

UNCLASSIFIED

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

**JUNIPER NETWORKS®
QFX5200**

**REVISION 1.0
April 07, 2017**

UNCLASSIFIED

TABLE OF CONTENTS

1 Introduction 1

 1.1 Purpose 1

 1.2 Scope 1

2 Equipment Overview..... 1

 2.1 Identification of Chassis 1

 Figure 2-1: QFX5200 Chassis different views 2

 Description of Components 3

 2.1.1 System 3

 2.1.2 Power Supply Unit Slots..... 3

 2.1.3 Cooling Subsystem 3

3 Power Down and Removal of Non-Volatile Storage 4

 3.1 System Power Down 4

 3.2 Removal of the SSD Flash storage devices from the System..... 8

 8

TABLE OF FIGURES

Figure 2-1: QFX5200 Chassis different views..... 2

Figure 3-1: Identification of SSD Flash devices 8

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' Switch (QFX5200).

1.2 Scope

This document only addresses the QFX5200 switch platform. While other platforms offered by Juniper Networks may contain similar hardware components, this document only applies to the QFX5200. Furthermore, this document only provides directions 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 QFX series product family are commercial off-the-shelf (COTS) components, directions for destruction of those components are left to the customer's governing department, agency, or office.

2 EQUIPMENT OVERVIEW

2.1 Identification of Chassis

The QFX5200 compact 1 U high-density QSFP/QSFP28 ports, 10GbE, 25GbE, 40GbE, and 100GbE connections. Redundant fans, 2 AC/DC power supplies, back-to-front airflow (AFI) or front-to-back- airflow (AFO).The chassis is fixed with system motherboard, with Universal Serial Bus ("USB") interfaces, internal Dynamic Random Access Memory (DDR3 DIMM), Boot flash chip, Integrated Driver Electronics ("IDE"), Electrically Erasable Programmable Read-Only Memory ("EEPROM"), that are soldered on the system board except the DIMM and SSD Flash. The volatile and non-volatile memories cannot be accessed without removing the top cover of the chassis and these are soldered to the motherboard except for the DIMM and the SSD Flash storage devices. Customers are not advised to remove these soldered storage devices unless they want to scrap the system. If the user wants to remove them, the customer has to de-solder these chips.

The following pictures show the different views of the QFX5200 model:

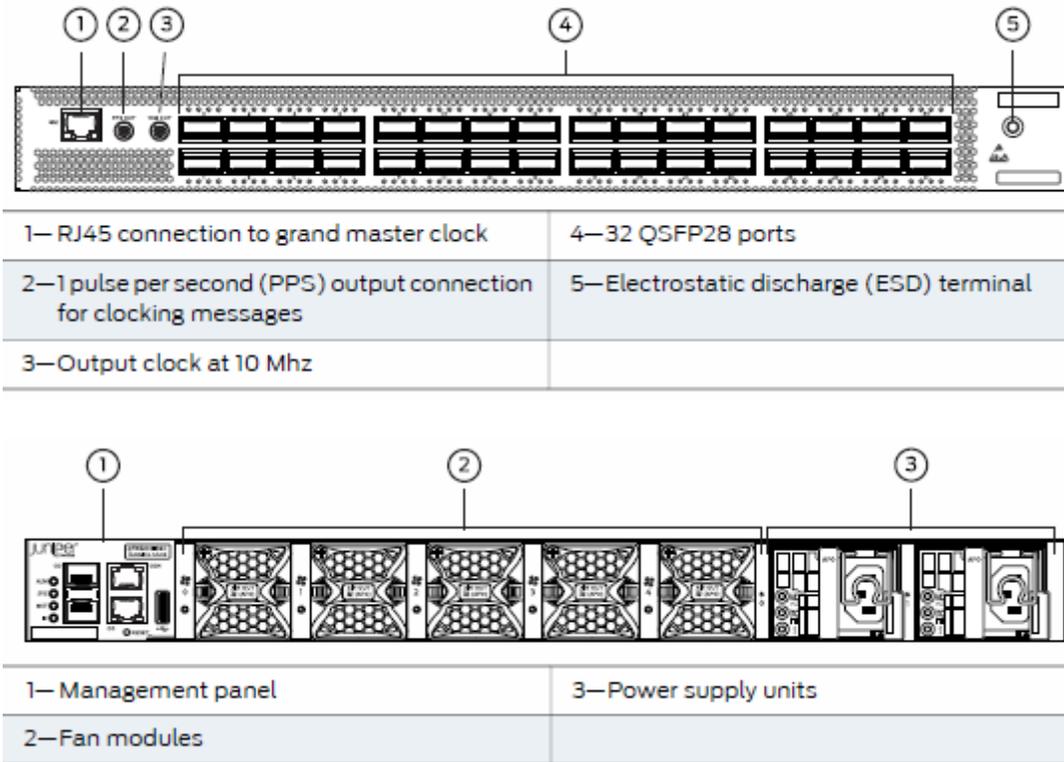


Figure 2-1: QFX5200 Chassis different views

Description of Components

The following major components are installed in the QFX5200 chassis.

