

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

**JUNIPER NETWORKS
EX4400-48T**

**REVISION 1.0
March 8, 2021**

TABLE OF CONTENTS

1 Introduction 1

 1.1 Purpose 1

 1.2 Scope 1

2 Equipment Overview..... 1

 2.1 Identification of Chassis 1

 2.2 Description of Field Replaceable Units (FRU) 2

3 NON-VOLATILE MEMORIES 2

4 Power Down and Removal of Non-Volatile Storage 3

 4.1 System Power Down 3

 4.2 Disassembly of the EX4400-48T Chassis and Identification of NV storage..... 3

 4.3 Mainboard..... 7

 4.4 Follow the assembly procedure in reverse order to assemble the EX4400-48T Chassis..... 9

TABLE OF FIGURES

Figure 2-1: EX4400-48T 2

Figure 3-1: PSU FRUs, FAN FRUs..... 3

Figure 3-2: Top cover screws 4

Figure 3-3: Side screws of Top Cover..... 5

Figure 3-4: Locate DIMM and Battery 6

Figure 3-5: Locate NV storage (eMMC) 6

Figure 3-7: MainBoard 6

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 EX4400-48T platform. Non-Volatile (NV) storage is a system memory that can store user data information and system configuration data even when system not powered. Volatile (V) storage is a system memory that only retains data or its contents while system powered but when system powered off or interrupted, its data or contents are immediately lost.

1.2 Scope

This document only addresses the EX4400-48T platform. 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 the NV storage components used in the EX4400-48T 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

Juniper Networks EX4400 Ethernet Switches provide connectivity for high-density environments and scalability for growing networks. These switches can be deployed wherever you need high density of Gigabit Ethernet ports or redundancy. Typically, EX4400 switches are used in large branch offices, campus wiring closets, and data centers. In datacenters, EX4400 switches can be positioned as top-of-rack switches; the top devices in a rack to provide connectivity for all the devices in the rack. Juniper Networks EX Series Ethernet Switches run Junos OS, which provides Layer2 and Layer3 switching, routing, and security services.

The 48-port EX4400 switches with gigabit ports EX4400-48T and provide built-in Ethernet network ports, 0-47 built-in 1G ports, Ethernet network ports, and Two built-in 100-Gigabit Ethernet quad small form-factor pluggable plus (QSFP28) ports that can house 100-Gigabit QSFP28 transceivers. Network ports support 1Gbps EX4400-48T is designed to fit in a standard 19" rack.

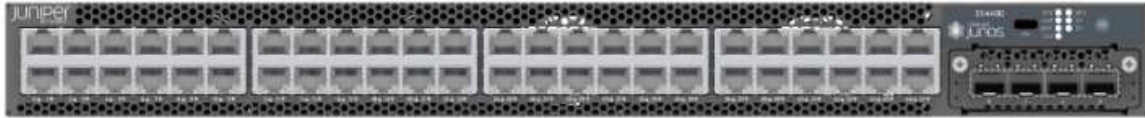


Figure 2-1: EX4400-48T

2.2 Description of Field Replaceable Units (FRU)

The power supply, fan tray, Uplink modules and transceivers are hot-swappable. You can remove and replace them without powering off the system or disrupting system functions.

None of these components contain NV RAM. All NV RAM is either soldered or installed onto the system board.

3 NON-VOLATILE MEMORIES

This section covers the identification of non-volatile memories on EX4400-48T system.

CPU Board:

- eMMC (System storage) – stores user data.
- BIOS Flash
- IDEEPROM
- RECPLD & backup flash

Main board:

- IDEEPROM
- System CPLD
- TD3 PCIe Flash memory
- NIC configuration Flash

Uplink Module 4x25G

- IDEEPROM

4 POWER DOWN AND REMOVAL OF NON-VOLATILE STORAGE

To ensure that no user data or system configurations remain resident on a EX4400-48T platform, the following steps must be performed:

1. Power must be removed from the system to clear all volatile storage.
2. The eMMC Chip must be removed from the system board.
3. The SPI Flash components must be removed from the system board.

A detailed process is included in the following sections.

4.1 System Power Down

Power down the system by removing any connected power cords from power supply.

4.2 Disassembly of the EX4400-48T Chassis and Identification of NV storage

The EX4400-48T does contain NV storages that is replaceable as well as it is soldered to the system board. To access the memory for removal, refer to the following steps:

1. Removing ear-mounts on both left and right side.
2. Remove power supplies Blank PSU, and Fan modules from the system (figure 3-1)
 - a. Move latch towards PSU Handle and Pull PSU out of Chassis.
 - b. Unfasten the captive screws and remove the Blank PSU.
 - c. Unfasten the captive screws for each fan FRU, unlatch and pull out the Fan FRU out of the chassis.



Figure 3-1: PSU FRUs, FAN FRUs

3. Remove thirteen screws on top side (figure 3-2).



Figure 3-2: Top cover screws

**Remove twelve screws on left side and right side of top cover (figure 3-3)
Slide and lift to remove the Top cover.**





Figure 3-3: Side screws of Top Cover

CPU BOARD:

CPU board non-volatile devices are listed below.

