Hardware Installation Guide



Alteon SSL Accelerator Secure Sockets Layer Offload Device

Part Number: 212941-B, August 2002



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Intelligent Webworking"

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Licensing

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/).

CryptoSwift HSM is a registered trademark of Rainbow Technologies, Inc.

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).

This product includes software written by Tim Hudson (tjh@cryptsoft.com).

For more information on licensing, see the "License Information" appendix in the *Alteon SSL Accelerator* 3.1 User's Guide and Command Reference.



Regulatory Compliance

FCC Class A Notice. The equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: 1) The device may not cause harmful interference, and 2) This equipment must accept any interference received, including interference that may cause undesired operation.

The equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. The equipment generates, uses and can radiate radio-frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. Operation of this equipment in a residential area is likely to cause harmful interference. In such a case, the user will be required to correct the interference at his own experience.

Do not make mechanical or electrical modifications to the equipment.

Industry Canada: This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil Numérique de la classe A respecte toutes les exigences du Règlements sur le matériel brouilleur du Canada.

VCCI Class A Notice: This is a Class A product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may occur. In such a case, the user may be required to take corrective actions.

Japanese VCCI Class A Statement

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。

Taiwan EMC Statement



CE Notice: The CE mark on this equipment indicates that this equipment meets or exceeds the following technical standards: EN50082-1, EN55022, EN60555-2, EN61000-4-1, EN61000-4-2, EN61000-4-3, EN61000-4-4, and EN61000-4-5.



Safety Information

Caution—The management processor module in this product contains a Lithium Battery. Batteries are not customer replaceable parts. They may explode if mishandled. Do not dispose of the battery in fire. Do not disassemble or recharge.

Caution—Nortel Networks Alteon products are designed to work with single-phase power systems having a grounded neutral conductor. To reduce the risk of electric shock, do not plug Nortel Networks Alteon products into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

Caution—Not all power cords have the same ratings. Household extension cords do not have overload protection and are not meant for use with computer systems. Do not use household extension cords with your Nortel Networks Alteon product.

Caution—Your Nortel Networks Alteon product is shipped with a grounding type (three-wire) power cord. To reduce the risk of electric shock, always plug the cord into a grounded power outlet.

Nordic Lithium Battery Cautions

(**Norge**) **ADVARSEL**—Litiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

(Sverige) VARNING—Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

(**Danmark**) **ADVARSEL!** Litiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

(Suomi) VAROITUS—Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.



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Preface

This Hardware Installation Guide describes the features and installation process of the Nortel Networks Alteon SSL Accelerator (ASA) with SSL offload software.

Who Should Use This Book

This Hardware Installation Guide is intended for network installers and system administrators engaged in configuring and maintaining a network. It assumes that you are familiar with Ethernet concepts and IP addressing.



How This Book Is Organized

The chapters in this book are organized as follows:

Chapter 1, "Introducing the Alteon SSL Accelerator" provides an overview of the major features of the ASA hardware platform, including the physical layout.

Chapter 2, "Installing the Alteon SSL Accelerator" describes how to mount the ASA, and how to connect network cables and power cords. It also describes how to connect a terminal to the console port.

Chapter 3, "Connecting to the Alteon SSL Accelerator" provides suggestions for troubleshooting problems starting the ASA after the hardware installation.

Appendix A, "Specifications" describes the physical characteristics for the ASA hardware platform.

Appendix B, "FIPS 140-1 Validation Certificate" displays the Federal Information Processing Standard (FIPS) 140-1 Validation Certificate for the Hardware Security Module (HSM), which is installed in the 410 FIPS.



Typographic Conventions

The following table describes the typographic styles used in this book.

Table 1	Typographic	Conventions
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Typeface or Symbol	Meaning	Example	
AaBbCc123	This type is used for names of commands, files, and directories used within the text.	View the readme.txt file.	
	It also depicts on-screen computer output and prompts.	Main#	
AaBbCc123	This bold type appears in command exam- ples. It shows text that must be typed in exactly as shown.	nand exam- Main# sys typed in	
<aabbcc123></aabbcc123>	This italicized type appears in command examples as a parameter placeholder. Replace the indicated text with the appropriate real name or value when using the command. Do not type the brackets.	To establish a Telnet session, enter: host# telnet <ip address=""></ip>	
	This also shows book titles, special terms, or words to be emphasized.	Read your User's Guide thoroughly.	
[]	Command items shown inside brackets are optional and can be used or excluded as the situation demands. Do not type the brackets.	host# ls [-a]	



How to get Help

If you purchased a service contract for your Nortel Networks product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller for assistance.

If you purchased a Nortel Networks service program, contact one of the following Nortel Networks Technical Solutions Centers:

Technical Solutions Center	Telephone		
Europe, Middle East, and Africa	(33) (4) 92-966-968		
North America	(800) 4NORTEL or (800) 466-7835		
Asia Pacific	(61) (2) 9927-8800		
China	(800) 810-5000		

Additional information about the Nortel Networks Technical Solutions Centers is available from the http://www.nortelnetworks.com/help/contact/global URL.

An Express Routing Code (ERC) is available for many Nortel Networks products and services. When you use an ERC, your call is routed to a technical support person who specializes in supporting that product or service. To locate an ERC for your product or service, go to the http://www.nortelnetworks.com/help/contact/erc/index.html URL.



CHAPTER 1 Introducing the Alteon SSL Accelerator

The Alteon SSL Accelerator (ASA) is a peripheral Secure Socket Layer (SSL) offload platform that attaches to an Alteon Web switch or a comparable switch from another vendor. The ASA performs a TCP three-way handshake with the client through the Web switch and performs all the SSL encryption and decryption for the session. Combined with the load balancing features of the Web switch, the ASA offloads SSL encryption/decryption functions from backend servers.

The ASA is delivered on the following hardware platforms:

- ASA 310
- ASA 410

Optionally, the ASA 310 is delivered with the FIPS compliant Hardware Security Module (HSM):

ASA 310-FIPS

For detailed technical specifications of the hardware platform, see "Specifications" on page 57.



Hardware Feature Summary

ASA 310 models

- ASA 310 Copper NIC and ASA 310-FIPS—Dual integrated, high-speed 10/100/1000 network interface controllers (NICs), which provide an Ethernet interface.
- ASA 310 Fiber NIC—Gigabit fiber-optic port NIC for Gigabit Ethernet, in addition to the dual integrated NICs.
- 1U height, rack-mountable chassis.
- PCI SSL accelerator card(s).
 - □ ASA 310 (Copper NIC or Fiber NIC)—one 600 TPS card.
 - □ ASA 310-FIPS (Copper NIC only)—two HSM (Hardware Security Module) cards.
- Serial port (DTE) at the back panel for system diagnostics and configuration.
- TFTP or FTP download to hard disk for software updates and upgrades.

