

# **SteelCentral™ NetShark Maintenance Guide**

CSK-01100

CSK-02100

CSK-02200

CSK-03100

CSK-03200

August 2014

**riverbed®**

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# About this guide

This guide covers the removal and replacement of field-replaceable units (FRUs) as well as the addition or removal of network interface cards (NICs) for these Riverbed® SteelCentral™ NetShark appliances:

Model number	Rack height
CSK-01100	1U
CSK-02100	2U
CSK-02200	2U
CSK-03100	3U
CSK-03200	3U

The intended audience for this guide is experienced technicians and network administrators with a sound knowledge of SteelCentral NetShark appliances.

In this guide we may refer to the SteelCentral NetShark appliances as “NetShark appliances”, or simply “NetShark”.

Some general procedures apply to many of the individual procedures for removing and replacing FRUs:

- Removing the NetShark appliance from the rack (partial or full removal) and replacing it
- Removing and replacing the front bezel
- Removing and replacing the chassis cover

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## Safety considerations

To reduce the risk of personal injury or equipment damage, observe the safety warnings and cautions provided in the Riverbed *Safety and Compliance Guide* (shipped with the appliance).

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**WARNING: Make sure your equipment racks are securely bolted to the floor and/or walls to avoid tipping over when a chassis is extended on its mounting rails. Do not extend more than one chassis from the rack at a time.**

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**WARNING: NetShark appliances are heavy. Use two people and proper lifting technique if you remove the NetShark appliance from the rack.**

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## Removing the NetShark appliance from the rack

Depending on how densely your equipment rack is packed and how much working space you have available, you may be able to perform several of the procedures in this guide without removing the NetShark appliance from the rack. Alternatively, you can remove the NetShark from the rack completely and place it on a bench or similar flat surface.

### Sliding the NetShark into working position in the rack

If you intend to perform a procedure with the NetShark still in the equipment rack, do the following:

1. Disconnect power and network cables from the back of the NetShark appliance.
2. Pull the NetShark forward out of the rack on its rails until the latch mechanism stops the NetShark.
3. If you need more room for access to the NetShark, while following the warning below use the latch levers on the sides of the slides to release the latches, and pull the NetShark farther out from the rack.

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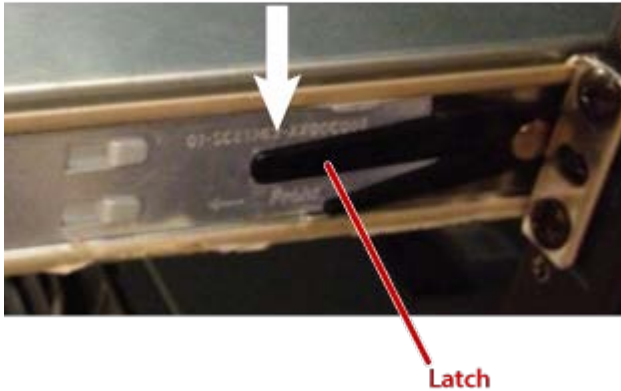
**WARNING: Do not extend the NetShark appliance to the point that it becomes unstable in the mounting rails. Limit the extension of the NetShark from the rack to the minimum amount that allows you adequate access to the interior of the chassis. If in doubt, follow the instructions below for removing the NetShark completely from the rack.**

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## Fully removing the NetShark from the rack

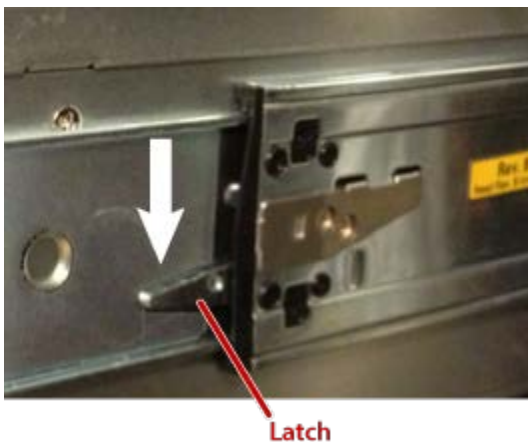
This procedure requires two people.

1. Disconnect power and network cables from the back of the appliance.
2. Pull the NetShark appliance part of the way out from the rack on its slides until the latch mechanism stops it.
3. Use the latch levers on the sides of the slides to release the latches. The latch levers on the CSK-01100 NetShark look like this:



Push down the lever on the right side of the NetShark and pull up the lever on the left side of the NetShark to release the latches.

The latch levers on all other Sharks look like this:



Push down the levers on both sides of the NetShark to release the latches.

4. Using two people and proper lifting technique, pull the NetShark the rest of the way out, and place it on a flat surface such as a bench.

To replace the NetShark in the rack:

1. Using two people and proper lifting technique, lift the NetShark up to the rack.
2. Align the slides on the side of the NetShark with the slides in the rack.

3. Push the NetShark back into the rack. You may have to depress the latch levers when inserting the NetShark. When you have pushed the NetShark all the way into the rack you should hear the latch mechanism click into the locked position.
4. Reconnect power and network cables at the back of the appliance.

---

## Removing the front bezel

If you operate your NetShark with the front bezel in place, you will need to remove it for some of the procedures we describe.

1. Unlock the lock on the front bezel.
2. Push in the latch.
3. Pull the bezel clear of the chassis.



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## Replacing the front bezel

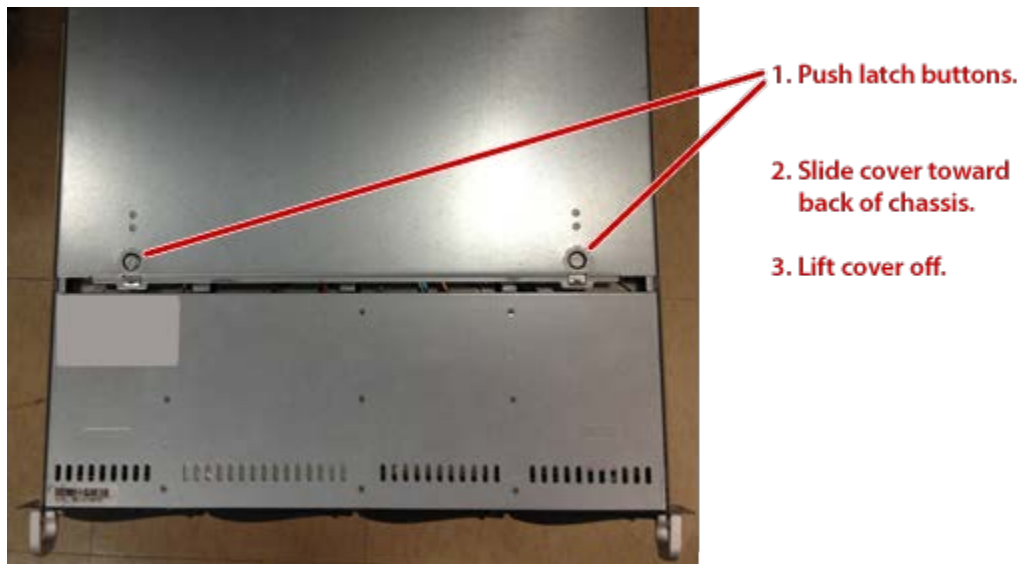
1. Insert the pins on the left side of the bezel into the holes on the left side of the chassis.
2. Push in the latch. This retracts the pins on the right side of the bezel.
3. Push the bezel into place on the front of the chassis.
4. Release the latch. Make sure that the pins on the right side of the bezel fit securely into the holes.
5. Lock the lock, if desired.