- U4 -eMMC (System storage) – stores user data.
- U2056 -BIOSFlash
- U18 -IDEEPROM
- U2063 -RECPLD & backup flash

4. Locate Volatile memory DIMM, and Battery on the CPU Board (figure 3-4).



Figure 3-4: Locate DIMM and Battery

5. Locate NV storage on Main Board (figure 3-5).



Figure 3-5: Locate NV storage (eMMC)

5. Locate Management port EEPROM from the Main Board – Top side (figure 3-5).

Figure 3-5: Locate Management EEPROM

6. Locate SPI FLASH and RE-CPLD from the CPU Board Top Side (figure 3-6).

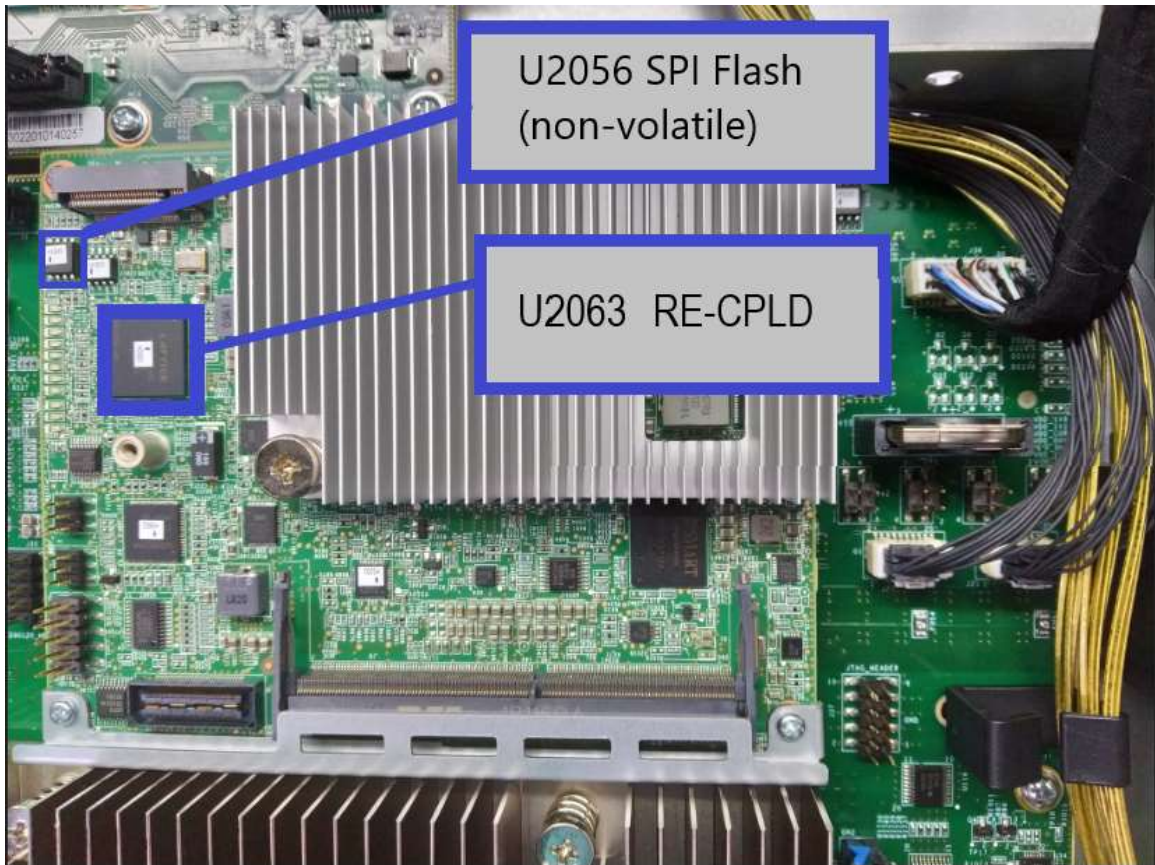


Figure 3-6: Locate RE-CPLD SPI Flash

Main Board

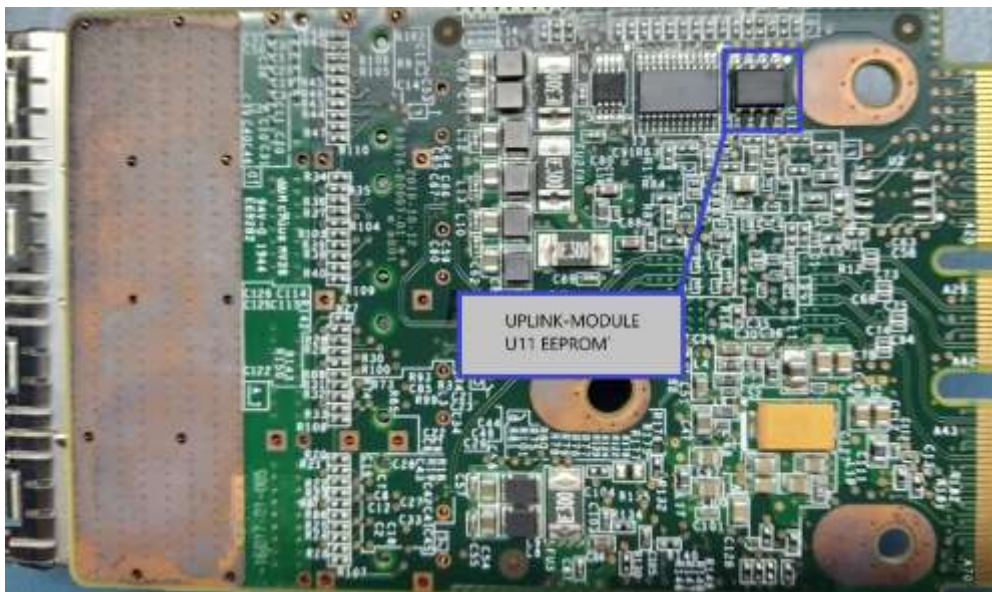
- U28 -IDEEPROM
- U8 -System CPLD
- U41 -TD3 PCIe Flash memory
- U40 -NIC configuration Flash



Figure 3-7: Locate System-CPLD, PCIe flash NIC IDEEPROM and MB-IDEEPROM.

Uplink Module

- U11 -IDEEPROM



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

4.3 Follow the assembly procedure in reverse order to assemble the EX4400-48T Chassis.