ASA 410 models

- ASA 410 Copper NIC—Dual integrated, high-speed 10/100/1000 network interface controllers (NICs), which provide an Ethernet interface.
- ASA 410 Fiber NIC—Gigabit fiber-optic port NIC for Gigabit Ethernet, in addition to the dual integrated NICs.
- 1U height, rack-mountable chassis.
- PCI SSL accelerator card(s)—one 2000 TPS card
- Serial port (DTE) at the back panel for system diagnostics and configuration.
- TFTP or FTP download to hard disk for software updates and upgrades.



Physical Description

Front Panel Features and Indicators



Figure 1-1 Front Panel

The following controls and indicators are behind the faceplate on the system's front panel.

Front panel LED indicators

See Table 1-1 on page 14 for LED indicator descriptions.

Power button

Controls the AC power input to the system's power supply.

- Keyboard/mouse connector
- Video connector
- Identification buttons

on the front and back panels can be used to locate a particular system within a rack. When one of these buttons is pushed, the blue system status indicator on the front and back blinks until one of the buttons is pushed again.

The front panel also incorporates a USB connector and a PS/2 connector to connect a mouse and keyboard using a Y-cable (see Figure 1-1).



Table 1-1 describes the Front Panel LED indicators found on the ASA.

LED Indicator (from left to right)	Description
Blue and amber system sta- tus indicator _∕γ⊷	The blue system status indicator lights up during normal system opera- tion. The server management software can also cause the blue system sta- tus indicator to flash to identify a particular system. The amber system status indicator flashes when the system needs atten- tion due to a problem with power supplies, fans, system temperature, or hard drives. Note: If the system is connected to AC power and an error has been detected, the amber system status indicator will flash regardless of whether the system has been powered on.
Hard-disk drive activity indicator	This LED blinks when activity is detected on the hard-disk drive.
NICs 1, 2 indicators $B_1 B_2$	These LEDs are solid green when a link is detected. They flicker off when network activity is detected. Note: If A/C power is connected to the power supply, these LEDs func- tion when the system is off.
System power indicator	This LED is green when the power supply is turned on. There is a dupli- cate system power status indicator on the back panel.

Table 1-1 ASA Front Panel LEDs





Rear Panel Features and Indicators

Figure 1-2 Rear Panel

NOTE – Systems with only one power supply should connect the power cable to connector PS1 (see Figure 1-2).

- AC power receptacle
- PCI expansion slots: see "Expansion slots (empty)" on page 58.
- SCSI port
- Serial port
- Video connector (monitor port)
- Status LEDs (System attention indicator)
 This is a duplicate of the system attention indicator found on the front panel.
- System power status indicator This LED is green when the power supply is turned on. This is a duplicate of the power status indicator found on the front panel.
- Power button
- Universal Serial Bus (USB) ports (2)



- Network Interface Controller (NIC) connectors
 - □ Model ASA 310 and ASA 410 Copper NIC—dual integrated 10/100/1000 NICs
 - Model ASA 310 and ASA 410 Fiber NIC—one Gigabit NIC for fiber-optic Gigabit Ethernet, in addition to the dual integrated 10/100/1000 NICs
 - □ Model ASA 310-FIPS—dual integrated 10/100/1000 NICs.
- Mouse connector
- Keyboard connector

PCI Card LED Status

The cards that are installed in the PCI expansion ports feature a multi-color LED that can indicate the conditions listed in the table below.

Table 1-2 Conditions indicated b	y the PCI Cards Multi-color LED
----------------------------------	---------------------------------

LED Status	Indicated Condition	
Amber	The SSL acceleration card is currently performing cryptographic operations, or the self-test.	
Green	The card has completed the self-test, and is ready for normal operations.	
Red	The card has failed the self-test, or is in an error state. Contact the product support at Nortel Networks for assistance. For more information, see "How to get Help" on page 10.	
Off	The card has no PCI power.	
Flashing Amber (ASA 310-FIPS model only)	The HSM card in the ASA 310-FIPS waits for an iKey to be inserted in the adjoining USB port (native to the card). The Command Line Interface will provide information about which specific iKey is being requested.	



CAUTION—If the HSM LED displays in red, never try to open the ASA 310-FIPS device. Due to the security cover and tamper detection circuit on the HSM card, this might be perceived as a tampering attempt. If a tampering attempt is determined, private key information contained within the HSM will be destroyed. Instead, contact product support at Nortel Networks. See "How to get Help" on page 10 for more information.



CHAPTER 2 Installing the Alteon SSL Accelerator

This chapter describes the physical installation of the Alteon SSL Accelerator, including instructions on how to choose a location and directions for mounting and cabling.

The Alteon SSL Accelerator is shipped with the following items:

- A/C power cord—the unit is shipped with one U.S. standard and one EU standard power cord. Country-specific power cords are available separately.
- Console cable
- Serial cable
- One two-post open rack installation kit for flush mounting or center mounting
- One four-post rack installation kit for cabinet mounting
- Online user's manual on CD-ROM
- Printed Hardware Installation Guide (this manual)

Installation involves the following tasks:

- Choosing a Location (page 18)
- Reading the Safety Instructions (page 19)
- Mounting the System:
 - □ Two-Post Open-Frame Rack Installation (page 21), or
 - □ Four-Post Cabinet Rack Installation (page 31)
- Connecting Network Cables (page 48)
- Power Management (page 51)



Choosing a Location

The Alteon SSL Accelerator is intended for installation in data centers or similar surroundings that meet the environmental, hardware, and power requirements listed in "Specifications" on page 57.

Precautions for selecting a site and installing the system



CAUTION—Make sure the device is properly grounded electrically and that power connections are safe, particularly when using power strips.

Avoid overloading your electrical supply circuits. Electrical ratings are printed on the nameplates of all your equipment. Be sure that your supply circuits and wiring can support the rated power draw of whatever equipment is used.

The ambient temperature of an operating Alteon SSL Accelerator must not exceed 40° C. When installing the device in a closed or multi-unit rack assembly, please consider that the operating ambient temperature of the equipment may be higher than the ambient temperature of the room. Take appropriate steps to ensure that the device does not overheat.

For proper air circulation, the vents on the front, back, and sides of the device should not be blocked or obstructed by cables, panels, rack frames, or other materials.

Do not place or rack-mount the device in any way which would exceed the maximum weightbearing capacity of the surface or rack, or cause potentially hazardous uneven mechanical loading.



