Upgrades — Software Release 7.1
Avaya Ethernet Routing Switch 8800/8600

7.1
NN46205-400, 05.01
February 2011

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Contents

Chapter 1: Regulatory Information and Safety Precautions

Read the information in this section to learn about regulatory conformities and compliances.

International Regulatory Statements of Conformity

This is to certify that the Avaya 8000 Series chassis and components installed within the chassis were evaluated to the international regulatory standards for electromagnetic compliance (EMC) and safety and were found to have met the requirements for the following international standards:

- EMC—Electromagnetic Emissions—CISPR 22, Class A
- EMC—Electromagnetic Immunity—CISPR 24
- Electrical Safety—IEC 60950, with CB member national deviations

Further, the equipment has been certified as compliant with the national standards as detailed in the following sections.

National Electromagnetic Compliance (EMC) Statements of Compliance

FCC Statement (USA only)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the Federal Communications Commission (FCC) rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures may be necessary to correct the interference at their own expense.

ICES Statement (Canada only)

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (8800/8600 Series chassis and installed components) does not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Règlement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique (8800/8600 Series chassis) respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada.

CE Marking Statement (Europe only)

EN 55 022 Statements

This is to certify that the Avaya 8800/8600 Series chassis and components installed within the chassis are shielded against the generation of radio interference in accordance with the application of Council Directive 2004/108/EC. Conformity is declared by the application of EN 55 022 Class A (CISPR 22).

Caution:

This device is a Class A product. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users are required to take appropriate measures necessary to correct the interference at their own expense.

EN 55 024 Statement

This is to certify that the Avaya 8800/8600 Series chassis is shielded against the susceptibility to radio interference in accordance with the application of Council Directive 2004/108/EC. Conformity is declared by the application of EN 55 024 (CISPR 24).

EN 300386 Statement

The Avaya Ethernet Routing Switch 8800/8600 Series chassis complies with the requirements of EN 300386 V1.3.3 for emissions and for immunity for a Class A device intended for use in either Telecommunications centre or locations other than telecommunications centres given the performance criteria as specified by the manufacturer.

EC Declaration of Conformity

The Avaya Ethernet Routing Switch 8800/8600 Series chassis conforms to the provisions of the R&TTE Directive 1999/5/EC.

European Union and European Free Trade Association (EFTA) Notice

CE

All products labeled with the CE marking comply with R&TTE Directive (1999/5/EEC) which includes the Electromagnetic Compliance (EMC) Directive (2004/108/EC) and the Low Voltage Directive (2006/95/EC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (ENs). The equivalent international standards are listed in parenthesis.

- EN 55022 (CISPR 22)–Electromagnetic Interference
- EN 55024 (IEC 61000-4-2, -3, -4, -5, -6, -8, -11)–Electromagnetic Immunity
- EN 61000-3-2 (IEC 610000-3-2)–Power Line Harmonics
- EN 61000-3-3 (IEC 610000-3-3)–Power Line Flicker

VCCI Statement (Japan/Nippon only)

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) for information technology equipment. If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

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This device has been approved for use in Business applications only per the Class A requirements of the Republic of Korea Ministry of Information and Communications (MIC). This device may not be sold for use in a non-business application.

National Safety Statements of Compliance

CE Marking Statement (Europe only)

EN 60 950 Statement

This is to certify that the Avaya 8000 Series chassis and components installed within the chassis are in compliance with the requirements of EN 60 950 in accordance with the Low Voltage Directive. Additional national differences for all European Union countries have been evaluated for compliance. Some components installed within the 8000 Series chassis may use a nickel-metal hydride (NiMH) and/or lithium-ion battery. The NiMH and lithium-ion batteries are long-life batteries, and it is very possible that you will never need to replace them. However, should you need to replace them, refer to the individual component manual for directions on replacement and disposal of the battery.

NOM Statement (Mexico only)

The following information is provided on the devices described in this document in compliance with the safety requirements of the Norma Oficial Méxicana (NOM):

Exporter:	Avaya Inc. 4655 Great America Parkway Santa Clara CA 95054 USA
Importer:	Avaya Communication De Mexico S.A. De C.V.

	Av Presidente Msarik 111 Piso 6 Col. Chapultepec Morales Deleg. Miguel Hidalgo México D.F. 11570
Tel:	52 5 480 2100
Fax:	52 5 480 2199
Input:	Model 8004AC: 100-240 VAC, 50-60 Hz, 12-6 A maximum for each power supply Model 8005AC: 100-120 VAC, 50-60 Hz, 16 A maximum for each power supply 200-240 VAC, 50-60 Hz, 8.5 A maximum for each power supply Model 8005DI AC: 100-120 VAC, 50-60 Hz, 16 A maximum for each AC inlet 200-240 VAC, 50-60 Hz, 9.3 A maximum for each AC inlet Model 8005DI DC: 8005DIDC: 40 to 75 VDC, 48.75 to 32.5 A single supply, single supply + one redundant supply, two supplies, or two supplies + one redundant supply configurations Model 8004DC: 48-60 VDC, 29-23 A Model 8005DC: 48-60 VDC, 42-34 A

Información NOM (únicamente para México)

La información siguiente se proporciona en el dispositivo o en los dispositivos descritos en este documento, en cumplimiento con los requisitos de la Norma Oficial Mexicana (NOM):

Exportador:	Avaya Inc. 4655 Great America Parkway Santa Clara, CA 95054 USA
Importador:	Avaya Communication De Mexico S.A. De C.V.. Av Presidente Msarik 111 Piso 6

	Col. Chapultepec Morales Deleg. Miguel Hidalgo México D.F. 11570
Tel:	52 5 480 2100
Fax:	52 5 480 2199
Embarcar a:	Model 8004AC:
	100-240 VCA, 50-60 Hz, 12-6 A max. por fuente de poder
	Model 8005AC:
	100-120 VCA, 50-60 Hz, 16 A max. por fuente de poder
	200-240 VCA, 50-60 Hz, 9.5 A max. por fuente de poder
	Model 8005DI AC:
	100-120 VCA, 50-60 Hz, 16 A max para cada entrada de CA
	200-240 VCA, 50-60 Hz, 9.3 A max para cada entrada de CA
	Model 8005DI DC:
	8005DIDC: 40 to 75 VDC, 48.75 to 32.5 A
	una fuente, una fuente + configuraciones de una fuente redundante, dos
	fuentes o dos + configuraciones de una fuente redundante
	Model 8004DC:
	-48 VCD, 29 A
	Model 8005DC:
	-48 VCD, 42 A

Denan Statement (Japan/Nippon only)

警告

本製品を安全にご使用頂くため、以下のことにご注意ください。

- 接続ケーブル、電源コード、ACアダプタなどの部品は、必ず製品に同梱されております添付品または指定品をご使用ください。添付品・指定品以外の部品をご使用になると故障や動作不良、火災の原因となることがあります。
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Safety Messages

This section describes the different precautionary notices used in this document. This section also contains precautionary notices that you must read for safe operation of the Avaya Ethernet Routing Switch 8800/8600.

Notices

Notice paragraphs alert you about issues that require your attention. The following sections describe the types of notices. For a list of safety messages used in this guide and their translations, see "Translations of safety messages".

Attention Notice

Important:

An attention notice provides important information regarding the installation and operation of Avaya products.

Caution ESD Notice

Electrostatic alert:

ESD

ESD notices provide information about how to avoid discharge of static electricity and subsequent damage to Avaya products.

Electrostatic alert:

ESD (décharge électrostatique)

La mention ESD fournit des informations sur les moyens de prévenir une décharge électrostatique et d'éviter d'endommager les produits Avaya.

Electrostatic alert:

ACHTUNG ESD

ESD-Hinweise bieten Information dazu, wie man die Entladung von statischer Elektrizität und Folgeschäden an Avaya-Produkten verhindert.

Electrostatic alert:

PRECAUCIÓN ESD (Descarga electrostática)

El aviso de ESD brinda información acerca de cómo evitar una descarga de electricidad estática y el daño posterior a los productos Avaya.

Electrostatic alert:

CUIDADO ESD

Os avisos do ESD oferecem informações sobre como evitar descarga de eletricidade estática e os conseqüentes danos aos produtos da Avaya.

Electrostatic alert:

ATTENZIONE ESD

Le indicazioni ESD forniscono informazioni per evitare scariche di elettricità statica e i danni correlati per i prodotti Avaya.

Caution Notice

Caution:

Caution notices provide information about how to avoid possible service disruption or damage to Avaya products.

Caution:

ATTENTION

La mention Attention fournit des informations sur les moyens de prévenir une perturbation possible du service et d'éviter d'endommager les produits Avaya.

Caution:

ACHTUNG

Achtungshinweise bieten Informationen dazu, wie man mögliche Dienstunterbrechungen oder Schäden an Avaya-Produkten verhindert.

Caution:

PRECAUCIÓN

Los avisos de Precaución brindan información acerca de cómo evitar posibles interrupciones del servicio o el daño a los productos Avaya.

Caution:

CUIDADO

Os avisos de cuidado oferecem informações sobre como evitar possíveis interrupções do serviço ou danos aos produtos da Avaya.

Caution:
ATTENZIONE

Le indicazioni di attenzione forniscono informazioni per evitare possibili interruzioni del servizio o danni ai prodotti Avaya.

Warning Notice

Warning:
Warning notices provide information about how to avoid personal injury when working with Avaya products.

Warning:
AVERTISSEMENT

La mention Avertissement fournit des informations sur les moyens de prévenir les risques de blessure lors de la manipulation de produits Avaya.

Warning:
WARNUNG

Warnhinweise bieten Informationen dazu, wie man Personenschäden bei der Arbeit mit Avaya-Produkten verhindert.

Warning:
ADVERTENCIA

Los avisos de Advertencia brindan información acerca de cómo prevenir las lesiones a personas al trabajar con productos Avaya.

Warning:
AVISO

Os avisos oferecem informações sobre como evitar ferimentos ao trabalhar com os produtos da Avaya.

Warning:
AVVISO

Le indicazioni di avviso forniscono informazioni per evitare danni alle persone durante l'utilizzo dei prodotti Avaya.

Danger High Voltage Notice

 **Voltage:**

Danger—High Voltage notices provide information about how to avoid a situation or condition that can cause serious personal injury or death from high voltage or electric shock.

 **Voltage:**

La mention Danger—Tension élevée fournit des informations sur les moyens de prévenir une situation ou une condition qui pourrait entraîner un risque de blessure grave ou mortelle à la suite d'une tension élevée ou d'un choc électrique.

 **Voltage:**

GEFAHR

Hinweise mit „Vorsicht – Hochspannung“ bieten Informationen dazu, wie man Situationen oder Umstände verhindert, die zu schweren Personenschäden oder Tod durch Hochspannung oder Stromschlag führen können.

 **Voltage:**

PELIGRO

Los avisos de Peligro-Alto voltaje brindan información acerca de cómo evitar una situación o condición que cause graves lesiones a personas o la muerte, a causa de una electrocución o de una descarga de alto voltaje.

 **Voltage:**

PERIGO

Avisos de Perigo—Alta Tensão oferecem informações sobre como evitar uma situação ou condição que possa causar graves ferimentos ou morte devido a alta tensão ou choques elétricos.

 **Voltage:**

PERICOLO

Le indicazioni Pericolo—Alta tensione forniscono informazioni per evitare situazioni o condizioni che potrebbero causare gravi danni alle persone o il decesso a causa dell'alta tensione o di scosse elettriche.

Danger Notice

Danger:

Danger notices provide information about how to avoid a situation or condition that can cause serious personal injury or death.

Danger:

La mention Danger fournit des informations sur les moyens de prévenir une situation ou une condition qui pourrait entraîner un risque de blessure grave ou mortelle.

Danger:

GEFAHR

Gefahrenhinweise stellen Informationen darüber bereit, wie man Situationen oder Umständen verhindert, die zu schweren Personenschäden oder Tod führen können.

Danger:

PELIGRO

Los avisos de Peligro brindan información acerca de cómo evitar una situación o condición que pueda causar lesiones personales graves o la muerte.

Danger:

PERIGO

Avisos de perigo oferecem informações sobre como evitar uma situação ou condição que possa causar graves ferimentos ou morte.

Danger:

PERICOLO

Le indicazioni di pericolo forniscono informazioni per evitare situazioni o condizioni che potrebbero causare gravi danni alle persone o il decesso.

Chapter 2: New in this release

The following sections detail what's new in *Avaya Ethernet Routing Switch 8800/8600 Upgrades* (NN46205-400) for Release 7.1.

Features on page 19

Features

See the following sections for information about feature changes:

8800 series I/O modules

Release 7.1 introduces three new Ethernet Routing Switch 8800 interface modules. The 8800 series modules use a new enhanced network processor, the RSP 2.7. The 8800 modules provide the same functionality as their RS module equivalents in accordance with the following table.

RS module	8800 series module
8648GTRS	8848GT
8648GBRS	8848GB
8634XGRS	8834XG

You must be running minimum Release 7.1 SW for the 8800 series modules to operate properly.

In release 7.1, R and RS modules continue to be supported. In addition, you can install a mix of R/RS and 8800 modules in the same chassis.

Important:

You can only replace a module with another module of the same type. For example, you cannot replace a 48– port copper module with a fibre module. You can replace a copper module with another copper module, or a fibre module with another fibre module.

This document is updated to take into account upgrade requirements for the 8800 series modules.

Supported hardware modules with Release 7.1

The following modules are supported with Release 7.1.

- 8630GBR module
- 8683XZR module
- 8648GTR module
- 8683XLR module
- 8612XLRS module
- 8648GBRS module
- 8634XGRS module
- 8648GTRS module
- 8848GB module
- 8834XG module
- 8848GT module
- 8004AC power supply
- 8004DC power supply
- 8005AC power supply
- 8005DIAC power supply
- 8005DIDC power supply
- 8005DC power supply
- 8692 SF/CPU with SuperMezz (not supported without SuperMezz)
- 8895 SF/CPU

Nonsupported hardware for Release 7.1 and later

Release 7.1 and later does not support any of the following classic modules. Be sure to remove these modules from the chassis before upgrading to Release 7.1.

- 8608GBE module
- 8608GBM module
- 8608GTE module
- 8608GTM module
- 8608SXE module
- 8616GTE module

- 8616SXE module
- 8624FXE module
- 8632TXE module
- 8632TXM module
- 8648TXE module
- 8648TXM module
- 8672ATME module
- 8672ATMM module
- 8683POSM module
- 8690 SF/CPU module
- 8691 SF/CPU module
- WSM module
- 8660 Service Delivery Module
- Media Dependent Adapters for the 8672ATME and 8672ATMM Modules
- Breaker Interface Panel
- 8001AC power supply
- 8002DC power supply
- 8003AC power supply

References to these modules are removed from this document.

In addition, the 8003 chassis is no longer supported. It is replaced by the 8003-R chassis.

Finally, Release 7.1 supports the 8692 SF/CPU only if it is equipped with SuperMezz. The 8692 SF/CPU without SuperMezz is not supported with Release 7.0.

For information on supported SF/CPU and I/O module migration paths for Release 7.1, see Supported migration matrix on page 159.

Files required for upgrade

Information about the files required for upgrade is updated. See New software files on page 41.

Chapter 3: Introduction

This guide provides instructions to upgrade the Avaya Ethernet Routing Switch 8800/8600 to Release 7.1. It also provides instructions for adding the required SuperMezz option to the 8692 SF/CPU and for replacing an existing 8692 SF/CPU (with or without SuperMezz) with a new 8895 SF/CPU.

For information about installing or transferring licenses, see *Avaya Ethernet Routing Switch 8800/8600 Administration,* (NN46205-605).

Navigation

Chapter 4: Avaya Ethernet Routing Switch 8800/8600 upgrade

Upgrade the chassis and module software to take advantage of all the latest Ethernet Routing Switch 8800/8600 features and improvements. This document describes how to upgrade the software for the Ethernet Routing Switch 8800/8600 SF/CPU, and how to update R module firmware.

For more information about how to use the command line interface (ACLI), the Avaya command line interface (CLI), and Enterprise Device Manager, see *Avaya Ethernet Routing Switch 8800/8600 User Interface Fundamentals,* (NN46205-308).

For information about installing or transferring licenses, see *Avaya Ethernet Routing Switch 8800/8600 Administration,* (NN46205-605).

Ethernet Routing Switch 8800/8600 upgrade navigation

Chapter 5: Avaya Ethernet Routing Switch 8800/8600 upgrade considerations and concepts

Review the considerations and concepts in this section before you upgrade the Ethernet Routing Switch 8800/8600.

For Release 7.1, you require Advanced or Premier Routing licenses to unlock certain features.

Advanced License

The features enabled by the Advanced License are as follows:

- Border Gateway Protocol version 4 (BGP4) for more than 10 Peers
- Bidirectional Forwarding Detection
- Multicast Source Discovery Protocol (MSDP)
- Packet Capture function (PCAP)
- IPv6 Features
  - IP Routing
  - IPv6 over SMLT and RSMLT
  - DHCPv6 Relay
  - VRRPv3
  - BGP+
  - RADIUSv6

Premier License

The features enabled by the Premier License are as follows:

- All Advanced License features
- Virtual Routing and Forwarding, Lite version (VRF-Lite)

- Multicast virtualization for VRF-Lite (IGMP and PIM-SM/SSM)
- Multi-Protocol Border Gateway Protocol (MP-BGP)
- IP-Virtual Private Network, Multi-Protocol Label Switching (RFC2547) (IP-VPN MPLS RFC2547)
- IP-Virtual Private Network-Lite (IP-VPN-Lite – IP-in-IP)
- Shortest Path Bridging (SPB) Features:
  - SPB L2 VSNs (VLAN Extensions)
  - SPB Native IP shortcuts (VRF0 shortcuts)
  - SPB L3 VSN (VRF Extensions)
  - IP VPN Lite over SPB IP shortcuts
  - InterISID Routing
  - IEEE 802.1ag Connectivity Fault Management

The Premier License enables all licensed features on the Ethernet Routing Switch 8800.

For a complete list of files that you require to upgrade, their sizes, and any last-minute upgrade procedure changes, see the Release Notes or ReadMe files that accompany your software release. You can download these documents from the Avaya Technical Support Web site: http://www.avaya.com/support.

Navigation

Supported upgrade paths

The Ethernet Routing Switch 8800/8600 Software Release 7.1 supports upgrades from the following earlier releases:

- 4.1.8.x
- 5.0.1
- 5.1.2
- 5.1.3
- 5.1.4
- 5.1.5
- 7.0.0.0

Important:

If you want to upgrade to 7.1.0.0 from a release other than those listed above, first upgrade to one of the listed releases, and then upgrade to 7.1.0.0. Other upgrade paths may work, but have not been tested and are not officially supported. Also note that Release 7.1.0.0 only supports the following SF/CPU modules:

- 8895 SF/CPU
- 8692 SF/CPU with SuperMezz

The 8692 SF/CPU without SuperMezz is not supported with Release 7.1.

Important:

Before you upgrade to Release 7.1, upgrade all power supplies to either 8004 or 8005 level power supplies.

See also Considerations for upgrades from 5.0.0.x release code on page 45 for important upgrade information.

Upgrade considerations

Release 7.1 does not support any classic modules. Be sure to remove classic modules from the chassis before upgrading to Release 7.1. For a complete list of nonsupported modules, see Nonsupported hardware for Release 7.1 and later on page 20.

Release 7.1 supports the 8692 SF/CPU only if it is equipped with SuperMezz. The 8692 SF/CPU without SuperMezz is not supported with Release 7.1.

In addition, the 8003 chassis is no longer supported. It is replaced by the 8003-R chassis.

Before you upgrade to release 7.1, upgrade all power supplies to either 8004 or 8005 level power supplies.

The 8895 SF/CPU module requires release 7.0 or later software to function properly.

Avaya does not support different software versions, for example, Releases 7.0 and 7.1, on the Master and Secondary SF/CPU. The only exception to this rule is during an upgrade process when the HA-CPU flag is disabled.

When the HA-CPU flag is enabled, the Standby and Master SF/CPUs must simultaneously run the same software version, or system instability can result.

Before you upgrade the software image

Caution:

Risk of service interruption

If the switch has only one SF/CPU, the upgrade procedure can cause interruption of normal switch operation.

Before you upgrade the Ethernet Routing Switch 8800/8600:

- Read the entire upgrade procedure.
- Back up your runtime configuration and boot configuration for both Master and Secondary SF/CPUs (if the SavetoStandby feature is enabled, you only need to back up the files from the Master).
- Determine that you have enough power supplies installed to run all modules and devices —see Upgrade and Power Management on page 31.
- Remove all nonsupported classic modules, including E and M modules, 8691 SF/CPU modules, and 8692 SF/CPU modules without SuperMezz (the 8692 SF/CPU is supported

if equipped with SuperMezz.) For a complete list of all nonsupported modules, see Nonsupported hardware for Release 7.1 and later on page 20.

After you upgrade the software, if the upgrade is unsuccessful and you must return to the previous software version, you need the previously saved configuration files (boot.cfg and config.cfg). The upgrade process automatically converts, but does not save, the existing configuration files to a format that is compatible with the new software release. The new configuration files may not be backward compatible.

Before you run any **copy** command that uses Trivial File Transfer Protocol (TFTP), be aware that if a failure occurs (for example, a TFTP server is not available), the file that you specify in the copy command is deleted. To preserve the original file, rename the file or make a copy of the file in the internal flash memory or external Personal Computer Memory Card International Association (PCMCIA) card (for 8692 SF/CPU) or external compact flash (for 8895 SF/CPU) before you begin the copy process.

When you install files on the onboard flash memory or external memory card, verify capacity before you download the files.

Caution:

Loss of access to /pcmcia/boot.cfg

If you use a PCMCIA card manufactured by SanDisk, the Ethernet Routing Switch 8800/8600 may be unable to access the /pcmcia/boot.cfg file during bootup. This limitation is observed only during bootup.

Upgrade and Power Management

The Power Management feature available with Release 7.1 may require you to take special steps before you upgrade.

When you upgrade to Release 7.1, Power Management is enabled by default. If Power Management detects that there are not enough power supplies in the system to successfully run the system, it shuts down the lowest-priority modules. This does not occur if you have enough available power.

You can calculate the number of power supplies required for your Ethernet Routing Switch 8800/8600 system. To determine the number of power supplies required for your switch configuration, use the *Avaya ERS 8800/8600 Power Supply Calculator,* (NN48500-519). This is available on the Avaya Technical Support Web site at www.avaya.com/support.

For Power Management configuration and conceptual information, see *Avaya Ethernet Routing Switch 8800/8600 Administration,* (NN46205-605).

Power Management operations

With Power Management, when the switch boots, users are notified if there is redundant power available in the system. This notification is based on the available power provided by the power supplies as compared to the power requirements of the installed modules.

No I/O modules are brought up if there is insufficient power available. Although there is an override capability available, this should only be used for short periods of time or in emergencies—operating a chassis in an underpowered condition can lead to unpredictable results.

The amount of system power is calculated based on the number, type, and input source voltage of the power supplies in the chassis. This system power calculation is equal to the DC wattage output (which can differ depending on AC input voltage) minus 90 W required for the fans. For 8005AC or 8005DI AC supplies, the system detects whether the supply is sourced with 110 V or 220 V and uses the corresponding output power. For 8004 series power supplies, the system power output calculation is the same (690 W), regardless of source input AC voltage. However, the actual power supply wattage output will vary depending upon the input source voltage. The system power output calculation is always based on low-voltage input. Therefore in systems using 8004 series power supplies that are running at high voltage input (220 V), the system output power calculation will actually be lower (displaying 690 W) than what the system is capable of.

By default, switch fabrics are allotted highest priority and always power up. I/O modules power up if there is sufficient power remaining to do so. If there is insufficient power to bring all I/O modules online, they are powered up based on slot priority. By default, I/O modules are powered up starting at slot 1 until there is insufficient power to bring the next module online.

You have the ability within a working system to reconfigure slot priority to your own requirements. Avaya does not recommend changing the priority for the switch fabric slots.

If a chassis boots up and there are modules that are not online due to insufficient power, adding an additional power supply does not bring the modules online automatically. To bring the modules online, the system must be rebooted, or the module must be removed and reinserted into the chassis after the additional power supply is added.

If a system boots and power supply failure occurs, one of the two following conditions result:

1. A system with redundant power continues to operate normally. The redundant power configuration compensates for a power supply failure.
2. A system with no redundant power continues to operate, however, if there is insufficient power to support all modules, an SNMP trap and syslog message are sent every five minutes notifying the user that the system is operating in an underpowered condition. Correct this situation as soon as possible.

Hot swapping modules

When an upgrade includes I/O or SF/CPU module replacement, be aware that the removal of an active module or SF/CPU can cause an undesirable effect on the forwarding plane. When you remove an active SF/CPU module, packets currently traversing the switch fabric may be lost or corrupted. The same is true if you want to replace an active SF/CPU module and the chassis has dual SF/CPUs. To avoid loss of data in a dual SF/CPU system, you should switchover the active (Master) CPU so that the Secondary SF/CPU becomes active. Then you can disable and remove the old Master.

If only one SF/CPU exists in the chassis, disabling the SF/CPU causes a loss of data. Additionally, the removal and replacement of the SF/CPU in a single-CPU system causes all I/O modules to be reset.

All I/O modules are sensitive to corruption caused by removing active devices and can cause other I/O modules in the chassis to inadvertently stop receiving or forwarding traffic. If this occurs, a full system reboot is required to restore all services. To remove a module from an active system, you should disable the module before you remove it.

Caution:

Risk of initialization failure

Do not hot swap or insert modules in an Ethernet Routing Switch 8800/8600 while the switch is booting. If you do, the switch may not recognize the module, which causes initialization failure.

Before you swap an SF/CPU module, make sure that you save all files you may need later.

When you hot swap the active SF/CPU module in an Ethernet Routing Switch 8800/8600 with dual SF/CPU modules (HA mode enabled or disabled), wait until the previous Secondary SF/CPU module is stabilized before you insert any other modules. Wait until the new Master is stabilized before you insert a replacement SF/CPU, the original SF/CPU, or any input/output modules.

The new Master is stable when the SF/CPU module displays a login prompt on the console screen. If no console connection is available, wait for at least thirty seconds or until the previous Secondary CPU becomes Master, whichever is longer. Then you can insert modules.

DOSFS with upgrades from pre-Release 5.0

Release 5.0 introduced a unique signature to the Disk Operating System File System (DOSFS) volume label generated during **`dos-format`** and **`format-flash`** operations. This label

provides clear identification about which DOSFS devices have been formatted with the latest DOSFS source code.

When you upgrade from pre-Release 5.0 software and boot an image with Release 5.0 or later, you may see boot messages like:

```
The /flash device mounted successfully, but it appears to have been formatted with
pre-Release 5.0 file system code. Avaya recommends backing up the files from /flash,
and executing dos-format /flash to bring the file system on the /flash device to the
latest ERS8600 baseline.
```

If you receive this message, Avaya recommends that you perform a one-time reformat of the DOSFS device (using **dos-format**) to set the DOSFS baseline. This is part of the upgrade procedures.

Important:

The one-time DOS reformat erases all files on the DOSFS device. Avaya recommends that you:

1. Back up all files from the DOSFS device.

   Be sure to back up all hidden files as well.
2. Reformat the device.
3. Replace all files.

Avaya Command Line Interface

Starting with Release 5.0, you can use either the command line interface (CLI) or the Avaya command line interface (ACLI) to access and configure the Ethernet Routing Switch 8800/8600.