2.1.1 System

The System printed circuit board located inside the chassis. The IDEEPROM, CPLD are soldered to the board (refer to the figure below). The DDR3 DIMM and SSD Flash card are plugged in the socket on the board.

The QFX5200 has the following non-volatile memory devices:

- 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.
- SSD Flash stores the JUNOS image and user data
- CPLD internal flash - stores CPLD image, no user data is stored.

In addition, has one USB port, 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 these ports.

All other components of the QFX5200 are volatile, so they do not store any information after power is lost, following are the volatile memory present on QFX5200:

- DDR3 DIMM 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

2.1.2 Power Supply Unit Slots

The QFX5200 includes two power supply slots, it can be powered with one or two power supplies, the power supply contains IDEEPROM and has no users information will be stored in it.

2.1.3 Cooling Subsystem

The Cooling Subsystem consists of redundant 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 a QFX5200 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 SSD Flash must be removed from the board by remove the screws and disconnect it from the connector.
2. All external USB storage devices must be removed from the chassis

A detailed process is included in the following sections.

3.1 System Power Down

The QFX 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 a QFX platform, complete the following steps:

1. Execute the “request system halt both-routing-engines” command from the command line. Wait for positive feedback that the shutdown is complete. If connected via the console, you will see the shutdown message below.

```
root> request system halt both-routing-engines
warning: Other routing-engine not present
warning: This command will halt all the members.
If planning to halt only one member use the member option
Halt the system ? [yes,no] (no) yes
```

```
Shutdown at Tue Apr 4 05:14:44 2017.
[pid 41003]
```

```
{master:0}
root>
*** System shutdown message from root@ ***
```

```
System going down in 1 minute
```

```
*** System shutdown message from root@ ***
```

```
System going down in 30 seconds
```

*** FINAL System shutdown message from root@ ***

System going down IMMEDIATELY

Stopping cron.

Waiting for PIDS: 3696.

Poweroff for hypervisor to respawn

Apr 4 05:14:45 jlaunchd: periodic-packet-services (PID 3724) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: alarm-control (PID 3725) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: craft-control (PID 3726) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: mib-process (PID 3727) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: routing (PID 3728) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: pfed (PID 3729) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: remote-operations (PID 3730) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: class-of-service (PID 3731) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: firewall (PID 3732) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: neighbor-liveness (PID 3733) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: redundancy-device (PID 3734) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: dynamic-flow-capture (PID 3735) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: clksyncd-service (PID 3736) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: ethernet-link-fault-management (PID 3737) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: mpls-traceroute (PID 3738) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: secure-neighbor-discovery (PID 3739) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: shm-rtssdbd (PID 3740) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: subscriber-management (PID 3741) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: ddos-service (PID 3742) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: snmp (PID 3743) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: iccp-service (PID 3744) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: l2-learning (PID 3745) terminate signal 15 sent

Apr 4 05:14:45 jlaunchd: sntp (PID 3746) terminate signal 15 sent
Apr 4 05:14:45 jlaunchd: sflow-service (PID 3747) terminate signal 15 sent
Apr 4 05:14:45 jlaunchd: license-service (PID 3748) terminate signal 15 sent
Apr 4 05:14:45 jlaunchd: cloud-analytics-engine (PID 3749) terminate signal 15 sent
Apr 4 05:14:45 jlaunchd: dot1x-protocol (PID 3750) terminate signal 15 sent
Apr 4 05:14:45 jlaunchd: analytics (PID 3751) terminate signal 15 sent
Apr 4 05:14:45 jlaunchd: pki-service (PID 3752) terminate signal 15 sent
Apr 4 05:14:45 jlaunchd: interface-control (PID 3753) terminate signal 15 sent
Apr 4 05:14:49 jlaunchd: mpls-traceroute (PID 3738) exited with status=0 Normal Exit
Apr 4 05:14:49 jlaunchd: virtual-chassis-control (PID 3714) exited with status=0 Normal Exit
Apr 4 05:14:49 jlaunchd: tnp-process (PID 3703) exited with status=0 Normal Exit
pfe_send_failed(index 0, type 27), err=32
Waiting (max 60 seconds) for system process `vnlru' to stop...done
Waiting (max 60 seconds) for system process `bufdaemon' to stop...done
Waiting (max 60 seconds) for system process `syncer' to stop...
Syncing disks, vnodes remaining...3 3 3 0 0 0 0 done
All buffers synced.
Uptime: 34d4h10m6s
usb0: controller did not stop
Khelf module "jsocket" can't unload until its refcount drops from 9 to 0.
acpi0: Powering system off
INIT: Switching to runlevel: 0
INIT: Sending processes the TERM signal
Stopping OpenBSD Secure Shell server: sshdstopped /usr/sbin/sshd (pid 1353)
.
Stopping domain name service: named.
Stopping system message bus: dbus.
Shutting down irqbalance: stopped irqbalance (pid 1404) done
Stopping ntpd: stopped process in pidfile '/var/run/ntp.pid' (pid 3131) done
stopping rsyslogd ... done
Stopping internet superserver: xinetd.
Stopping crond: OK
Stopping S.M.A.R.T. daemon: smartd.
Deconfiguring network interfaces... done.
Sending all processes the TERM signal...