Safety Instructions

Use the following safety guidelines to ensure your own personal safety and to help protect your server, storage system, or appliance from potential damage.

NOTE – Your system is safety-certified as a free-standing unit and as a component for use in a rack cabinet using the customer rack kit when both the rack cabinet and rack kit were designed for your system. The installation of your system and rack kit in any other rack cabinet has not been approved by any safety agencies. It is your responsibility to have the final combination of system and rack kit in a cabinet evaluated for suitability by a certified safety agency. The manufacturer disclaims all warranties and liability in connection with such combinations. System rack kits are intended to be installed in an approved rack by trained service technicians. If you install the kit in any other rack, be sure that the rack meets the specifications.

This section provides instructions for trained service technicians installing one or more systems in a rack cabinet or in an open-frame relay rack. The RapidRailsTM rack kit can be installed in all the system manufacturer's rack cabinets without tools, and the VersaRailsTM rack kit can be installed in most industry-standard rack cabinets. The procedures for installing both RapidRails and VersaRails rack kits are similar. One rack kit is required for each system to be installed in the rack cabinet.

This guide includes procedures for the following rack kits:

- Two-post kit (installed in either center-mount or flush-mount configuration).
- RapidRails kit in a four-post rack cabinet.
- VersaRails kit in a four-post rack cabinet.

For ease in troubleshooting and the identification of system health, all of these rack kits include a cable-management arm with a status-indicator cable assembly that extends the information on the two-color status indicators on the front and back panels to the back of the cable management arm.

NOTE – The two-post open-frame relay rack must be properly secured according to the manufacturer or industry specifications before installing the ASA. The four-post cabinet rack must meet the relevant ANSI/EIA-310-D-92, IEC 297, or DIN 41494 specifications.



Before attempting this installation, you should read through this entire section carefully.



CAUTION—Do not install rack kit components designed for another system. Use only the rack kit for your system. Using the rack kit for another system may result in damage to the system and personal injury to yourself and to others.

Precautions for Rack-Mountable Products



CAUTION—Observe the following precautions for rack stability and safety. Also refer to the rack installation documentation accompanying the system and the rack for specific warning and/or caution statements and procedures.

Servers, storage systems, and appliances are considered to be components in a rack. Thus, "component" refers to any server, storage system, or appliance, as well as to various peripherals or supporting hardware.

Installing system components in a rack without the front and side stabilizers installed could cause the rack to tip over, potentially resulting in bodily injury under certain circumstances. Therefore, always install the stabilizers before installing components in the rack.

After installing system/components in a rack, never pull more than one component out of the rack on it's slide assemblies at one time. The weight of more than one extended component could cause the rack to tip over and injure someone.

Do not move large racks by yourself. Due to the height and weight of the rack, it is recommended that a minimum of two people perform this task.

Before working on the rack, make sure that the stabilizers are secured to the rack, extend to the floor, and that the full weight of the rack rests on the floor. Install front and side stabilizers on a single rack or front stabilizers for joined multiple racks before working on the rack.

Always load the rack from the bottom up, and load the heaviest item in the rack first.

Make sure that the rack is level and stable before extending a component from the rack.

Use caution when pressing the component rail release latches and sliding a component into or out of a rack; the slide rails can pinch your fingers.

After a component is inserted into the rack, carefully extend the rail into a locking position, and then slide the component into the rack.

Do not overload the power supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.

Ensure that proper airflow is provided to components in the rack.

Do not step on or stand on any system/component when servicing other systems/components in a rack.



Two-Post Open-Frame Rack Installation

The two-post open-frame relay rack installation kit is intended for a standard 3-inch or 6-inch open-frame rack. Both universal hole spacing or wide hole spacing are accommodated. The kit contains all the parts for center-mount or flush-mount installation.

The procedure for both center-mount and flush-mount installations consists of marking the rack, attaching the brackets, and securing the ASA to the rack.

NOTE – This kit is designed to support a single system. Using the kit to support more than one ASA may cause damage to the units.

The two-post kit incorporates slide assemblies which enable the system to be pulled out of the rack for servicing.

You must properly secure the rack to the floor, the ceiling or upper wall, and where applicable, to adjacent racks, using floor and wall fasteners and bracing specified or approved by the rack manufacturer or by industry standards. See the manufacturer's installation documentation for precautionary warnings before attempting this installation.

Recommended Tools and Supplies

You need the following tools and supplies to install the system in a two-post relay rack:

- #2 Phillips screwdriver
- 11/32-inch wrench or nut driver (if changing bracket to flush-mount configuration)
- Straight edge
- Masking tape or felt-tip pen to mark the mounting holes.



Rack Kit Contents

The two-post rack kit includes (see Figure 2-1):

- Slide assemblies, one pair (2)
- Stiffening bracket (1)
- Cable-management arm (1)
- Status-indicator cable assembly (1)
- Stop blocks (2)
- 12-24 x 0.5-inch pan-head Phillips screws (10)
- Releasable tie wraps (not shown)



Figure 2-1 Two-Post Rack Kit Components

Two-Post Rack Installation Tasks

Installing a two-post rack kit includes performing the following tasks in their numbered order:

- **1.** Marking the rack
- 2. Installing the slide assemblies in the rack
 - Center-mount installation
 - Flush-mount installation
- **3.** Installing the system in the rack
- 4. Installing the cable-management arm
- 5. Routing cables



Marking the Rack

Allow 1 U (44 mm or 1.75 inches) of vertical space for each system you install in the two-post rack.

Universal-Hole Spacing Racks

Industry-standard two-post racks with universal-hole spacing have an alternating pattern of three holes per U with center-to-center hole spacing (beginning at the top hole of a 1-U space) of 15.9 mm, 15.9 mm, and 12.7 mm (0.625 inch, 0.625 inch, and 0.5 inch) for the front and back vertical column of holes (see Figure 2-2).



Figure 2-2 Two-Post, Open-Frame Rack, Universal-Hole Spacing



Wide-Hole Spacing Racks

Some two-post racks with wide-hole spacing have an alternating pattern of two holes per U with center-to-center hole spacing (beginning at the top hole of a 1-U space) of 31.7 mm and 12.7 mm (1.25 inches and 0.5 inch) for the front and back vertical column of holes (see Figure 2-3)



Figure 2-3 Two-Post, Open-Frame Rack, Wide-Hole Spacing

To mark the rack, perform the following steps:

1. Place a mark on the rack's front vertical rails where you want to locate the bottom of the system you are installing in the two-post rack.

The bottom of each 1-U space is at the middle of the narrowest metal area between holes.

NOTE – If your rack has wide-hole spacing, go to step 3.