---

## Removing the chassis cover

During normal operation the chassis cover should be kept in place to channel airflow properly. You will need to remove the cover for many of the maintenance procedures.

1. If there are screws securing the sides of the cover to the chassis, remove them. There may be two screws, one on each side of the cover. On model CSK-01100 Sharks the screws are near the back of the cover; on other Sharks the screws are a short distance back from the front edge of the cover.
2. Press and hold the latch buttons on the top of the chassis cover.
3. Slide the cover toward the back of the chassis.
4. Lift the cover to remove it from the chassis.



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## Replacing the chassis cover

1. Place the cover on top of the chassis, with the back of the cover slightly behind the back of the chassis.
2. Slide the cover toward the front of the chassis until the cover latches click into place.
3. If desired, secure the cover to the chassis with the two screws you removed earlier.



The datastore (RAID) drives are field replaceable:

- HDK-CSK-0001 – 1 TB
- HDK-CSK-0002 – 2 TB

The RAID controller is not field replaceable.

---

## Removing a RAID drive

The RAID drives can be removed while power is applied to the NetShark appliance.

1. Remove the front bezel if it is installed. (See the procedure on page 1.)
2. Press the latch button on the front of the drive carrier.



This releases the drive carrier handle.

3. Using the handle, pull the drive carrier from its slot.



4. Place the drive carrier on a flat surface, such as a table or bench.
5. Unscrew the six screws from the sides of the drive carrier that secure it to the drive.
6. Remove the drive from the drive carrier.

---

## Replacing a RAID drive

1. Place the drive carrier on a flat surface, such as a table or bench.
2. Slide the hard drive into the carrier, with the printed circuit board side of the drive facing down.
3. Align the mounting holes of the drive and the carrier. Make sure that the bottom of the carrier and the bottom of the drive are flush.
4. Secure the hard drive to the carrier using all six screws.
5. With the latch handle in the open position, slide the drive carrier into its slot in the chassis until it stops.
6. Lock the carrier to the chassis by closing the handle until it latches into the locked position.
7. If desired, replace the front bezel.

The OS drive is field replaceable:

- HDK-CSK-0003 – CSK-01100, CSK-03100, CSK-03200 OS Drive
- HDK-CSK-0004 – CSK-02100, CSK-02200 OS Drive

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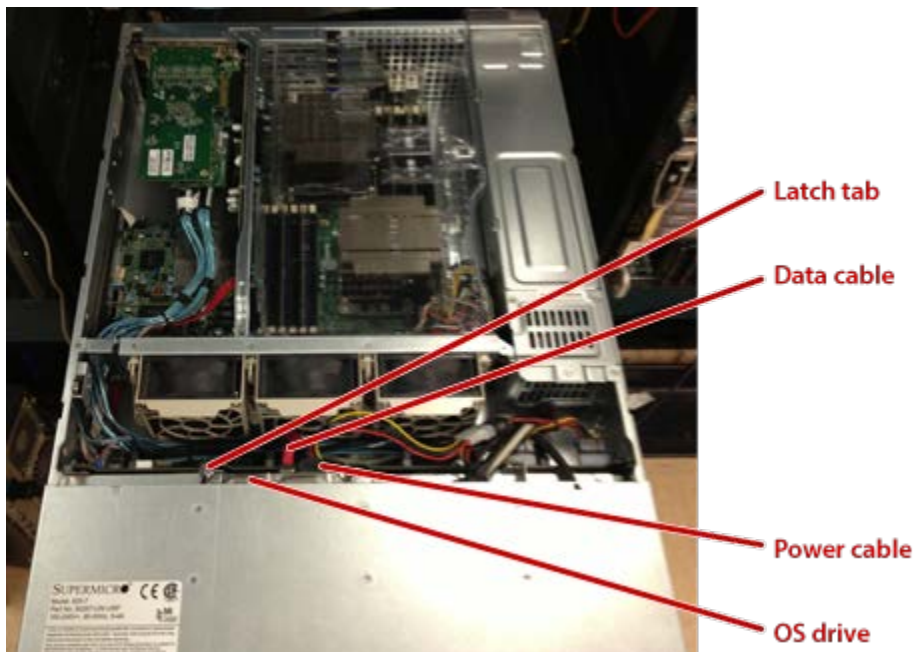
## Removing the OS drive

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**WARNING:** Use two people and proper lifting technique if you remove the NetShark appliance from the rack.

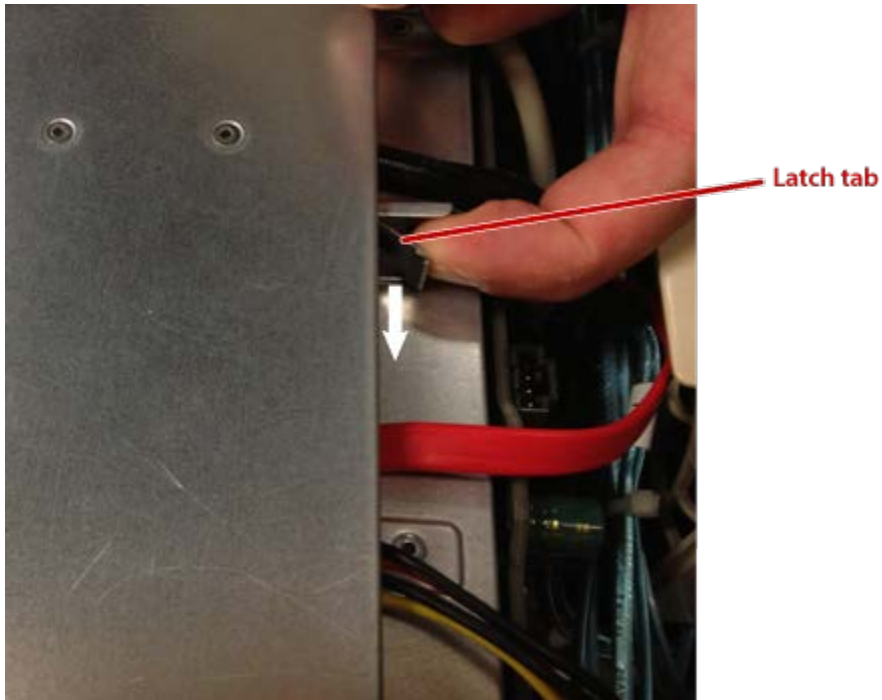
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- Unplug the power cable and network cables from the back of the NetShark appliance.
- Remove the front bezel if it is installed. (See the procedure on page 3.)
- Pull the NetShark appliance part of the way out from the rack on its slides, or  
fully remove the NetShark appliance from the rack and place it on a flat surface such as a bench. (See the procedure on page 1).
- Remove the chassis cover. (See the procedure on page 4.) The OS drive is under the sheet metal that covers the front of the NetShark.