You cannot use ACLI commands in a CLI session, and you cannot use CLI commands in an ACLI session.

A CLI configuration file cannot be loaded by a switch running in ACLI mode.

An ACLI configuration file cannot be loaded by a switch running in CLI mode.

You can save a configuration file in either mode; however, you cannot convert a configuration file from one mode to another.

For more information about ACLI, see *Avaya Ethernet Routing Switch 8800/8600 User Interface Fundamentals,* (NN46205-308).

Flash memory and PCMCIA card file systems

This section describes the flash memory and PCMCIA card file systems in the switch. With the 8692 SF/CPU, the files that boot and operate the Ethernet Routing Switch 8800/8600 exist in onboard flash memory or on the external PCMCIA card. The 8895 SF/CPU is also equipped with onboard flash memory. However, with the 8895 SF/CPU, the external PCMCIA slot is replaced by a compact flash slot.

For onboard memory, the 8692 SF/CPU and the 8895 SF/CPU each have two onboard flash memory devices: the boot flash memory and the system flash memory.

Boot flash memory is 2 Mbytes and contains the boot monitor image file. You cannot access the boot monitor image directly. You can update the boot flash memory using a special boot monitor image file (p80bxxxx.img) that writes to the area reserved for the boot image.

The system flash memory stores configuration files, runtime images, the system log, and other files. You can access it through Enterprise Device Manager or CLI (/flash).

The system flash memory size is 16 to 64 Mbytes and depends on the SF/CPU type and software release version.

Release support for flash memory is summarized as follows:

Table 1: Release support for flash memory

Software release	Flash memory usage
3.7.x	16 Mbyte
4.0.x	Up to 40 Mbyte, but only with the 8692 SF/CPU
4.1-5.x	Up to 64 Mbyte, but only with the 8692 SF/CPU
7.0 and later	Up to 64 Mbyte with the 8692 SF/CPU and 8895 SF/CPU

To access 64 Mbytes of flash memory on the 8692 SF/CPU, reformat the flash memory after you upgrade to any 4.1.x or later boot monitor image (p80bxxxx.img). If you reformatted the flash in a previous code upgrade, the reformatting is not required again during the 7.1 upgrade. The 8895 SF/CPU is standard equipped with 64 Mbytes of flash memory.

For more information about:	See:
Memory and storage options	File storage options on page 36
Flash memory reformatting procedures	For CLI: Reformatting the 8692 SF/CPU flash memory to 64 MB for a single SF/CPU system on page 120, Reformatting the flash memory to 64 MB for a dual SF/CPU system on page 123 For ACLI: Reformatting the 8692 SF/CPU flash memory to 64 MB for a single SF/CPU system on

For more information about:	See:
	page 149, Reformatting the flash memory to 64 MB for a dual SF/CPU system on page 151.
Downgrading the flash memory	For CLI: Downgrading flash and PCMCIA memory on page 124 For ACLI: Downgrading flash and PCMCIA memory on page 152

On the 8692 SF/CPU, the PCMCIA card is a removable storage device that you can also use to store configuration files, runtime images, and other files. PCMCIA cards provide a convenient way to move files between switches because they are portable. You can use one PCMCIA card to update the configuration and image files on several switches. An Ethernet Routing Switch 8800/8600 accepts any ATA-type, SanDisk-compatible memory card. PCMCIA cards as large as 1 gigabyte (GB) are successfully tested with the Ethernet Routing Switch 8800/8600.

The Ethernet Routing Switch 8800/8600 file system uses long file names such as those used with Microsoft Windows 95, Windows 98, and Windows NT operating systems. The file naming convention for system flash memory files is /flash/<filename>. The file naming convention for PCMCIA card files is /pcmcia/<filename>.

On the 8895 SF/CPU, the PCMCIA card slot is replaced by a compact flash slot that you can also use to store configuration files, runtime images, and other files. You can use one compact flash card to update the configuration and image files on several switches. 2 gigabyte (GB) compact flash cards are successfully tested with the Ethernet Routing Switch 8800/8600.

For backwards compatibility, the file naming convention for compact flash card files remains /pcmcia/<filename>.

Note that PCMCIA cards cannot function in the external 8895 SF/CPU card slot, and similarly, compact flash cards cannot function in the external 8692 SF/CPU card slot. If you need to transfer files from an 8692 SF/CPU to an 8895 SF/CPU, Avaya recommends the use of an external TFTP/FTP server for storage during the transfer.

File storage options

You can download the new software directly to a personal computer with a compact flash card (for the 8895 SF/CPU) or PCMCIA card (for the 8692 SF/CPU). You can also download the software to a TFTP server, or to a File Transfer Protocol (FTP) server.

If you use a compact flash or PCMCIA card, after the new software is loaded onto the card, you can insert it into the Ethernet Routing Switch 8800/8600 and then:

- Load the software directly from the external compact flash or PCMCIA card
- Copy the software from the external compact flash or PCMICA card to the internal flash memory and then load from the internal flash memory

If you use a TFTP or FTP server:

- Load the software directly from the TFTP or FTP server
- Copy the software from the TFTP or FTP server to internal flash memory or to the external flash or PCMCIA card and then load from the internal flash memory or from the external flash or PCMCIA card

The Ethernet Routing Switch 8800/8600 can act as an FTP server. If the FTP daemon (ftpd) is enabled, you can use a standards-based FTP client to connect to the SF/CPU by using the CLI log on parameters. Copy the files from the client either to the internal flash memory or to the external flash or PCMCIA card.

Each storage choice has advantages and disadvantages. Files in the internal flash memory are accessed most quickly; however, the internal flash memory size may be a limiting factor.

You can download the software to one external flash or PCMCIA card, and use the card to upgrade many Ethernet Routing Switches. Copying to, and loading from, a TFTP (or FTP) server is the easiest method; however, this method can present problems if there are network connectivity issues or limited bandwidth.

The upgrade procedures in this guide assume that you copy the new software from a TFTP server to the internal flash memory. However, you can use any of the storage options if you use the bootconfig command to point the Ethernet Routing Switch to the correct file location. The upgrade procedures in this guide point the switch to the internal flash memory.

Boot sources

The default boot sequence directs the switch to look for its image and configuration files first on the PCMCIA card (on the 8692 SF/CPU) or the external compact flash (on the 8895 SF/CPU), then in the onboard flash memory, and then from a server on the network. The switch first checks for /pcmcia/pcmboot.cfg and then checks for /flash/boot.cfg.

The primary source for files is the PCMCIA card (on the 8692 SF/CPU) or the external compact flash (on the 8895 SF/CPU); the onboard flash memory is the secondary source; and the network server is the tertiary source. These source and file name definitions are in the boot configuration file. The boot source order is configurable.

The config.cfg file stores the configuration of the Ethernet Routing Switch 8800/8600 and its modules. This is the default configuration file. You can specify a different configuration file for the switch to use for the boot process.

For more details about boot sources, see *Avaya Ethernet Routing Switch 8800/8600 Administration,* (NN46205-605).

Switch behavior during boot cycle and redundant configuration files

Avaya recommends that you take special care when providing the boot option for your production systems. The Ethernet Routing Switch 8800/8600 provides three boot configuration file choices, as well as a backup configuration file choice for each configuration file choice.

In normal operation, Avaya recommends that the primary configuration file is saved on the /flash drive, and that the primary backup configuration file is saved on the /pcmcia drive. Using this configuration, if one file or drive gets corrupted, the switch can still boot from the other file or drive. When you change configuration files, Avaya further recommends that you save the last known good configuration using the secondary choice option.

Caution:

Risk of network outage

If a switch cannot access a valid configuration file, it will fall into default configuration mode, which can cause a network outage.

Ensure a valid configuration file is always available.

For procedures for configuring the boot sources, see Configuring boot sources on page 108 (CLI) and Configuring boot sources on page 136 (ACLI).

The information in the following table describes how the switch behaves in different boot situations. If a configuration file is unspecified, this means that the **`config bootconfig choice`** command was not provided for the file. The switch action column describes the expected behavior in both CLI and ACLI modes, unless otherwise specified.

Table 2: Switch behavior during boot cycle

Boot situations	Switch action
A configuration file is not specified. The config.cfg file is present on the internal flash drive.	The switch boots config.cfg
The primary configuration file is specified. The configuration file is present on the internal flash drive.	The switch boots the specified configuration file.
The primary configuration file is specified. The configuration file is not present on the internal flash drive.	The switch boots with factory defaults (if **`config boot flags verify-config`** is *true*, and a backup configuration is not specified).

Boot situations	Switch action
The primary configuration file is specified. The configuration file on the internal flash drive has a bad command.	The switch boots with factory defaults (if **`config boot flags verify-config`** is *true*, and a backup configuration is not specified).
The primary configuration file is specified. The configuration file on the internal flash drive has a bad command. The backup configuration file is specified, but it has a bad command.	The switch fails the first configuration file, and boots the second configuration file, ignoring the bad command.
The switch is configured to boot with factory defaults.	The switch boots with factory defaults.
The boot.cfg file is corrupt.	In CLI mode: The switch fails to load the boot.cfg file and creates a new boot.cfg file with a default boot configuration. In ACLI mode: The switch fails to load the boot.cfg file and creates a new boot.cfg file with a default boot configuration. The switch comes up in CLI mode, which is the correct behavior because the ACLI mode flag is false by default.

Support for the pcmboot.cfg file

Ethernet Routing Switch 8800/8600 Software Release 4.1 and later offers pcmboot.cfg file support. Apcmboot.cfg file on a PCMCIAcard (on the 8692 SF/CPU) or on an external compact flash card (on the 8895 SF/CPU) takes precedence over all other boot configurations. The boot lookup sequence is as follows:

- /pcmcia/pcmboot.cfg
- /flash/boot.cfg
- /pcmcia/boot.cfg

DLD file considerations

R, RS, and 8800 modules require a .dld image. These files are named by default to be p80jxxxx.dld for R modules and p80kxxxx.dld for RS and 8800 modules, and automatically load to the module from the same location as the runtime image (p80axxxx.img). Avaya strongly recommends that you store the I/O module .dld files on /flash, and that you do not change the file names.

The .dld file version must match the running software version. Although you can store different versions of .dld files on the same flash, you must ensure that the switch runs the correct version.

The easiest way to ensure this is to use the **config bootconfig bootp image <image-name> <slot>** command, where image-name = default (or **boot config bootp <Primary|Secondary> default <1-10>** in the ACLI). Using this command ensures that the DLD file loaded during the boot sequence corresponds to the running software version. Avaya recommends that you always use this setting.

If the **config bootconfig bootp image <image-name>** command has been used with a file specified, then the switch uses that version each time it boots. In this case, to ensure that the correct .dld file is loaded, either use this command again with the correct image name, or else set the switch to always use the correct version by using default as the image name.

To ensure proper system operation, if you want to rename or change the location of .dld files, specify the new location and name of the files using **bootconfig bootp** commands. See Configuring boot sources on page 108 (CLI) or Configuring boot sources on page 136 (ACLI).

FPGA firmware

The Ethernet Routing Switch 8800/8600 R, RS, and 8800 modules use a field programmable gate array (FPGA) in the module. At times, the FPGA firmware is upgraded and must be updated.

FPGA firmware includes:

- FOQ—Feedback Output Queueing
- DPC—Dual Port Controller
- BMC—BAP Memory Controller
- PIM—Port Interface Module

FPGA firmware updates are not always mandatory for a software upgrade; they depend on the hardware revision and the software release version.

You can check if a firmware upgrade is required. See:

- Checking firmware revisions on page 111
- Installing FPGA firmware on R modules on page 93
- Installing FPGA firmware on RS and 8800 modules on page 96

For R modules, each component (FOQ, PIM, DPC, BMC) must be updated separately using a command for each component. For RS and 8800 modules, all firmware components (except PIM) are updated through one command.

Any R, RS, or 8800 module that ships from the factory already has the latest FPGA firmware installed, and no firmware update is required. If, after a software upgrade, an update is required, a log message is generated.

New software files

To upgrade the Ethernet Routing Switch 8800/8600, depending on the modules present in the chassis and your operating system, you require some or all of the files listed in the following table. For file sizes and current file names, see *Release Notes — Software Release 7.1* (NN46205–402).

From the Avaya Technical Support Web Site, you can download each file separately, or you can download all files at once using the tar file.

Table 3: Release 7.1 software files

Module or file type	Description	File name
Software tar file	Tar file of all software deliverables (includes images that also contain encryption software)	pr86_7100.tar.gz
Ethernet Routing Switch images		
Boot monitor image for 8692 SF/CPU	8692 CPU and switch fabric firmware	p80b7100.img
Boot monitor image for 8895 SF/CPU	8895 CPU and switch fabric firmware	p80be7100.img
Run-time image for 8692 SF/CPU	Run-time image for 8692 SF/CPU	p80a7100.img
Run-time image for 8895 SF/CPU	Run-time image for 8895 SF/CPU	p80ae7100.img
Run-time image for R modules	Image for R modules	p80j7100.dld
Run-time image for RS and 8800 modules	Run-time image for RS and 8800 modules	p80k7100.dld
Run-time image for Enterprise Enhanced SF/CPU Daughter Card (SuperMezz)	Image for the SuperMezz card	p80m7100.img
3DES for 8692 SF/CPU	Encryption module for privacy protocol with Secure Shell (SSH)	p80c7100.des

Module or file type	Description	File name
3DES for 8895 SF/CPU	Encryption module for privacy protocol with Secure Shell (SSH)	p80ce7100.des
AES for 8692 SF/CPU	Encryption module for privacy protocol with Secure Shell (SSH)	p80c7100.aes (this image includes the 3DES image)
AES for 8895 SF/CPU	Encryption module for privacy protocol with Secure Shell (SSH)	p80ce7100.aes (this image includes the 3DES image)
MIB	MIB files	p80a7100.mib
MIB (zip file)	Zip file containing MIBs	p80a7100.mib.zip
MD5 checksum file	md5 checksums of all Release 7.1 software files	p80a7100.md5
Firmware images		
FOQ for R modules	Feedback output queueing FPGA firmware	foq267.xsvf
BMC for R modules	BAP memory controller FPGA firmware	bmc776.xsvf
DPC for R modules	Dual port controller FPGA firmware	dpc184.xsvf
PIM8630GBR	Programmable I/O module FPGA firmware; for the 8630GBR only	PI_769.xsvf
Firmware for RS and 8800 modules	Contains FOQ, BMC, DPC, mirroring, and loopback images	rs_dpm_fpga.bin
PIM images for RS and 8800 modules	PIM FPGA firmware required for 8612XLRS module only	pim8612XLRS.bin
	PIM FPGA firmware required for 8634XGRS and 8834XG modules	pim8634XGRS.bin
	PIM FPGA firmware required for 8648GBRS and 8848GB modules	pim8648GBRS.bin
	PIM FPGA firmware required for 8648GTRS and 8848GT modules	pim8648GTRS.bin
Trace files		

Module or file type	Description	File name
MPLS trace file	Trace file for MPLS. This is autogenerated and appears on the PCMCIA after upgrade.	nbpdtrc.lo0
EDM Help files		
EDM help files	Help files for EDM GUI	ERS8000_71_Help.zip
ERS 8000 EDM plug-in for COM		
EDM plug-in for COM	EDM plug-in for COM	ers8000v7.1.0.0.war

Installing EDM help files

While the EDM GUI is bundled with the Release 7.1 software, the associated EDM help files are not included.

To access the help files from the EDM GUI, you must install the EDM help files on a TFTP or FTP server in your network.

Use the following procedure to install the EDM help files on a TFTP or FTP server.

Important:
Do not install the EDM help files on PCMCIA or Flash.

Procedure steps

1. Retrieve the EDM help zip file from avaya.com or from the software CD.
2. On a TFTP or FTP server that is reachable from your switch, create a directory named: ERS8000_71_Help.

   If you are using FTP for this installation, be sure that the switch is configured with the appropriate host name and password using the **`config bootconfig host user`** and **`config bootconfig host password`** commands (or, using the ACLI, **`boot config host user`** and **`boot config host password`**).

   If a host password is configured, the switch uses FTP to transfer data from the switch to the server.

   If no host password is configured, the switch uses TFTP for the data transfer. To clear the host password, specify a blank value using the host password command: **`config bootconfig host password ""`** (CLI) OR **`boot config host password ""`** (ACLI)
3. Unzip the EDM help zip file in the new FTP or TFTP server directory.

4. Using EDM on the switch, open the following folders: **Configuration** > **Security** > **Control Path**.
5. Double-click **General**.
6. Click the **Web** tab.
7. In the **HelpTftp/Ftp_SourceDir** field, enter the FTP or TFTP server IP and the path of the online directory where the files are unzipped, in the following format: `<TFTP/FTP-server-IP-address>:ERS8000_71_Help`.
8. To test that the help is working properly, select any tab (for example, Edit > Chassis) and click the **Help** button.

   The appropriate EDM help page appears.

High Availability mode considerations

High Availability CPU (HA-CPU, or HA mode) provides Layer 3 redundancy. For the latest information about HA mode and protocol support for this release, see *Avaya Ethernet Routing Switch 8800/8600 Release Notes — Software Release 7.1* (NN46205-402).

High Availability mode requires additional steps in the upgrade procedures. Follow the upgrade procedures carefully. To upgrade an HA-CPU system, two options exist:

1. Keep HA enabled; upgrade the switch software. During the upgrade procedure, reboot the standby CPU, then immediately reboot the Master SF/CPU.

   The Standby and Master SF/CPUs must simultaneously run the same software version, or system instability can result.
2. Disable HA, reboot the system; upgrade the switch software; enable HA; reboot the system.

These options are both included in the upgrade procedures. Choose one and follow the appropriate steps.

If you must perform a failover when High Availability is enabled, see Hot swapping the Master SF/CPU module in a dual CPU chassis on page 114.

MD5 checksums

By verifying the MD5 checksum, you can verify that files transfer properly (error-free) to the switch. This command is available from both the boot monitor or runtime CLI.

The **`md5`** command calculates the MD5 checksum for files on the internal switch flash memory or external memory card and either shows the output on screen or stores the output in a file that you specify. An MD5 command option compares the calculated MD5 checksums with

checksums present in a checksum file on internal flash memory or external memory card, and shows the compared output on the screen.

The Ethernet Routing Switch 8800/8600 software includes the MD5 file p80a7100.md5, which includes the MD5 checksums of all of the new files.

Transfer your image files to the switch and use the **`md5`** command to ensure that the checksums of the images on the switch are the same as those in the checksum file.

For information about using the **`md5`** command, see Verifying the MD5 checksums on page 125 (CLI) and Verifying the MD5 checksums on page 153 (ACLI).

Considerations for upgrades from 5.0.0.x release code

Users should read and reference the latest version of CSB 2008008618, Software Life-Cycle Management for the ERS 8800/8600 product, before deciding to move to any code release.

Important:

For switch cluster systems running 5.0.0.x code (where x is less than 2), intermediate upgrades first to 5.0.0.2, then to one of 5.1.x release are required, versus a direct upgrade to 7.1.0.0. If not performed, direct console access will be required to recover the 'peer' switch cluster system still running 5.0.0.x code, after the first switch is upgraded. Refer to the 5.0.1.0 Release notes for details regarding the intermediate upgrade. Direct upgrades to release 7.1.0.0 are supported from 4.1.8.x, 5.0.1, 5.1.2, 5.1.3, 5.1.4, 5.1.5, and 7.0.0.0.

Configuration file modifications for BGP upgrades from release 4.x code

Caution:

Users using BGP with release 4.x code need to be aware of the following limitations regarding upgrading to 5.x or later code release. For any user using the add-as-path command in 4.x or earlier releases, a direct upgrade to 5.x or later code (including 5.0.0.x, 5.0.1.0, 5.1.0.0, 7.0.0.0, or 7.1.0.0 code) will create issues with your BGP operation, as the format for this command has changed in 5.x and all future code releases. The usage of this command can be confirmed by looking at your current 4.x based configuration file (config.cfg by default) by using either CLI command **`show config`** or **`more /flash/config.cfg`**, and looking for entries under:

Important:

Direct upgrades to release 7.1.0.0 are supported from 4.1.8.x, 5.0.1, 5.1.2, 5.1.3, 5.1.4, 5.1.5, and 7.0.0.0. If you want to upgrade to 7.1.0.0 from an earlier release, you must first upgrade to a supported release, then upgrade to 7.1.0.0.

```
# IP AS LIST CONFIGURATION #
```

Entries such as this indicate usage of the command:

```
ip as-list 1 create ip as-list 1 add-as-path 100 permit "64521"
```

With 5.x code, the two commands have been replaced by a single command of format:

```
ip as-list <as-list id; 1-1024> create <member id in as-path;
0-65535> permit "<as-path: 0-65535>"
```

Prior to upgrading to 5.x code, if such config entries are in a 4.x config file, those entries must be manually converted to 5.x or later format before upgrading; the upgrade to 5.x or later code does not convert this command structure properly. Since both the 4.x and 5.x code files are plain ASCII text, the 4.x config file can be copied to any text editor (or edited locally on the 8800/8600 switch with its Unix VI editor), edited (for example with MS Word) and then copied back before upgrading.

For example, the above 4.x config example:

```
ip as-list 1 create ip as-list 1 add-as-path 100 permit "64521"
```

Must be changed to the following 5.x config format:

```
ip as-list 1 create 100 permit "64521"
```

(Q01977204)

SMLT switch cluster upgrade considerations

With SMLT switch cluster upgrades, to maintain remote Telnet access to the switches, you must follow specific upgrade steps in some scenarios when upgrading to any higher release of code.

Important:

For switch cluster systems running 5.0.0.x code (where x is less than 2), intermediate upgrades first to 5.0.0.2, then to one of 5.1.x release are required, versus a direct upgrade to 7.1.0.0. If not performed, direct console access will be required to recover the 'peer' switch cluster system still running 5.0.0.x code, after the first switch is upgraded. Refer to the 5.0.1.0 Release notes for details regarding the intermediate upgrade. Direct upgrades to release 7.1.0.0 are supported from 4.1.8.x, 5.0.1, 5.1.2, 5.1.3, 5.1.4, 5.1.5, and 7.0.0.0.

For device management during an upgrade, you can use one of the following options:

1. Direct serial console connection to the switch
2. Telnet access to the management IP
3. Telnet access to any of the in-band IP addresses on the switch

In scenarios 1 and 2, you can manage the switch effectively at all times during the upgrade, and therefore these scenarios require no additional considerations. However, in scenario 3, you can lose Telnet connectivity during the upgrade of the IST peers unless you follow the proper steps.

Consider the following figure, showing a triangle SMLT setup. In this case, the user intends to upgrade the IST peers (that are currently running 5.1.0.0) to 7.1.0.0.

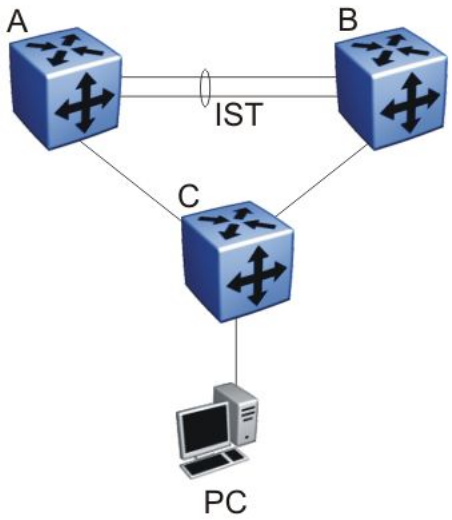


Figure 1: SMLT upgrade scenario

Assume the user Telnets from the PC to manage switch A and switch B. When the Telnet traffic generated by the PC arrives at switch C, depending on the MLT hashing algorithm, the traffic can be hashed to the link toward switch A or switch B. So, it is possible to have a situation where the Telnet management traffic destined for switch A flows through switch B and vice-versa.

Assume that the user upgrades switch A to 7.1.0.0. Due to the SMLT behavior, the network diagram now looks like the following figure.

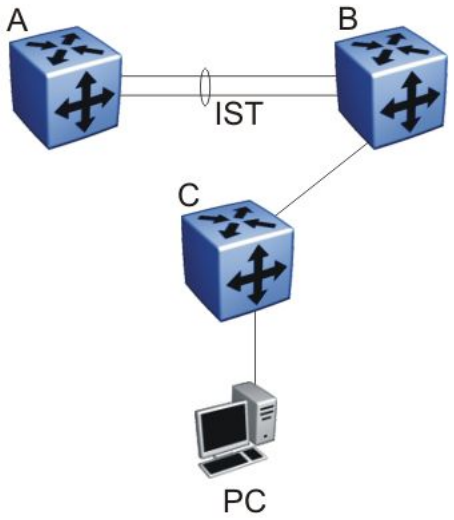


Figure 2: SMLT upgrade scenario after upgrading switch A to 7.1.0.0

In this situation the PC cannot communicate with switch A, and as a result Telnet access to switch A is unavailable. For in-band management, you can alternatively Telnet first into switch B, and then Telnet to switch A from there.

The following are the recommended steps to perform this upgrade procedure while using Telnet in-band management:

1. Telnet to switch B from the PC
2. From switch B, Telnet to switch A
3. Upgrade switch A to 7.1.0.0, following the normal upgrade process. At this point, your Telnet session to switch A is lost, and eventually times out. After approximately a minute, Telnet to switch A again. This allows you to check the log messages on switch A. (At this point, you can possibly lose the Telnet connectivity to B in some situations depending on the MLT hashing occurring on switch C. If this occurs, re-open a Telnet connection to switch B.)
4. Upgrade switch B to 7.1.0.0 following the normal upgrade process. At this point, your Telnet session to switch B is lost. You can open a new Telnet session to switch A. After switch B completes the upgrade, you can then establish connectivity with switch B, either via Telnet from switch A, or via Telnet from the PC.

The same procedure applies for warm standby and hot standby scenarios. You must follow the upgrade directions for warm and hot standby cases provided in the upgrade document for individual chassis.

Note that you cannot use SSH in this upgrade scenario, as you cannot open SSH connections from one Ethernet Routing Switch 8800/8600 to another. You must use Telnet.

Note:
If switch A and switch B are running 4.x, or 5.0.0.x (where x is less than 2), the switches MUST be upgraded to 5.1.x before upgrading to 7.1.0.0.

Downgrade considerations

Downgrades from release 7.1.0.0 to releases 4.1.8.2, 4.1.8.3, 5.0.1.x, 5.1.x, and 7.0.0.0 are supported with original configuration files. To successfully downgrade, you require a previously saved primary configuration and the boot configuration for the version to which the switch is being downgraded.

If you downgrade from release 7.1.0.0 to any previous release, you must remove all installed 8800 I/O modules prior to the downgrade.

If you downgrade from release 7.1.0.0 to a pre-7.0 release, you must also remove all installed 8895 SF/CPU modules prior to the downgrade.

In addition, downgrades from 7.1.0.0 to 4.1.8.2 (or 4.1.8.3) work only if the internal flash and the PCMCIA are formatted with 4.1.8.2 (or 4.1.8.3) software. If you have formatted the flash and PCMCIA in release 7.1.0.0 for any reason, and then want to downgrade to 4.1.8.x, you must perform the Downgrading flash and PCMCIA memory on page 124 procedure first before you can successfully downgrade to 4.1.8.x.

If you downgrade to any release, you need the previously saved configuration files (boot.cfg and config.cfg) for the release to which you intend to downgrade.

Avaya does not support different software versions, for example, Releases 7.0 and 7.1, on the Master and Secondary SF/CPU except during an upgrade or downgrade process. An exception to this rule occurs for a switch in High Availability mode, where both the Master and Secondary SF/CPU must run the same software release. Also, the Master and Secondary SF/CPU must have the same amount of memory.

