hp e-commerce server accelerator sa7100/sa7120

user guide

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Table of Contents

Chapter 1: Introduction

About this User Guide 1
Who Should Use this Book. 2
Before You Begin 2
How to Use this Book. 2

Chapter 2: Installation and Initial Configuration

Before You Begin 5
Installing the SA7100/SA7120 Free-Standing or in a Rack. 6
    Rack Installation 6
    Free-Standing Installation 7
    Network Connections. 7
    Status Check. 8
        Network and Server LEDs 8

Inline LED 8
Admin Terminal Connection 9
HyperTerminal* Paste Operations 9
Troubleshooting 10
Server and Network LEDs 10
Continuing Configuration 10

Chapter 3: Theory of Operation

Security 11
Single Server Acceleration 11
Multiple Servers 12
Working with Internet Traffic Management (ITM) Devices 13
Positioning SA7100/SA7120 between ITM Device and Client Network 13
Positioning SA7100/SA7120 between ITM Device and Server 14
Multiple SA7100/SA7120s and Cascading Processing 14
Scalability and Cascading 14
Spilling and Throttling 15
Availability 15
Keys and Certificates 16
Cutting and Pasting with HyperTerminal* 16
Obtaining a Certificate from VeriSign* or Other Certificate Authority 17
Procedure 17
Exporting a Key/Certificate from a Server 20
Apache* Interface to Open SSL* (mod_ssl) 20
Apache SSL* 20
Stronghold* 21
Importing into the SA7100/SA7120 21
Creating a new Key/Certificate on the SA7100/SA7120 22
Procedure 22
Global Site Certificates 23
Overview 23
Global Site Certificate Paste Procedure 24
Redirection: Clients and Unsupported Ciphers 26
Client Authentication 27
Creating a Client CA Certificate using OpenSSL* 28
SSL Processing 29
Server Assignment (“Mapping”) 29

Automapping 30
Automapping with user-specified key and certificate 30
Automapping with multiple port combinations 30
Deleting automapping entries 30
Manual mapping 31
Combining automapping and manual mapping 31
Blocking 31
Specific IP, Specific Port 31
Subnet, Specific Port 32
All IPs, Specific Port 32
Delete a Block 33
Failure Conditions, Fail-safe, and Fail-through 34

Chapter 4: Scenarios

Scenario 1—Single Server 36
Procedure for Scenario 1 36
Automapping 36
Manual Configuration 36
Scenario 2—Multiple Servers 38
Procedure for Scenario 2 38
Scenario 3—Multiple SA7100/SA7120s, Cascaded 40
Initial Configuration 40
Procedure for Scenario 3 41
Scenario 4—Different Ingress and Egress Routers 43
Procedure for Scenario 4 43
Scenario 5—Configuring a Firewall 44
Server Configuration 44
SA7120 Configuration 45

Chapter 5: Command Reference

Online Help 47
Command Line Interface 48
User Authentication 48
Command Line Prompt 48
Syntax 48
Abbreviation to Uniqueness 49
Moving the Insertion Point 50

Command History 50
Cutting Text 51
Command Summary 52
Command Reference 57
Help Commands 57
Status Command 57
SSL Commands 58
Port Mapping Commands 67
Operational Commands 70
Remote Management Commands 73
Alarms and Monitoring Commands 79
Configuration Commands 82
Administration Commands
Logging Commands 87

Chapter 6: Remote Management

Overview 93
Limitations 94
Remote Management CLI Commands 94
Remote Telnet Sessions 96
Local Serial Console 96
Remote Console, Telnet 97
Changing the Telnet Port 97
Disabling Telnet 98
Remote SSH Sessions 98
Local Serial Console 98
Remote Console, SSH 99
Changing the SSH Port 100
Disabling SSH 100
SNMP 100
Standards Compliance 101
HP MIB Tree 101
Supported MIBs 102
Where to find MIB Files 102
Enterprise Private MIB Summary 102
Trap Summary 106
Standard SNMP Traps 106

Private Traps in the HP private MIB (hpssl-appliance-mib.my) 106
Enabling SNMP 107
Specifying SNMP Information 108
Community String 109
Trap Community String 109

Chapter 7: Alarms and Monitoring

Overview 111
Alarm Types 113
ESC: Encryption Status Change Alarm 113
Alarm Modifiers and Messages: 113
RSC: Refused SSL Connections 113
Alarm Modifiers and Messages 114
Extended Data 114
RSC Alarm CLI Commands 114
UTL: Utilization Threshold Alarm 115
Alarm Modifiers and Messages 115
Extended Data 115
UTL Alarm CLI commands 116
OVL: Overload Alarm 116
Alarm Modifiers and Messages 117
Extended Data 117
OVL Alarm CLI Commands 117
NLS: Network Link Status Alarm 117
Alarm Modifiers and Messages 117
Extended Data 118
Alarm Logging 118
Example: list logs command: 118
Example: status command 119
Example: status alarms command 121
Monitoring 121
Monitoring Reports 121
Report Configuration 121
Monitoring Reports CLI Commands 122

Chapter 8: Software Updates

Before Upgrading 126
Monitoring output data can interfere with import/export operations. 126
IP blocks may not persist across software upgrade 126
Using Windows* HyperTerminal* 127