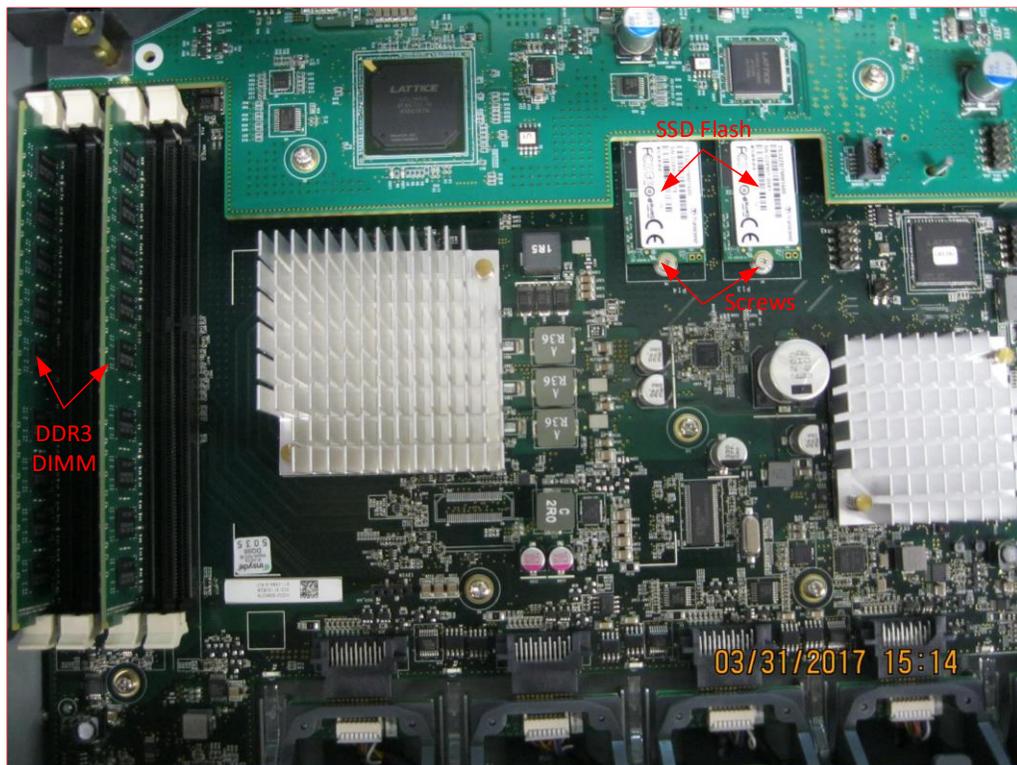
Sending all processes the KILL signal...
Unmounting remote filesystems...
Deactivating swap...
Unmounting local filesystems...
RE-FPGA-DRV: reboot notifier called with 0x0003
Power down.

2. If connected via Telnet or SSH, your session will be disconnected before the QFX completes the power down process. You can verify via the console or observe the LED's on the front of the chassis. If monitoring the LED's, ensure the Power LED is off (not solid on or flashing).
3. Unplug the power cord from the QFX5200 system.
4. The user can shut down the system by removing AC cables from source for QFX5200 AC system.

3.2 Removal of the SSD Flash storage devices from the System

Open the chassis top cover,
Locate the SSD Flash, see picture below,
Remove screws, pull to remove the SSD Flash.

Figure 3-1: Identification of SSD Flash devices



This completes the sanitization process for the QFX5200.