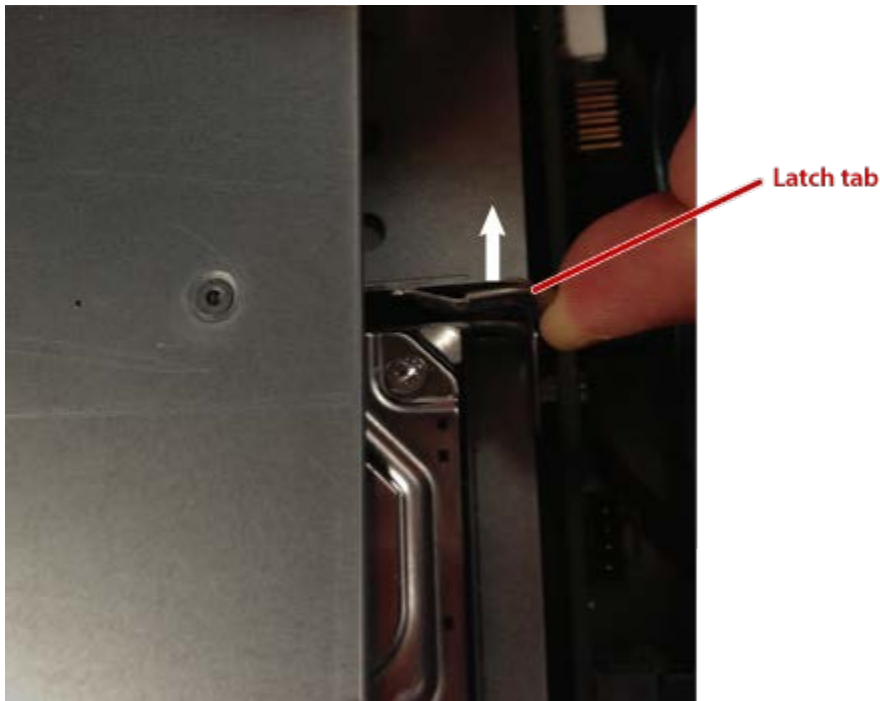


- Unplug the data and power cables from the drive.

- Press the latch tab that secures the drive carrier and slide the drive toward the front of the chassis.
  - For an OS drive in a CSK-01100, CSK-03100, or CSK-03200 NetShark, press the latch tab in, toward the drive.



- For an OS drive in a CSK-02100 or CSK-02200 NetShark, press the latch tab out, away from the drive.



- Push the drive through its slot and out the front of the chassis.
- Remove the screws on the bottom of the drive carrier that secure the drive to the carrier, and remove the drive from the carrier.

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## Replacing the OS drive

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**WARNING: If you removed the NetShark appliance from the rack, use two people and proper lifting technique when you replace it in the rack.**

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- Align the mounting holes in the drive and drive carrier, and secure the drive to the carrier using the screws you removed during the removal procedure.
- Insert the drive carrier in the OS drive slot and push it all the way into the slot until the latch tab clicks into place.
- Plug the data and power cables into the ports on the back of the drive.
- Replace the chassis cover. (See the procedure on page 4.)
- Return the NetShark appliance to its original location in the rack:
  - If you did not remove the NetShark from the rack, simply push the NetShark all the way back into the rack until it stops.
  - If you removed the NetShark from the rack, use two people and proper lifting technique to replace it. See the instructions on page 2.
- If desired, replace the front bezel. (See the procedure on page 3.)
- Plug the power and network cables into the back of the NetShark appliance.



# Network interface cards (NICs)

## Installing or replacing network interface cards (NICs)

The Riverbed® SteelCentral NetShark appliances support the following network interface cards and SFP Modules:

Model Number	Description
NIC-CSK-2TX-X	2-port 1GbE TX Copper Capture NIC (CSK)
NIC-CSK-4TX-X	4-port 1GbE TX Copper Capture NIC (CSK)
NIC-CSK-210G-X	2-port 10GbE Fiber NIC (CSK) Add on (requires SFP)
NIC-013-4SF-X	4-Port 1G Fiber (LX, SX) SFP (NetShark Bracket))
SFP-CSK-LR-X	2x LR SFP Module for NIC-CSK-210G
SFP-CSK-SR-X	2x SR SFP Module for NIC-CSK-210G
SFP-001-LX-X	SFP-LX module- 4 inserts
SFP-001-SX-X	SFP-SX module- 4 inserts

Both network interface cards (NICs) and small form-factor pluggable (SFP or SFP+) modules are field replaceable. There are different removal and replacement procedures for NICs in the various Sharks.

## Supported NIC slot configurations

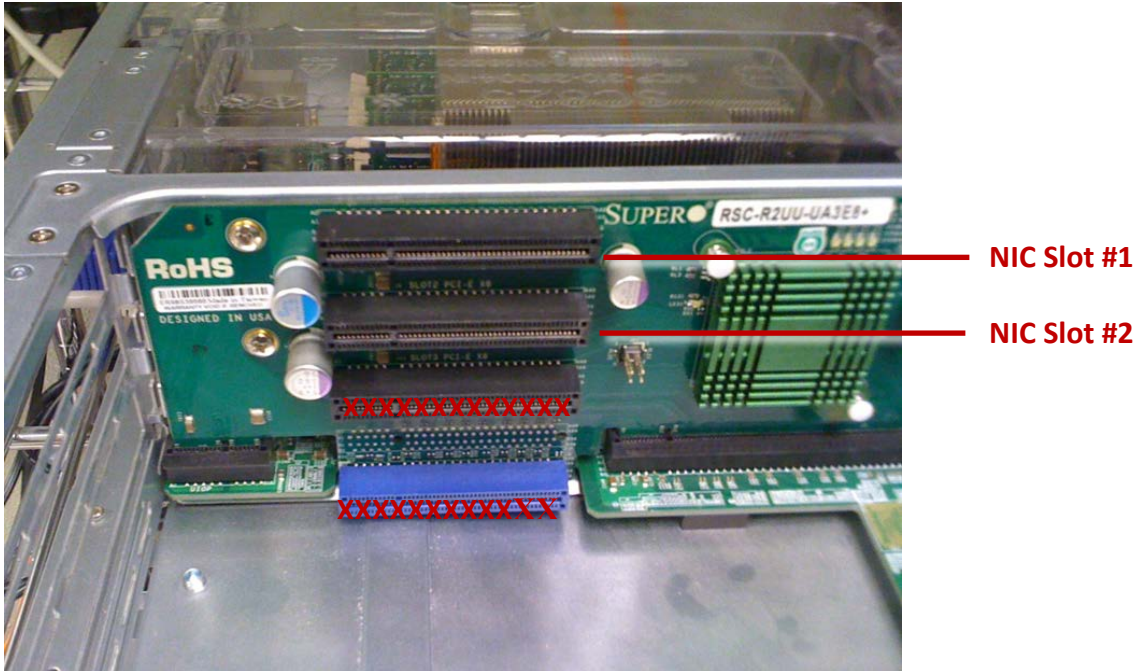
Follow the configuration rules below when placing NICs into NetShark appliances. **Note:** different slots are used in a CSK2x00 appliance versus a CSK3x00 appliance. See the illustrations below for the location of NIC slots in CSK2x00 and CSK3x00 appliances.

