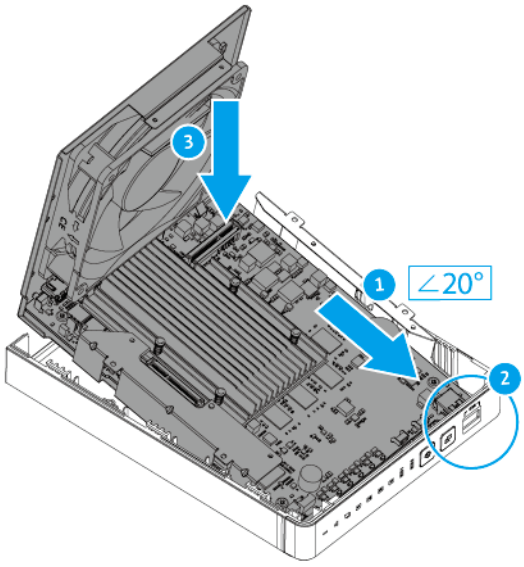


3. Attach the system board tray to the left panel.

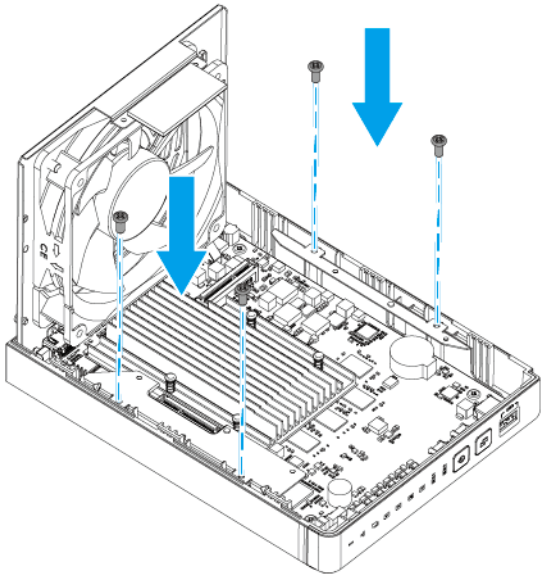
a. Insert the tray into the front of the left panel at an angle of around 20 degrees.

b. Ensure the USB port on the system board is inserted into the USB port hole on the left panel.

c. Place the tray fully into the left panel.



d. Attach the screws that secure the tray to the left panel.



Note

- The pan head self-tapping D3x6 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

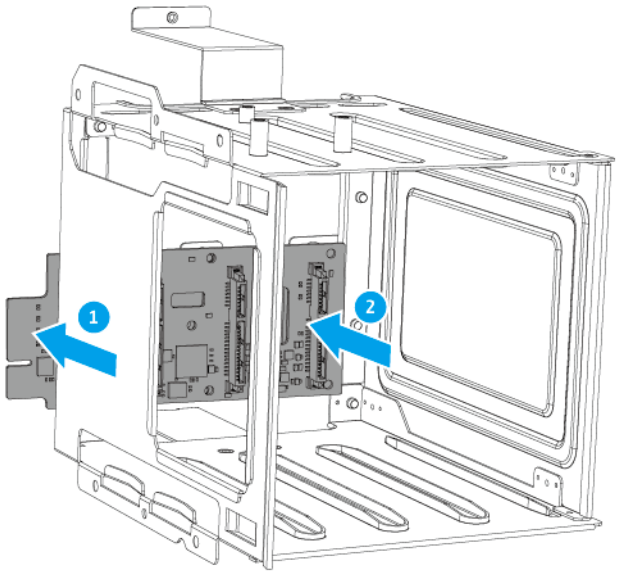
4. Attach the backplane to the drive cage.

Warning

Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

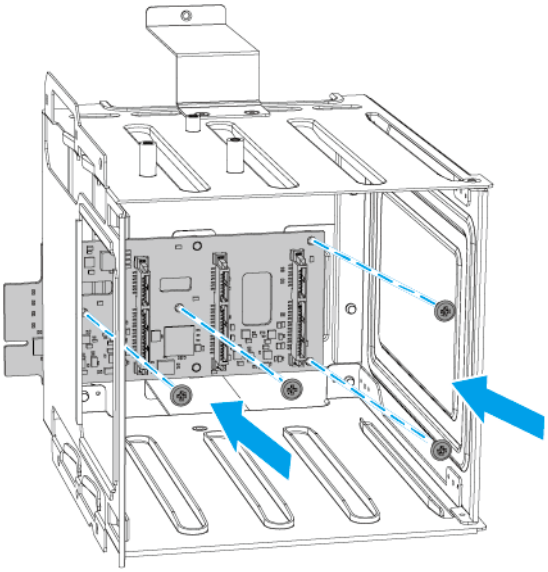
a. Carefully insert the connector end of the backplane into the hole at the back of the drive cage.

b. Align the holes on the backplane to the positioning posts and screw holes on the drive cage.



c. Place the backplane on the drive cage so that the positioning posts keep the backplane in place.

d. Attach the screws.



Note

- The pan head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

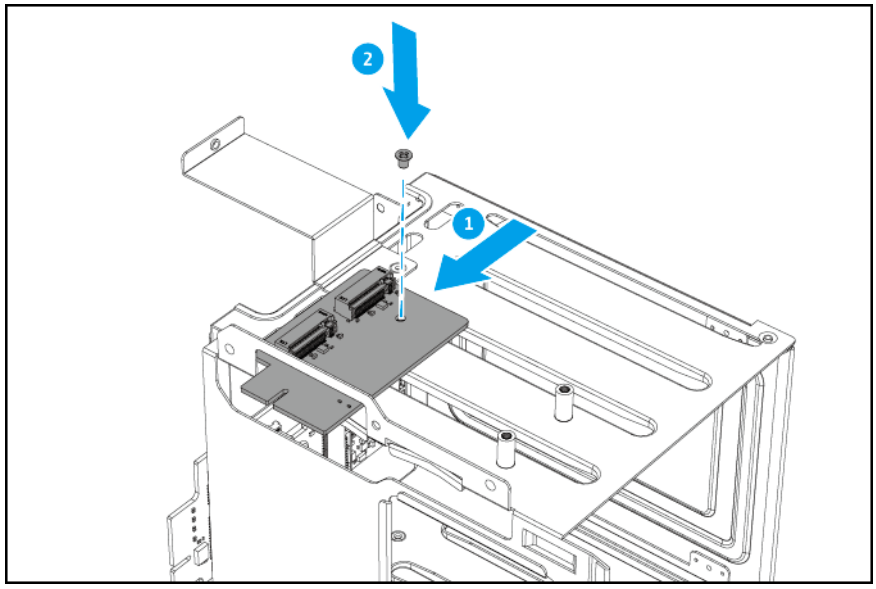
5. Attach the riser card to the drive cage.

> **Warning**
> Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

   a. Insert the connector end of the riser card into the hole on the drive cage.

   b. Align the hole on the riser card to the screw hole on the drive cage.

   c. Attach the screw.

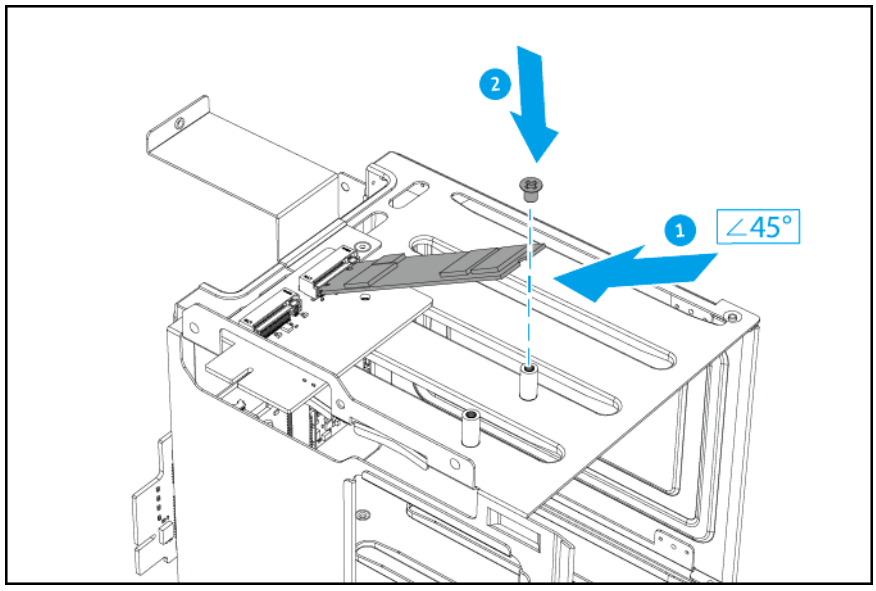


> **Note**
> - The pan head M3x5 screw requires a Phillips #2 screwdriver.
> - A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

6. Optional: Install M.2 SSDs on the riser card.

   a. Insert the M.2 SSD into the slot.

b. Attach the screw.



Note

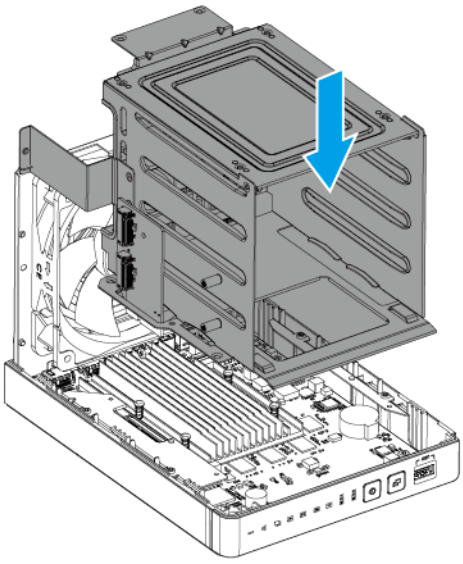
- The pan head M2.5x3 screw requires a Phillips #2 screwdriver.
- A torque of 3 kgf.cm (2.60 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

c. Optional: Install an additional M.2 SSD.

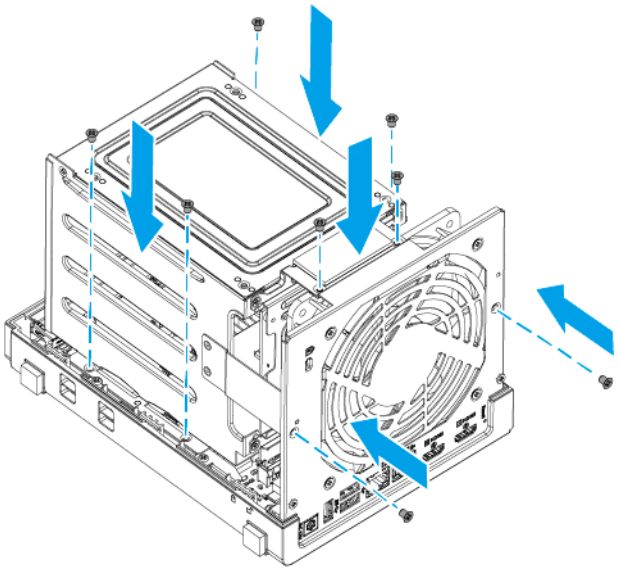
7. Attach the drive cage.

a. Align the connectors on the riser card and backplane to the slots on the system board.

b. Firmly push down on the drive cage so that the connectors are inserted into the slots.



c. Attach the screws to secure the drive cage.



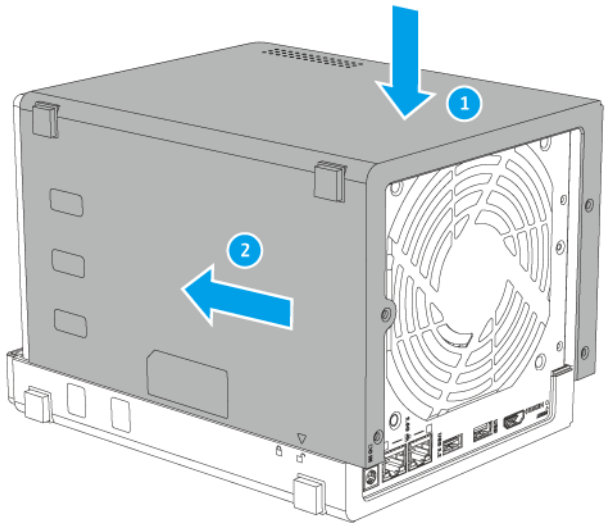
Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

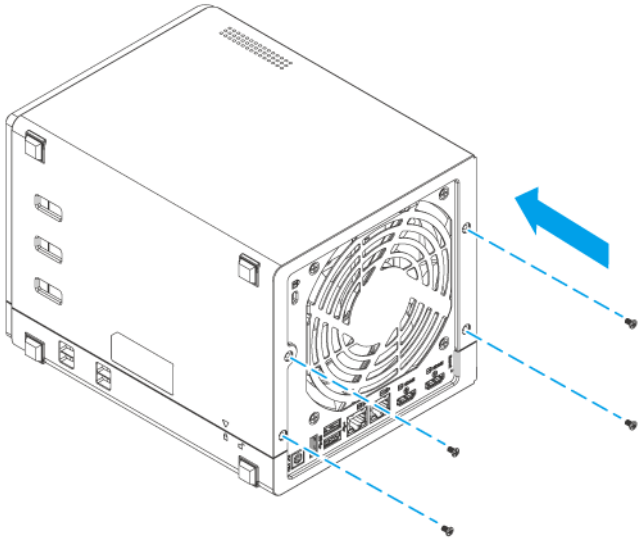
8. Attach the case cover.

a. Place the cover on the device.

b. Slide the cover forward.



c. Attach the screws that secure the case cover to the rear panel.



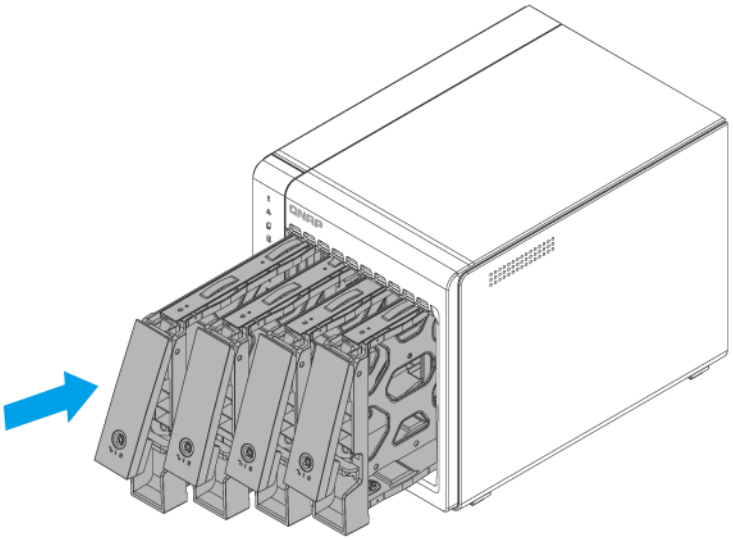
Note

- The pan head M3x5 screws require a Phillips #1 screwdriver.
- A torque of 2.75 kgf.cm (2.39 lbf.in) ± 0.25 kgf.cm (0.22 lbf.in) is recommended for electric screwdrivers.

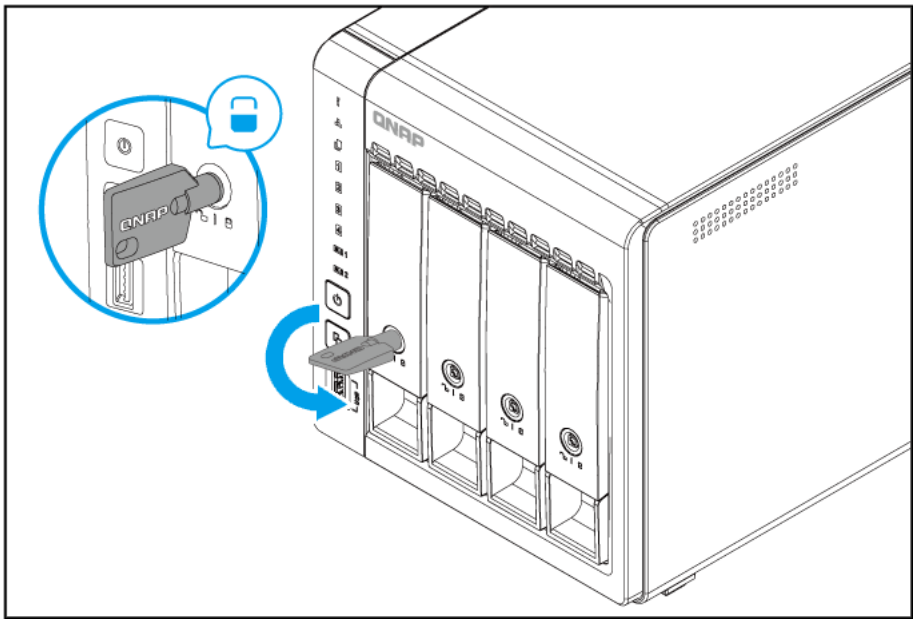
d. Place the NAS in its normal upright position.

9. Slide each drive tray back into the NAS.

Important
Each drive must be returned to their original bay.



10. Optional: Lock the trays.



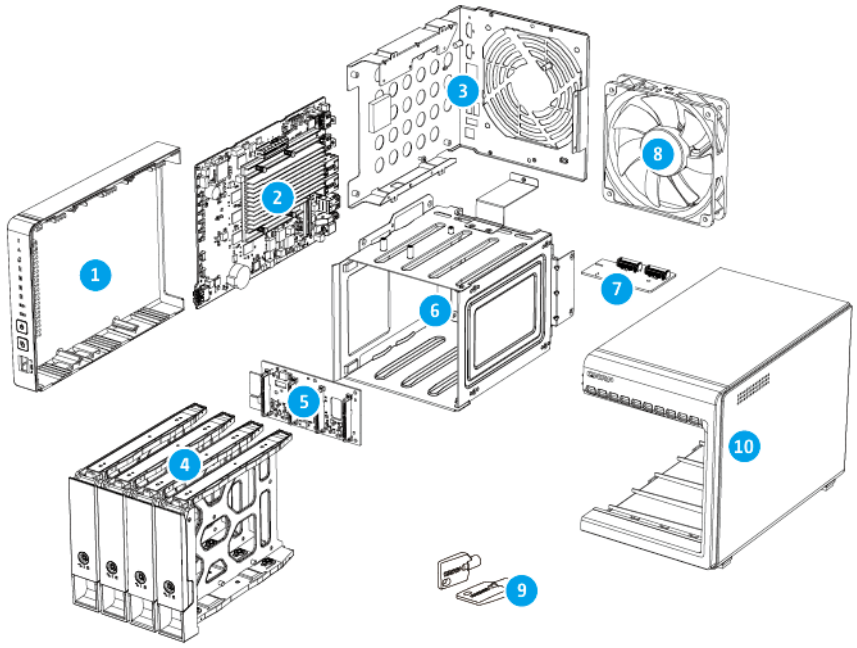
TS-453E components and screws

Note

The information presented here apply only to the representative model of the NAS category. While all models within a NAS category have the same general structural design, their components and screws may differ in size, quantity, and other specifications.

Important

Recommended torque values are provided for electric screwdrivers. To avoid damage to the screw or component, the actual torque setting should not exceed ± 0.5 kgf.cm (0.43 lbf.in) of the recommended value, unless specified otherwise.



No.	Component (Quantity)	Screw Type (Quantity)	Screwdriver (Torque)	Attached To
1	Left panel (1)	-	-	-
2	System board (1)	Pan head M3x5 (4)	Phillips #2 (7 kgf.cm / 6.08 lbf.in)	System board tray
-	HDMI ports on system board (2)	Flat head M2x4 (2)	Phillips #1 (2 kgf.cm / 1.74 lbf.in)	System board tray (Rear panel)

No.	Component (Quantity)	Screw Type (Quantity)	Screwdriver (Torque)	Attached To
3	System board tray (1)	Pan head Self-tapping D3x6 (4)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Left panel
4	Drive tray (3.5-inch) (4)	-	-	-
5	Backplane (1)	Pan head M3x5 (4)	Phillips #2 (7 kgf.cm / 6.08 lbf.in)	Drive cage
6	Drive cage (1)	Flat head M3x4 (8)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	System board tray
7	Riser card (1)	Pan head M3x5 (1)	Phillips #2 (7 kgf.cm / 6.08 lbf.in)	Drive cage
8	System fan (1)	Flat head Self-tapping M5x10 (4)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	System board tray (Rear panel)
9	Drive tray key (2)	-	-	-
10	Case cover (1)	Pan head M3x5 (4)	Phillips #1 (2.75 kgf.cm / 2.39 lbf.in) **Important** To avoid damage to these screws, the torque setting should not exceed ± 0.25 kgf.cm (0.22 lbf.in) of the recommended value.	System board tray (Rear panel)

Optional Components

These components are not included with the original NAS but may be installed by the user.

Component (Quantity)	Screw Type (Quantity)	Screwdriver (Torque)	Attached To
M.2 SSD (2 maximum, not included with original NAS)	Pan head M2.5x3 (2, included with original NAS)	Phillips #2 (3 kgf.cm / 2.60 lbf.in)	Inserted into slot on riser card, and then secured to the drive cage with a screw.

4. Category B NAS Models

This chapter uses the TS-AI642 as the representative NAS model for category B. The disassembly and reassembly instructions, list of components and screws, and list of replacement parts are based on the representative model.

For details on category B NAS models, see NAS model categorization.

Note

While all NAS models in the same category share the same general structural design, different models may have certain differences in their parts and components in terms of size, quantity, and other specifications. For non-representative models in this category, please use the following topics as a point of reference.

Disassembling the TS-AI642

Before you start, make sure you read the Repair requirements.

Warning

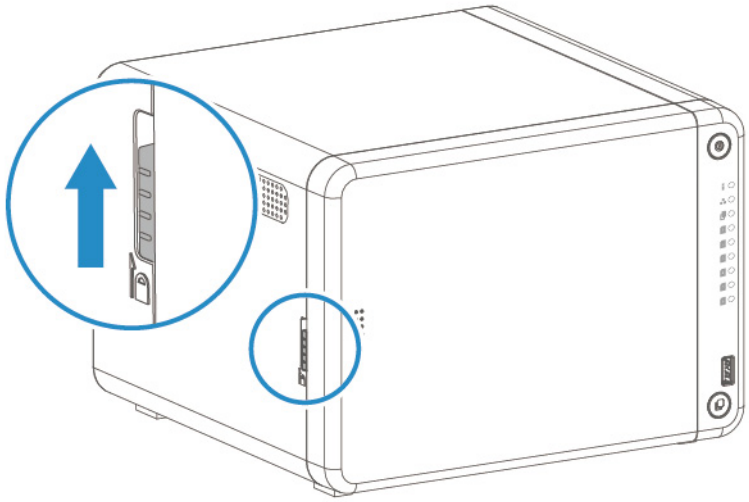
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.
- 

  Moving fan blades: Keep your hands and other body parts away from moving fan blades.
- 

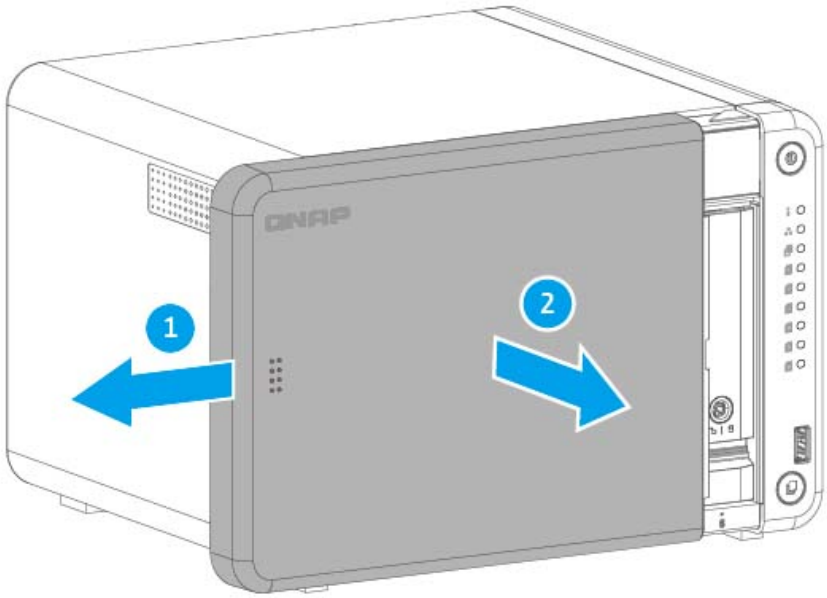
  Other moving components: Keep your hands and other body parts away from other moving components.

1. Power off the NAS.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove the front cover.
   a. Locate the locking mechanism on the left side of the device.

b. Slide the lock up to release the front cover.

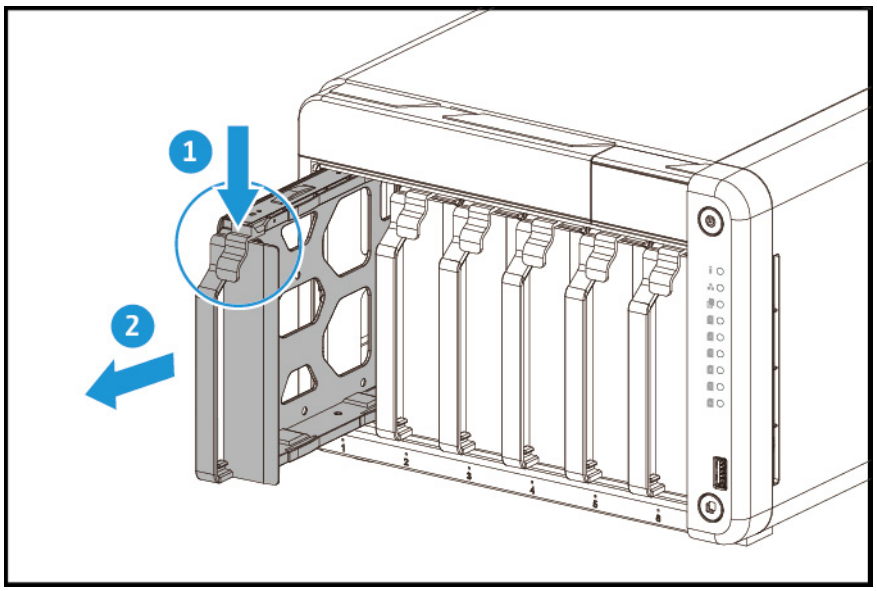


c. Slide the front cover to the left and then pull.



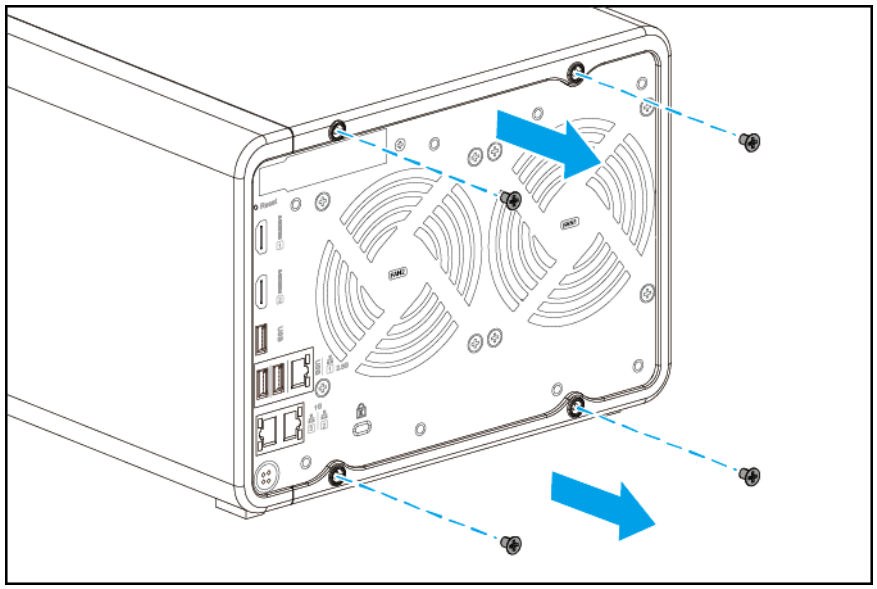
5. Remove all drive trays.

> **Important**
> Remember the number of each drive. Each drive will need to be returned to their original bay.



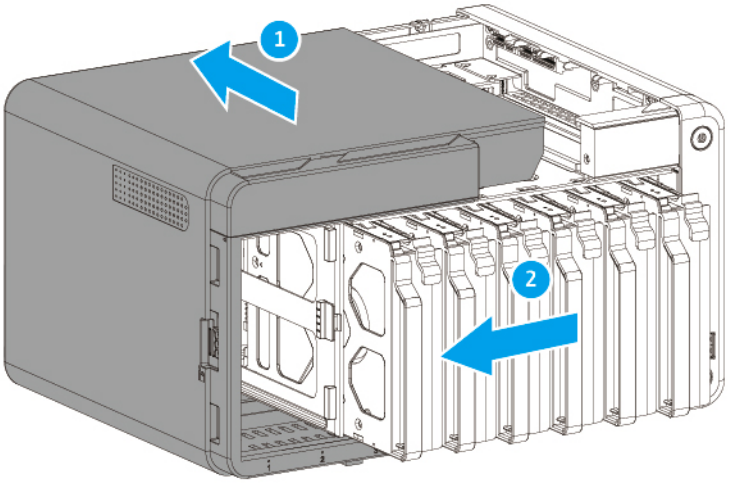
6. Remove the case cover.

   a. Remove the screws that secure the case cover to the chassis.



   b. Slide the case cover back.

c. Slide the case cover to the left to detach it from the chassis.

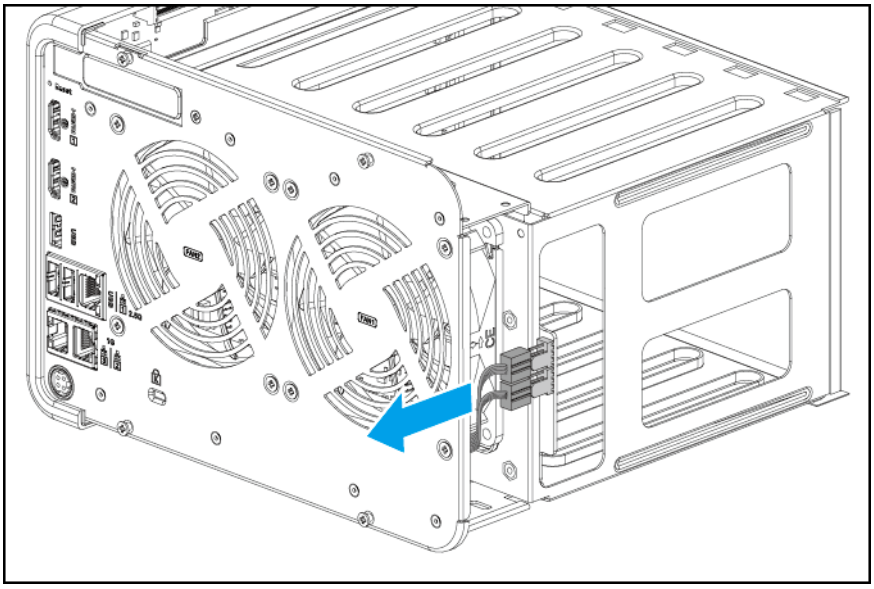


Note

- The pan head M3x5 screws require a Phillips #1 screwdriver.
- A torque of 2.75 kgf.cm (2.39 lbf.in) ± 0.25 kgf.cm (0.22 lbf.in) is recommended for electric screwdrivers.

7. Remove the system fan.

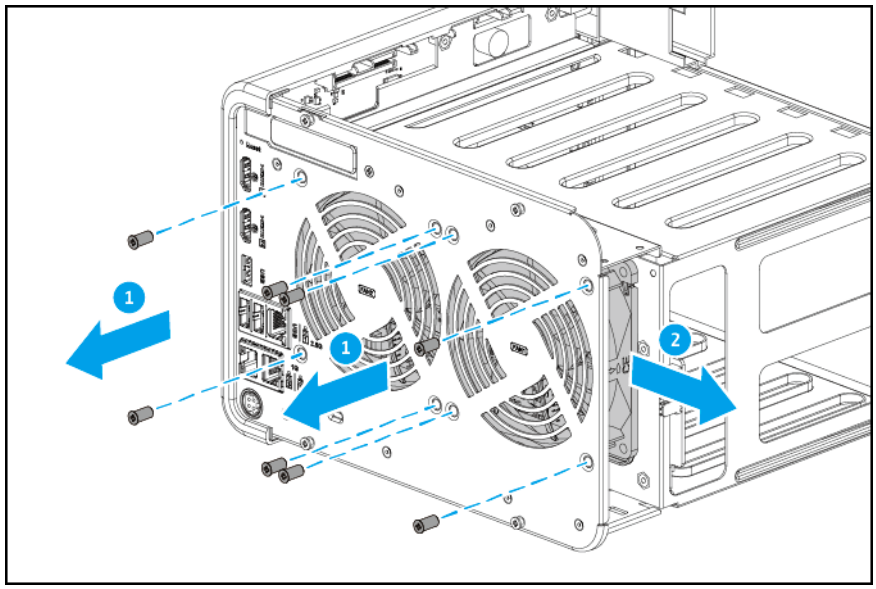
a. Disconnect the fan cable from the system board.



b. Remove the screws that secure the fan to the tray.

c. Remove the fan.

> **Important**
> Remember which side of the fan is attached. To ensure proper cooling, the correct side must be reattached so that the airflow is directed out of the rear panel. There may be an arrow on the side of the fan that indicates the airflow direction.

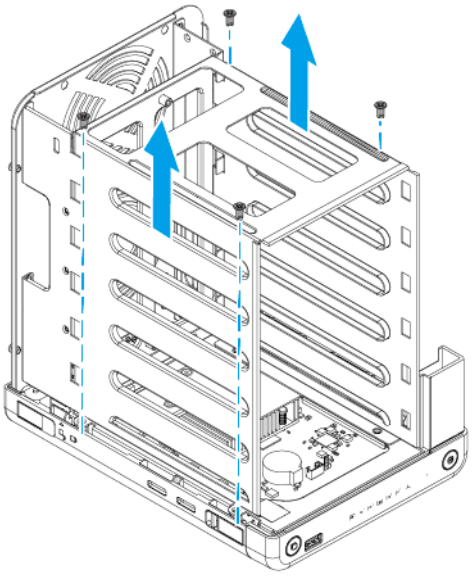


> **Note**
> - The flat head self-tapping M5x10 screws require a Phillips #2 screwdriver.
> - A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

8. Remove the drive cage.

a. Position the NAS on its right side.

b. Remove the screws that secure the drive cage to the system board.

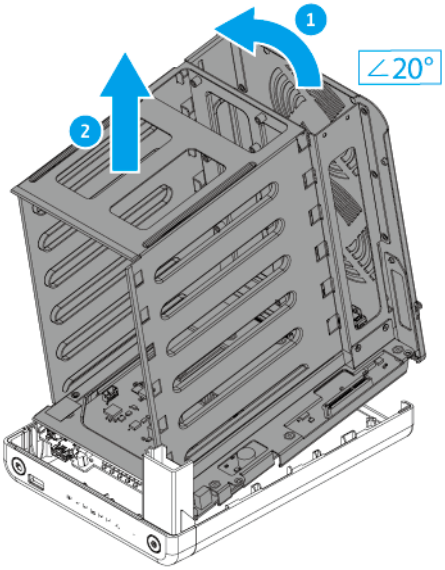


Note

- The flat head D3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

c. Tilt the rear end of the tray up by about 20 degrees.

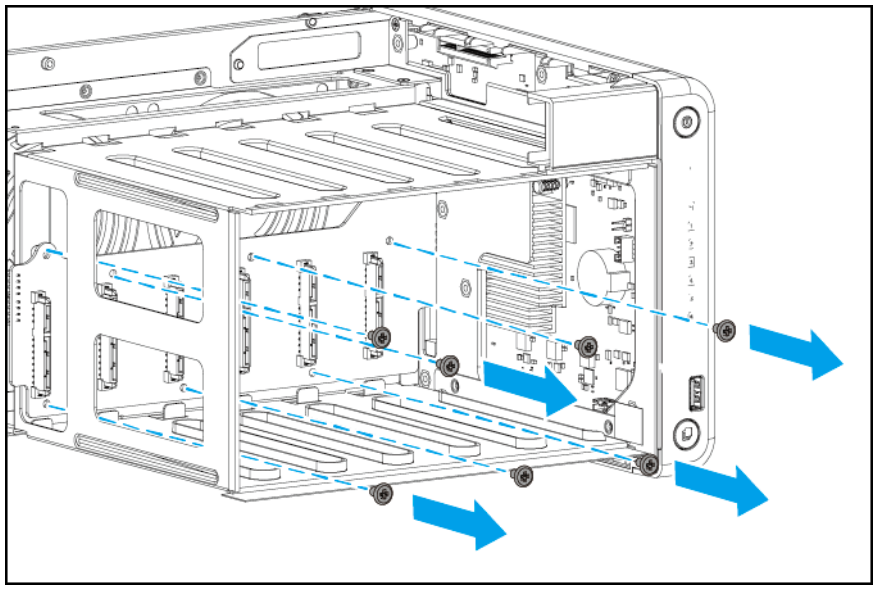
d. Lift the tray out of the chassis base.



9. Remove the drive backplane.

> **Warning**
> Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

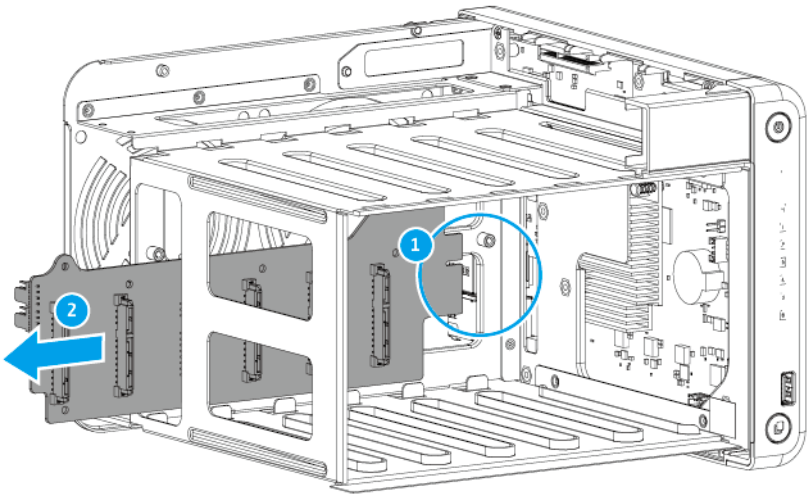
a. Remove the screws that secure the backplane to the drive cage.



> **Note**
>
> - The pan head M3x5 screws require a Phillips #2 screwdriver.
> - A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Lightly push back the connector end of the backplane so that the other end of the backplane is lifted off of the drive cage surface.

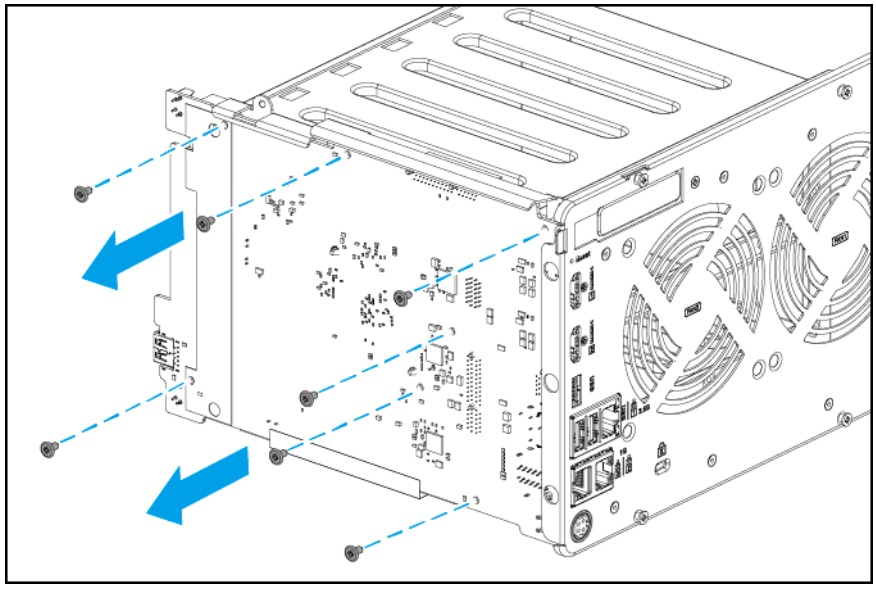
c. Carefully remove the backplane from the drive cage.



10. Remove the system board.

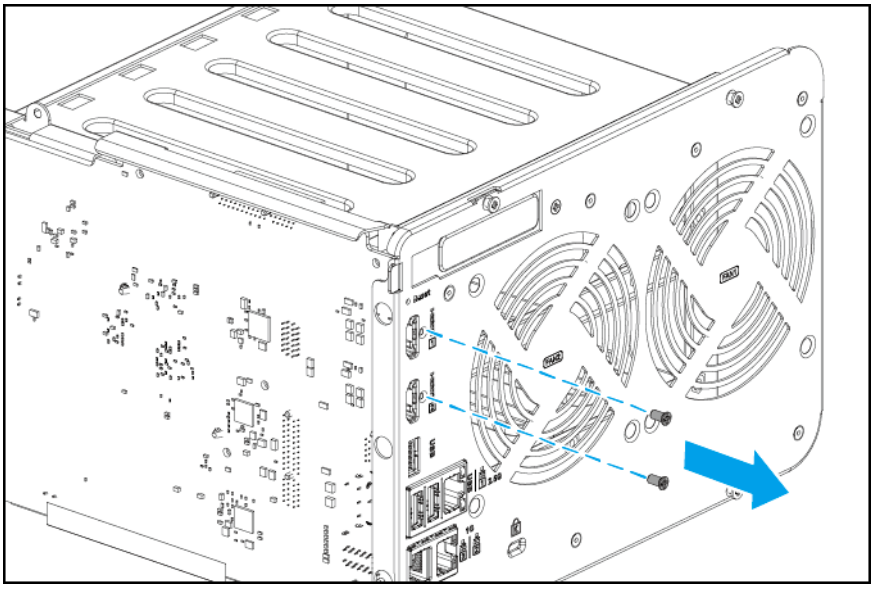
> **Note**
> The system board tray and the rear panel are connected as a single component.

a. Remove the screws that secure the tray to the chassis base.



> **Note**
>
> - The pan head self-tapping M3x5 screws require a Phillips #2 screwdriver.
> - A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

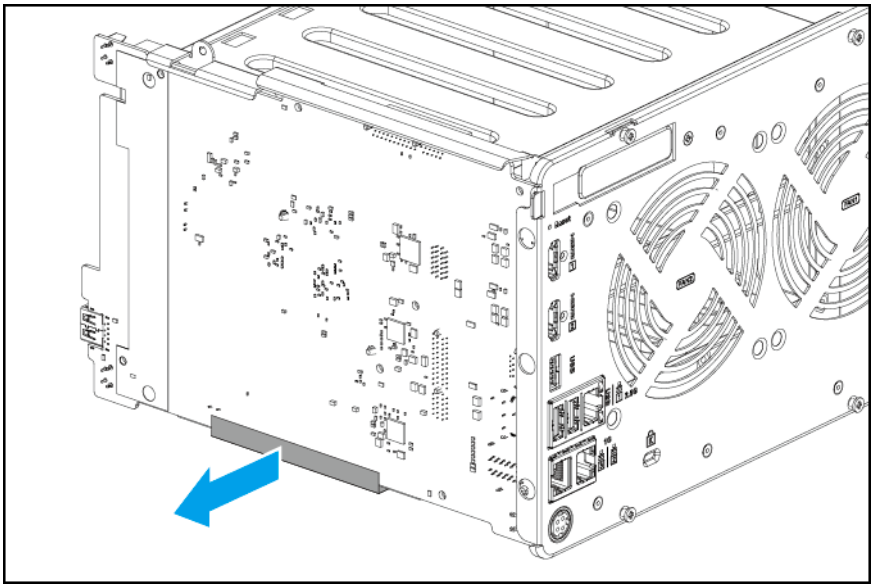
b. Remove the screws that secure the HDMI ports on the system board to the rear panel of the tray.



Note

- The pan head self-tapping M2x4 screws require a Phillips #1 screwdriver.
- A torque of 2 kgf.cm (1.74 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

c. Remove the mylar.

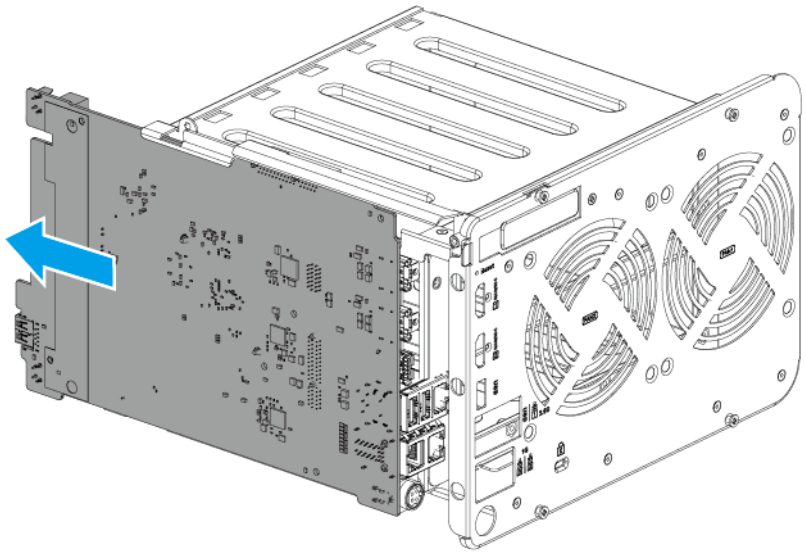


11. Remove the system board.

> **Warning**
> Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

a. Carefully pull out the system board from the chassis.

b. Slide the system board out.



> **Note**
>
> - The flat head M2x4 screws require a Phillips #1 screwdriver.
> - A torque of 2 kgf.cm (1.74 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

Reassembling the TS-AI642

Before you start, make sure you read the Repair requirements.

Warning

- Observe electrostatic discharge (ESD) procedures to avoid damage to components.
- 

  Moving fan blades: Keep your hands and other body parts away from moving fan blades.
- 

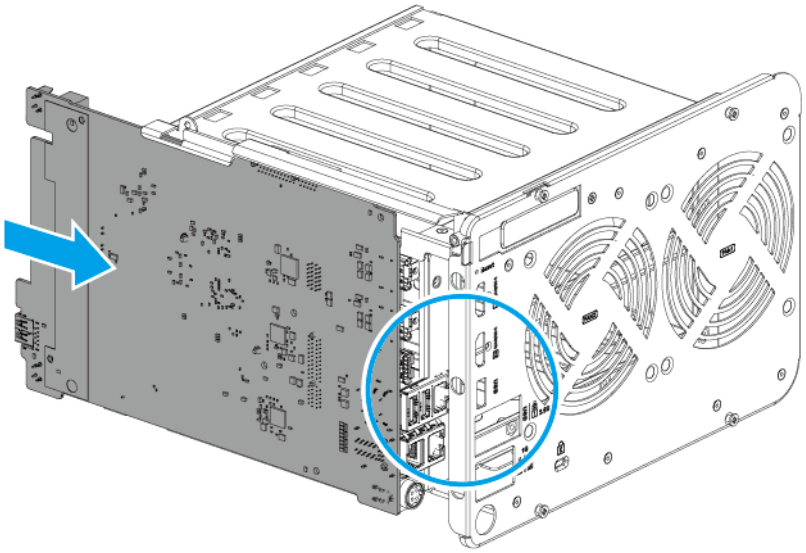
  Other moving components: Keep your hands and other body parts away from other moving components.