2. Place a mark 44 mm (1.75 inches) above the original mark you made (or count up three holes in a rack with universal-hole spacing) (see Figure 2-2 on page 23).

Each 1 U (44 mm, or 1.75 inches) of vertical space on a rack with universal-hole spacing has three holes with center-to-center spacing between holes (beginning at the top of a 1-U space) of 0.625, 0.625, and 0.5 inch (see Figure 2-2 on page 23).

NOTE – If your rack has universal-hole spacing, you have completed the procedure for marking the rack.



3. Place a mark 44 mm (1.75 inches) above the original mark you made (or count up to the next hole in the rack with wide-hole spacing (see Figure 2-3 on page 24).

Each 1 U (44 mm, or 1.75 inches) of vertical space on a rack with wide-hole spacing has two holes with center-to-center spacing between holes (beginning at the top of a 1-U space) of 31.7 mm (1.25 inches) (see Figure 2-3 on page 24).

Installing the Slide Assemblies in the Rack

You can install the slide assemblies in a two-post, open-frame rack having either universalhole spacing (see Figure 2-2 on page 23) or wide hole spacing (see Figure 2-3 on page 24). You can install the 1-U slide assemblies in either a flush-mount or center-mount configuration.



CAUTION—Do not install another system using this rack kit. Use only the rack kit intended for your system. Using the rack kit for another system may result in damage to the system and personal injury to yourself and to others.

Center-Mount Installation

The two-post rack kit is shipped with the brackets configured for center-mount installation. To complete the installation, perform the following steps:







- 1. Locate the right slide assembly and push the back bracket towards the back of the slide assembly (see Figure 2-4 on page 25).
- 2. Position the right slide assembly in the two-post rack at the location you marked, push the back bracket forward against the vertical two-post rack, and secure the front and rear center-mounting brackets to the rack with two 12-24 x 0.5-inch pan-head Phillips screws (see Figure 2-4 on page 25).
- 3. Repeat steps 1 and 2 to install the left slide assembly in the rack.
- 4. Install the stiffening bracket into the appropriate holes at the back of the slide assemblies and secure the bracket with a 12-24 x 0.5-inch pan-head Phillips screw on each slide assembly (see Figure 2-4 on page 25).

If the vertical rack is 3 inches wide, use the holes at the back end of the slide assemblies (shown in Figure 2-5). If the vertical rack is 6 inches wide, use the holes located 3 inches in front of the holes at the back end of the slide assemblies.



Figure 2-5 Installing the Stiffening Bracket (shown in 3-inch rack position)



Flush-Mount Installation

The two-post rack kit is shipped configured for center-mount installation. To prepare the slide assemblies for flush-mount installation, perform the following steps:

1. Locate the two slide assemblies and place them, side by side, on a smooth wo the front ends of the slide assemblies toward you. Position both slide assemblies so that the center brackets are facing upwards (see Figure 2-6).

NOTE – To prepare the slides for flush-mount installation, remove the front mounting bracket, rotate it 180 degrees, and reinstall it on the opposite slide assembly.

- 2. Using a #2 Phillips screwdriver and an 11/32-inch wrench or nut driver, remove two 12-24 x 0.5-inch pan-head Phillips screws, two nuts, and two shoulder washers from each front center bracket (see Figure 2-6).
- 3. Remove the front bracket from both slide assemblies.
- 4. Place the bracket from one slide assembly onto the threaded studs on the opposite slide assembly, with the bracket turned 180 degrees so that the mounting flange faces forward (see Figure 2-6).
- 5. Secure each front center mount bracket (by its nuts and shoulder washers) finger tight on their opposite slide assemblies using the two shoulder washers and two nuts you removed in step 2 (see Figure 2-6).
- 6. Join the front brackets you just installed to the bracket on the slide assembly with the two 12-24 x 0.5-inch pan-head Phillips screws you removed in step 2 (see Figure 2-6).

The joined bracket becomes the new extended rear bracket.

7. Repeat steps 4 through 6 to configure the other slide assembly.







8. Holding the left slide assembly into position in the rack at the location you marked, adjust the extended rear bracket tightly against the back of the vertical two-post rack and secure it to the rail with two 12-24 x 0.5-inch Phillips screws (see Figure 2-7).



Figure 2-7 Installing the Slide Assemblies for Flush-Mount Configuration

- 9. Secure the front bracket on the slide assembly to the two-post rail with two 12-24 x 0.5-inch pan-head Phillips screws (see Figure 2-7).
- 10. Perform steps 8 and 9 to install the right slide assembly in the rack.
- 11. Use an 11/32-inch wrench or nut driver to fully tighten the nuts on the mounting brackets on both slide assemblies that you tightened with your fingers.



12. Install the stiffening bracket into the appropriate holes at the back of the slide assemblies and secure the bracket with a 12-24 x 0.5-inch pan-head Phillips screw on each slide assembly (see Figure 2-5 on page 26).

If the vertical rack is 3 inches wide, use the holes at the back end of the slide assemblies (shown in Figure 2-5 on page 26). If the vertical rack is 6 inches wide, use the holes located 3 inches in front of the holes at the back end of the slide assemblies.

Installing the System in the Rack



CAUTION—Due to the size and weight of the system, never attempt to install the system by yourself.

NOTE – The procedure for installing a system into a rack is identical for flush-mounted and center-mounted support trays.

- 1. Pull the slides out to their fully extended position.
- 2. Remove the system front bezel:
 - Unlock the keylock.
 - Press the right- and left-end tabs.
 - Pull the bezel away from the system.
- 3. Lift the system into position (see Figure 2-7 on page 28).
- 4. Place one hand on the front-bottom of the system and the other hand on the back-bottom of the system.
- 5. Tilt the back of the system down while aligning the back shoulder screws on the sides of the system with the back slots on the slide assemblies.
- 6. Engage the back shoulder screws into their slots.
- 7. Lower the front of the system and engage the front shoulder screws in the front slot behind the system release latch (see Figure 2-7 on page 28).

The system release latch will move forward and then snap back as the front shoulder screw passes into the front slot.

Use this system release latch when you wish to remove the system from the slide assemblies.



- 8. Press the slide release latch at the side of each slide to slide the system completely into the rack (see Figure 2-7 on page 28).
- 9. Push in and turn the captive thumbscrews on each side of the front chassis panel to secure the system to the rack.

Installing the Cable-Management Arm

See "Installing the Cable-Management Arm" on page 43.

Routing Cables

See the procedure "Routing Cables" on page 46.

You have completed the installation of the rack kit in a two-post rack.



Four-Post Cabinet Rack Installation

Before attempting this installation, you should read through this entire procedure carefully.