Emergency recovery tree

The following figure depicts an emergency recovery tree (ERT) for the upgrade and downgrade process.

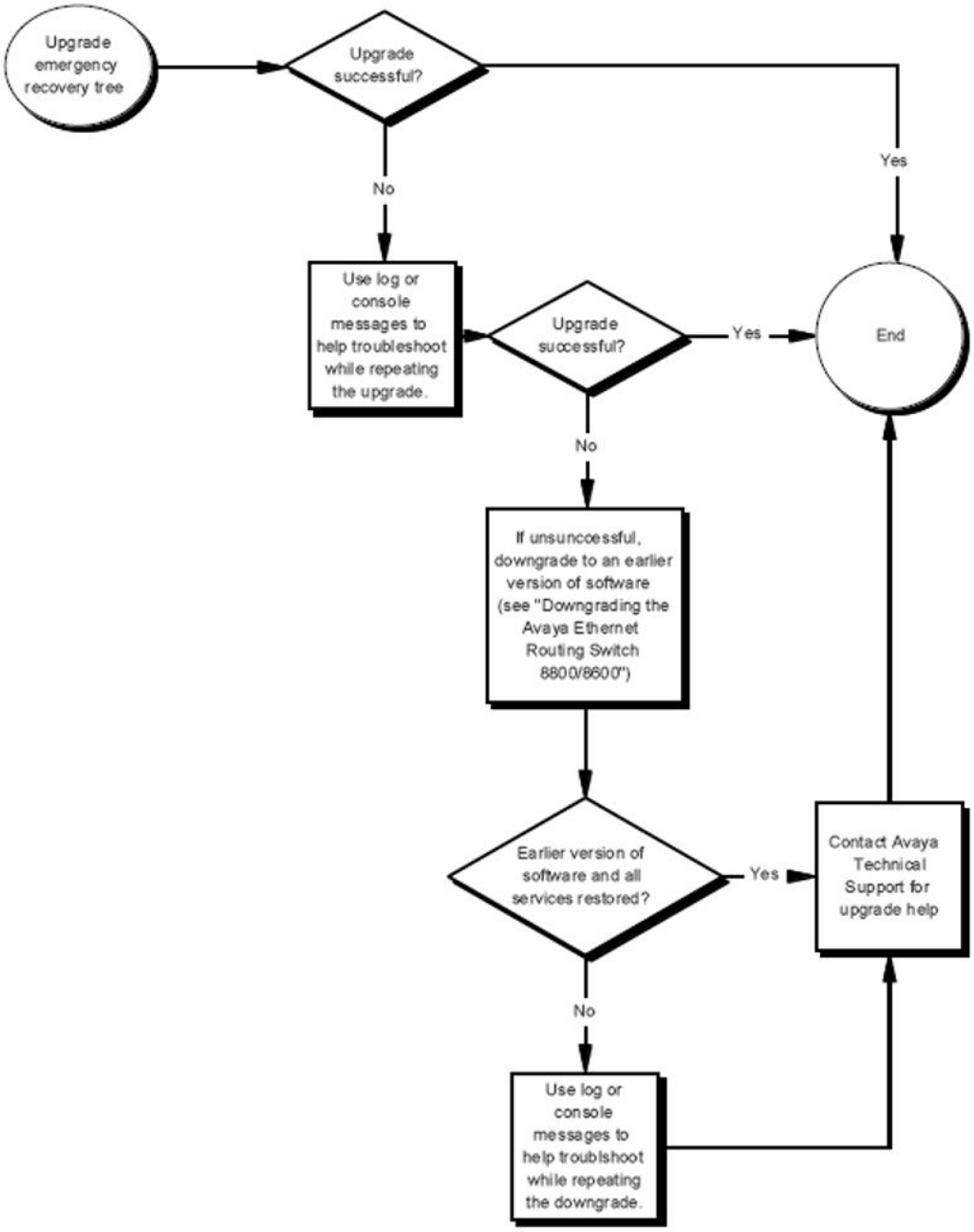


Figure 3: Emergency recovery tree for upgrade process

Chapter 6: Avaya Ethernet Routing Switch 8800/8600 SF/CPU, R, RS, and 8800 module upgrade using the CLI

Upgrade software to add new functionality to your Ethernet Routing Switch.

After upgrade, all routing configurations are placed in VRF 0.

Prerequisites

Caution:

Risk of service interruption

If the switch has only one SF/CPU, the upgrade procedure can cause interruption of normal switch operation.

Important:

All upgrade procedures assume that files use the default names. Use caution in any procedure if the file names are nondefault. Ensure that all parameters associated with file names take into consideration the use of nondefault values.

- Read the latest Release Notes.
- Read the section Translations of Safety Messages on page 167.
- Remove all nonsupported classic modules, including E and M modules, 8691 SF/CPU modules, and 8692 SF/CPU modules without SuperMezz (the 8692 SF/CPU is supported if equipped with SuperMezz.) For a complete list of all nonsupported modules, see Nonsupported hardware for Release 7.1 and later on page 20.
- Upgrade all power supplies to either 8004 or 8005 level power supplies.
- Read the section Avaya Ethernet Routing Switch 8800/8600 upgrade considerations and concepts on page 27, especially the section High Availability mode considerations on page 44.

- You must be able to access the new software from the site http://www.avaya.com/support. You need a valid user or site ID and password.
- If necessary, schedule a time for the switch to be nonoperational.

Ethernet Routing Switch 8800/8600 SF/CPU, R, RS, and 8800 module upgrade using the CLI tasks

This task flow shows you the sequence of tasks you perform to upgrade the Ethernet Routing Switch 8800/8600.

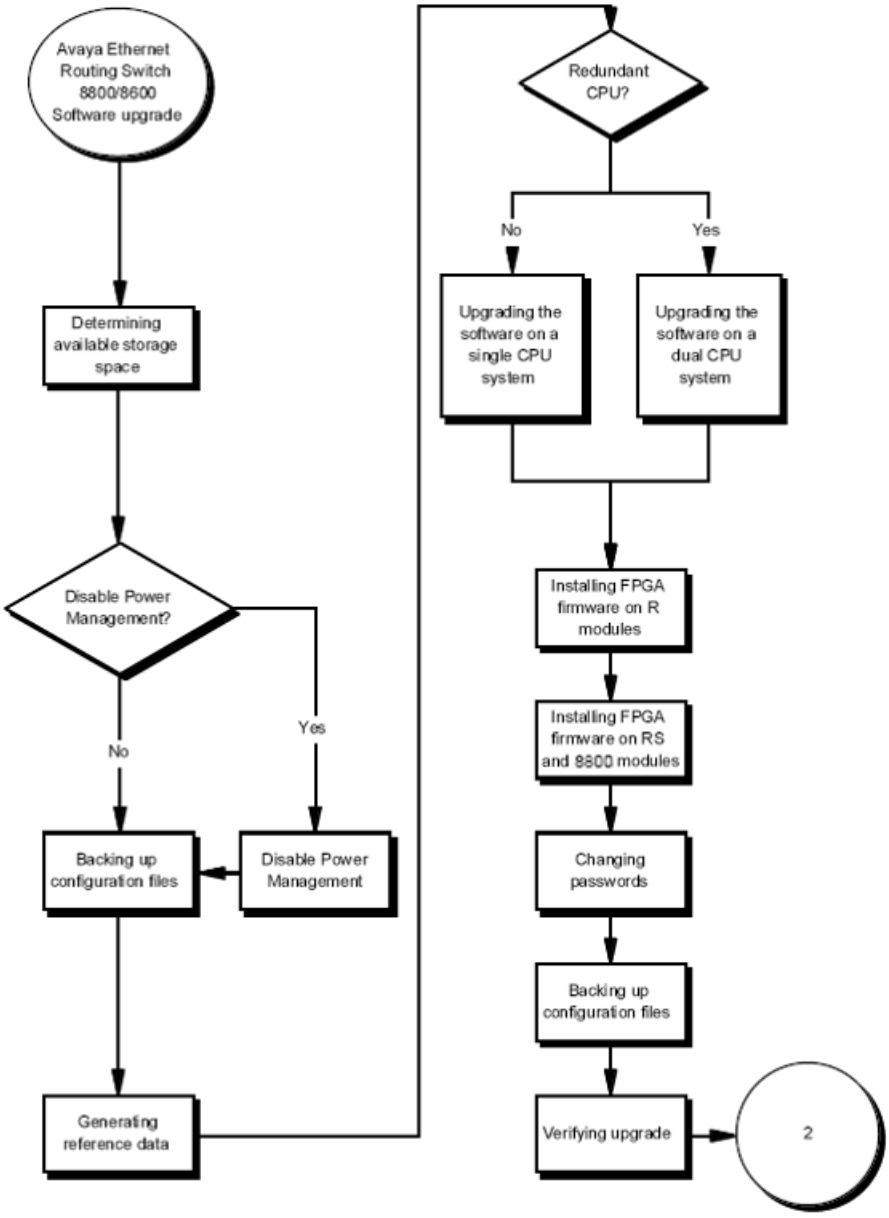


Figure 4: Ethernet Routing Switch 8800/8600 SF/CPU, R, RS, and 8800 module upgrade using the CLI tasks 1

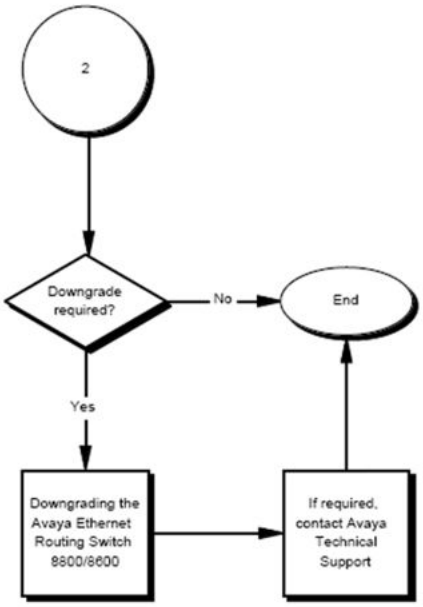


Figure 5: Ethernet Routing Switch 8800/8600 SF/CPU, R, RS, and 8800 module upgrade using the CLI tasks 2

Ethernet Routing Switch 8800/8600 SF/CPU, R, RS, and 8800 module upgrade navigation

- Upgrading from 8692 SF/CPU with SuperMezz to 8895 SF/CPU on page 73
- Downgrading the Ethernet Routing Switch 8800/8600 on page 74

Ethernet Routing Switch upgrade time requirements

The following table lists tasks used to upgrade the Ethernet Routing Switch 8800/8600 software and the estimated time to complete each task. Not all tasks are required for every Ethernet Routing Switch 8800/8600 system; the required tasks depend on the hardware present in the chassis. Upgrade times may vary depending on the software access method used (TFTP; FTP, and so on), number and size of files, and the number of boot sources to be configured.

Table 4: Upgrade tasks and times

Task	Application	Estimated time required
Preupgrade tasks	Determining available storage space Backing up files Generating reference data	10–15 minutes
Upgrading Ethernet Routing Switch 8800/8600 software on a single CPU system		30–45 minutes
Upgrading Ethernet Routing Switch 8800/8600 software on a dual CPU system		45–60 minutes
Upgrading R, RS, or 8800 module firmware		10–20 minutes
Post-upgrade tasks	Changing passwords Backing up upgraded configuration files Verifying the upgrade	10–15 minutes
Downgrading the Ethernet Routing Switch 8800/8600		Similar to upgrade time

Determining available storage space

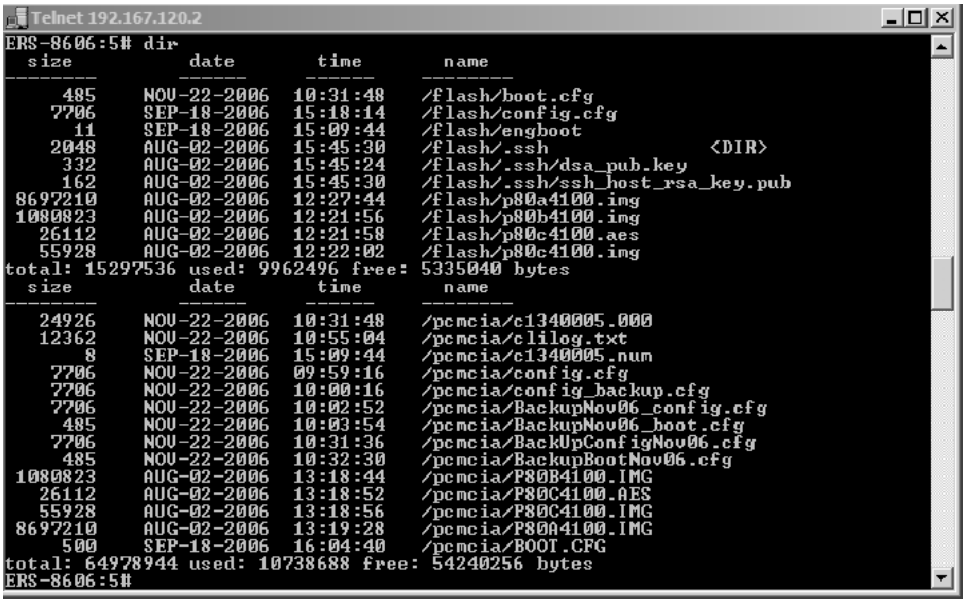
Determine whether the switch has enough storage space to store the new software.

Procedure steps

1. To view the free space and files in internal flash memory by using the CLI, enter the following command:

   ```
   dir
   ```

   The bottom line shows the amount of free space in internal flash memory and on the external memory card.



2. If you must remove files to make space, use the remove command:

   ```
   rm /flash/<filename>
   ```

   ```
   rm /pcmcia/<filename>
   ```

   Important:

   Older load, boot, and configuration files may be required if the upgrade is unsuccessful. Make sure you back up these files to a safe place before you remove them.

   Consult Avaya Support for recommendations about deleting old image (.img), log (.txt), PCAP (.cap), or bootconfig (.cfg) files.

Variable definitions

Use the information in the following table to perform this procedure.

Variable	Value
<filename>	Species the file by name.

Disabling Power Management

Disable Power Management to successfully upgrade when the chassis is not equipped with enough power supplies to run all I/O modules.

If you already have enough power supplies, you do not need to disable Power Management.

You can calculate the number of power supplies required for your Ethernet Routing Switch 8800/8600 system. To determine the number of power supplies required for your switch configuration, use the *Power Supply Calculator for Avaya ERS 8800/8600,* (NN48500-519) . This is available on the Avaya Technical Support Web site at www.avaya.com/support.

Important:

Avaya recommends that you do not disable Power Management, and that you instead install the required power supplies before upgrade. However, if you must disable Power Management for a short period of time, install the required supplies as quickly as possible.

1. Save the pre-7.1 configuration file.

   ```
   save config.cfg
   ```

2. Edit the configuration file using an editor like VI or EMACS. You can either:

   - Use the CLI to edit the file on the switch (the switch has a built-in VI-like editor).

     ```
     edit config.cfg
     ```

   - Save the file as an ASCII file and transfer to another device for editing with a text editor like Notepad.
   - Transfer the file to a device and edit with VI or EMACS-like editor.

3. In the configuration file, add the following lines to the end of the flags section:

   ```
   #!power power-check-enable false

   #!power fan-check-enable false
   ```

   See the following job aid for an example of correct placement of these commands.

4. Save the file and, if you edited it off-switch, transfer the file back to the switch to use in the upgrade.

Job aid: configuration file and command placement

```
#
# THU OCT 15 09:05:03 2009 UTC
# box type              : ERS-8006
# software version      : REL7.1.0.0
# monitor version       : 7.1.0.0/xxx
# cli mode              : 8600 CLI
#
#
# Asic Info :
# SlotNum|Name    |CardType  |MdaType    |Parts Description
#
# Slot  1   --     0x00000001 0x00000000
# Slot  2 8612XLRS 0x2433410c 0x00000000  PRS:RSP=26 F2I=4 F2E=5 FTMUX=17 CC=33281
FOQ=270 DPC=7 BMC =264 PIM=1024 MAC=303177837 Mirror=304 Loopback=274
# Slot  3   --     0x00000001 0x00000000
# Slot  4 8648GTR  0x24220130 0x00000000  RSP=25 CLUE=2 F2I=1 F2E=1 FTMUX=17 CC=3
FOQ=267 DPC=184 BM C=776 PIM=3 MAC=2
# Slot  5 8895SF   0x200e1100 0x00000000  CPU: BDLB=21 glue=14 SFM: OP=3 TMUX=2
SWIP=23 FAD=16 CF=2
# Slot  6 8895SF   0x200e1100 0x00000000  CPU: BDLB=21 glue=14 SFM: OP=3 TMUX=2
SWIP=23 FAD=16 CF=2
#
#!flags global-filter-ordering false
#!resource-reservation max-vlan false
#!resource-reservation multicast 2048
#!flags multicast-check-packet true

#!flags system-monitor true
#!system-monitor monitoring-enable true
#!system-monitor detection-time 30
#!power power-check-enable false        <------- ADD THIS LINE
#!power fan-check-enable false          <------- ADD THIS LINE
```

Backing up configuration files

Before you upgrade your switch software, make copies of the configuration files. If an upgrade is unsuccessful, use backup configuration files to return the switch to its previous state.

You should have several copies of backup files. For more information, see Switch behavior during boot cycle and redundant configuration files on page 38.

Prerequisites

- If you use Trivial File Transfer Protocol (TFTP) or File Transfer Protocol (FTP), ensure that the switch allows TFTP or FTP access. See Enabling FTP and TFTP on page 108.
- For more details about how to copy files, see Copying files on page 106.

Procedure steps

1. Determine the configuration file names by using the following CLI command:

   ```
   show boot choice primary
   ```

2. Save the configuration files. Assuming the files use the default file names, enter:

   ```
   save config
   ```

   ```
   save bootconfig
   ```

   ```
   save config standby config.cfg
   ```

   ```
   save bootconfig standby boot.cfg
   ```

   If the SaveToStandby flag is true, then you do not need to save the files to the Secondary.

3. Copy the files to a safe place:

   ```
   copy /flash/boot.cfg /pcmcia/boot_backup.cfg
   ```

   ```
   copy /flash/config.cfg /pcmcia/config_backup.cfg
   ```

   OR

   Copy the files to a TFTP server:

   ```
   copy /flash/config.cfg <tftpipaddress>:config_backup.cfg
   ```

   ```
   copy /flash/boot.cfg <tftpipaddress>:boot_backup.cfg
   ```

Variable definitions

Use the information in the following table to perform this procedure.

Variable	Value
`<tftpipaddress>`	Specifies the IP address of the TFTP server.

Generating reference data

Use show commands to generate data to determine if the software upgrade is successful. After the upgrade, the switch and network should operate as they did before the upgrade. Avaya recommends that you keep track of important parameters and ensure that they are unchanged after an upgrade. The following procedure gives examples of how to generate reference data. Choose the parameters that are most important to your network.

If these parameters remain unchanged before and after the upgrade, the upgrade is likely successful. Otherwise, you may need to downgrade to a previous release or perform troubleshooting procedures. For downgrade information, see Downgrade considerations on page 49.

Procedure steps

1. Determine the number of routes in the routing table:

   ```
   show ip route info
   ```

   Record the number of routes.
2. Determine Address Resolution Protocol (ARP) information:

   ```
   show ip arp info
   ```
3. Determine Border Gateway Protocol (BGP) parameters; note the total number of routes:

   ```
   show ip bgp summary
   ```
4. Determine the total number of Internet Group Management Protocol (IGMP) groups:

   ```
   show ip igmp group
   ```
5. Determine the total number of multicast routes:

   ```
   show ip mroute interface
   ```

   ```
   show ip mroute route
   ```
6. Determine Open Shortest Path First (OSPF) parameters:

   ```
   show ip ospf show-all
   ```
7. Use the following command to view other IP show commands that you can use:

   ```
   show ip ?
   ```

Upgrading the software on a single SF/CPU system

Use this CLI procedure to upgrade the SF/CPU software on a nonredundant Ethernet Routing Switch 8800/8600 SF/CPU. This procedure shows how to upgrade using the flash memory as

the file storage location; you can use other storage locations. For information about storage options, see File storage options on page 36.

Caution:

Risk of bootconfig file corruption

Operating a system with different versions of the runtime image and boot monitor image can cause a corrupt bootconfig file. If the boot.cfg file is corrupt, replace it with a saved version or recreate the file.

Important:

Before you configure the switch to run the new software, ensure the integrity of the new software by checking the MD5 checksums. This is part of the following upgrade procedure.

Prerequisites

- Back up the switch configuration files. See Backing up configuration files on page 58 and Copying files on page 106.
- You must be able to access www.avaya.com/support.
- If you determined you must disable Power Management, ensure that the configuration file is edited appropriately and saved on the switch. See Disabling Power Management on page 57.

Procedure steps

1. Download the new software.

   For instructions, see Downloading the software on page 103.
2. Connect to the Ethernet Routing Switch 8800/8600 CLI interface by using the management console port, Secure Shell (SSH), or a Telnet session.
3. Copy the required software files to flash memory. If you use TFTP or FTP, use the IP address of the SF/CPU.

   For instructions about copying files, see Copying files on page 106.
4. Confirm that the software files are successfully copied by using the **`dir`** command. Ensure that the new files are listed.
5. Ensure that the new files are error-free. See Verifying the MD5 checksums on page 125.
6. Configure the boot source to point to the new runtime image file on flash:

`config bootconfig choice primary image-file /flash/p80a7100.img` (for 8692 SF/CPU)

`config bootconfig choice primary image-file /flash/p80ae7100.img` (for 8895 SF/CPU)

7. Ensure that the switch loads the new Mezz image from the flash:

   `config bootconfig mezz-image image-name /flash/p80m7100.img`

8. Ensure that the switch uses the correct R, RS, and 8800 module driver files from the flash memory (repeat for each slot):

   `config bootconfig bootp image-name default <slot-number>`

9. Save the configuration files:

   `save bootconfig`

   `save config`

10. To verify that the changed primary image file settings are in the boot.cfg file, enter the following command :

    `more boot.cfg`

    Confirm that the image location and name are correct.

11. To boot the Ethernet Routing Switch 8800/8600 with the new boot-monitor image, enter the following command:

    `boot /flash/p80b7100.img` (for 8692 SF/CPU)

    `boot /flash/p80be7100.img` (for 8895 SF/CPU)

    This step causes an interruption to user traffic.

    The switch boots using the new image file. The system takes a longer time to come up than a normal reboot because the system must write the new boot monitor to flash memory.

    If you interrupt the auto-boot process, you may have to issue the **`boot`** command again.

12. For upgrades from pre-Release 5.0 software, after the switch boots and runs the Release 5.0 or later software for the first time, perform the following steps to use the new DOSFS.

    Important:
    The following DOS reformat steps are only required the first time a switch is upgraded to a 5.0 or later release.

    - Back up all files from the flash and PCMCIA.
    - Format the flash and PCMCIA.

Important:

This step deletes any files on these devices.

- dos-format /flash
- dos-format /pcmcia

Move all files back to the flash and PCMCIA.

13. If you upgrade to release 7.1 or later from a release prior to 5.1, you must specify the location of your license file in the boot configuration file. If you do not specify the location of your license file, you can encounter issues with your licensed features. To specify the license file location, enter the following command:

```
boot config choice primary license-file <file>
```

Variable definitions

Use the information in the following table to perform this procedure.

Variable	Value
`<slot-number>`	Specifies the slots that have installed R, RS, or 8800 modules.

Upgrading the software on a dual SF/CPU system

Use this procedure to upgrade the SF/CPU software on a system that contains redundant SF/CPUs. This procedure shows how to upgrade using the flash memory as the file storage location; you can use other storage locations. For information about storage options, see File storage options on page 36.

Caution:

Risk of configuration loss

Avaya does not support different software versions, for example, Releases 7.0 and 7.1, on the Master and Secondary SF/CPUs except for during an upgrade process. An exception to this rule occurs for a switch in High Availability mode, where both the Master and Secondary SF/CPU must run the same software release. Also, operating a system with different versions of the runtime image and boot monitor image can corrupt the bootconfig file. If the boot.cfg file is corrupt, replace it with a saved version, or recreate the file.

The Master and Secondary SF/CPU must have the same amount of memory.

Caution:

Risk of system instability

If you use High Availability mode, to upgrade, you must use one of two options:

1. Keep HA enabled; upgrade the switch software. During the upgrade procedure, reboot the standby CPU, then immediately reboot the Master SF/CPU.

   The Standby and Master SF/CPUs must simultaneously runthe same software version, or system instability can result.

2. Disable HA, reboot the system; upgrade the switch software; enable HA; reboot the system.

These options are both included in this procedure. Choose one and follow the appropriate steps.

Important:

Before you configure the switch to run the new software, ensure the integrity of the new software by checking the MD5 checksums. This is part of the following upgrade procedure.

Prerequisites

- Back up the switch configuration files. See Backing up configuration files on page 58.
- You must be able to access www.avaya.com/support.
- If TFTP or FTP is required, ensure they are enabled. See Enabling FTP and TFTP on page 108.

Procedure steps

1. Download the new software.

   For instructions, see Downloading the software on page 103.

2. Connect to the Master SF/CPU CLI interface by using the management console port, SSH, or a Telnet session.
3. If you use High Availability mode and chose the second HA upgrade option, disable HA:

   ```
   config bootconfig flags ha-cpu false

   reset -y
   ```

4. Save the boot.cfg file and reboot the switch.
5. Copy the required software files to flash memory. Use the management IP address of the SF/CPU.

   For instructions about copying files, see Copying files on page 106.

6. To confirm that the software files are successfully copied, use the **dir** command.
7. Ensure that the new files are error-free. See Verifying the MD5 checksums on page 125.
8. Copy the runtime image file (and all other files copied to the Master SF/CPU flash) to the Secondary SF/CPU.

   For example:

   `ERS-8610:5# copy /flash/p80a7100.img <IP address of standby CPU>:p80a7100.img` (for 8692 SF/CPU)

   `ERS-8610:5# copy /flash/p80ae7100.img <IP address of standby CPU>:p80ae7100.img` (for 8895 SF/CPU)

   Use the management IP address of the Master SF/CPU.
9. Configure the boot source to point to new runtime image file:

   `config bootconfig choice primary image-file /flash/p80a7100.img` (for 8692 SF/CPU)

   `config bootconfig choice primary image-file /flash/p80ae7100.img` (for 8895 SF/CPU)
10. Ensure that the switch uses the correct R, RS, and 8800 module driver files from the flash memory (repeat for each R, RS, or 8800 module slot):

    `config bootconfig bootp image-name default <slot-number>`
11. Ensure that the switch loads the new Mezz image from the flash:

    `config bootconfig mezz-image image-name /flash/p80m7100.img`
12. Save the configuration on both the Master and the Secondary SF/CPUs:

    `save bootconfig standby boot.cfg`

    `save config standby config.cfg`
13. To verify that the changed primary image file settings are in the boot.cfg file, enter the following command:

    `more boot.cfg`

    Verify that the primary image file is p80a7100.img (for 8692 SF/CPU) or p80ae7100.img (for 8895 SF/CPU).
14. To log on to the Secondary SF/CPU, enter the following command and log on:

    `peer telnet`
15. To verify that the changed primary image file settings are in the boot.cfg file, enter the following command:

    `more boot.cfg`

Confirm that the image location and name are correct.

