

UNCLASSIFIED

**IDENTIFICATION OF VOLATILE  
AND NON-VOLATILE STORAGE  
AND  
SANITIZATION OF SYSTEM  
COMPONENTS**

**JUNIPER NETWORKS  
EX4550 Switches**

**REVISION 1.0  
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## 1 INTRODUCTION

### 1.1 Purpose

The purpose of this document is to provide direction to identify and remove all non-volatile (NV) storage from the Juniper Networks EX4550 switching platforms.

### 1.2 Scope

This document only addresses the EX4550 switching platforms. While other platforms offered by Juniper Networks may contain similar hardware components, this document only applies to these devices. Furthermore, this document only provides direction for the identification and removal of NV storage components. It does not address destruction procedures for those components. As all of the NV storage components used in the EX4550s are commercial off-the-shelf (COTS) components, directions for destruction of those components are left to the governing Department, Agency, or Office.

## 2 EQUIPMENT OVERVIEW

### 2.1 Identification of Chassis

EX-series switches provide scalable connectivity for the enterprise market, including branch offices, campus locations, and data centers. The switches run under the JUNOS software, which provides Layer 2 and Layer 3 switching, routing, and security services. The same JUNOS code base that runs on EX-series switches also runs on all Juniper Networks J-series, M-series, MX-series, and T-series routing platforms.

Featuring up to 48 wire-speed 10-Gigabit Ethernet (10GbE) ports in a one rack unit (1U) platform, the Juniper Networks® EX4550 Ethernet Switch delivers Layer 2 and Layer 3 connectivity to networked devices such as servers and other switches. The Fiber version of EX4550 base switch provides 32 fixed 10GbE pluggable ports that can also support GbE connectors for added flexibility. The Copper version provides 32 fixed 10GBase-T ports that can also support 1GBase-T. Two optional high-speed uplink modules offer eight additional 10GbE small form-factor pluggable transceiver (SFP+) ports, or 10GBase-T ports each, for connecting to upstream devices. Additionally, a third optional module type supports two 64Gb/s Virtual Chassis ports.

By targeting high-density 10GbE top-of-rack and aggregation deployments in the data center, campus, and service provider environments, EX4550 switches perfectly complement the Juniper Networks EX Series Ethernet

Switch product family: the Juniper Networks EX2200 line and EX3200 line designed for low-density access deployments; the EX4200 line designed for data center and campus GbE access and aggregation deployments; and the EX8200 line of Ethernet switches designed for data center and campus core and aggregation environments.

You can connect individual EX4550 switches together to form one unit and manage the unit as a single chassis, called a *virtual chassis*. You can add more member switches to the virtual chassis as needed, up to a total of 10 members.

To connect EX4550 switches in a *Virtual Chassis* you must either install at least one Virtual Chassis module into either expansion slot, or use any of the 10G ports to connect members of a virtual chassis across multiple wiring closets.

To provide carrier-class reliability, EX4550 switches include:

- Dual redundant power supplies that are field-replaceable and hot-swappable.
- Three field-replaceable fan trays. The switch remains operational if a single fan tray fails.
- Redundant Routing Engines in a virtual chassis configuration. This redundancy enables GRES (graceful Routing Engine switchover) and nonstop active routing.
- JUNOS software with its modular design that enables failed systems processes to gracefully restart.

Three optional uplink modules are available for the EX4550. These Uplink modules provide either: eight 10G small form-factor pluggable (SFP+) transceivers, eight 10GBase-T ports or two 64G Virtual Chassis ports.



**Figure 2-1: EX4550 Fiber**



**Figure 2-2: EX4550 Copper**

## **2.2 Description of Field Replaceable Units (FRU)**

Field-replaceable units (FRUs) are components that you can replace at your site. The FRUs in EX4550 switches are:

- Power supplies
- Fan trays
- Uplink module(s)
- Virtual Chassis module
- SFP+ transceivers

All FRUs are hot-removable and hot-insert-able.