Before You Begin

Before you begin installing your system in the rack, carefully read "Safety Instructions" on page 19 for additional information.



CAUTION—When installing multiple systems in a rack, complete all of the procedures for the current system before attempting to install the next system.

Rack cabinets can be extremely heavy and move easily on their casters. They have no brakes. Use extreme caution while moving the rack cabinet. Retract the leveling feet when relocating the rack cabinet. Avoid long or steep inclines or ramps where loss of cabinet control may occur. Extend the leveling feet for support and to prevent the cabinet from rolling. You must strictly follow the procedures in this document to protect yourself as well as others who may be involved. Your system may be very large and heavy and proper preparation and planning are important to prevent injury to yourself and to others. This becomes increasingly important when systems are installed high up in the rack.

Recommended Tools and Supplies

You need the following tools and supplies to install the system in a four-post relay rack:

- #2 Phillips screwdriver
- Masking tape or felt-tip pen for use in marking the mounting holes to be used.



RapidRails Rack Kit Contents

The RapidRails rack kit includes the following items (see Figure 2-8):





Figure 2-8 RapidRails Rack Kit Contents

- RapidRails Slide assemblies, one pair (2)
- Cable-management arm (1)
- Stop block (1)
- Status-indicator cable assembly (1)
- Releasable tie wraps (not shown in Figure 2-8)



VersaRails Rack Kit Contents

NOTE – The nonmetric screws described in illustrations and in procedural steps are identified by size and number of threads-per-inch. For example, a #10 Phillips-head screw with 32 threads per inch is identified as a 10-32 screw.

The VersaRails rack kit includes the following items (see Figure 2-9):

- VersaRails Slide assemblies, one pair (2)
- Cable-management arm (1)
- Stop block (1)
- Status-indicator cable assembly (1)
- 10-32 x 0.5-inch flange-head Phillips screws (10)
- Releasable tie wraps (not shown in Figure 2-9)







Figure 2-9 VersaRails Rack Kit Contents



Installation Tasks

Installing a rack kit involves performing the following tasks in their numbered order:

- 1. Removing the rack doors
- 2. Marking the rack
- 3. Installing the slide assemblies in the rack
 - RapidRails slide assemblies
 - VersaRails slide assemblies
- 4. Installing the system in the rack
- 5. Installing the cable-management arm
- 6. Routing cables
- 7. Replacing the rack doors

Removing the Rack Doors

See the procedures for removing doors in the documentation provided with your rack cabinet.



CAUTION—Because of the size and weight of the rack cabinet doors, never attempt to remove or install them by yourself.

Store the two doors where they will not injure someone if the doors accidently fall over. If you are installing more than one system, install the slide assemblies so that the first system is installed in the lowest available position in the rack.



Marking the Rack

Allow 1 U (44 mm, or 1.75 inches) of vertical space for each system you install in the rack. Rack cabinets that meet EIA-310 standards have an alternating pattern of three holes per rack unit with center-to-center hole spacing (beginning at the top hole of a 1-U space) of 15.9 mm, 15.9 mm, and 12.7 mm (0.625 inch, 0.625 inch, and 0.5 inch) for the front and rear vertical rails (see Figure 2-10). Rack cabinets may have round or square holes.

NOTE – The vertical rails may be marked by horizontal lines and numbers in 1-U increments. If you wish, you can make a note of the number marking on the rack's vertical rail. It is not necessary to mark or place tape on the rack. If you choose this method, skip ahead to the procedure "Installing the RapidRails Slide Assemblies" on page 37.



CAUTION—If you are installing more than one system, install the slide assemblies so that the first system is installed in the lowest available position in the rack.



Figure 2-10 One Rack Unit



To mark the rack, perform the following steps:

1. Place a mark on the rack's front vertical rails where you want to locate the bottom of the system you are installing in the rack cabinet.

The bottom of each 1-U space is at the middle of the narrowest metal area between holes (marked with a horizontal line on some rack cabinets—see Figure 2-10 on page 35).

2. Place a mark 44 mm (1.75 inches) above the original mark you made (or count up three holes in a rack that meets EIA-310 standards) and mark the rack's front vertical rails with a felt-tipped marker or masking tape (if you counted holes, place a mark just above the top hole).

This mark or piece of tape indicates where the system's upper edge will be located on the vertical rails (see Figure 2-11).



Figure 2-11 Marking the Vertical Rails



Installing the RapidRails Slide Assemblies

1. At the front of the rack cabinet, position one of the RapidRails slide assemblies so that its mounting-bracket flange fits between the marks or tape you placed on the rack (see Figure 2-12 on page 38).

The mounting hook on the slide assembly's front mounting bracket flange should enter the top hole between the marks you made on the vertical rails.

- 2. Push the slide assembly forward until the mounting hook enters its respective square hole on the vertical rail, and then push down on the mounting-bracket flange until the mounting hooks seat in the square holes and the push button pops out and clicks (see Figure 2-12 on page 38).
- 3. At the back of the cabinet, pull back on the mounting-bracket flange until the mounting hooks are located in their respective square holes, and then push down on the mounting-bracket flange until the mounting hooks seat in the square holes and the push button pops out and clicks.
- 4. Repeat steps 1 through 3 for the slide assembly on the other side of the rack.



5. Ensure that the rails are mounted at the same position on the vertical rails on each side of the rack.



Figure 2-12 Installing the RapidRails Slide Assemblies



Installing the VersaRails Slide Assemblies

1. At the front of the rack cabinet, position one of the VersaRails slide assemblies so that its mounting-bracket flange fits between the marks or tape (or numbered location) on the rack (see Figure 2-13 on page 40).

The three holes on the front of the mounting bracket should align with three of the holes between the marks you made on the front vertical rail.

- 2. Install two 10-32 x 0.5-inch flange-head Phillips screws in the mounting flange's top and bottom holes to secure the slide assembly to the front vertical rail (see Figure 2-13 on page 40).
- 3. At the back of the cabinet, pull back on the mounting-bracket flange until the mounting holes align with their respective holes on the back vertical rail.
- 4. Install three 10-32 x 0.5-inch flange-head Phillips screws in the back mounting flange's holes to secure the slide assembly to the back vertical rail.
- 5. Repeat steps 1 through 4 for the slide assembly on the other side of the rack.
- 6. Ensure that the slide assemblies are mounted at the same position on the vertical rails on each side of the rack.





Figure 2-13 Installing the VersaRails Slide Assemblies



Installing the System in the Rack



CAUTION—If you are installing more than one system, install the first system in the lowest available position in the rack.

Never pull more than one component out of the rack at a time.