16. Boot the Secondary SF/CPU.

    Important:
    Boot the Secondary SF/CPU first and immediately after that, boot the Master SF/CPU (following step). Do not wait for the Secondary SF/CPU to come up completely before booting the Master SF/CPU, or the Secondary SF/CPU may hang.

    To boot the Secondary SF/CPU with the new boot monitor image, enter the following command:

    `boot /flash/p80b7100.img` (for 8692 SF/CPU)

    `boot /flash/p80be7100.img` (for 8895 SF/CPU)

    During the booting of the Secondary SF/CPU, the Telnet session stops responding and takes some time to time out. To quickly exit the peer Telnet session, enter `CTRL` + `]`. Next, when prompted, enter `q`.

17. To upgrade the Master SF/CPU with the new boot monitor image, enter the following command:

    `boot /flash/p80b7100.img` (for 8692 SF/CPU)

    `boot /flash/p80be7100.img` (for 8895 SF/CPU)

    If you interrupt the auto-boot process, you may have to issue the **`boot`** command again.

    If you are connecting remotely, the session stops responding. You will have to reconnect.

18. If you use High Availability mode and you are using the second HA upgrade option, after both SF/CPUs come back online, reenable HA:

    ```
    config bootconfig flags ha-cpu true
    ```

    When you are prompted to continue, enter `y`.

19. To run in HA mode, you must reboot the switch.

Variable definitions

Use the information in the following table to perform this procedure.

Variable	Value
`<slot-number>`	Specifies the slots that have installed R, RS, or 8800 modules.

Installing FPGA firmware on R modules

For proper operation, review and, if required, update the field programmable gate array (FPGA) firmware revisions on every R module.

Caution:

Risk of service loss

Before a firmware upgrade, Avaya strongly recommends that you verify the file MD5 checksums. If you upgrade using a corrupted file, module functionality can be affected and require a return manufacturing agreement (RMA).

Important:

After the update process begins, do not enter commands or reset the module or switch during the process. If any failure occurs, retry the updates or contact Avaya before you reset the module or switch.

You can only update firmware for one slot at a time. For example, the BAP Memory Controller (BMC) must be completed for a slot before you complete Dual Port Controller (DPC).

If you do not enter a file name the default file name is shown. Do not interrupt the update process, which is approximately ten minutes in length. Wait until the FPGA UPDATE SUCCESS message appears for each slot that you update. The success message is appended to the log file.

Important:

While upgrading FPGA on a line card with active ports in a live environment, certain warnings may be seen. Once the upgrade is complete, the warnings stop.

Do not download an image or multiple images to different modules at the same time. Only download one image to one module at one time.

Procedure steps

1. Determine if a firmware update is required.

   See Checking firmware revisions on page 111.

2. Copy the following files to the SF/CPU flash memory on the chassis that contains R modules:

   - foqyyy.xsvf
   - dpcyyy.xsvf
   - bmcyyy.xsvf

- PI_yyy.xsvf (only for 8630GBR modules)

3. For each R module slot, enter the following command:

   ```
   config diag fpga foq update <1-4,7-10> <file-name>
   ```

   The following messages appear:

   ```
   Starting the update Process, will take a few minutes
   Don't reset the card or box during the process A SUCCESS message will
   display on the console and will get appended to the log file upon
   completion of the update.
   ERS-8610:5#  CPU5 [02/08/05 18:55:31] SW ERROR R module Slot<1> is unable
   to Process Async messages and Slot Reset is Disabled!!
   ERS-8610:5# CPU5 [04/12/05 14:05:38] COP-SW INFO Slot 1:
   FPGA UPDATE SUCCESS
   ```

   Disregard the message `SW ERROR unable to Process Async messages and Slot Reset is Disabled!!` The message disappears after system reboot.

4. For each R module slot, enter the following command:

   ```
   config diag fpga bmc update <1-4,7-10> <file-name>
   ```

5. For each R module slot, enter the following command:

   ```
   config diag fpga dpc update <1-4,7-10> <file-name>
   ```

6. For each 8630 GBR module slot, enter the following command:

   ```
   config diag fpga pim update <1-4,7-10> <file-name>
   ```

7. After all modules are updated, for the updates to take effect, you have three choices:

   a. Reboot the switch.

      Before you boot, wait at least 30 seconds after the FPGA UPDATE SUCCESS message appears.

   b. Any module can be unseated and reseated for the change to take effect.

   c. You can use the **`config slot <slot num> state reset`** command for the change to take effect.

      An enable/disable of the slot is not sufficient for the change to take effect.

   The **`show sys info asic`** command does not display the updated firmware revisions until after you have performed one of these three options.

Variable definitions

Use the information in the following table to help you perform this procedure.

Variable	Value
<filename>	Specifies the appropriate xsvf file.
<1-4,7-10>	Specifies the slots that have installed R modules. Slots 5 and 6 are for SF/CPUs.

Installing FPGA firmware on RS and 8800 modules

For proper operation, review and, if required, update the field programmable gate array (FPGA) firmware revisions on every RS and 8800 module.

Caution:

Risk of service loss

Before a firmware upgrade, Avaya strongly recommends that you verify the file MD5 checksums. If you upgrade using a corrupted file, module functionality can be affected and require a return manufacturing agreement (RMA).

Important:

After the update process begins, do not enter commands or reset the module or switch during the process. If any failure occurs, retry the updates or contact Avaya before you reset the module or switch.

If you do not enter a file name the default file name is shown. Do not interrupt the update process, which is approximately ten minutes in length. Wait until the FPGA UPDATE SUCCESS message appears for each slot that you update. The success message is appended to the log file.

Important:

While upgrading FPGA on a line card with active ports in a live environment, certain warnings may be seen. Once the upgrade is complete, the warnings stop.

Do not download an image or multiple images to different modules at the same time. Only download one image to one module at one time.

Procedure steps

1. Determine if a firmware update is required.

See Checking firmware revisions on page 111.

2. Copy the required files to the SF/CPU flash memory on the chassis that contains RS or 8800 modules:
   - rs_dpm_fpga.bin (for all RS and 8800 modules—contains DPC, BMC, FOQ, Mirror, Loopback firmware)
   - pim8612XLRS.bin (only for 8612XLRS modules)
   - pim8634XGRS.bin (only for 8634XGRS and 8834XG modules)
   - pim8648GBRS.bin (only for 8648GBRS and 8848GB modules)
   - pim8648GTRS.bin (only for 8648GTRS and 8848GT modules)
3. For each RS or 8800 module slot, enter the following command:

   ```
   config diag fpga rs-module-dpm update <1-4,7-10> [<file-name>]
   ```

   This command reprograms all five subcomponents.
4. For each RS or 8800 module slot, update the PIM FPGA firmware with the appropriate PIM file:

   ```
   config diag fpga pim update <1-4,7-10> <file-name>
   ```
5. After all modules are updated, for the updates to take effect, you have three choices:
   a. Reboot the switch.

      Before you boot, wait at least 30 seconds after the FPGA UPDATE SUCCESS message appears.
   b. Any module can be unseated and reseated for the change to take effect.
   c. You can use the **`config slot <slot num> state reset`** command for the change to take effect.

      An enable/disable of the slot is not sufficient for the change to take effect.

   The **`show sys info asic`** command does not display the updated firmware revisions until after you have performed one of these three options.

Variable definitions

Use the information in the following table to help you perform this procedure.

Variable	Value
<filename>	Specifies the appropriate file, if the file is not named the default name.
<1-4,7-10>	Specifies the slots that have installed RS or 8800 modules.

Changing passwords

Change passwords after an upgrade to maintain the highest security levels. For more information about passwords, see *Avaya Ethernet Routing Switch 8800/8600 Security,* (NN46205-601).

Important:

Passwords are stored in an encrypted format in a system file, rather than in the configuration file. Passwords are maintained across an upgrade, assuming that the hidden files are not modified. If required, change the passwords after upgrade to secure your system. All passwords are case-sensitive.

Procedure steps

1. To change a password, use one of the following commands as required:

   ```
   config cli password ro <username> [<password>]
   ```

   ```
   config cli password rw <username> [<password>]
   ```

   ```
   config cli password rwa <username> [<password>]
   ```

2. To view other options to configure, use the **`config cli password ?`** command.

Variable definitions

Use the information in the following table to help you perform this procedure.

Variable	Value
<username>	Specifies the user name.
<password>	Specifies the password for the user.

Backing up upgraded configuration files

After you complete the upgrade, save the new config.cfg and boot.cfg files to the external memory card or another safe place. See Backing up configuration files on page 58.

Verifying the upgrade

Verify your upgrade to ensure proper switch operation.

Procedure steps

1. Repeat the procedure used in Generating reference data on page 60 and regenerate the same data.

   Compare the results. If you see substantial differences in this data, you may have to downgrade to the previous version and/or commence troubleshooting procedures. See Downgrading the Ethernet Routing Switch 8800/8600 on page 74.

2. To view bootconfig flags, enter the following command:

   ```
   config bootconfig flags info
   ```

   Ensure that the flags are set correctly.

3. To view mode flags, enter the following command:

   ```
   config sys set flags info
   ```

   Ensure that the flags are set correctly.

4. To view RADIUS settings, enter the following command:

   ```
   config radius info
   ```

   Ensure that the settings are correct.

5. To check for alarms or unexpected errors, enter one the following commands:

   ```
   show log file tail
   ```

   ```
   show log file severity
   ```

Upgrading from 8692 SF/CPU with SuperMezz to 8895 SF/CPU

Use the following steps to upgrade from 8692 SF/CPUs with SuperMezz to 8895 CPUs.

Prerequisites

- You must be local to the switch with a console connection.
- Upgrade the Ethernet Routing Switch 8800/8600 to 7.1 code with the 8692 SF/CPU with SuperMezz as master and slave.
- Download the p80ae7100.img and p80be7100.img software images, as well as the dld files (p80j7100.dld, p80k7100.dld) to the master 8692 SF/CPU.

Procedure steps

1. Disable the slot for the slave SF/CPU. For example (where slot x is the slot of the slave 8692 SF/CPU):

   ```
   ERS-8010:5#config slot x state dis
   ```

2. Remove the slave 8692 SF/CPU with SuperMezz.
3. Insert the 8895 SF/CPU into the chassis, and immediately after inserting the 8895 SF/CPU, stop the boot process at the boot monitor when prompted.
4. Copy the running configuration file (config.cfg), boot configuration file (boot.cfg), images and dld files (p80ae7100.img, p80be7100.img, p80j7100.dld, p80k7100.dld) from the current master 8692 SF/CPU to the 8895 SF/CPU using the internal IP for the copy command: `127.0.0.X`, where X is the slot number of the 8692 SF/CPU. For example:

   ```
   ERS-8010:5#copy 127.0.0.X:/flash/<name of the file> /flash/
   ```

5. Edit the primary image file name in the boot.cfg to load the 8895 image. For example:

   ```
   monitor:5# choice primary image-file p80ae7100.img

   monitor:5# save
   ```

6. Boot the 8895 SF/CPU with the correct image and wait for the login screen. For example:

```
monitor:5# boot /flash/ p80be7100.img
```

7. Perform a failover from the master 8692 SF/CPU using the following command:

   ```
   ERS-8010:5# config sys set action cpuswitchover
   ```

8. After the 8895 SF/CPU becomes the master, remove the slave 8692 SF/CPU with SuperMezz.
9. Insert another 8895 SF/CPU into the chassis, and immediately after inserting the 8895 SF/CPU, stop the boot process at the boot monitor when prompted.
10. Copy the running configuration file (config.cfg), boot configuration file (boot.cfg), images and dld files (p80ae7100.img, p80be7100.img, p80j7100.dld, p80k7100.dld) from the current master 8895 SF/CPU to the new 8895 SF/CPU using the internal IP for the copy command: `127.0.0.X`, where X is the slot number of the master 8895 SF/CPU. For example:

    ```
    ERS-8010:5#copy 127.0.0.X:/flash/<name of the file> /flash/
    ```

11. Boot the 8895 SF/CPU with the correct images and wait for the login screen.

    ```
    monitor:5# boot /flash/ p80be7100.img
    ```

Downgrading the Ethernet Routing Switch 8800/8600

Downgrade the Ethernet Routing Switch 8800/8600 if an upgrade is not successful.

Prerequisites

- You must remove any installed 8800 series I/O modules.
- If you are downgrading to a pre-7.0 release, you must remove any installed 8895 SF/CPU modules.
- You need the previously saved configuration files (boot.cfg and config.cfg) for the release to which you intend to downgrade.
- For I/O modules, you need compatible firmware versions for the release to which you intend to downgrade. See the Upgrades document for the target release for the required firmware.
- Read Downgrade considerations on page 49.

Procedure steps

1. Install an older version of software.

   Use the procedure found in the *Upgrades* document that corresponds to the software release you intend to install. Ensure that you use the previously saved configuration files for that release.

2. Install an older version of compatible firmware on any R or RS modules.

   See Installing FPGA firmware on R modules on page 67 and Installing FPGA firmware on RS and 8800 modules on page 69.

Chapter 7: Avaya Ethernet Routing Switch 8800/8600 SF/CPU, R, RS, and 8800 module upgrade using the ACLI

Upgrade software to add new functionality to your Ethernet Routing Switch.

Upgrade times using the ACLI are the same as for using the CLI. See Ethernet Routing Switch upgrade time requirements on page 55.

Prerequisites

Caution:

Risk of service interruption

If you do not have a redundant SF/CPU system, the upgrade can cause an interruption to normal switch operation.

Important:

All upgrade procedures assume that files use the default names. Use caution in any procedure if the file names are non-default. Ensure that all parameters associated with file names take into consideration the use of nondefault values.

- Read the latest Release Notes.
- Read the section Translations of Safety Messages on page 167.
- Remove all non-supported classic modules, including E and M modules, 8691 SF/CPU modules, and 8692 SF/CPU modules without SuperMezz (the 8692 SF/CPU is supported if equipped with SuperMezz.) For a complete list of all non-supported modules, see Nonsupported hardware for Release 7.1 and later on page 20.
- Upgrade all power supplies to either 8004 or 8005 level power supplies.
- Read the section Avaya Ethernet Routing Switch 8800/8600 upgrade considerations and concepts on page 27.

- You must be able to access the new software from the site www.avaya.com/support. You need a valid user or site ID and password.
- If necessary, schedule a time for the switch to be non-operational.

Ethernet Routing Switch 8800/8600 SF/CPU, R, RS, and 8800 module upgrade using the ACLI tasks

This task flow shows you the sequence of tasks you perform to upgrade the Ethernet Routing Switch 8800/8600.

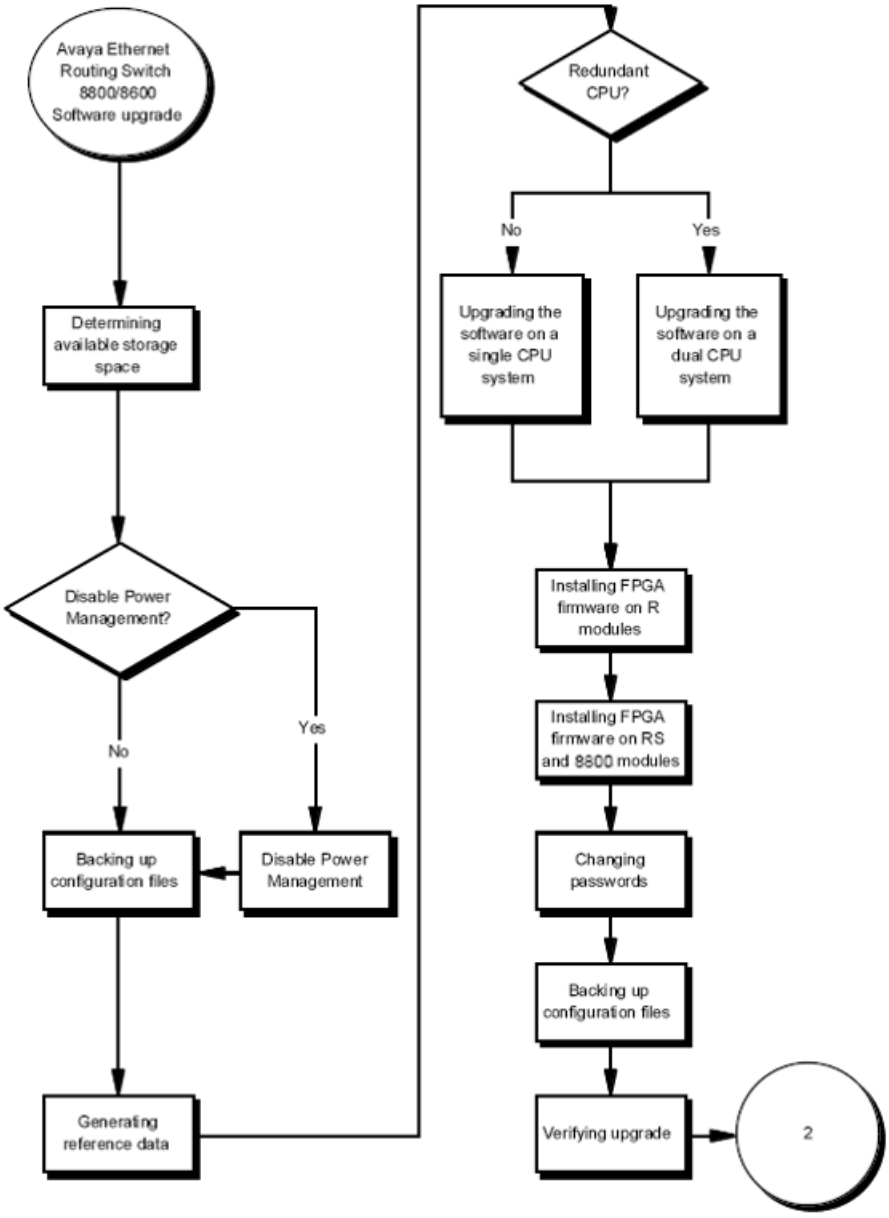


Figure 6: Ethernet Routing Switch 8800/8600 SF/CPU, R, RS, and 8800 module upgrade using the ACLI tasks 1

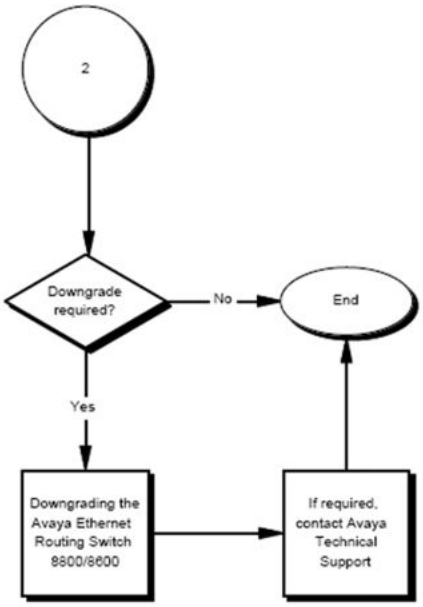


Figure 7: Ethernet Routing Switch 8800/8600 SF/CPU, R, RS, and 8800 module upgrade using the ACLI tasks 2

Ethernet Routing Switch 8800/8600 SF/CPU, R, RS, and 8800 module upgrade using the ACLI navigation

- Upgrading from 8692 SF/CPU with SuperMezz to 8895 SF/CPU on page 100
- Downgrading the Ethernet Routing Switch 8800/8600 on page 101

Determining available storage space

Determine whether the switch has enough storage space to store the new software.

Prerequisites

Access Privileged EXEC mode.

Procedure steps

1. To view the free space and files in flash memory, enter the following command:

   ```
   dir
   ```

   The bottom of the table shows available space:

   ```
   total: 64155648 used: 40067072 free: 24088576 bytes
   ```

2. If you must remove files to make space, use the remove command:

   ```
   rm <WORD 1-99> [-y]
   ```

   Important:

   Older load, boot, and configuration files may be required if the upgrade is unsuccessful. Make sure you back up these files to a safe place before you remove them.

   Consult Avaya Support for recommendations about deleting old image (.img), log (.txt), PCAP (.cap), or bootconfig (.cfg) files.

Variable definitions

Use the data in the following table to help you use the **rm** command.

Variable	Value
<WORD 1-99>	**<WORD 1-99>** specifies the file to remove.

Variable	Value
-y	Skip the confirm question.

Disabling Power Management

Disable Power Management to successfully upgrade even though not enough power supplies are installed to run all I/O modules.

If you already have enough power supplies, you do not need to disable Power Management.

You can calculate the number of power supplies required for your Ethernet Routing Switch 8800/8600 system. To determine the number of power supplies required for your switch configuration, use the *Power Supply Calculator for Avaya ERS 8800/8600,* (NN48500-519). This is available on the Avaya Technical Support Web site at www.avaya.com/support.

Important:

Avaya recommends that you do not disable Power Management, and that you instead install the required power supplies before upgrade. However, if you must disable Power Management for a short period of time, install the required supplies as quickly as possible.

1. Save the pre-7.1 configuration file.

   ```
   save <file-name.cfg>
   ```

2. Edit the configuration file using an editor like VI or EMACS. You can either:

   - Use the ACLI to edit the file on the switch (the switch has a built-in VI-like editor). Use the **`edit config.cfg`** command.
   - Save the file as an ASCII file and transfer to another device for editing with a text editor like Notepad.
   - Transfer the file to a device and edit with VI or EMACS-like editor.

3. In the configuration file, add the following lines to the end of the flags section:

   ```
   #!power power-check-enable false

   #!power fan-check-enable false
   ```

   See the following job aid for an example of correct placement of these commands.

4. Save the file and, if you edited it off-switch, transfer the file back to the switch to use in the upgrade.

Job aid: configuration file and command placement

```
#
```

```
# WED OCT 14 21:30:21 2009 UTC
# box type              : ERS-8006
# software version      : REL7.1.0.0
# monitor version       : 7.1.0.0/xxx
# cli mode              : ACLI
#
#
# Asic Info :
# SlotNum|Name    |CardType  |MdaType    |Parts Description
#
# Slot  1   --     0x00000001 0x00000000
# Slot  2   --     0x00000001 0x00000000
# Slot  3 8634XGRS 0x24325122 0x00000000  PRS:RSP=26 F2I=4 F2E=5 FTMUX=17 CC=33281
FOQ=270 DPC=7 BMC =264 PIM=1024 MAC=1112670281/1112670281/303177837 Mirror=304
Loopback=274
# Slot  4 8648GTR  0x24220130 0x00000000  RSP=25 CLUE=2 F2I=1 F2E=1 FTMUX=17 CC=3
FOQ=267 DPC=184 BM C=776 PIM=3 MAC=2
# Slot  5   --     0x00000001 0x00000000
# Slot  6 8695SF   0x200e1100 0x00000000  CPU: BDLB=21 glue=14 SFM: OP=3 TMUX=2
SWIP=23 FAD=16 CF=1
#
#!flags global-filter-ordering false
#!resource-reservation max-vlan false
#!resource-reservation multicast 2048
#!flags multicast-check-packet true

#!flags system-monitor true
#!system-monitor monitoring-enable true
#!system-monitor detection-time 30
#!power power-check-enable false        <------- ADD THIS LINE
#!power fan-check-enable false          <------- ADD THIS LINE
```

Backing up configuration files

Before you upgrade your switch software, make copies of the configuration files. If an upgrade is unsuccessful, use backup configuration files to return the switch to its previous state.

You should have several copies of backup files. See Switch behavior during boot cycle and redundant configuration files on page 38.

Prerequisites

- If you are using FTP or TFTP, ensure that the switch allows Trivial File Transfer Protocol (TFTP) or File Transfer Protocol (FTP) access. See Enabling FTP and TFTP on page 108.
- For more details about copying files, see Copying files on page 134.
- Access Privileged EXEC mode.

Procedure steps

1. Determine the configuration file names:

   ```
   show boot config choice
   ```

2. Save the configuration files. Assuming the files use the default file names, enter:

   ```
   save config
   ```

   ```
   save bootconfig
   ```

   ```
   save config standby config.cfg
   ```

   ```
   save bootconfig standby boot.cfg
   ```

   If the SaveToStandby flag is true, then you do not need to save the files to the Secondary.

3. Copy the files to a safe place. For example, to copy to an external memory card:

   ```
   copy /flash/boot.cfg /pcmcia/boot_backup.cfg
   ```

   ```
   copy /flash/config.cfg /pcmcia/config_backup.cfg
   ```

Generating reference data

Use show commands to generate data to determine if the software upgrade is successful. After upgrade. the switch and network should operate as they did before the upgrade. Avaya recommends that you keep track of important parameters and ensure that they are unchanged after an upgrade. The following procedure gives examples of how to generate reference data. Choose the parameters that are most important to your network.

If these parameters remain unchanged before and after the upgrade, the upgrade is likely successful. Otherwise, you may need to downgrade to a previous release or perform troubleshooting procedures. For downgrade information, see Downgrade considerations on page 49.

Prerequisites

Access Privileged EXEC mode.

Procedure steps

1. Determine the number of routes in the routing table:

   ```
   show ip route
   ```

   Record the number of routes.
2. Determine Address Resolution Protocol (ARP) information:

   ```
   show ip arp
   ```
3. Determine Border Gateway Protocol (BGP) parameters; note the total number of routes:

   ```
   show ip bgp summary
   ```
4. Determine the total number of Internet Group Management Protocol (IGMP) groups:

   ```
   show ip igmp group
   ```
5. Determine the total number of multicast routes:

   ```
   show ip mroute interface
   ```

   ```
   show ip mroute route
   ```
6. Determine Open Shortest Path First (OSPF) parameters:

   ```
   show ip ospf
   ```

   ```
   show ip ospf neighbors
   ```
7. Use the following command to view other IP show commands that you can use:

   ```
   show ip ?
   ```

Upgrading the software on a single SF/CPU system

Use this procedure to upgrade the SF/CPU software on a nonredundant Ethernet Routing Switch 8800/8600 SF/CPU. This procedure shows how to upgrade using the flash memory as the file storage location; you can use other storage locations. For information about storage options, see File storage options on page 36.

Caution:

Risk of bootconfig file corruption

Operating a system with different versions of the runtime image and boot monitor image can cause a corrupt bootconfig file. If the boot.cfg file is corrupt, replace it with a saved version or recreate the file.

Important:

The 8692 SF/CPU requires a SuperMezz module with release 7.1. You must format the system flash memory to 64 MB. The new software requires significant memory space. If you do not have 64 MB and you use SuperMezz, you cannot load the files from the flash. Format the flash memory to make all of the memory space available.

See Reformatting the 8692 SF/CPU flash memory to 64 MB for a single SF/CPU system on page 120.

Important:

Before you configure the switch to run the new software, ensure the integrity of the new software by checking the MD5 checksums. This is part of the following upgrade procedure.

Prerequisites

- Back up the switch configuration files. See Backing up configuration files on page 83.
- You must be able to access www.avaya.com/support.
- If you determined you must disable Power Management, ensure that the configuration file is edited appropriately and saved on the switch. See Disabling Power Management on page 82.
- Access Global Configuration mode.

Procedure steps

1. Download the new software.

   For instructions, see Downloading the software on page 103.
2. Connect to the Ethernet Routing Switch 8800/8600 ACLI interface by using the management console port, Secure Shell (SSH), or a Telnet session.
3. Copy the required software files to flash memory. If you use TFTP or FTP, use the IP address of the SF/CPU.

   For instructions about copying files, see Copying files on page 134.