1. Install the system board.

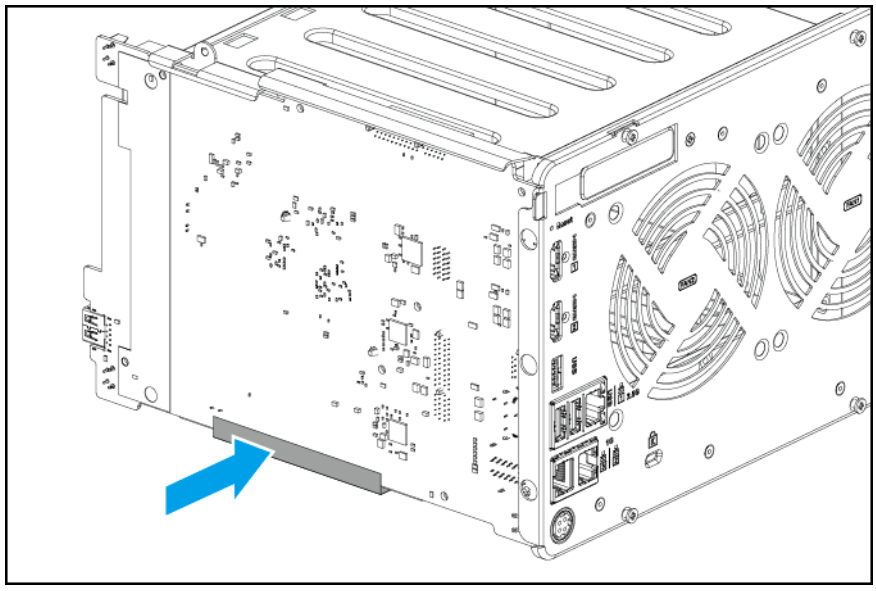
   Warning

   Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

   a. Slide the system board into the chassis.

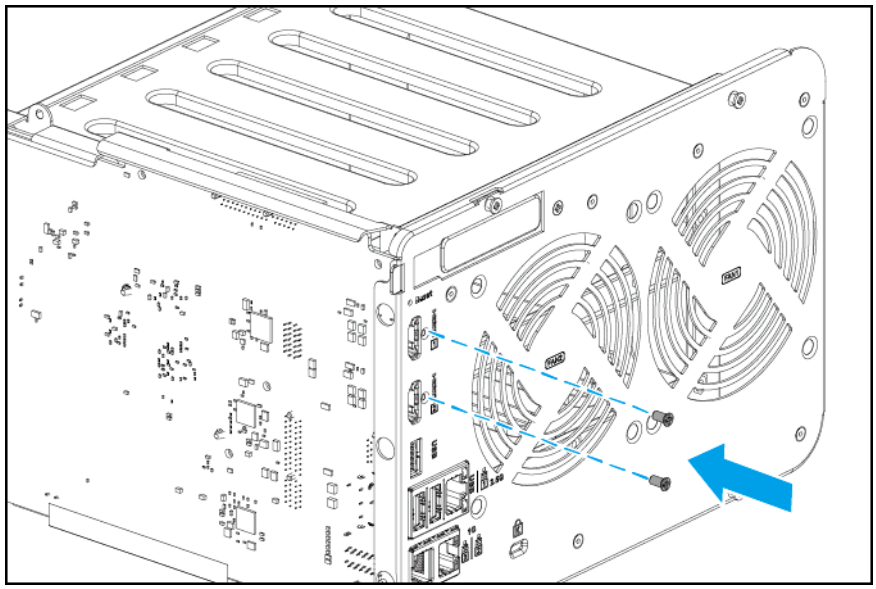


b. Attach the mylar.



c. Align the mounting holes on the system board to the screw holes on the tray.

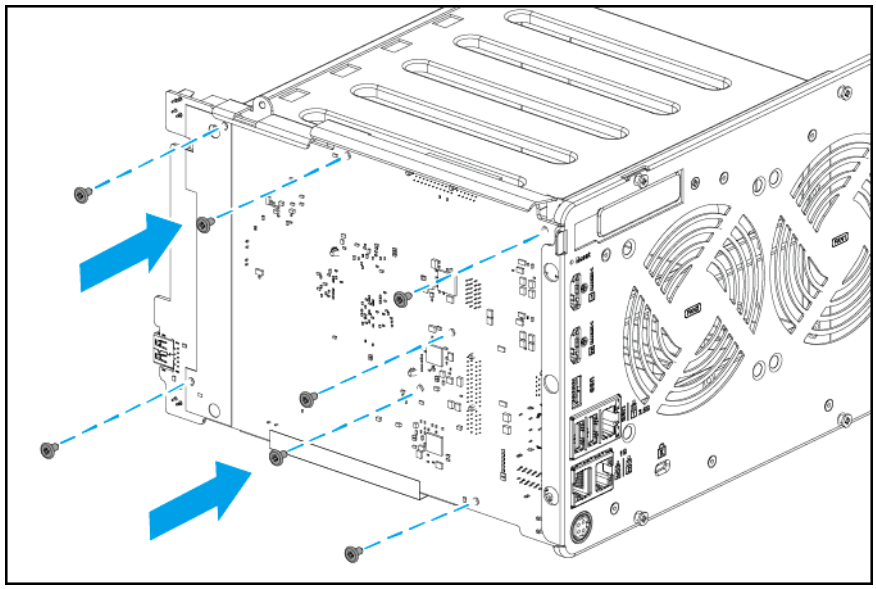
d. Attach the screws that secure the HDMI ports on the system board to the rear panel of the tray.



Note

- The pan head self-tapping M2x4 screws require a Phillips #1 screwdriver.
- A torque of 2 kgf.cm (1.74 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

e. Attach the screws that secure the system board to the tray.



Note

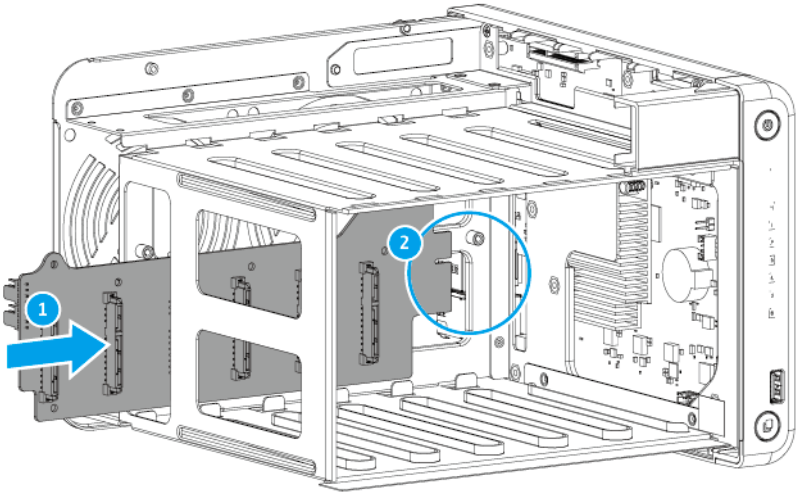
- The flat head M2x4 screws require a Phillips #1 screwdriver.
- A torque of 2 kgf.cm (1.74 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

2. Attach the backplane to the drive cage.

Warning

Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

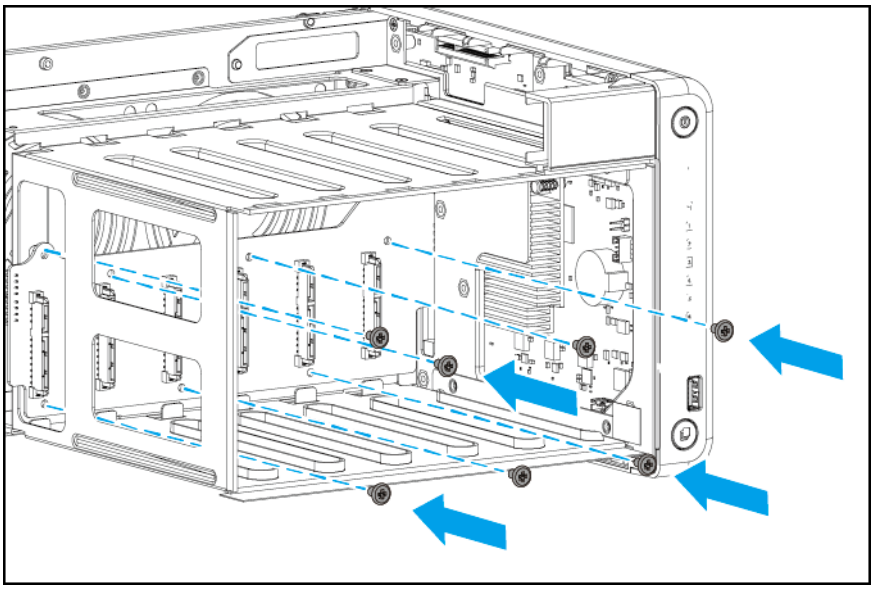
a. Carefully insert the connector end of the backplane into the hole at the back of the drive cage.



b. Align the holes on the backplane to the positioning posts and screw holes on the drive cage.

c. Place the backplane on the drive cage so that the positioning posts keep the backplane in place.

d. Attach the screws.



Note

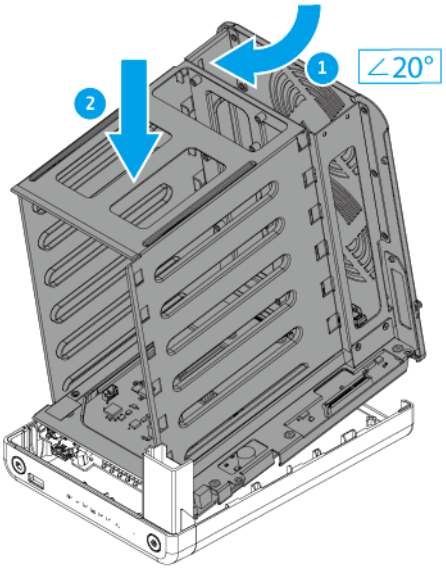
- The pan head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

3. Attach the system board tray to the chassis base.

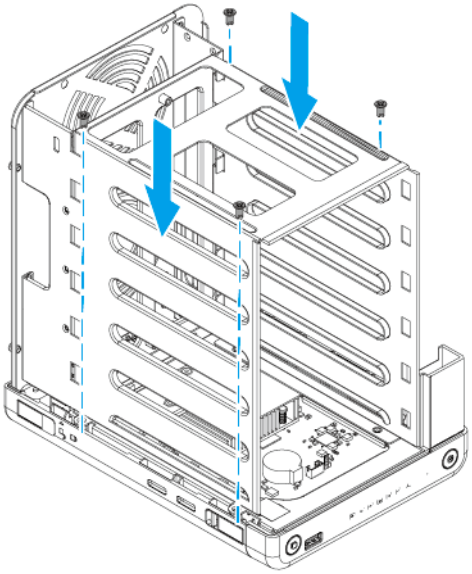
   a. Insert the tray into the front of the chassis base at an angle of around 20 degrees.

   b. Ensure the USB port on the system board is inserted into the USB port hole on the chassis base.

   c. Place the tray fully into the chassis base.



   d. Attach the screws that secure the tray to the chassis base.



Note

- The flat head D3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

4. Install the system fan.

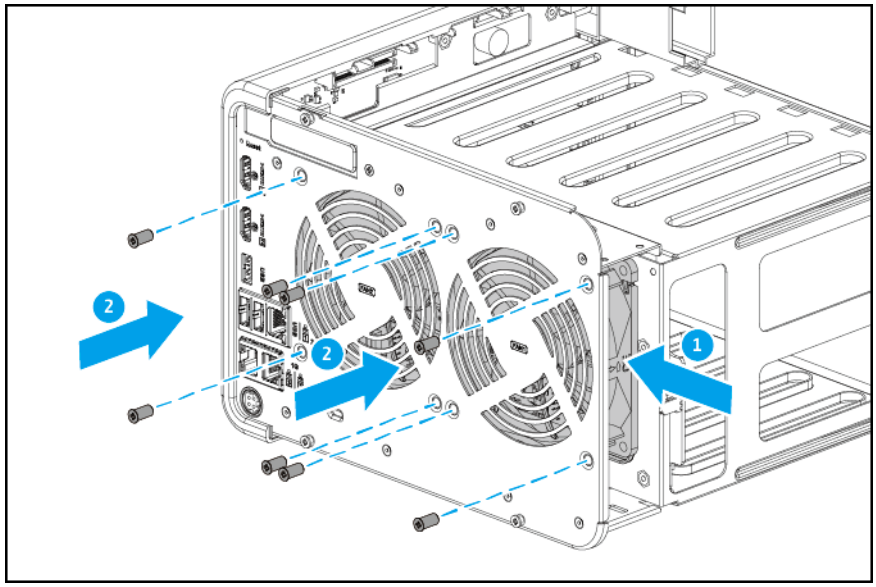
   a. Place the NAS in its normal upright position.

   b. Align the holes on the fan to the screw holes on the tray.

   Important

   To ensure proper cooling, the correct side of the fan must be reattached so that the airflow is directed out of the rear panel. There may be an arrow on the side of the fan that indicates the airflow direction.

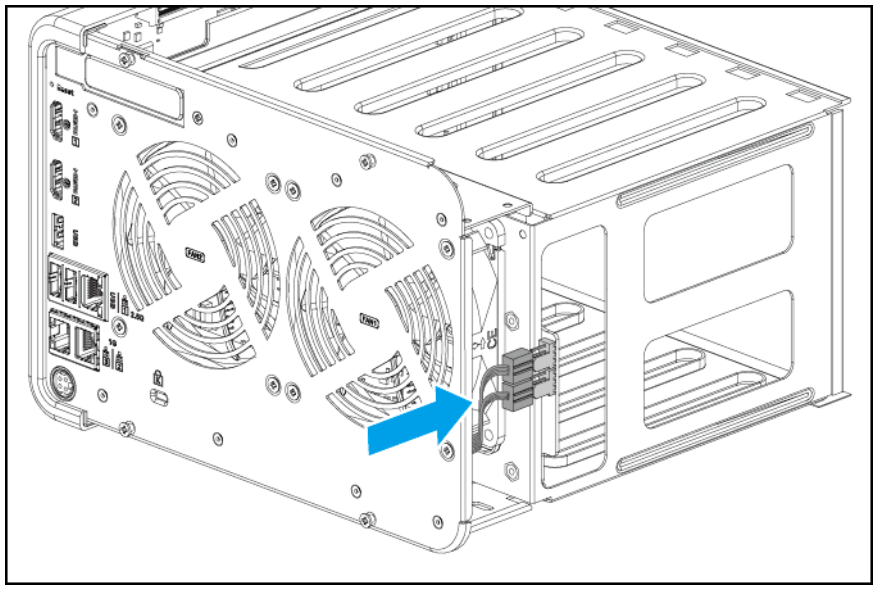
   c. Attach the screws that secure the fan to the tray.



Note

- The flat head self-tapping M5x10 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

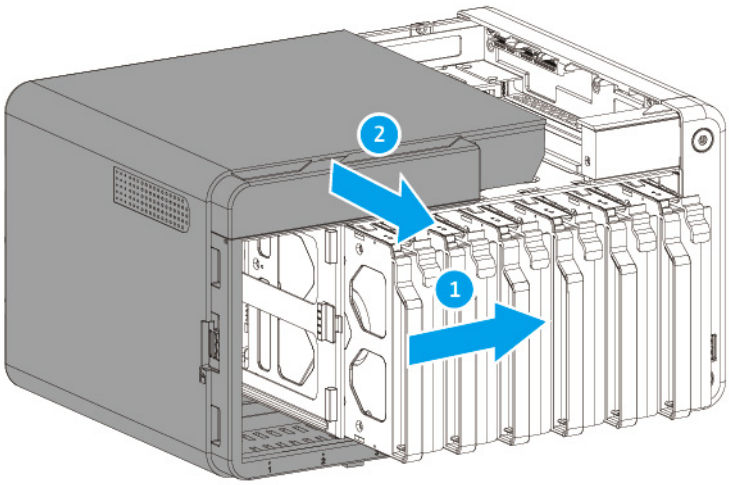
d. Connect the fan cable to the system board.



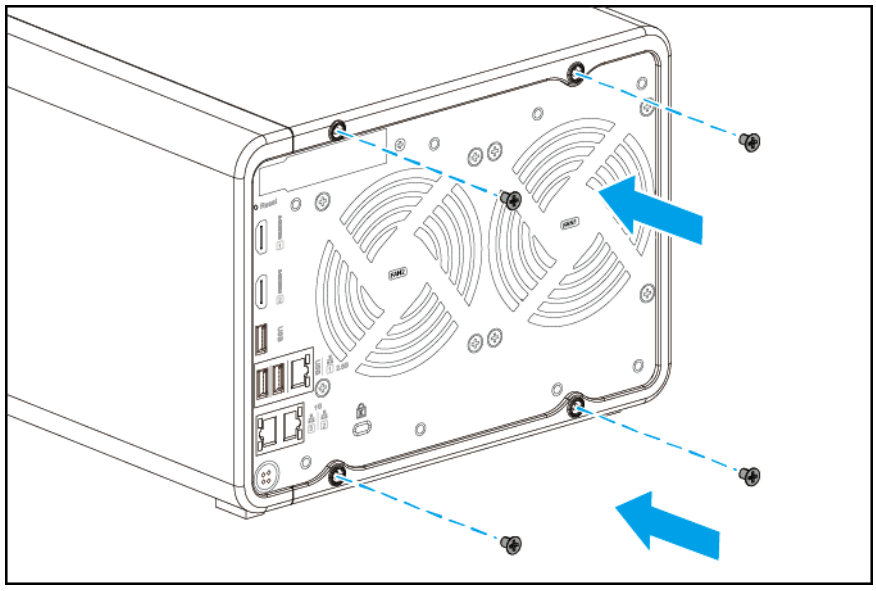
5. Attach the case cover.

a. Place the cover on the device.

b. Slide the cover forward.



c. Attach the screws that secure the case cover to the rear panel.

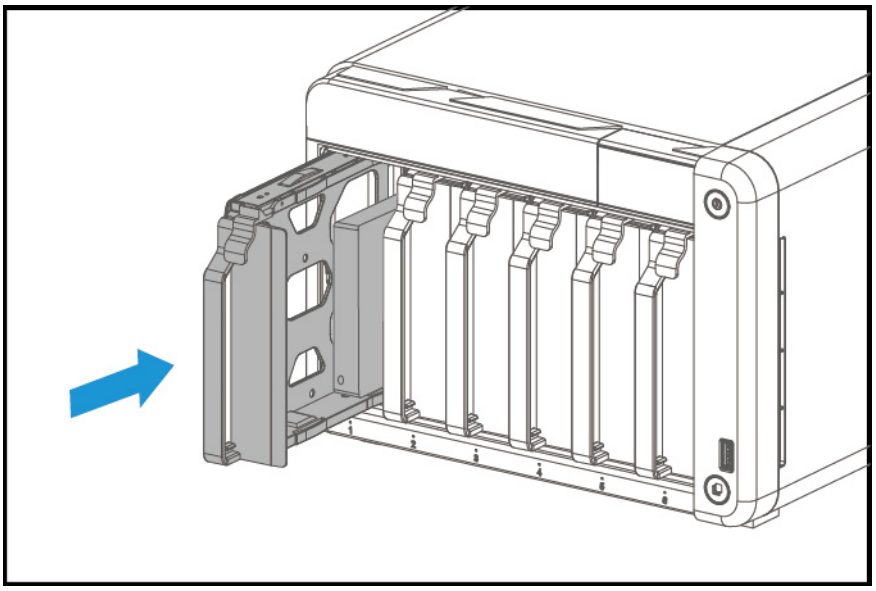


Note

- The pan head M3x5 screws require a Phillips #1 screwdriver.
- A torque of 2.75 kgf.cm (2.39 lbf.in) ± 0.25 kgf.cm (0.22 lbf.in) is recommended for electric screwdrivers.

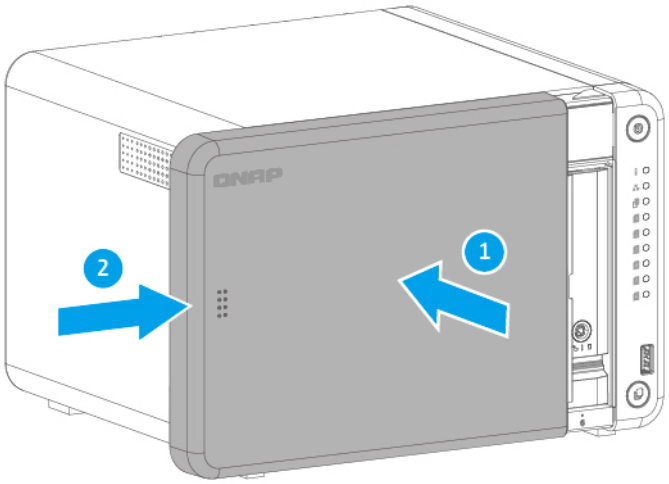
6. Slide each drive tray back into the NAS.

> **Important**
> Each drive must be returned to their original bay.

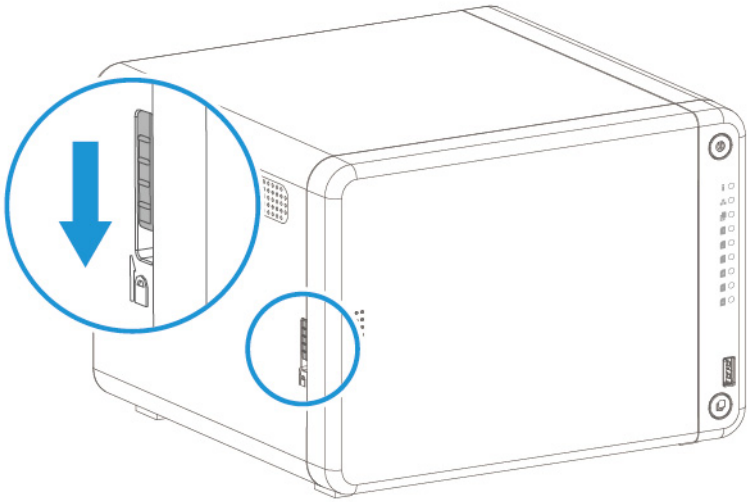


7. Attach the front cover.

   a. Align the front cover with the grooves on the case and then slide to the right.



b. Slide the lock down to secure the front cover.



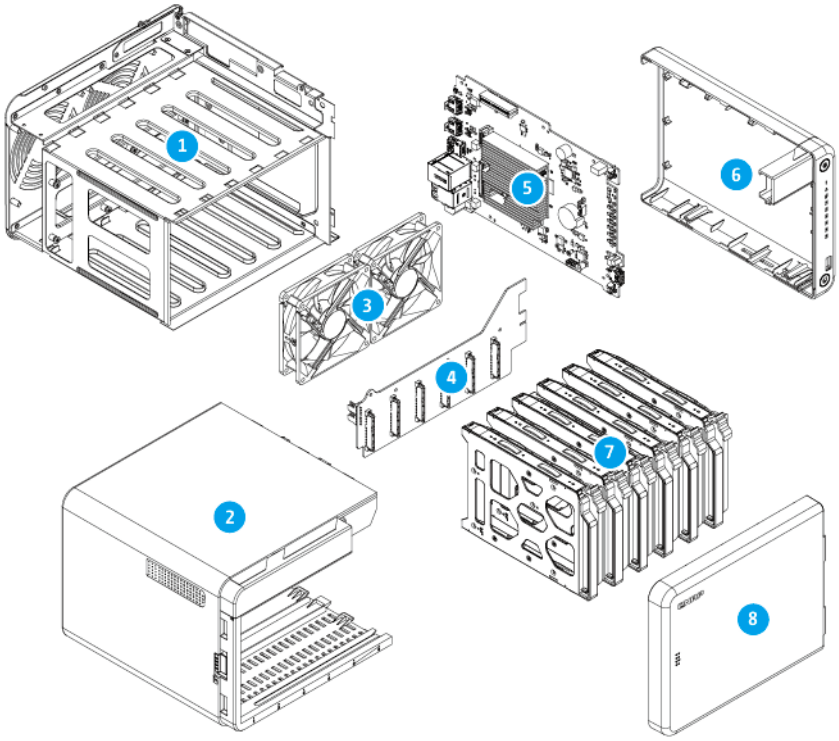
TS-AI642 components and screws

Note

The information presented here apply only to the representative model of the NAS category. While all models within a NAS category have the same general structural design, their components and screws may differ in size, quantity, and other specifications.

Important

Recommended torque values are provided for electric screwdrivers. To avoid damage to the screw or component, the actual torque setting should not exceed ± 0.5 kgf.cm (0.43 lbf.in) of the recommended value, unless specified otherwise.



No.	Component (Quantity)	Screw Type (Quantity)	Screwdriver (Torque)	Attached To
1	Drive cage (1)	-	-	-
-	HDMI ports on system board (2)	Flat head M2x4 (2)	Phillips #1 (2 kgf.cm / 1.74 lbf.in)	Drive cage (Rear panel)
2	Case cover (1)	-	-	-
3	System fans (2)	Flat head Self-tapping M5x10 (8)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Drive cage (Rear panel)
4	Backplane (1)	Pan head M3x5 (7)	Phillips #2 (7 kgf.cm / 6.08 lbf.in)	Drive cage
5	System board (1)	Pan head M3x5 (7)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Right panel

No.	Component (Quantity)	Screw Type (Quantity)	Screwdriver (Torque)	Attached To
6	Right panel (1)	-	-	-
7	Drive tray (3.5-inch) (6)	-	-	-
2	Front cover (1)	-	-	-

5. Category C NAS Models

This chapter uses the TVS-h874T as the representative NAS model for category C. The disassembly and reassembly instructions, and the list of components and screws, are based on the representative model.

For details on category C NAS models, see NAS model categorization.

Note

While all NAS models in the same category share the same general structural design, different models may have certain differences in their parts and components in terms of size, quantity, and other specifications. For non-representative models in this category, please use the following topics as a point of reference.

Disassembling the TVS-h874T

Before you start, make sure you read the Repair requirements.

Warning

- Observe electrostatic discharge (ESD) procedures to avoid damage to components.
- 

  Moving fan blades: Keep your hands and other body parts away from moving fan blades.
- 

  Other moving components: Keep your hands and other body parts away from other moving components.

1. Power off the NAS.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove each drive tray.

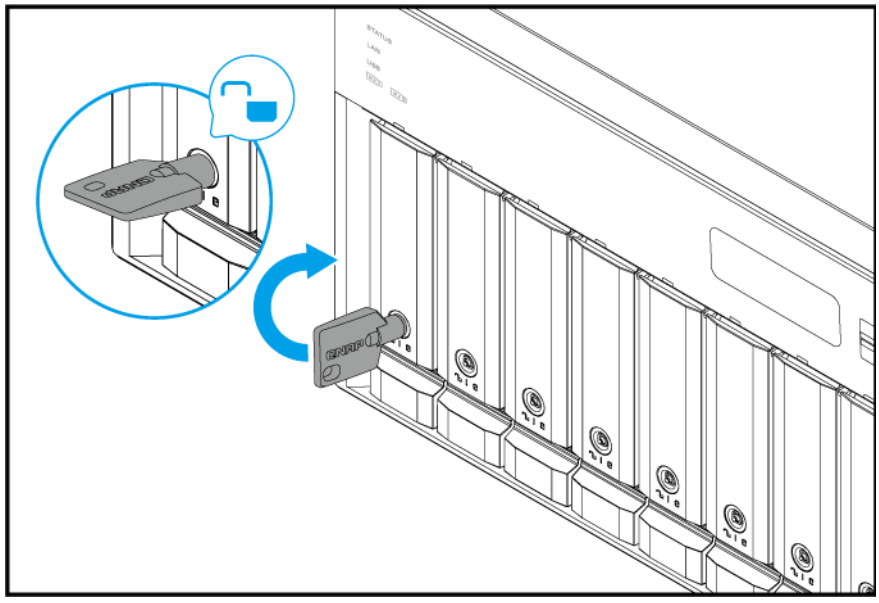
Important

Remember the number of each drive. Each drive will need to be returned to their original bay.

a. Optional: Unlock the tray.

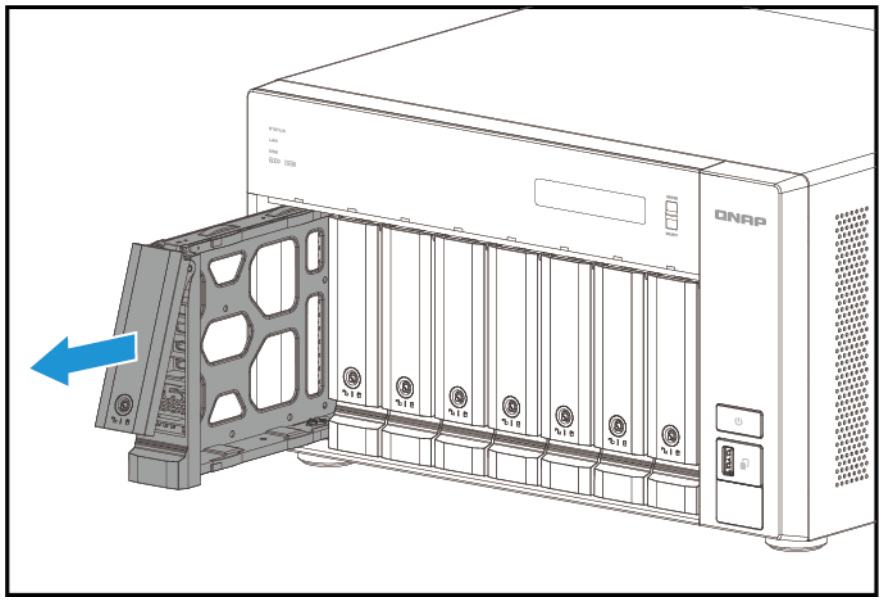
> **Note**
> The preinstalled drive trays come unlocked.

> **Important**
> Ensure the drive tray keys are stored in a safe place.

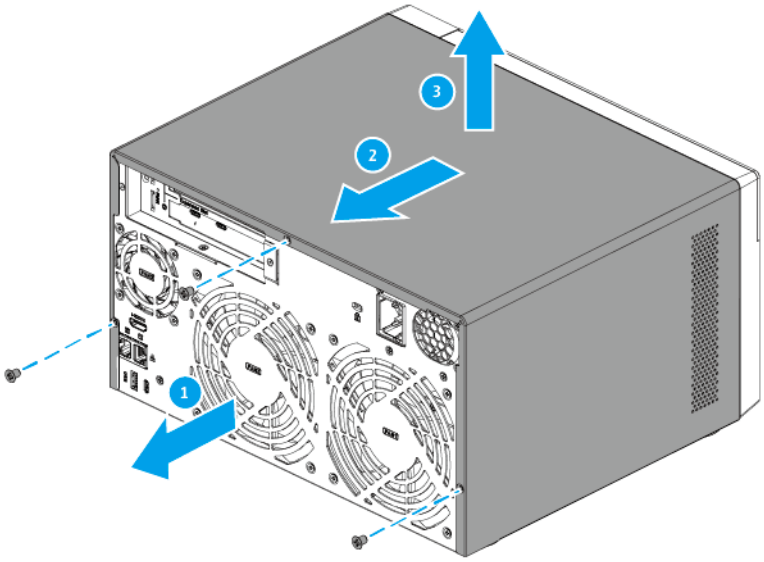


b. Pull the tray handle outward.

c. Pull the tray out.

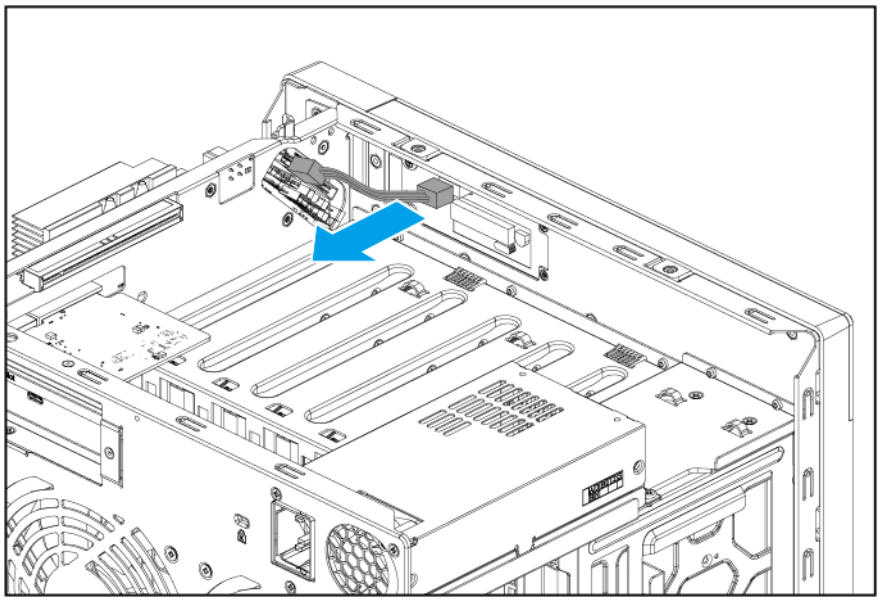


5. Remove the case cover.
   a. Remove the screws.
   b. Slide the cover back.
   c. Lift the cover off the device.



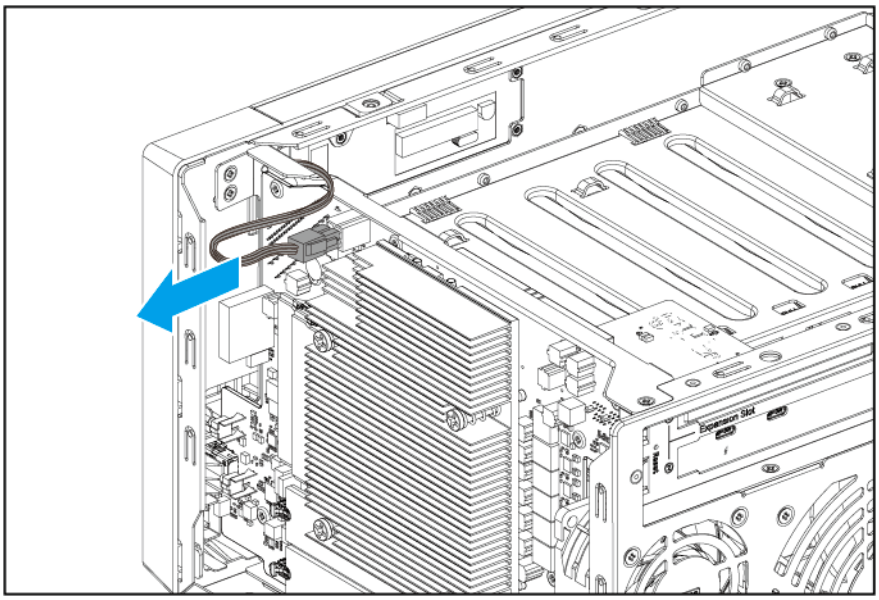
> **Note**
> The flat head M3x4 screws require a Phillips #2 screwdriver.

6. Remove the LCD panel cable from the LCD panel.

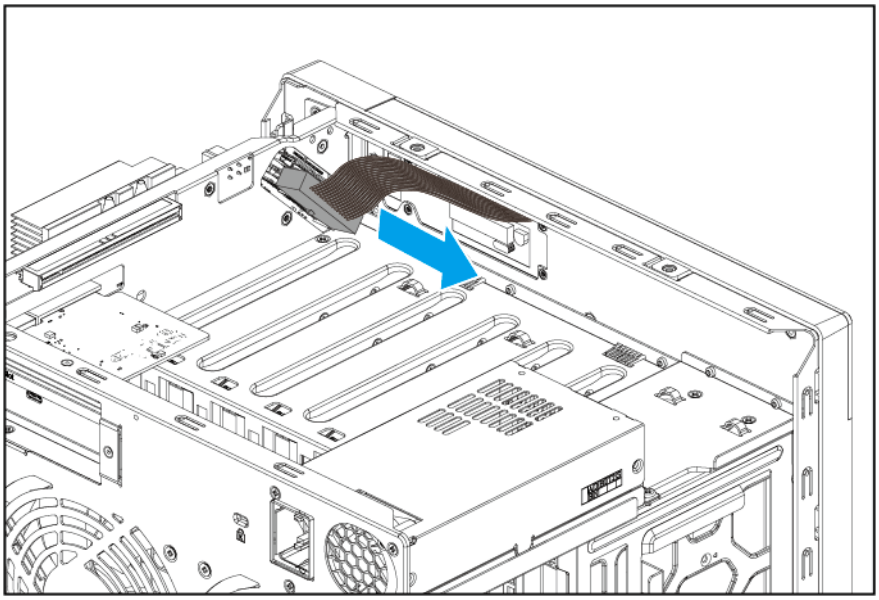


7. Remove the power supply unit connectors from the device.

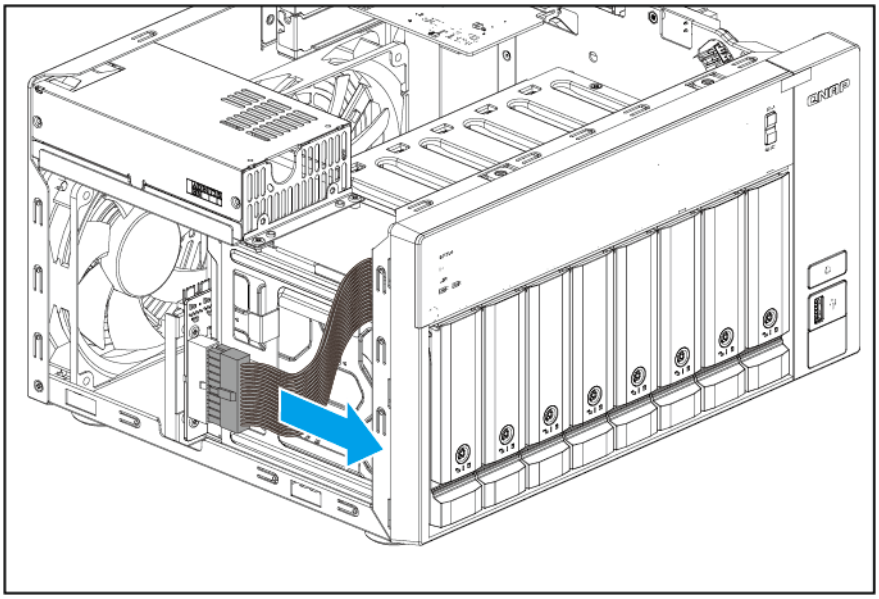
   a. Remove the motherboard cable from the cable clips on the system board tray.



   b. Remove the system board cable from the cable clips on the system board.

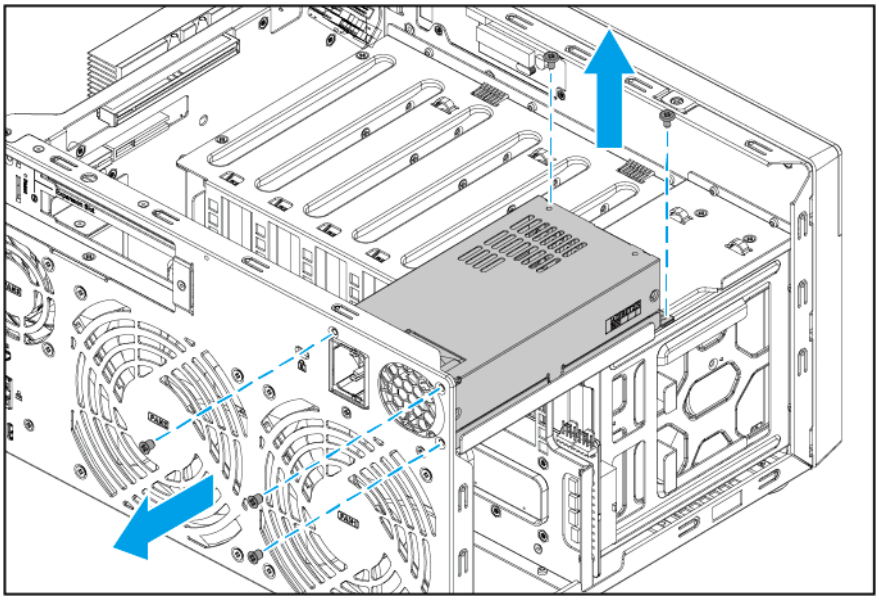


c. Remove the backplane cable from the cable clips on the backplane tray.



8. Remove the power supply unit.

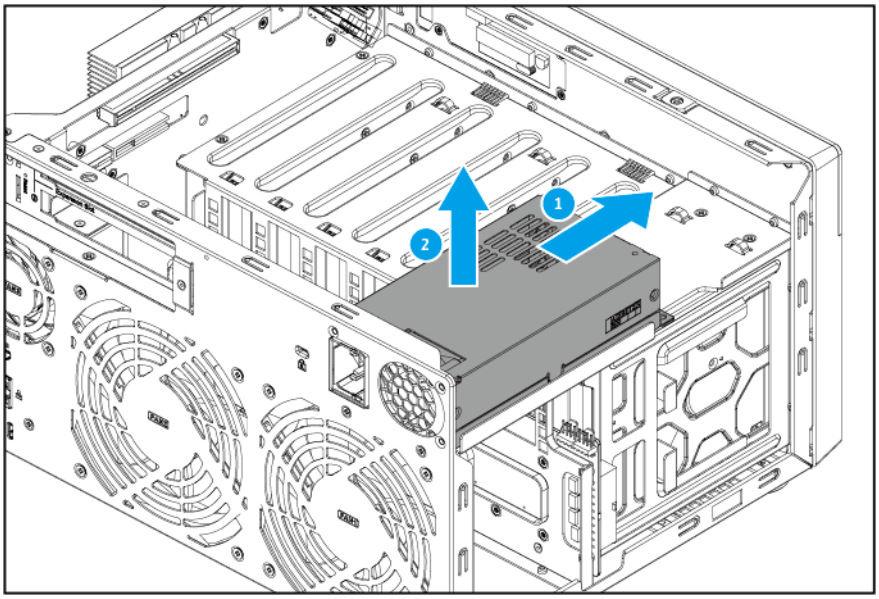
a. Remove the screws securing the power supply unit to the base chassis.



Note

- The flat head M3x4 screws on the rear chassis require a Philips #2 screwdriver.
- The flat head M3x4 screws on the base chassis require a Philips #2 screwdriver.

b. Slide the power supply unit off the base chassis.



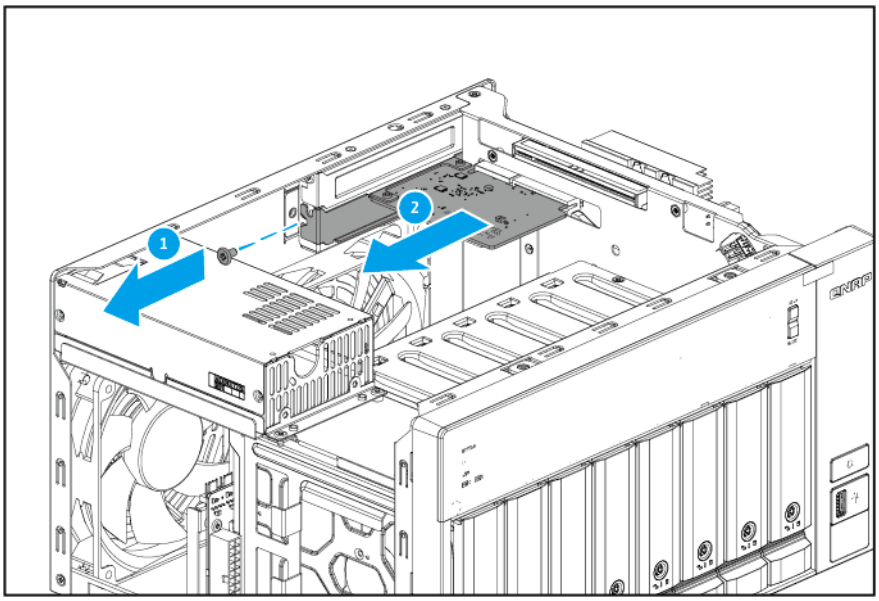
9. Remove existing expansion cards.

a. Remove the screw that secures the PCIe card to the chassis.

> **Note**
> The flat head M3x5 screw requires a Phillips #2 screwdriver.

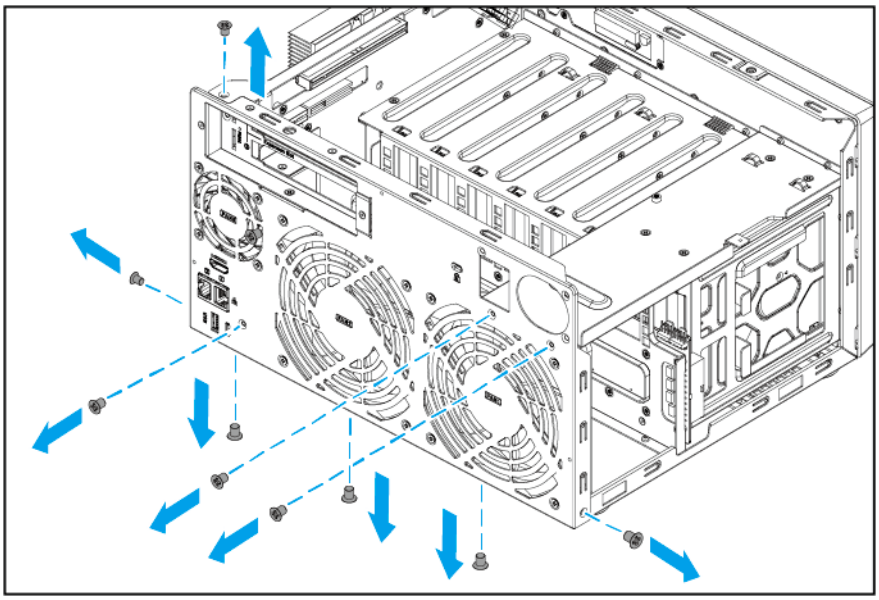
b. Hold the card by the edges.

c. Carefully pull the card out of the slot.



10. Remove the rear panel.

a. Remove the screws securing the rear panel to the chassis.