Chapter 9: Troubleshooting

Appendix A: Front Panel

Buttons and Switches 134
Front Panel LEDs 134
Connectors 136

Appendix B: Failure/Bypass Modes

Bypass Button 138
Fail-through Switch (Security Level) 138

Appendix C: Supported Ciphers

Cipher Strength 141
SSL Version Level 142

Appendix D: Regulatory Information

Taiwan Class A EMI Statement 145
VCCI Statement 146
FCC Part 15 Compliance Statement 146
Canada Compliance Statement (Industry Canada) 147
CE Compliance Statement 147
CISPR 22 Statement 148
VCCI Class A (Japan) 148
Australia 148
WARNING 148
AVERTISSEMENT 149
WARNUNG 150
AVVERTENZA 150

ADVERTENCIAS 151
Wichtige Sicherheitshinweise 152

Appendix E: Software License Agreement

Mozilla* and expat* License Information 158
MOZILLA PUBLIC LICENSE, Version 1.1 158

Support Services

Support for your SA7100/SA7120 171
U.S. and Canada 171
Europe 172
Asia 173
Latin America 174
Other Countries 174

Glossary

Index

Notes

1 Introduction

Congratulations on your choice of the HP e-Commerce Server Accelerator SA7100/SA7120. The processing of secure transactions through Secure Socket Layer (SSL) can use up to 90% of even the largest servers' CPU power and can degrade response time significantly. The SA7100/SA7120 provides a completely transparent way to increase the performance of Web sites for SSL transactions. The SA7100/SA7120 is positioned in front of the server farm, where it intercepts SSL transactions, processes them, and relays them to the servers. The SA7100/SA7120 performs all encryption and decryption management in this environment with a minimum of administrator interaction.

About this User Guide

This User Guide supports the HP e-Commerce Server Accelerator SA7100 and the HP e-Commerce Server Accelerator SA7120. By default this text refers to the product as "SA7100/SA7120." Where appropriate, the text refers to "SA7100" or "SA7120." Additionally, notes in the left-hand margin may be used to distinguish the two products. Illustrations of the command prompt use:
"`HP SA7120>`".

Who Should Use this Book

This User Guide is intended for administrators with the following background:

- Familiarity with networking concepts and terminology.
- Basic knowledge of network topologies.
- Basic knowledge of networks and IP routing.
- Some knowledge of SSL, keys, and certificates.
- Knowledge of Web servers.

Before You Begin

SA7100/SA7120 setup can be divided into three basic procedures:

- Physically install single or multiple SA7100/SA7120s with single or multiple servers.
- Configure your SA7100/SA7120 in the Command Line Interface.
- Identify existing certificates or obtain new ones you want to use in SSL operations.

How to Use this Book

The information in this book is organized as follows:

- *Chapter 1: Introduction* provides an introduction and overview of the SA7100/SA7120, and a summary of new features.
- *Chapter 2: Installation and Initial Configuration* contains installation and initial configuration procedures. (This material is also discussed in the separate *Quick Start Guide*.)
- *Chapter 3: Theory of Operation* explains the general principles behind SA7100/SA7120 operation.
- *Chapter 4: Scenarios* provides examples of SA7100/SA7120 configurations, together with specific procedures for their implementation.
- *Chapter 5: Command Reference* explains the Command Line Interface (CLI), and lists the commands and their functions.

- *Chapter 6: Remote Management* details how you can use Telnet, Secure Shell (SSH), and SNMP to manage the SA7100/SA7120 from remote locations.
- *Chapter 7: Alarms and Monitoring* explains the ways in which you can configure the device to report information to you, either routinely or as a result of abnormal events or conditions.
- *Chapter 8: Software Updates* provides procedures for obtaining SA7100/SA7120 system software updates.
- *Chapter 9: Troubleshooting* is a table containing symptoms of problems you may encounter with corresponding likely causes and remedies.
- *Appendix A: Front Panel* diagrams and explains the SA7100/SA7120's front panel LEDs, buttons, and connections.
- *Appendix B: Failure/Bypass Modes* explains how the SA7100/SA7120 deals with failure conditions and details the bypass function.
- *Appendix C: Supported Ciphers* lists the supported encryption ciphers.
- *Appendix D: Regulatory Information* provides information regarding the SA7100/SA7120's compliance with applicable regulations.
- *Appendix E: Software License Agreement* contains the software license and terms and conditions of user of this product.
- *Support Services* contains customer support telephone numbers for various locales.
- *Glossary* defines terms appearing in this User Guide.

Notes

2 Installation and Initial Configuration

Before You Begin

WARNING: *Do not remove the device's cover. There are no user-servicable parts inside.*

Before you begin installation, you need the following:

- IP address for SA7100/SA7120 (only if you intend to use the Remote Management).
- IP addresses and IP port numbers of servers.
- Keys/certificates. See Chapter 3 for information on obtaining keys and certificates.
- Network cables, such as straight-through and/or crossover cables. (The table in the section "Network Connections" in this chapter identifies the types of cables you must use.)
- Phillips screwdriver (rack-mounting only).
- Rack-mounting screws (rack-mounting only).