4. Confirm that the software files are successfully copied by using the **dir** command. Ensure that the new files are listed.
5. Ensure that the new files are error-free. See Verifying the MD5 checksums on page 153.
6. Configure the boot source to point to the new runtime image file:

   `boot config choice primary image-file /flash/p80a7100.img` (for 8692 SF/CPU)

   `boot config choice primary image-file /flash/p80ae7100.img` (for 8895 SF/CPU)
7. Ensure that the switch loads the new Mezz image from the flash:

   ```
   boot config mezz-image image-name /flash/p80m7100.img
   ```
8. Ensure that the switch uses the correct R, RS, and 8800 module driver files from the flash memory (repeat for each slot):

   ```
   boot config bootp Primary default <1-4,7-10>
   ```
9. Save the configuration files:

   ```
   save bootconfig
   ```

   ```
   save config
   ```
10. To verify that the changed primary image file settings are in the boot.cfg file, enter the following command :

    ```
    show boot config choice
    ```

    Confirm that the image location and name are correct.
11. To boot the Ethernet Routing Switch 8800/8600 with the new boot-monitor image, enter the following command:

    `boot /flash/p80b7100.img` (for 8692 SF/CPU)

    `boot /flash/p80be7100.img` (for 8895 SF/CPU)

    If you interrupt the auto-boot process, you may have to issue the **boot** command again.

    This step causes an interruption to user traffic.

    The switch boots using the new image file. The system takes a longer time to come up than a normal reboot because the system must write the new boot monitor to flash memory.
12. For upgrades from pre-Release 5.0 software, after the switch boots and runs the Release 5.0 or later software for the first time, perform the following steps to use the new DOSFS.

Important:

The following DOS reformat steps are only required the first time a switch is upgraded to a 5.0 or later release.

- Back up all files from the flash and PCMCIA.
- Format the flash and PCMCIA:

  Important:

  This step deletes any files on these devices.

  ```
  dos-format /flash

  dos-format /pcmcia
  ```

- Move all files back to the flash and PCMCIA.

13. If you upgrade to release 7.1 or later from a release prior to 5.1, you must specify the location of your license file in the boot configuration file. If you do not specify the location of your license file, you can encounter issues with your licensed features. To specify the license file location, enter the following command:

    ```
    boot config choice primary license-file <file>
    ```

Variable definitions

Use the information in the following table to help you perform this procedure.

Variable	Value
<1-4,7-10>	Specifies the slots that have installed R, RS, or 8800 modules.

Upgrading the software on a dual SF/CPU system

Use this procedure to upgrade the SF/CPU software on a system that contains redundant SF/CPUs. This procedure shows how to upgrade using the flash memory as the file storage location; you can use other storage locations. For information about storage options, see File storage options on page 36.

Caution:

Risk of configuration loss

Avaya does not support different software versions, for example, Releases 7.0 and 7.1, on the Master and Secondary SF/CPUs except for during an upgrade process. An exception to this rule occurs for a switch in High Availability mode, where both the Master and

Secondary SF/CPU must run the same software release (see following Caution). Also, operating a system with different versions of the runtime image and boot monitor image can corrupt the bootconfig file. If the boot.cfg file is corrupt, replace it with a saved version, or recreate the file.

The Master and Secondary SF/CPU must have the same amount of memory.

Caution:

Risk of system instability

If you use High Availability mode, to upgrade, you must use one of two options:

1. Keep HA enabled; upgrade the switch software. During the upgrade procedure, reboot the standby CPU, then immediately reboot the Master SF/CPU.

   The Standby and Master SF/CPUs must simultaneously runthe same software version, or system instability can result.
2. Disable HA, reboot the system; upgrade the switch software; enable HA; reboot the system.

These options are both included in this procedure. Choose one and follow the appropriate steps.

Important:

The 8692 SF/CPU requires a SuperMezz module with release 7.1.0.0. You must format the system flash memory to 64 MB. The new software requires significant memory space. If you do not have 64 MB and you use SuperMezz, you cannot load the files from the flash. Format the flash memory to make all of the memory space available.

See Reformatting the flash memory to 64 MB for a dual SF/CPU system on page 123.

Important:

Before you configure the switch to run the new software, ensure the integrity of the new software by checking the MD5 checksums. This is part of the following upgrade procedure.

Prerequisites

- Back up the switch configuration files. See Backing up configuration files on page 83.
- You must be able to access www.avaya.com/support.
- If TFTP or FTP is required, ensure they are enabled. See Enabling FTP and TFTP on page 108.
- Access Global Configuration mode.

Procedure steps

1. Download the new software.

   For instructions, see Downloading the software on page 103.
2. Connect to the Master SF/CPU ACLI interface by using the management console port, SSH, or a Telnet session.
3. If you use High Availability mode and chose the second HA upgrade option, disable HA:

   ```
   no boot config flags ha-cpu
   ```

   ```
   reset
   ```
4. Copy the required software files to flash memory. Use the management IP address of the SF/CPU.

   For instructions about copying files, see Copying files on page 134.
5. To confirm that the software files are successfully copied, use the **dir** command.
6. Ensure that the new files are error-free. See Verifying the MD5 checksums on page 153.
7. Copy the runtime image file (and all other files copied to the Master SF/CPU flash) to the Secondary SF/CPU.

   For example:

   `copy /flash/p80a7100.img <IP address of standby CPU>:p80a7100.img` (for 8692 SF/CPU)

   `copy /flash/p80ae7100.img <IP address of standby CPU>:p80ae7100.img` (for 8895 SF/CPU)

   Use the management IP address of the Master SF/CPU.
8. Configure the boot source to point to new runtime image file:

   `boot config choice primary image-file /flash/p80a7100.img` (for 8692 SF/CPU)

   `boot config choice primary image-file /flash/p80ae7100.img` (for 8895 SF/CPU)
9. Ensure that the switch loads the new Mezz image from the flash:

   ```
   boot config mezz-image image-name /flash/p80m7100.img
   ```
10. Ensure that the switch uses the correct R, RS, and 8800 module driver files from the flash memory (repeat for each slot):

```
boot config bootp Primary default <1-4,7-10>
```

11. Save the configuration on both the Master and the Secondary SF/CPUs:

    ```
    save bootconfig standby boot.cfg
    ```

    ```
    save config standby config.cfg
    ```

12. To verify that the changed primary image file settings are in the boot.cfg file, enter the following command:

    ```
    show boot config choice
    ```

    Verify that the primary image file is p80a7100.img (for 8692 SF/CPU) or p80ae7100.img (for 8895 SF/CPU).

13. To log on to the Secondary SF/CPU, enter the following command and log on:

    ```
    peer telnet
    ```

14. To verify that the changed primary image file settings are in the boot.cfg file, enter the following command:

    ```
    show boot config choice
    ```

    Confirm that the image location and name are correct.

15. Boot the Secondary SF/CPU.

    Important:
    Boot the Secondary SF/CPU first and immediately after that, boot the Master SF/CPU (following step). Do not wait for the Secondary SF/CPU to come up completely before booting the Master SF/CPU, or the Secondary SF/CPU may hang.

    To boot the Secondary SF/CPU with the new boot monitor image, enter the following command:

    `boot /flash/p80b7100.img` (for 8692 SF/CPU)

    `boot /flash/p80be7100.img` (for 8895 SF/CPU)

    During the booting of the Secondary SF/CPU, the Telnet session stops responding and takes some time to time out. To quickly exit the peer Telnet session, enter `CTRL + ]`. Next, when prompted, enter **q**.

16. To upgrade the Master SF/CPU with the new boot monitor image, enter the following command:

    `boot /flash/p80b7100.img` (for 8692 SF/CPU)

    `boot /flash/p80be7100.img` (for 8895 SF/CPU)

    If you interrupt the auto-boot process, you may have to issue the **`boot`** command again.

If you are connecting remotely, the session stops responding. You will have to reconnect.

17. For upgrades from pre-Release 5.0 software, after the switch boots and runs the Release 5.0 or later software for the first time, perform the following steps to use the new DOSFS.

    Important:
    The following DOS reformat steps are only required the first time a switch is upgraded to a 5.0 or later release.

    - Back up all files from the Secondary flash and PCMCIA.
    - Format the Secondary flash and PCMCIA:

      Important:
      This step deletes any files on these devices.

      ```
      dos-format /flash
      dos-format /pcmcia
      ```

    - Move all files back to the Secondary flash and PCMCIA.
    - Back up all files from the Master flash and PCMCIA.
    - Format the Master flash and PCMCIA:

      Important:
      This step deletes any files on these devices.

      ```
      dos-format /flash
      dos-format /pcmcia
      ```

    - Move all files back to the Master flash and PCMCIA.

18. If you use High Availability mode, and you are using the second HA upgrade option, after both SF/CPUs come back online, reenable HA:

    ```
    boot config flags ha-cpu
    ```

19. To run in HA mode, you must reboot the switch.

20. If you upgrade to release 7.1 or later from a release prior to 5.1, you must specify the location of your license file in the boot configuration file. If you do not specify the location of your license file, you can encounter issues with your licensed features. To specify the license file location, enter the following command:

    ```
    boot config choice primary license-file <file>
    ```

Variable definitions

Use the information in the following table to help you perform this procedure.

Variable	Value
<1-4,7-10>	Specifies the slots that have installed R, RS, or 8800 modules.

Installing FPGA firmware on R modules

For proper operation, review and, if required, update the field programmable gate array (FPGA) firmware revisions on every R module.

Caution:

Risk of service loss

Before a firmware upgrade, Avaya strongly recommends that you verify the file MD5 checksums. If you upgrade using a corrupted file, module functionality can be affected and require a return manufacturing agreement (RMA).

Important:

After the update process begins, do not enter commands or reset the module or switch during the process. If any failure occurs, retry the updates or contact Avaya before you reset the module or switch.

You can only update firmware for one slot at a time. For example, BAP Memory Controller (BMC) must be completed for a slot before you complete Dual Port Controller (DPC).

If you do not enter a file name the default file name is shown. Do not interrupt the update process, which is approximately ten minutes in length. Wait until the FPGA UPDATE SUCCESS message appears for each slot that you update. The success message is appended to the log file.

Important:

While upgrading FPGA on a line card with active ports in a live environment, certain warnings may be seen. Once the upgrade is complete, the warnings stop.

Do not download an image or multiple images to different modules at the same time. Only download one image to one module at one time.

Prerequisites

Access Global Configuration mode.

Procedure steps

1. Determine if a firmware update is required.

   See Checking firmware revisions on page 111.

2. Copy the following files to the SF/CPU flash memory on the chassis that contains R modules:

   - foqyyy.xsvf
   - dpcyyy.xsvf
   - bmcyyy.xsvf
   - PI_yyy.xsvf (only for 8630GBR modules)

3. For each R module slot, enter each of the following commands (given in steps 3 to 6).

   Update Feedback Output Queuing (FOQ):

   ```
   fpga update <1-4,7-10> foq [WORD <1-40>]
   ```

   OR

   ```
   default fpga update <1-4,7-10> foq
   ```

   You can use the **default** command if you have not changed the image file names, moved the files from flash, and are upgrading to the latest release.

   The following messages appear:

   ```
   Starting the update Process, will take a few minutes
   Don't reset the card or box during the process A SUCCESS message will
   display on the console and will get appended to the log file upon
   completion of the update.
   ERS-8610:5#  CPU5 [02/08/05 18:55:31] SW ERROR R module Slot<1> is unable
   to Process Async messages and Slot Reset is Disabled!!
   ERS-8610:5# CPU5 [04/12/05 14:05:38] COP-SW INFO Slot 1:
   FPGA UPDATE SUCCESS
   ```

   Disregard the message `SW ERROR unable to Process Async messages and Slot Reset is Disabled!!` The message disappears after the system reboot.

4. Update the BMC:

   ```
   fpga update <1-4,7-10> bmc [WORD <1-40>]
   ```

OR

```
default fpga update <1-4,7-10> bmc
```

5. Update the DPC:

   ```
   fpga update <1-4,7-10> dpc [WORD <1-40>]
   ```

   OR

   ```
   default fpga update <1-4,7-10> dpc
   ```

6. If you are upgrading an 8630GBR module, update the Port Interface Module (PIM):

   ```
   fpga update <1-4,7-10> pim [WORD <1-40>]
   ```

   OR

   ```
   default fpga update <1-4,7-10> pim
   ```

7. After all modules are updated, for the updates to take effect, you have three choices:

   a. Reboot the switch.

      Before you boot, wait at least 30 seconds after the FPGA UPDATE SUCCESS message appears.

   b. Any module can be unseated and reseated for the change to take effect.

   c. You can use the **`slot reset <slotList>`** command (Privileged EXEC mode) for the change to take effect.

      An enable/disable of the slot is not sufficient for the change to take effect.

   The **`show sys-info asic`** command does not display the updated firmware revisions until after you have performed one of these three options.

Variable definitions

Use the data in the following table to help you use the update commands.

Variable	Value
`<WORD 1-40>`	**`<WORD 1-40>`** specifies the FPGA image file name.
`<1-4,7-10>`	Specifies the R module slot number. Slots 5 and 6 are for SF/CPUs.

Installing FPGA firmware on RS and 8800 modules

For proper operation, review and, if required, update the field programmable gate array (FPGA) firmware revisions on every RS and 8800 module.

Caution:

Risk of service loss

Before a firmware upgrade, Avaya strongly recommends that you verify the file MD5 checksums. If you upgrade using a corrupted file, module functionality can be affected and require a return manufacturing agreement (RMA).

Important:

After the update process begins, do not enter commands or reset the module or switch during the process. If any failure occurs, retry the updates or contact Avaya before you reset the module or switch.

If you do not enter a file name the default file name is shown. Do not interrupt the update process, which is approximately ten minutes in length. Wait until the FPGA UPDATE SUCCESS message appears for each slot that you update. The success message is appended to the log file.

Important:

While upgrading FPGA on a line card with active ports in a live environment, certain warnings may be seen. Once the upgrade is complete, the warnings stop.

Do not download an image or multiple images to different modules at the same time. Only download one image to one module at one time.

Prerequisites

Access Global Configuration mode.

Procedure steps

1. Determine if a firmware update is required.

See Checking firmware revisions on page 111.

2. Copy the required files to the SF/CPU flash memory on the chassis that contains RS or 8800 modules:

   - rs_dpm_fpga.bin (for all RS and 8800 modules—contains DPC, BMC, FOQ, Mirror, Loopback firmware)
   - pim8612XLRS.bin (only for 8612XLRS modules)
   - pim8634XGRS.bin (only for 8634XGRS and 8634XG modules)
   - pim8648GBRS.bin (only for 8648GBRS and 8648GB modules)
   - pim8648GTRS.bin (only for 8648GTRS and 8648GT modules)

3. For each RS and 8800 module slot, enter the following command:

   ```
   fpga update <1-4,7-10> rs-module-dpm [<WORD 1-40>]
   ```

   OR

   ```
   default fpga update <1-4,7-10> rs-module-dpm
   ```

   You can use the **default** command if you have not changed the image file names, moved the files from flash, and are upgrading to the latest release.

   This command reprograms all five subcomponents.

4. For each RS or 8800 module slot, update the PIM FPGA firmware with the appropriate PIM file:

   ```
   fpga update <1-4,7-10> pim [WORD <1-40>]
   ```

   OR

   ```
   default fpga update <1-4,7-10> pim
   ```

5. After all modules are updated, for the updates to take effect, you have three choices:

   a. Reboot the switch.

      Before you boot, wait at least 30 seconds after the FPGA UPDATE SUCCESS message appears.

   b. Any module can be unseated and reseated for the change to take effect.

   c. You can use the **slot reset <slotList>** command (Privileged EXEC mode) for the change to take effect.

      An enable/disable of the slot is not sufficient for the change to take effect.

   The **show sys-info asic** command does not display the updated firmware revisions until after you have performed one of these three options.

Variable definitions

Use the information in the following table to help you perform this procedure.

Variable	Value
<WORD 1-40>	Specifies the appropriate file, if the file is not named the default name.
<1-4,7-10>	Specifies the slots that have installed RS or 8800 modules. Slots 5 and 6 are for SF/CPUs.

Changing passwords

Change passwords after an upgrade to maintain the highest security levels.

Important:

Passwords are stored in an encrypted format in a system file, rather than in the configuration file. Passwords are maintained across an upgrade, assuming that the hidden files are not modified. If required, change the passwords after upgrade to secure your system. All passwords are case-sensitive.

Prerequisites

Access Global Configuration mode.

Procedure steps

1. To change a password, use one of the following commands as required:

   ```
   cli password <WORD 1-20> read-only [<WORD 0-20>]
   cli password <WORD 1-20> read-write [<WORD 0-20>]
   cli password <WORD 1-20> read-write-all [<WORD 0-20>]
   ```

2. To view other password options, use the **`cli password ?`** command.

Variable definitions

Use the information in the following table to help you perform this procedure.

Variable	Value
<WORD 1-20>	Specifies the user name.
<WORD 0-20>	Specifies the password for the user. For more password options, enter **cli password <WORD 1-20> ?**

Backing up post-upgrade configuration files

After you complete the upgrade, save the new config.cfg and boot.cfg files to the external memory card or another safe place. See Backing up configuration files on page 83.

Verifying the upgrade

Verify your upgrade to ensure proper switch operation.

Prerequisites

Access Privileged EXEC mode.

Procedure steps

1. Repeat the procedure used in Generating reference data on page 84 and regenerate the same data.

   Compare the results. If you see substantial differences in this data, you may have to downgrade to the previous version and/or commence troubleshooting procedures.

2. To view bootconfig flags, enter the following command:

   ```
   show boot config flags
   ```

Ensure that the flags are set correctly.

3. To view mode flags, enter the following command:

   ```
   show sys flags
   ```

   Ensure that the flags are set correctly.

4. To view RADIUS settings, enter the following command:

   ```
   show radius
   ```

   Ensure that the settings are correct.

5. To check for alarms or unexpected errors, enter one the following commands:

   ```
   show log file tail
   ```

   ```
   show log file severity
   ```

Upgrading from 8692 SF/CPU with SuperMezz to 8895 SF/CPU

Use the following steps to upgrade from 8692 SF/CPUs with SuperMezz to 8895 CPUs.

Prerequisites

- You must be local to the switch with a console connection.
- Upgrade the Ethernet Routing Switch 8800/8600 to 7.1 code with the 8692 SF/CPU with SuperMezz as master and slave.
- Download the p80ae7100.img and p80be7100.img software images to the master 8692 SF/CPU.

Procedure steps

1. Disable the slot for the slave SF/CPU. For example:

   ```
   ERS-8010:5(config)# slot shutdown x (where slot x is the slot of the slave 8692 SF/CPU)
   ```

2. Remove the slave 8692 SF/CPU with SuperMezz.
3. Insert the 8895 SF/CPU into the chassis, and immediately after inserting the 8895 SF/CPU, stop the boot process at the boot monitor when prompted.

4. Copy the running configuration file (config.cfg), boot configuration file (boot.cfg), images and dld files (p80ae7100.img, p80be7100.img, p80j7100.dld, p80k7100.dld) from the current master 8692 SF/CPU to the 8895 SF/CPU using the internal IP for the copy command: `127.0.0.X`, where X is the slot number of the 8692 SF/CPU. For example:

   ```
   ERS-8010:5# copy 127.0.0.X:/flash/<name of the file> /flash/
   ```

5. Edit the primary image file name in the boot.cfg to load the 8895 image. For example:

   ```
   monitor:5# choice primary image-file p80ae7100.img

   monitor:5# save
   ```

6. Boot the 8895 SF/CPU with the correct image and wait for the login screen. For example:

   ```
   monitor:5# boot /flash/ p80be7100.img
   ```

7. Perform a failover from the master 8692 SF/CPU using the following command:

   ```
   ERS-8010:5# sys action cpu-switch-over
   ```

8. After the 8895 SF/CPU becomes the master, remove the slave 8692 SF/CPU with SuperMezz.
9. Insert another 8895 SF/CPU into the chassis, and immediately after inserting the 8895 SF/CPU, stop the boot process at the boot monitor when prompted.
10. Copy the running configuration file (config.cfg), boot configuration file (boot.cfg), images and dld files (p80ae7100.img, p80be7100.img, p80j7100.dld, p80k7100.dld) from the current master 8895 SF/CPU to the new 8895 SF/CPU using the internal IP for the copy command: `127.0.0.X`, where X is the slot number of the master 8895 SF/CPU. For example:

    ```
    ERS-8010:5# copy 127.0.0.X:/flash/<name of the file> /flash/
    ```

11. Boot the 8895 SF/CPU with the correct images and wait for the login screen.

    ```
    monitor:5# boot/flash/ p80be7100.img
    ```

Downgrading the Ethernet Routing Switch 8800/8600

Downgrade the Ethernet Routing Switch 8800/8600 if an upgrade is not successful.

Prerequisites

- You must remove any installed 8800 series I/O modules.
- If you are downgrading to a pre-7.0 release, you must remove any installed 8895 SF/CPU modules.
- You need the previously saved configuration files (boot.cfg and config.cfg) for the release to which you intend to downgrade.
- For I/O modules, you need compatible firmware versions for the release to which you intend to downgrade. See the Upgrades document for the target release to identify the required firmware.
- Read Downgrade considerations on page 49.

Procedure steps

1. Install an older version of software.

   Use the procedure found in the *Upgrades* document that corresponds to the software release you intend to install. Ensure that you use the previously saved configuration files for that release.

2. Downgrade the flash memory if necessary.

   To downgrade, use the procedure Downgrading flash and PCMCIA memory on page 124. To determine whether to downgrade, see Flash memory and PCMCIA card file systems on page 35.

3. Install an older version of compatible firmware on R modules.

   See Installing FPGA firmware on R modules on page 93.

4. Install an older version of compatible firmware on RS modules.

   See Installing FPGA firmware on RS and 8800 modules on page 96.

Chapter 8: Common procedures

The following sections describe common procedures that you can use for the Avaya Ethernet Routing Switch 8800/8600. You can use these procedures during upgrade or as part of normal system operations.

Navigation

[Downloading the software](#) on page 103

Downloading the software

Download the new software to upgrade the switch.

Prerequisites

Before you download the software, review the sections [New software files](#) on page 41 and [File storage options](#) on page 36.

Procedure steps

1. Go to the Avaya technical support portal: www.avaya.com/support
2. To download software you must do one of the following:
   - Click **Register** and follow the registration instructions.
   - Click **Sign In** and enter your login credentials.

   Once you are registered or signed in, the Support pane reappears.
3. From the list on the left side of the Support pane, click **Downloads**.

   A dialog box appears.
4. In the dialog box, do one of the following:

- Enter your product name.
- Click **A-Z List**, click a letter from the selections, and select your product from the list.

The product support page appears.

5. From the list on the left side of the product support pane, click **Downloads**.

   The software downloads dialog appears.

6. Click the link that appears beneath the software downloads dialog, for example: **Ethernet Routing Switch 8800/8600 Downloads**.

   The product Downloads page appears.

7. On the product Downloads page, click the **Downloads** tab.

   A list of available software downloads appears.

8. Click a software file to download and follow the instructions on the screen.

Chapter 9: Common procedures using the CLI

The following sections describe common procedures that you can use for the Avaya Ethernet Routing Switch 8800/8600. You can use these procedures during upgrade or as part of normal system operations.

Navigation

Saving configuration files

Save configuration files in the mode that you want to use. Although you cannot convert configuration files from one mode to another, you can save them in either CLI or ACLI mode.

Procedure steps

1. When in CLI mode, to save a configuration file in CLI mode, enter:

   ```
   save config
   ```

   ```
   save bootconfig
   ```

2. When in CLI mode, to save a configuration file in ACLI mode, enter:

   ```
   save config mode acli
   ```

   ```
   save bootconfig mode acli
   ```

Copying files

Copy files as part of an upgrade procedure to back up files or to move files to another location.

When you copy files, you can rename the files. Use caution. All procedures in this document use the default file names. Upgrades can be unsuccessful if the wrong file names are used.

Important:
If a failure occurs while you copy a file using TFTP (for example, a TFTP server is not available), the file is deleted.

Procedure steps

1. Use the **copy** command:

   ```
   copy <filename> <filename>
   ```

   For example:

   ```
   copy /flash/config.cfg /pcmcia/config_backup.cfg
   ```

The first parameter you specify is where the file resides, and the second parameter is the location for the new file.

2. To copy files using a TFTP server, ensure that the TFTP server is operating and then use the following command:

   ```
   copy <tftp IP address>:<filename> /<location>/
   ```

   For example:

   ```
   copy 111.111.1.11:p80a4100.img /flash/p80a4100.img
   ```

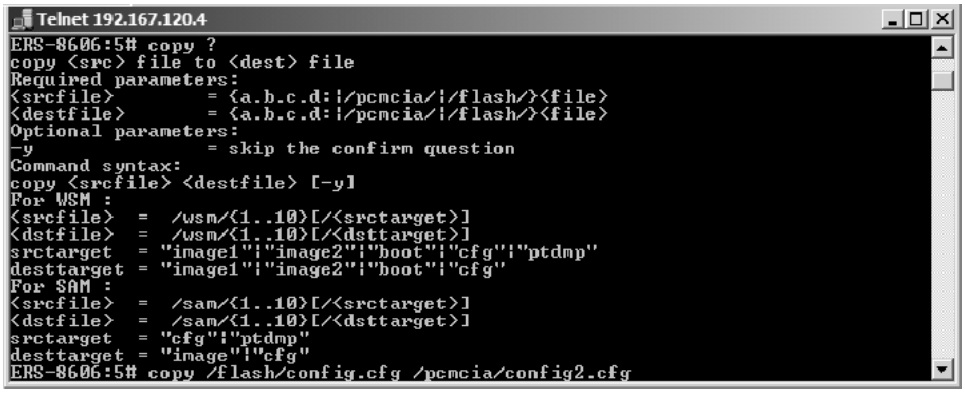
Variable definitions

Use the information in the following table to help you perform this procedure.

Variable	Value
<filename>	Specifies the file name and the path.
<location>	Specifies the file name and the path for file storage on the switch
<tftp IP address>	Specifies the IP address of the TFTP server.

Example of copying files

The following figure shows how to copy files by using the CLI.



Hiding files

Hide files for security reasons, and to keep them safe from accidental deletion.

Procedure steps

To hide files, use the attribute "+h" command. For example, to hide a file located on the flash named shadov.txt:

```
attrib /flash/shadov.txt "+h"
```

Enabling FTP and TFTP

Enable FTP and TFTP to use these protocols on the Ethernet Routing Switch 8800/8600. You can use FTP or TFTP servers to store upgrade files. To save a file to a Secondary SF/CPU, enable TFTP on the Secondary SF/CPU. Reboot the switch to enable FTP or TFTP.

Procedure steps

1. To enable the FTP daemon, enter the following command:

   ```
   config bootconfig flags ftpd true
   ```

2. To enable the TFTP daemon, enter the following command:

   ```
   config bootconfig flags tftpd true
   ```

3. To save the boot configuration file, enter the following command:

   ```
   save bootconfig standby boot.cfg
   ```

4. Reboot the SF/CPU so that the changes take effect, and the protocols are enabled:

   ```
   boot -y
   ```

Configuring boot sources

If the boot source location or image name is not default, specify its location or name. To specify boot source locations and file names, use the following procedure. You can also use these commands to change the order in which the boot sources (internal flash memory, external memory card, FTP or TFTP server) are accessed. If you move a .dld file from its default location, be sure to specify its new location. For more information about boot sources, see Boot sources on page 37.

Important:

R, RS, and 8800 modules require that the switch loads a .dld image on each module. See DLD file considerations on page 39.

The R module image is p80jxxxx.dld and the RS and 8800 module image is p80kxxxx.dld.