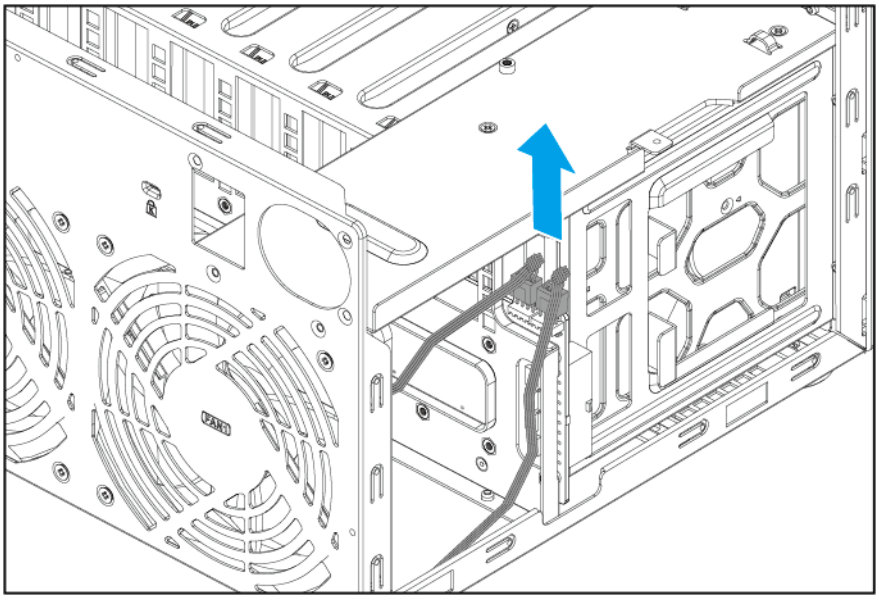


Note

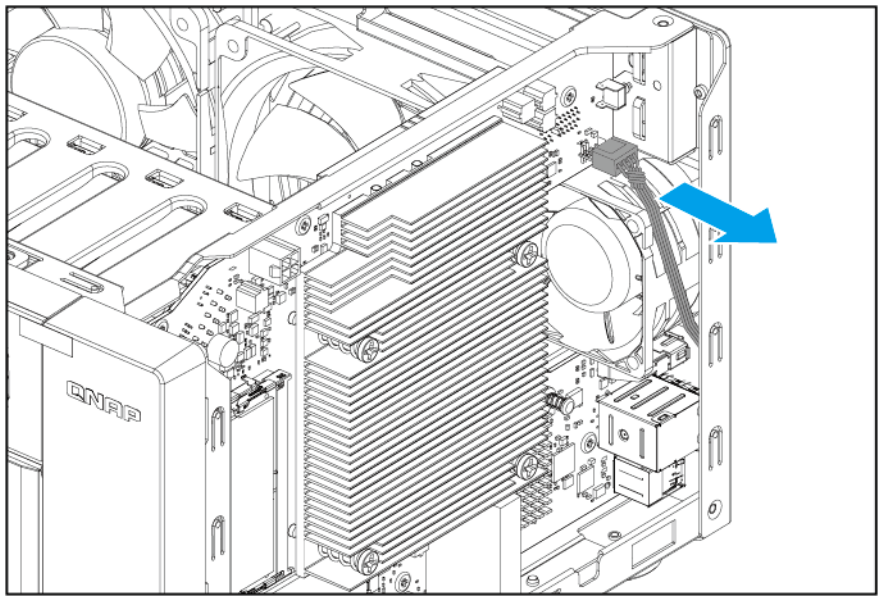
- The flat head M3x4 screws require a Phillips #2 screwdriver.
- To prevent misalignment or stress on the cover during removal, remove the screws in the following order: top edge first, then sides, back panel, and bottom last.

11. Remove the fan cables.

a. Remove the fan cables from the backplane tray.

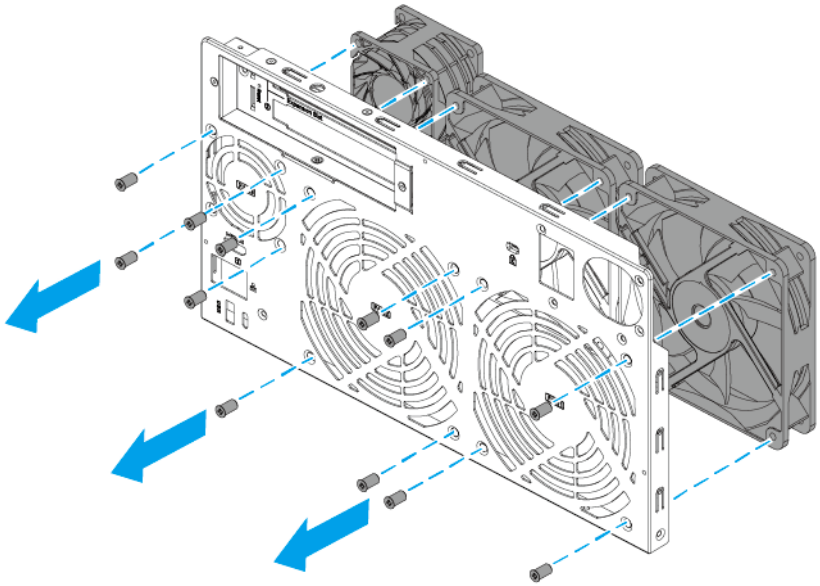


b. Remove the fan cable from the system board.



12. Remove the CPU and system fan modules.

a. Remove the screws securing the fan modules to the rear panel.



Note

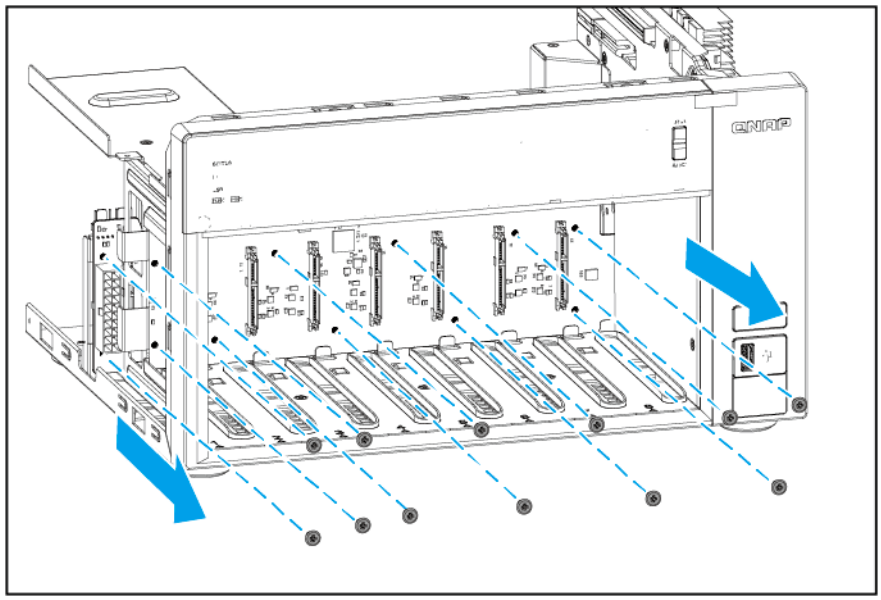
The self-tapping M5x10 screws require a Phillips #2 screwdriver.

13. Remove the backplane.

Warning

Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

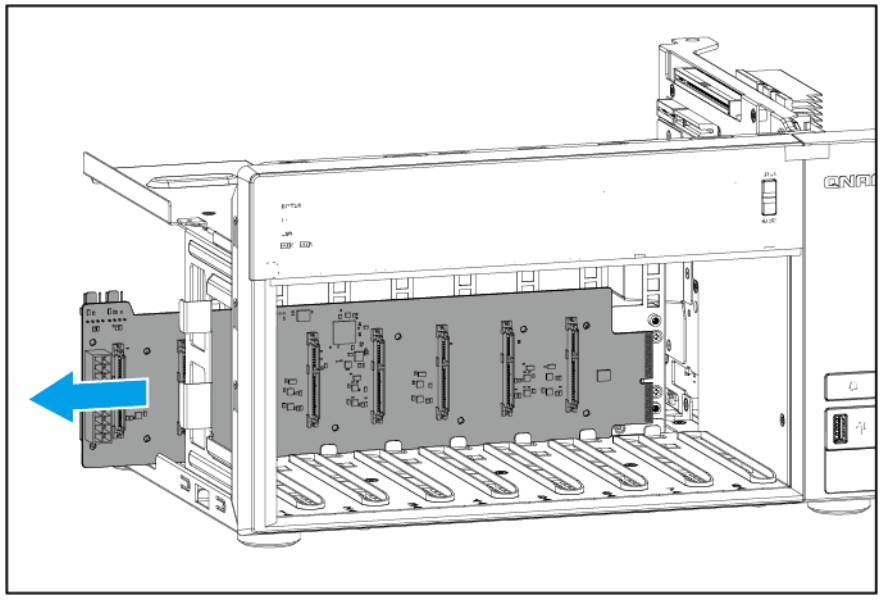
a. Access and remove the screws securing the backplane from the inside of the front panel.



> **Note**
> The flat head M3x5 screws require a Phillips #2 screwdriver.

b. Lightly push back the connector end of the backplane so that the other end of the backplane is lifted off of the drive cage surface.

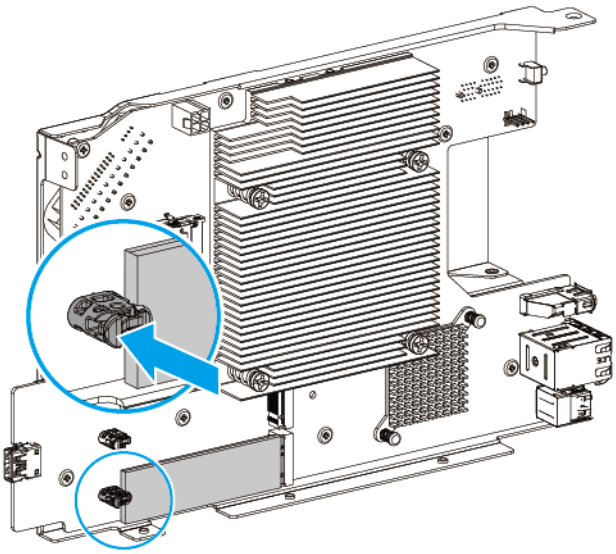
c. Carefully remove the backplane from the drive cage.



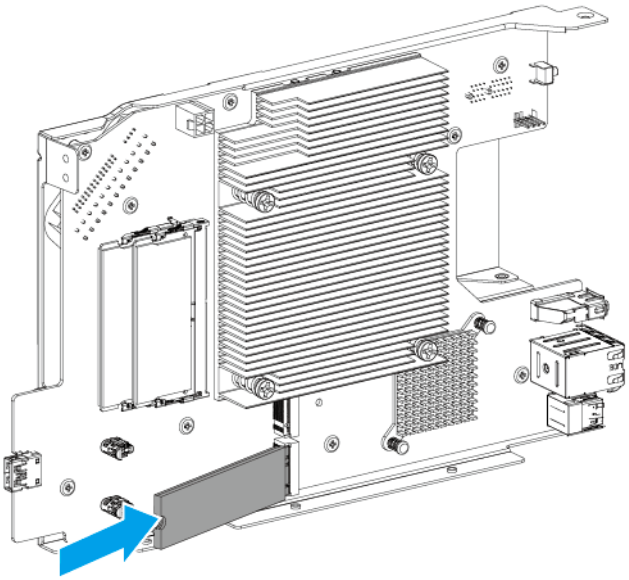
14. Remove existing M.2 solid-state drives.

a. Position the NAS on its left side.

b. Unlock the M.2 spacer by pushing down on its edge.



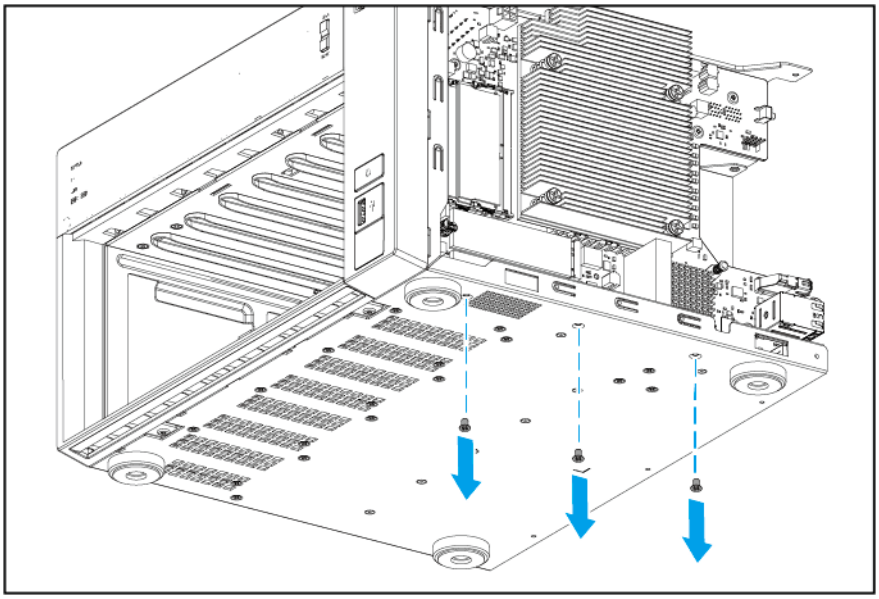
c. Carefully pull the M.2 solid-state drive out of its slot.



15. Remove the system board tray from the chassis.

a. Position the NAS on its left side.

b. Remove the screws that secure the system board tray to the bottom of the chassis.

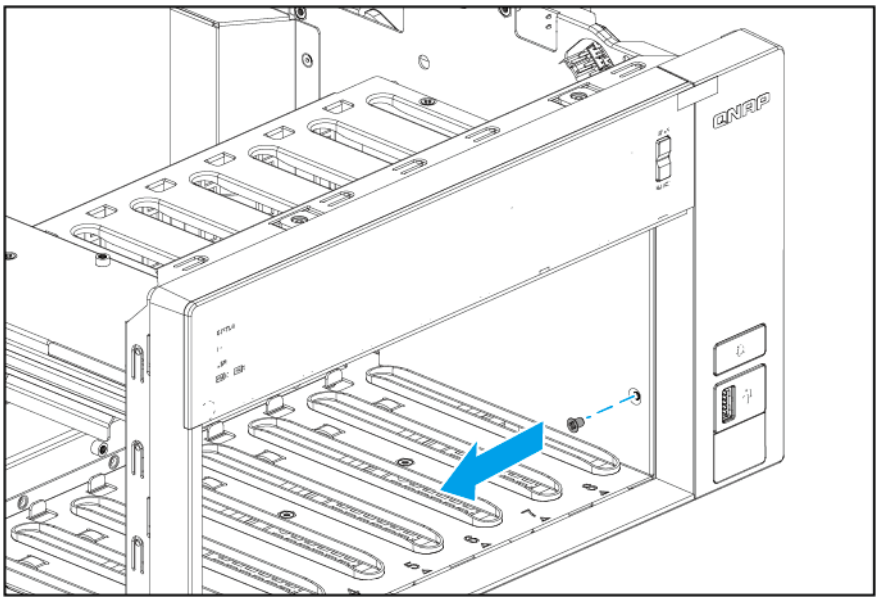


Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

c. Place the NAS in its normal upright position.

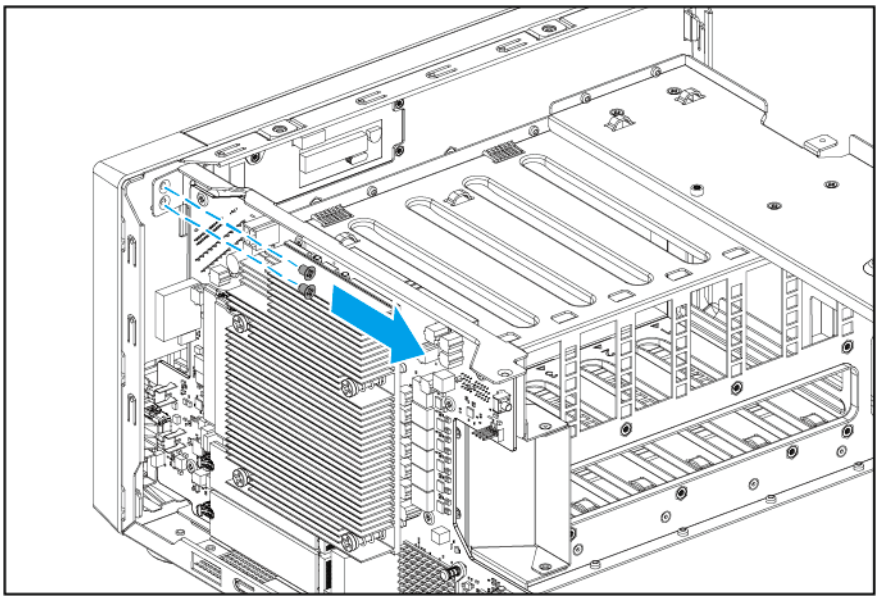
d. Remove the screw securing the system board tray from the inside of the front panel.



Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

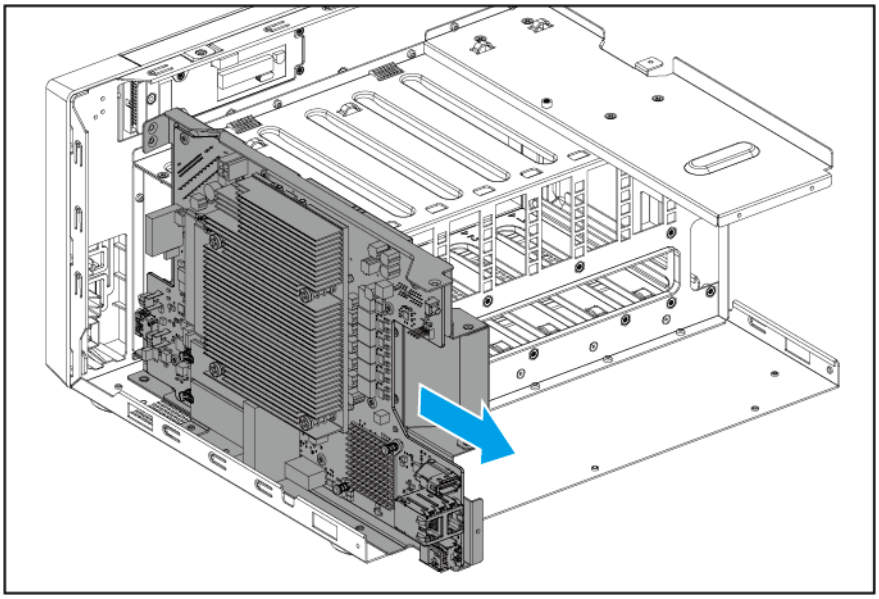
e. Remove the screws securing the system board tray to the outer side of the side panel.



Note

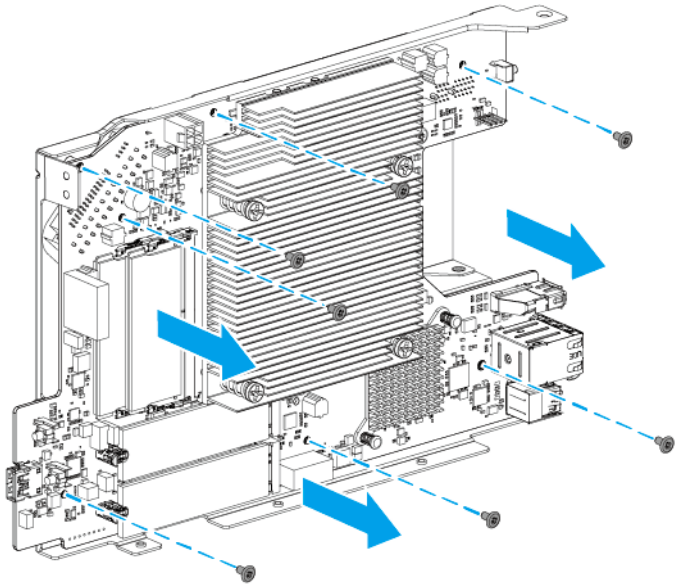
- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

f. Slide the system board tray back to remove it.



16. Remove the system board from the system board tray.

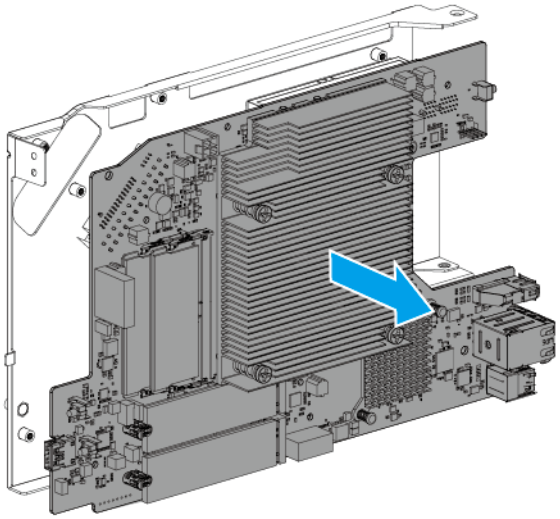
a. Remove the screws that secure the system board to the tray.



Note

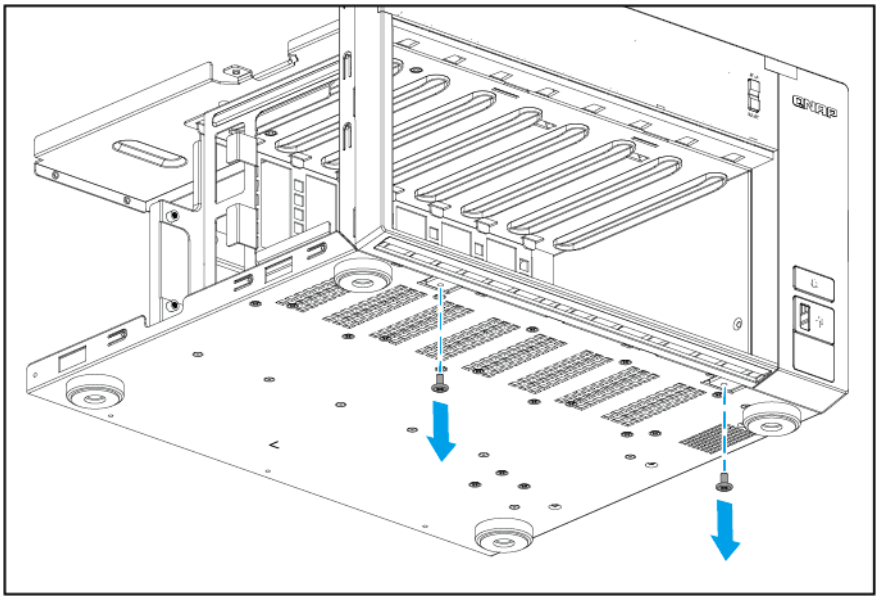
- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Remove the system board.



17. Remove the front panel from the base chassis.

a. Remove the screws that secure the bottom of the front cover to the bottom of the chassis.



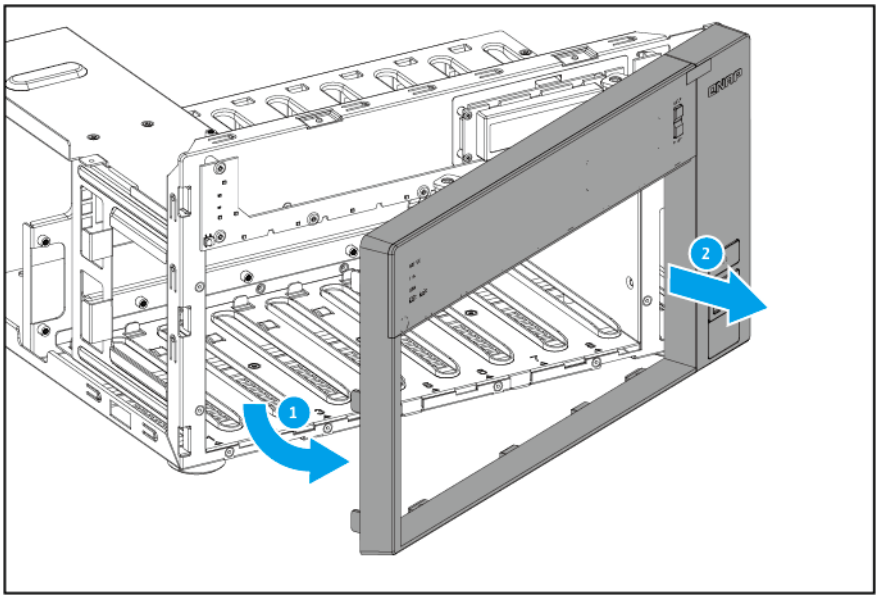
Note

- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 3 kgf.cm (2.60 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Release the latches that secure the front cover to the chassis.

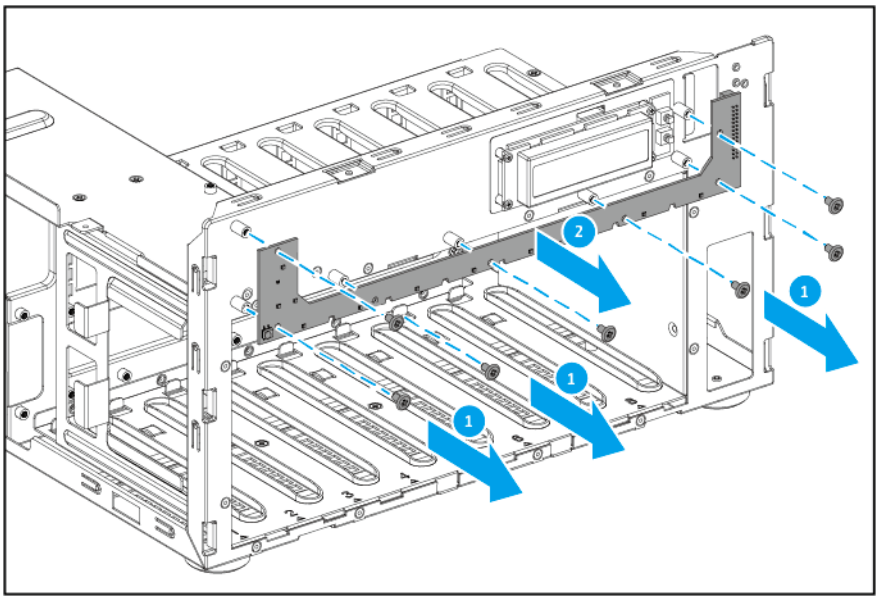
> **Note**
> You may need to use a tool such as a slotted screwdriver to help push and release the latches.

c. Pull the front panel away at an angle.



18. Remove the LED circuit board from the base chassis.

a. Remove the screws securing the light board to the chassis.



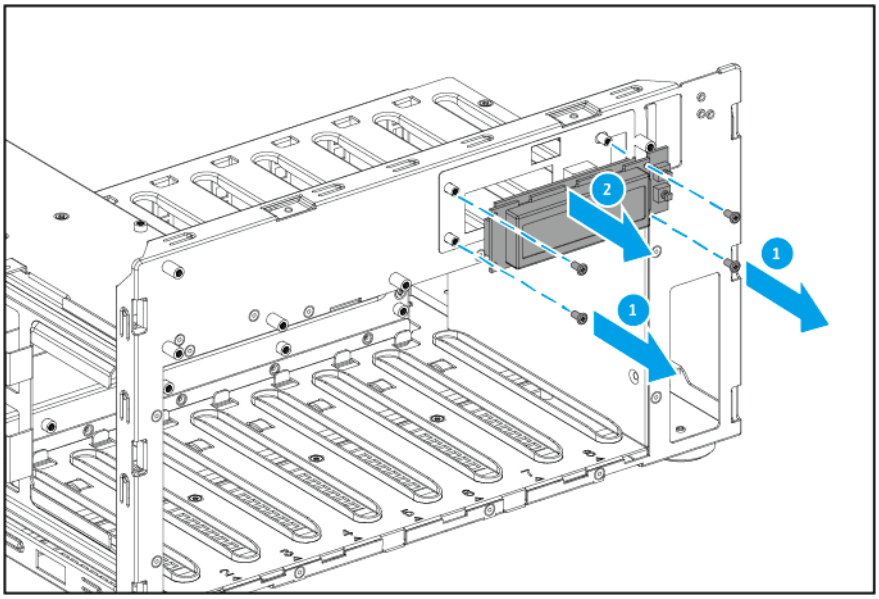
Note

- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Pull the LED circuit board away from the chassis.

19. Remove the LCD display module from the chassis.

a. Remove the screws that secure the LCD display module to the chassis.



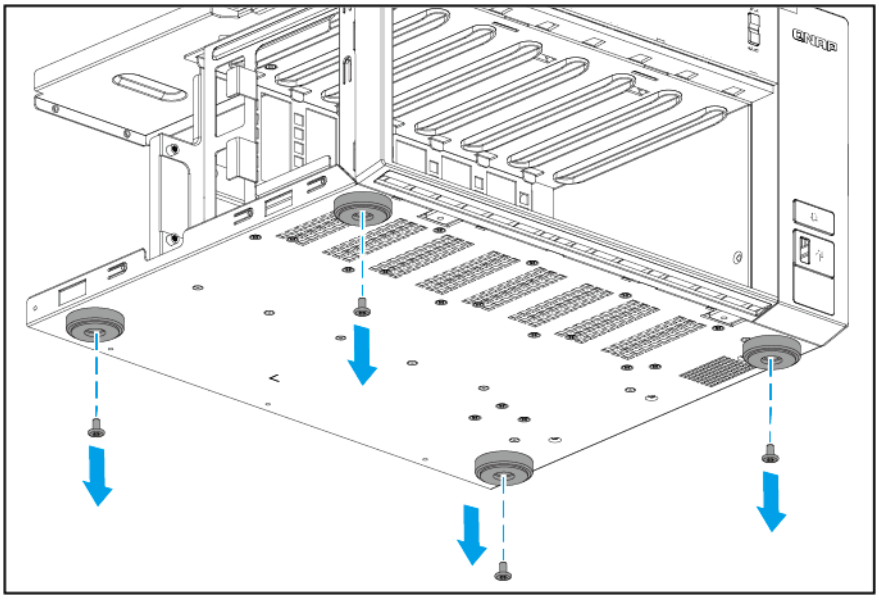
Note

- The flat head M2.5x4 screws require a Philips #1 screwdriver.
- A torque of 3 kgf.cm (2.60 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Remove the LCD display module.

20. Remove the rubber feet.

a. Remove the screws securing the rubber feet to the base chassis.



> **Note**
> The flat head M3x5 screws require a Philips #2 screwdriver.

b. Remove the rubber feet.

Reassembling the TVS-h874T

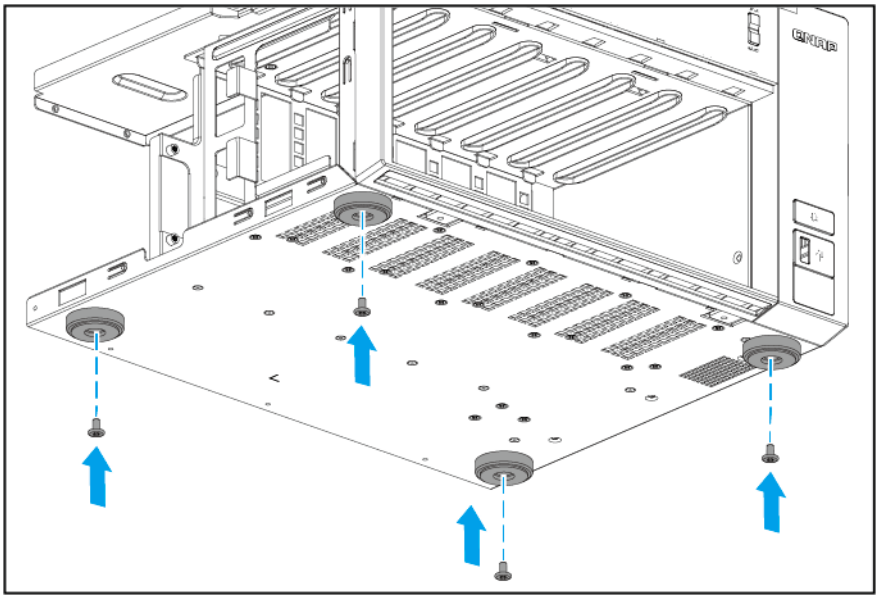
Before you start, make sure you read the Repair requirements.

> **Warning**
>
> - Observe electrostatic discharge (ESD) procedures to avoid damage to components.
> - 
>
> **Moving fan blades:** Keep your hands and other body parts away from moving fan blades.
> - 
>
> **Other moving components:** Keep your hands and other body parts away from other moving components.

1. Attach the rubber feet.

a. Align the holes on the rubber feet to the screw holes on the base chassis.

b. Attach the screws.

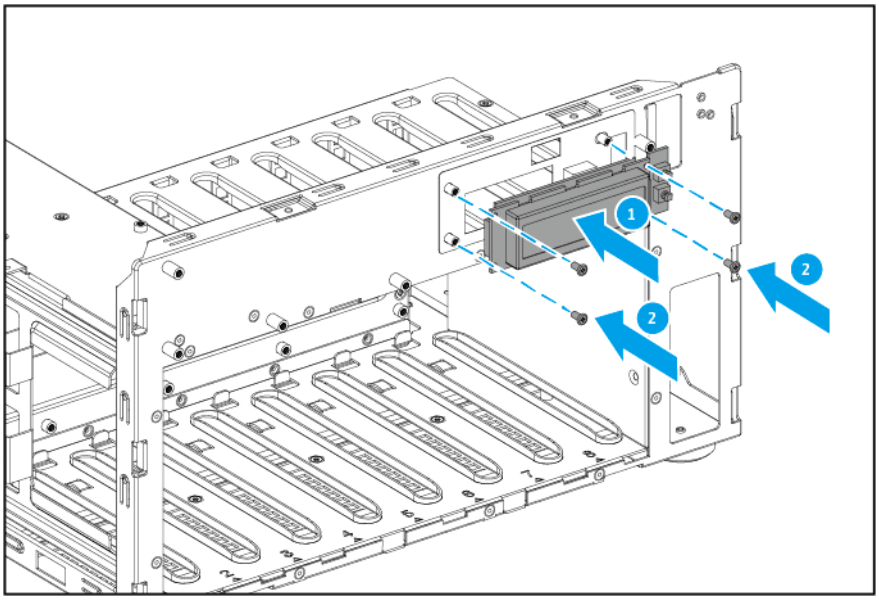


> **Note**
> The flat head M3x5 screws require a Philips #2 screwdriver.

2. Attach the LCD display module to the chassis.

a. Align the holes on the LCD display module to the screw holes on the chassis.

b. Attach the screws.



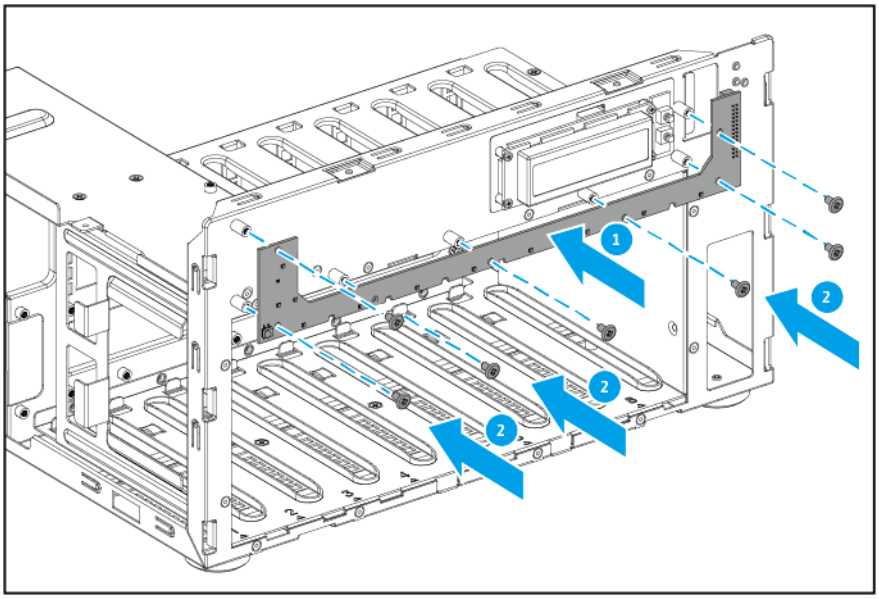
Note

- The flat head M2.5x4 screws require a Philips #1 screwdriver.
- A torque of 3 kgf.cm (2.60 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

3. Attach the LED circuit board to the chassis.

a. Align the holes on the LED circuit board to screw holes on the chassis.

b. Attach the screws.



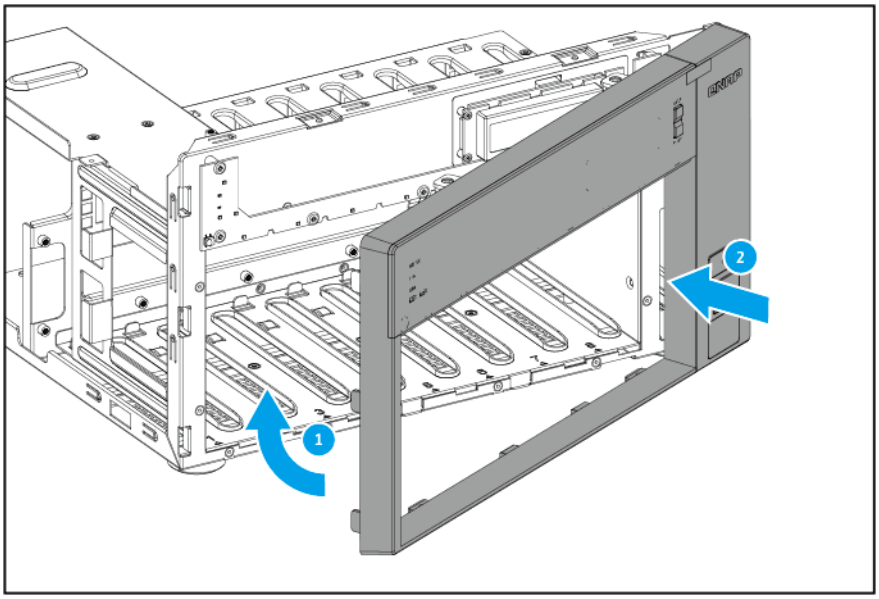
Note

- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

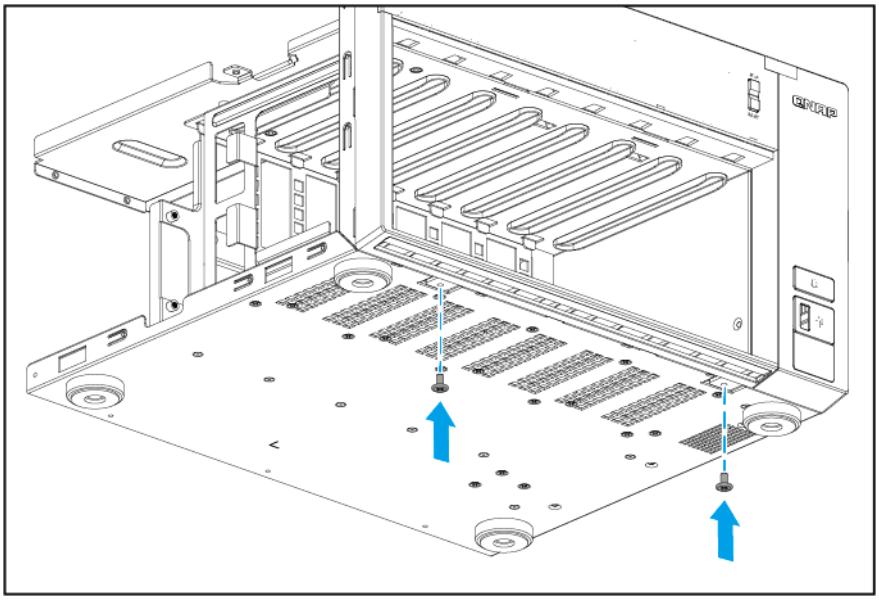
4. Attach the front panel to the chassis.

a. Align the latches of front panel to the holes on the chassis.

b. Attach the front panel to the chassis.



c. Attach the screws that secure the front panel to the chassis.

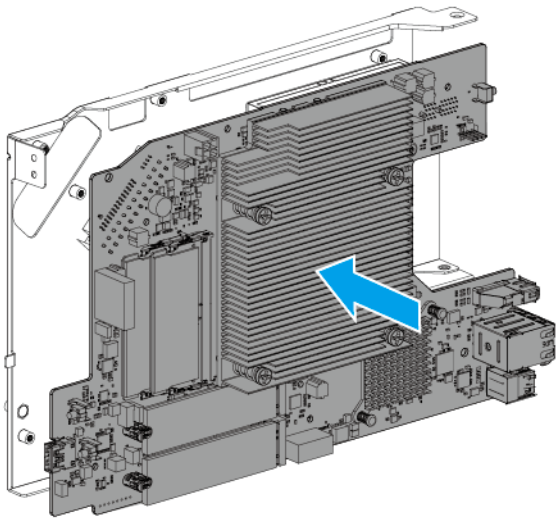


Note

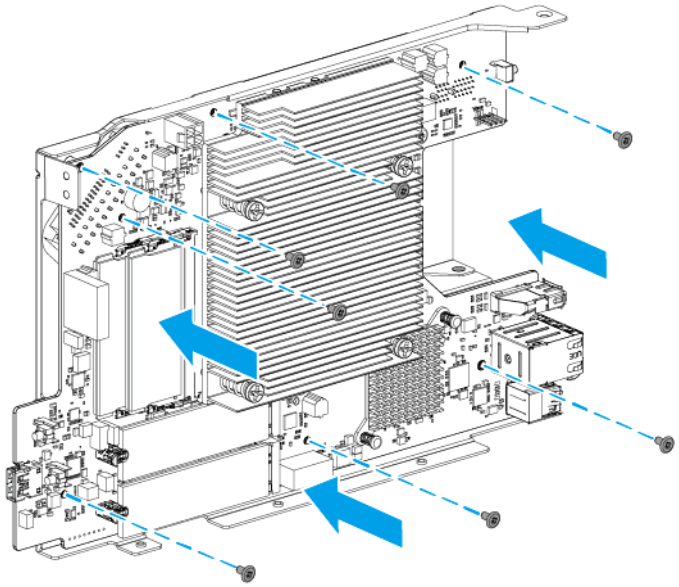
- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 3 kgf.cm (2.60 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

5. Attach the system board to the system board tray.

   a. Align the mounting holes on the system board with the screw holes on the tray.



   b. Attach the screws.

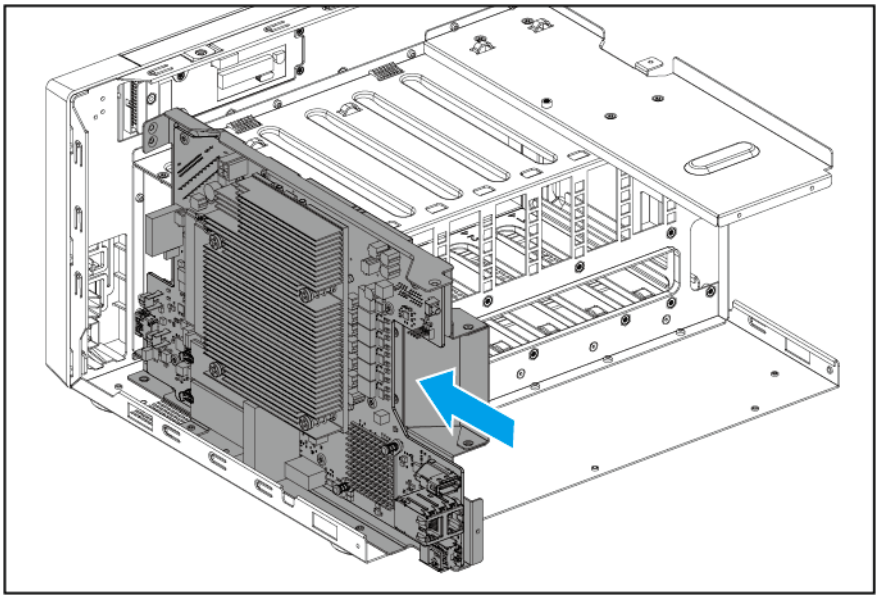


Note

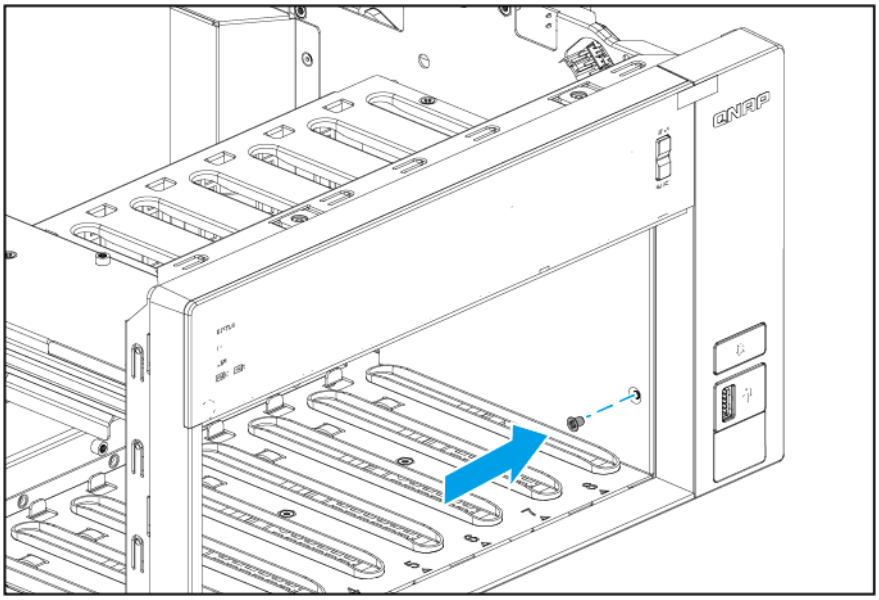
- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

6. Attach the system board tray.

a. Slide the system board tray in.



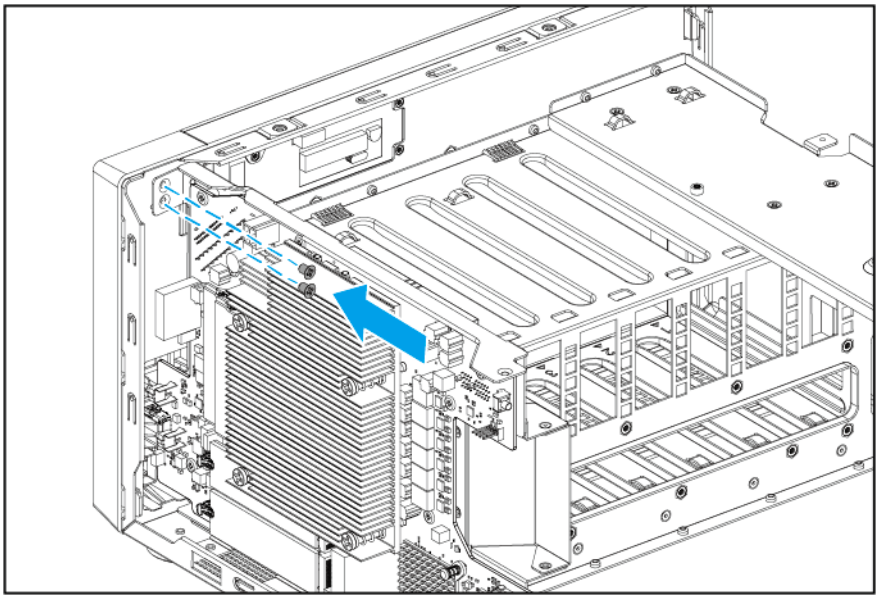
b. Attach the screw that secures the system board tray from the inside of the front panel.



Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

c. Attach the screws that secure the tray to the side of the chassis.

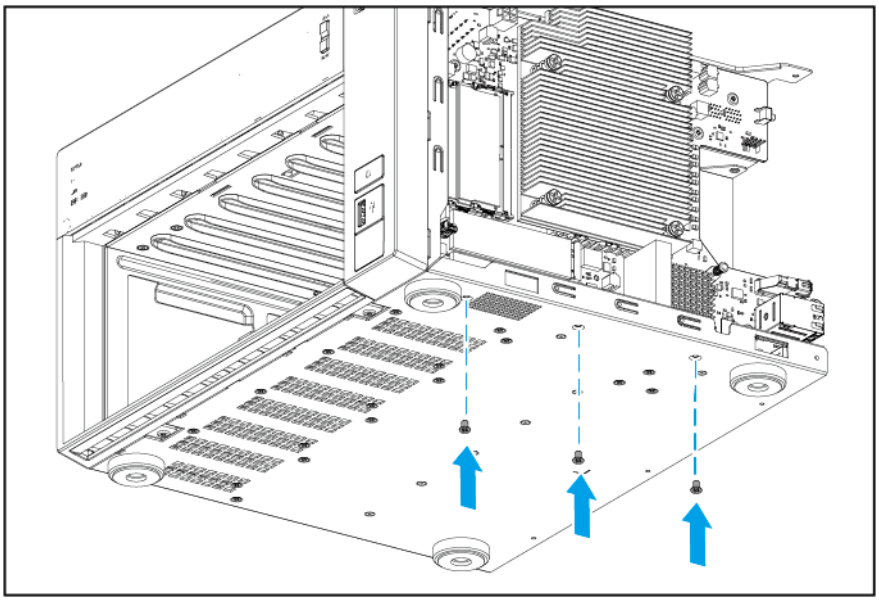


Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

d. Position the NAS on its left side.

e. Attach the screws that secure the system board tray to the bottom of the chassis.