Rules	For CSK2x00 appliance	For CSK3x00 appliance
A single NIC of any type	Place NIC in Slot 2.	Place NIC in Slot 1.
Two NICs of the same type:	Place one NIC in Slot 1, the other in Slot 2.	Place one NIC in Slot 1, the other in Slot 2.
Two NICs of different types	Look up the NIC priority in the table below Place the highest priority NIC in Slot 2.	Look up the NIC priority in the table below Place the highest priority NIC in Slot 1.

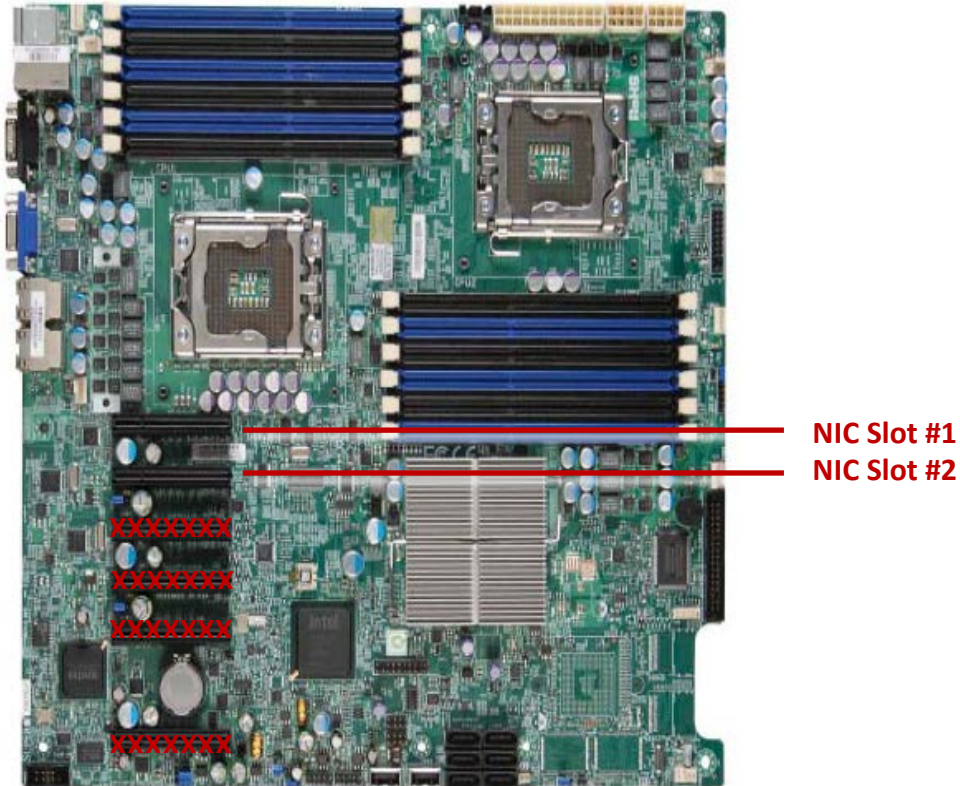
## NIC priority table

NIC Priority	NIC Model#	Description
1	NIC-CSK-210G-X	2-port 10GbE Fiber NIC (CSK) Add on (requires SFP)
2	NIC-CSK-4TX-X	4-port 1GbE TX Copper Capture NIC (CSK)
3	NIC-013-4SF-X	4-Port 1G Fiber (LX, SX) SFP (NetShark Bracket))
4	NIC-CSK-2TX-X	2-port 1GbE TX Copper Capture NIC (CSK)





CSK2x00 NIC slots



CSK3x00 NIC slots



---

## Before you begin

If you are replacing, adding, or moving a NIC in a NetShark appliance that is monitoring and capturing traffic in your network, do the following before you shut down the appliance.

1. Stop and delete all active capture jobs using an interface on a NIC that will be replaced or moved.
2. Stop flow exports from an interface on a NIC that will be replaced or moved.
3. Close all views using an interface on a NIC that will be replaced or moved.

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## Removing and replacing a NIC in a CSK-01100 NetShark appliance

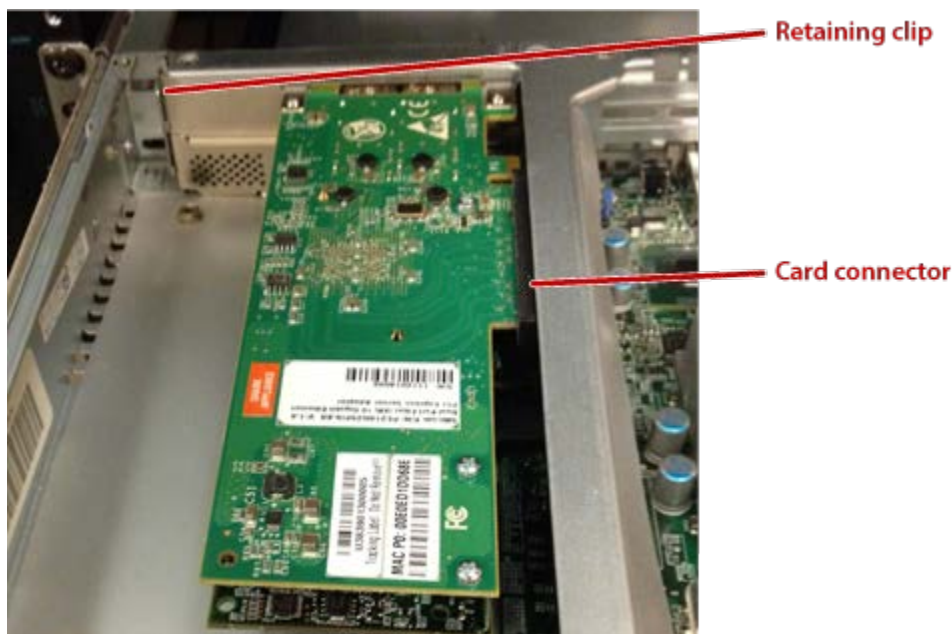
Depending on how much working space you have at the back of your equipment rack, you may be able to remove the NIC from the NetShark without removing the NetShark from the rack. Alternatively, you can remove the NetShark from the rack completely and place it on a bench or similar flat surface.

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**WARNING:** Use two people and proper lifting technique if you remove the NetShark appliance from the rack.

