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

JUNIPER NETWORKS SRX-SERIES SRX340/345

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1 INTRODUCTION

1.1 Purpose

The purpose of this document is to provide direction to identify volatile and non-volatile storages and remove non-volatile (NV) storage from the Juniper Networks' Secure Services Gateway SRX340/345 security platform.

1.2 Scope

This document only addresses the SRX340/345 security platform. While other platforms offered by Juniper Networks may contain similar hardware components, this document only applies to the SRX340/345. 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 SRX Series product family 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

The SRX340/345 is a 1U chassis with 8 fixed 10/100/1000 Mbps Ethernet ports, 8 fixed SFP ports, four front-facing WAN Physical Interface Module (mini-PIM) slots for additional port capacity. The chassis is fixed with a system motherboard, with one front-facing Universal Serial Bus (USB) interface, internal embedded USB Solid State Drive (eUSB SSD), internal Dynamic Random Access Memory (DDR3 chips), Boot flash chip, IDEEPROM and Renesas Security chips, which are all fixed on the system motherboard except the eUSB SSD. The volatile and non-volatile memories can not be accessed without removing the top cover of the device and these are soldered to the motherboard except the eUSB SSD. Users are not advised to remove these storage devices unless they want to scrap the system. If the user wants to remove them, the user has to de-solder these chips.

The following pictures show the different views of the SRX340/345 model:

Figure 2-1: SRX340/345 Chassis different views

2.2   Description of Components

The following major components are installed in the SRX340/345.

2.2.1   System Motherboard

The System Motherboard is the large printed circuit board located inside the device. The DDR3 chips, Flash, IDEEPROM, CPLD and Security chip are soldered to the motherboard (refer to the figure 2-2). The eUSB SSD is plugged in the socket on the Motherboard.

The SRX340/345 has the following non-volatile memory devices:

- Anti-counterfeit security chip's internal EEPROM – stores the signature of the security chip. No user data is stored here.
- IDEEPROM– only used to store FRU identification data. No user data is stored here.
- Boot flash for Processor– stores the boot loader image for the Processor, no user data.
- eUSB SSD stores the JUNOS image and user data
- CPLD internal flash - stores CPLD image, no user data is stored.

In addition, the SRX340/345 has one USB port, into which the user can install an external USB disk device to store core dumps, system configuration, software images, etc. The system does not store any user data onto storage devices attached to this port.

All other components of the SRX340/345 are volatile, so they do not store any information after power is lost, following are the volatile memory present on SRX340/345:
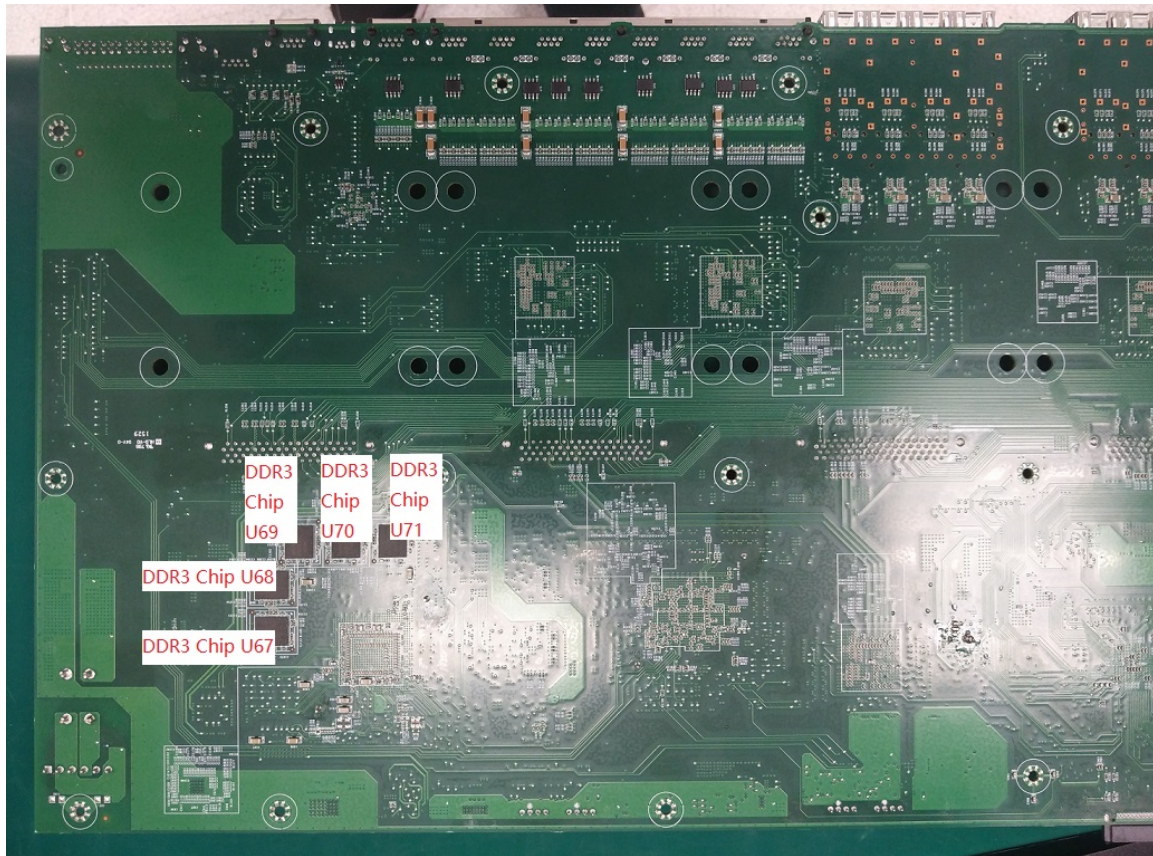- DDR3 chips memory– stores User data here
- Processor Internal Cache memory and registers– stores operational data here