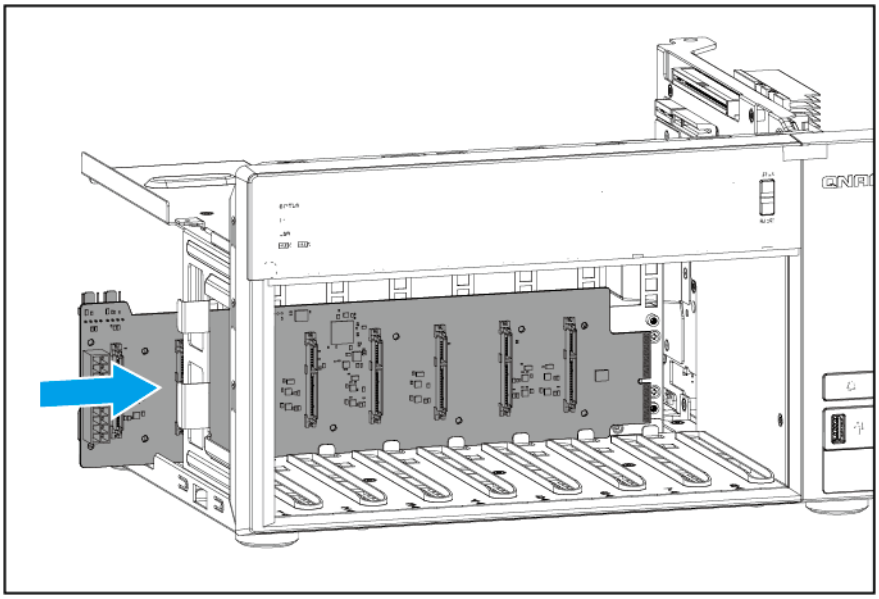


Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

7. Attach the backplane to the chassis.

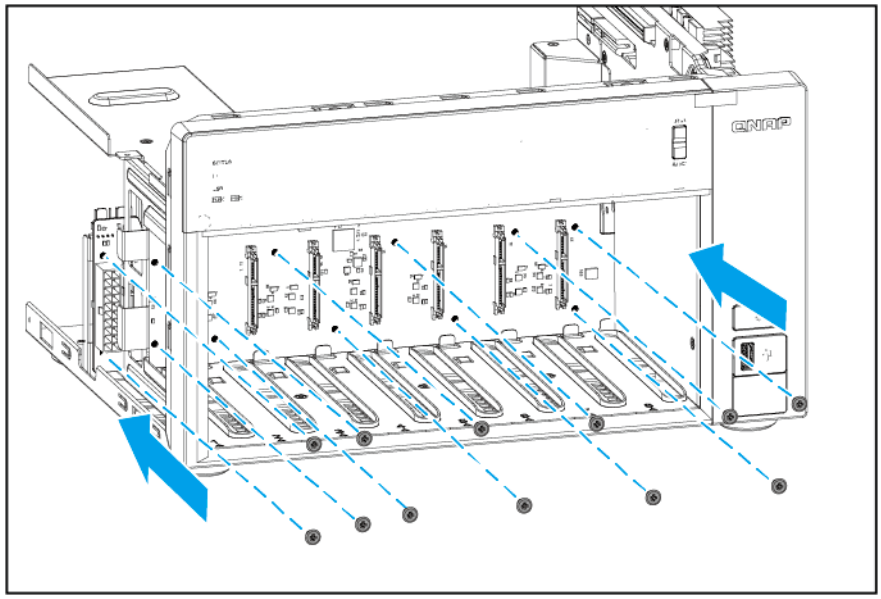
a. Slide the backplane in.



b. Insert the connector on the backplane into the slot on the system board.

c. Attach the screws from the inside of the front panel.

> **Warning**
> Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

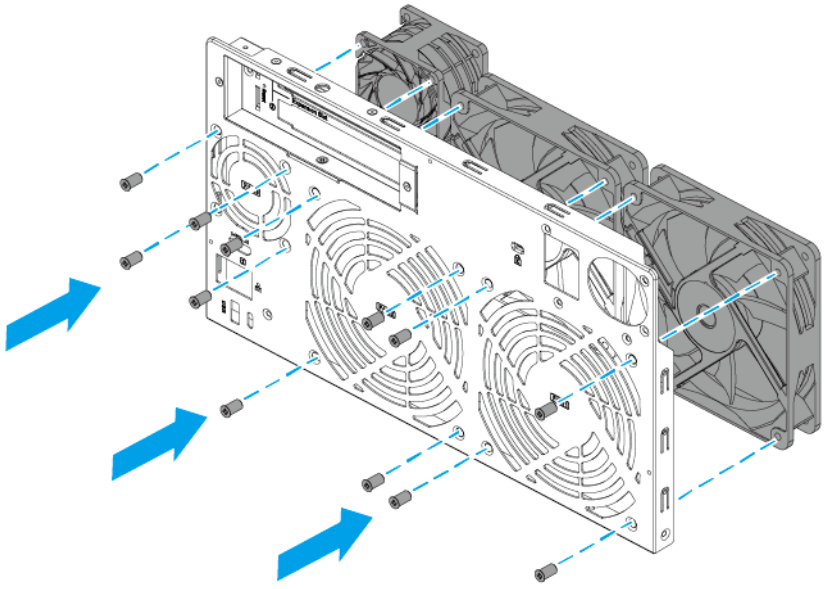


> **Note**
> The flat head M3x5 screws require a Phillips #2 screwdriver.

8. Attach the fans to the rear panel.

a. Align the holes in the fans with the screw holes on the rear panel.

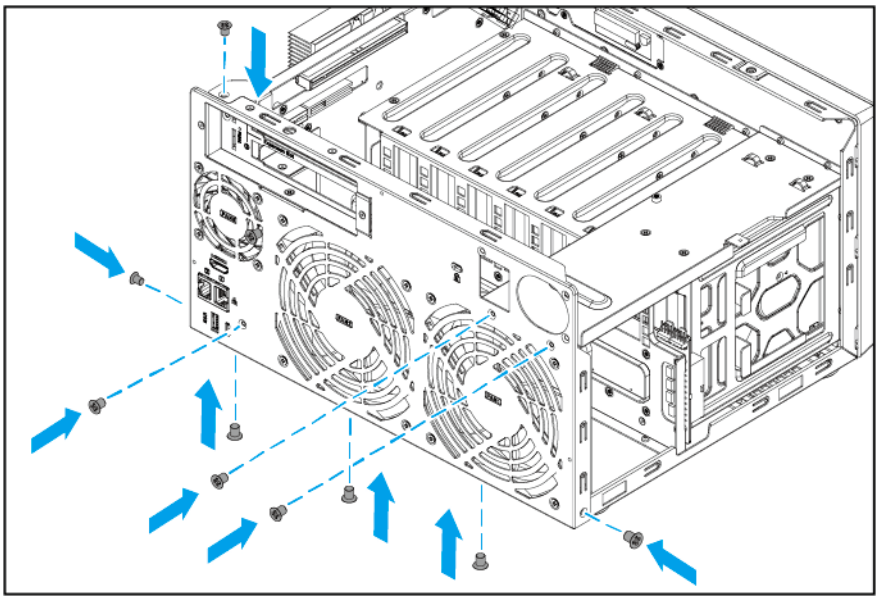
b. Attach the screws.



Note

The self-tapping M5x10 screws require a Phillips #2 screwdriver.

9. Attach the rear panel.
   a. Align the holes on the rear panel to the screw holes and ports on the chassis.
   b. Attach the screws that secure the rear panel to the chassis.

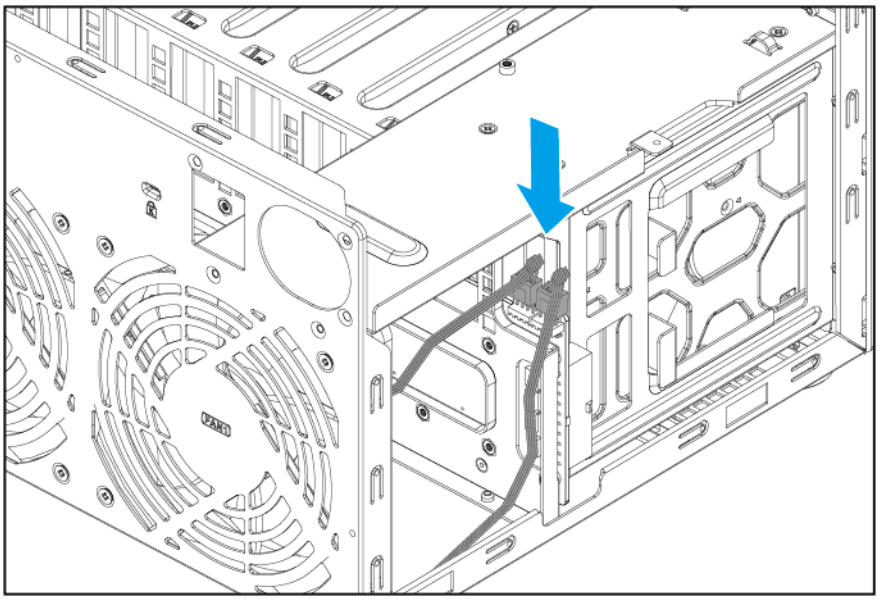


Note

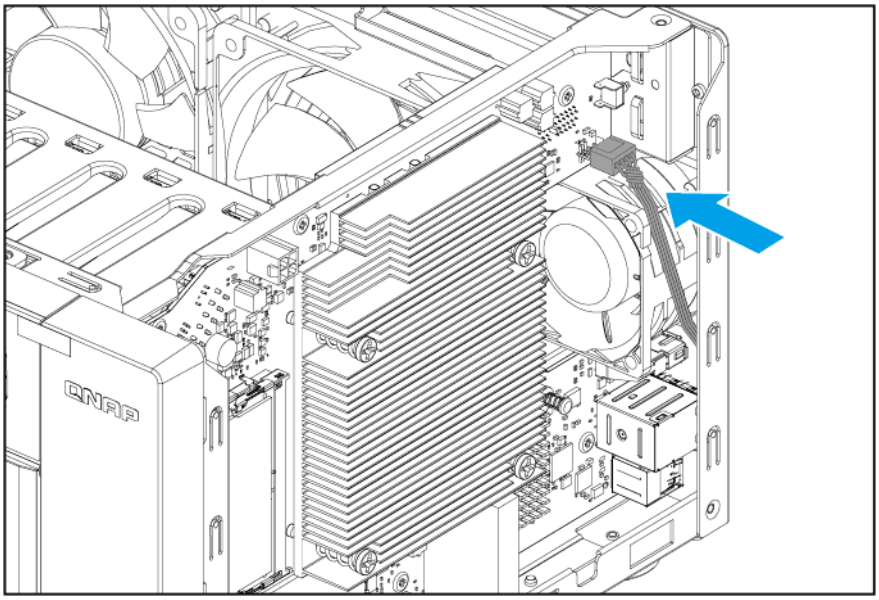
- The flat head M3x4 screws require a Phillips #2 screwdriver.
- Attach the screws securely in the following order to ensure a proper fit and prevent stress on the cover: bottom first, then back panel, sides, and top edge last.

10. Attach the fan cables.

a. Attach the fan cables to the backplane tray.

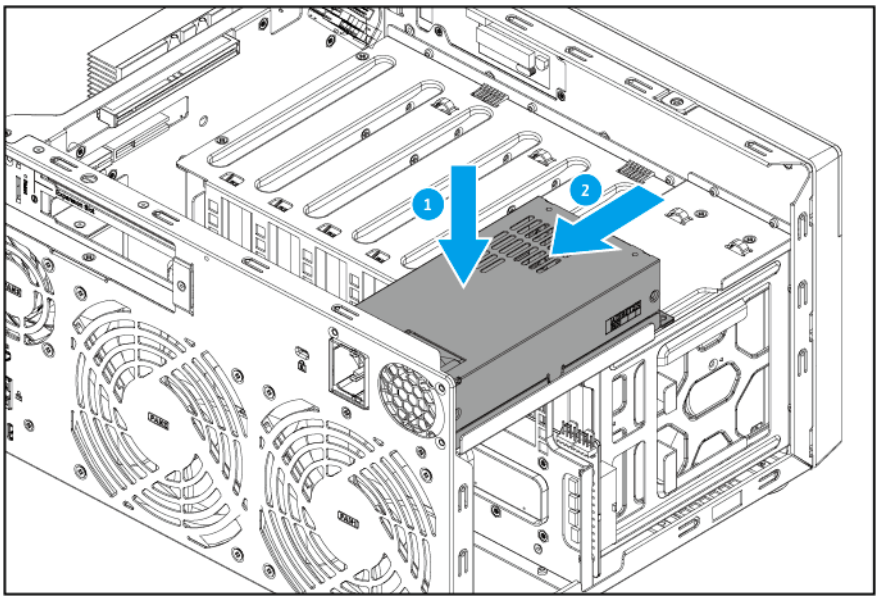


b. Attach the fan cable to the system board.

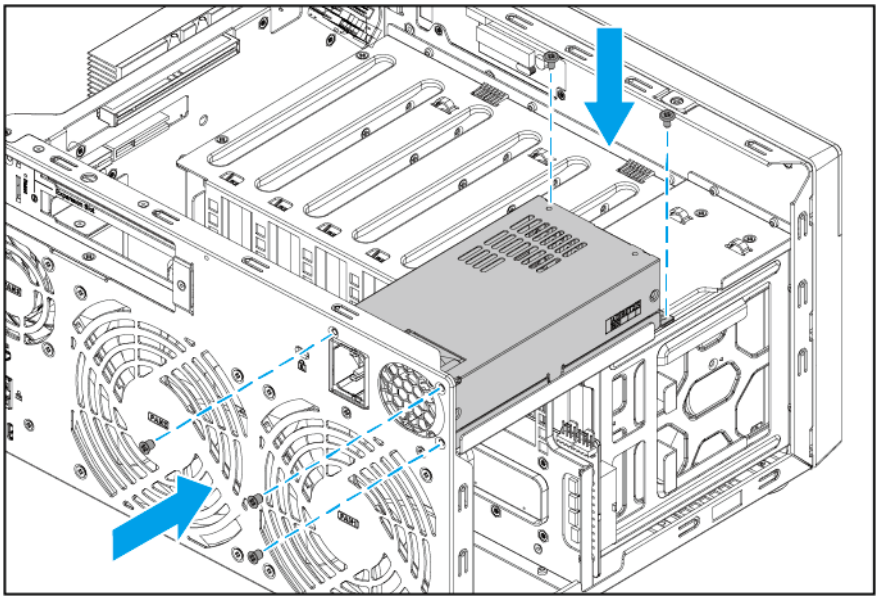


11. Attach the power supply unit.

a. Align the screw holes of the power supply unit to the screw holes of the chassis.



b. Attach the screws that secure the power supply unit to the chassis.

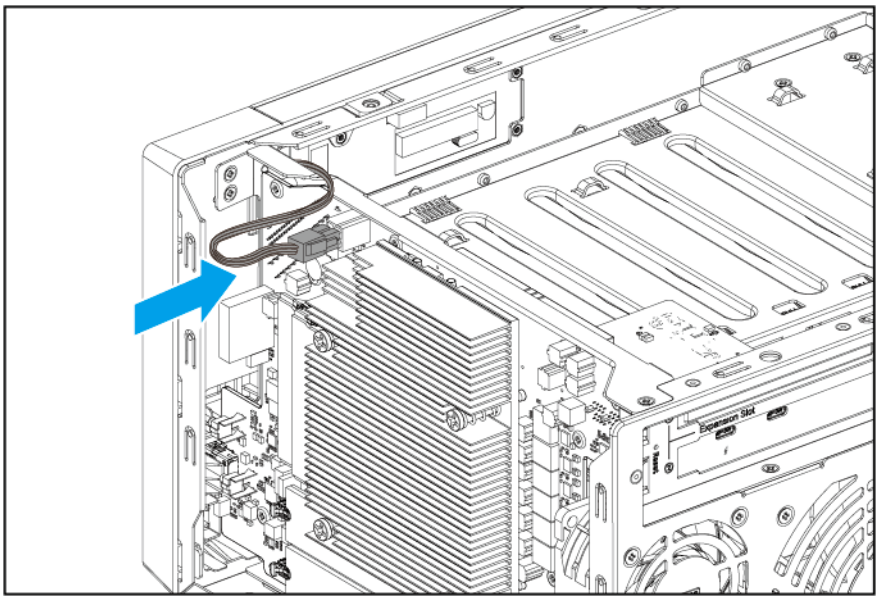


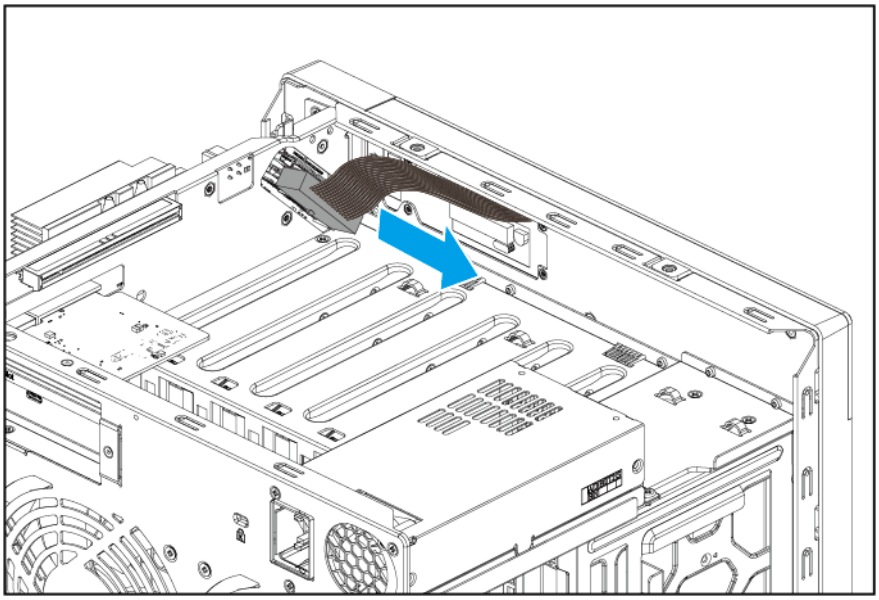
Note

- The flat head M3x4 screws on the rear chassis require a Philips #2 screwdriver.
- The flat head M3x4 screws on the base chassis require a Philips #2 screwdriver.

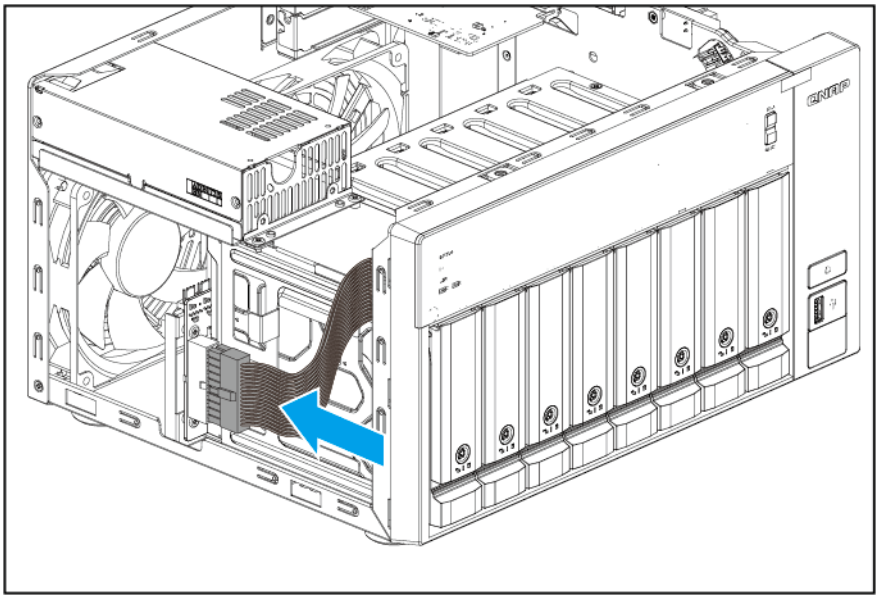
12. Attach the power supply unit cables.

a. Attach the power supply unit cables to the cable clips on the system board tray.

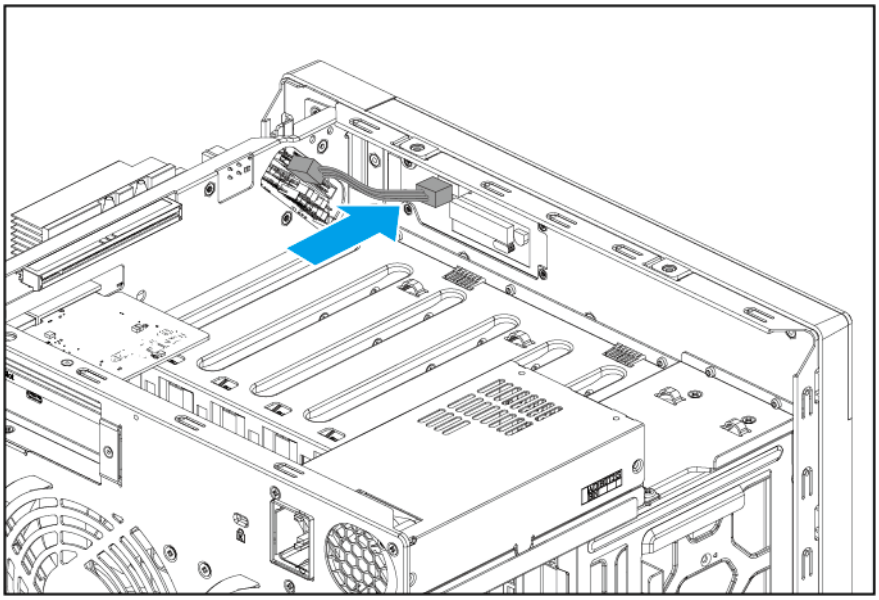




b. Attach the power supply unit cable to the cable clips on the backplane.



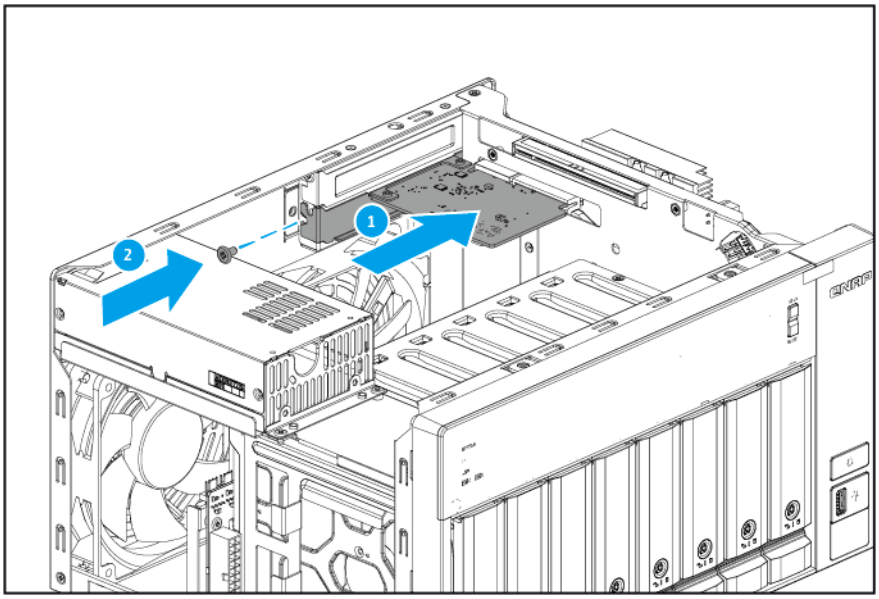
13. Attach the LCD display module to the system board.



14. Optional: Attach expansion cards.

a. Insert an expansion card into the slot on the system board.

b. Attach the screw that secures the PCIe bracket to the rear panel.



Note

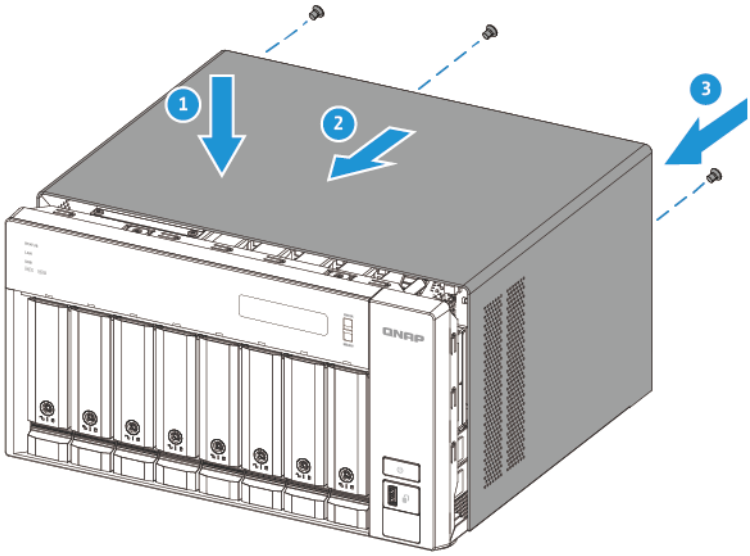
The flat head M3x5 screw requires a Phillips #2 screwdriver.

15. Attach the case cover.

a. Place the cover on the device.

b. Slide the cover forward.

c. Attach the screws connecting the top cover to the chassis.



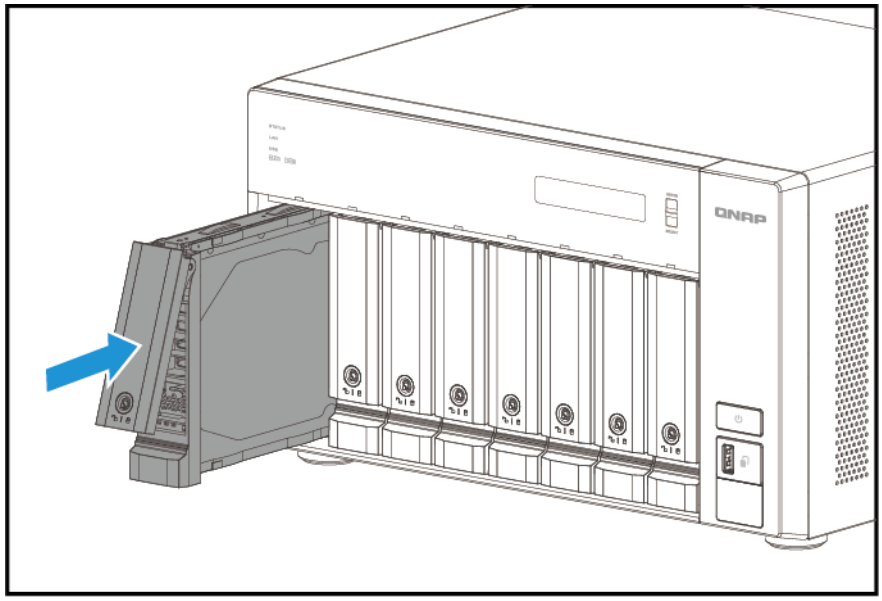
Note

The flat head M3x4 screws require a Phillips #2 screwdriver.

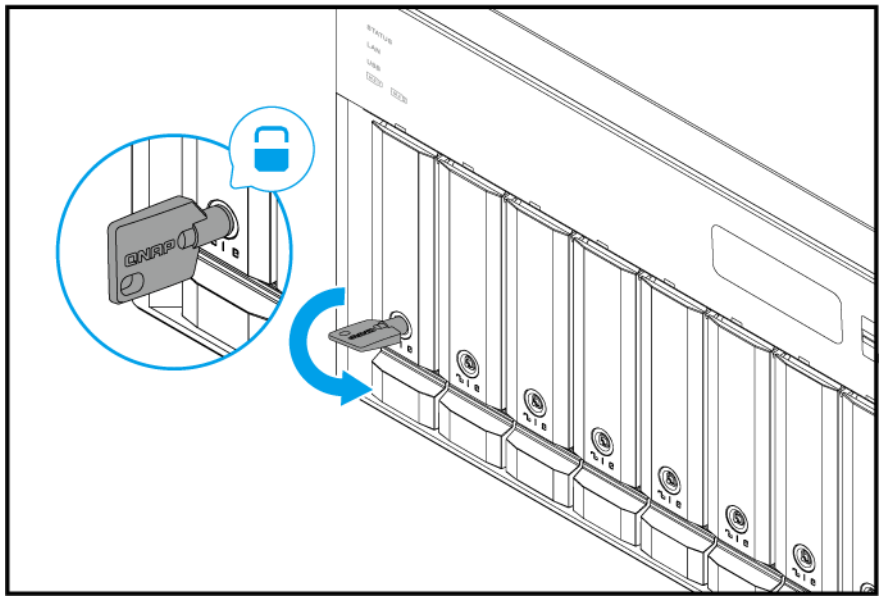
16. Load the trays into the bay.

    a. Insert the tray into the bay.

    b. Push the handle.



    c. Lock the tray.



17. Connect all cables and external attachments.

18. Connect the power cord to the electrical outlet.

19. Power on the device.

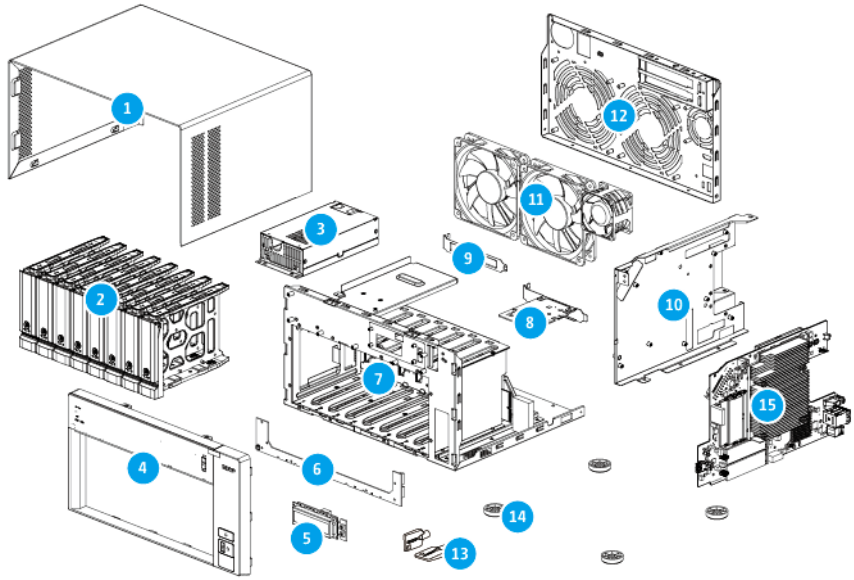
TVS-h874T components and screws

Important

The information presented here apply only to the representative model of the NAS category. While all models within a NAS category have the same general structural design, their components and screws may differ in size, quantity, and other specifications.

Note

Recommended torque values are provided for electric screwdrivers. To avoid damage to the screw or component, the actual torque setting should not exceed ± 0.5 kgf.cm (0.43 lbf.in) of the recommended value, unless specified otherwise.



No.	Component (Quantity)	Screw Type (Quantity)	Screwdriver (Torque)	Attached To
1	Case cover (1)	-	-	-
2	Drive tray (3.5-inch) (8)	-	-	-
3	Power supply unit (1)	Flat head • M3x4 (3) • M3x5 (2)	Phillips #2	Chassis

No.	Component (Quantity)	Screw Type (Quantity)	Screwdriver (Torque)	Attached To
4	Front panel (1)	Flat head M3x5 (2)	Phillips #2 (3 kgf.cm / 2.60 lbf.in)	Chassis
5	LCD display module (1)	Flat head M2.5x4 (4)	Phillips #1	Chassis
6	LED circuit board (1)	Flat head M3x5 (7)	Phillips #2	Chassis
7	Chassis (1)	-	-	-
8	Expansion card (PCIe low profile) (1)	Flat head M3x5 (1)	Phillips #2	PCIe bracket
9	PCIe cover (1)	Flat head M3x5 (1)	Phillips #2	Chassis
10	System board tray (1)	Flat head M3x4 (6)	Phillips #2	Chassis
11	• CPU fan • System fan (1)	Self-tapping M3x10 (12)	Phillips #2	Rear panel
12	Rear panel (1)	Flat head M3x4 (9)	Phillips #2	Chassis
13	Drive tray key (8)	-	-	-
14	Rubber feet (4)	Flat head M3X5 (4)	Phillips #2	Chassis

No.	Component (Quantity)	Screw Type (Quantity)	Screwdriver (Torque)	Attached To
15	System board	Flat head M3X5 (9)	Phillips #2	System board tray
16	Backplane	-	-	Chassis

Optional Components

These components are not included with the original NAS but may be installed by the user.

Component (Quantity)	Screw Type (Quantity)	Screwdriver (Torque)	Attached To
M.2 SSD (2 maximum, not included with original NAS)	Pan head M2.5x3 (2, included with original NAS)	Phillips #2 (3 kgf.cm / 2.60 lbf.in)	Inserted into slot on riser card, and then secured to the drive cage with a screw.

6. Category D NAS Models

WORK IN PROGRESS

This chapter uses the TVS-h1288X as the representative NAS model for category D. The disassembly and reassembly instructions, and the list of components and screws, are based on the representative model.

For details on category D NAS models, see NAS model categorization.

Note

While all NAS models in the same category share the same general structural design, different models may have certain differences in their parts and components in terms of size, quantity, and other specifications. For non-representative models in this category, please use the following topics as a point of reference.

Disassembling the TVS-h1288X

Before you start, make sure you read the Repair requirements.

Warning

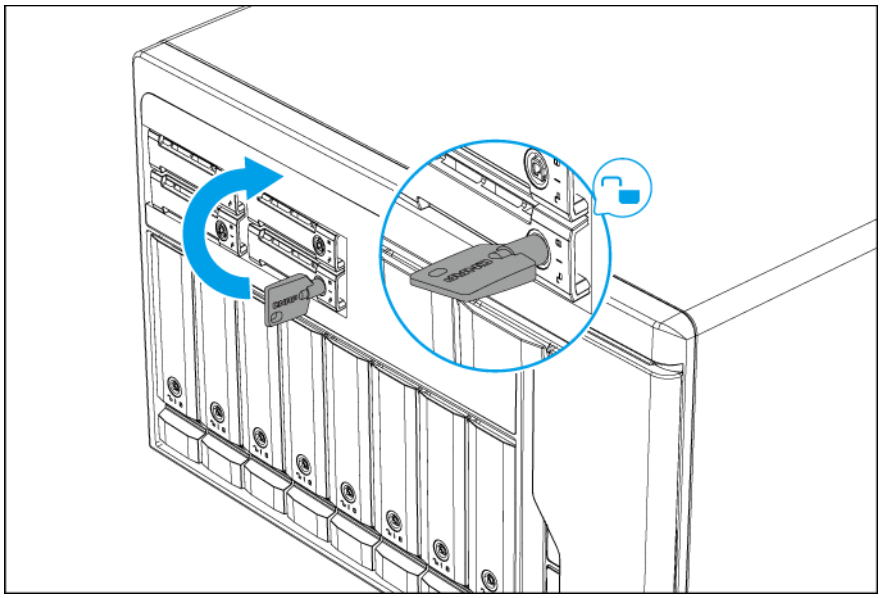
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.
- 

  Moving fan blades: Keep your hands and other body parts away from moving fan blades.
- 

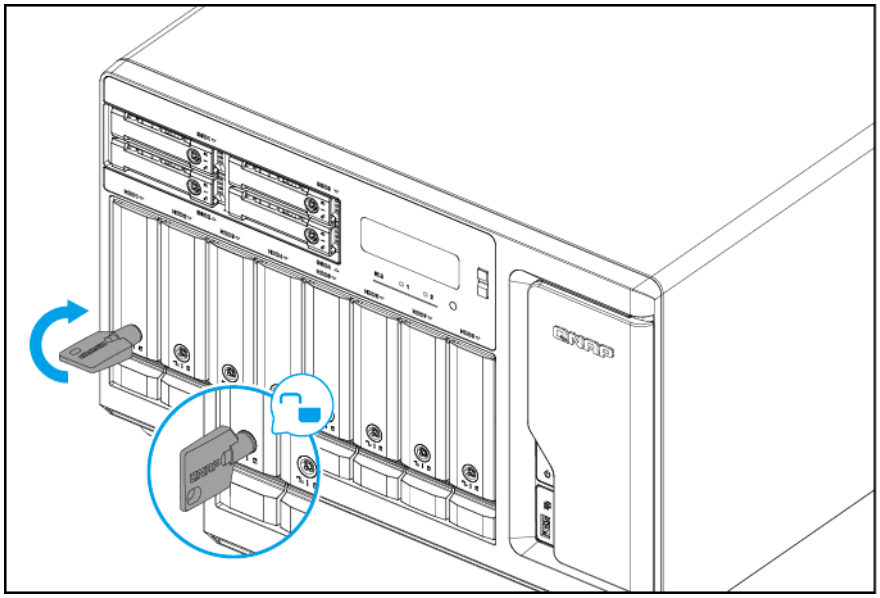
  Other moving components: Keep your hands and other body parts away from other moving components.

1. Power off the NAS.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.

4. Unlock the trays.



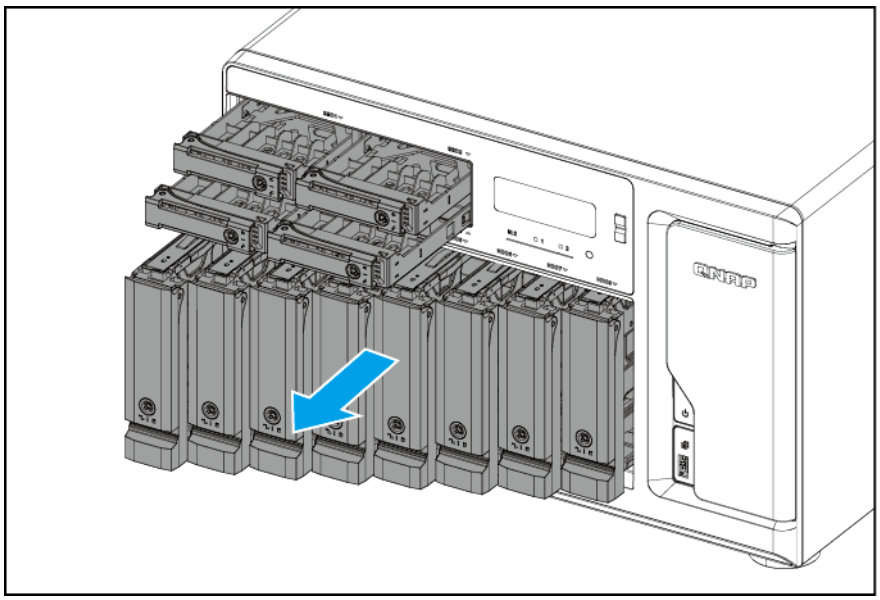
2.5-inch drive tray



3.5-inch drive tray

5. Remove all drive trays.

> **Important**
> Remember the number of each drive. Each drive will need to be returned to their original bay.



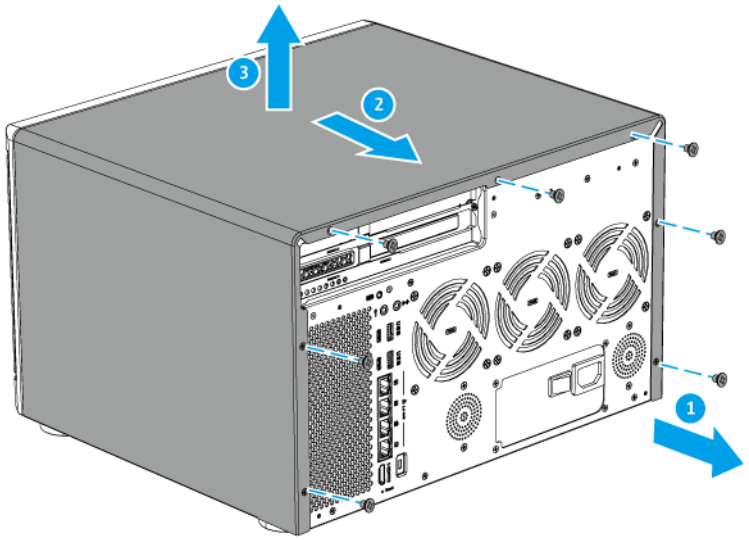
6. Remove the case cover.

   a. Remove the screws on the rear panel.

   > **Note**
   > - The flat head M3x4 screws require a Phillips #2 screwdriver.
   > - A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

   b. Slide the cover back.

c. Lift the cover until it is completely detached from the chassis.



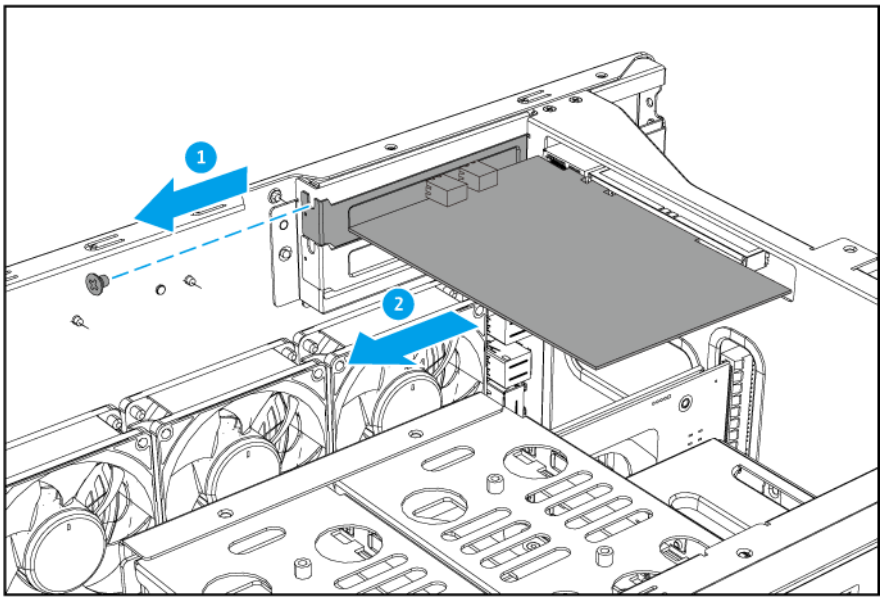
7. Remove expansion cards.

a. Remove the screw that secures the expansion card to the chassis.

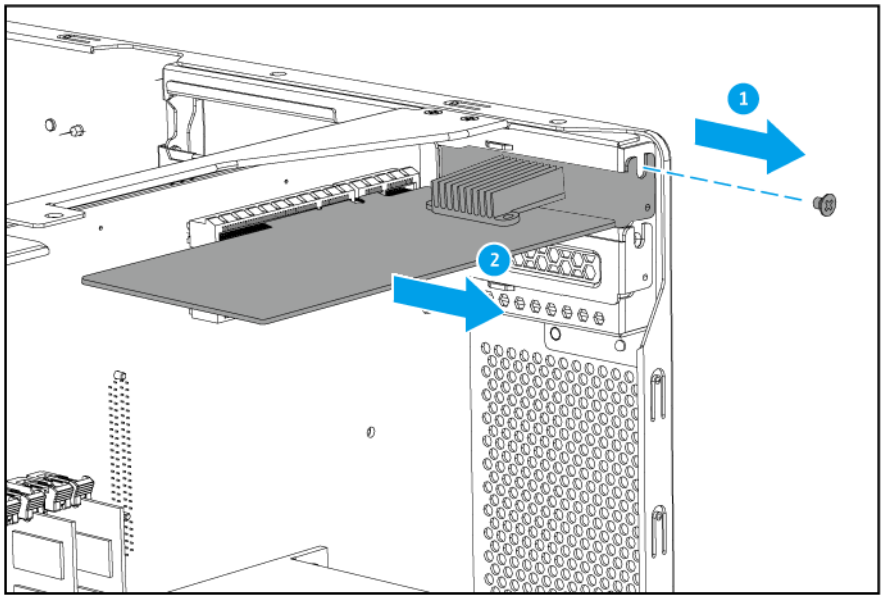
> **Note**
>
> - The pan head M3x5 screw requires a Phillips #2 screwdriver.
> - A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Hold the card by the edges.

c. Carefully pull the card out of the slot.



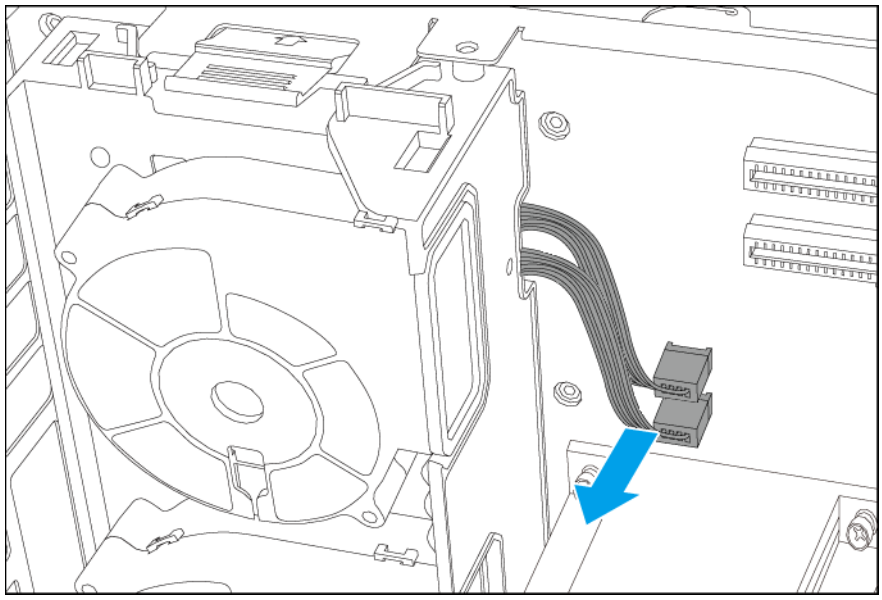
Full-height PCIe expansion card



Low-profile PCIe expansion card

8. Remove the CPU fan tray.

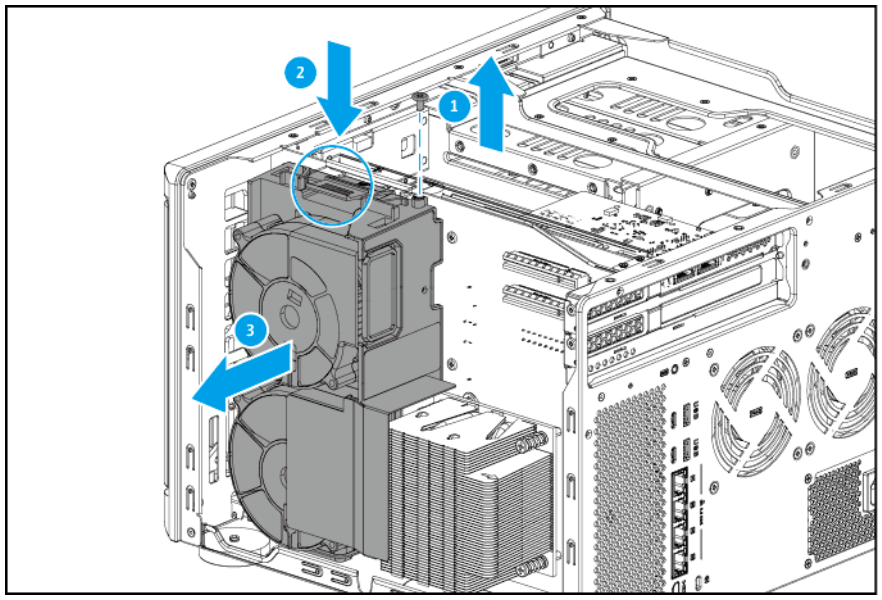
   a. Detach the fan cables from the system board.