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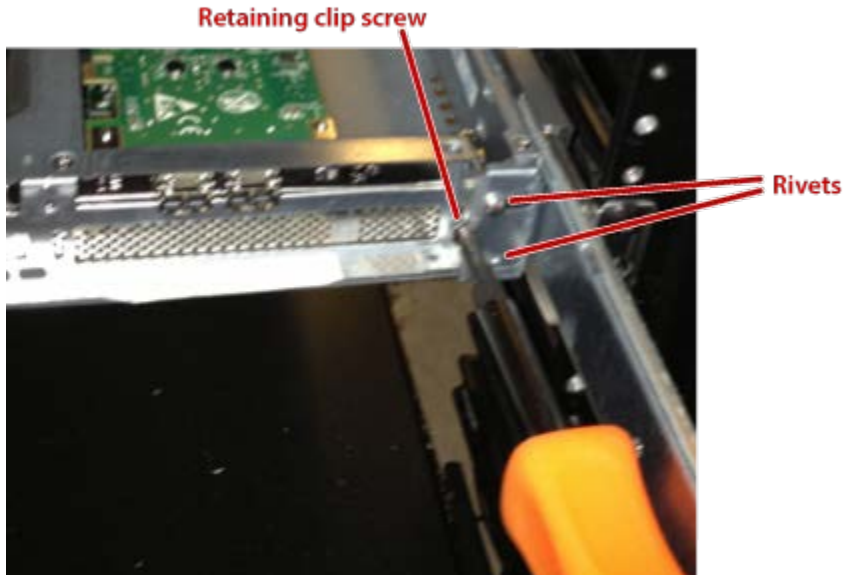
In a CSK-01100 NetShark appliance, the NIC is held in place by a retaining clip. This view is from the inside of the chassis, showing the retaining clip holding the card bracket on the front of the NIC in place:



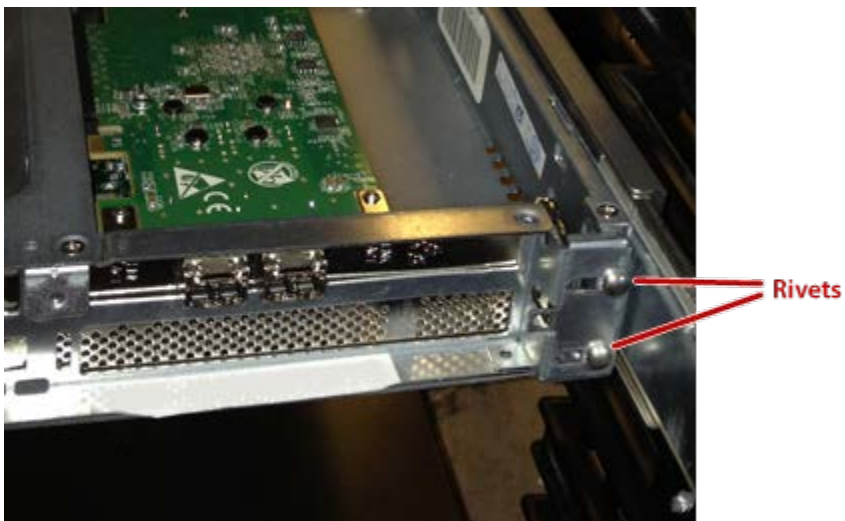
To remove the NIC:

1. Unplug the power and network cables from the back of the NetShark appliance.

2. Pull the NetShark appliance part of the way out from the rack on its slides,  
or  
fully remove the NetShark appliance from the rack and place it on a flat surface such as a bench.(See the procedure on page 1).
3. Remove the chassis cover. (See the procedure on page 4.)
4. If you have left the NetShark in the rack, you may want to push it all the way back into the rack to give you easier access from the back of the rack.
5. From the back of the chassis, unscrew the screw that holds the retaining clip in place.



6. Using the two rivets on the retaining clip, slide the retaining clip away from the top of the NIC (toward the side of the chassis):



7. Unplug the NIC from its socket and remove it from the chassis.  
Replacement is the reverse of the removal procedure.

---

## Removing and replacing a NIC in a CSK-02100 or CSK-02200 NetShark appliance

Depending on how much working space you have at the back of your equipment rack, you may be able to remove the NIC from the NetShark without removing the NetShark from the rack. Alternatively, you can remove the NetShark from the rack completely and place it on a bench or similar flat surface.

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**WARNING: Use two people and proper lifting technique if you remove the NetShark appliance from the rack.**

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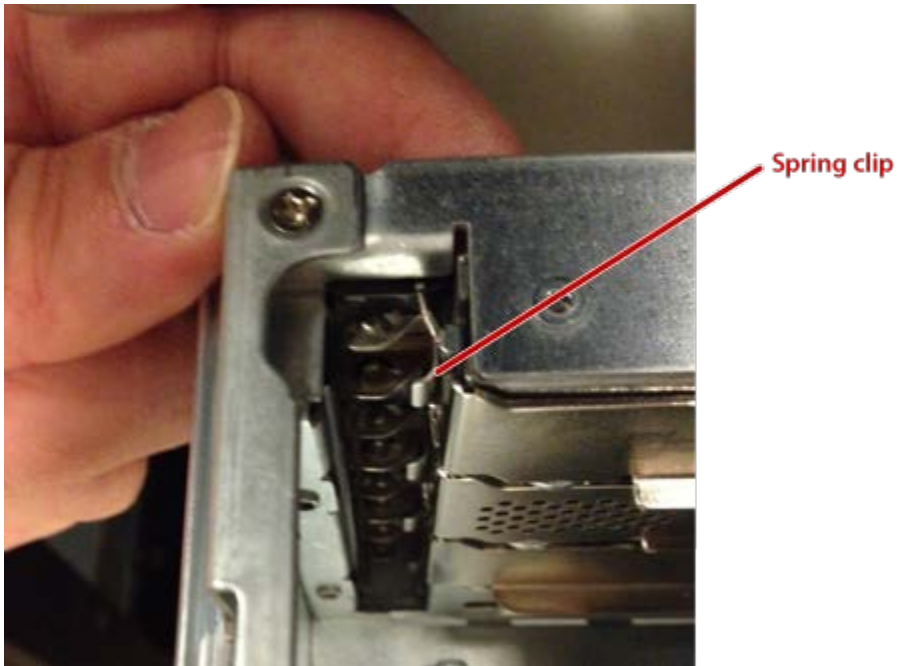
In a CSK-02100 or CSK-02200 NetShark appliance, the NIC is held in place by a spring clip. This view is from the inside of the chassis, showing the spring clip holding the card bracket on the front of the NIC in place:



To remove the NIC:

1. Unplug the power and network cables from the back of the NetShark appliance.
2. Pull the NetShark appliance part of the way out from the rack on its slides,  
or  
fully remove the NetShark appliance from the rack and place it on a flat surface such as a bench. (See the procedure on page 1).
3. Remove the chassis cover. (See the procedure on page 4.)
4. If you have left the NetShark in the rack, you may want to push it all the way back into the rack to give you easier access from the back of the rack.

5. From the back of the chassis, pull out on the tab of the spring clip to release the spring clip from the card.



6. Unplug the NIC from its socket and remove it from the chassis.

Replacement is the reverse of the removal procedure.