No other sub-components on the motherboard contain any storage elements, either volatile or non-volatile.
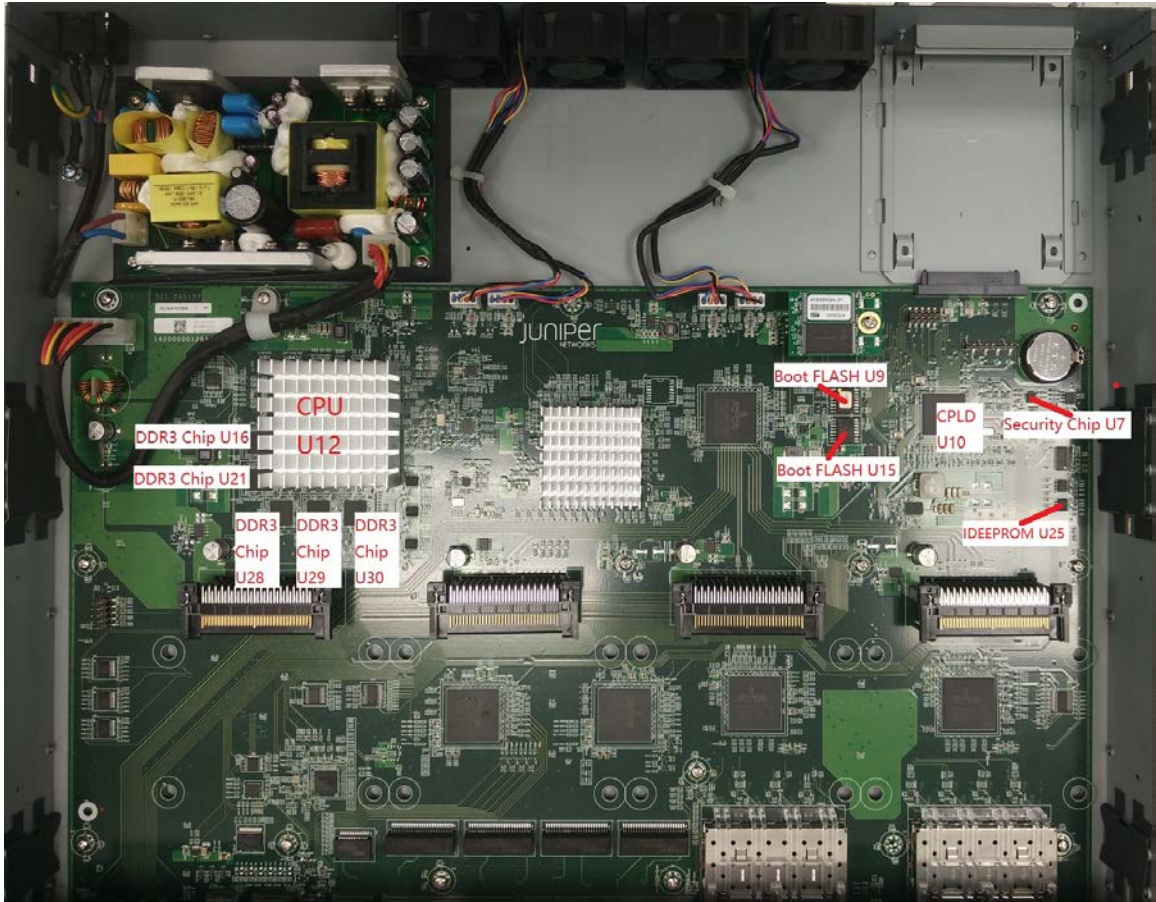
Top View

Bottom View

Figure 2-2: Identification of storage devices

2.2.2 Physical Interface Module Slot

The mini-PIM provides expanded input/output (I/O) capability for the SRX340/345.

2.2.3 Cooling Subsystem

The Cooling Subsystem consists of 4 fans. The Cooling Subsystem contains no storage elements, either volatile or non-volatile.

3   POWER DOWN AND REMOVAL OF NON-VOLATILE STORAGE

In order to ensure that no data remains resident on an SRX340/345 platform in volatile memory, power must be removed from the system to clear all volatile storage.

Normally, the user will not be able to destroy user data stored in non-volatile memory as some non-volatile memory chips are soldered on system motherboard. However, if the user wants to destroy such data, the user needs to

follow the steps below, but it is not advised unless the user wants to scrap the system.