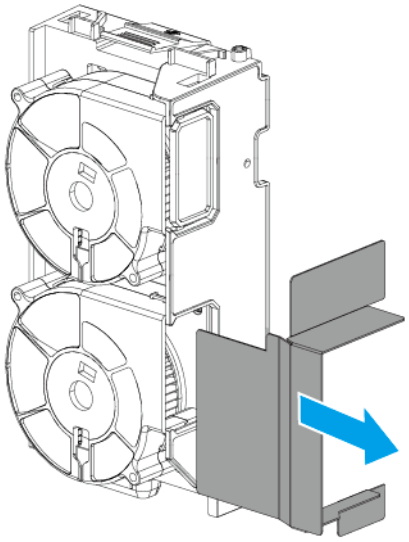
   b. Remove the screw that secures the fan tray to the chassis.

> **Note**
>
> - The flat head M3x4 screw requires a Phillips #2 screwdriver.
> - A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

   c. Press the clip and then pull the fan tray out of the chassis.

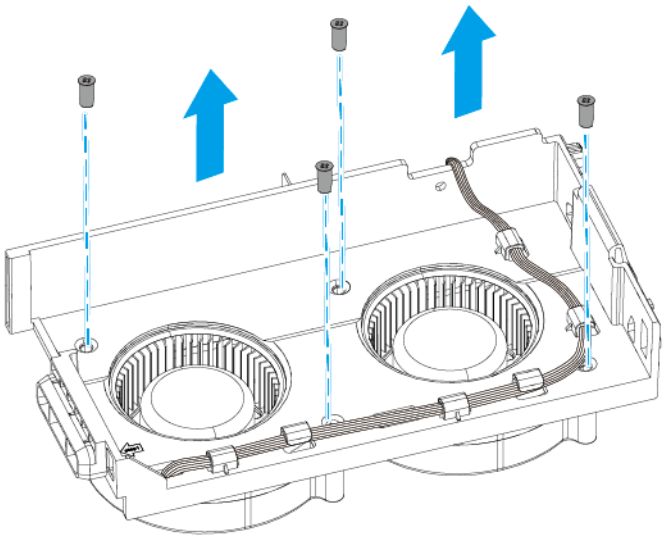


9. Remove the air shroud from the fan tray.



10. Remove the CPU fans from the fan tray.

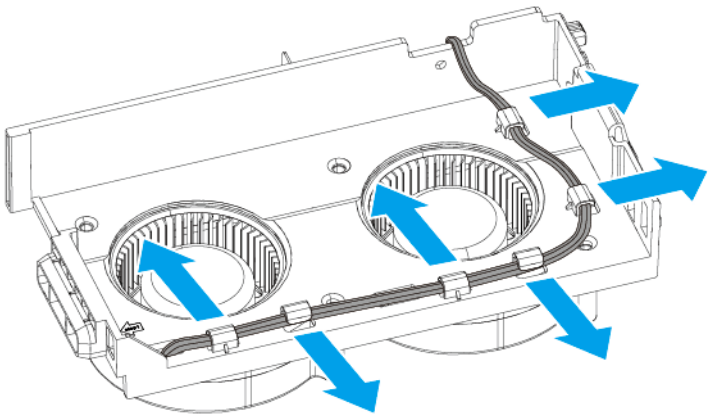
    a. Remove the screws that secure the fans to the fan tray.



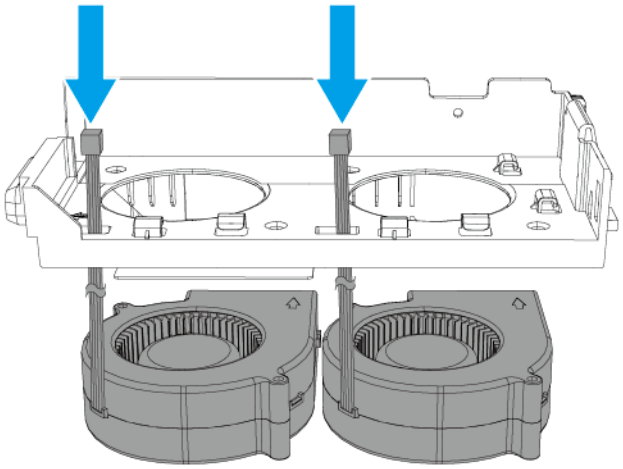
Note

- The flat head M4.5x10 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Remove the fan cables from the cable clips on the fan tray.

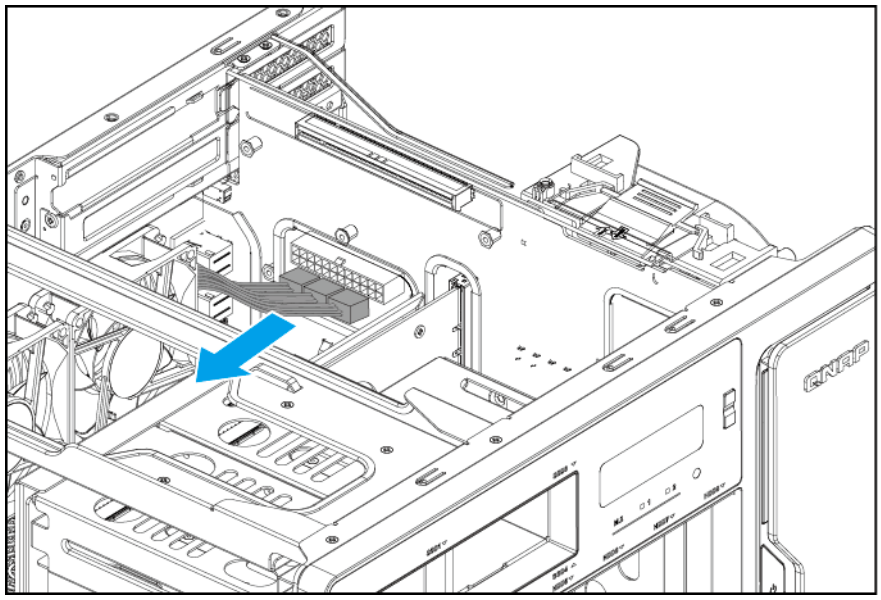


c. Remove the fans.

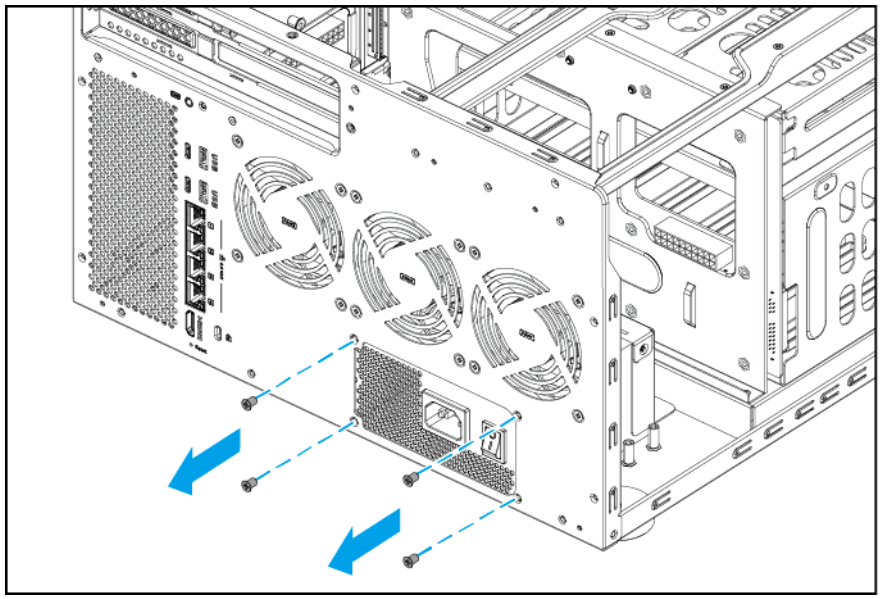


11. Remove the rear panel.

a. Detach the system fan cables from the system board.



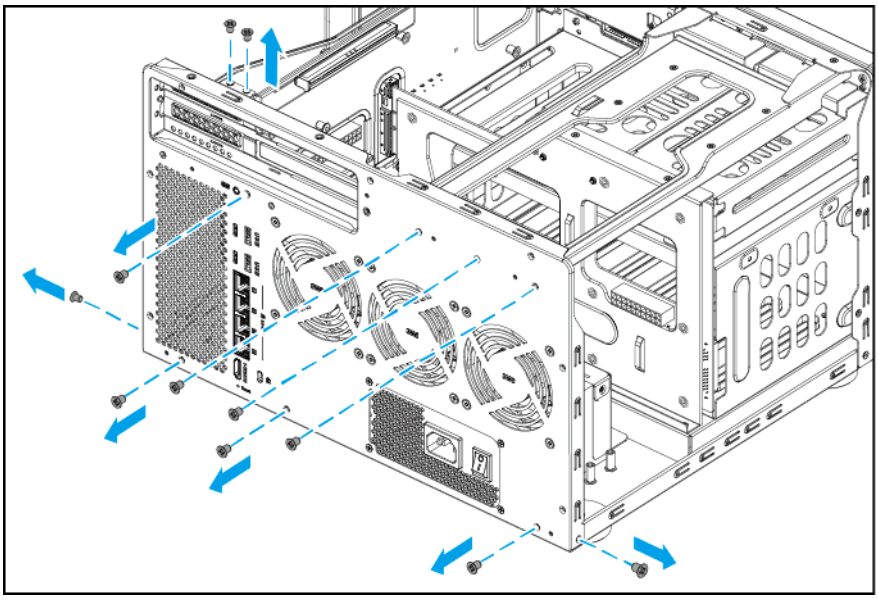
b. Remove the screws that secure the power supply unit to the rear panel.



Note

- The flat head #6-32 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

c. Remove the screws that secure the rear panel to the chassis.



Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

d. Remove the rear panel.

12. Remove the system fans from the rear panel

Important

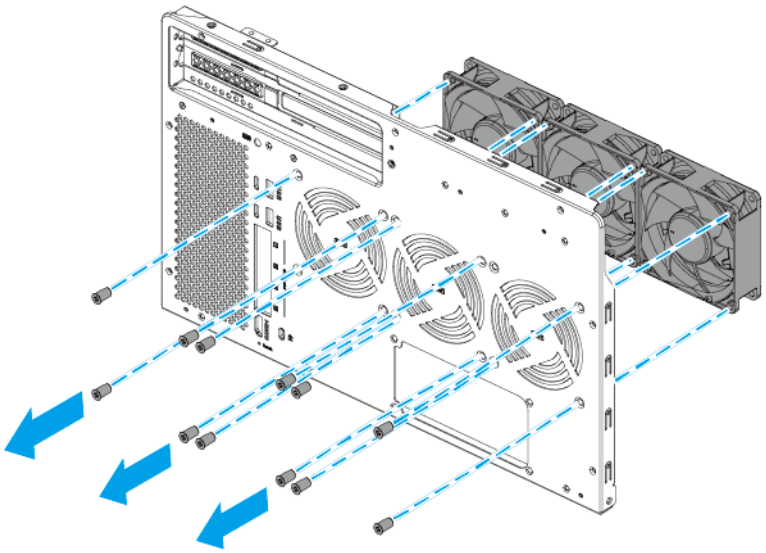
Remember which side of the fans is attached. To ensure proper cooling, the correct side must be reattached so that the airflow is directed out of the rear panel. There may be an arrow on the side of the fans that indicates the airflow direction.

a. Remove the screws that secure the fans to the rear panel.

Note

- The flat head M5x10 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Remove the fans.



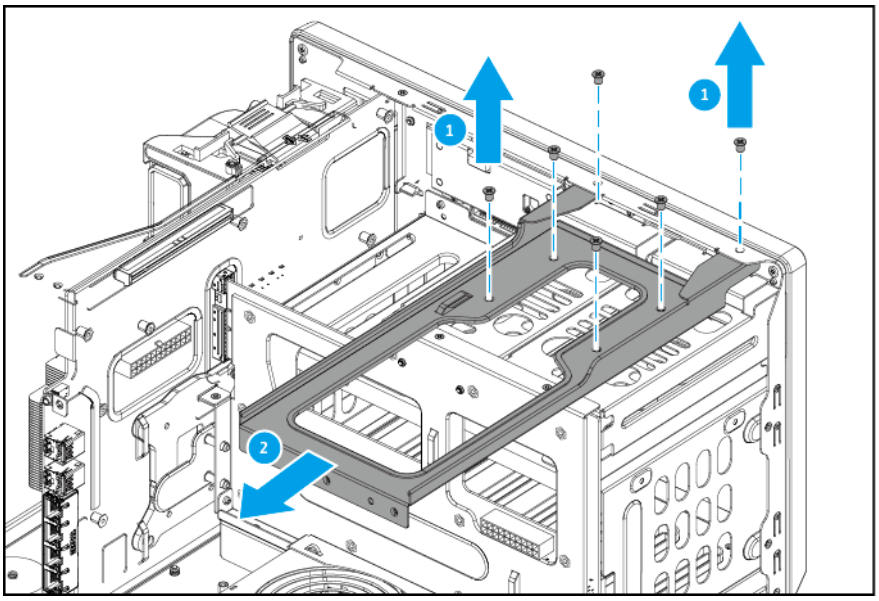
13. Remove the top bracket from the chassis.

a. Remove the screws that secure the top bracket to the chassis.

Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

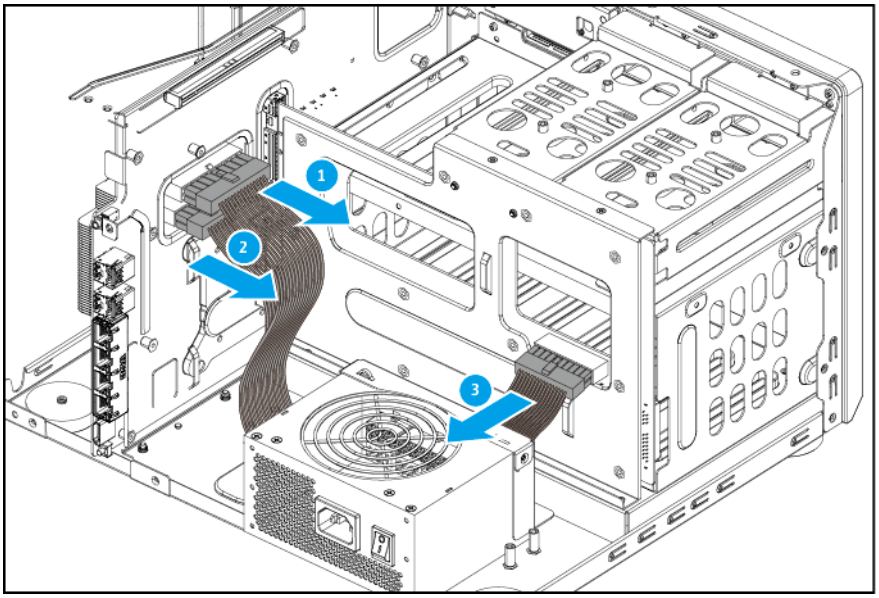
b. Slide back the top bracket to remove it from the chassis.



14. Remove the power supply unit from the chassis.

a. Detach the power cables from the system board.

b. Detach the power cable from the backplane.

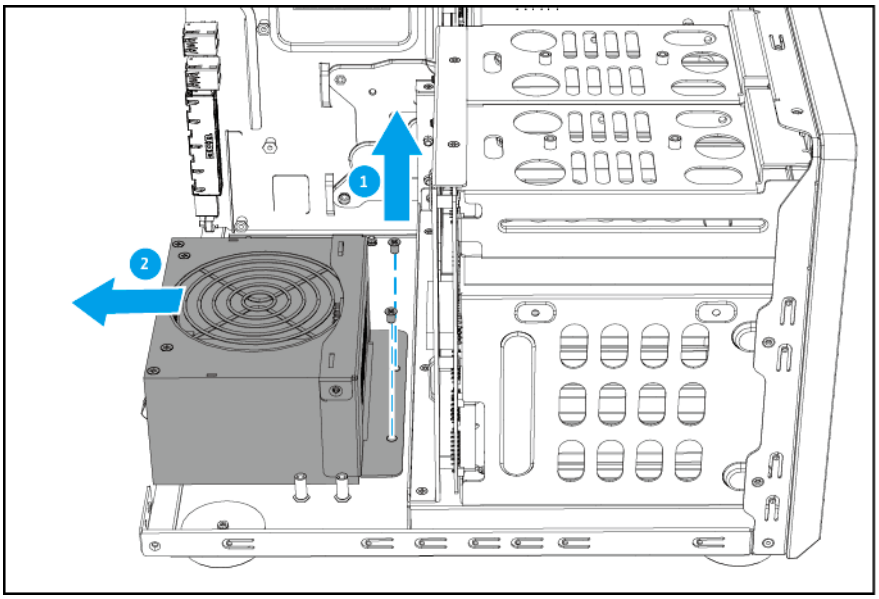


c. Remove the screws that secure the power supply unit bracket to the chassis.

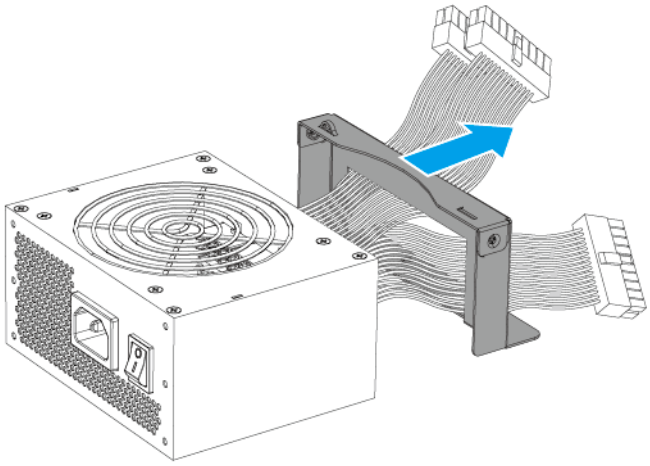
Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

d. Remove the power supply unit and power supply unit bracket.



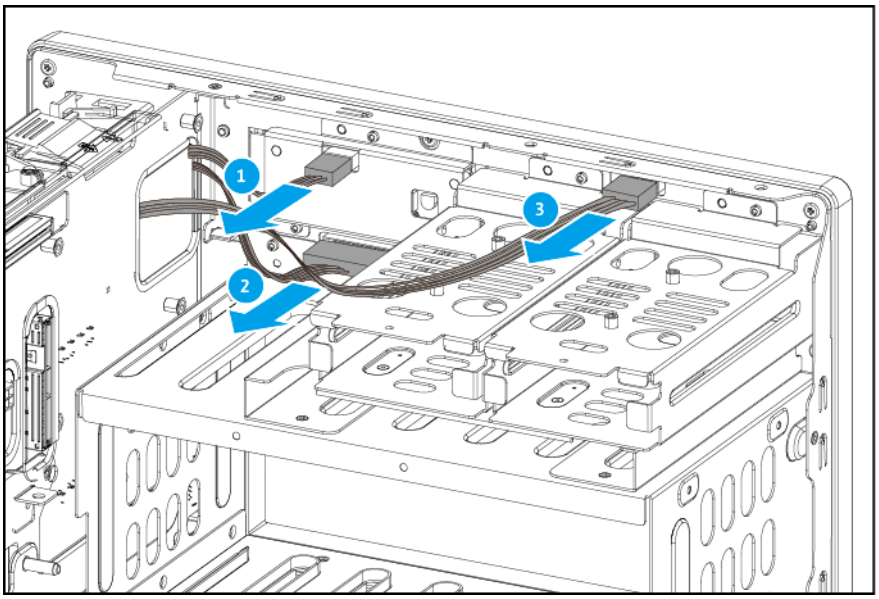
e. Remove the power supply unit bracket from the power supply unit.



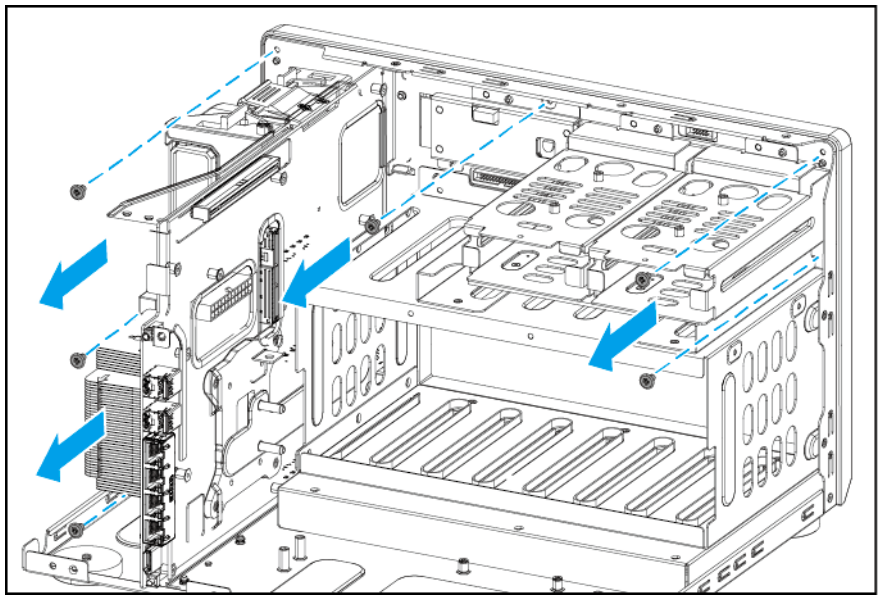
15. Remove the front panel from the chassis.

a. Detach the LCD display module cable.

b. Detach the LED cables.



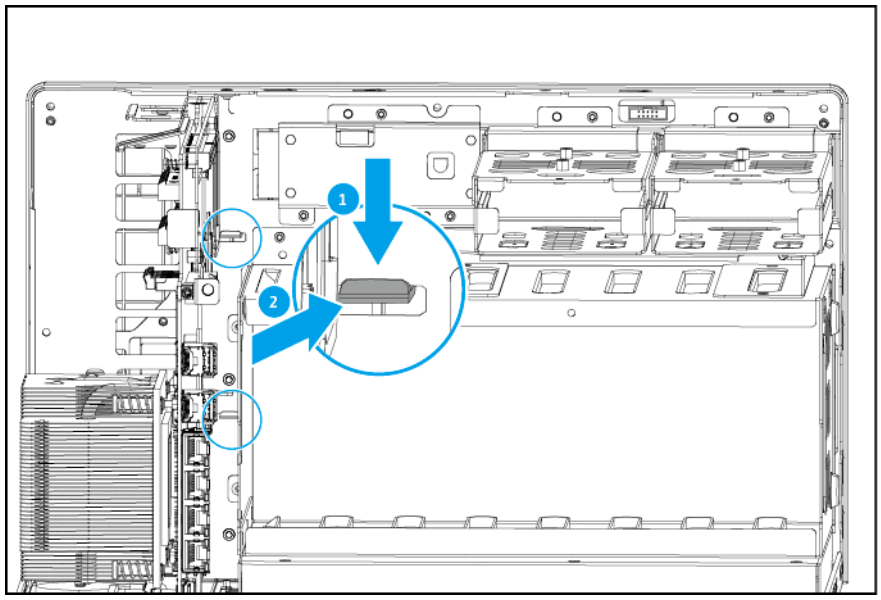
c. Remove the screws that secure the front panel to the chassis.



Note

- The pan head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.
- On other models, there may also be screws that secure the front panel to the bottom of the chassis.

d. Release the latches that secure the front panel to the chassis.

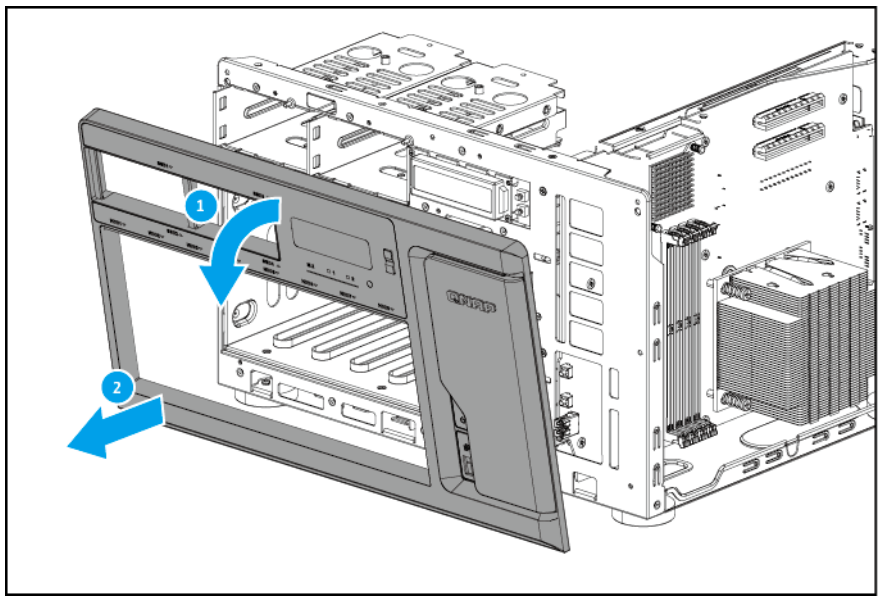


> **Note**
> You may need to use a tool such as a slotted screwdriver to help push down and release the latches.

e. Remove the top end of the front panel from the chassis.

f. Pull the front panel away at an angle.

> **Note**
> There are hooks at the bottom of the front panel that latch onto the chassis.

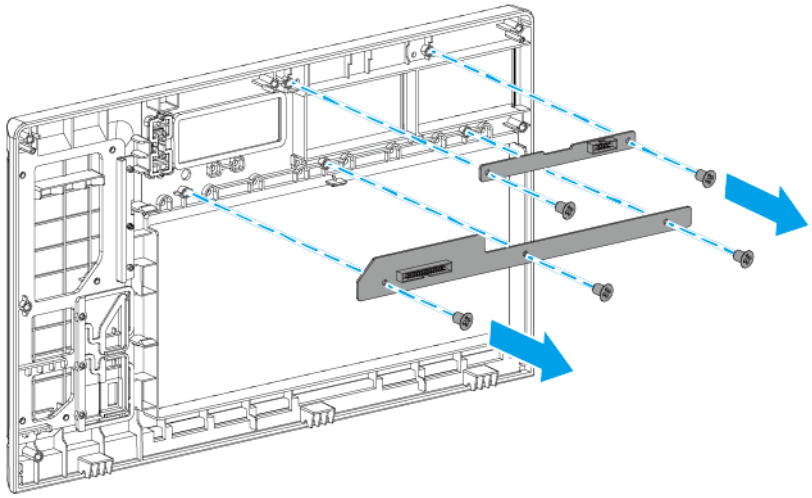


16. Remove the LED circuit boards from the front panel.

a. Remove the screws that secure the LED circuit boards to the front panel.

> **Note**
>
> - The pan head M3x5 screws require a Phillips #2 screwdriver.
> - A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Remove the LED circuit boards.



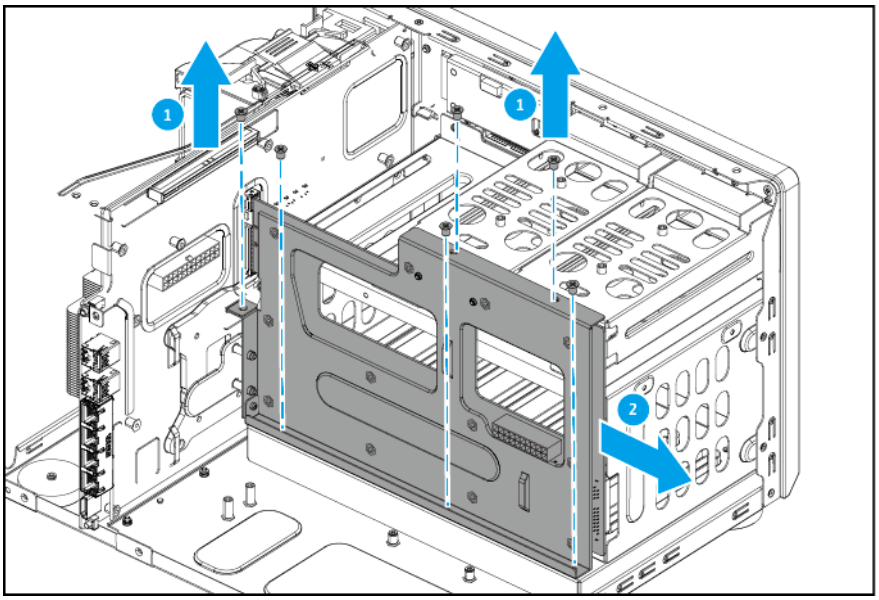
17. Remove the backplane tray from the chassis.

a. Remove the screws that secure the backplane tray to the chassis.

Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Slide out the backplane tray.

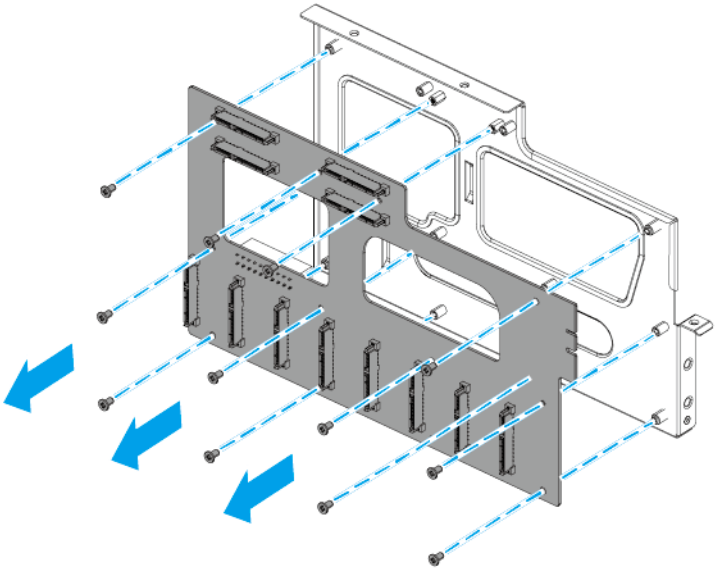


18. Remove the backplane from the tray.

a. Remove the screws that secure the backplane to the tray.

> **Note**
>
> - The pan head M3x5 screws require a Phillips #2 screwdriver.
> - A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

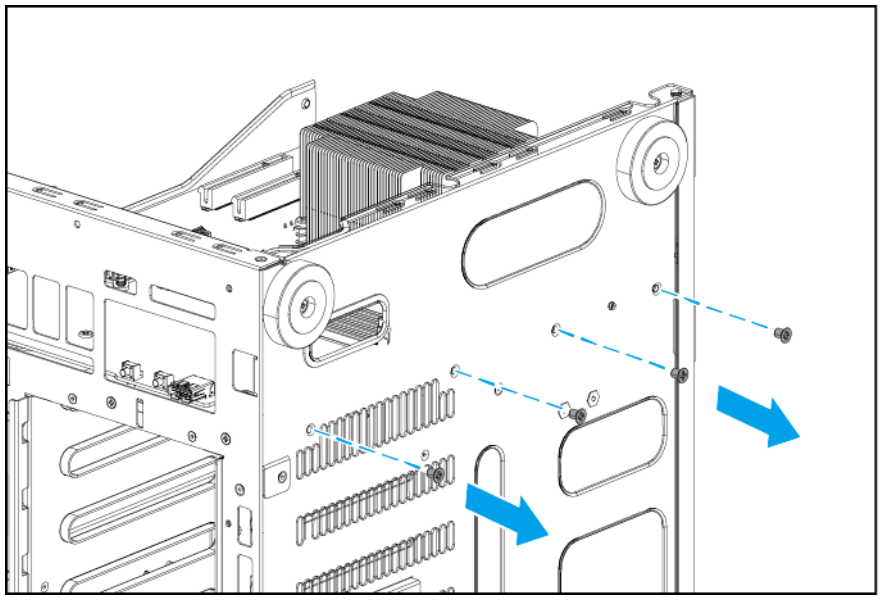
b. Remove the backplane.



19. Remove the system board tray from the chassis.

a. Position the chassis on its left side.

b. Remove the screws that secure the system board tray to the bottom of the chassis.



Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

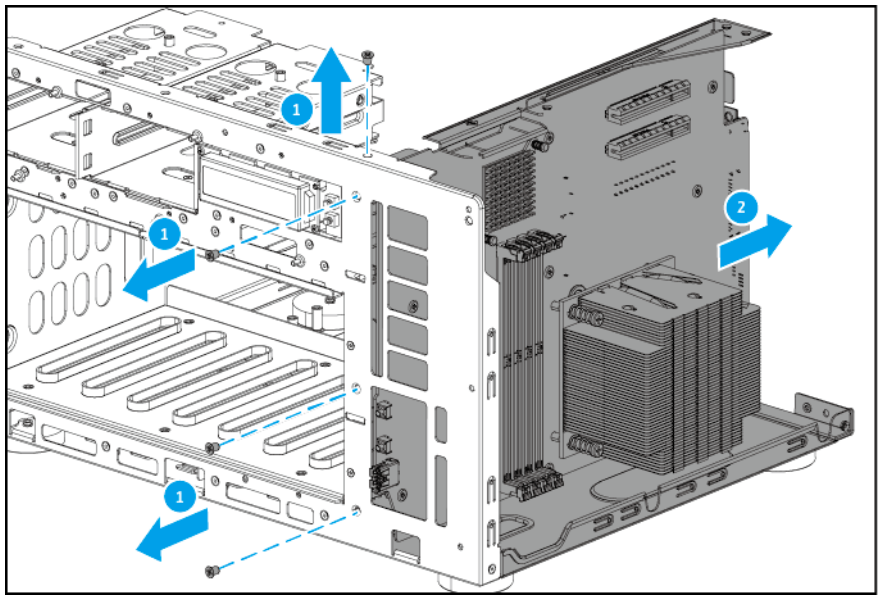
c. Place the chassis in its normal upright position.

d. Remove the screws that secure the system board tray to the front of the chassis.

Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

e. Slide out the system board tray.



20. Remove the CPU heatsink from the system board.

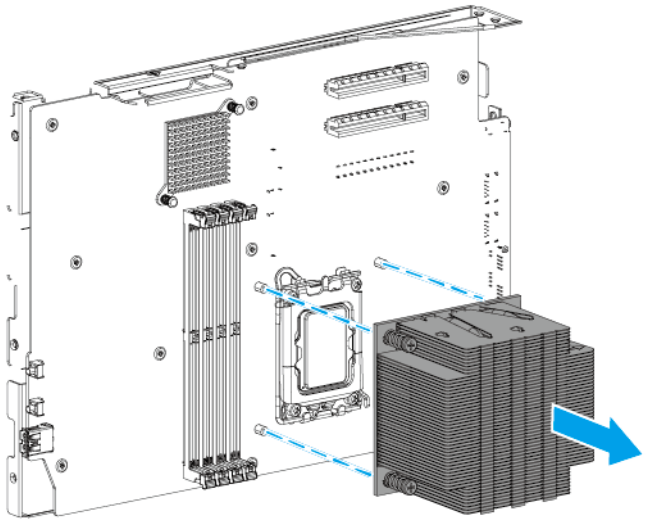
a. Loosen the screws that secure the heatsink to the system board.

Note

- The pan head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.
- First loosen each screw only halfway, and then fully loosen all the screws. If you fully loosen a single screw first, it may become difficult to loosen the other screws.

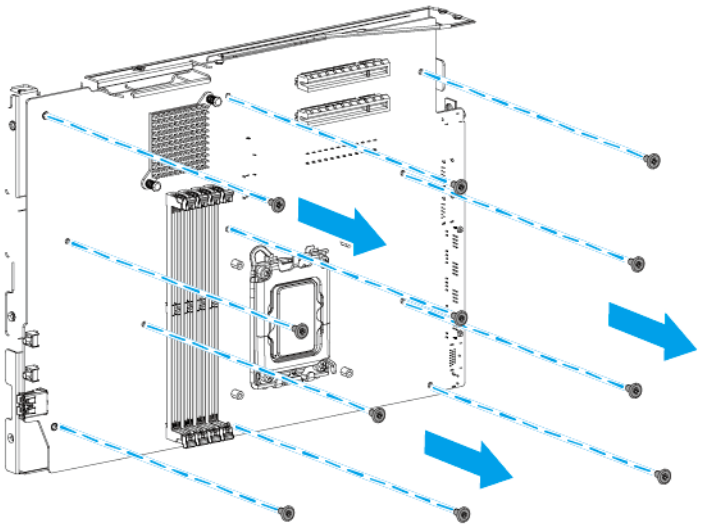
b. Remove the heatsink.

> **Tip**
> There may be a layer of thermal paste that keeps the heatsink attached to the CPU. You can break the adhesive tension of the thermal paste by gently twisting the heatsink.



21. Remove the system board from the system board tray.

a. Remove the screws that secure the system board to the tray.



Note

- The pan head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Remove the system board.

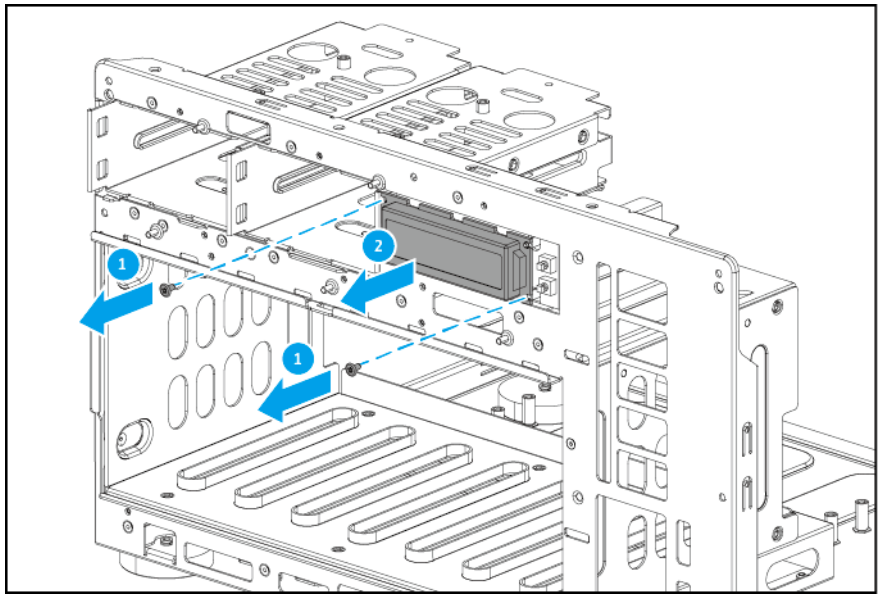
22. Remove the LCD display module from the front panel.

a. Remove the screws that secure the LCD display module to the front panel.

Note

- The pan head M2.5x3 screws require a Phillips #1 screwdriver
- A torque of 3 kgf.cm (2.60 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Remove the LCD display module.



23. Remove the rubber feet from the bottom of the chassis.

a. Position the chassis on its left side.

b. Remove the screws that secure the rubber feet to the chassis.

> **Note**
>
> - The flat head M3x5 screws require a Phillips #2 screwdriver.
> - A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

c. Remove the rubber feet.

Reassembling the TVS-h1288X

Before you start, make sure you read the Repair requirements.

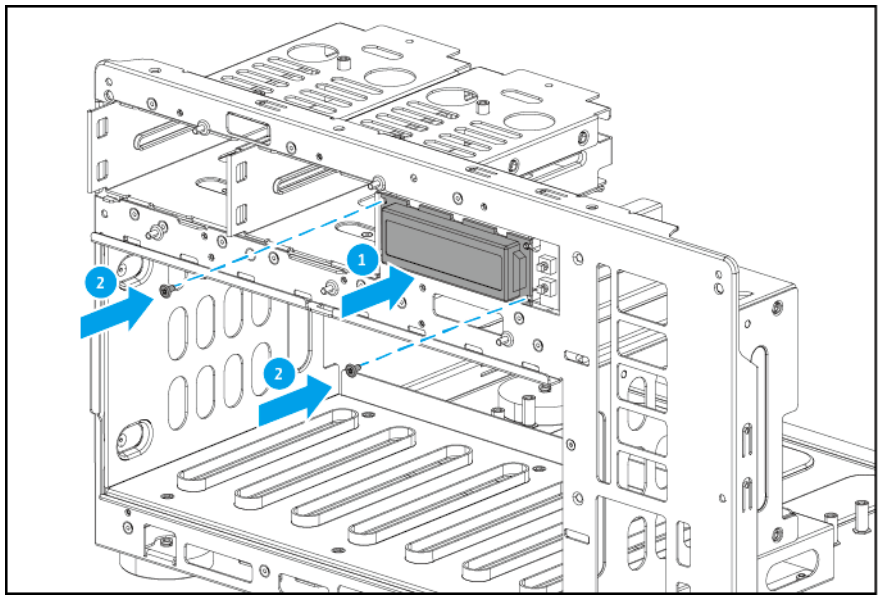
> **Warning**
>
> - Observe electrostatic discharge (ESD) procedures to avoid damage to components.
> - 
>
>   **Moving fan blades:** Keep your hands and other body parts away from moving fan blades.
> - 
>
>   **Other moving components:** Keep your hands and other body parts away from other moving components.

1. Attach the rubber feet to the bottom of the chassis.
   a. Position the chassis on its left side.
   b. Align the holes in the rubber feet to the screw holes at the bottom of the chassis.
   c. Attach the screws.

   > **Note**
   >
   > - The flat head M3x5 screws require a Phillips #2 screwdriver.
   > - A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

2. Attach the LCD display module to the front panel.
   a. Align the screw holes in the LCD display module to the screw holes in the front panel.

b. Attach the screws.



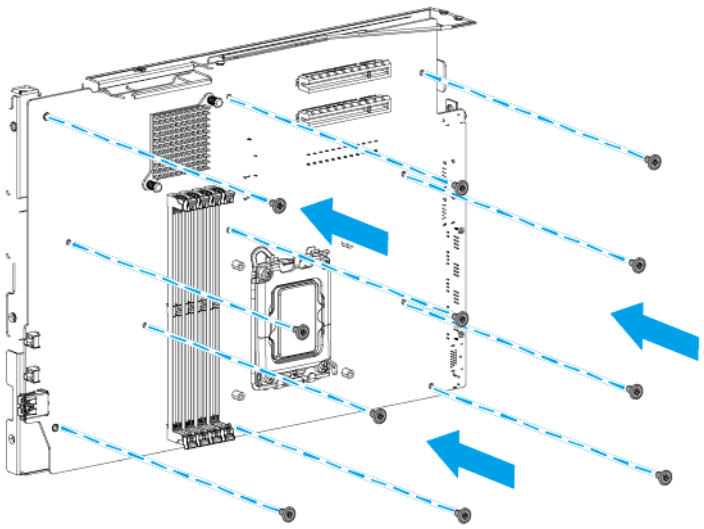
Note

- The pan head M2.5x3 screws require a Phillips #1 screwdriver
- A torque of 3 kgf.cm (2.60 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

3. Attach the system board to the system board tray.

a. Align the mounting holes in the system board with the screw holes on the tray.

b. Attach the screws.



Note

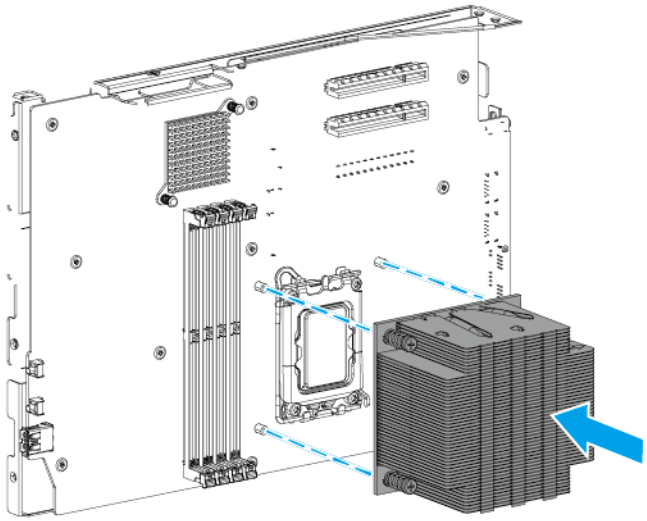
- The pan head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

4. Attach the CPU heatsink to the system board.

   a. Align the screws on the heatsink with the screw holes on the system board.

   Important
   To ensure proper cooling of the CPU, make sure the heatsink fins are parallel to the fan's airflow direction so that the air flows through all fins.

   b. Tighten the screws.



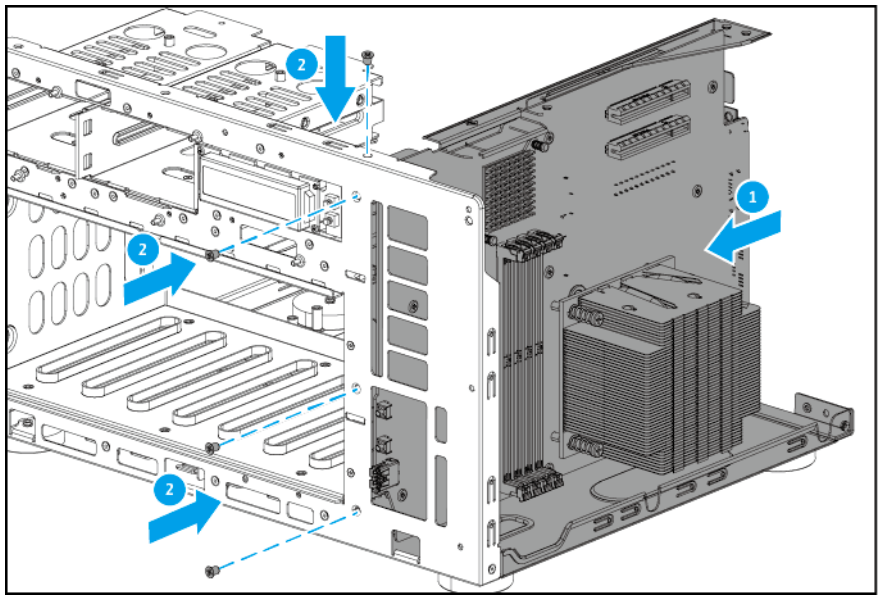
Note

- The pan head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.
- First tighten each screw only halfway to stabilize the heatsink in place, and then fully tighten all the screws. If you fully attach a single screw first, you will not be able to attach the other screws.

5. Attach the system board tray to the chassis.

   a. Slide the system board tray into the chassis.

b. Attach the screws that secure the tray to the front of the chassis.