Procedure steps

1. To change the runtime configuration file locations, use the following command:

   ```
   config bootconfig choice <primary|secondary|tertiary>
   [config-file <file>|backup-config-file <file>|image-file
   <file>]
   ```

   For example, to specify the configuration file in flash memory as the primary, use the following command:

   ```
   ERS-8610:6# config bootconfig choice primary config-file /
   flash/config.cfg
   ```

2. To set the location for the I/O module driver image for the BootStrap protocol:

   ```
   config bootconfig bootp image-name <image-name> <slot-number>
   ```

   ```
   config bootconfig bootp secondary-image-name <image-name>
   <slot-number>
   ```

   For example, to specify an R module driver for slot 2 in flash memory, use the following command:

   ```
   ERS-8610:6# config bootconfig bootp /flash/p80j41xx.dld 2
   ```

   Important:
   Avaya recommends that you store .dld files in flash memory, and that you always set the image-name to default.

3. To set the boot source location for the SuperMezz image:

   ```
   config bootconfig mezz-image image-name <image-name>
   ```

   For example:

   ```
   ERS-8610:6# config bootconfig mezz-image image-name /flash/
   p80m41xx.img
   ```

Variable definitions

Use the data in the following table to help you use the **`config bootconfig choice <primary|secondary|tertiary>`** command.

Variable	Value
backup-config-file <file>	Identifies the backup boot configuration file; **file** is the device path and file name, up to 256 characters including the path.
config-file <file>	Identifies the boot configuration file; **file** is the device path and file name, up to 256 characters including the path.
image-file <file>	Identifies the image file; **file** is the device path and file name, up to 256 characters including the path.
info	Shows the current boot choices and associated files.

Use the data in the following table to help you use the **config bootconfig bootp** command.

Variable	Value
image-name <image-name> <slot-number>	Identifies the I/O module primary image. **<file>** is the device and file name, up to 256 characters including the path. **<slot-number>** identifies the image with a particular slot. To ensure that the .dld image loaded is the same as the running software image, configure the image-name to default.
secondary-image-name <image-name> <slot-number>	Identifies the I/O module secondary image. **<file>** is the device and file name, up to 256 characters including the path. **<slot-number>** identifies the image with a particular slot. To ensure that the .dld image loaded is the same as the running software image, configure the image-name to default.
info	Shows the current boot choice and associated files.

Use the data in the following table to help you use the **config bootconfig mezz-image** command.

Variable	Value
image-name <image-name> [<slot-number>]	Identifies the SuperMezz image.**<image-name>** is the device and file name, up to 256 characters including the path. slot-number identifies the image with a particular slot.
info	Shows the current SuperMezz boot choice and associated files.

Example of configuring primary and secondary sources

This example configures the primary and secondary sources as per Avaya recommendation.

1. Configure the primary configuration file choices:

   ```
   config bootconfig choice primary config-file /flash/
   primaryconfig.cfg
   ```

   ```
   config bootconfig choice primary backup-config-file /pcmcia/
   primaryconfig.cfg
   ```

2. Configure the secondary configuration file choices:

   ```
   config bootconfig choice secondary config-file /flash/
   secondaryconfig.cfg
   ```

   ```
   config bootconfig choice secondary backup-config-file /
   pcmcia/secondaryconfig.cfg
   ```

Checking firmware revisions

To determine if an update to the firmware is required, check the current firmware revisions on the slot containing an R, RS, or 8800 module.

Procedure steps

Enter the following command:

```
show sys info asic
```

```
#
# Asic Info :
# SlotNum|Name    |CardType  |MdaType    |Parts Description
#
# Slot  1   --     0x00000001 0x00000000
# Slot  2 8612XLRS 0x2433410c 0x00000000  PRS:RSP=26 F2I=4 F2E=5 FTMUX=17
CC=33281 FOQ=270 DPC=7 BMC =264 PIM=1024 MAC=303177837 Mirror=304
Loopback=274
# Slot  3   --     0x00000001 0x00000000
# Slot  4 8648GTR  0x24220130 0x00000000  RSP=25 CLUE=2 F2I=1 F2E=1 FTMUX=17
CC=3 FOQ=267 DPC=184 BM C=776 PIM=3 MAC=2
# Slot  5 8695SF   0x200e1100 0x00000000  CPU: BDLB=21 glue=14 SFM: OP=3
TMUX=2 SWIP=23 FAD=16 CF=2
# Slot  6 8695SF   0x200e1100 0x00000000  CPU: BDLB=21 glue=14 SFM: OP=3
TMUX=2 SWIP=23 FAD=16 CF=2
```

If the Dual Port Controller (DPC), BAP Memory Controller (BMC), Port Interface Module (PIM), mirror, loopback, and Feedback Output Queueing (FOQ) firmware

revisions are not equivalent to those specified in the list of required firmware files, a firmware update is required.

For information about required files, see Job aid: required firmware on page 112.

Job aid: required firmware

Use the following information to determine the firmware version required.

Table 5: Firmware release support

Module	FPGA firmware version
R modules with Release 7.1	• PIM for 8630GBR: 769 • FOQ: 267 • BMC: 776 • DPC: 194
RS and 8800 modules with Release 7.1	• PIM for 8612XLRS: 1024 • PIM for 8634XGRS and 8834XG: 1024 • PIM for 8648GBRS and 8848GB: 1024 • PIM for 8648GTRS and 8848GT: 768 • FOQ: 267 • DPC: 7 • BMC: 776 • Mirror: 304 • Loopback: 274

Replacing a SF/CPU module in a single CPU chassis

Replace a single SF/CPU module in a single chassis to replace a faulty SF/CPU or to upgrade the SF/CPU to a newer model.

If the flash is not accessible on a faulty SF/CPU, obtain the files from another source, which can be another network device, such as a TFTP or FTP server. Alternatively, the files can be rebuilt using the Customer Spec Book or the configuration from the VRRP peer Ethernet Routing Switch 8800/8600.

Electrostatic alert:
Risk of equipment damage

To prevent damage from electrostatic discharge, always wear an antistatic wrist strap connected to an ESD jack.

Prerequisites

You can access the Console port and the Ethernet Management port.

Procedure steps

1. Save the configuration files.

   See Saving configuration files on page 106.
2. Place all required files onto the external memory card.

   See Job aid: files present on SF/CPU modules on page 114 and Copying files on page 134.
3. Power down the switch to stop all traffic.
4. Disconnect the cables from the Management and Console ports.
5. Remove the old SF/CPU.

   For instructions, see *Avaya Ethernet Routing Switch 8800/8600 Installation — Modules,* (NN46205-304).
6. Insert the new SF/CPU.
7. Reconnect the cables to the Management and Console ports.
8. Replace the external memory card.
9. Connect to the console and open the terminal emulator application.
10. Power up the switch and stop the auto-boot process.

    Before the system loads the runtime image, the following message appears:

    ```
    "Loaded boot configuration from file /flash/boot.cfg Attaching network
    interface lo0... done. Press <Return> to stop autoboot..."
    ```
11. To stop the auto-boot process, on the keyboard, press Enter.
12. Using the Console port and the CLI, copy all required files from the external memory card to the SF/CPU flash memory.
13. Hide any hidden (.txt) files.

    See Hiding files on page 107.
14. Boot the system with the correct boot monitor:

`Monitor# boot /flash/p80b7100.img` (for 8692 SF/CPU)

`Monitor# boot /flash/p80be7100.img` (for 8692 SF/CPU)

A message appears stating that the boot flash will be written, and to not interrupt the process. After the system writes the boot flash with the new boot monitor, the system reboots and loads boot.cfg and config.cfg along with the proper runtime software specified within the new configuration. The upgrade is complete.

15. Verify that the image and configuration loaded properly:

    `show sys sw`

Job aid: files present on SF/CPU modules

The following hidden files can be present on the SF/CPU flash memory of an Ethernet Routing Switch 8800/8600. The files present on the flash depend on the hardware and software configuration present on the switch. See also New software files on page 41 and the release notes for the most up-to-date file names.

Table 6: Required hidden files

File type	Name
Hidden files	• ospf_md5key.txt • shadov.txt • snmp_usm.txt • snmp_comm.txt • passvord.txt

Hot swapping the Master SF/CPU module in a dual CPU chassis

Use this procedure to hot swap an Ethernet Routing Switch 8800/8600 module that is in a redundant SF/CPU configuration. You can use this procedure when you upgrade switch fabrics, or when you perform a failover with High Availability (HA) mode enabled.

If you use HA-CPU in a dual SF/CPU system, this procedure minimizes packet loss. If the SF/CPU is in Warm Standby mode, packet loss cannot be avoided; however, this procedure minimizes downtime.

For information about configuring which SF/CPU is the Master, see *Avaya Ethernet Routing Switch 8800/8600 Administration,* (NN46205-605).

Caution:

Risk of traffic loss or corruption

When you hot swap the active SF/CPU module in a redundant SF/CPU system, wait until the new Master stabilizes before you insert any other modules. Do not hot swap I/O modules until the new SF/CPU becomes the Master SF/CPU.

If you have only one SF/CPU and you swap the SF/CPU, all the SNMP password files, including the hidden file, are lost. Either reconfigure the trap receivers and community strings each time you change the SF/CPU module, or save these hidden files to an external memory card.

Do not hot swap or insert modules in a switch while the switch boots. If you do, the switch may not recognize the module, which causes module initialization failure.

Switchover causes an interruption to user traffic.

In HA mode, Avaya strongly recommends that you make the Secondary SF/CPU the Master before you remove the old Master SF/CPU. If you remove the Master SF/CPU before you make the Secondary SF/CPU the Master, traffic may be lost or corrupted.

Electrostatic alert:

Risk of equipment damage

To prevent damage from electrostatic discharge, always wear an antistatic wrist strap connected to an ESD jack.

Procedure steps

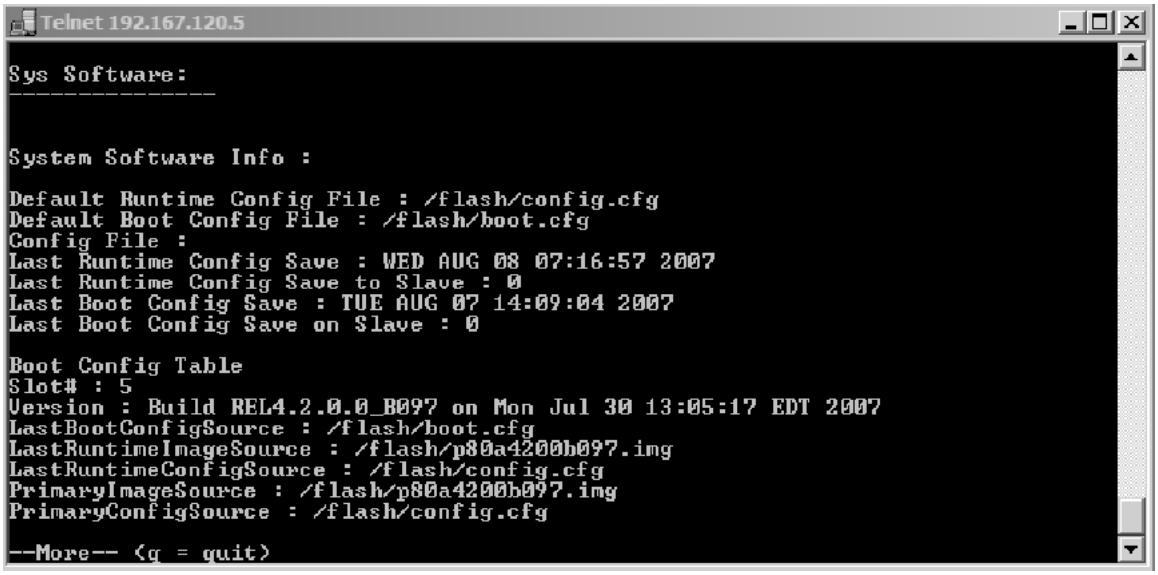
1. Connect to the Master SF/CPU using either Telnet or the console port.

   If you use a Telnet session, be aware that it will be disconnected when the Master fails over unless you use the Virtual Management IP address.

2. Determine which slot (5 or 6) contains the Master. On the switch, the Master LED of the Secondary CPU is unlit. Or, you can enter the following command:

   ```
   show tech
   ```

   In the Sys Software, BootConfig Table section, the slot number is indicated.



3. Ensure that both SF/CPUs have the same configuration. To do so, enter:

   ```
   save config standby <filename>
   ```

   ```
   save bootconfig standby <filename>
   ```

4. Perform the switchover:

   ```
   config sys set action cpuswitchover
   ```

5. Wait for the switchover to complete (about 30 seconds). When it is complete, a logon prompt appears on the console session. On the old Secondary SF/CPU module, the Master LED lights.

   If you were connected by Telnet to the old Master, now logon to the new Master.

6. After the old Secondary becomes the Master, disable the SF/CPU that you are removing.

   ```
   config slot <slotnum> state disable
   ```

   Important:

   The disable command does not disable the CPU, but disables only the switch fabric portion of the SF/CPU module. The LEDs on the front panel do not indicate a state change for the module; the CPU remains active. The only indication of a change is when the console displays a message stating that the module is safe to pull out.

7. Remove the SF/CPU module.
8. Insert the new SF/CPU module.

   The chassis automatically enables the new module.

9. Confirm that the new SF/CPU module is operational:

```
peer telnet

show sys perf
```

As well, the Online LED of the SF/CPU module lights up.

10. Ensure that both SF/CPUs have the same configuration by connecting to the Master and repeating step 3.
11. Confirm that traffic is traversing the switch as normal.

Variable definitions

Use the following table to help you use the commands in this procedure.

Variable	Value
<filename>	Specifies the Secondary destination path and filename in the format /pcmcia/<filename> or /flash/<filename>
<slotnum>	Specifies the slot number of the module to be disabled. SF/CPUs can reside in slots 5 and 6 of the 6 and 10-slot chassis.

Hot swapping the Secondary SF/CPU module in a dual CPU chassis

Use this procedure to hot swap an Ethernet Routing Switch 8800/8600 module that is in a redundant SF/CPU configuration. You can use this procedure when you upgrade switch fabrics, or when you perform a failover with High Availability (HA) mode enabled.

For information about configuring which SF/CPU is the Master, see *Avaya Ethernet Routing Switch 8600 Administration,* (NN46205-605).

Caution:

Risk of traffic loss or corruption

Do not hot swap or insert modules in a switch while the switch boots. If you do, the switch may not recognize the module, which causes module initialization failure.

Electrostatic alert:

Risk of equipment damage

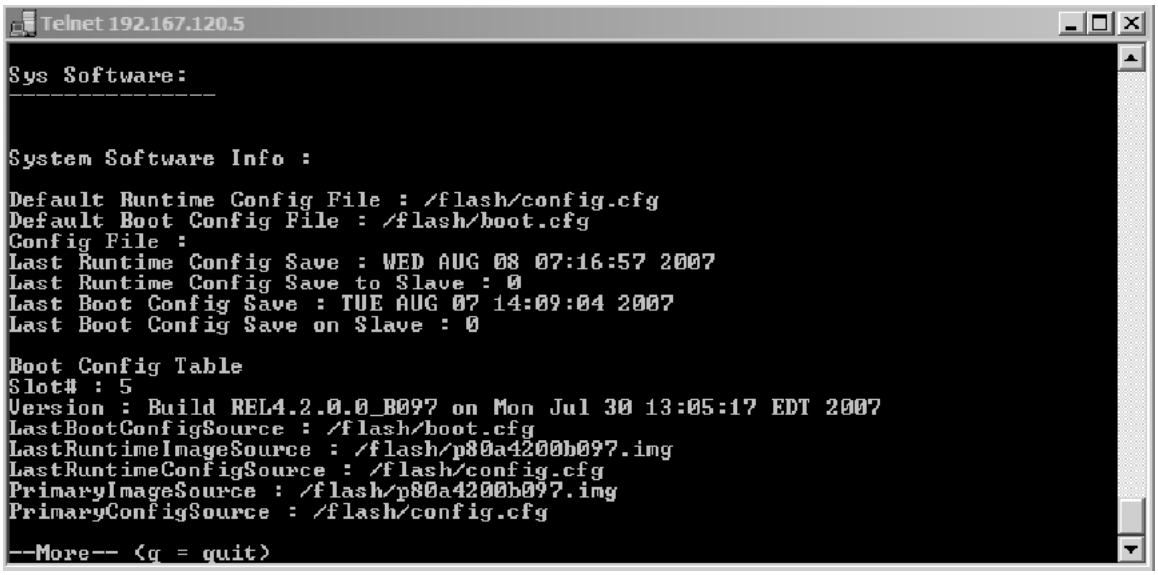
To prevent damage from electrostatic discharge, always wear an antistatic wrist strap connected to an ESD jack.

Procedure steps

1. Connect to the Master SF/CPU.
2. Determine which slot (5 or 6) contains the Master. On the switch, the Master LED of the Secondary CPU is unlit. Or, you can enter the following command:

   ```
   show tech
   ```

   In the Sys Software, BootConfig Table section, the slot number is indicated.



3. Disable the Secondary SF/CPU.

   ```
   config slot <slotnum> state disable
   ```

   Important:

   The disable command does not disable the CPU, but disables only the switch fabric portion of the module. The LEDs on the front panel do not indicate a state change for the module; the CPU remains active. The only indication of a change is when the console displays a message stating that the module is safe to pull out.

4. Remove the SF/CPU module.
5. Insert the new SF/CPU module.

   The chassis automatically enables the new module.

6. Confirm that the new SF/CPU module is operational:

   ```
   peer telnet
   ```

```
show sys perf
```

As well, the Online LED of the SF/CPU module lights up.

7. Ensure that both SF/CPUs have the same configuration by connecting to the Master and issuing the following commands:

   ```
   save config standby <filename>
   ```

   ```
   save bootconfig standby <filename>
   ```

8. Confirm that traffic is traversing the switch as normal.

Variable definitions

Use the following table to help you use the commands in this procedure.

Variable	Value
`<filename>`	Specifies the secondary destination path and filename in the format /pcmcia/<filename> or /flash/<filename>
`<slotnum>`	Specifies the slot number of the module to be disabled. SF/CPUs can reside in slots 5 and 6 in the six and ten-slot chassis.

Hot swapping an I/O module

Use this procedure to hot swap an Ethernet Routing Switch 8800/8600 I/O module. You can use this procedure when you upgrade to the latest modules.

Caution:
Risk of traffic loss or corruption

Do not hot swap or insert modules in a switch while the switch boots. If you do, the switch may not recognize the module, which causes module initialization failure.

Electrostatic alert:
Risk of equipment damage

To prevent damage from electrostatic discharge, always wear an antistatic wrist strap connected to an ESD jack.

Procedure steps

1. Connect to the Master SF/CPU.
2. To reduce the chance of packet loss, Avaya recommends that you disable the module prior to removal, although this is not a strict requirement:

   ```
   config slot <slotnum> state disable
   ```

3. If you disabled the module, confirm that the module is disabled.

   The Online LED of the module is amber when the module is disabled. You can also verify that the module is disabled by using the following command:

   ```
   show tech
   ```

4. Remove the module.
5. Insert the new module.

   The chassis automatically enables the new module.

6. Confirm that the new module is operational:

   ```
   show tech
   ```

   As well, the Online LED of the module lights up.

7. Confirm that traffic is traversing the module as normal.

Variable definitions

Use the following table to help you use the commands in this procedure.

Variable	Value
<slotnum>	Specifies the slot number of the module to be disabled.

Reformatting the 8692 SF/CPU flash memory to 64 MB for a single SF/CPU system

Use this procedure to increase the size of the SF/CPU flash memory to 64 Mbytes (MB), which may be required for a switch upgrade.

This procedure uses a PCMCIA card to back up files. You do not have to use this; you can use any accessible storage device except for the internal flash memory. See File storage options on page 36.

For information about flash memory size and release support, see Table 1: Release support for flash memory on page 35.

Important:

If you reformat the flash from 16 MB to 64 MB and then use the **dir** command to check if the reformat was successful, you may see error messages of the following form:

0x42cc8a0 (tShell): dosFsLib.c : Malformed boot sector. Offset 32, value 0.

If this problem occurs, reformat the flash again and reissue the **dir** command. The command output should indicate that 64 MBytes of flash memory is now accessible.

This problem does not occur for reformats from 16 to 40 or 40 to 64 MB.

Prerequisites

- A boot monitor image file (p80b7100.img for 8692 SF/CPU or p80be7100.img for 8895 SF/CPU) from 7.1 must be running on the switch.
- Before you format the flash memory, back up all the existing files.

Procedure steps

1. Log on to the switch.
2. Save the configuration files:

   ```
   save config

   save bootconfig
   ```

3. Back up all necessary files to the PCMCIA card. See Job aid: files present on SF/CPU modules on page 114.

   For instructions about copying files, see Copying files on page 106.

4. To ensure that the files are successfully copied to the PCMCIA card, use the **dir** command.
5. Format the flash memory:

   ```
   format-flash -y
   ```

Caution:
Risk of data loss

This action erases all flash contents. Any files that must be used later must be copied to another storage location before you reformat the flash memory.

6. Enter the following command:

   ```
   reset -y
   ```

   This step avoids the generation of incorrect error messages.

7. After the flash memory is reformatted, to ensure 64 MB, enter the `dir` command.
8. Copy each of the files you moved in step 3 back to the flash memory. For example:

   ```
   ERS-8610:6# copy /pcmcia/boot.cfg /flash/boot.cfg
   ```

9. To ensure that the switch uses the correct files from the flash memory, enter the following commands:

   ```
   config bootconfig choice primary image-file /flash/
   p80axxxx.img
   ```

   For R, RS, and 8800 modules (repeat for each slot):

   ```
   config bootconfig bootp image-name default <slot-number>
   ```

   If you have SuperMezz:

   ```
   config bootconfig mezz-image image-name /flash/p80mxxxx.img
   ```

   If you did not store these files in flash memory, configure the switch to check a different location. See Configuring boot sources on page 108.

10. Save configuration files:

    ```
    save config
    ```

    ```
    save bootconfig
    ```

11. Hide all hidden password, OSPF, and SNMP files. For example:

    ```
    attrib /flash/shadov.txt "+h"
    ```

12. After the switch resumes normal operations, to ensure proper reformatting and copying, log on and issue the following commands:

    ```
    more boot.cfg
    ```

    ```
    dir
    ```

Reformatting the flash memory to 64 MB for a dual SF/CPU system

Use this procedure to increase the size of the SF/CPU flash memory to 64 Mbytes (MB), which may be required for a switch upgrade.

This procedure uses a PCMCIA card to back up files. You do not have to use this; you can use any accessible storage device except for the flash memory. See File storage options on page 36.

For information about flash memory size and release support, see Table 1: Release support for flash memory on page 35.

Important:

If you reformat the flash from 16 MB to 64 MB and then use the **`dir`** command to check if the reformat was successful, you may see error messages of the following form:

0x42cc8a0 (tShell): dosFsLib.c : Malformed boot sector. Offset 32, value 0.

If this problem occurs, reformat the flash again and reissue the **`dir`** command. The command output should indicate that 64 MBytes of flash memory is now accessible.

This problem does not occur for reformats from 16 to 40 or 40 to 64 MB.

Prerequisites

- A boot monitor image file (p80b7100.img for 8692 SF/CPU or p80be7100.img for 8895 SF/CPU) from 7.1 must be running on the switch.
- Before you format the flash memory, back up all the existing files.

Procedure steps

1. Perform the procedure Reformatting the 8692 SF/CPU flash memory to 64 MB for a single SF/CPU system on page 120 on the Secondary SF/CPU.
2. Repeat the procedure on the Master SF/CPU.

Downgrading flash and PCMCIA memory

Procedure steps

1. Connect to the SF/CPU by using the console port.
2. Copy your files from internal flash memory to the PCMCIA card. See Job aid: files present on SF/CPU modules on page 114.

   For information about how to copy files, see Copying files on page 106.
3. Downgrade the boot monitor with an earlier release of the software.
4. When you see the following message, interrupt the autoboot process by pressing Return:

   ```
   Press <Return> to stop auto-boot.
   ```
5. To format the flash memory, enter the following command:

   ```
   format-flash
   ```

   Caution:
   Risk of data loss

   This action erases all flash contents. Any files that must be used later must be copied to another storage location before you reformat the flash memory.

   At the prompt, enter **y**.
6. To reboot, enter the following command:

   ```
   reset -y
   ```
7. When you see the following message, interrupt the autoboot process by pressing Return:

   ```
   Press <Return> to stop auto-boot.
   ```
8. Copy the new runtime images and configuration files from the PCMCIA card back to the internal flash memory. Alter the boot config image-file entry to match the new runtime image.

   The runtime image release must match the boot monitor image.
9. Enter the following command at the monitor prompt:

```
boot
```

10. Back up all files from the PCMCIA, and then format the PCMCIA using the following CLI command:

    Important:
    This step deletes any files on the PCMCIA device.

    ```
    dos-format /pcmcia
    ```

11. Move the files back to the PCMCIA.

Verifying the MD5 checksums

Use the MD5 checksums to ensure the integrity of the new software files before you use them to upgrade. Corrupted files can cause the upgrade to fail.

For more information about the **md5** command, see MD5 checksums on page 44.

Procedure steps

1. To calculate the message digest for files in internal flash memory or on an external memory card, and to display the output on screen, enter the following command:

   ```
   md5 <filename>
   ```

   For example:

   ```
   md5 *.img
   ```

2. If, for any file, the checksum does not match, retransfer the file and run the **md5** command again.

Variable definitions

Use the data in the following table to help you use the **md5 <filename>** command.

Variable	Value
wildcard character (*)	Calculates the MD5 checksum of all files.
-a	Adds data to the output file instead of overwriting it. You cannot use the -a option with the -c option.

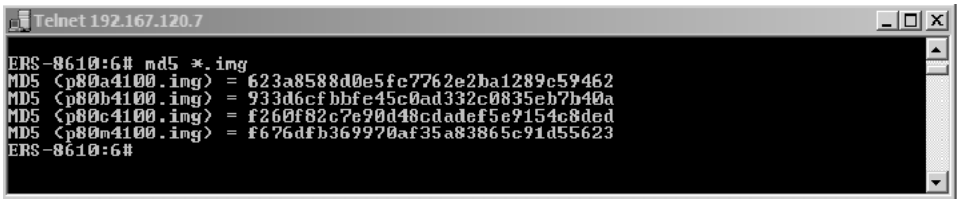
Variable	Value
`-c`	Compares the checksum of the specified file by *<filename>* with the MD5 checksum present in the checksum file name. You can specify the checksum file name using the -f option. When the checksum file name is not specified, the file /flash/checksum.md5 is used for comparison. If the checksum file name and the default file are not available in flash memory, the following error message is displayed: `Error: Checksum file <filename> not present.` The -c option also: • calculates the checksum of files specified by *filename* • compares the checksum with all keys in the checksum file, even if the file names do not match • shows the results of the comparison

`-f <checksum-file-name>`	Stores the result of MD5 checksum to a file in internal flash memory or on an external memory card.
	If the output file specified with the -f option is one of the:
	• reserved file names on the switch, the command fails and the error message is displayed:
	`Error: Invalid operation.`
	• files for which MD5 checksum is to be computed, the command fails and the error message is displayed:
	`Error: Invalid operation on file <filename>`
	If the checksum file name specified by the -f option already exists on the switch (and is not one of the reserved file names), the following message is shown:
	`File exists. Do you wish to overwrite? (y/n)`

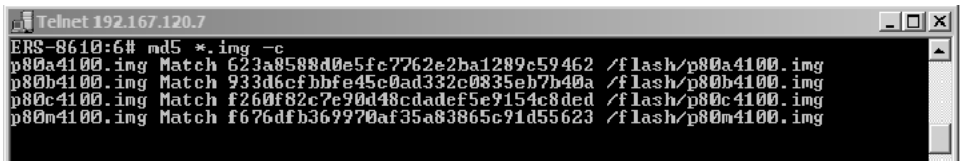
`-r`	Reverses the output and can be used with -f option to store the output to a file. The -r option cannot be used with the -c option.