Installing the SA7100/SA7120 Free-Standing or in a Rack

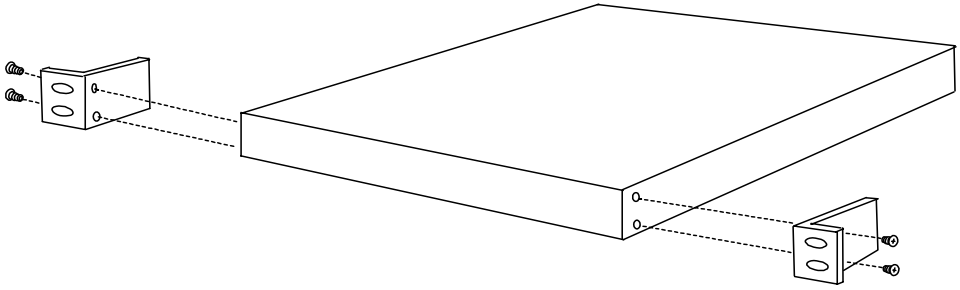
The HP e-Commerce Server Accelerator SA7100/SA7120 is physically installed in either of two ways:

- In a standard 19” rack, cantilevered from the provided mounting brackets.
- Free-standing on a flat surface with sufficient space for air-flow.

Rack Installation

Rack mounting requires the use of the mounting brackets, and all four of the included Phillips screws.

1. Locate the two mounting brackets and the four screws. (Two screws for each bracket.)
2. Attach a mounting bracket to each side of the SA7100/SA7120, using two of the provided screws for each bracket. Use the holes near the front of the SA7100/SA7120’s sides. The brackets have both round and oval holes; the flange with round holes attaches to the SA7100/SA7120, the flange with oval holes to the rack.



Mounting Bracket Orientation

3. Position the SA7100/SA7120 in the desired space of your 19” rack and attach the front flange of each mounting bracket to the rack with two screws each. (Rack-mounting screws are not provided.)

Free-Standing Installation

1. Attach the provided self-adhesive rubber feet to the SA7100/SA7120's bottom.
2. Place the SA7100/SA7120 on a flat surface and make sure that there is adequate airflow surrounding the unit (allow at least one inch of air space on all sides).

Network Connections

Use the table below to select and install the appropriate cables. (All cables must be Category 5 UTP or better.)

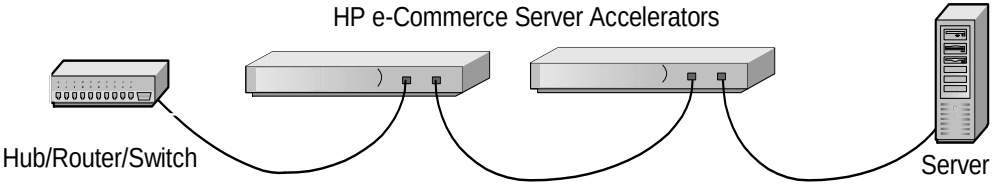
	SA7100/SA7120's network connector	**SA7100/SA7120's server connector**
Workstation or Server	Crossover cable	Straight-through cable
Switch or Hub	Straight-through cable	Crossover cable
Router	Crossover cable	Not recommended
SA7100/SA7120 network connector*	N/A	Straight-through cable
SA7100/SA7120 server connector*	Straight-through cable	N/A

* Applicable only to multiple, cascaded units.

NOTE: *Use caution when connecting both of the SA7100/SA7120's network ports to the same switch, hub, or router. Doing so creates a feedback loop that adversely effects network bandwidth.*

3. Connect the provided power cable to the back of the unit. (There is no power switch.) Under normal circumstances, the SA7100/SA7120 requires approximately 30 seconds to boot. When the boot is complete, the unit's Power LED is steadily illuminated. (If the Power LED is not steadily illuminated, see Chapter 9, "Troubleshooting," to rectify before proceeding to Step 3.)
4. The Inline LED should be either steadily illuminated or blinking (to indicate Inline mode). If it is not, press the Bypass switch on the device's front panel to enable Inline mode.

5. At this point both the Network and Server LEDs should be steadily illuminated. If not, please see Chapter 9, “Troubleshooting.”



Network Connections

Status Check

Before proceeding to the Admin Terminal Connection section, take a moment to verify that the SA7100/SA7120 is correctly connected.

Network and Server LEDs

Verify that the Network and Server LEDs are both illuminated. If one or both are not, refer to the Troubleshooting section at the end of this chapter.

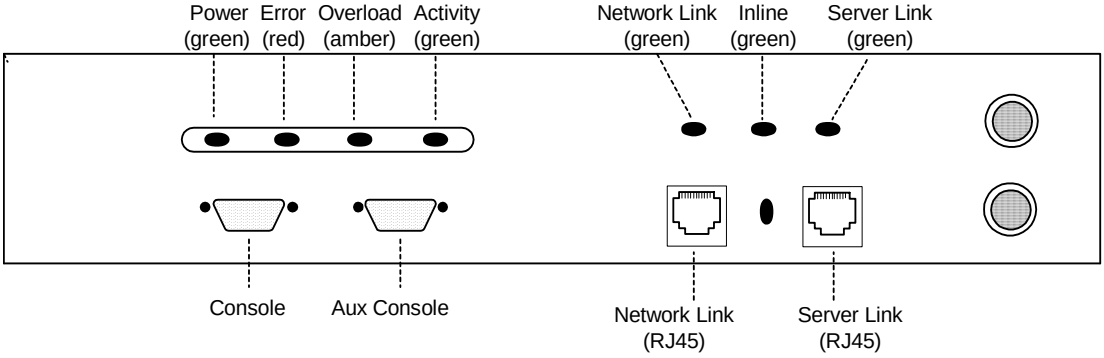
Inline LED

A blinking Inline LED indicates that the system is online in Fail-safe mode. Refer to the Troubleshooting section at the end of this chapter or Appendix B, “Failure/Bypass Modes.”