1. The internal eUSB SSD must be removed from the motherboard by pulling the eUSB SSD from the eUSB socket.
2. All external USB storage devices must be removed from the device.

A detailed process is included in the following sections.

3.1 System Power Down

The SRX340/345 should be powered down gracefully if time exists to do so. A graceful power down takes less than a minute to complete. To perform a graceful power down of an SRX platform, complete the following steps:

1. Execute the "request system power-off" command from the command line. Wait for positive feedback that the shutdown is complete. If connected via the console, you will see the message "The operating system has halted. Please press any key to reboot." If connected via Telnet or SSH, your session will be disconnected before the SRX completes the power down process. You can verify via the console or observe the LED's on the front of the device. If monitoring the LED's, ensure the Power LED is off (not solid on or flashing).
2. The user can power off the system via pressing and releasing the power button on front panel. This is shuts down the system gracefully.
3. The user can power off the system by pressing the power button in front panel for 10sec, system will shut downs immediately. You can verify via observing the Power LED. Please ensure the power LED is off.
4. Unplug the power cord from the SRX340/345 system.

An emergency power down of a JUNOS system can be performed by omitting step 1 and 2, simply performing step 3 and 4 in the process above. Note that an emergency power down could possibly corrupt the operating system and configurations stored on the eUSB SSD. Once the system has been powered down, all volatile storage is clear.

3.2 Removal of the eUSB SSD storage devices from the System Motherboard

Open the chassis top cover,
Locate the eUSB SSD, see Figure3-1,
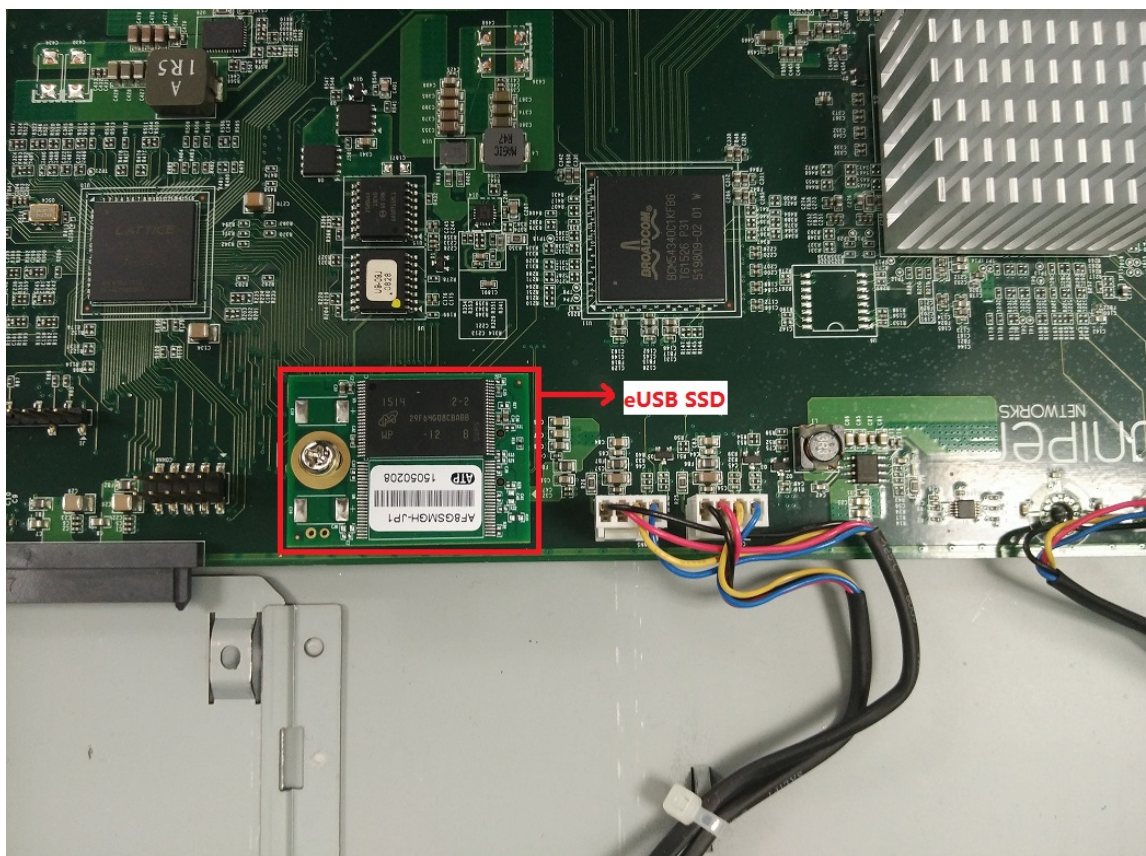Pull to remove the eUSB SSD.

Figure 3-1: Location of eUSB SSD

3.3   Removal of USB Storage from the Chassis

There is one USB interface on the front of the SRX340/345 chassis. With the unit powered off, gently pull any attached media devices away from the SRX340/345 to remove them.

4   ENCRYPTION KEYS

The Encryption Keys are stored in DRAM, when system is running, and will be lost after the system is powered off.