Because of the size and weight of the system, never attempt to install the system in the slide assemblies by yourself.

- 1. Pull the two slide assemblies out of the rack until they lock in the fully extended position.
- 2. Remove the system front bezel:
 - Unlock the keylock.
 - Press the right- and left-end tabs.
 - Pull the bezel away from the system.
- 3. Lift the system into position in front of the extended slides.
- 4. Place one hand on the front-bottom of the system and the other hand on the back-bottom of the system.
- 5. Tilt the back of the system down while aligning the back shoulder screws on the sides of the system with the back slots on the slide assemblies.
- 6. Engage the back shoulder screws into their slots.
- 7. Lower the front of the system and engage the front shoulder screws in the front slot behind the system release latch (see Figure 2-14 on page 42).

The system release latch will move forward and then snap back as the shoulder screw passes into the front slot.

Use this system release latch when you wish to remove the system from the slide assemblies.

8. Press the slide release latch at the side of each slide to slide the system completely into the rack (see Figure 2-14 on page 42).



9. Push in and turn the captive thumbscrews on each side of the front chassis panel to secure the system to the rack.



Figure 2-14 Installing the System in the Rack (RapidRails or VersaRails)



Installing the Cable-Management Arm

NOTE – The cable management arm can be installed on the right- or left-side of the rack cabinet. This procedure describes installing the cable management arm in the right side of the rack cabinet, as viewed from the back. If you are installing several systems in the rack, consider installing the cable management arms on alternating sides of the rack for ease in cable routing.

To install the cable-management arm on the back of the system, perform the following steps:

- 1. Facing the back of the rack cabinet, locate the latch on the end of the right slide assembly that you secured to the back vertical rail.
- 2. Push the tab on the back end of the cable-management arm into the latch on the end of the slide assembly (see Figure 2-15 on page 44).

The latch clicks when locked.

3. Push the tab on the remaining free end (the front) into a mating latch on the inner segment of the slide assembly (see Figure 2-15 on page 44).

The latch clicks when locked.





Figure 2-15 Installing the Cable-Management Arm

4. Install a stop block on the latch on the end of the opposite slide assembly (see Figure 2-15).

The stop block prevents the backward travel of the cable-management arm and supports the weight of the arm with its load of installed cables.

The two-post rack kit has two stop blocks: one for right-side mounting and one for left-side mounting. You can only install the proper stop block.

- 5. Install the status-indicator cable plug into its connector.
- 6. Open the wire covers on the cable-management arm by lifting the center of the wire over the top of the embossed round button on the front of the forward part of the arm, and lifting the wire over the top of a similar round button on the back part of the arm.

The wire cover swings open to enable cables to be routed within the arm.



- 7. Route the status-indicator end of the cable assembly through the cable-management arm, and install the indicator in its slot at the back end of the cable-management arm (see Figure 2-18 on page 47).
- 8. Connect the power cords to their receptacles on the back panel.

NOTE – Although the strain-relief can accommodate power cords with a bend radius of up to 19 mm (0.75 inch), the system manufacturer recommends that you only use the power cords provided with the system.

- 9. Install a tie-wrap through the slot on the strain-relief tab (see Figure 2-17 on page 46).
- 10. Bend the power cords back beside the power receptacle housing and form a tight loop. Install the strain-relief tie-wrap loosely around the looped power cords (see Figure 2-17 on page 46).



Figure 2-16 Opening the Wire Covers





Figure 2-17 Installing the Power Cord Strain Relief

- 1. Attach the I/O cable connectors to their respective connectors on the system back panel.
- 2. Route the power and I/O cables through the cable-management arm, using four loosely secured releasable tie wraps (two in the middle and on each end of the cable-management arm). Do not fully tighten the tie wraps at this time (see Figure 2-18 on page 47).

Allow some cable slack in the cable-management arm to prevent damage to the cables.

- 3. Secure the cables to the cable-management arm:
 - After connecting the cables to the system, unscrew the thumbscrews that secure the front of the system to the front vertical rail.
 - Slide the system forward to the fully extended position.
 - Route the cables along the cable-management arm, make any adjustments to the cable slack at the hinge positions, and secure the cables to the cable-management arm with the releasable tie wraps and the wire covers over the cable-management arm.

NOTE – As you pull the system out to its furthest extension, the slide assemblies lock in the extended position. To push the system back into the rack, press the slide release latch on the side of the slide, and then slide the system completely into the rack.



- 4. Slide the system in and out of the rack to verify that the cables are routed correctly and do not bind, stretch, or pinch with the movement of the cable-management arm.
- 5. Make any necessary adjustments to ensure that the cable slack is neither too tight nor too loose, yet keeps the cables in place as the system is moved in and out of the rack.



Figure 2-18 Routing Cables

Replacing the Rack Doors

Refer to the procedures for replacing doors in the documentation provided with your rack cabinet.



CAUTION—Because of the size and weight of the rack cabinet doors, never attempt to remove or install them by yourself.

This completes the rack installation of your system in a four-post rack cabinet.



Connecting Network Cables

The Alteon SSL Accelerator high-speed uplink port must be connected to an Alteon Web switch running Web OS 8.0 (or higher) software, or to the appropriate port of a comparable switch. The type and method of cabling depends on your particular model of Alteon SSL Accelerator.

Network cable connections are described below.

Models ASA 310 and ASA 410 Copper NIC (10Base-T/100Base-TX/1000 Base-T Ports)

The ASA 310 and ASA 410 Copper NIC each have two integrated 10/100/1000-megabit-persecond (Mbps) network interface controllers (NIC). The NICs provide all the functions of a separate network expansion card and support 10Base-T, 100Base-TX and 1000Base-T Ethernet standards.

Network Cable Requirements

Your system's RJ45 NIC connectors are designed for attaching a UTP Ethernet cable equipped with standard RJ45-compatible plugs. Press one end of the UTP cable into the NIC connector until the plug snaps securely into place. Connect the other end of the cable to an RJ45 jack wall plate or to an RJ45 port on a UTP concentrator or hub, depending on your network configuration. Observe the following cabling restrictions for 10 Base-T, 100 Base-TX, and 1000Base-T networks.

The NICs ports are designed to operate with UTP Category 5 cables equipped with standard RJ-45-compatible plugs.

NOTE – Only use the NIC connector 1 (the rightmost connector on the back panel) when connecting the ASA 310 or ASA 410 Copper NIC to a Web switch, hub, or router.

Figure 2-19 depicts the NIC connector and the LEDs.



Figure 2-19 NIC Connector and LEDs for the Copper NIC



Table 2-1 describes the states of the NIC connector LEDs.