Admin Terminal Connection

Run HyperTerminal* or a similar terminal emulator on your PC. The steps below are illustrative of HyperTerminal*. Other terminals will require different procedures.

1. Use the serial cable provided with the SA7100/SA7120 to connect the device's serial port (the left-hand serial port labeled "Console") to the serial port of any terminal. (A PC running Windows* HyperTerminal* is used here as an example.)



Front Panel Connectors and LEDs

2. Type an appropriate name in the Name field of the Connection Description window (e.g., "Configuration"), and then click the **OK** button. The **Phone Number** panel appears.
3. In the **Connect Using…** field specify "COM1" (or the serial port through which the PC is connected to the SA7100/SA7120 if different from COM1).
4. Click the **OK** button. The COM1 Properties panel appears. Set the values displayed here to **9600**, **8**, **none**, **1**, and **none**.
5. Click the **OK** button.

HyperTerminal* Paste Operations

If you're using HyperTerminal* you **must** make the following configuration change:

1. In the **File** menu, click **Properties**.
2. Click the **Settings** tab.
3. Click the **ASCII Setup** button.
4. Change the values of Line and Character delay from 0 to at least 1 millisecond.

5. Click **OK** to exit ASCII Setup.
6. Click **OK** to exit Connection Properties.

Troubleshooting

Server and Network LEDs

If either the Network or Server LED fails to illuminate using either straight-through or crossover network cables, the problem may be elsewhere in the network. Verify by wiring around the SA7100/ SA7120.

Inline LED

The Fail-through switch allows you to control what happens in the event of a failure. It is located in a recess between the Network and Server connectors. Use a small screwdriver or paper clip to manipulate the switch. The two options are:

- Allow traffic to flow through the SA7100/SA7120 unprocessed. (Fail-through mode, indicated by a steadily illuminated Inline LED.)
- Block traffic flow through the SA7100/SA7120 entirely. (Fail-safe mode, indicated by a blinking Inline LED.)

Please see Appendix B for a table describing all permutations of LED operation.

Continuing Configuration

This concludes basic configuration of the SA7100/SA7120. To configure the unit for production please continue with Chapter 3, *Theory of Operations*, or Chapter 4, *Scenarios*.

3 Theory of Operation

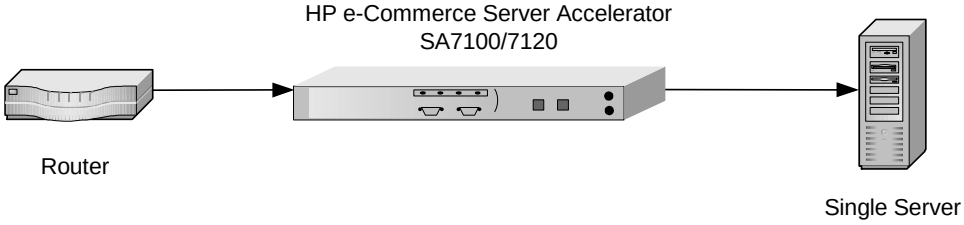
Security

The HP e-Commerce Server Accelerator SA7100/SA7120 offers Remote Management capability. This feature requires that the SA7100/SA7120's network interface be assigned an IP address, thus security becomes a matter for your attention. If you intend to manage your SA7100/SA7120 from a remote location, be sure to read the section, "Access Control" in Chapter 6.

Single Server Acceleration

Typically, SA7100/SA7120 supports the SSL processing needs of a single server. This is the simplest and most common configuration. The SA7100/SA7120 is connected to the network between the router and the server.

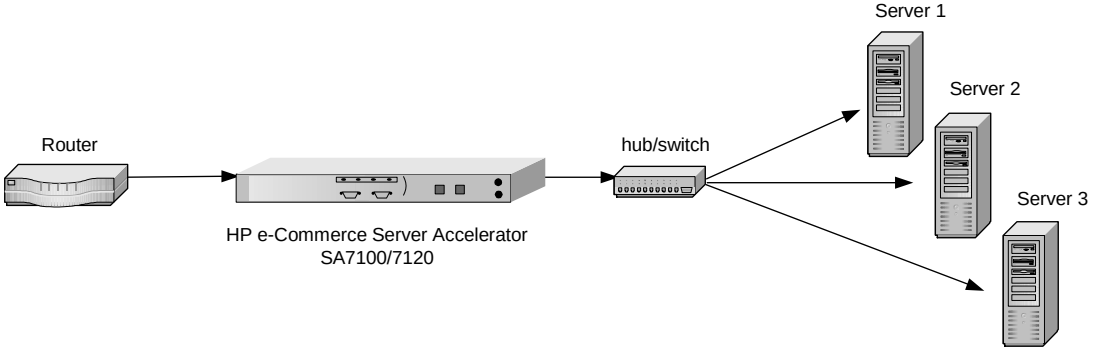
Ideally, the SA7100/SA7120 is installed in the network in such a way as to minimize network latency.