Example of verifying MD5 checksums

The following are examples of generated output used with **`md5`** command options.



The following figure shows that the MD5 checksums match; the files transferred properly.



Determining the number of chassis MAC addresses

Before you upgrade the number of chassis MAC addresses, ensure that your chassis needs the upgrade.

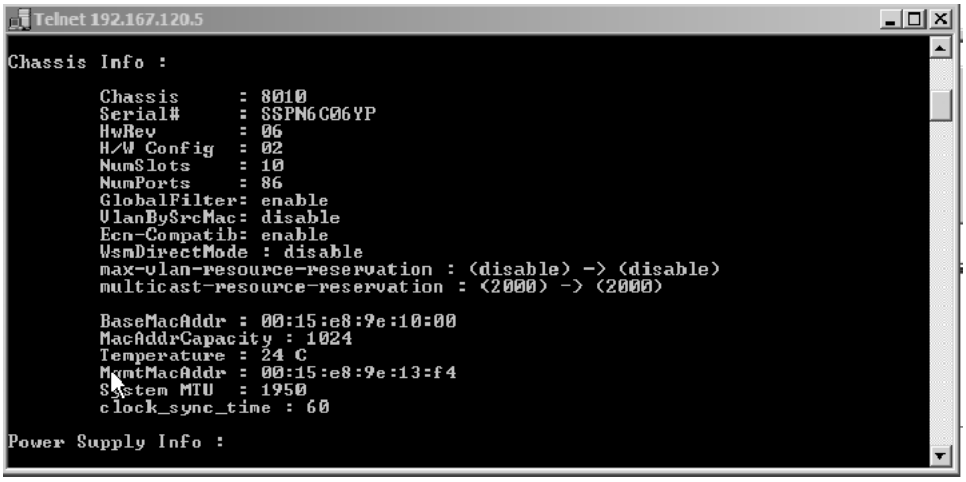
All new chassis come with 4096 MAC address capability.

Procedure steps

1. Access the boot monitor or run-time CLI.
2. Enter the following command:

   ```
   show sys info
   ```

   MAC address support is indicated in the Chassis Info section as MacAddrCapacity.



3. If MacAddrCapacity is not 4096, proceed to upgrade to 4096 MAC addresses.

Upgrading to 4096 MAC addresses

Upgrade the number of MAC addresses so that the switch can use a greater number of IP interfaces (that is, improve routed VLAN scaling). You can use the CLI to upgrade to 4096 MAC addresses. The CLI command used to upgrade the number of MAC addresses is a hidden command; it does not show in response to the `?` command.

The part number for the upgrade kit is DS1411015. This upgrade is supported on the following Ethernet Routing Switch 8000 Series chassis:

- Ethernet Routing Switch 8010co
- Ethernet Routing Switch 8010
- Ethernet Routing Switch 8006
- Ethernet Routing Switch 8003-R

All new chassis come with 4096 MAC address capability.

To prevent overlapping MAC addresses, the new block of 4096 MAC addresses overwrites the old block of 1024 MAC addresses.

Caution:

Risk of data loss

Each Additional MAC Addresses License allows you to upgrade one switch. If you enter the same license code on two switches, both switches will have the same MAC address, which will result in serious networking issues.

Prerequisites

Caution:
Risk of service interruption

Upgrading the chassis to 4096 MAC addresses requires a system reboot. Schedule the upgrade accordingly.

- The chassis does not have 4096 address support (see Determining the number of chassis MAC addresses on page 127
- License code
- Base MAC address of your new block of MAC addresses

Job aid: MAC address kit contents

The MAC address kit contains:

- an Additional MAC Addresses License
- two labels printed with the base MAC address of the new block of MAC Addresses
- documentation

Procedure steps

Caution:
Risk of equipment damage

This upgrade requires a chassis EEPROM reprogram. Do not turn off power or press reset until the upgrade process is complete. Otherwise, the chassis EEPROM may be permanently damaged.

1. Access the boot monitor or runtime CLI.
2. Enter the following command, using the base MAC address and license code provided with your license:

   ```
   config bootconfig upgrade-mac-addr <base-mac-addr>
   <licensecode>
   ```

   The following information appears:

   ```
   Base MAC address: <base-mac-addr>
   License Code: <licensecode>
   Are you sure you want to upgrade the Mac addresses (y/n)?
   ```

3. If the information is correct, enter **y**.

   If you enter **n**, the system returns you to the prompt line.

   After the MAC address upgrade successfully completes, the system displays the following information:

```
You have successfully completed reprogramming the Chassis with 4096 MAC
addresses. Please write down the Chassis Serial number as displayed below
in the upgrade kit sent to you for your records.
Chassis serial number is: (ddddddddd)
Please place the supplied MAC address barcode label on the right side of
the chassis. Please place the second supplied MAC address label (number
only) over the existing label on the front of the chassis.
Need to reboot the switch for the upgraded MAC address kit to take effect.
Do you want to reboot the switch now?
(y/n)
```

4. To reboot, enter **y**

   The system displays the following information:

```
For Dual CPU, SLAVE CPU also needs to be re-booted.
```

   This message appears even if the Secondary SF/CPU is inactive or if you are using a 3-slot chassis.

5. To show the base MAC address, enter:

   ```
   show sys info
   ```

   Ensure that the correct address is shown.

6. Place the MAC address barcode label on the right side of the chassis near the serial and order number labels.

   Place the other label (number only) on the front of the chassis over the existing label.

   Not all chassis already have a label on the front.

Variable definitions

Use the data in the following table to help you use the **config bootconfig upgrade-mac-addr** command to upgrade the number of MAC addresses.

Variable	Value
<base-mac-addr>	Specifies s the base MAC address shown on the Additional MAC Addresses License. Enter this address in the format xx:xx:xx:xx:xx:xx

Variable	Value
<licensecode>	Specifies the license code shown on the Additional MAC Addresses License

Chapter 10: Common procedures using the ACLI

The following sections describe common procedures that you can use for the Avaya Ethernet Routing Switch 8800/8600. You can use these procedures during upgrade or as part of normal system operations.

Navigation

Saving configuration files

Save configuration files in the mode that you want to use. Although you cannot convert configuration files from one mode to another, you can save them in either CLI or ACLI mode.

Prerequisites

Access Privileged EXEC mode.

Procedure steps

1. When in ACLI mode, to save configuration files in ACLI mode, enter:

   ```
   save config
   ```

   ```
   save bootconfig
   ```

2. When in ACLI mode, to save a configuration file in CLI mode, enter:

   ```
   save config mode cli
   ```

   ```
   save bootconfig mode cli
   ```

Copying files

Copy files as part of an upgrade procedure to back up files or to move files to another location.

When you copy files, you can rename the files. Use caution. All procedures in this document use the default file names. Upgrades can be unsuccessful if the wrong file names are used.

Important:
If a failure occurs while you copy a file using TFTP (for example, a TFTP server is not available), the file is deleted.

Prerequisites

Access Privileged EXEC mode.

Procedure steps

1. Use the **copy** command:

   ```
   copy <file> <file>
   ```

   For example:

   ```
   copy /flash/config.cfg /pcmcia/config_backup.cfg
   ```

   The first parameter you specify is where the file resides, and the second parameter is the location for the new file.

2. To copy files using a TFTP server, ensure that the TFTP server is operating and then use the following command:

   ```
   copy <tftp IP address>:<filename> /<location>/
   ```

   For example:

   ```
   copy 111.111.1.11:p80a4100.img /flash/p80a4100.img
   ```

Hiding files

Hide files for security reasons and to keep them safe from accidental deletion.

Prerequisites

Access Privileged EXEC mode.

Procedure steps

To hide files, use the attribute "+h" command. For example, to hide a file located on the internal flash named shadov.txt:

```
attrib /flash/shadov.txt "+h"
```

Enabling FTP and TFTP

Enable FTP and TFTP to use these protocols on the Ethernet Routing Switch 8800/8600. You can use FTP or TFTP servers to store upgrade files. To save a file to a Secondary SF/CPU, enable TFTP on the Secondary SF/CPU. Reboot the switch to enable FTP or TFTP.

Prerequisites

Access Global Configuration mode.

Procedure steps

1. To enable the FTP daemon, enter the following command:

   ```
   boot config flags ftpd
   ```

2. To enable the TFTP daemon, enter the following command:

   ```
   boot config flags tftpd
   ```

3. To save the boot configuration file, enter the following command:

   ```
   save config standby boot.cfg
   ```

4. Reboot the SF/CPU so that the changes take effect, and the protocols are enabled:

   ```
   boot
   ```

Configuring boot sources

If the boot source location or image name is not default, specify its location or name. To specify boot source locations and file names , use the following procedure. You can also use these commands to change the order in which the boot sources (internal flash memory, external memory card, FTP or TFTP server) are accessed. If you move a .dld file from its default location, be sure to specify its new location. For more information about boot sources, see Boot sources on page 37.

Important:
R, RS, and 8800 modules require that the switch loads a .dld image on each module. See DLD file considerations on page 39.

The R module image is p80jxxxx.dld and the RS and 8800 module image is p80kxxxx.dld.

Prerequisites

Access Global Configuration mode.

Procedure steps

1. To change the runtime configuration file locations, use the following command:

   ```
   boot config choice <primary|secondary|tertiary> [config-file
   <WORD 0-255>|backup-config-file <WORD 0-255>|image-file
   <WORD 0-255>]
   ```

   For example, to specify the configuration file in internal flash memory as the primary, use the following command:

   ```
   boot config choice primary config-file /flash/config.cfg
   ```

2. To set the location for the R, RS, or 8800 module driver image for the BootStrap protocol:

   ```
   boot config bootp <Primary|Secondary> <WORD 0-127> <1-10>
   ```

   For example, to specify the R module driver file in internal flash memory, use the following command:

   ```
   boot config bootp Primary /flash/p80j41xx.dld 2
   ```

   Important:
   Avaya recommends that you store .dld files in internal flash memory, and that you always set the image-name to default.

3. To set the boot source location for the SuperMezz image:

   ```
   boot config mezz-image image-name <file>
   ```

   For example:

   ```
   boot config mezz-image image-name /flash/p80m41xx.img
   ```

4. Save the boot.cfg file and reboot the switch.

Variable definitions

Use the data in the following table to help you use the **boot config choice <primary|secondary|tertiary>** command.

Variable	Value
backup-config-file <WORD 0-255>	Identifies the backup boot configuration file; **<WORD 0-255>** is the device and file name, up to 256 characters including the path.
config-file <WORD 0-255>	Identifies the boot configuration file; **<WORD 0-255>** is the device and file name, up to 256 characters including the path.
image-file <WORD 0-255>	Identifies the image file; **<WORD 0-255>** is the device and file name, up to 256 characters including the path.

Use the data in the following table to help you use the **boot config mezz-image** commands.

Variable	Value
image-name <WORD 0-256>	Identifies the image. **<WORD 0-256>** is the device and file name, up to 256 characters including the path.

Use the data in the following table to help you use the **boot config bootp** commands.

Variable	Value
<Primary|Secondary> <WORD 0-127> <1-10>	Identifies the primary or secondary image file for R, RS, and 8800 modules. **<WORD 0-127>** is the device and file name, including the path, of up to 128 characters. **<1-10>** is the slot number. To ensure that the .dld image loaded is the same as the running software image, configure the image-name to default.

Example of configuring primary and secondary sources

This example configures the primary and secondary sources as per Avaya recommendation.

1. Configure the primary configuration file choices:

   ```
   boot config choice primary config-file /flash/<primary config filename.cfg>
   ```

```
boot config choice primary config-file /pcmcia/<primary
config filename.cfg>
```

2. Configure the secondary configuration file choices:

```
boot config choice secondary config-file /flash/<secondary
config filename.cfg>
```

```
boot config choice secondary backup-config-file /pcmcia/
<secondary config filename.cfg>
```

Checking firmware revisions

To determine if an update to the firmware is required, check the current firmware revisions on the slot containing an R, RS, or 8800 module.

Prerequisites

Access Privileged EXEC mode.

Procedure steps

Enter the following command:

```
show sys-info asic
```

```
#
# Asic Info :
# SlotNum|Name    |CardType  |MdaType    |Parts Description
#
# Slot  1   --     0x00000001 0x00000000
# Slot  2 8612XLRS 0x2433410c 0x00000000  PRS:RSP=26 F2I=4 F2E=5 FTMUX=17
CC=33281 FOQ=270 DPC=7 BMC =264 PIM=1024 MAC=303177837 Mirror=304
Loopback=274
# Slot  3   --     0x00000001 0x00000000
# Slot  4 8648GTR  0x24220130 0x00000000  RSP=25 CLUE=2 F2I=1 F2E=1 FTMUX=17
CC=3 FOQ=267 DPC=184 BM C=776 PIM=3 MAC=2
# Slot  5 8895SF   0x200e1100 0x00000000  CPU: BDLB=21 glue=14 SFM: OP=3
TMUX=2 SWIP=23 FAD=16 CF=2
# Slot  6 8895SF   0x200e1100 0x00000000  CPU: BDLB=21 glue=14 SFM: OP=3
TMUX=2 SWIP=23 FAD=16 CF=2
```

If the Dual Port Controller (DPC), BAP Memory Controller (BMC), Port Interface Module (PIM), and Feedback Output Queueing (FOQ) firmware revisions are not equivalent to those specified in the list of required firmware files, a firmware update is required.

For information about required files, see Job aid: required firmware on page 140.

Job aid: required firmware

Use the following information to determine the firmware version required.

Table 7: Firmware release support

Module	FPGA firmware version
R modules with Release 7.1	• PIM for 8630GBR: 769 • FOQ: 267 • BMC: 776 • DPC: 194
RS and 8800 modules with Release 7.1	• PIM for 8612XLRS: 1024 • PIM for 8634XGRS and 8834XG: 1024 • PIM for 8648GBRS and 8848GB: 1024 • PIM for 8648GTRS and 8848GT: 768 • FOQ: 267 • DPC: 7 • BMC: 776 • Mirror: 304 • Loopback: 274

Replacing an SF/CPU module in a single CPU chassis

Replace a single SF/CPU module in a single chassis to replace a faulty SF/CPU or to upgrade the SF/CPU to a newer model.

If the internal flash is not accessible on a faulty SF/CPU, obtain the files from another source, which can be another network device, such as a TFTP or FTP server. Alternatively, the files can be rebuilt using the Customer Spec Book or the configuration from the VRRP peer Ethernet Routing Switch 8800/8600.

Electrostatic alert:

Risk of equipment damage

To prevent damage from electrostatic discharge, always wear an antistatic wrist strap connected to an ESD jack.

Prerequisites

- You can access the Console port and the Ethernet Management port.
- Access Privileged EXEC mode.

Procedure steps

1. Save the configuration files.

   See Saving configuration files on page 134.
2. Place all required files onto the external memory card.

   See Job aid: files present on SF/CPU modules on page 114.
3. Power down the switch to stop all traffic.
4. Disconnect the cables from the Management and Console ports.
5. Remove the old SF/CPU.

   For instructions, see *Avaya Ethernet Routing Switch 8800/8600 Installation — Modules,* (NN46205-304).
6. Insert the new SF/CPU.
7. Reconnect the cables to the Management and Console ports.
8. Replace the external memory card.
9. Connect to the console and open the terminal emulator application.
10. Power up the switch and stop the auto-boot process.

    Before the system loads the runtime image, the following message appears:

    ```
    "Loaded boot configuration from file /flash/boot.cfg Attaching network
    interface lo0... done. Press <Return> to stop autoboot..."
    ```
11. To stop the auto-boot process, on the keyboard, press Enter.
12. Using the Console port, copy all required files from the external memory card to the SF/CPU flash memory.
13. Hide any hidden (.txt) files.

    See Hiding files on page 135.
14. Boot the system with the correct boot monitor:

    `Monitor# boot/flash/p80b7100.img` (for 8692 SF/CPU)

`Monitor# boot/flash/p80be7100.img` (for 8895 SF/CPU)

A message appears stating that the boot flash will be written, and to not interrupt the process. After the system writes the boot flash with the new boot monitor, the system reboots and loads boot.cfg and config.cfg along with the proper runtime software specified within the new configuration. The upgrade is complete.

15. Verify that the image and configuration loaded properly:

    `show sys software`

Job aid: files present on SF/CPU modules

The following hidden files can be present on the SF/CPU flash memory of an Ethernet Routing Switch 8800/8600. The files present on the flash depend on the hardware and software configuration present on the switch. See also New software files on page 41 and the release notes for the most up-to-date file names.

Table 8: Required hidden files

File type	Name
Hidden files	• ospf_md5key.txt • shadov.txt • snmp_usm.txt • snmp_comm.txt • passvord.txt

Hot swapping the Master SF/CPU module in a dual CPU chassis

Use this procedure to hot swap an Ethernet Routing Switch 8800/8600 module that is in a redundant SF/CPU configuration. You can use this procedure when you upgrade switch fabrics, or when you perform a failover with High Availability (HA) mode enabled.

If you use HA-CPU in a dual SF/CPU system, this procedure minimizes packet loss. If the SF/CPU is in Warm Standby mode, packet loss cannot be avoided; however, this procedure minimizes downtime.

For information about configuring which SF/CPU is the Master, see *Avaya Ethernet Routing Switch 8800/8600 Administration,* (NN46205-605).

Caution:

Risk of traffic loss or corruption

When you hot swap the active SF/CPU module in a redundant SF/CPU system, wait until the new Master stabilizes before you insert any other modules. Do not hot swap I/O modules until the new SF/CPU becomes the Master SF/CPU.

If you have only one SF/CPU and you swap the SF/CPU, all the SNMP password files, including the hidden file, are lost. Either reconfigure the trap receivers and community strings each time you change the SF/CPU module, or save these hidden files to an external memory card.

Do not hot swap or insert modules in a switch while the switch boots. If you do, the switch may not recognize the module, which causes module initialization failure.

Switchover causes an interruption to user traffic.

In HA mode, Avaya strongly recommends that you make the Secondary SF/CPU the Master before you remove the old Master SF/CPU. If you remove the Master SF/CPU before you make the Secondary SF/CPU the Master, traffic may be lost or corrupted.

Electrostatic alert:

Risk of equipment damage

To prevent damage from electrostatic discharge, always wear an antistatic wrist strap connected to an ESD jack.

Prerequisites

Access Global Configuration mode.

Procedure steps

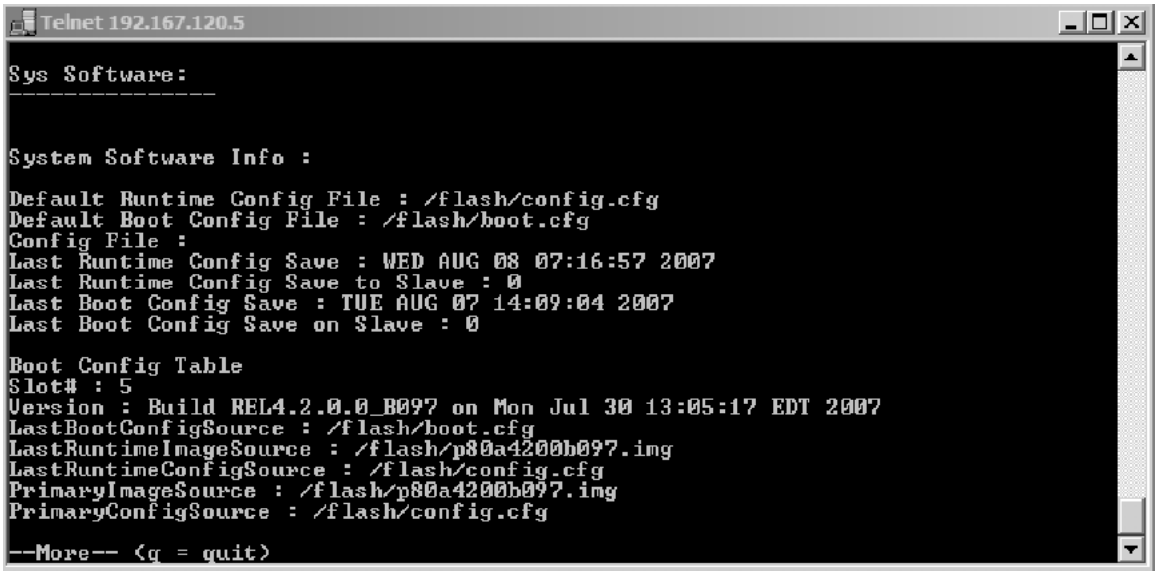
1. Connect to the Master SF/CPU using either Telnet or the console port.

   If you use a Telnet session, be aware that it will be disconnected when the Master fails over unless you use the Virtual Management IP address.

2. Determine which slot (5 or 6) contains the Master. On the switch, the Master LED of the Secondary CPU is unlit. Or, you can enter the following command:

   ```
   show tech
   ```

   In the Sys Software, BootConfig Table section, the slot number is indicated.



3. Ensure that both SF/CPUs have the same configuration. To do so, enter:

   ```
   save config standby <WORD 1-99>
   ```

   ```
   save bootconfig standby <WORD 1-99>
   ```

4. Perform the switchover:

   ```
   sys action cpu-switch-over
   ```

5. Wait for the switchover to complete (about 30 seconds). When it is complete, a logon prompt appears on the console session. On the old Secondary SF/CPU module, the Master LED lights.

   If you were connected by Telnet to the old Master, now logon to the new Master.

6. After the old Secondary becomes the Master, disable the SF/CPU that you are removing. Access Global Configuration mode and then enter the following command:

   ```
   shutdown <1-10>
   ```

   Important:

   The shutdown command does not disable the CPU, but disables only the switch fabric portion of the SF/CPU module. The LEDs on the front panel do not indicate a state change for the module; the CPU remains active. The only indication of a change is when the console displays a message stating that the module is safe to pull out.

7. Remove the SF/CPU module.
8. Insert the new SF/CPU module.

   The chassis automatically enables the new module.

9. Confirm that the new SF/CPU module is operational:

```
peer telnet

show sys performance
```

As well, the Online LED of the SF/CPU module lights up.

10. Ensure that both SF/CPUs have the same configuration by connecting to the Master and repeating Step 3.
11. Confirm that traffic is traversing the switch as normal.

Variable definitions

Use the following table to help you use the commands in this procedure.

Variable	Value
<WORD 1-99>	Specifies the secondary destination path and filename in the format /pcmcia/<filename> or /flash/<filename>
<1-10>	Specifies the slot number of the module to be disabled. SF/CPUs can reside in slots 5 and 6 of the 6 and 10-slot chassis.

Hot swapping the Secondary SF/CPU module in a dual CPU chassis

Use this procedure to hot swap an Ethernet Routing Switch 8800/8600 module that is in a redundant SF/CPU configuration. You can use this procedure when you upgrade switch fabrics, or when you perform a failover with High Availability (HA) mode enabled.

For information about configuring which SF/CPU is the Master, see *Avaya Ethernet Routing Switch 8600 Administration,* (NN46205-605).

Caution:

Risk of traffic loss or corruption

Do not hot swap or insert modules in a switch while the switch boots. If you do, the switch may not recognize the module, which causes module initialization failure.

Electrostatic alert:

Risk of equipment damage

To prevent damage from electrostatic discharge, always wear an antistatic wrist strap connected to an ESD jack.

Prerequisites

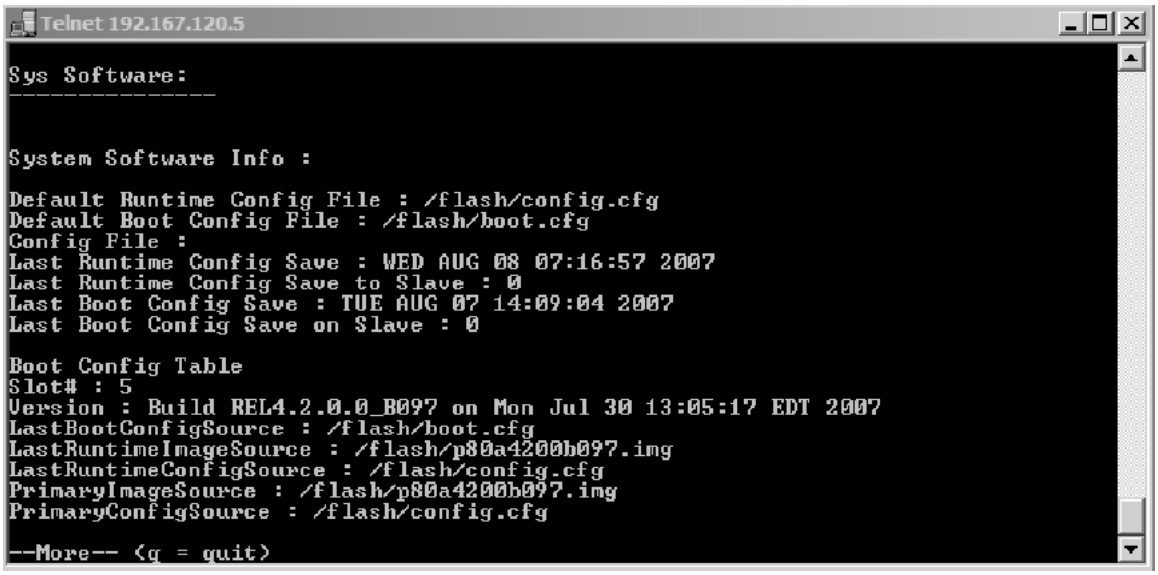
Access Global Configuration mode.

Procedure steps

1. Connect to the Master SF/CPU.
2. Determine which slot (5 or 6) contains the Master. On the switch, the Master LED of the Secondary CPU is unlit. Or, you can enter the following command:

   ```
   show tech
   ```

   In the Sys Software, BootConfig Table section, the slot number is indicated.



3. Disable the Secondary SF/CPU. Enter the following command:

   ```
   shutdown <1-10>
   ```

   Important:

   The disable command does not disable the CPU, but disables only the switch fabric portion of the module. The LEDs on the front panel do not indicate a state change for the module; the CPU remains active. The only indication of a change is when the console displays a message stating that the module is safe to pull out.

4. Remove the SF/CPU module.
5. Insert the new SF/CPU module.

The chassis automatically enables the new module.

6. Confirm that the new SF/CPU module is operational:

   ```
   peer telnet
   show sys performance
   ```

   As well, the Online LED of the SF/CPU module lights up.

7. Ensure that both SF/CPUs have the same configuration by connecting to the Master and issuing the following commands:

   ```
   save config standby <WORD 1-99>
   save bootconfig standby <WORD 1-99>
   ```

8. Confirm that traffic is traversing the switch as normal.

Variable definitions

Use the following table to help you use the commands in this procedure.

Variable	Value
<WORD 0-64>	Specifies the secondary destination path and filename in the format /pcmcia/<filename> or /flash/<filename>
<1-10>	Specifies the slot number of the module to be disabled. SF/CPUs can reside in slots 5 and 6 in the six and ten-slot chassis.