LED	State	Description
Link	On Off	Good 10/100/1000 Mbps Ethernet link established. No 10 or 100 Mbps link established (possible bad cable, bad connector, or configuration mismatch).
Data	Blinking Off	Data is detected on the port. No data is detected on the port.

Table 2-1 Copper NIC Connector LEDs

Models ASA 310 and ASA 410 Fiber NIC (1000Base-SX Port)

In addition to the dual integrated 10/100 Mbps network interface controllers (NIC), the ASA 310 and ASA 410 Fiber NIC each have one Full-Duplex 1000 Mbps Gigabit EtherLink NIC that supports the 1000Base-SX Gigabit Ethernet standard. The Gigabit NIC is equipped with a 1000Base-SX port designed to operate with multimode fiber-optic cables having SC-type connectors.

The figure below illustrates an SC-type connector:



Figure 2-20 Fiber Optic SC Connector for the Fiber NIC



Table 2-2 lists the multimode fiber operating distance characteristics for the 1000Base-SX port.

Description	Operating Distance
62.5/160 multimode fiber	Up to 220 meters (721 ft)
62.5/200 multimode fiber	Up to 275 meters (902 ft)
50/400 multimode fiber	Up to 500 meters (1,639 ft)
50/500 multimode fiber	Up to 550 meters (1,803 ft)

Table 2-2 Multimode Fiber Operating Distance Characteristics

Table 2-3 describes the states of the Gigabit Ethernet NIC LEDs.

Table 2-3 Fiber NIC Gigabit EtherLink NIC LED

LED	State	Description
Data	Blinking Off	Data is detected on the port. No data is detected on the port.
Link	On Off	Good link established. No link established (possible bad cable or bad connector).



Power Management

Connecting the Power Cord

- 1. The power button can be in any position when you connect the power cord to the AC power receptacle. The unit will not power on until you press the power button.
- 2. Connect the power cord to power receptacle 1 on the back of the unit.
- 3. Plug the cord into a properly fused outlet.

Turning Power On/Off

Power is off when you press the power button once and the power system indicator LED does not emit green light.

NOTE – The ASA has a duplicate power button and power system indicator on the back panel. You can use either of the two power buttons. Also note that the NIC indicators on the front panel function when the system is off, provided AC power is connected to the power supply.

To turn power on, press the power button. The power system indicator LED turns green to indicate that the power supply is turned on.



Alteon SSL Accelerator Hardware Installation Guide



CHAPTER 3 Connecting to the Alteon SSL Accelerator

The Alteon SSL Accelerator (ASA) has a console port for system diagnostics and configuration. This chapter explains how to connect a terminal to the console port in order to establish a first console connection.

There is also a troubleshooting section for problems that may occur if the ASA is not installed properly.

For instructions on viewing and configuring system settings using either a console connection or network connection (via Telnet or SSH), see your *Alteon SSL Accelerator 3.1 User's Guide and Command Reference*.



Connecting a Terminal

To establish a console connection with an ASA, the following is required:

An ASCII terminal or a computer running ASCII terminal emulation software set to the parameters shown in the table below:

Table 3-1 Console Configuration Parameters

Parameter	Value	
Baud Rate	9600	
Data Bits	8	
Parity	None	
Stop Bits	1	
Flow control	none	

 A serial cable with a female DB-9 connector (shipped with the ASA).

Serial Connector and Pin Assignments

The serial port accepts a serial cable with a female DB-9 connector.

DB-9 Serial Port Connector	Pin	Signal	I/O	Description
	1	DCD	Ι	Data carrier detect
	2	SIN	Ι	Serial input
	3	SOUT	0	Serial output
(1 2 3 4 5)	4	DTR	0	Data terminal ready
	5	GND	N/A	Signal ground
	6	DSR	Ι	Data set ready
6789	7	RTS	0	Request to send
	8	CTS	Ι	Clear to send
	9	RI	Ι	Ring indicator
	Shell	N/A	N/A	Chassis ground

Table 3-2 Pinouts for ASA 410 DB-9 Serial Connector



Establishing a Console Connection

1. Connect the terminal to the console port using the correct serial cable.

When connecting to an ASA, use the provided serial cable with the female DB-9 connector.

2. Power on the terminal.

3. To establish the connection, press ENTER on your terminal.

You should now see the login prompt. Log in as the admin user and press ENTER.

4. Enter the password when prompted.

The default administrator password is admin. Once the password is verified, the Setup menu is displayed. For instructions on how to perform the initial setup, see the "Initial Setup" chapter in the *Alteon SSL Accelerator 3.1 User's Guide and Command Reference*.



Troubleshooting

This section contains information about possible problems when starting the ASA the very first time after the installation.

The ASA Does Not Boot

If nothing at all seem to happen when you switch on the ASA it may have been damaged during transport. Things to check:

Q: Have you connected the power to the ASA?

If not, connect the power cord of the ASA to a power source. Also, make sure the power source really provides enough voltage.

Q: Have you switched on the ASA?

If not, turn on the ASA.

Q: When switching on the ASA, can you hear any noise (e.g. from the built-in fan)?

If not, the ASA's power supply is probably broken. Replace the ASA.

Q: Can you see boot messages but not the console prompt?

Refer to "Connecting a Terminal" on page 54.

If none of the suggested problems apply to you, contact Nortel Networks support. See "How to get Help" on page 10 for details.



APPENDIX A Specifications

ASA Physical Characteristics

Characteristic	Measurement
Height	43.2 mm (1.7 inches), 1U
Width	447.3 mm (17.61 inches)
Depth	711.2 mm (28 inches)
Weight	9.97 kg (22 pounds) minimum 11.80 kg (26 pounds) maximum
Processor	 On models ASA 310 (copper and fiber) and ASA 310-FIPS, one Pentium III-T, 1.4GHz processor On model ASA 410 (copper and fiber), two Pentium III-T, 1.4GHz processors
SDRAM (ECC) memory	1GB SDRAM,133MHZ, 4X256 DIMMS
Level 2 Cache (internal)	512KB
Video type	ATI RAGE XL PCI video controller; VGA connector
Video memory (standard)	PCI Riser, 2x64/66
SCSI hard-disk drive	18GB 10K RPM Ultra 160 SCSI Hard Drive
SCSI devices	Internal hot-pluggable with RAID controller, termination and automatic configuration for up to three drives. Integrated Adaptec Ultra3 AIC-7899 SCSI host adapter
Diskette drive	3.5 inch, 1.44-MB diskette drive
CD-ROM drive	24X IDE Internal CD-ROM