SA7100/SA7120 in Single Server Configuration

Multiple Servers

Given the SSL processing power of the SA7100/SA7120, multiple servers can be supported. In this configuration, the SA7100/SA7120 sits between the router and the switch. SSL traffic intended for these servers is intercepted and other traffic is passed through.



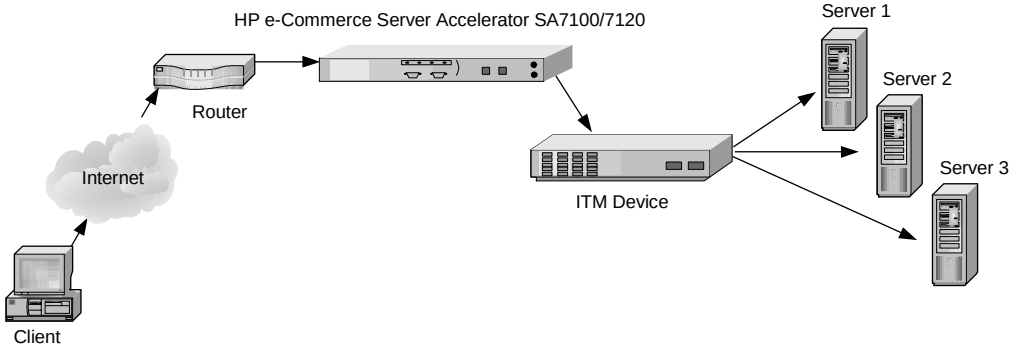
SA7100/SA7120 in Multiple Server Configuration

Working with Internet Traffic Management (ITM) Devices

The SA7100/SA7120 is compatible with Internet Traffic Management (ITM) devices. In such environments, the SA7100/SA7120 lies between the router and the ITM device, or between the ITM device and the server. ITM devices distribute workload across multiple servers and redirect traffic based on content.

Positioning SA7100/SA7120 between ITM Device and Client Network

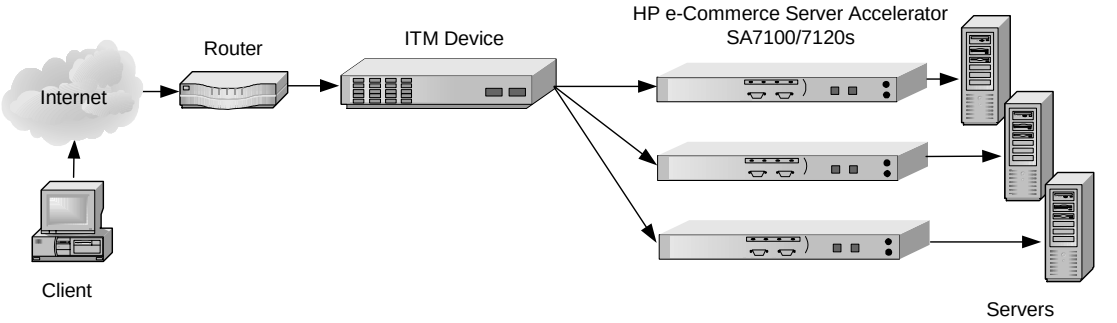
If the ITM device supports layer 7 traffic management, URLs must be readable (that is, unencrypted). Therfore, in environments performing layer 7 load balancing, it is recommended that the SA7100/SA7120 be placed between the ITM device and the client network.



SA7100/SA7120 Between Router and ITM Device

Positioning SA7100/ SA7120 between ITM Device and Server

If security considerations require limited network access to clear text, the SA7100/SA7120 should be placed between the ITM device and the server.



SA7100/SA7120s Between ITM Device and Servers

NOTE: *The illustrated configuration precludes layer 7 load balancing because secure traffic through the ITM device is encrypted.*

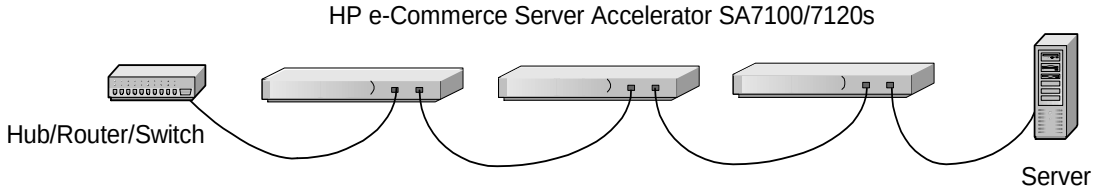
Multiple SA7100/SA7120s and Cascading Processing

Scalability and Cascading

The SA7100/SA7120's capabilities are scalable by chaining, or "cascading," multiple SA7100/SA7120s together. In such configurations, each unit's server side connector is wired to the network side connector of the next SA7100/SA7120 in line. The last SA7100/SA7120 in line is connected to the server, switch, or ITM device.

Spilling and Throttling

When the SA7100/SA7120's "spill" option is enabled, if a given SA7100/SA7120 cannot process a request within a specified interval, the request is passed on, still encrypted, to the next SA7100/SA7120 in line. The last SA7100/SA7120 on the server side can also be enabled to spill to the server. Spilling is performed dynamically on a connection-by-connection basis. (See **spill** command, Chapter 5, "Command Reference.") If spill is disabled, the SA7100/SA7120 "throttles," that is, will not accept incoming requests when it becomes overloaded.