Hot swapping an I/O module

Use this procedure to hot swap an Ethernet Routing Switch 8800/8600 I/O module. You can use this procedure when you upgrade to the latest modules.

Caution:
Risk of traffic loss or corruption

Do not hot swap or insert modules in a switch while the switch boots. If you do, the switch may not recognize the module, which causes module initialization failure.

Electrostatic alert:
Risk of equipment damage

To prevent damage from electrostatic discharge, always wear an antistatic wrist strap connected to an ESD jack.

Prerequisites

Access Global Configuration mode.

Procedure steps

1. Connect to the Master SF/CPU.
2. To reduce the chance of packet loss, Avaya recommends that you disable the module prior to removal, although this is not a strict requirement:

   ```
   shutdown <1-10>
   ```

3. If you disabled the module, confirm that the module is disabled.

   The Online LED of the module is amber when the module is disabled. You can also verify that the module is disabled by using the following command:

   ```
   show tech
   ```

4. Remove the module.
5. Insert the new module.

   The chassis automatically enables the new module.

6. Confirm that the new module is operational:

   ```
   show tech
   ```

   As well, the Online LED of the module lights up.

7. Confirm that traffic is traversing the module as normal.

Variable definitions

Use the following table to help you use the commands in this procedure.

Variable	Value
<1-10>	Specifies the slot number of the module to be disabled.

Reformatting the 8692 SF/CPU flash memory to 64 MB for a single SF/CPU system

Use this procedure to increase the size of the 8692 SF/CPU flash memory to 64 Mbytes (MB), which may be required for a switch upgrade.

This procedure uses a PCMCIA card to back up files. You do not have to use this; you can use any accessible storage device except the internal flash memory. See File storage options on page 36.

Important:

If you reformat the flash from 16 MB to 64 MB and then use the **dir** command to check if the reformat was successful, you may see error messages of the following form:

0x42cc8a0 (tShell): dosFsLib.c : Malformed boot sector. Offset 32, value 0.

If this problem occurs, reformat the flash again and reissue the **dir** command. The command output should indicate that 64 MBytes of flash memory is now accessible.

This problem does not occur for reformats from 16 to 40 or 40 to 64 MB.

For information about flash memory size and release support, see Table 1: Release support for flash memory on page 35.

Prerequisites

- A boot monitor image file (p80b7100.img for 8692 SF/CPU or p80be7100.img for 8895 SF/CPU) from 7.1 must be running on the switch.
- Before you format the flash memory, back up all the existing files. This procedure lists important files to back up, but if you have additional important files in flash memory, back them up as well.
- Enter Global Configuration mode.

Procedure steps

1. Save the configuration files:

```
save config
```

```
save bootconfig
```

2. Back up the necessary files to the PCMCIA card. See Job aid: files present on SF/CPU modules on page 142.

   For instructions about copying files, see Copying files on page 134.

3. To ensure that the files are successfully copied to the PCMCIA card, use the **dir** command.
4. Format the flash memory:

   ```
   format-flash
   ```

5. Enter the following command:

   ```
   reset
   ```

   This step avoids the generation of incorrect error messages.

6. After the flash memory is reformatted, to ensure 64 MB, enter the **dir** command.
7. Copy each of the files you moved in step 3 back to the flash memory. For example:

   ```
   copy /pcmcia/boot.cfg /flash/boot.cfg
   ```

8. To ensure that the switch uses the correct files from the flash memory, enter the following commands:

   ```
   boot config choice primary image-file default
   ```

   For R, RS, and 8800 modules (repeat for each slot):

   ```
   boot config bootp <Primary|Secondary> default <1-10>
   ```

   For SuperMezz:

   ```
   boot config mezz-image image-name /flash/p80mxxxx.img
   ```

   If you did not store these files in flash memory, configure the switch to check a different location. See Configuring boot sources on page 136.

9. Save configuration files:

   ```
   save config
   ```

   ```
   save bootconfig
   ```

10. Hide all hidden password, OSPF, and SNMP files. For example:

    ```
    attrib /flash/shadov.txt "+h"
    ```

11. Reset the switch:

    ```
    reset -y
    ```

This step causes an interruption in normal switch operations.

12. After the switch resumes normal operations, to ensure proper reformatting and copying, log on and issue the following command:

```
show tech
```

Reformatting the flash memory to 64 MB for a dual SF/CPU system

Use this procedure to increase the size of the SF/CPU flash memory to 64 Mbytes (MB), which may be required for a switch upgrade.

This procedure uses a PCMCIA card to back up files. You do not have to use this; you can use any accessible storage device except the flash memory. See File storage options on page 36.

Important:

If you reformat the flash from 16 MB to 64 MB and then use the **dir** command to check if the reformat was successful, you may see error messages of the following form:

0x42cc8a0 (tShell): dosFsLib.c : Malformed boot sector. Offset 32, value 0.

If this problem occurs, reformat the flash again and reissue the **dir** command. The command output should indicate that 64 MBytes of flash memory is now accessible.

This problem does not occur for reformats from 16 to 40 or 40 to 64 MB.

For information about flash memory size and release support, see Table 1: Release support for flash memory on page 35.

Prerequisites

- A boot monitor image file (p80b7100.img for 8692 SF/CPU or p80be7100.img for 8895 SF/CPU) from 7.1 must be running on the switch.
- Before you format the flash memory, back up all the existing files. This procedure lists important files to back up, but if you have additional important files in flash memory, back them up as well.

Procedure steps

1. Perform the procedure Reformatting the 8692 SF/CPU flash memory to 64 MB for a single SF/CPU system on page 149 for the Secondary SF/CPU.
2. Repeat the procedure for the Master SF/CPU.

Downgrading flash and PCMCIA memory

Prerequisites

Access Global Configuration mode.

Procedure steps

1. Connect to the SF/CPU by using the console port.
2. Copy your files from internal flash memory to the PCMCIA card. See Job aid: files present on SF/CPU modules on page 142.

   For information about how to copy files, see Copying files on page 106.
3. Downgrade the boot monitor with an earlier release of the software.
4. When you see the following message, interrupt the autoboot process by pressing Return:

   ```
   Press <Return> to stop auto-boot.
   ```
5. To format the flash memory, enter the following command:

   ```
   format-flash
   ```

   At the prompt, enter **y**.
6. To reboot, enter the following command:

   ```
   reset -y
   ```

7. When you see the following message, interrupt the autoboot process by pressing Return:

   ```
   Press <Return> to stop auto-boot.
   ```

8. Copy the new runtime images and configuration files from the PCMCIA card back to the internal flash memory. Alter the boot config image-file entry to match the new runtime image.

   The runtime image release must match the boot monitor image.

9. Enter the following command at the monitor prompt:

   ```
   boot
   ```

10. Back up all files from the PCMCIA, and then format the PCMCIA using the following ACLI command:

    Important:
    This step deletes any files on the PCMCIA device.

    ```
    dos-format /pcmcia
    ```

11. Move the files back to the PCMCIA.

Verifying the MD5 checksums

Use the MD5 checksums to ensure the integrity of the new software files before you use them to upgrade. Corrupted files can cause the upgrade to fail.

For more information about the **md5** command, see MD5 checksums on page 44.

Prerequisites

Access Global Configuration mode.

Procedure steps

1. To calculate the message digest for files in internal flash memory or on an external memory card, and to display the output on screen, enter the following command:

   ```
   md5 <filename>
   ```

   For example: `md5 *.img`

It takes some time to compute the message digest.

2. If, for any file, the checksum does not match, retransfer the file and run the **md5** command again.

Variable definitions

Use the data in the following table to help you use the **md5 <filename>** command.

Variable	Value
wildcard character (*)	Calculates the MD5 checksum of all files.
-a	Adds data to the output file instead of overwriting it. You cannot use the -a option with the -c option.
-c	Compares the checksum of the specified file by *<filename>* with the MD5 checksum present in the checksum file name. You can specify the checksum file name using the -f option. When the checksum file name is not specified, the file /flash/checksum.md5 is used for comparison. If the checksum file name and the default file are not available in internal flash memory, the following error message is displayed: `Error: Checksum file <filename> not present.` The -c option also: • calculates the checksum of files specified by *filename* • compares the checksum with all keys in the checksum file, even if the file names do not match • shows the results of the comparison

-f <checksum-file-name>	Stores the result of MD5 checksum to a file in internal flash memory or on a external memory card.
	If the output file specified with the -f option is one of the:
	• reserved file names on the switch, the command fails and the error message is displayed:
	`Error: Invalid operation.`
	• files for which MD5 checksum is to be computed, the command fails and the error message is displayed:
	`Error: Invalid operation on file <filename>`
	If the checksum file name specified by the -f option already exists on the switch (and is not one of the reserved file names), the following message is shown:

Variable	Value
	`File exists. Do you wish to overwrite? (y/n)`
`-r`	Reverses the output and can be used with -f option to store the output to a file. The -r option cannot be used with the -c option.

Determining the number of chassis MAC addresses

Before you upgrade the number of chassis MAC addresses, ensure that your chassis needs the upgrade.

All new chassis come with 4096 MAC address capability.

Prerequisites

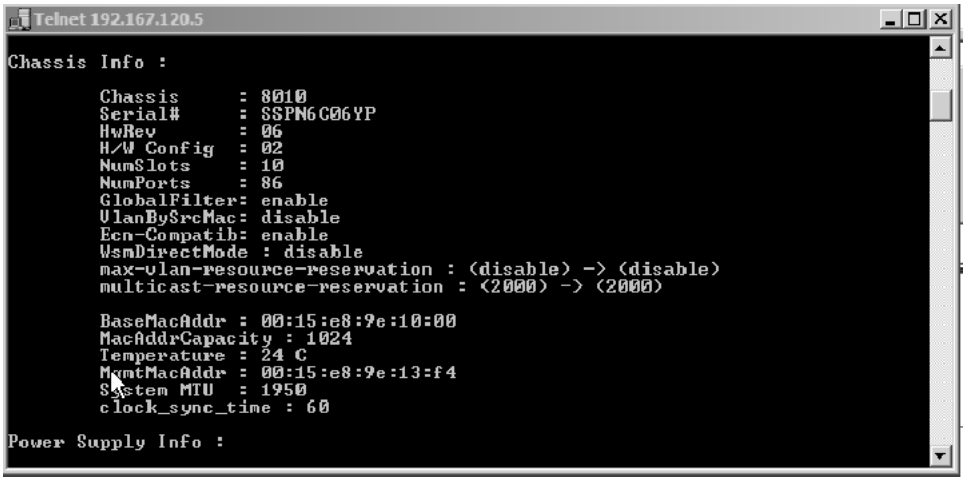
Access Privileged EXEC mode.

Procedure steps

1. Enter the following command:

   ```
   show sys-info
   ```

   MAC address support is indicated in the Chassis Info section as MacAddrCapacity.



2. If MacAddrCapacity is not 4096, proceed to upgrade to 4096 MAC addresses.

Upgrading to 4096 MAC addresses

Upgrade the number of MAC addresses so that the switch can use a greater number of IP interfaces (that is, improve routed VLAN scaling). You can use the ACLI to install the new block of MAC addresses. The ACLI command used to upgrade the number of MAC addresses is a hidden command; it does not show in response to the `?` command.

This upgrade is supported on the following Ethernet Routing Switch 8000 Series chassis:

- Ethernet Routing Switch 8010co
- Ethernet Routing Switch 8010
- Ethernet Routing Switch 8006
- Ethernet Routing Switch 8003-R

All new chassis come with 4096 MAC address capability.

To prevent overlapping MAC addresses, the new block of 4096 MAC addresses overwrites the old block of 1024 MAC addresses.

The upgrade kit part number is DS1411015. For information about the upgrade kit, see Job aid: MAC address kit contents on page 129.

Caution:

Risk of data loss

Each Additional MAC Addresses License allows you to upgrade one switch. If you enter the same license code on two switches, both switches will have the same MAC address, which results in serious networking issues.

Prerequisites

Caution:
Risk of service interruption

Upgrading the chassis to 4096 MAC addresses requires a system reboot. Schedule the upgrade accordingly.

- The chassis does not have 4096 address support (see Determining the number of chassis MAC addresses on page 155)
- License code
- Base MAC address of your new block of MAC addresses
- Access Global Configuration mode.

Procedure steps

Caution:
Risk of equipment damage

This upgrade requires a chassis EEPROM reprogram. Do not turn off power or press reset until the upgrade process is complete. Otherwise, the chassis may be permanently damaged.

1. At the prompt, enter:

   ```
   boot config upgrade-mac-addr <base-mac-addr> <licensecode>
   ```

   The following information appears:

   ```
   Base MAC address: <base-mac-addr>
   License Code: <licensecode>
   Are you sure you want to upgrade the Mac addresses (y/n)?
   ```

2. Enter **y**.

   If you enter **n**, the system returns you to the prompt line.

   After the MAC address upgrade successfully completes, the system displays the following information:

   ```
   You have successfully completed reprogramming the Chassis with 4096 MAC
   addresses. Please write down the Chassis Serial number as displayed below
   in the upgrade kit sent to you for your records.
   Chassis serial number is: (ddddddddd) Please place the supplied MAC
   address barcode label on the right side of the chassis. Please place the
   second supplied MAC address label (number only) over the existing label on
   the front of the chassis.
   ```

```
Need to reboot the switch for the upgraded MAC address kit to take effect.
Do you want to reboot the switch now? (y/n)
```

3. To reboot the switch, enter **y**.

   The system displays the following information:

   ```
   For Dual CPU, SLAVE CPU also needs to be re-booted.
   ```

   This message appears even if the Secondary SF/CPU is inactive or if you are working on a 3-slot chassis.

4. To show the base MAC address, enter:

   ```
   show sys-info
   ```

   or

   ```
   show tech
   ```

   Ensure that the correct address is shown.

5. Place the MAC address barcode label on the right side of the chassis near the serial and order number labels.

   Place the other label (number only) on the front of the chassis over the existing label.

   Not all chassis already have a label on the front.

Variable definitions

Use the data in the following table to help you use the **boot config upgrade-mac-addr** command to upgrade to 4096 MAC addresses.

Variable	Value
<base-mac-addr>	Specifies the base MAC address shown on the Additional MAC Addresses License. Enter this address in the format xx:xx:xx:xx:xx:xx
<licensecode>	Specifies the license code shown on the Additional MAC Addresses License

Appendix A: Supported migration matrix

Migration matrix

Table 9: Migration Matrix (7.1 only)

Base Config		Target Config		Migration Supported	Notes
CPU	I/O	CPU	I/O		
8691	E/M	8692/ noM	E/M	Not supported	Target config is not supported in 7.1
8691	E/M	8692/ noM	R/RS	Not supported	Target config is not supported in 7.1
8691	E/M	8692/M	E/M	Not supported	Target config is not supported in 7.1
8691	E/M	8692/M	R/RS	Reconfigure from scratch	The only way such a migration can happen is by reconfiguring the system from scratch. Same media legacy modules to R modules replacement is possible but the pre-existing configuration is not supported.
8691	E/M	8895	E/M	Not supported	Target config is not supported in 7.1
8691	E/M	8895	R/RS	Reconfigure from scratch	The only way such a migration can happen is by reconfiguring the system from scratch. Same media legacy modules to R modules replacement is possible but the pre-existing configuration is not supported.
8691	R/RS	8692/ noM	E/M	Not supported	Base config is not supported in any release
8691	R/RS	8692/ noM	R/RS	Not supported	Base config is not supported in any release
8691	R/RS	8692/M	E/M	Not supported	Base config is not supported in any release

Base Config		Target Config		Migration Supported	Notes
CPU	I/O	CPU	I/O		
8691	R/RS	8692/M	R/RS	Not supported	Base config is not supported in any release.
8691	R/RS	8895	E/M	Not supported	Base config is not supported in any release
8691	R/RS	8895	R/RS	Not supported	Base config is not supported in any release
8692/ noM	E/M	8692/ noM	E/M	Not supported	Target config is not supported in 7.1
8692/ noM	E/M	8692/ noM	R/RS	Not supported	Target config is not supported in 7.1
8692/ noM	E/M	8692/M	E/M	Not supported	Target config is not supported in 7.1
8692/ noM	E/M	8692/M	R/RS	Reconfigure from scratch	The only way such a migration can happen is by reconfiguring the system from scratch. Same media legacy modules to R modules replacement is possible but the pre-existing configuration is not supported.
8692/ noM	E/M	8895	E/M	Not supported	Target config is not supported in 7.0
8692/ noM	E/M	8895	R/RS	Reconfigure from scratch	The only way such a migration can happen is by reconfiguring the system from scratch. Same media legacy modules to R modules replacement is possible but the pre-existing configuration is not supported.
8692/ noM	E/M/R/ RS	8692/ noM	E/M	Not supported	Target config is not supported in 7.1
8692/ noM	E/M/R/ RS	8692/ noM	R/RS	Not supported	Target config is not supported in 7.1
8692/ noM	E/M/R/ RS	8692/M	E/M	Not supported	Target config is not supported in 7.1
8692/ noM	E/M/R/ RS	8692/M	R/RS	Supported	1. Load software that is supported for 7.1. 2. Swap the redundant CPU with 8692/M 3. Switchover to the redundant CPU 4. Swap new redundant CPU (Previously master) to

Base Config		Target Config		Migration Supported	Notes
CPU	I/O	CPU	I/O		
					8692/M 5. Replace E/M modules with appropriate R/RS modules and perform configuration 6. Verify configuration 7. Upgrade to 7.1
8692/ noM	E/M/R/ RS	8895	E/M	Not supported	Target config is not supported in 7.1
8692/ noM	E/M/R/ RS	8895	R/RS	Supported	1. Load software that is supported for 7.1. 2. Replace E/ M modules with appropriate R/ RS modules and perform configuration 3. Verify configuration and copy file to external media such as compact flash (an intermediate step will be required) or tftp server. 4. Power down chassis and replace 8692/noM with 8895. 5. Boot 8895 with 7.1 image with configuration from compact flash or tftp server.
8692/ noM	R/RS	8692/ noM	E/M	Not supported	Target config is not supported in 7.1
8692/ noM	R/RS	8692/ noM	R/RS	Not supported	Target config is not supported in 7.1
8692/ noM	R/RS	8692/M	E/M	Not supported	Target config is not supported in 7.1
8692/ noM	R/RS	8692/M	R/RS	Supported	1. Load software that is supported for 7.1. 2. Swap the redundant CPU with 8692/M (OR) remove the redundant CPU, install supermezz, and reinsert in the same slot. 3. Switchover to the redundant CPU 4. Swap new redundant CPU (Previously master) to 8692/M (OR) remove the redundant CPU, install supermezz, and reinsert in the same slot. 5. Upgrade to 7.1
8692/ noM	R/RS	8895	E/M	Supported	1. Verify configuration and copy to external media such as flash (an intermediate step will be required) or tftp server. 2.

Base Config		Target Config		Migration Supported	Notes
CPU	I/O	CPU	I/O		
					Power down the chassis 3. Remove 8692/noM and replace it with 8895 CPU 4. Power up the chassis while ensuring that the config is loaded from external media such as compact flash or tftp server. 5. Review warning messages, verify configuration, save config, and create a copy.
8692/ noM	R/RS	8895	R/RS	Supported	1. Load software that is supported for 7.1. 2. Verify configuration and copy file to external media such as compact flash (an intermediate step will be required) or tftp server. 3. Power down chassis and replace 8692/noM with 8895 4. Boot 8895 with 7.1 image with configuration from compact flash or tftp server.
8692/M	E/M	8692/ noM	E/M	Not supported	Target config is not supported in 7.1
8692/M	E/M	8692/ noM	R/RS	Not supported	Target config is not supported in 7.1
8692/M	E/M	8692/M	E/M	Not supported	Target config is not supported in 7.1
8692/M	E/M	8692/M	R/RS	Reconfigure from scratch	The only way such a migration can happen is by reconfiguring the system from scratch. Same media legacy modules to R modules replacement is possible but pre-existing configuration is not supported.
8692/M	E/M	8895	E/M	Not supported	Target config is not supported in 7.1
8692/M	E/M	8895	R/RS	Reconfigure from scratch	The only way such a migration can happen is by reconfiguring the system from scratch. Same media legacy modules to R modules replacement is possible but pre-existing configuration is not supported.

Base Config		Target Config		Migration Supported	Notes
CPU	I/O	CPU	I/O		
8692/M	E/M/R/RS	8692/noM	E/M	Not supported	Target config is not supported in 7.1
8692/M	E/M/R/RS	8692/noM	R/RS	Not supported	Target config is not supported in 7.1
8692/M	E/M/R/RS	8692/M	E/M	Not supported	Target config is not supported in 7.1
8692/M	E/M/R/RS	8692/M	R/RS	Supported	1. Load software that is supported for 7.1. 2. Replace E/M modules with appropriate R/RS modules and perform configuration 3. Verify configuration 4. Upgrade to 7.1
8692/M	E/M/R/RS	8895	E/M	Not supported	Target config is not supported in 7.1
8692/M	E/M/R/RS	8895	R/RS	Supported	1. Load software that is supported for 7.1. 2. Replace E/M modules with appropriate R/RS modules and perform configuration 3. Verify configuration and copy file to external media such as compact flash (an intermediate step will be required) or tftp server. 4. Upgrade the system to 7.1 software and verify config. 5. Insert 8895 in redundant CPU slot. 6. Save the running config on the redundant CPU. 7. Switchover to the redundant CPU so it becomes master and verify config. 8. Replace the new redundant CPU with 8895 9. Save the running config on the redundant CPU.
8692/M	R/RS	8692/noM	E/M	Not supported	Target config is not supported in 7.1
8692/M	R/RS	8692/noM	R/RS	Not supported	Target config is not supported in 7.1
8692/M	R/RS	8692/M	E/M	Not supported	Target config is not supported in 7.1
8692/M	R/RS	8692/M	R/RS	Supported	1. Load software that is supported for 7.1. 2. Copy 7.1

Base Config		Target Config		Migration Supported	Notes
CPU	I/O	CPU	I/O		
					software to the master flash as well as redundant CPU flash 3. Make changes to the bootconfig to point to the new software files. 4. Save config and bootconfig on master as well as redundant CPU and verify configs on both. Make sure savetostandby flag is set to true. 5. Upgrade redundant CPU to 7.1 image 6. Upgrade master CPU to 7.1. This will causes a switchover to redundant CPU, which will now become master.
8692/M	R/RS	8895	E/M	Not supported	Target config is not supported in 7.1
8692/M	R/RS	8895	R/RS	Supported	1. Load software that is supported for 7.1. 2. Copy configuration file to external media such as compact flash (an intermediate step will be required) or tftp server. 3. Upgrade the system to 7.1 software and verify config. 4. Insert 8895 in redundant CPU slot. 5. Save the running config on the redundant CPU. 6. Switchover to the redundant CPU so it becomes master and verify config. 7. Replace the new redundant CPU with 8895 8. Save the running config on the redundant CPU.
8895	E/M	Any	Any	Not supported	Base config is not supported in 7.1
8895	E/M/R/RS	Any	Any	Not supported	Base config is not supported in 7.1
8895	R/RS	8692/noM	E/M	Not supported	Target config is not supported in 7.1
8895	R/RS	8692/noM	R/RS	Not supported	Target config is not supported in 7.1

Base Config		Target Config		Migration Supported	Notes
CPU	I/O	CPU	I/O		
8895	R/RS	8692/M	E/M	Not supported	Target config is not supported in 7.1
8895	R/RS	8692/M	R/RS	Supported	1. Load software that is supported for 7.1 upgrade . 2. Copy configuration file to external media such as compact flash (an intermediate step will be required) or tftp server. 3. Upgrade the system to 7.1 software and verify config. 4. Insert 8692/M in redundant CPU slot. 5. Save the running config on the redundant CPU. 6. Switchover to the redundant CPU so it becomes master and verify config. 7. Replace the new redundant CPU with 8692/M 8. Save the running config on the redundant CPU.
8895	R/RS	8895	E/M	Not supported	Target config is not supported in 7.1
8895	R/RS	8895	R/RS	No Action	No action required

Appendix B: Translations of Safety Messages

This section contains translations of caution, warning, and danger messages that appear in this document.

Electromagnetic interference caution statement

Caution:

This device is a Class A product. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users are required to take appropriate measures necessary to correct the interference at their own expense.

Caution:

ATTENTION

Le périphérique est un produit de Classe A. Le fonctionnement de cet équipement dans une zone résidentielle risque de causer des interférences nuisibles, auquel cas l'utilisateur devra y remédier à ses propres frais.

Caution:

ACHTUNG

Dies ist ein Gerät der Klasse A. Bei Einsatz des Geräts in Wohngebieten kann es Störungen des Radio- und Fernsehempfangs verursachen. In diesem Fall muss der Benutzer alle notwendigen Maßnahmen ergreifen, die möglicherweise nötig sind, um die Störungen auf eigene Rechnung zu beheben.

Caution:

PRECAUCIÓN

Este es un producto clase A. El uso de este equipo en áreas residenciales puede causar interferencias nocivas, en cuyo caso, se requerirá que los usuarios tomen cualquier medida necesaria para corregir la interferencia por cuenta propia.

Caution:

CUIDADO

Este dispositivo é um produto Classe A. Operar este equipamento em uma área residencial provavelmente causará interferência prejudicial; neste caso, espera-se que os usuários tomem as medidas necessárias para corrigir a interferência por sua própria conta.

Caution:

ATTENZIONE

Questo dispositivo è un prodotto di Classe A. Il funzionamento di questo apparecchio in aree residenziali potrebbe causare interferenze dannose, nel cui caso agli utenti verrà richiesto di adottare tutte le misure necessarie per porre rimedio alle interferenze a proprie spese.

Electrostatic discharge caution statement

This section translates the electrostatic discharge caution message.

Electrostatic alert:

Risk of equipment damage

To prevent damage from electrostatic discharge, always wear an antistatic wrist strap connected to an ESD jack.

Electrostatic alert:

ATTENTION

Risque d'endommagement de l'équipement

To prevent damage from electrostatic discharge, always wear an antistatic wrist strap connected to an ESD jack.

Electrostatic alert:

ACHTUNG

Risiko eines Geräteschadens

Um Schäden durch elektrostatische Entladung zu verhindern, tragen Sie bei der Instandhaltung dieses Produkts immer ein antistatisches Band am Handgelenk, welches mit einer ESD-Buchse verbunden ist.

Electrostatic alert:

PRECAUCIÓN

Riesgo de daño del equipo

Para prevenir el daño producido por una descarga electrostática, use siempre una pulsera antiestática conectada a un enchufe ESD.

Electrostatic alert:

CUIDADO

Risco de danos ao equipamento

Para evitar danos com descarga eletrostática, sempre use uma pulseira antiestática que esteja conectada a uma tomada ESD.

Electrostatic alert:

ATTENZIONE

Rischio di danni all'apparecchiatura

Per evitare danni derivanti da scariche elettrostatiche, indossare sempre un polsino antistatico collegato a una presa ESD.

Appendix C: Customer service

Visit the Avaya Web site to access the complete range of services and support that Avaya provides. Go to www.avaya.com or go to one of the pages listed in the following sections.

Navigation

Getting technical documentation

To download and print selected technical publications and release notes directly from the Internet, go to www.avaya.com/support.

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Ongoing product training is available. For more information or to register, you can access the Web site at www.avaya.com/support. From this Web site, you can locate the Training contacts link on the left-hand navigation pane.

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If you purchased a service contract for your Avaya product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller for assistance.

Getting technical support from the Avaya Web site

The easiest and most effective way to get technical support for Avaya products is from the Avaya Technical Support Web site at www.avaya.com/support.