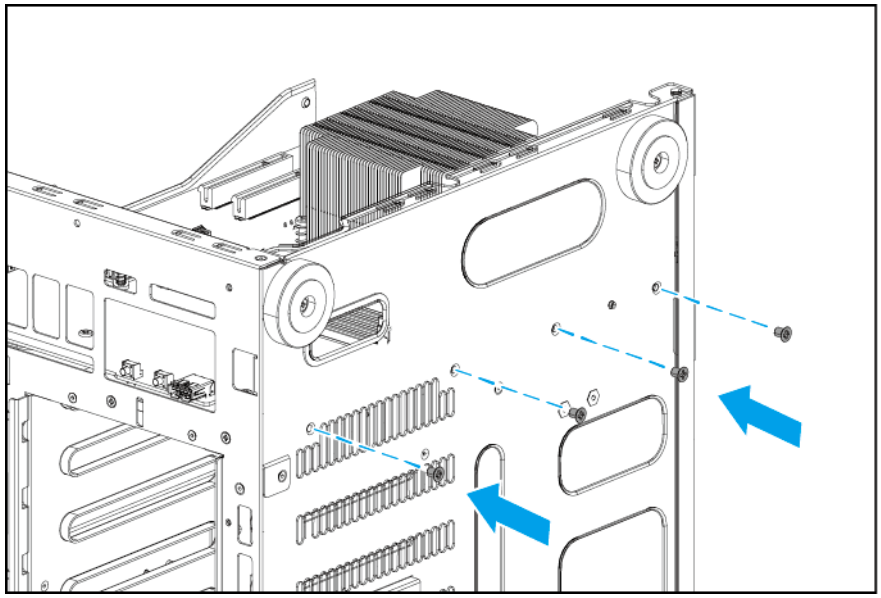


Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

c. Position the chassis on its left side.

d. Attach the screws that secure the tray to the bottom of the chassis.



Note

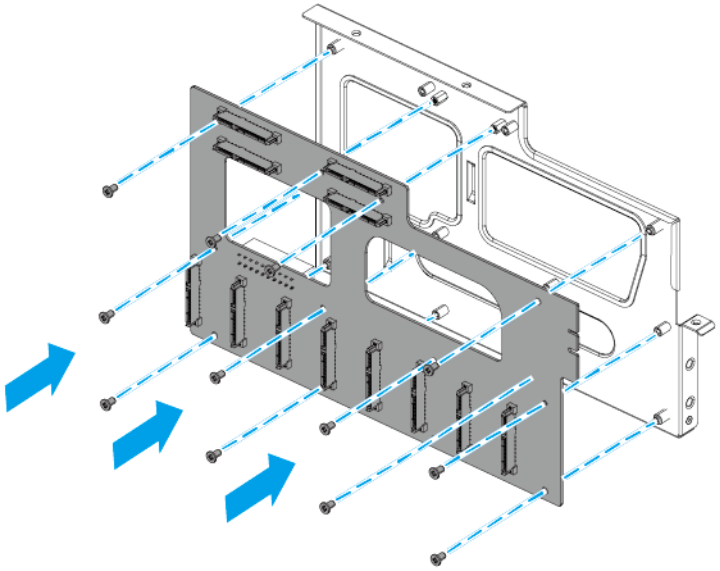
- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

e. Place the chassis in its normal upright position.

6. Attach the backplane to the backplane tray.

a. Align the holes in the backplane to the screw holes on the backplane tray.

b. Attach the screws.



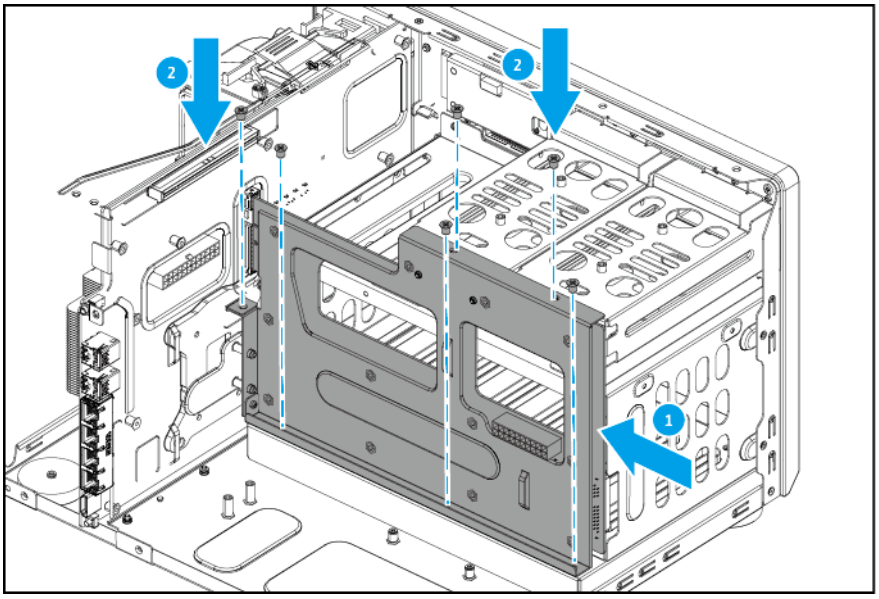
Note

- The pan head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

7. Attach the backplane tray to the chassis.

a. Slide in the backplane tray until the backplane connector is firmly inserted into the slot on the system board.

b. Attach the screws.



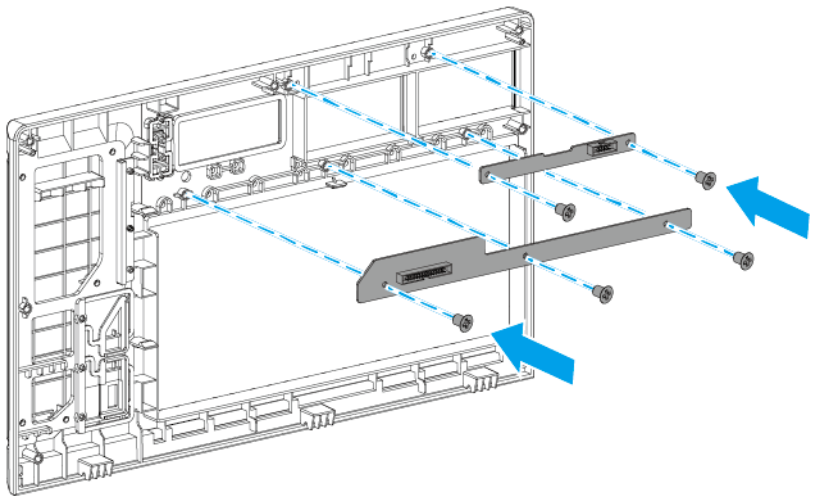
Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

8. Attach the LED circuit boards to the front panel.

a. Align the holes in the LED circuit boards to the screw holes on the front panel.

b. Attach the screws.



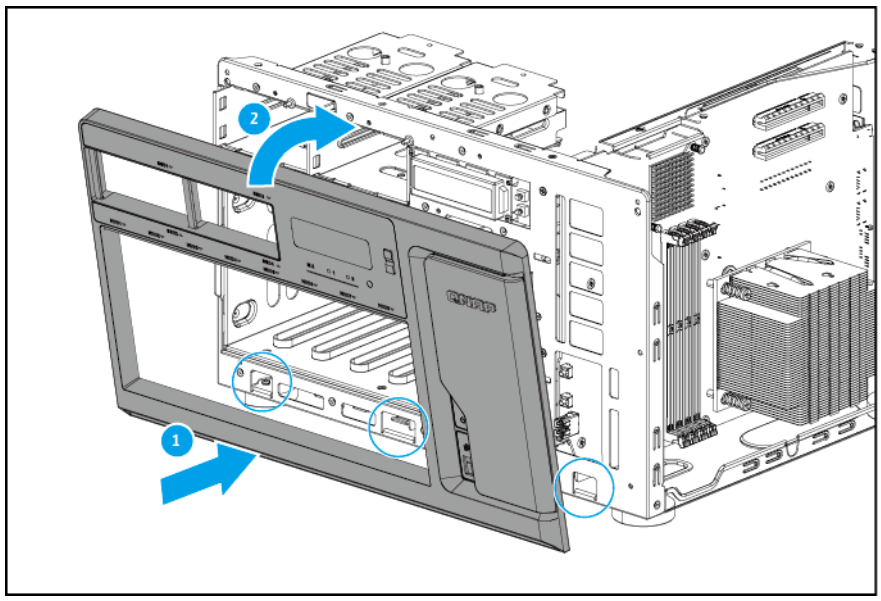
Note

- The pan head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

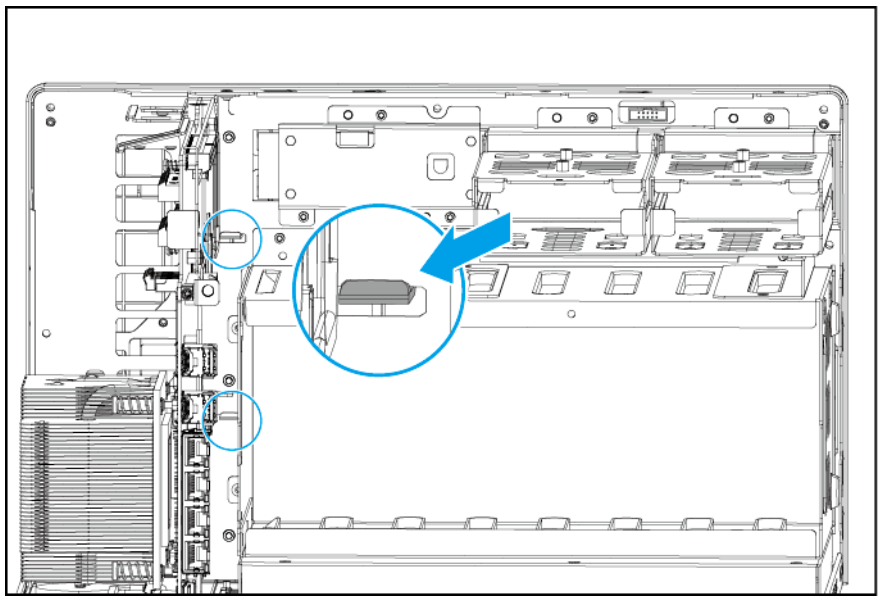
9. Attach the front panel to the chassis.

a. Insert the hooks at the bottom of the front panel to the holes on the chassis.

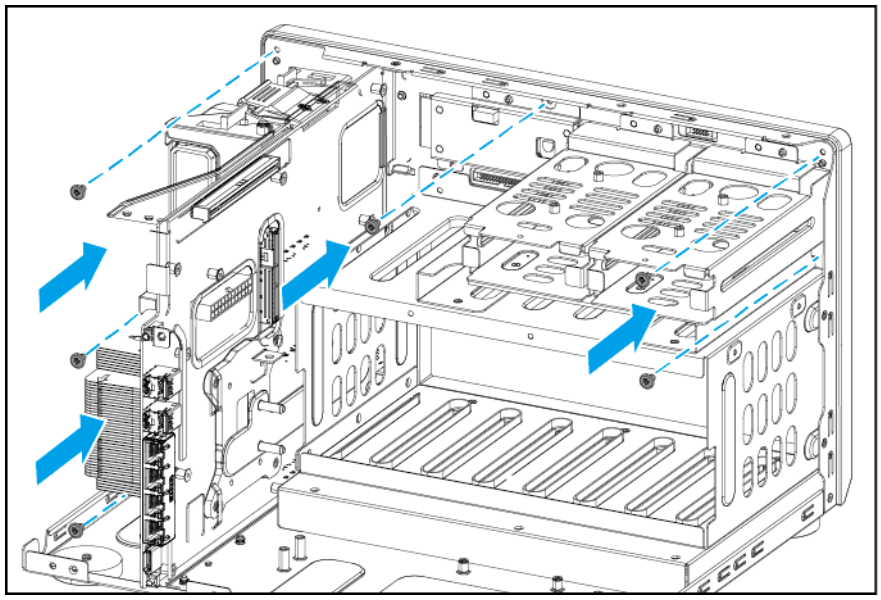
b. Attach the top of the front panel to the chassis.



c. Ensure the latches on the front panel are secured to the chassis.



d. Attach the screws.

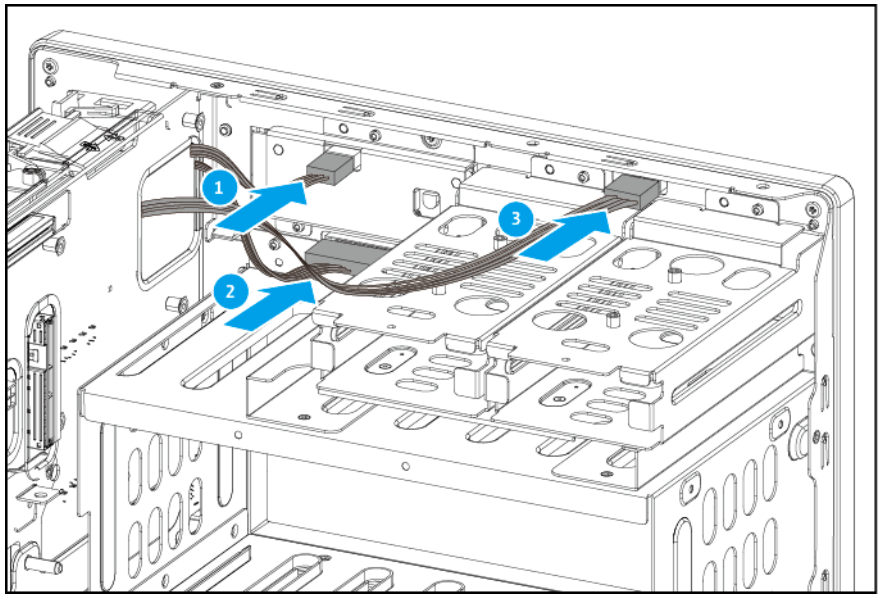


Note

- The pan head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.
- On other models, there may also be screws that secure the front panel to the bottom of the chassis.

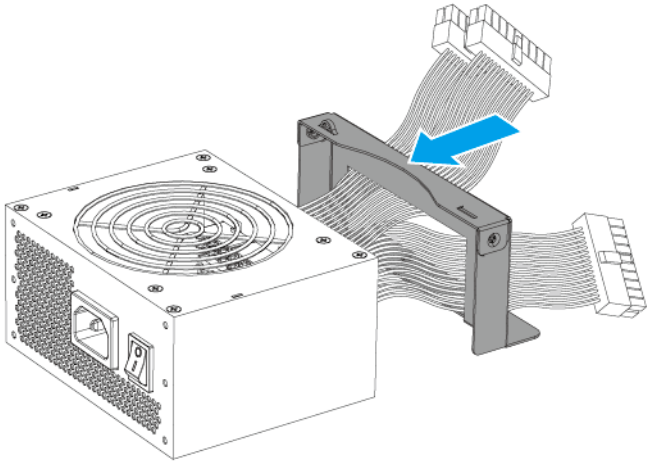
e. Attach the LED cables.

f. Attach the LCD display module cable.



10. Attach the power supply unit.

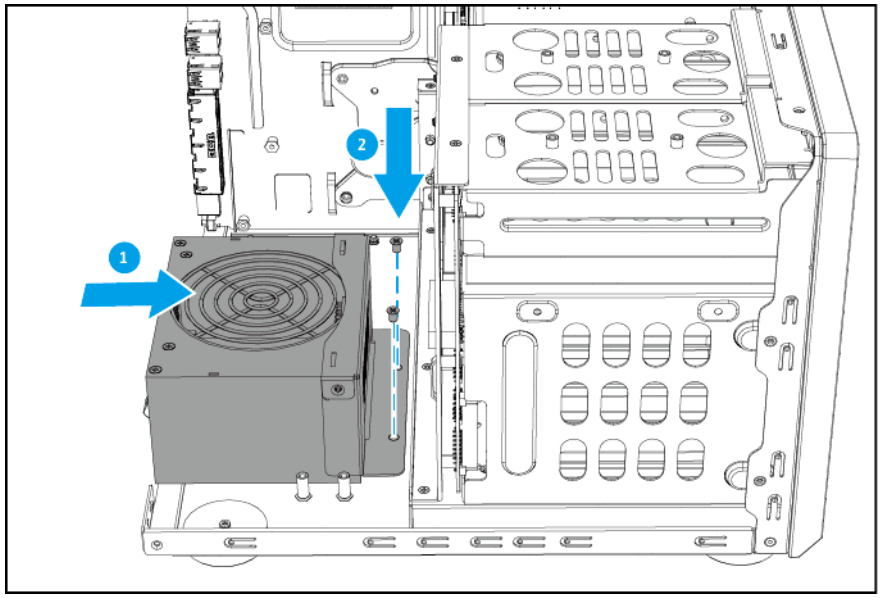
a. Attach the power supply unit bracket to the power supply unit.



b. Insert the power supply unit with the bracket.

c. Align the holes in the bracket with the holes on the chassis.

d. Attach the screws.

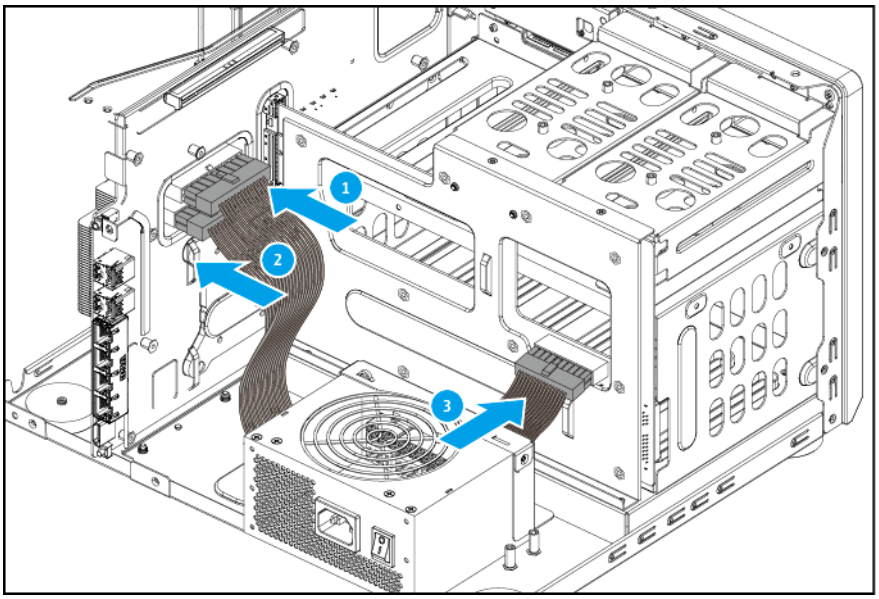


Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

e. Attach the power cables to the system board.

f. Attach the power cable to the backplane.

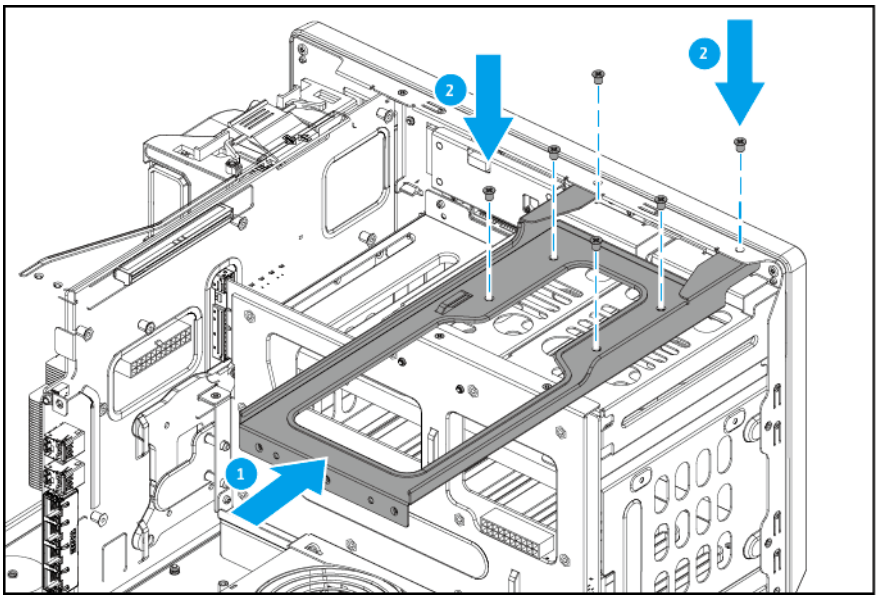


11. Attach the top bracket to the chassis.

a. Slide in the top bracket.

b. Align the holes in the top bracket to the screw holes on the chassis.

c. Attach the screws.



Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

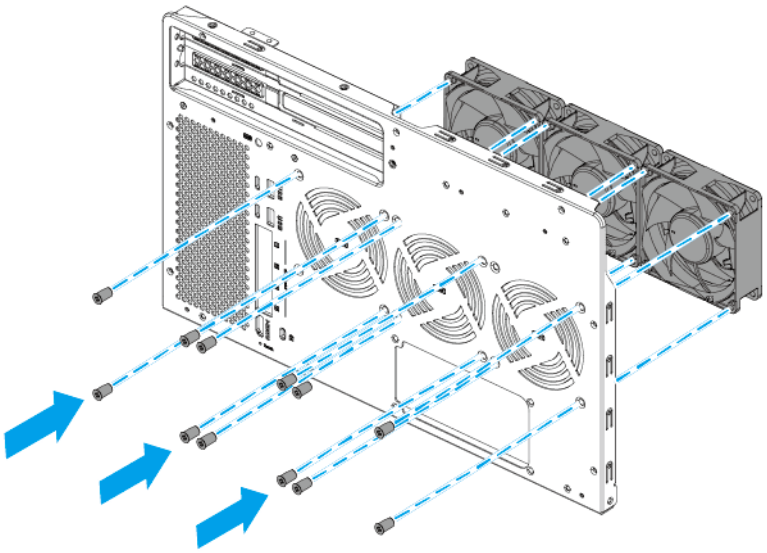
12. Attach the system fans to the rear panel.

Important

To ensure proper cooling, the correct side of the fans must be reattached so that the airflow is directed out of the rear panel. There may be an arrow on the side of the fans that indicates the airflow direction.

a. Align the holes in the fans with the screw holes on the rear panel.

b. Attach the screws.



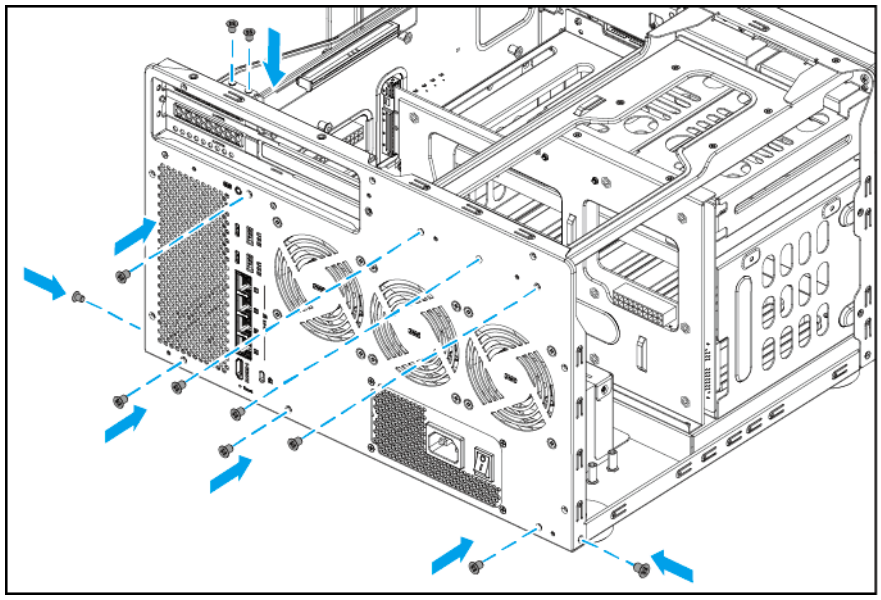
Note

- The flat head M5x10 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

13. Attach the rear panel to the chassis.

a. Align the holes on the rear panel to the screw holes and ports on the chassis.

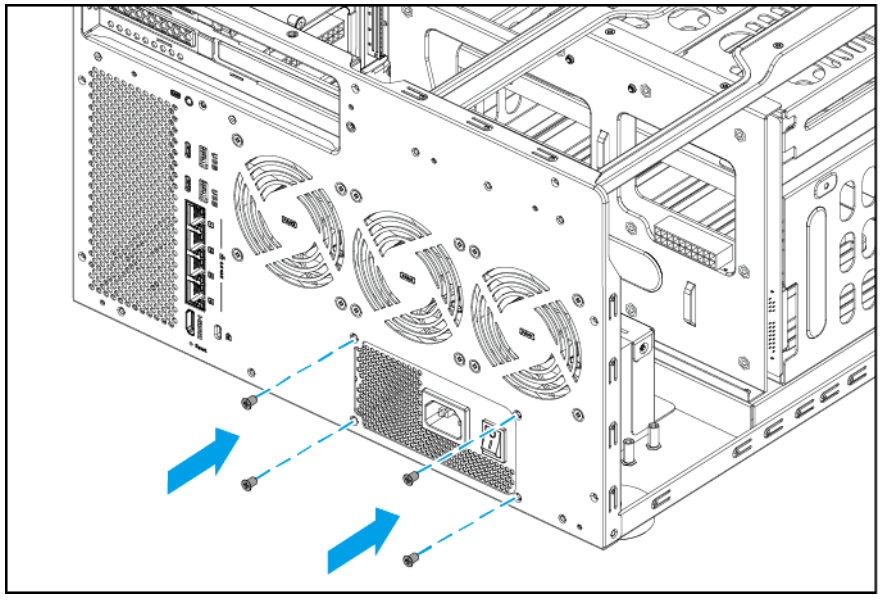
b. Attach the screws that secure the rear panel to the chassis.



Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

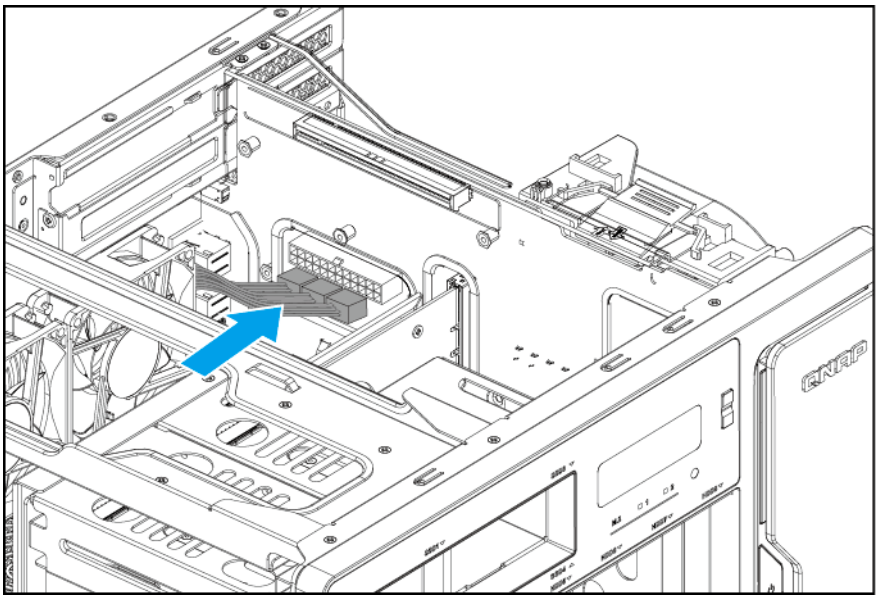
c. Attach the screws that secure the power supply unit to the rear panel.



Note

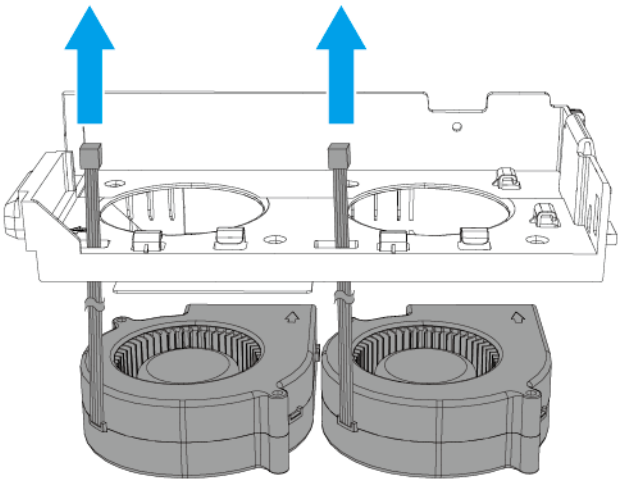
- The flat head #6-32 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

d. Attach the system fan cables to the system board.



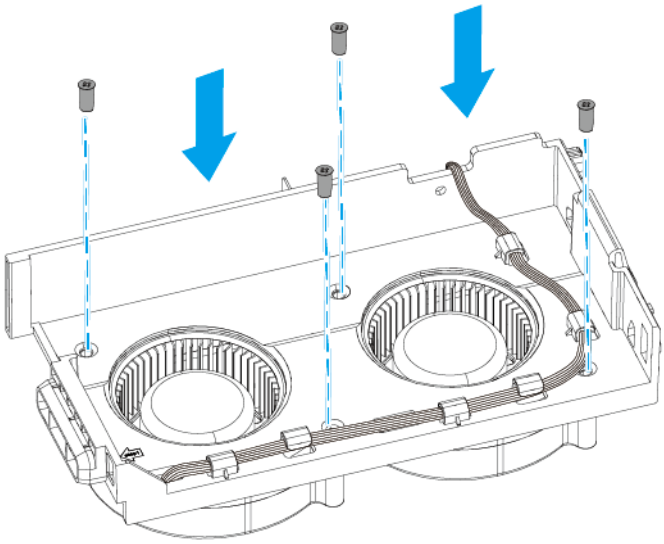
14. Attach the CPU fans to the fan tray.

a. Pass the fan cables through the holes in the fan tray.



b. Align the holes on the fans to the screw holes in the fan tray.

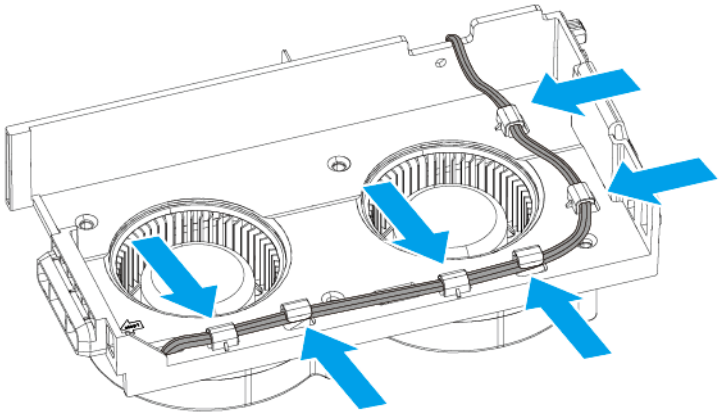
c. Attach the screws.



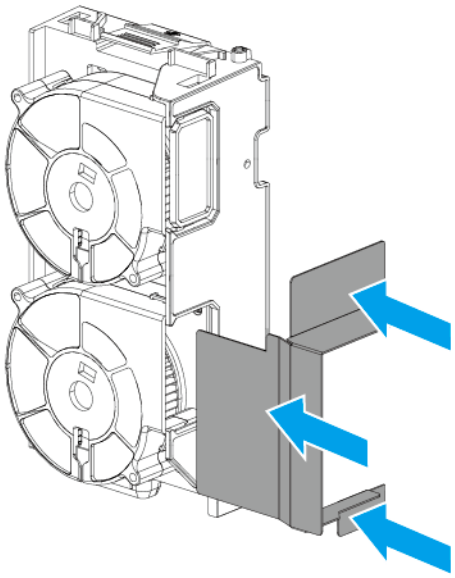
Note

- The flat head M4.5x10 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

d. Attach the fan cables to the cable clips on the fan tray.



15. Attach the air shroud to the fan tray.
The air shroud has three adhesive surfaces: Two attach to the fan tray and one attaches to the lower CPU fan.

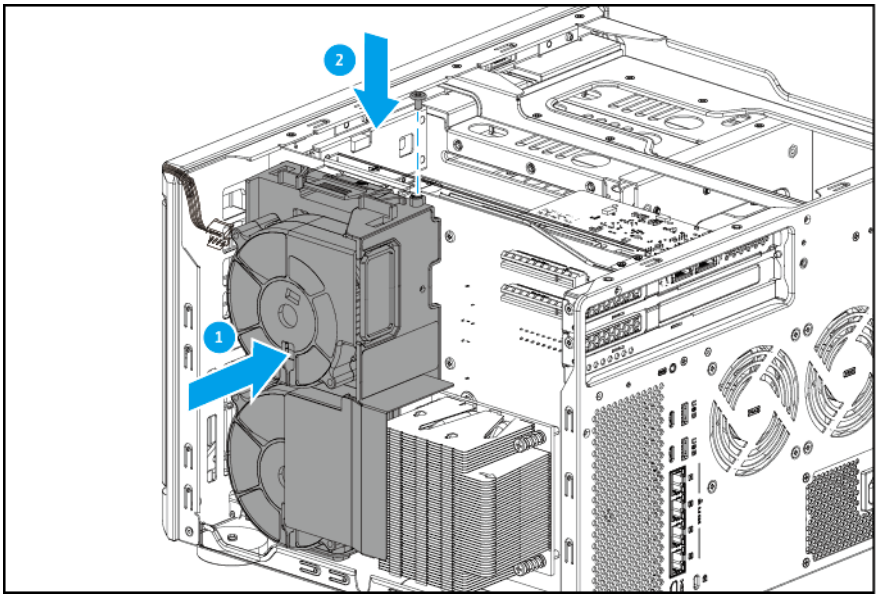


16. Attach the fan tray to the chassis.

a. Insert the bottom of the fan tray into the chassis.

b. Push the module toward the system board until the latch locks the fan tray in place.

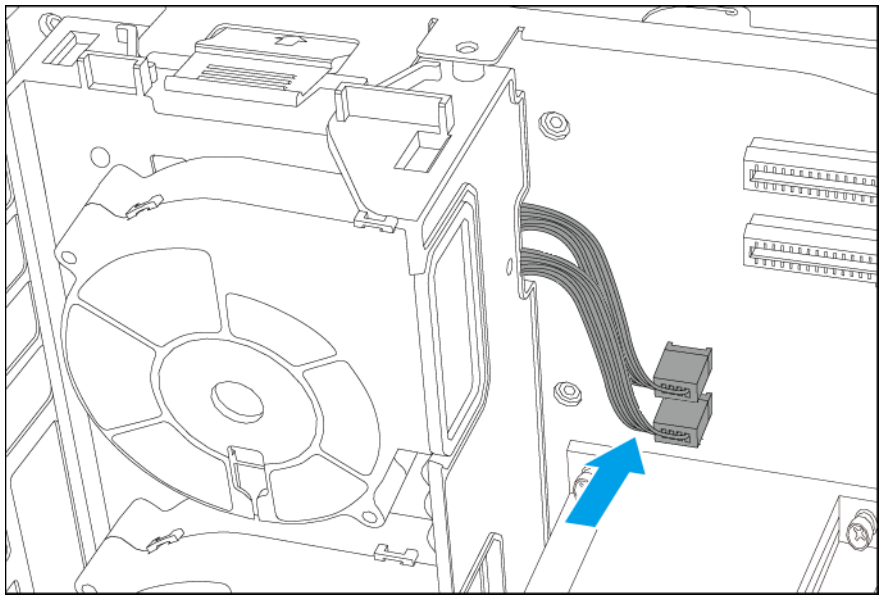
c. Attach the screw.



Note

- The flat head M3x4 screw requires a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

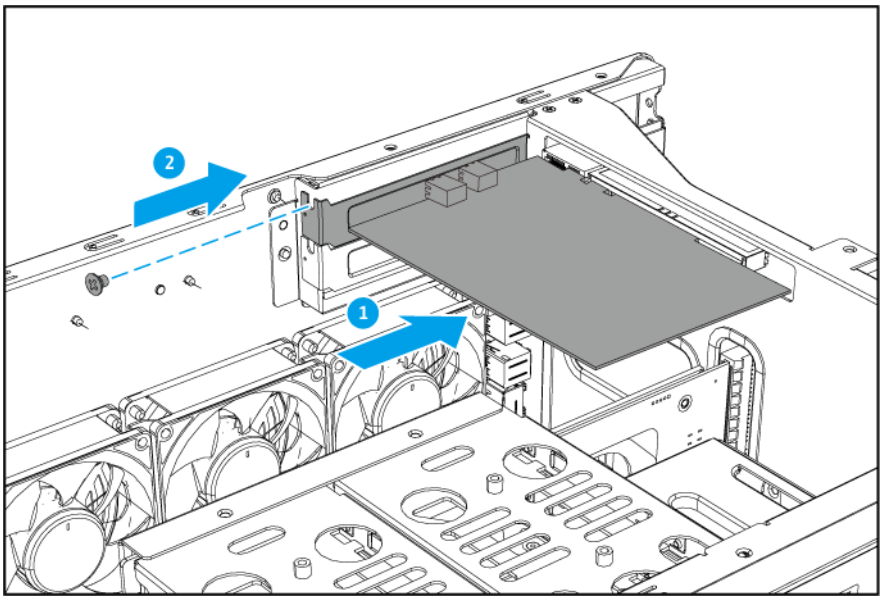
d. Attach the fan cables to the system board.



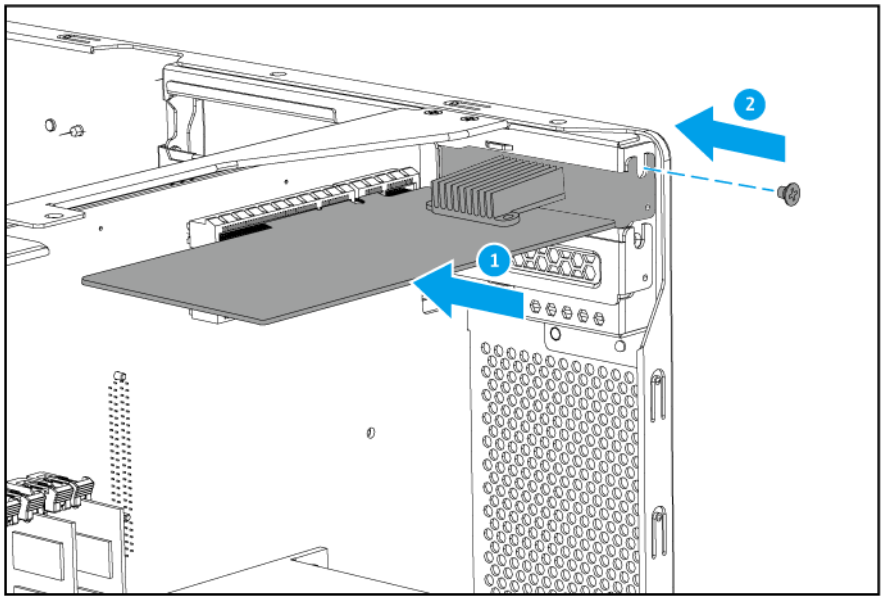
17. Attach expansion cards.

a. Insert an expansion card into the slot on the system board.

b. Attach the screw that secures the PCIe bracket to the rear panel.



Full-height PCIe expansion card



Low-profile PCIe expansion card

Note

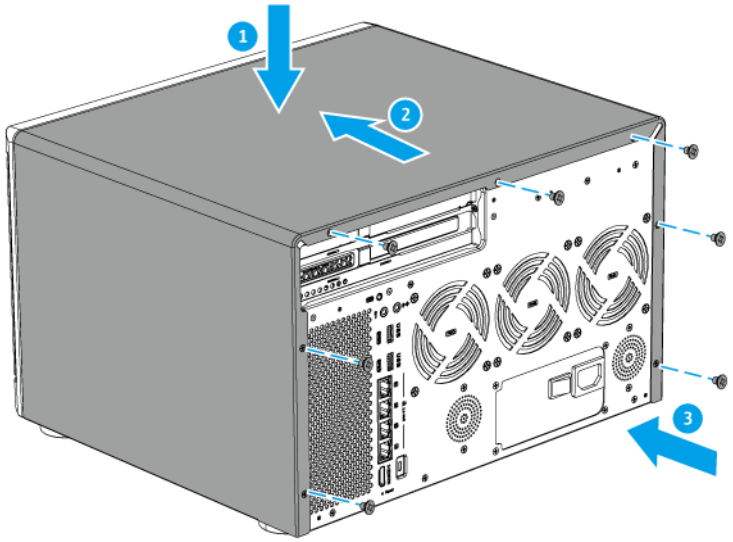
- The pan head M3x5 screw requires a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

18. Attach the case cover.

a. Place the cover on the device.

b. Slide the cover forward.

c. Attach the screws.



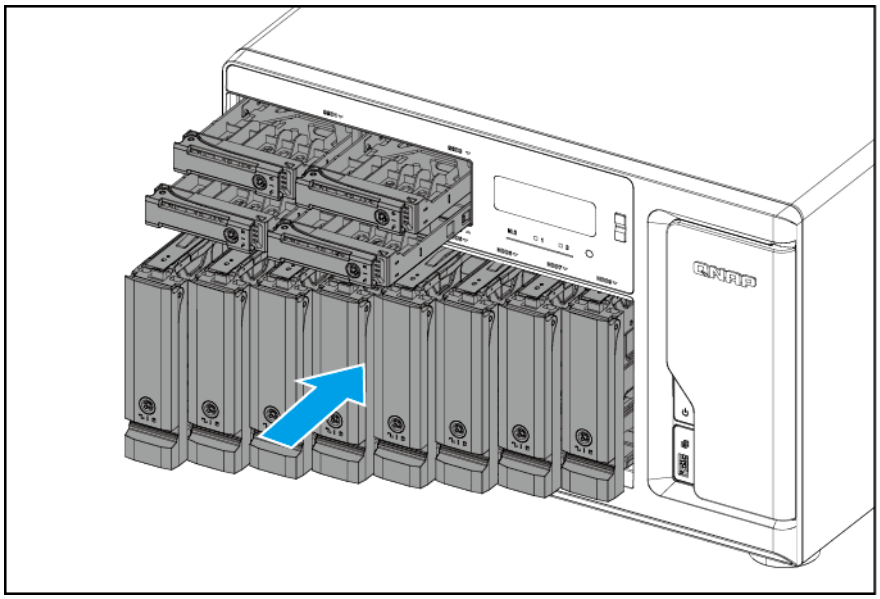
Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

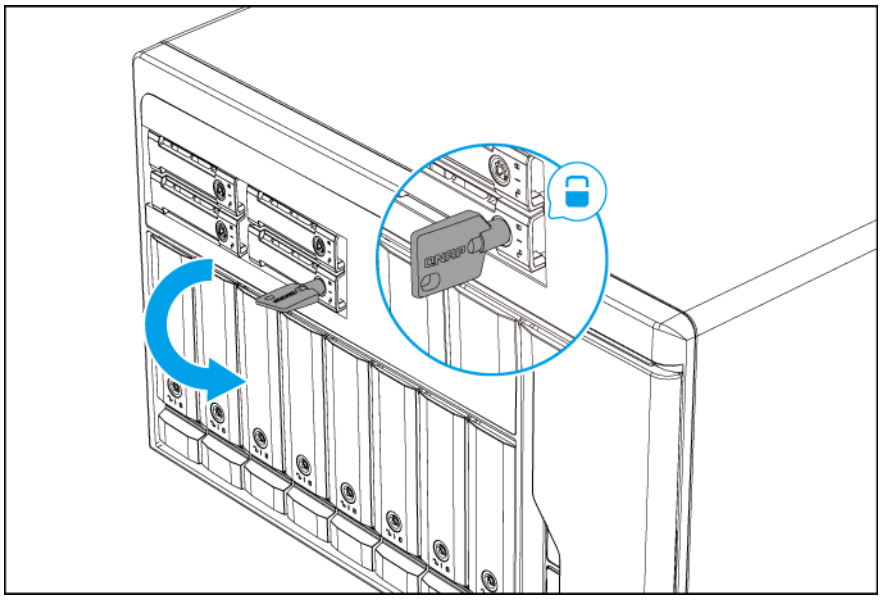
19. Slide each drive tray back into the NAS.

Important

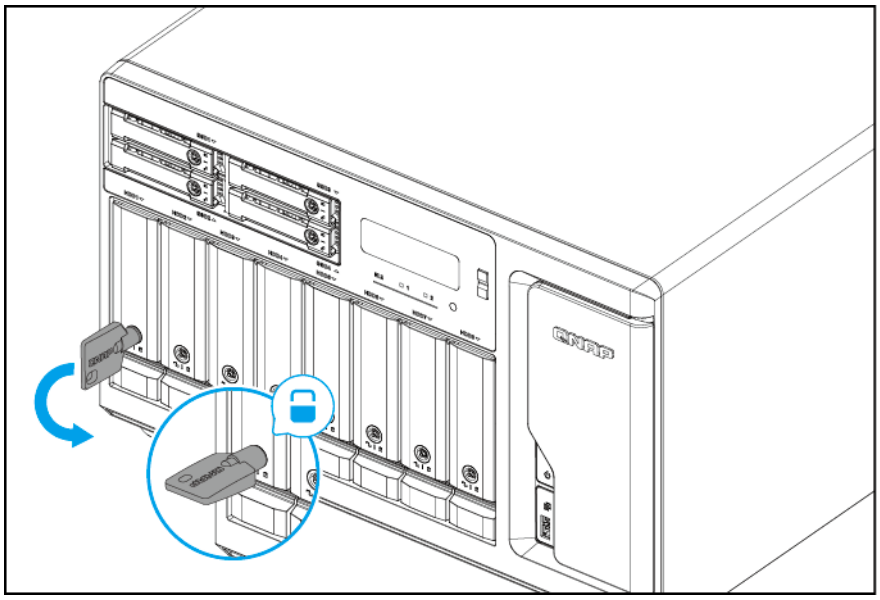
Each drive must be returned to their original bay.



20. Lock the trays.



2.5-inch trays



3.5-inch trays

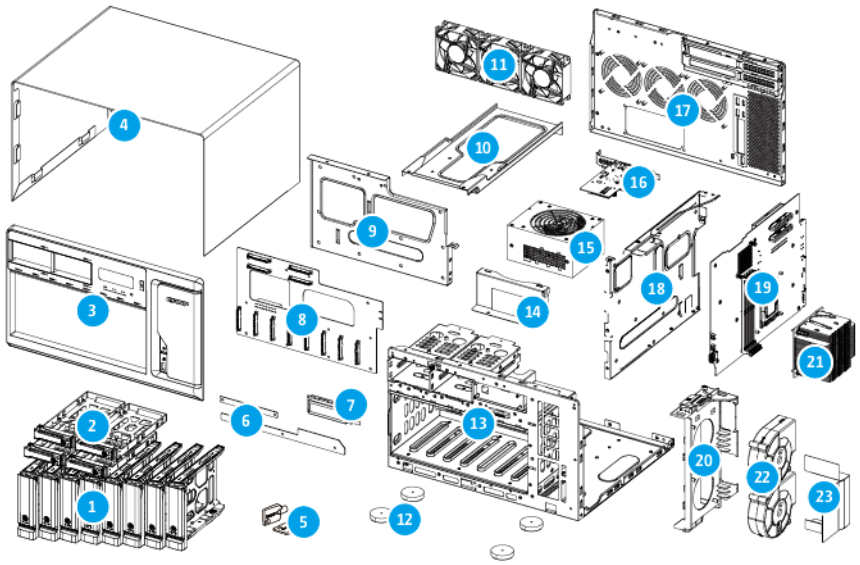
TVS-h1288X components and screws

Note

The information presented here apply only to the representative model of the NAS category. While all models within a NAS category have the same general structural design, their components and screws may differ in size, quantity, and other specifications.

Important

Recommended torque values are provided for electric screwdrivers. To avoid damage to the screw or component, the actual torque setting should not exceed ± 0.5 kgf.cm (0.43 lbf.in) of the recommended value, unless specified otherwise.