Cascaded SA7100/SA7120s

Availability

When a SA7100/SA7120 fails or is set to Bypass mode while Fail-through is enabled, the SA7100/SA7120's network side and server side network adapters are directly connected, allowing traffic to pass through to the next device until the failed unit is brought back into service. This feature eliminates a single point of failure and provides a high level of availability, should there be a failure. In installations with multiple SA7100/SA7120s, the next unit in the cascade picks up the encryption/decryption workload, while in single SA7100/SA7120 configurations, the server assumes the load. See "Failure/Bypass Modes" in Appendix B for more information.

Keys and Certificates

WARNING: *The SA7100/SA7120 comes with default keys and certificates for test purposes. Certificates for production use should be obtained from a recognized certificate authority.*

A necessary part of the SA7100/SA7120 configuration is the use of keys and certificates. A key is a set of numbers used to encrypt or decrypt data. A certificate is a "form" that identifies a server or user. The certificate contains information about your company as well as information from a third party that verifies your identity.

There are three ways to obtain keys and certificates:

- Obtaining a certificate from VeriSign* or other Certificate Authority (or "CA")
- Using an existing key/certificate
- Creating a new key/certificate on the SA7100/SA7120

Cutting and Pasting with HyperTerminal*

Cutting and pasting is an integral part of the next several procedures. Below are procedures for cutting and pasting in HyperTerminal*. If you use some other terminal program, consult that product's documentation for appropriate procedures.

To copy an item (key, certificate signing request, etc.) from HyperTerminal*:

1. Open the HyperTerminal* window.
2. Click and drag to select the item.
3. After the item is selected, open the **Edit** menu and click **Copy** (or type <**ctrl-c**>).
4. Open the window where you will paste the data, and position the cursor at the appropriate point.
5. In the **Edit** menu, click **Paste** (or type <**ctrl-v**>).

To paste an item (key, certificate signing request, etc.) into HyperTerminal*:

1. Display the item in the appropriate application window, then click and drag to select the item.
2. Once the item is selected, click the **Edit** menu and select **Copy** (or type <**ctrl-c**>).

3. Move to the HyperTerminal* window, and position the cursor at the appropriate point.
4. Pull down the **Edit** menu, and select **Paste to Host** (or type <**ctrl-v**>).

Obtaining a Certificate from VeriSign* or Other Certificate Authority

Use the **create key** command to create your key and the **create sign** command to create a signing request to be sent to VeriSign* or other CA for authentication. The CA will return it in approximately one to five days. After you have received the certificate, use the **import cert** command to import it into the SA7100/SA7120.

The fields input to create a signing request are called collectively a Distinguished Name (DN). For optimal security, one or more fields must be modified to make the DN unique.

Procedure

Create a key:

1. Type the **create key** command at the prompt:
```
HP SA7120> create key
Key strength (512/1024) [512]:
New keyID [001]: mywebserver
Keypair was created for keyID: mywebserver
```
2. Create a Certificate Signing Request:
```
HP SA7120> create sign mywebserver
You are about to be asked to enter information
that will be incorporated into your
certificate request. The "common name" must be
unique. For other fields, you could use
default values.
```

Certifying authorities have specific guidelines on how to answer each of the questions. These guidelines may vary by certifying authority. Please refer to the guidelines of the certifying authority to whom you submit your Certificate Signing Request (CSR). Please keep the following in mind when entering the information that will be incorporated into your certificate request:

- **Country code**: This is the two-letter ISO abbreviation for your country (for example, US for the United States).
- **State or Province**: This is the name of the state or province where your organization's head office is located. Please enter the full name of the state or province. Do not abbreviate.

- **Locality**: This is usually the name of the city where your organization's head office is located.
- **Organization**: This should be the organization that owns the domain name. The organization name (corporation, limited partnership, university, or government agency) must be registered with some authority at the national, state, or city level. Use the legal name under which your organization is registered. Please do not abbreviate your organization's name and do not use any of the following characters: < > ~ ! @ # $ % ^ * / \ ( ) ?.
- **Organizational unit**: This is normally the name of the department or group that will use the certificate.
- **Common name**: The common name is the "fully qualified domain name," (or FQDN) used for DNS lookups of your server (for example, www.mysite.com). Browsers use this information to identify your Web site. Some browsers will refuse to establish a secure connection with your site if the server name does not match the common name in the certificate. Please do not include the protocol specifier "http://" or any port numbers or path names in the common name. Do not use wildcard characters such as * or ?, and do not use an IP address.
- **E-mail address**: This should be the e-mail address of the administrator responsible for the certificate.

3. Export the Certificate Signing Request (CSR).

In this example, xmodem is used to send the CSR to a PC connected to the console port.

```
HP SA7120> export sign mywebserver
Export protocol: (xmodem, ascii) [ascii]:x
<Enter>
Use Ctrl-x to kill transmission
Beginning export...
Export successful!
HP SA7120>
```

To submit the CSR to a certifying authority, paste it into the field provided in the authority's online request form. Remember to include the "-----BEGIN CERTIFICATE REQUEST-----" and "-----END CERTIFICATE REQUEST-----" lines.