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## Removing and replacing a NIC in a CSK-03100 or CSK-03200 NetShark appliance

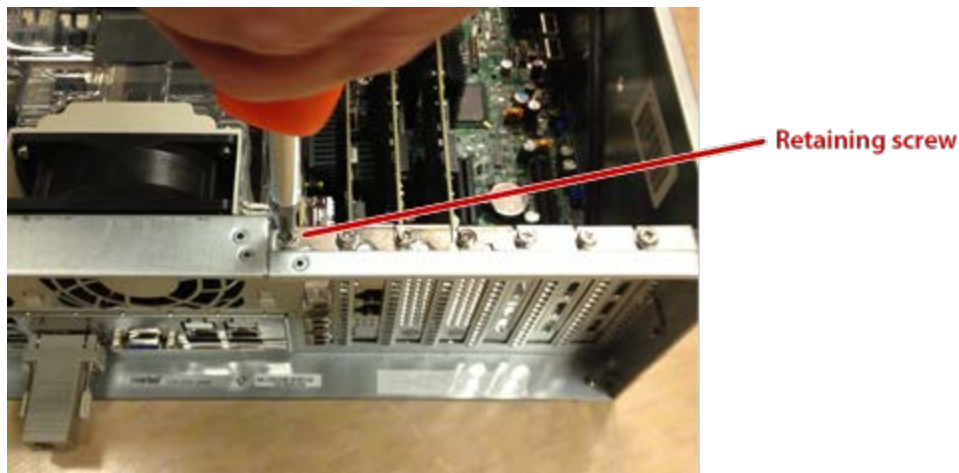
Depending on how much working space you have at the back of your equipment rack, you may be able to remove the NIC from the NetShark without removing the NetShark from the rack. Alternatively, you can remove the NetShark from the rack completely and place it on a bench or similar flat surface.

---

**WARNING: Use two people and proper lifting technique if you remove the NetShark appliance from the rack.**

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In a CSK-03100 or CSK-03200 NetShark appliance, a retaining screw holds the NIC in place. This view shows the retaining screw holding the NIC's card bracket to the chassis:



To remove the NIC:

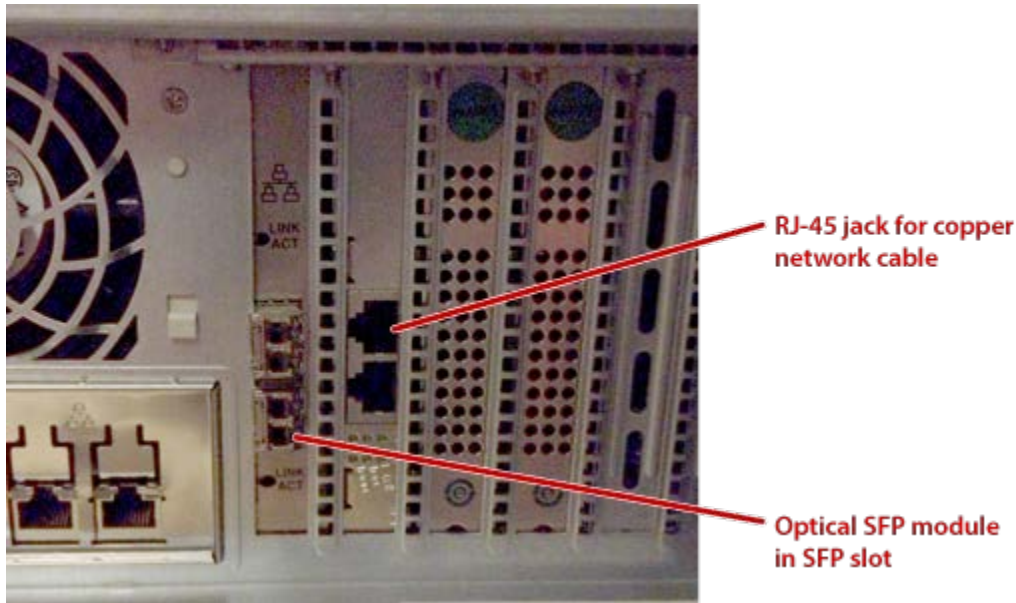
1. Unplug the power and network cables from the back of the NetShark appliance.
2. Pull the NetShark appliance part of the way out from the rack on its slides,  
or  
fully remove the NetShark appliance from the rack and place it on a flat surface such as a bench. (See the procedure on page 1).
3. Remove the chassis cover. (See the procedure on page 4.)
4. If you have left the NetShark in the rack, you may want to push it all the way back into the rack to give you easier access from the back of the rack.
5. Unscrew the retaining screw that holds the card to the chassis.
6. Unplug the NIC from its socket and remove it from the chassis.

Replacement is the reverse of the removal procedure.

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## Removing and replacing an SFP or SFP+ module

NICs that connect to the network with fiber-optic cables use small form-factor pluggable (SFP or SFP+) modules to connect to the fiber-optic cable. These modules plug into SFP slots in the NIC.



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**Caution:** SFP and SFP+ modules are static-sensitive devices. Use an ESD wrist strap or similar anti-static device grounded to the NetShark appliance chassis when removing and replacing SFP or SFP+ modules. Store SFP and SFP+ modules in antistatic bags when they are removed from the NIC.

---

## Removing an SFP module

1G SFP modules have a bail latch on the front of the module:



To remove an SFP module:

1. Disconnect the fiber-optic cable from the SFP module. Note which cable connector connects to which side of the module.
2. Pull the bail out and down to eject the module from the slot.
3. Grasp the module between thumb and forefinger and gently remove it from the slot.

## Removing an SFP+ module

10G SFP+ modules have a bail clasp latch on the front of the module. There is a small tab protruding from the center of the bail clasp:



To remove an SFP+ module:

1. Disconnect the fiber-optic cable from the SFP+ module. Note which cable connector connects to which side of the module.
2. Push the tab on the bail clasp up and outward to eject the bail clasp.
3. Grasp the module between thumb and forefinger and gently remove it from the slot.

## Replacing an SFP or SFP+ module

To replace an SFP or SFP+ module:

1. Insert the module into the slot until you feel resistance.
2. Press the module into the slot with your thumb until it latches firmly into place.
3. Test that the module is properly installed by grasping it between thumb and forefinger and trying to remove it without using the latch. If the module cannot be removed, it is installed properly.
4. Reconnect the fiber-optic cables.