Characteristic	Measurement
Communications	 On models 310 Copper NIC, ASA 310-FIPS, and ASA 410 Copper NIC, dual integrated 10/100/1000 Network Interface Controllers (NICs) On models ASA 310 Fiber NIC and ASA 410 Fiber NIC, one 1GB Fiber NIC for fiber-optic Gigabit Ethernet, in addition to the dual integrated 10/100/1000 Network Interface Controllers (NICs)
Expansion cards (installed)	 On model ASA 310 Copper NIC, one PCI card, 600 TPS On model ASA 310 Fiber NIC, one PCI card, 600 TPS, and one Ethernet Gigabit NIC PCI card On model ASA 310-FIPS, two HSM (Hardware Security Module) PCI cards On model ASA 410 Copper NIC, one PCI card, 2000 TPS On model ASA 410 Fiber NIC, one PCI card, 2000 TPS, and one Ethernet Gigabit NIC PCI card
Expansion slots (empty)	 On model ASA 310 Copper NIC, one PCI slot (64-bit, 66 MHz) empty On model ASA 310 Fiber NIC, empty extra PCI slots due to the 1GB Fiber NIC On model ASA 310-FIPS, no empty PCI slots due to the two HSM (Hardware Security Module) PCI cards On model ASA 410 Copper NIC, one empty PCI slot (64-bit, 66 MHz) On model ASA 410 Fiber NIC, no empty PCI slots due to the 1GB Fiber NIC

Supported Standards

- Logical Link Control (IEEE 802.2)
- 10Base-T/100Base-TX/1000Base-T (IEEE Std. 802.3, 802.3u, 802.3ab)
- 1000Base-SX (IEEE 802.3z)
- IP
- TFTP (RFC 783)



Port	Connector	Media	Maximum Distance
Rear:			
10Base-T	RJ-45	Cat. 3, 4, or 5 UTP	100 meters (328 feet)
100Base-TX	RJ-45	Cat. 5 UTP	100 meters (328 feet)
1000Base-T	RJ-45	Cat. 5 UTP	100 meters (328 feet)
1000Base-SX	SC full-duplex	Shortwave (850 nm): 62.5 micron multimode fiber 50 micron multimode fiber	2 to 275 meters (6.5 to 902 feet) 2 to 550 meters (6.5 to 1804 feet)
Serial (DTE)	Male DB-9	RS-232C (null-modem serial cable for console connections)	25 meters (80 feet)
USB	two 4-pin	USB cable	5 meters (20 feet)
Video	15-pin	Standard cable	N/A
PS/2-style key- board	6-pin mini- DIN	Standard cable	N/A
PS/2-compati- ble mouse	6-pin mini- DIN	Standard cable	N/A

Port Specifications

Power Requirements

Specification		Measurement
AC Power	Wattage	240 W Max.
	Voltage	100-240 VAC, 3.6-1.8 A, 60-50 Hz
System battery		CR2032 3-V lithium coin cell



Condition	Operating Specification	Storage Specification
Temperature	+10°C to +35°C (50°F to 95°F)	-40° C to $+65^{\circ}$ C (-40° F to 149° F)
Relative humidity	8% to 80% (noncondensing) with a humidity gradation of 10% per hour	5% to 95% (noncondensing)
Altitude	-16 meters to 3048 meters (-50 to 10,000 feet)	-16 meters to 10,600 meters (-50 to 35,000 feet)
Shock	Six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the system) of 41 G for 2 ms	Six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the sys- tem) of 71 G for 2 ms
Vibration	0.25 G (half-sine wave) at a sweep of 3 to 200 Hz for 15 minutes	0.5 G at 3 to 200 Hz for 15 minutes

Environmental Specifications

Certifications

Category	Compliance
EMC	CISPR22, CISPR24
	FCC CFR 47, Part 15, Class A
	VCCI, Class A
	ICES, Class A
	CE EN-55022, EN-55024, EN-61000-4-2, EN-61000-4-3, EN-
	61000-4-4,
	EN-61000-4-5, EN-61000-4-6, EN-61000-4-8, EN-61000-4-11
	BSMI CNS 13438 Class A
	AS/NZS 3548 Class A
Safety	UL 1950
·	CSA 22.2 No. 950
	IEC 60950, with all NCB Member Differences*
	EN 60950
	IEC 60825-1

*NCB (National Certified Bodies) Member countries: Austria, Australia, Belgium, Canada, Switzerland, China, Czech Republic, Germany, Denmark, Spain, Finland, France, United Kingdom, Greece, Hungary, Ireland, Israel, India, Italy, Japan, Republic of Korea, The Netherlands, Norway, Poland, Russia, Sweden, Singapore, Slovenia, Slovakia, United States of America, South Africa



APPENDIX B FIPS 140-1 Validation Certificate

This appendix displays the FIPS 140-1 Validation Certificate for the Rainbow CryptoSwift® HSM, which is installed in the ASA 310-FIPS.





FIPS 140-1 provides four increasing, qualitative levels of security: Level 1, Level 2, Level 3, and Level 4. These levels are intended to cover the wide range and potential applications and environments in which cryptographic modules may be employed. The security requirements cover eleven areas related to the secure design and implementation of a cryptographic module. The scope of conformance achieved by the cryptographic modules as tested in the product identified as:

Crypto	Swith ISM.	bry Flainbow	Technologi	es, nec.
Marchware	P/W 107316	Firmware Ve	value 6.6.23	🖓 Hardware),

Cryptographic Module Design:	Level 3	Module Interfaces:	Level [®] 3
Rbles and Services:	Level 🖪	Finite State Machine Model:	Level
Physical Security: (Multi-Chin Embedded)	Level 3	Software Security:	Level 3
EMI / EMC:	Level 🖪	Self Tests:	Level ² 4
Key Management:	Level 3		

Clperating System Security Level 👯 is met when used in the following configuration(s): _____

DES (Cort. #45); Fright DES (Corte #300); Stitle 1-2 Corte #360);

The following FIPS approved Cryptographic Algorithms are used: HUN (MCOUN, Window et al. 1997)

MD5; HMAC MD5; HMAC SHA-1; RC4; RSA Encryption; DSA(Non-Compliant)

The Cryptographic module also contains the following non-FIPS approved algorithms: The Cryptographic Module Validation Authority. End user queries concerning the non-FIPS approved algorithms may be directed to their respective Cryptographic Module Validation Authority.

Overall Level Achieved. 3

Signed on behalf of the Government of the United States

Signature: UE Dated:

Chief, Computer Security Division National Institute of Standards and Technology

Signed on Senal Of the Government of	Calanada
Signature:	
Dated:	-1

Director, Information Protection Group The Communications Security Establishment



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