Typically, the CSR will look something like this:

```
-----BEGIN CERTIFICATE REQUEST-----
MIIBnDCCAQUACQAwXjELMAkGA1UEBhMCQ0ExEDOABgNVBAgT
B09udGFayW8xEDAOBgNVBAcTB01vbnRyYWwxDDAKBgNVBAoT
```

```
A0tGQzEdMBsGA1UEAxMUd3d3Lmlsb3ZlY2hpY2tlbi5jb20w
gZ0wDQYJKoZIhvcNAQEBBQADgYsAMIGHAoGBALmJA2FLSGJ9
iCF8uwfPW2AKkyyKoe9aHnnwLLw8WWjhl[ww9pLietwX3bp6
Do87mwV3jrgQ1OIwarj9iKMLT6cSdeZ0OTNn7vvJaNv1iCBW
GNypQv3kVMMzzjEtOl2uGl8VOyeE7jImYj4HlMa+R168AmXT
82ubDR2ivqQwl7AgEDoAAwDQYJKoZIhvcNAQEEBQADgYEAn8
BTcPg4OwohGIMU2m39FVvh0M86ZBkANQCEHxMzzrnydXnvRM
KPSE208x3Bgh5cGBC47YghGZzdvxYJAT1vbkfCSBVR9GBxef
6ytkuJ9YnK84Q8x+pS2bEBDnw0D2MwdOSF1sBb1bcFfkmbpj
N2N+hqrrvA0mcNpAgk8nU=
-----END CERTIFICATE REQUEST-----
```

4. When the CA returns the certificate, import it into the SA7100/ SA7120. Use the **import cert** command, with the KeyID. As with the import key, choose an import protocol for importing the key. Use **p** for paste. After the paste is finished, add three periods to display the command line.

```
HP SA7120> import cert mywebserver
keyid is mywebserver;
Import protocol: (paste, xmodem) [paste]:
<Enter>
Type or paste in date, end with ... alone on line
-----BEGIN CERTIFICATE-----
MIIDKDCCAtKgAwIBAgIBADANBgkqhkiG9w0BAQQFADCBnDEL
MAkGA1UEBhMCVVMxCzAJBgNVBAgTAkNBMQ4wDAYDVQQHEwVQ
b3dheTEaMBgGA1UEChMRQ29tbWVyY2Ug
.
.
.
-----END CERTIFICATE----- <Enter>
... <Enter>
Import successful!
HP SA7120>
```

5. Create mapping for Server 1. Use the **create map** command to specify the server IP address, ports, and keyID.

```
HP SA7120> create map
Server IP (0.0.0.0): 10.1.1.30
SSL (network) port [443]: <Enter>
Cleartext (server) port [80]: <Enter>
KeyID to use for mapping: mywebserver
```

6. Save the configuration when the server has been mapped.

```
HP SA7120> config save
Saving configuration to flash...
Configuration saved to flash
HP SA7120>
```

Exporting a Key/Certificate from a Server

This method is used when it is important that the existing keys and certificates are used.

NOTE: *Currently there is no published method for extracting private keys from Microsoft* IIS or Netscape* servers.*

Consult your server software documentation for detailed instructions on how to export keys and certificates. Once you have exported the keys and certificates, use the **import key** and **import cert** commands to paste the keys and certificates into your SA7100/SA7120. Some general instructions are provided below for the Apache* Web Server.

Apache* Interface to Open SSL* (mod_ssl)

For key:

1. Look in $APACHEROOT/conf/httpd.conf for location of *.key file.
2. Copy and paste the key file.

For certificate:

1. Look in $APACHEROOT/conf/httpd.conf for location of *.crt file (certificate).
2. Copy and paste the certificate file.

Apache SSL*

For key:

1. Look in $APACHESSLROOT/conf/httpd.conf for location of *.key file.
2. Copy and paste the key file.

For certificate:

1. Look in $APACHESSLROOT/conf/httpd.conf for location of *.cert file.
2. Copy and paste the certificate file.

Stronghold*

For key:

1. Look in $STRONGHOLDROOT/conf/httpd.conf for location of *.key file.
2. Copy and paste the key file.

For certificate:

1. Look in $STRONGHOLDROOT/conf/httpd.conf for location of *.cert file.
2. Copy and paste the certificate file.

Importing into the SA7100/SA7120

1. Use the **import key** command with the keyID, and choose an import protocol for importing the key. In this case, use the default to "paste." When the paste is finished, add a line break followed by three periods to display the command line.

```
HP SA7120> import key mywebserver
Import protocol: (paste, xmodem) [paste]:
<Enter>
Type or paste in date, end with ... alone on line
-----BEGIN RSA PRIVATE KEY-----
MIIBOgIBAAJBALGOlBH14vIdtfuA+UnyRIoKya13ey8mj3GD
QakdwoDJALu+jtcC
.
.
.
S9dPdwp6zctsZeztn/ewPeNamz3q8QoEhY8CawEA
-----END RSA PRIVATE KEY-----<Enter>
... <Enter>
Import successful!
HP SA7120>
```

2. Use the **import cert** command with the keyID. As with import key, choose an import protocol for importing the key. Use the default to "paste." When the paste is finished, add a line break followed by three periods to display the command line.

```
HP SA7120> import cert mywebserver
keyid is mywebserver;
Import protocol: (paste, xmodem) [paste]:
<Enter>
Type or paste in date, end with ... alone on line
```

```
-----BEGIN CERTIFICATE-----
MIIDKDCCAtKgAwIBAgIBADANBgkqhkiG9w0BAQQFADCBnDEL
MAkGA1UEBhMCVVMxCzAJBgNVBAgTAkNBMQ4wDAYDVQQHEwVQ
b3dheTEaMBgGA1UEChMRQ29tbWVyY2Ug
.
.
.
-----END CERTIFICATE----- <Enter>
... <Enter>
Import successful!
HP SA7120>
```