No.	Component (Quantity)	Screw Type (Quantity)	Screwdriver (Torque)	Attached To
1	Drive tray (3.5-inch) (8)	-	-	-
2	Drive tray (2.5-inch) (4)	-	-	-
3	Front panel (1)	Pan head M3x5 (6)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Chassis
4	Case cover (1)	Flat head M3x4 (7)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Rear panel
5	Drive tray key (2)	-	-	-
6	LED circuit board (2)	Pan head M3x5 (5)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Front panel

No.	Component (Quantity)	Screw Type (Quantity)	Screwdriver (Torque)	Attached To
7	LCD display module (1)	Pan head M2.5x3 (2)	Phillips #1 (3 kgf.cm / 2.60 lbf.in)	Chassis
8	Backplane (1)	Pan head M3x5 (12)	Phillips #2 (7 kgf.cm / 6.08 lbf.in)	Backplane tray
9	Backplane tray (1)	Flat head M3x4 (6)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Chassis
10	Top bracket (1)	Flat head M3x4 (6)	Phillips #2 (7 kgf.cm / 6.08 lbf.in)	Chassis
11	System fan (3)	Flat head M5x10 (12)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Rear panel
12	Rubber feet (4)	Pan head M5x10 (4)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Chassis
13	Chassis (1)	-	-	-
14	Power supply unit bracket (1)	Flat head M3x4 (2)	Phillips #2 (7 kgf.cm / 6.08 lbf.in)	Chassis
15	Power supply unit (1)	Flat head #6-32x5 (4)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Rear panel
16	Expansion card (PCIe full height) (1)	Pan head M3x5 (1)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Rear panel

No.	Component (Quantity)	Screw Type (Quantity)	Screwdriver (Torque)	Attached To
17	Rear panel (1)	Flat head M3x4 (11)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	• Chassis (5 screws) • Top bracket (3 screws) • System board tray (3 screws)
18	System board tray (1)	Flat head M3x4 (8)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Chassis
19	System board (1)	Pan head M3x5 (11)	Phillips #2 (7 kgf.cm / 6.08 lbf.in)	System board tray
20	Fan tray (1)	Flat head M3x4 (1)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	System board tray
21	CPU heatsink (1)	Pan head M3x5 (4)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	System board
22	CPU fan (2)	Flat head M4.5x10 (4)	Phillips #2 (7 kgf.cm / 6.08 lbf.in)	Fan tray
23	Air shroud (1)	-	-	The air shroud has adhesive surfaces that attach to the fan tray and the lower CPU fan.

Optional Components

These components are not included with the original NAS but may be installed by the user.

Component (Quantity)	Screw Type (Quantity)	Screwdriver (Torque)	Attached To
Expansion card (PCIe low profile) (Not included with original NAS)	Pan head M3x5 (1)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Rear panel

7. Category E NAS Models

This chapter uses the TS-h1677AXU-RP as the representative NAS model for category E. The disassembly and reassembly instructions, and the list of components and screws, are based on the representative model.

For details on category E NAS models, see NAS model categorization.

Note

While all NAS models in the same category share the same general structural design, different models may have certain differences in their parts and components in terms of size, quantity, and other specifications. For non-representative models in this category, please use the following topics as a point of reference.

Disassembling the TS-h1677AXU-RP

Before you start, make sure you read the Repair requirements.

Warning

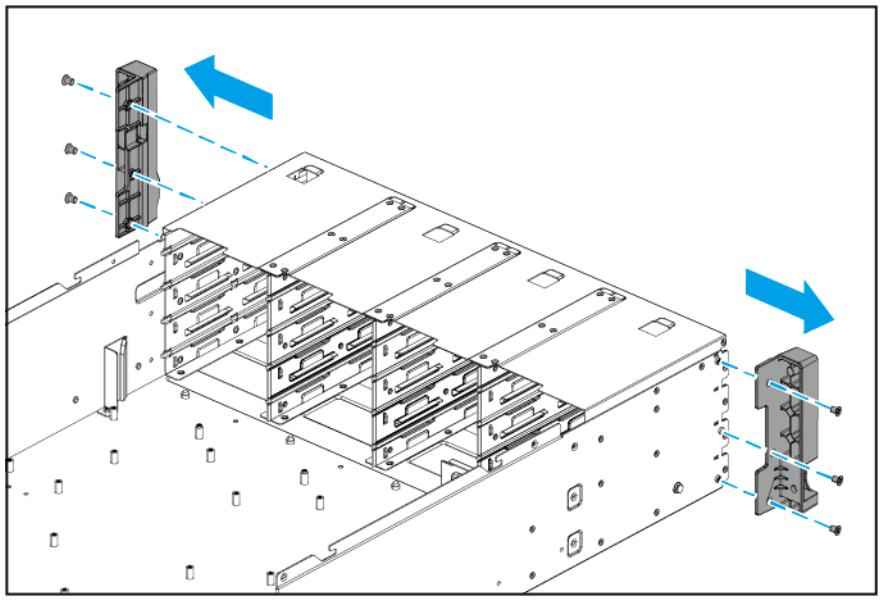
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.
- 

  Moving fan blades: Keep your hands and other body parts away from moving fan blades.
- 

  Other moving components: Keep your hands and other body parts away from other moving components.
- To avoid potential injury or damage to components, ensure that the drives and other internal system components have cooled before touching them.

1. Power off the NAS.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Optional: Remove handles.
   a. Remove the screws that secure the handles to the chassis.

b. Pull the handles off the chassis.



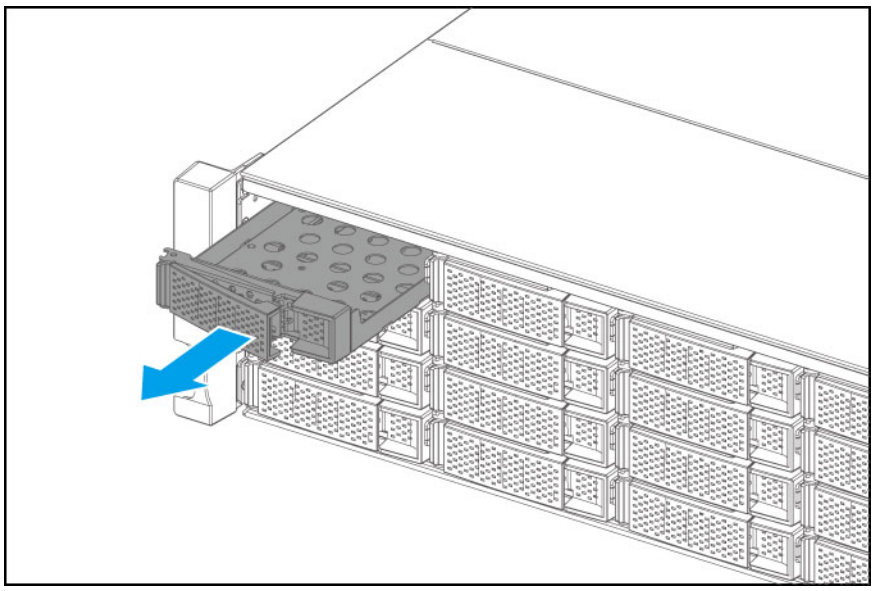
Note

- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

5. Remove all drive trays.

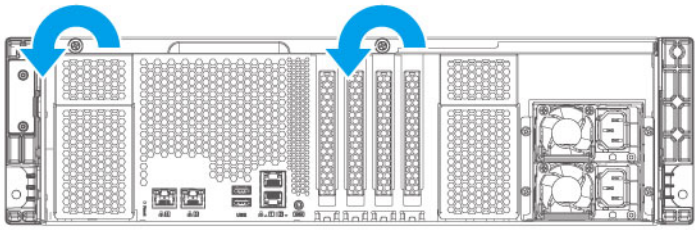
Important

Remember the number of each drive. Each drive will need to be returned to their original bay.



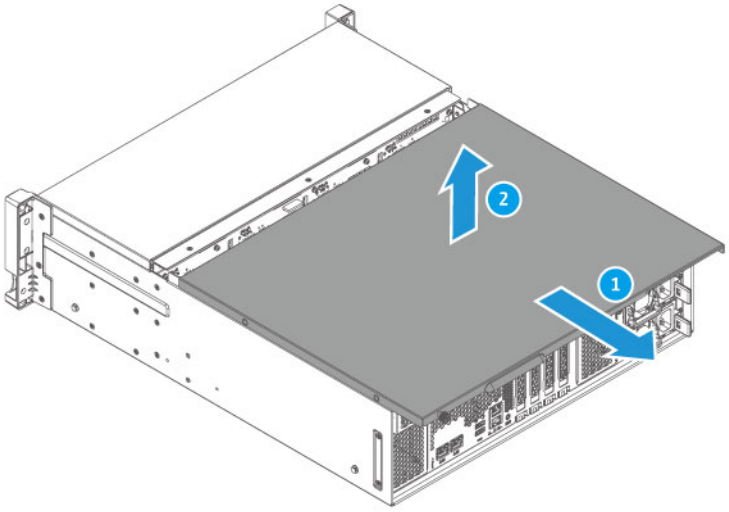
6. Remove the rear top cover.

   a. Loosen the screws that secure the top cover to the chassis.



   b. Slide the rear top cover back.

   c. Lift the rear top cover off the device.

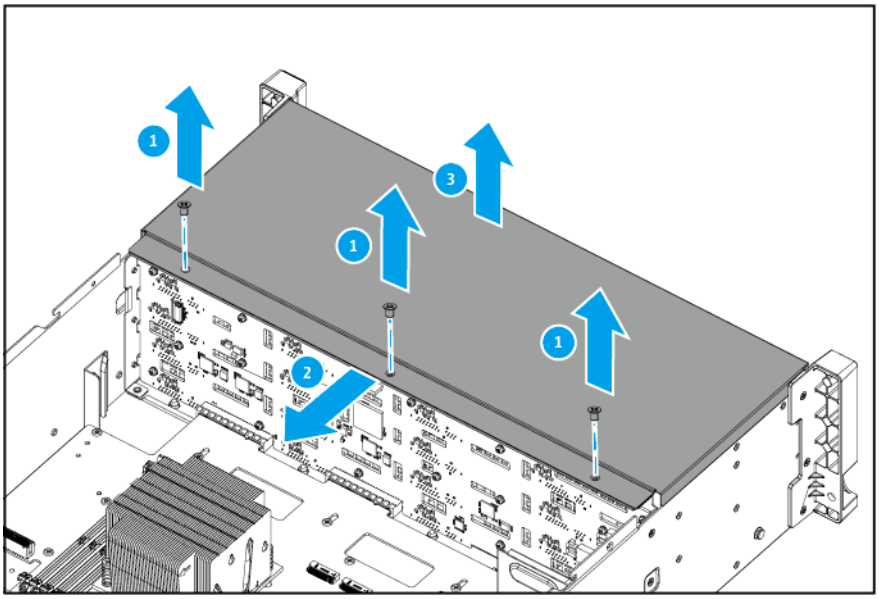


7. Remove the front top cover.

   a. Remove the screws that secure the front top cover to the chassis.

   b. Slide the front top cover backward.

c. Lift the front top cover off the device.



Note

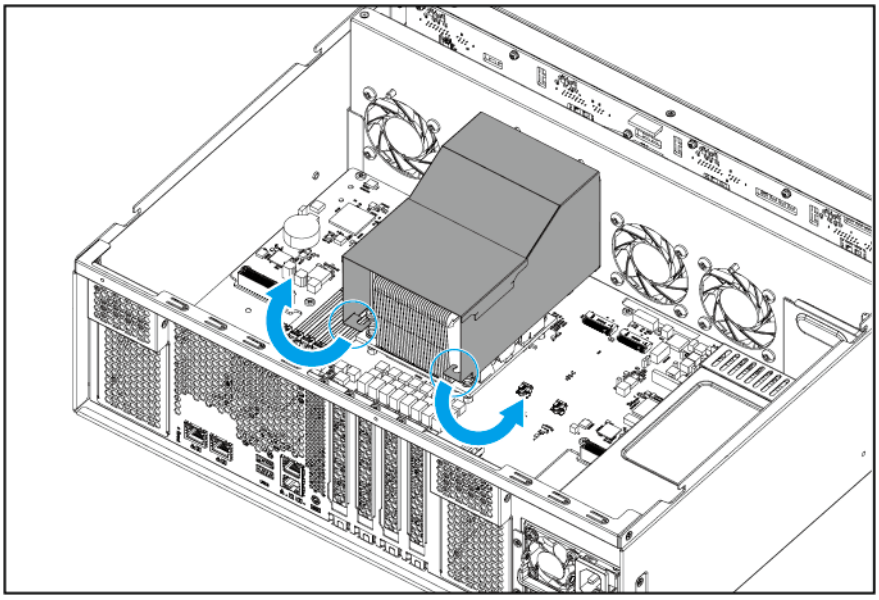
- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

8. Remove the CPU fan duct.

Note

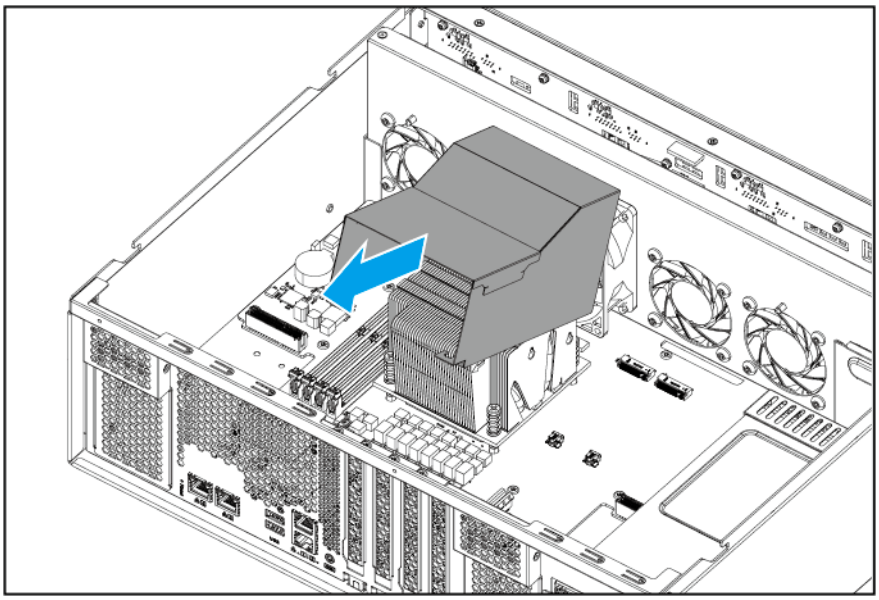
Skip this step if your device does not have a CPU fan duct.

a. Detach the bottom hooks of the CPU fan duct from the CPU heatsink screws.



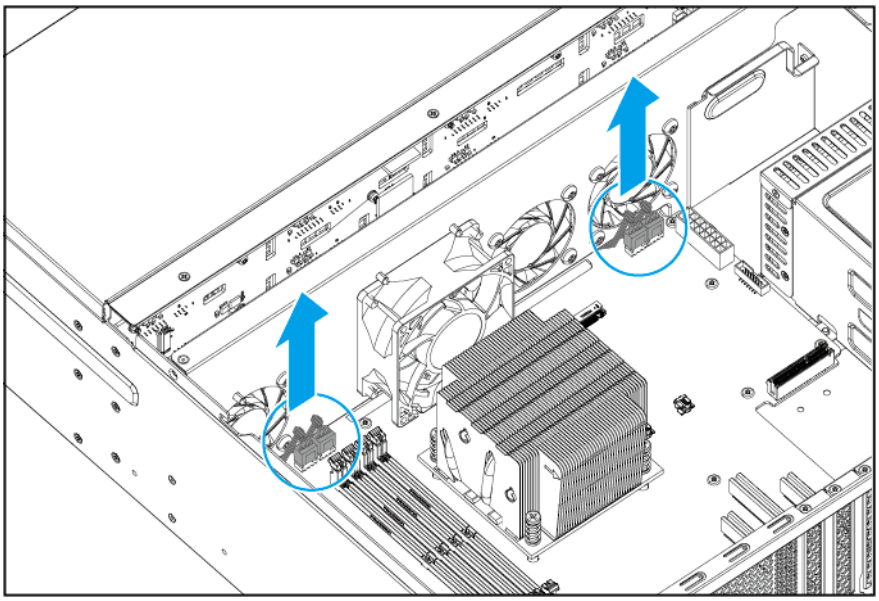
b. Tilt the CPU fan duct.

c. Pull the CPU fan duct out of the device.



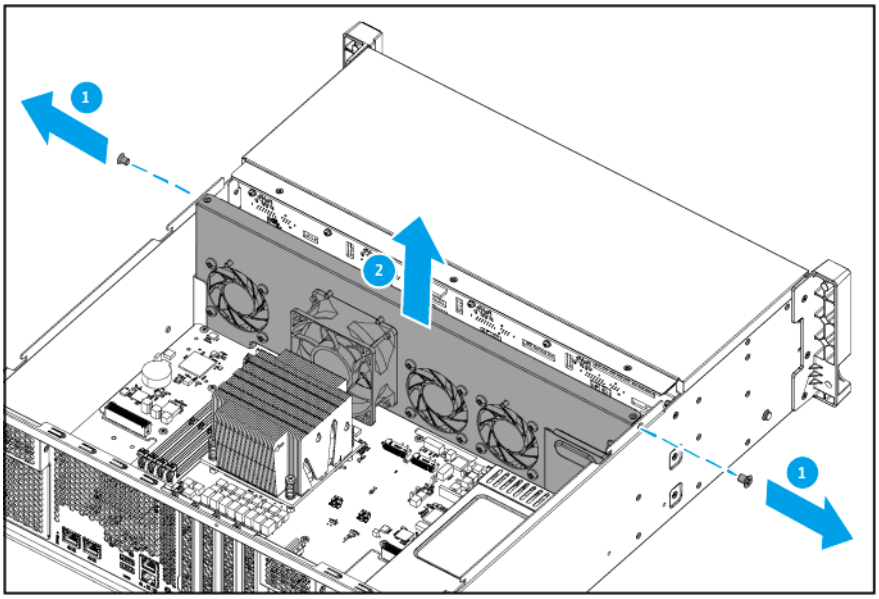
9. Remove the fan try from the chassis.

a. Disconnect the power connectors of all fans from the system board.



b. Remove the screws that secure the fan tray to the chassis.

c. Lift the fan tray out of the chassis.



Note

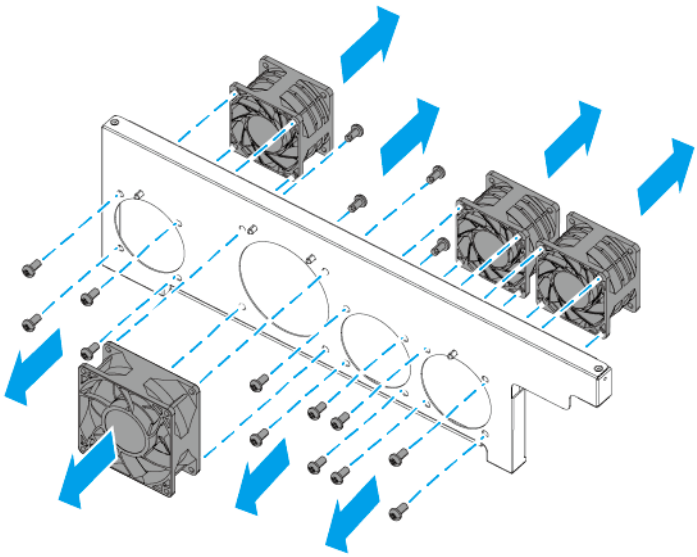
- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

10. Remove the fans from the fan tray.

a. Remove the screws that secure the fans to the fan tray.

Important

Remember which side of the fan is attached. To ensure proper cooling, the correct side must be reattached so that the airflow is directed out of the rear panel. There may be an arrow on the side of the fan that indicates the airflow direction.

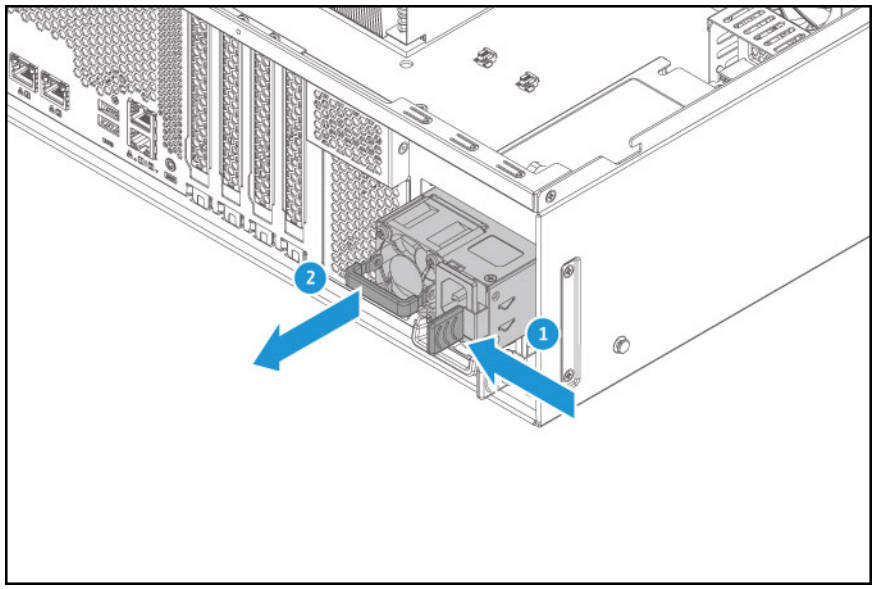


Note

- The self-tapping D5x10 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

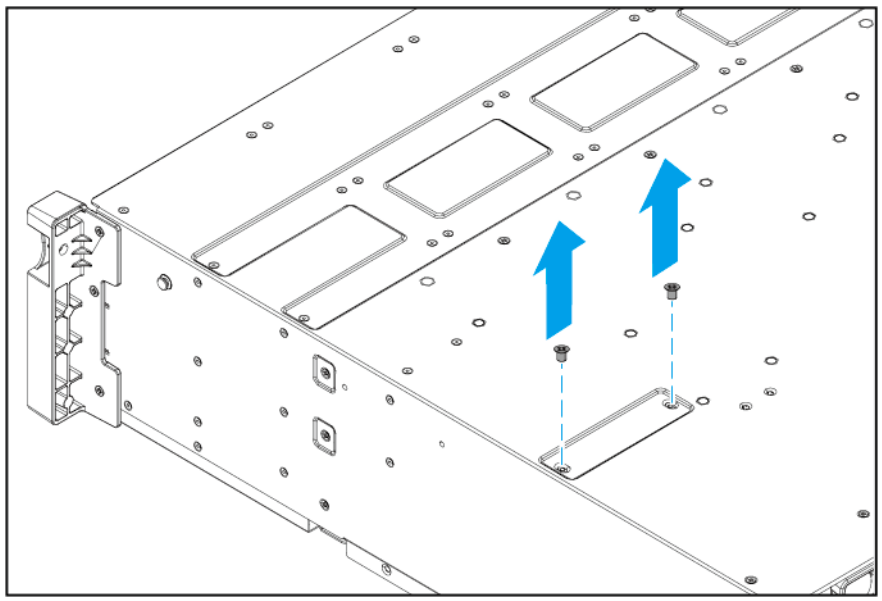
11. Remove power supply units (PSU).

a. For each PSU, firmly press the PSU latch toward the PSU handle, and pull the PSU out.



12. Remove power supply cage.

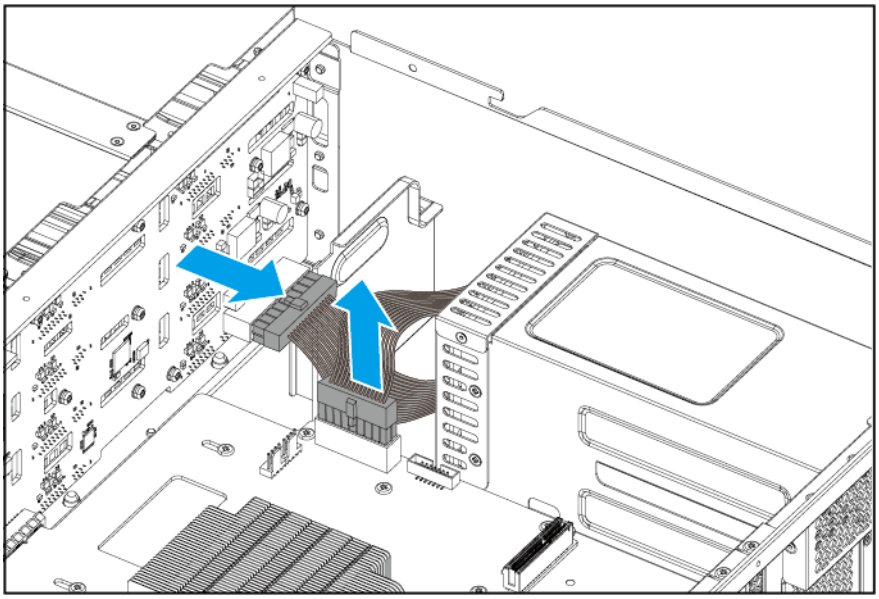
a. Remove the screws securing the power supply cage to the bottom of the chassis.



Note

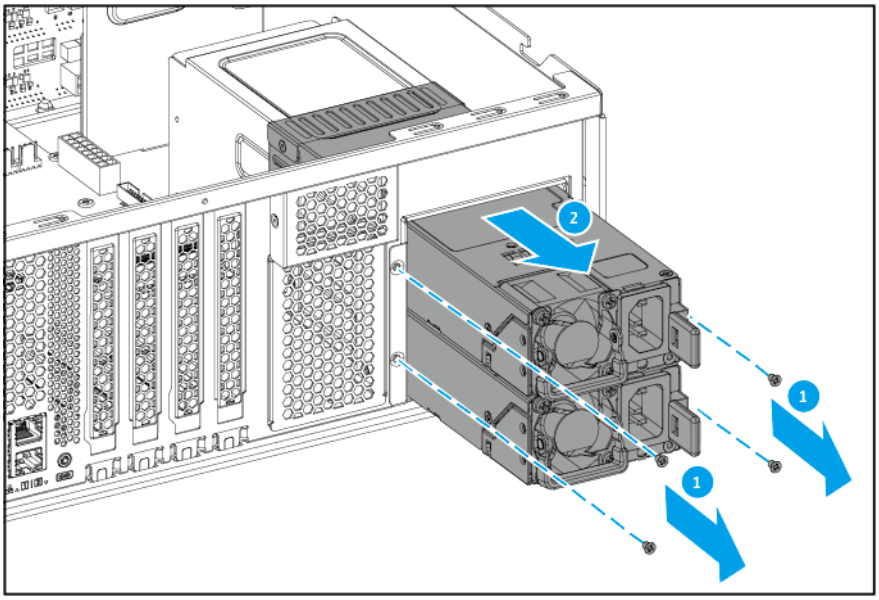
- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

b. Disconnect the PSU cables from the backplane and system board.



c. Remove the screws that secure the power supply cage to the rear panel.

d. Pull the power supply cage out.



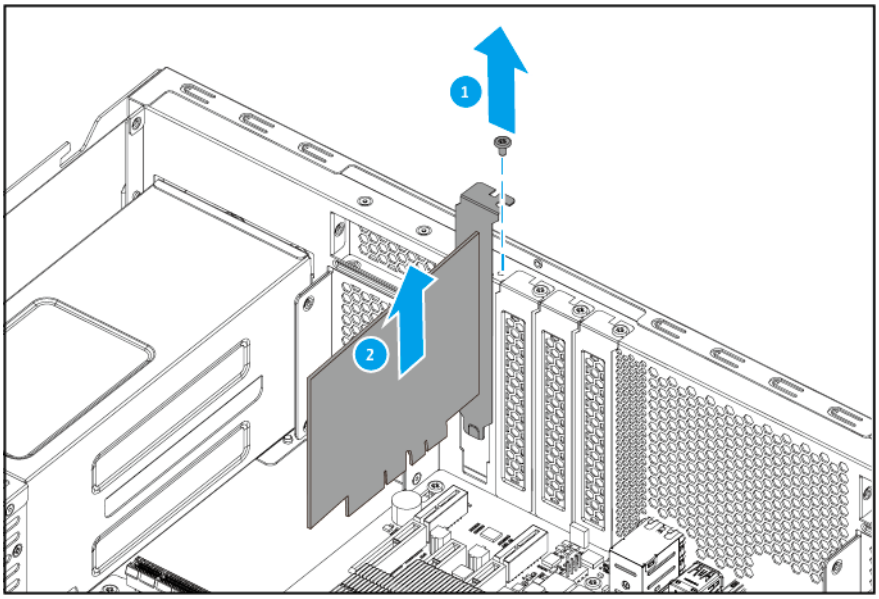
Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

13. Remove existing PCIe expansion cards.

a. Remove the screw that secures the expansion card to the rear panel.

b. Pull the expansion card away from the slot.



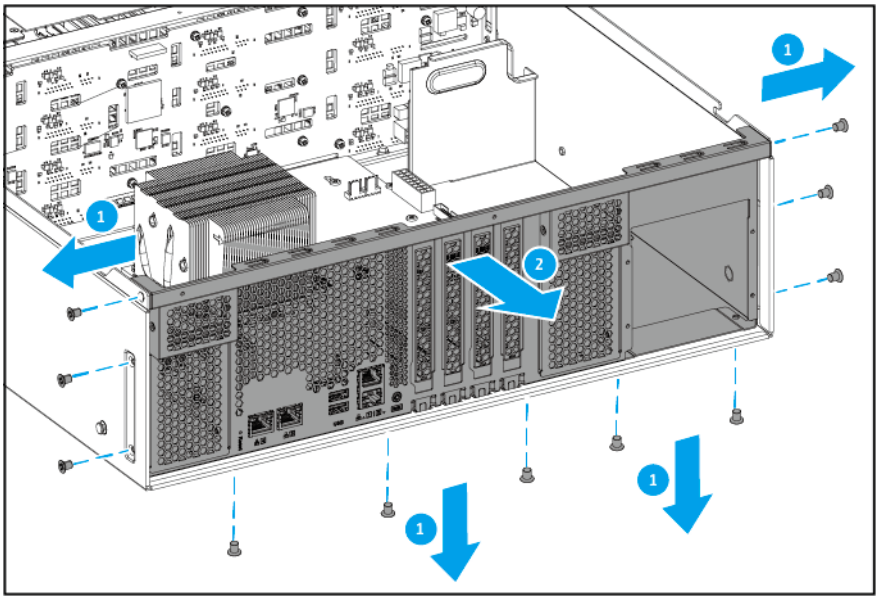
Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

14. Remove the rear panel.

a. Remove the screws that secure the rear panel to the chassis.

b. Pull the rear panel away from the chassis.



Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

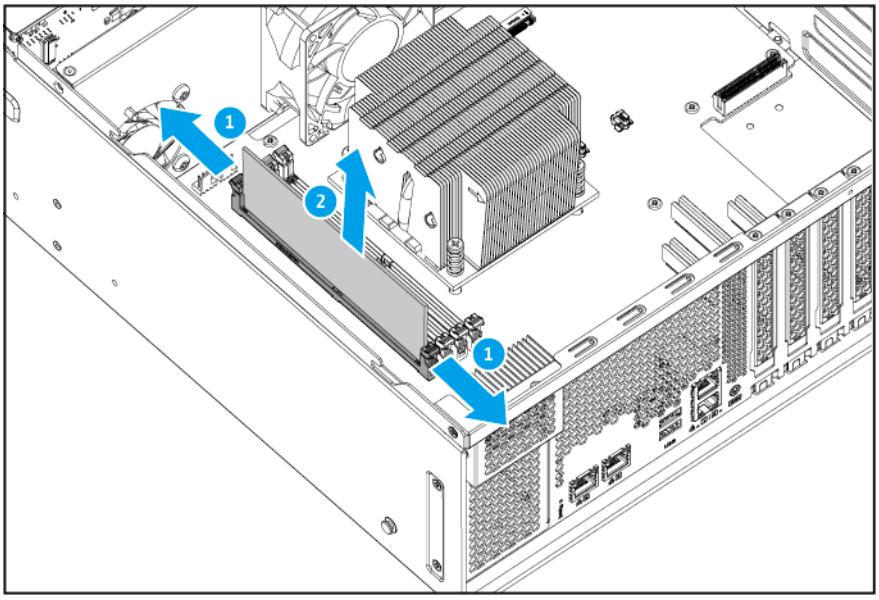
15. Optional: Remove existing memory modules.

a. Push the retention clips outward simultaneously to release the module.

Warning
Attempting to remove a module that is not completely released may damage the module and the system board.

b. Hold the module by the edges.

c. Carefully slide the module out of the slot.

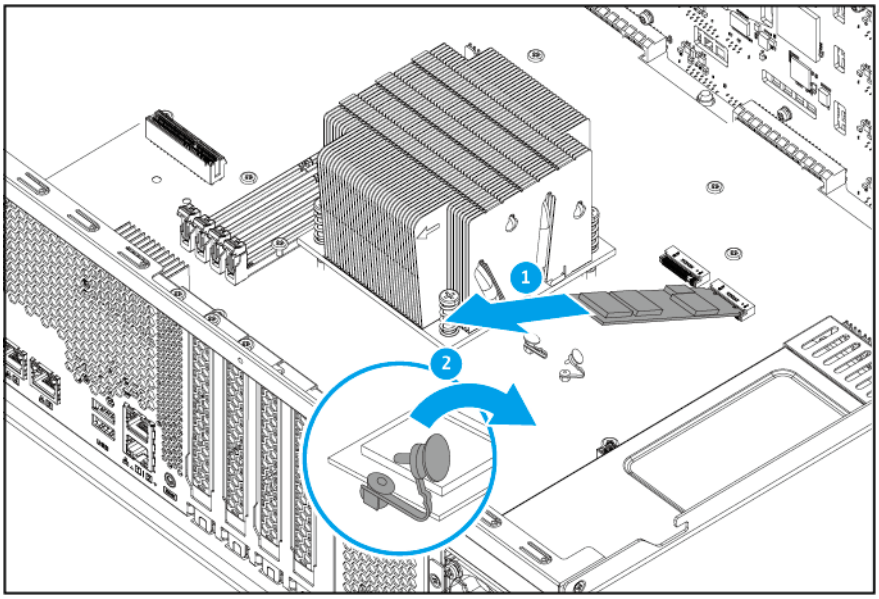


16. Optional: Remove existing M.2 SSDs.

Note
Skip this step if your device does not have M.2 SSD slots.

a. Pull out the pushpin.

b. Remove the M.2 SSD.

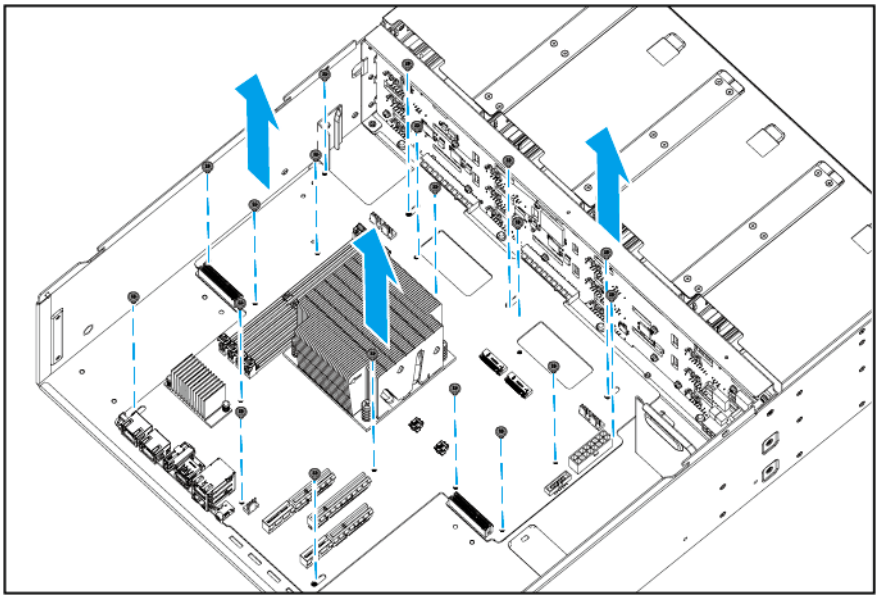


17. Remove the system board.

Warning

Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

a. Remove the screws that secure the system board to the chassis.

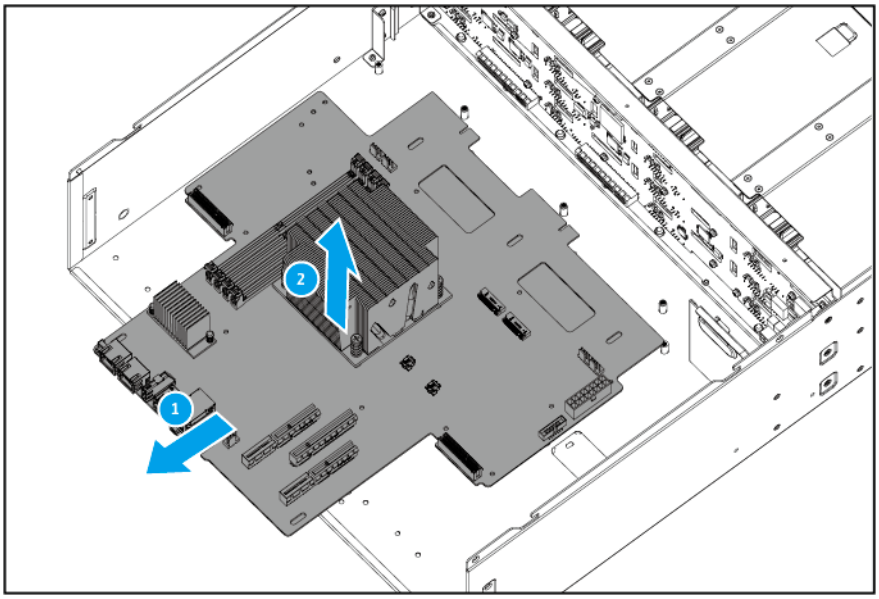


Note

- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

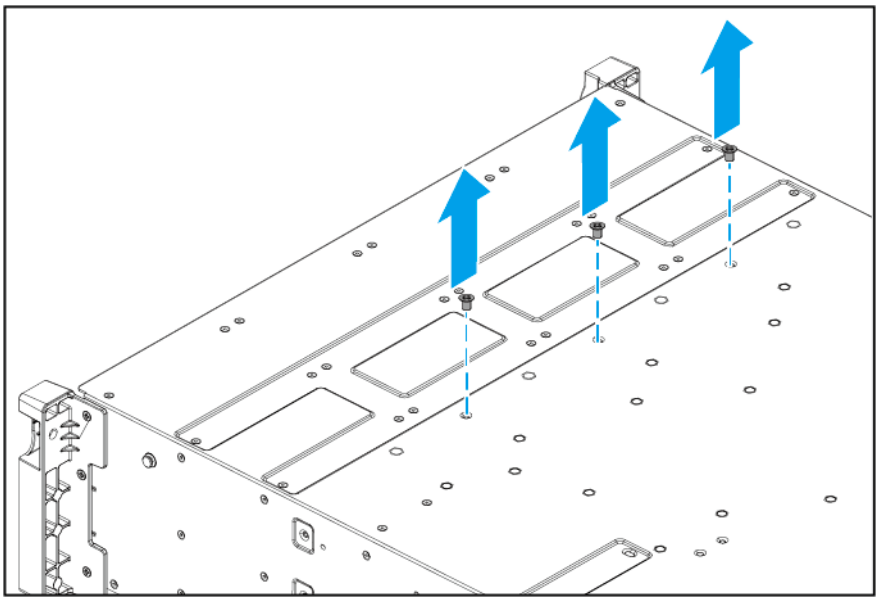
b. Slide the system board backward.

c. Lift the system board off the chassis.



18. Remove the backplane tray.

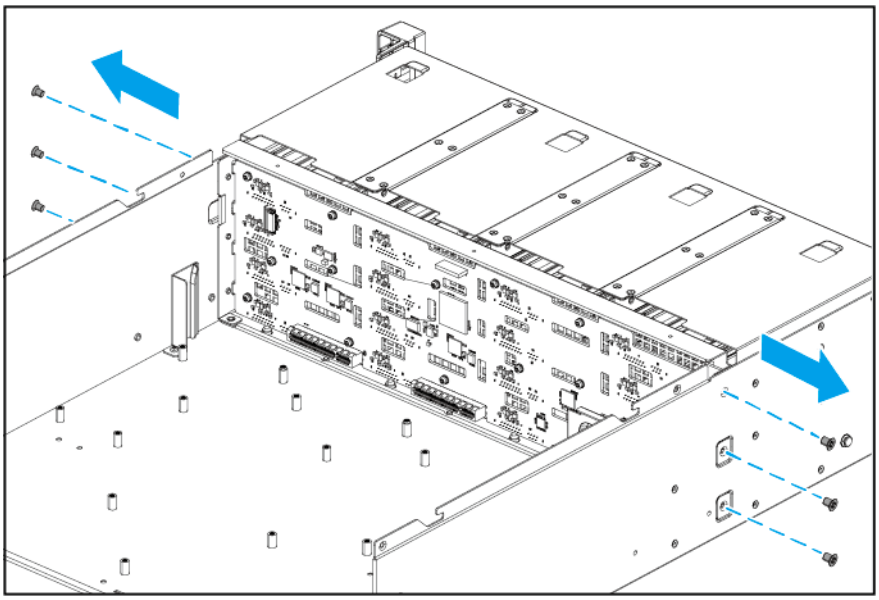
a. Remove the screws that secure the backplane tray to the bottom of the chassis.



Note

- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

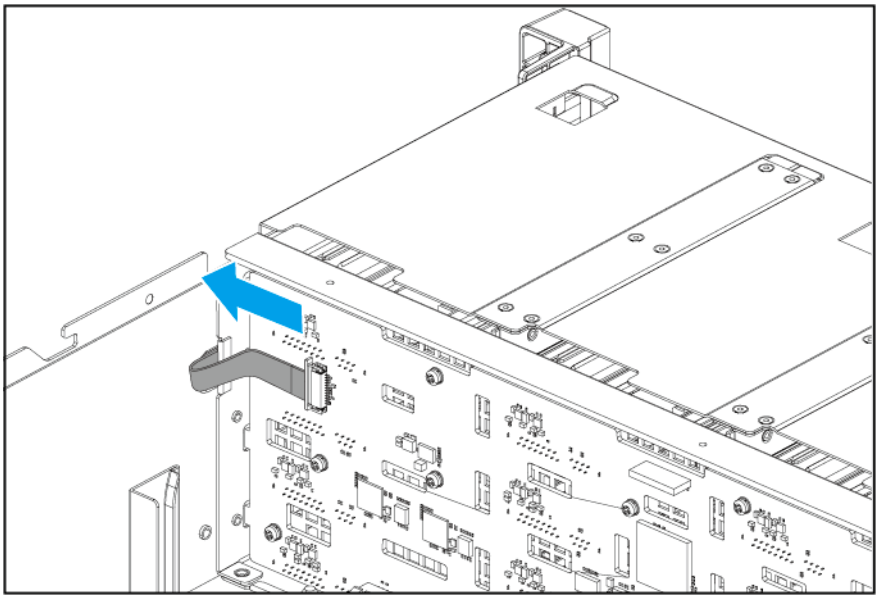
b. Remove the screws that secure the backplane tray to the sides of the chassis.



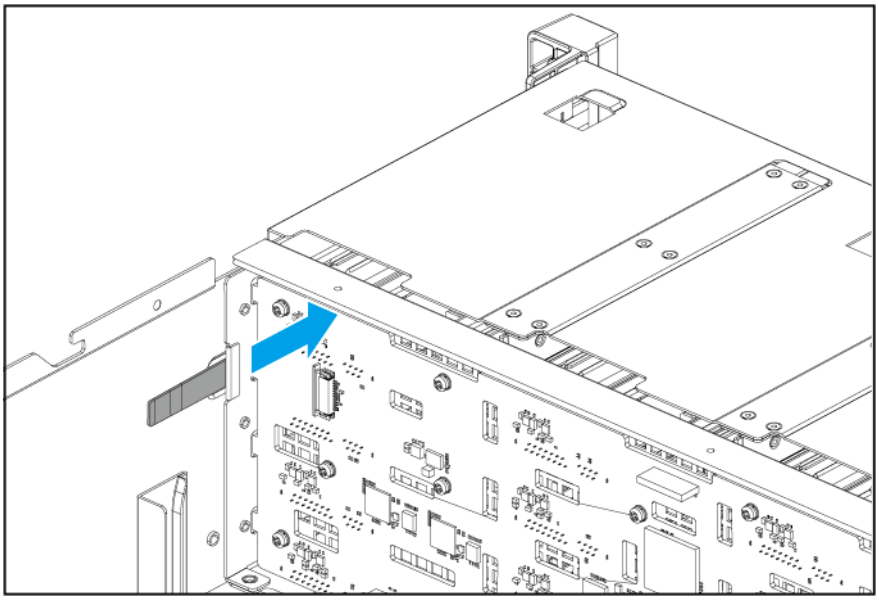
Note

- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

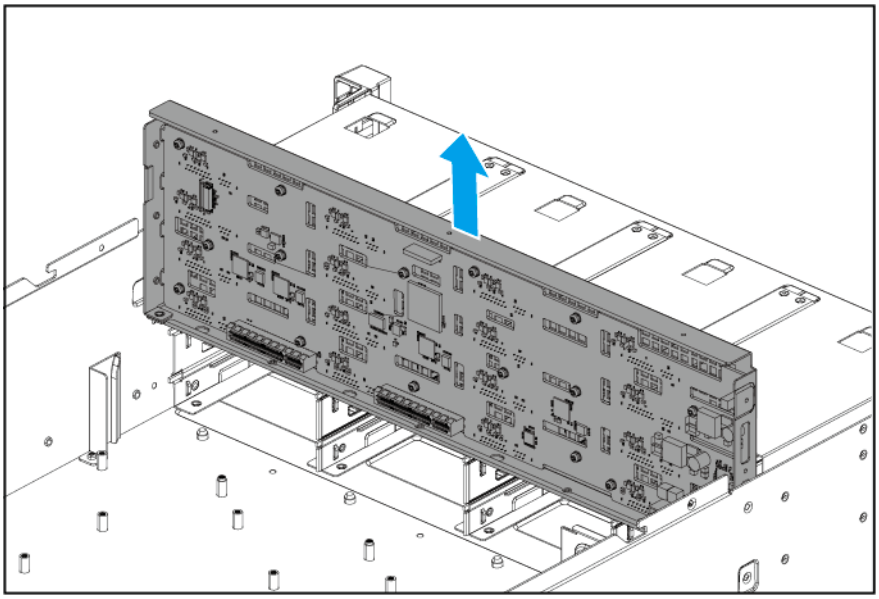
c. Disconnect the LED cable from the backplane.



d. Pull the LED cable out of the chassis.



e. Lift the backplane tray out of the chassis.

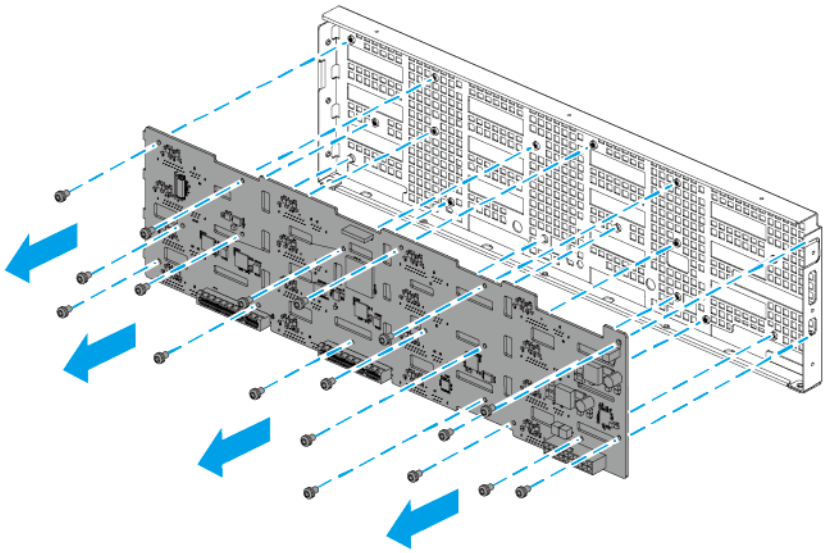


19. Remove the backplane from the backplane tray.

> **Warning**
> Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

a. Remove the screws that secure the backplane to the backplane tray.

b. Pull the backplane away from the backplane tray.