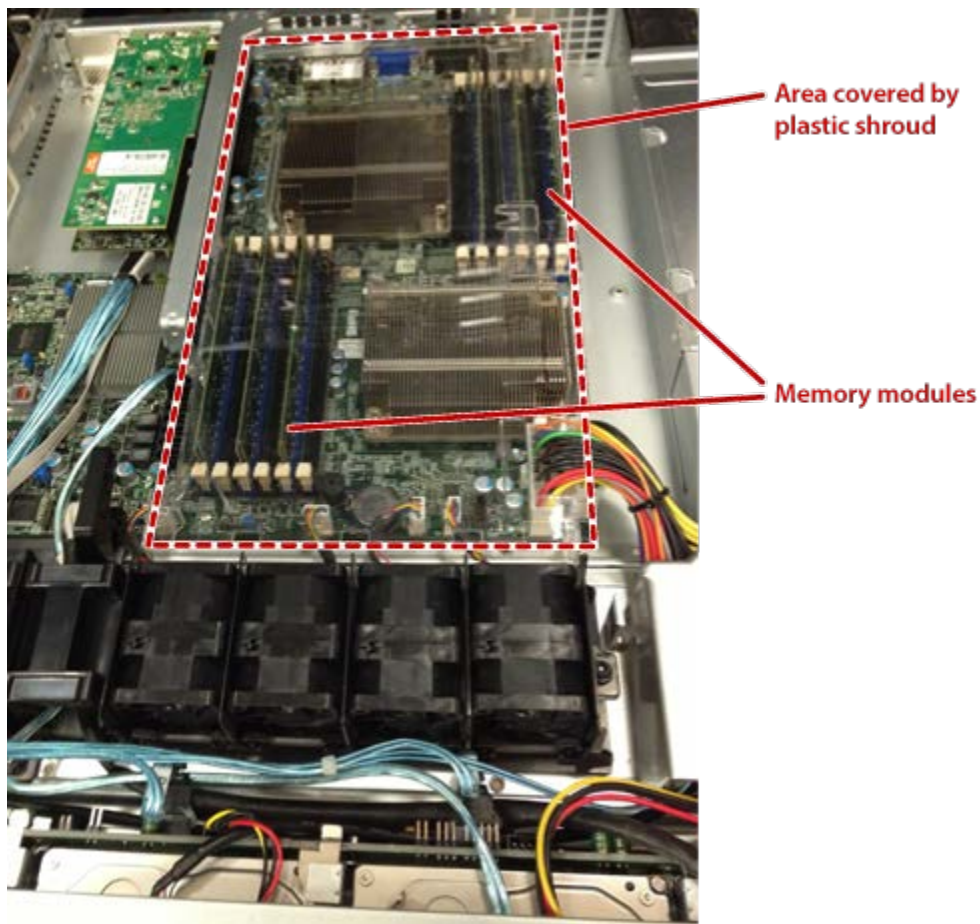


# Memory

The memory (RAM) is field replaceable:

- MEM-CSK-001 – memory for CSK-01100 NetShark
- MEM-CSK-002 – memory for CSK-02100 or CSK-02200 NetShark
- MEM-CSK-003 – memory for CSK-03100 or CSK-03200 NetShark

NetShark system memory is contained in two sets of memory slots located under a plastic shroud that controls airflow through the NetShark chassis. This view shows the memory locations in a CSK-01100 NetShark chassis; the other Sharks have a similar arrangement.



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**Caution:** Memory modules are static-sensitive devices. Use an ESD wrist strap or similar anti-static device grounded to the NetShark appliance chassis when removing and replacing memory modules. Store memory modules in antistatic bags when they are removed from the NIC.

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Depending on how much working space you have in your equipment rack, you may be able to remove the memory from the NetShark without removing the NetShark from the rack. Alternatively, you can remove the NetShark from the rack completely and place it on a bench or similar flat surface.

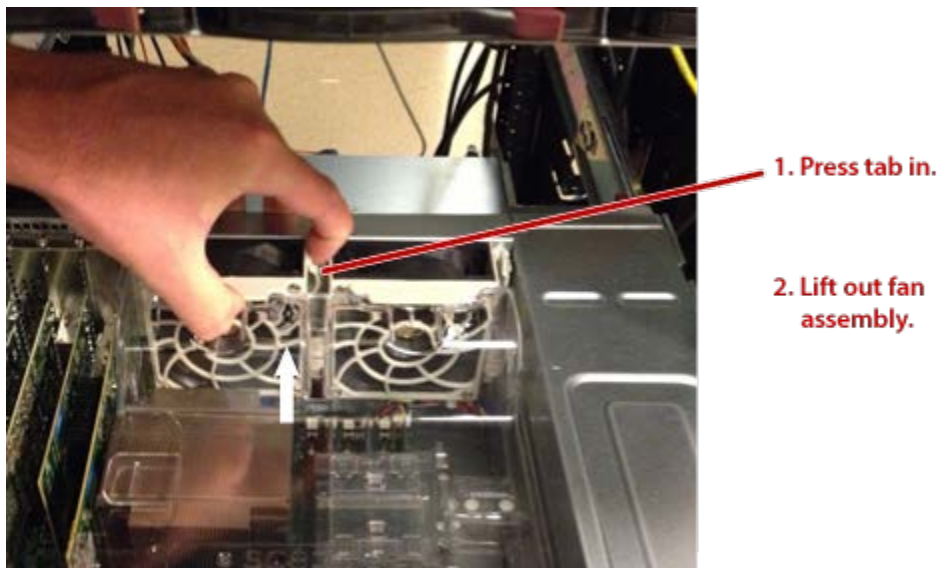
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**WARNING: Use two people and proper lifting technique if you remove the NetShark appliance from the rack.**

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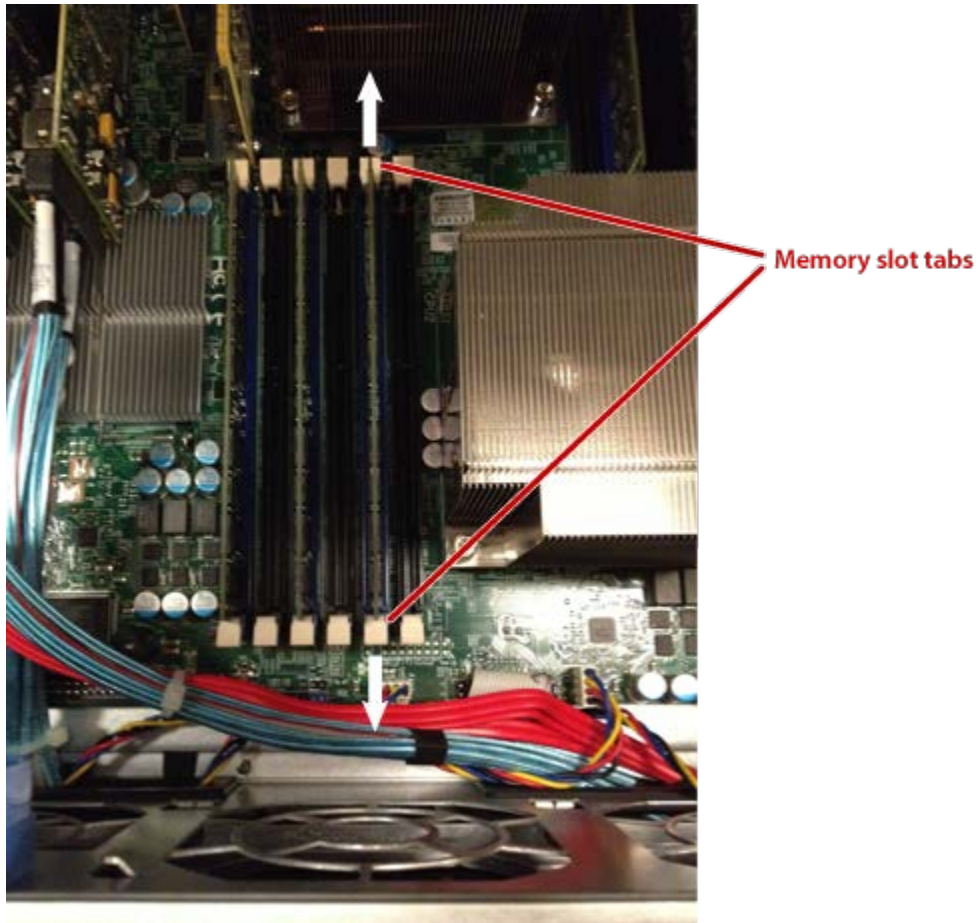
To remove the memory:

1. Unplug the power and network cables from the back of the NetShark appliance.
2. Pull the NetShark appliance part of the way out from the rack on its slides,  
or  
fully remove the NetShark appliance from the rack and place it on a flat surface such as a bench.(See the procedure on page 1).
3. Remove the chassis cover. (See the procedure on page 4.)
4. If your NetShark is a CSK-03100 or CSK-03200 NetShark, remove the two fans at the back of the chassis by pressing the tab on the side of each fan inward and lifting the fan out of its slot.



5. Grasp the plastic shroud that controls the airflow through the chassis and lift it clear of the chassis.

6. Grasp the tabs on the memory slot containing the memory module you want to remove and push them outward. This ejects the memory module from its slot.



7. Remove the memory module from the chassis.

Replacement is the reverse of the removal procedure.

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*Note: Memory should always be installed in the blue slots, and all the blue slots should be populated with memory.*

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# Power supply

The power supply is field replaceable:

- PWS-CSK-001 — 720W PS

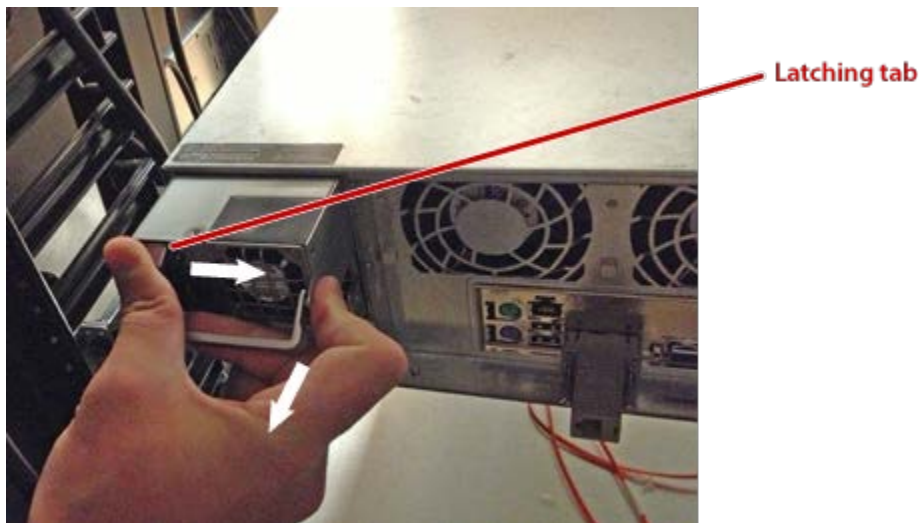
The same power supply is used in all NetShark appliances.

Except for the model CSK-01100, the power supply is hot swappable. If you have two power supplies supplying power to the NetShark appliance, you can remove one of them without shutting down the NetShark

To remove the power supply from the chassis:

1. Disconnect the power cord from the power supply.
2. Push the latching tab in the upper left corner of the power supply to the right.
3. While holding the latching tab, pull the power supply out of its slot in the chassis.

■



To replace the power supply:

1. Insert the power supply into its slot in the chassis.
2. Push the power supply in until the latch clicks into place.
3. Connect the power cord to the power supply.



# Mounting rails

The mounting rails are field replaceable:

- RMK-CSK-0001 — rails for CSK-01100 NetShark appliance
- RMK-CSK-0002 — rails for CSK-02100 or CSK-02200 NetShark appliance
- RMK-CSK-0003 — rails for CSK-03100 or CSK-03200 NetShark appliance

The mounting instructions for the 1U chassis used for NetShark Model CSK-01100 are slightly different from the mounting instructions for the chassis used with all other models.

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## NetShark model CSK-01100 (1U chassis)

The 1U model is shipped with the inner components of the rail assemblies already attached to the chassis. The outer components are in two pieces and must be assembled before being attached to the rack.

The package also includes two pairs of short brackets. These can be used to extend the front and back ends of the outer rails if needed for a non-standard rack size.

To install the appliance in a rack:

1. Locate the long brackets that have the mounting ears for the back of the rack. (They are labeled BACK.)
2. Insert the pins of the long brackets into the slots in the outer rails and secure the brackets to the rails with the screws provided.
3. Check the distance from the front of the rack to the back to ensure that the outer rails fit into the rack correctly. If the rack is too deep for the length of the rails, attach the extension brackets to the front or back ends of the rails as necessary.
4. Secure the outer rails to the rack, using two screws for the front and three screws for the back.
5. Observing the lifting safety precautions, line up the chassis with the rails in the rack and slide the chassis rails into the rack rails. Maintain an even pressure on both sides as you push the chassis into the rack. You may need to press the locking tabs to allow the chassis to slide into the rack.

As the chassis is fully inserted into the rack, listen for the sound of the locking tabs clicking into place.

6. If desired, use additional screws to secure the front of the chassis to the rack.

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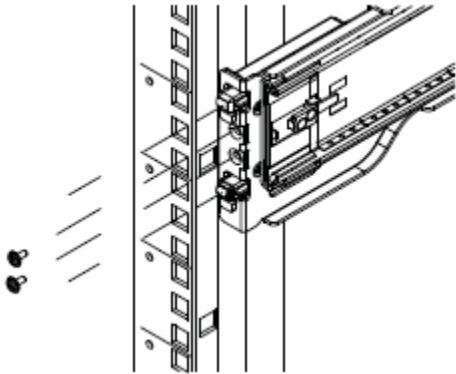
## All other NetShark models (2U and 3U chassis)

The CSK-02100, CSK-02200, CSK-03100, and CSK-03200 models are shipped with the inner rails already attached to the chassis.

The ends of the outer rail assemblies have hooks that hang through the mounting holes in the rack. Spring-loaded plastic tabs hold the hooks securely in the mounting holes.

Install the outer rails in the rack and mount the chassis in the rack as follows:

1. Place the hooks on the ends of the rails through the mounting holes in the rack. For a more secure installation, use the screws provided with the kit to secure the outer rails to the front and back of the rack.



2. Observing the lifting safety precautions, line up the chassis with the rails in the rack and slide the chassis rails into the rack rails. Maintain an even pressure on both sides as you push the chassis into the rack. You may need to press the locking tabs to allow the chassis to slide into the rack.

As the chassis is fully inserted into the rack, listen for the sound of the locking tabs clicking into place.

3. If desired, use additional screws to secure the front of the chassis to the rack.





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