*None of these components contain NVRAM. All NVRAM is soldered to the system board.*

## **3 POWER DOWN AND REMOVAL OF NON-VOLATILE STORAGE**

In order to ensure that no user data or system configurations remain resident on an EX4550 platform, the following steps must be performed:

1. Power must be removed from the system to clear all volatile storage
2. The FLASH Module must be removed from the system board

A detailed process is included in the following sections.

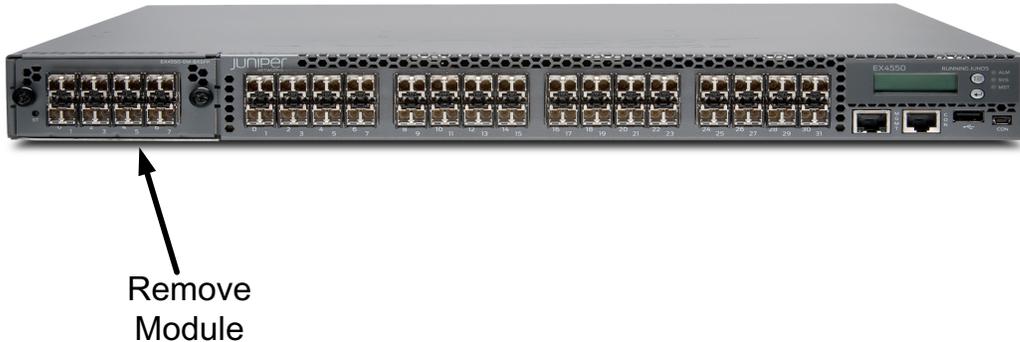
### **3.1 System Power Down**

Power down the system by removing any connected power cords.

### **3.2 Disassembly of the EX4550 Chassis and Identification of NV storage**

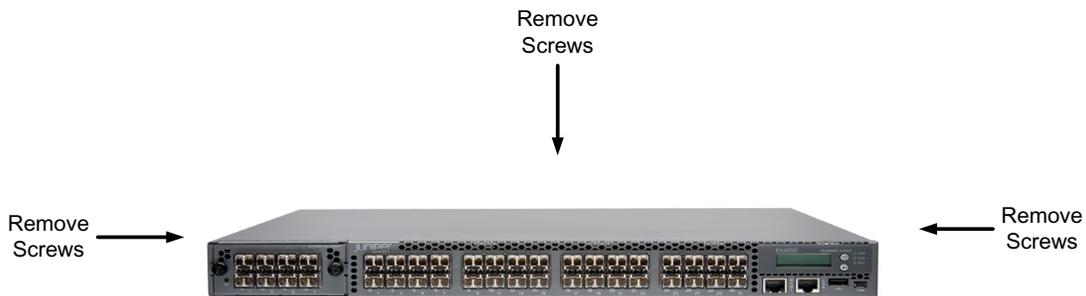
The EX4550 NV storage is easily removable once the cover is removed. The cover removal procedure is identical for Fiber and Copper systems. Refer to the following steps to remove the cover:

1. Remove any Front Modules that are installed into the system.  
To remove, loosen the two thumb screws until they rotate freely, grab the thumb screws and pull the module out.



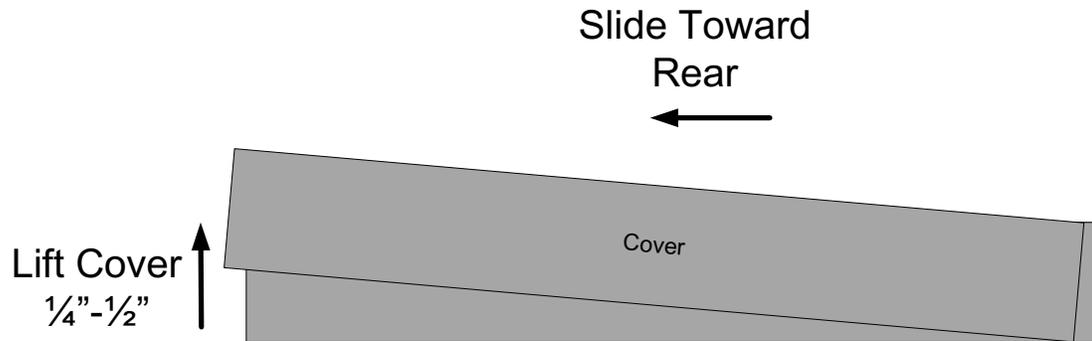
**Figure 3-1: Front Module**

2. Remove screws in the top and sides of the cover using a small Philips screw driver. When all the screws are removed, it will be possible to lift the rear of the cover a small amount from the chassis. If the cover will not lift then some screws still require removal.