Note

- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

Reassembling the TS-h1677AXU-RP

Before you start, make sure you read the Repair requirements.

Warning

- Observe electrostatic discharge (ESD) procedures to avoid damage to components.
- 

  Moving fan blades: Keep your hands and other body parts away from moving fan blades.
- 

  Other moving components: Keep your hands and other body parts away from other moving components.

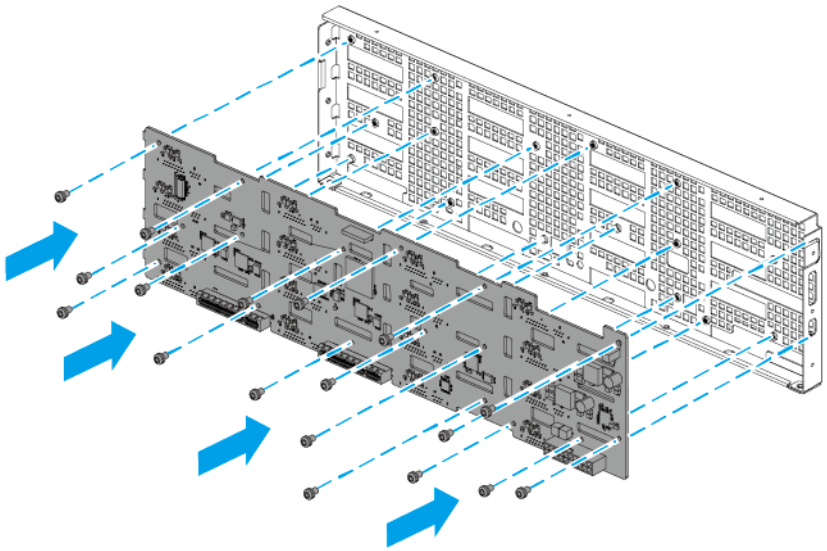
1. Attach the backplane to the backplane tray.

   Warning

   Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

   a. Align the backplane with the backplane tray.

b. Attach the screws that secure the backplane to the backplane tray.

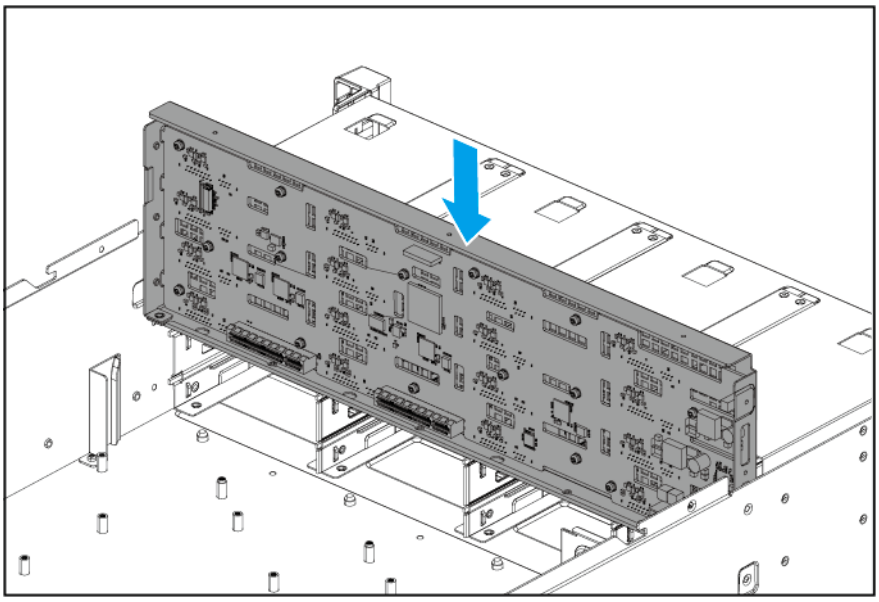


Note

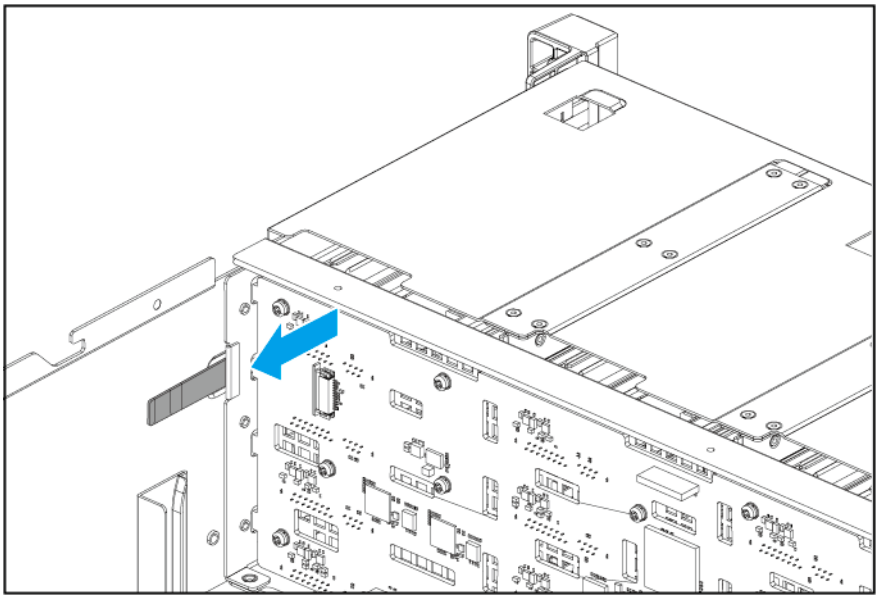
- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

2. Install the backplane tray.

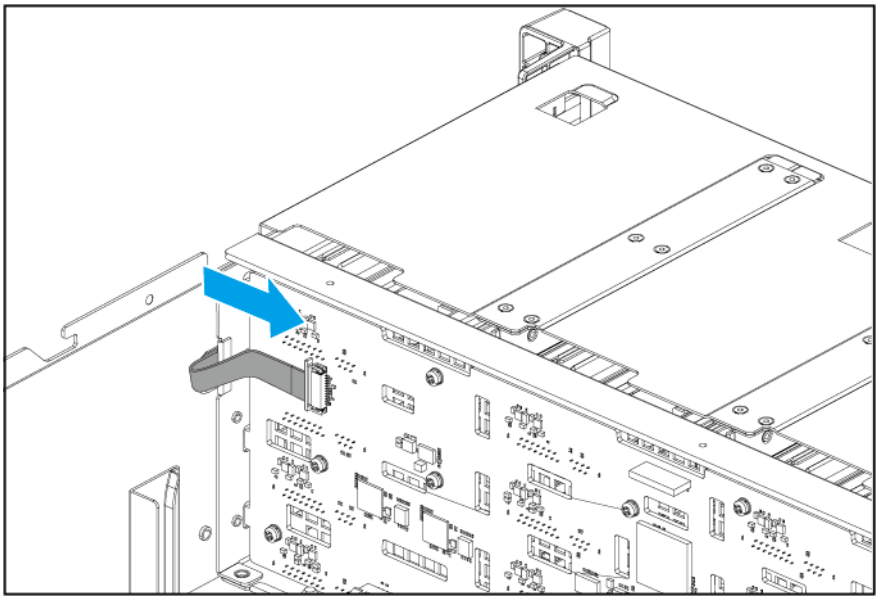
a. Insert the backplane tray into the chassis.



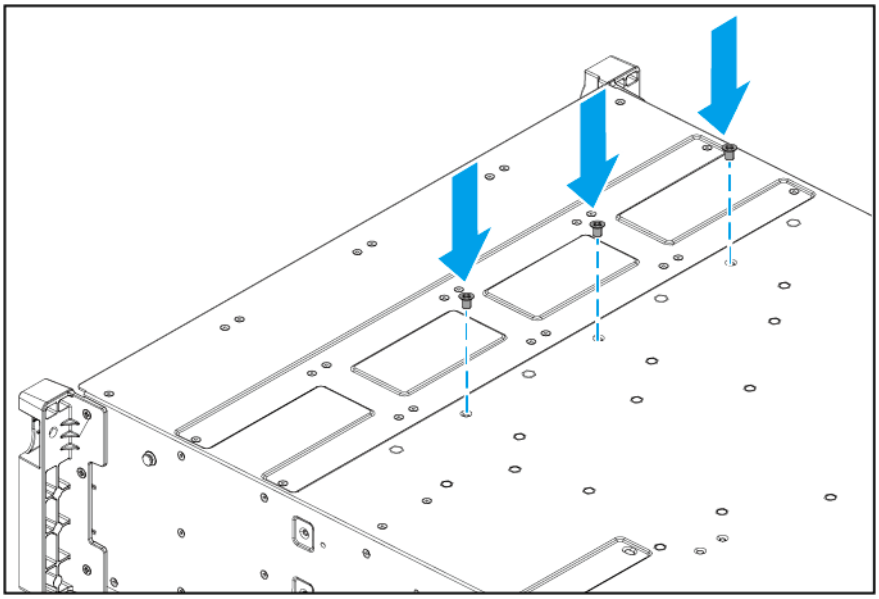
b. Insert the LED cable into the chassis.



c. Connect the LED cable to the backplane.



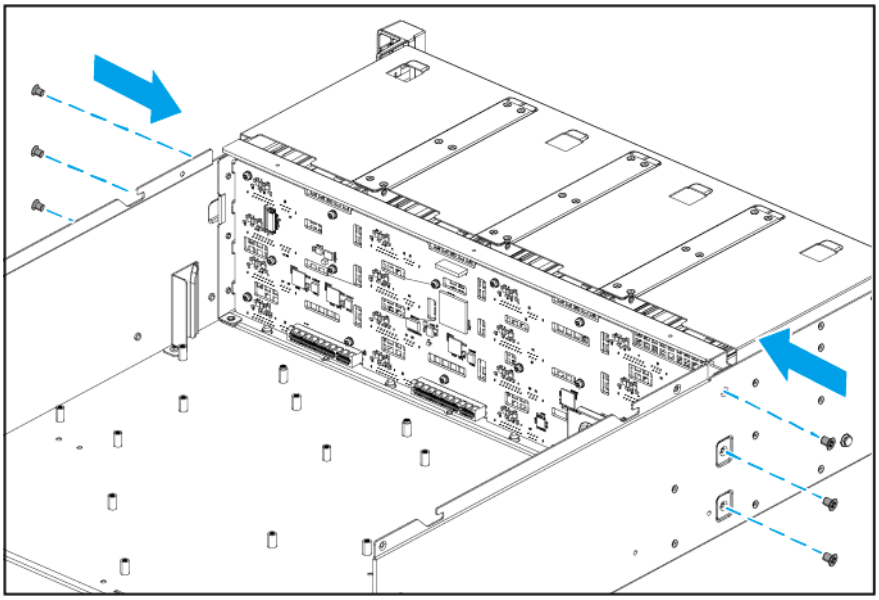
d. Attach the screws that secure the backplane tray to the bottom of the chassis.



Note

- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

e. Attach the screws that secure the backplane tray to the sides of the chassis.



Note

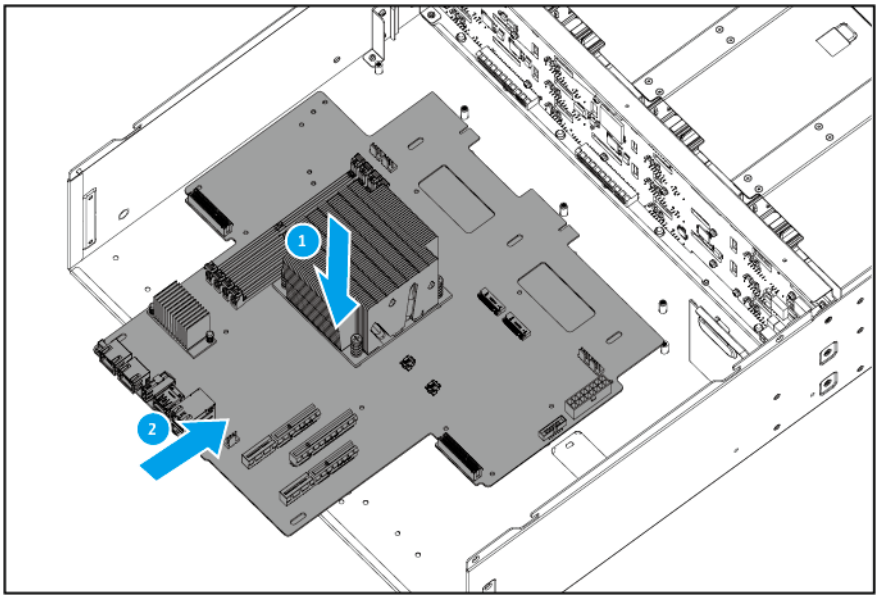
- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

3. Install the system board.

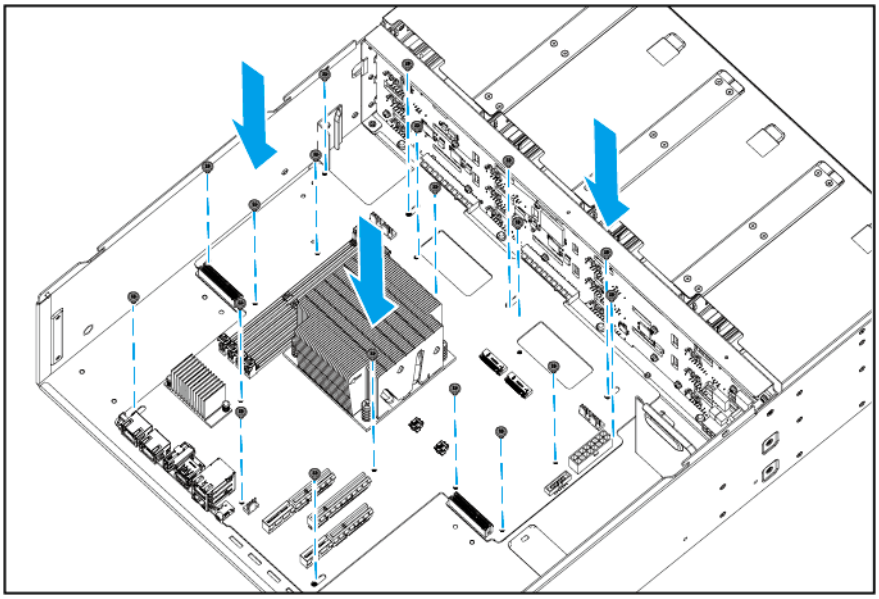
Warning
Do not touch the components on the circuit board or allow the components to come into direct contact with metallic objects. Doing so may cause damage.

a. Align the system board with the chassis.

b. Slide the system board forward.



c. Attach the screws that secure the system board to the chassis.



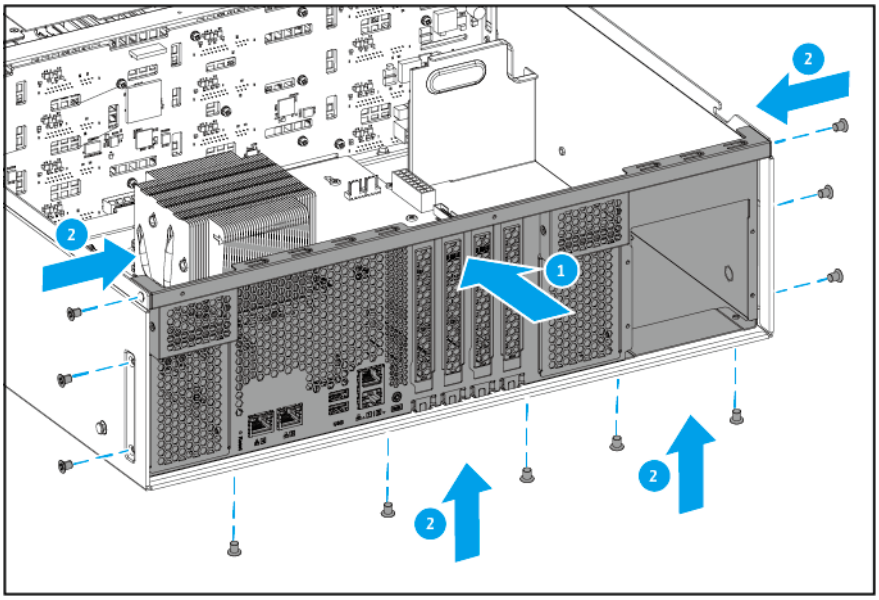
Note

- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

4. Install the rear panel.

a. Attach the rear panel to the chassis.

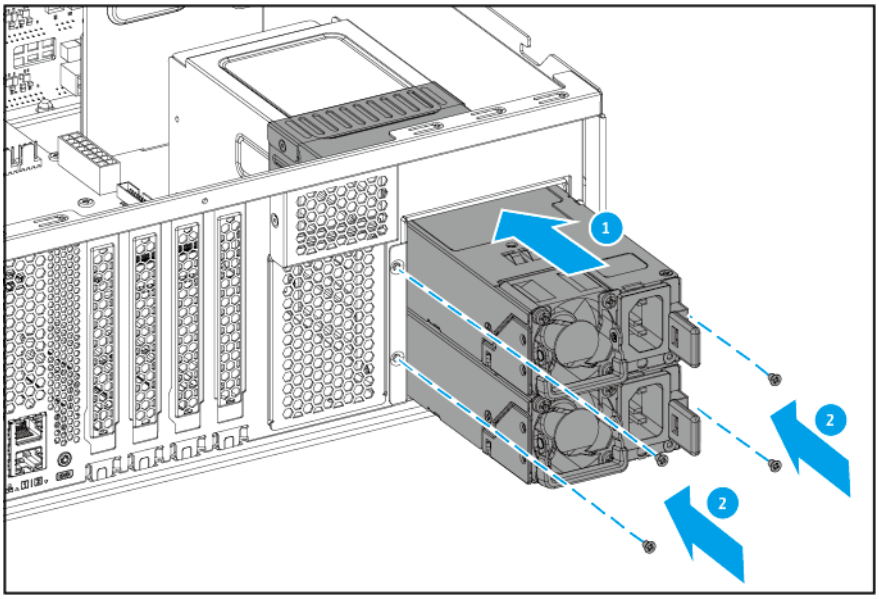
b. Attach the screws that secure the rear panel to the chassis.



Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

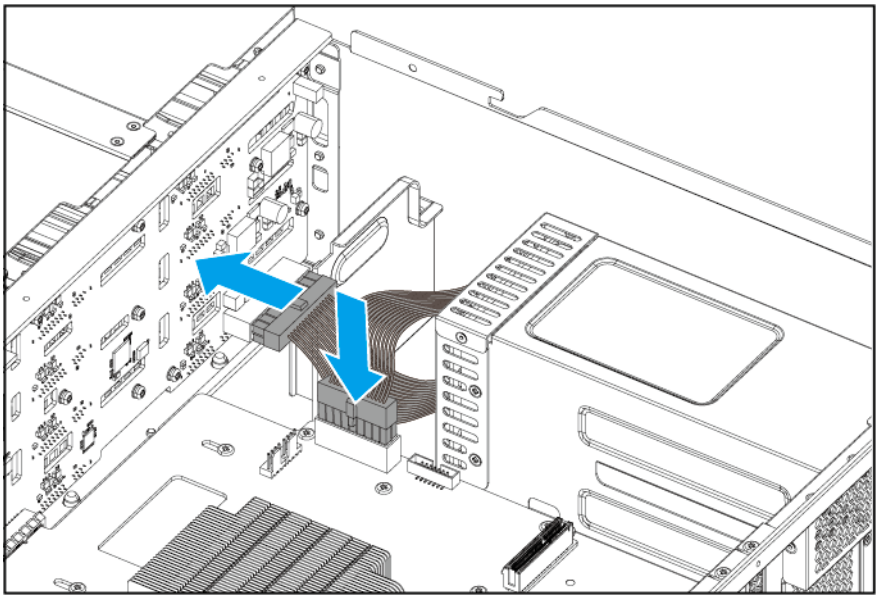
5. Install the power supply cage.
   a. Insert the power supply cage through the rear panel into the chassis.
   b. Attach the screws that secure the power supply cage to the rear panel.



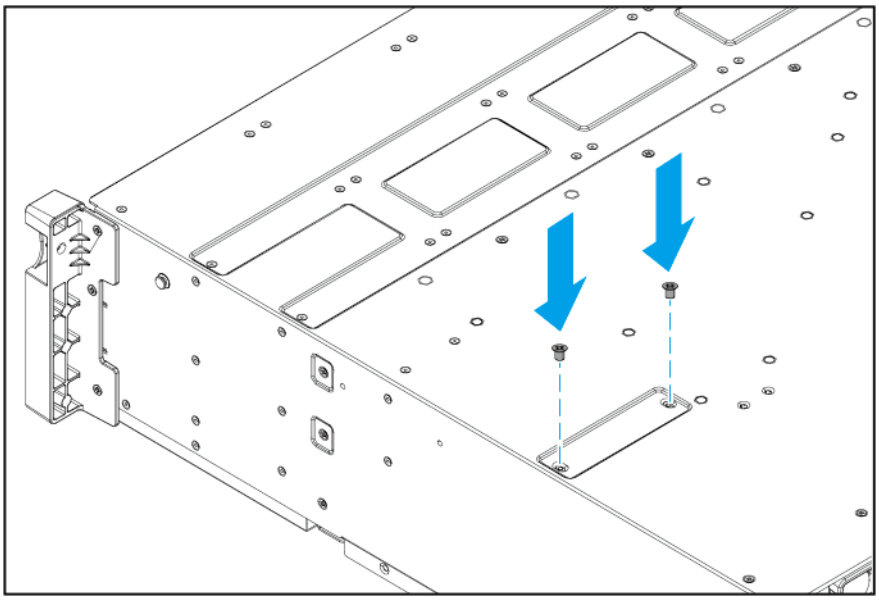
Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

c. Connect the PSU cables to the system board and backplane.



d. Attach the screws that secure the power supply cage to the bottom of the chassis.



Note

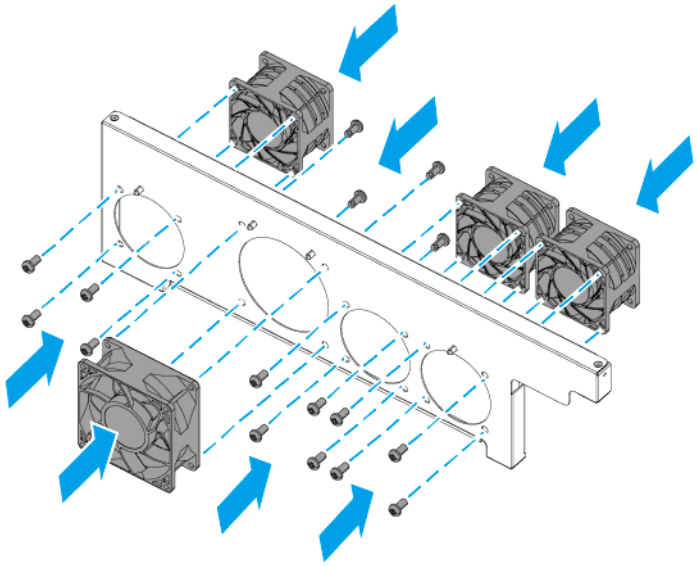
- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

6. Install fans onto the fan tray.

a. Align the fans to the screw holes on the fan tray.

b. Attach the screws that secure the fans to the fan tray.

> **Important**
>
> To ensure proper cooling, the correct side of the fan must be reattached so that the airflow is directed out of the rear panel. There may be an arrow on the side of the fan that indicates the airflow direction.

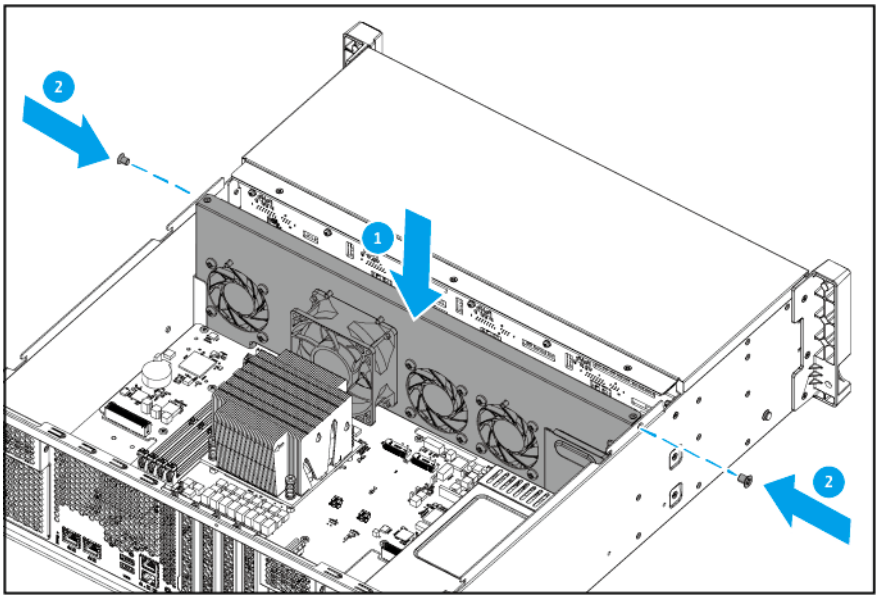


> **Note**
>
> - The self-tapping D5x10 screws require a Phillips #2 screwdriver.
> - A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

7. Install the fan tray.

a. Insert the fan tray into the chassis.

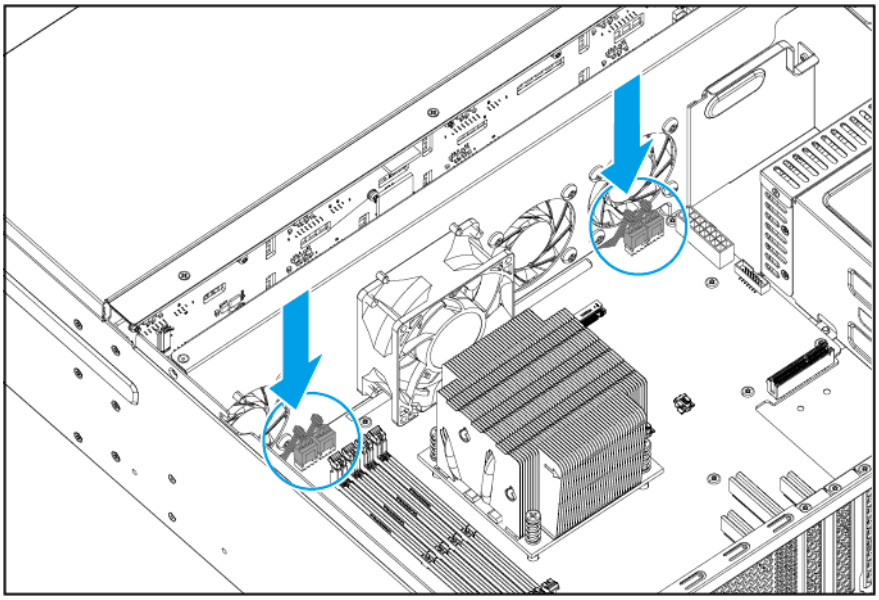
b. Attach the screws that secure the fan tray to the chassis.



Note

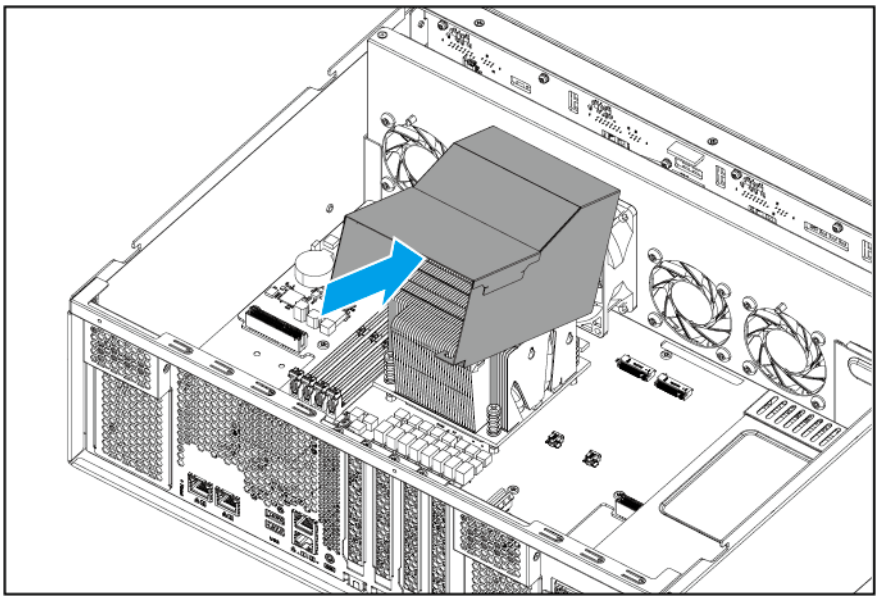
- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

c. Connect the power connectors of all fans to the system board.

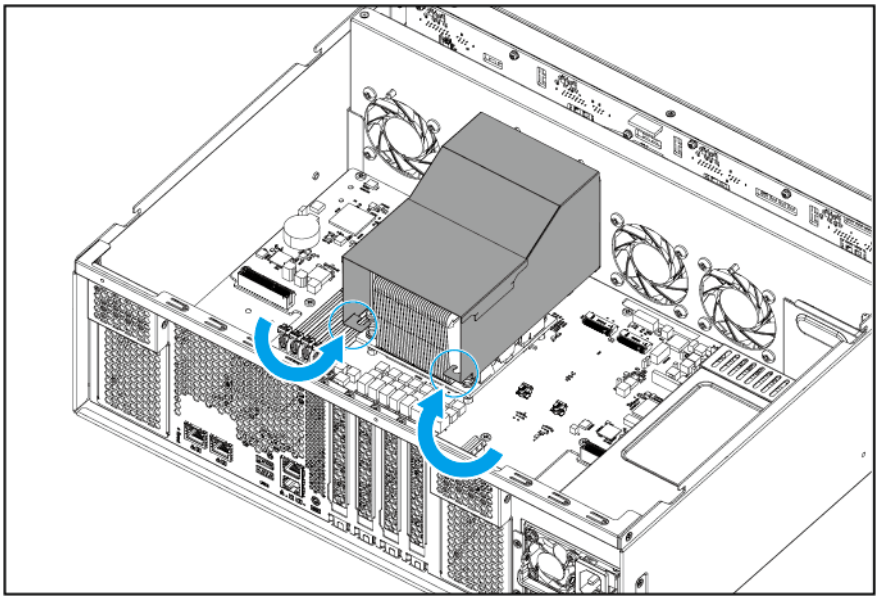


8. Attach the CPU fan duct.

   a. Attach the CPU fan duct to the CPU fan.



   b. Attach the bottom hooks of the CPU fan duct to the CPU heatsink screws.



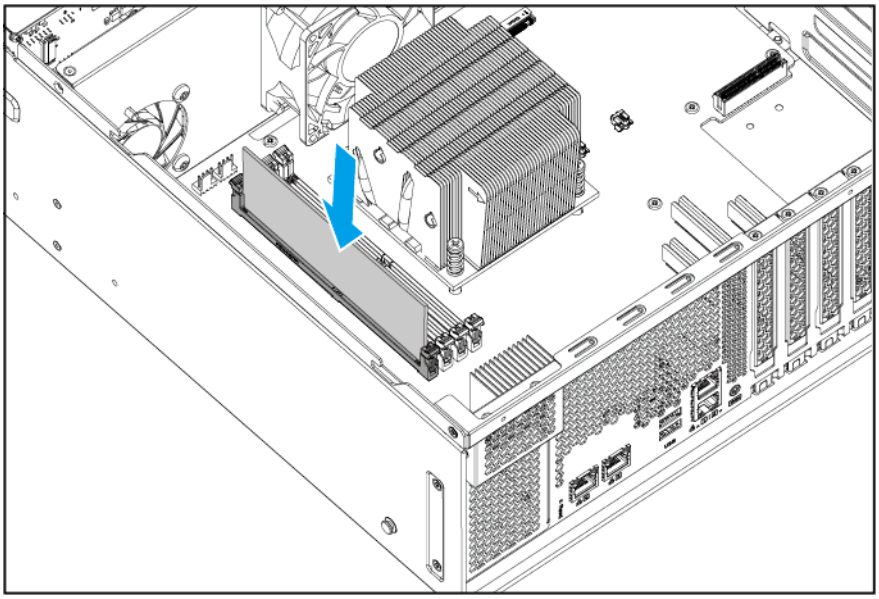
9. Optional: Install memory modules.

   a. Align the notch with the ridge in the slot.

   b. Insert the module into the slot.

   c. Verify that the metal connectors are completely inserted into the slot.

d. Carefully press down on the module until the retention clips lock the module into place.

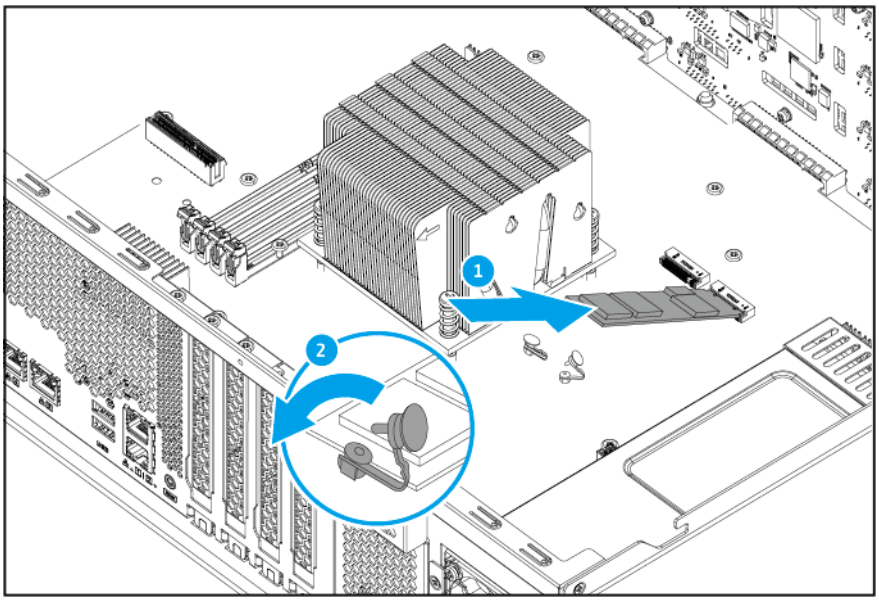


10. Optional: Install M.2 SSDs.

a. Pull out the pushpin.

b. Insert the M.2 SSD into the slot.

c. Insert the pushpin to secure the drive.

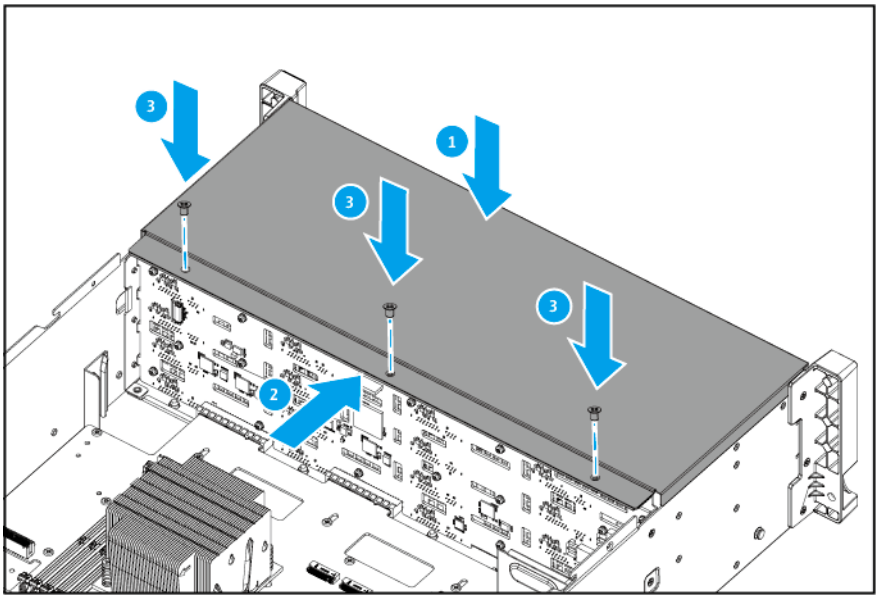


11. Attach the front top cover.

a. Place the front top cover on the device.

b. Slide the front top cover forward.

c. Attach the screws that secure the front top cover to the chassis.



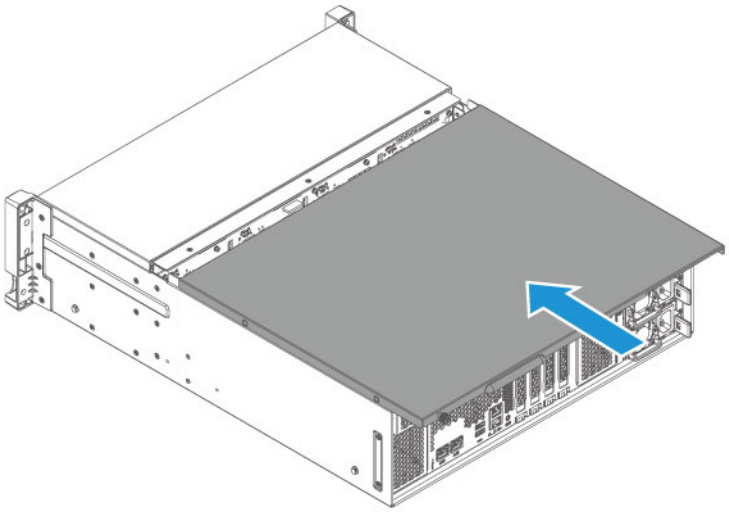
Note

- The flat head M3x4 screws require a Phillips #2 screwdriver.
- A torque of 5 kgf.cm (4.34 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

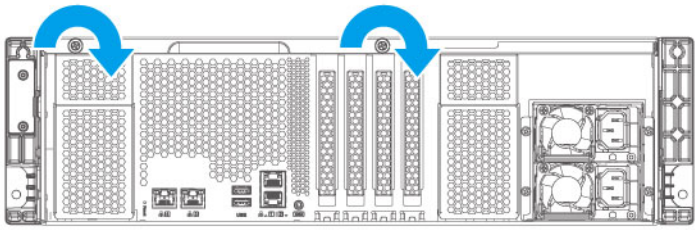
12. Attach the rear top cover.

a. Place the rear top cover on the device.

b. Slide the rear top cover forward.



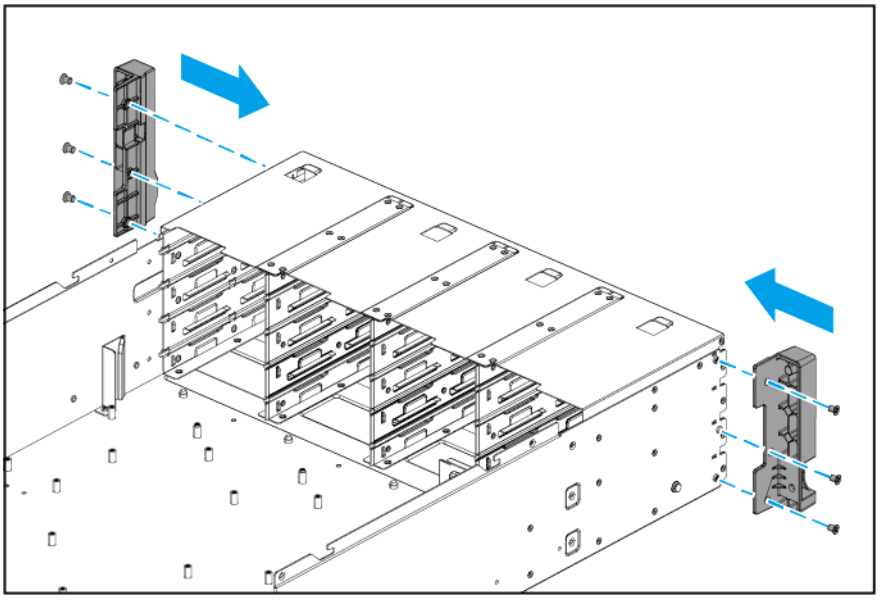
c. Tighten the screws that secure the rear top cover to the chassis.



13. Optional: Install handles.

a. Align the holes on the handle with the holes on the chassis.

b. Attach the screws that secure the handle to the chassis.



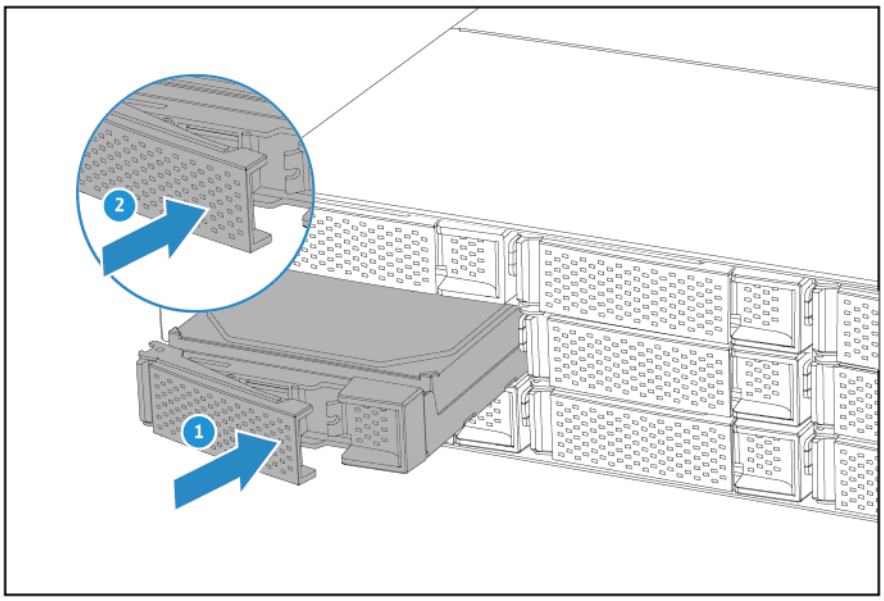
Note

- The flat head M3x5 screws require a Phillips #2 screwdriver.
- A torque of 7 kgf.cm (6.08 lbf.in) ± 0.5 kgf.cm (0.43 lbf.in) is recommended for electric screwdrivers.

14. Slide each drive tray back into the NAS.

Important

Each drive must be returned to their original bay.



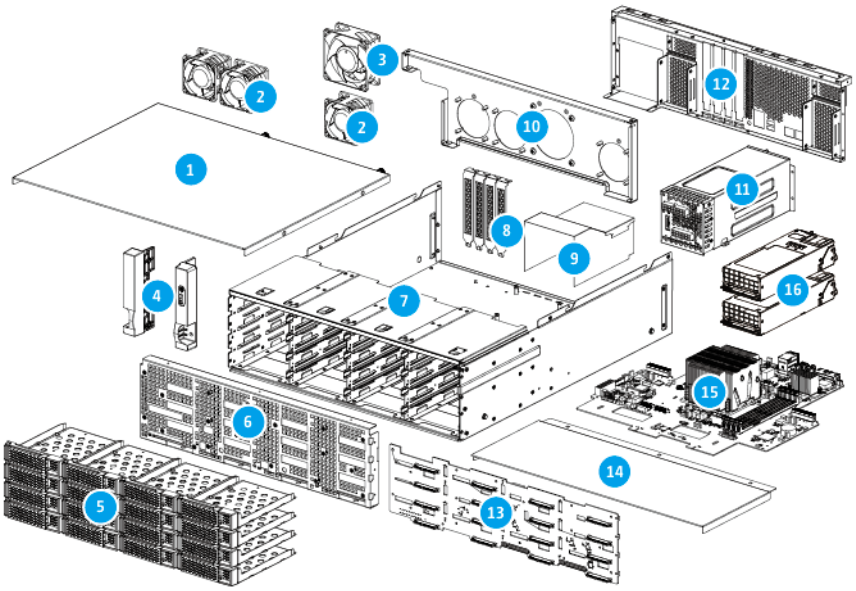
TS-h1677AXU-RP components and screws

Note

The information presented here apply only to the representative model of the NAS category. While all models within a NAS category have the same general structural design, their components and screws may differ in size, quantity, and other specifications.

Important

Recommended torque values are provided for electric screwdrivers. To avoid damage to the screw or component, the actual torque setting should not exceed ± 0.5 kgf.cm (0.43 lbf.in) of the recommended value, unless specified otherwise.



No.	Component (Quantity)	Screw Type (Quantity)	Screwdriver (Torque)	Attached To
1	Rear top cover (1)	Thumb screw	-	Chassis
2	System fan (3)	Self-tapping D5x10 (4)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Fan tray
3	CPU fan (1)	Self-tapping D5x10 (4)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Fan tray
4	Handles (2)	Flat head M3x5 (2 x 3 = 6)	Phillips #2 (7 kgf.cm / 6.08 lbf.in)	Chassis
5	Drive tray (3.5-inch) (4)	-	-	-
6	Backplane tray (1)	Flat head M3x4 (9)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Chassis
7	Chassis (1)	-	-	-

No.	Component (Quantity)	Screw Type (Quantity)	Screwdriver (Torque)	Attached To
8	Expansion card slot cover (3)	Flat head M3x4 (1)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Rear panel
9	Fan duct (1)	-	-	System board
10	Fan tray (1)	Flat head M3x4 (2)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Chassis
11	Power supply cage (1)	Flat head M3x4 (6)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Chassis Rear panel
12	Rear panel (1)	Flat head M3x4 (11)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Chassis
13	Backplane (1)	Flat head M3x5 (18)	Phillips #2 (7 kgf.cm / 6.08 lbf.in)	Backplane tray
14	Front top cover (1)	Flat head M3x4 (3)	Phillips #2 (5 kgf.cm / 4.34 lbf.in)	Chassis
15	System board (1)	Flat head M3x5 (19)	Phillips #2 (7 kgf.cm / 6.08 lbf.in)	Chassis Backplane
16	Power supply unit (2)	-	-	-

8. Glossary

air shroud

Thin plastic covering for directing airflow from fans

backplane

A circuit board that serves as an extension to the system board. QNAP backplanes typically contain slots for connecting hard disk drives and solid-state drives with the use of drive trays.

circuit board

A hard, flat sheet with electrical connections printed on the surface. Examples of circuit boards include system boards, backplanes, and riser cards.

drive cage

An enclosure with slots for inserting and securing drive trays

fan duct

Thin plastic covering for creating a tunnel to direct airflow from fans

flat head screw

A screw whose head has a tapered edge and a flat top that is level with the surface when fully screwed in

heatsink

A device with parallel fins that help transfer and dissipate heat from an electronic unit (such as a CPU or memory module)

LCD display module

A unit containing an LCD panel and a supporting circuit board

mounting holes

Screw holes in circuit boards for attachment to a surface

pan head screw

A screw whose head has a straight edge and protrudes from the surface when fully screwed in

Phillips screwdriver

A screwdriver with a cross-shaped (+) point

positioning holes

Holes in a circuit board for stabilization on a surface before attaching screws. The holes fit onto specific positioning pins on the attachment surface.

positioning pins

Pins on a surface for stabilizing a circuit board before attaching screws. The pins align with specific positioning holes on the circuit board.

power supply cage

An enclosure for hot-swappable power supply units

power supply unit

A component that converts alternating high voltage current (AC) into direct current (DC) for an electrical device

riser card

A small circuit board that serves as an extension to the system board for installing expansion cards and modules

self-tapping screw

A screw that can create its own threads as it is driven into the material. QNAP sometimes uses self-tapping screws for certain components such as fans.

system board

The main circuit board in a device where important system modules (such as the CPU) are located