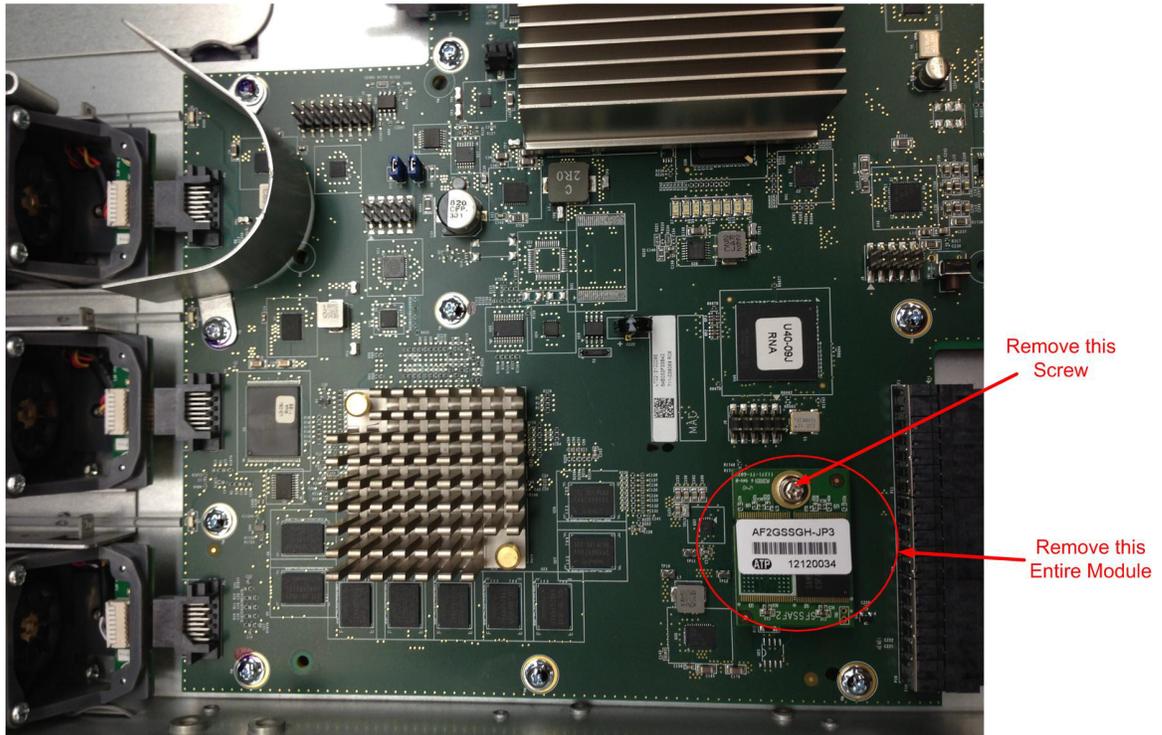
**Figure 3-2: Remove Cover Screws**

3. Lift the rear of the cover between  $\frac{1}{4}$ " and  $\frac{1}{2}$ ", and slide away from the front of the chassis until the lip of the cover is free from the front of the chassis. The cover should now be free from the chassis and can be set aside.



**Figure 3-3: Slide Top Cover to Remove**

4. The NV storage is a module that sits up on a connector and a stand-off near the rear of the main system board. To remove the storage, remove the screw inserted into the stand-off. A Philips screw driver is required to remove the screw. Grasp the module on two sides and lift with enough force to remove from the connector on the main board.



**Figure 3-4: Remove NV Flash**

*NOTE : Before removal, ensure J-TAC and the appropriate account team has been notified of your intentions.*