3. Create a server mapping. Use the **create map** command to specify the server IP address, ports, and keyID.
```
HP SA7120> create map
Server IP (0.0.0.0): 10.1.1.30
SSL (network) port [443]: <Enter>
Cleartext (server) port [80]: <Enter>
KeyID to use for mapping: mywebserver
```
4. Save the configuration when the server has been mapped.
```
HP SA7120> config save
Saving configuration to flash...
Configuration saved to flash
HP SA7120>
```

Creating a new Key/Certificate on the SA7100/SA7120

Use the **create key** and **create cert** commands to create new keys and certificates for SA7100/SA7120 operation. This procedure can be used when there are no existing keys and certificates on the server. The advantage is that this method is very fast, but a CA has not signed the certificates.

The fields input to create a certificate are called a Distinguished Name (DN). For optimal security, one or more fields must be modified to make the DN unique.

Procedure

1. Create a key as follows:
```
HP SA7120> create key
Enter the key strength [512,1024]: 512
New keyID [001]: mywebserver
Keypair was created for keyID: mywebserver
```
2. Enter the **create cert** command with the keyID
```
HP SA7120> create cert mywebserver
You are about to be asked to enter information...
```

Enter the information for the certificate, as prompted:

- Country
- State
- Locality
- Organization
- Organization unit
- Common name (for example, www.myserver.com)
- E-mail address

3. Create a server mapping. Use the **create map** command to specify the server IP address, ports, and keyID.

```
HP SA7120> create map
Server IP (0.0.0.0): 10.1.1.30
SSL (network) port [443]: <Enter>
Cleartext (server) port [80]: <Enter>
KeyID to use for mapping: mywebserver
```

4. Save the configuration when the server has been mapped.

```
HP SA7120> config save
Saving configuration to flash...
Configuration saved to flash
HP SA7120>
```

Global Site Certificates

Overview

NOTE: *The SA7100/ SA7120 supports only one root CA certificate per mapping. However, multiple intermediate CA certificates per single mapping are supported.*

Four types of certificates are involved in the following discussion:

- Root Certificate. The certificate of a trusted CA such as VeriSign.*
- Server Certificate. Loaded on the server. Can be either self-generated or received from a CA such as VeriSign*. Interacts with requesting browser's root certificate to establish encryption level.
- Global Site Certificate. An extended server certificate. Allows 128-bit encryption for export-restricted browsers.
- Intermediate certificate authority (CA) Certificate. A certificate "signed," that is, authenticated, by a recognized CA such as VeriSign*, and used to validate a global site certificate. Called an "intermediate CA certificate" in the following discussion.

Export versions of Internet Explorer* and Netscape* Communicator use 40-bit encryption to initiate connections to SSL servers. Upon receiving a client request, the server responds by sending a digital certificate. If this certificate is a conventional server certificate (that is, not a global site certificate), browser and server complete the SSL handshake and use a 40-bit key to encrypt application data. If the server responds to a requesting browser with a global site certificate, the client automatically renegotiates the connection to use 128-bit encryption.

A global site certificate is validated by an accompanying intermediate CA certificate. (Such pairs are called “chained certificates.”) Examples of intermediate CA certificates include Microsoft SGC Root* and VeriSign Class 3*. When a requesting browser receives a global site certificate along with an intermediate CA certificate, the browser’s root certificate is used to validate the intermediate CA certificate, which in turn is used to validate the global site certificate, thus letting the browser know that it can renegotiate the connection to use 128-bit encryption.

Global Site Certificate Paste Procedure

If you wish to use a global site certificate, you must import both the global site certificate and its accompanying intermediate CA certificate. Both certificates must be chained together in a single file.

Use the **import cert** command to import either single or chained certificates. In the latter case, paste the server’s global site certificate first, followed by the intermediate CA certificate. Follow the intermediate CA certificate by typing three periods on a new line.

Example:

```
HP SA7120> import cert <keyID>
Import protocol: (paste, xmodem) [paste]:
Type or paste in data, end with ... alone on line

-----BEGIN CERTIFICATE-----
MIIFZTCCBM6gAwIBAgIQCTN2wvQH2CK+rgZKcTrNBzANBgkq
hkiG9w0BAQQFADCBujEfMB0GA1UEChMWVmVyaVNpZ24gVHJ1
c3QgTmV0d29yazEXMBUGA1UECxMOVmVyaVNpZ24sIEluYy4x
MzAxBgNVBAsTKlZlcmlTaWduIEludGVybmF0aW9uYWwgU2Vy
:
dmVyIENBIC0gQ2xhc3MgMzFJMEcGA1UECxNAd3d3LnZlcmlz
aWduLmNvbS9DUFMg
SW5jb3JwLmJ5IFJlZi4gTElBQklMSVRZIExURC4oYyk5NyBW
ZXJpU2lnbjAeFw05
OTExMTEwMDAwMDBaFw0wMDExMTAyMzU5NTlaMIHHMQswCQYD
```

NOTE: There must be no white space before, between, or after certificates, and the “Begin...” headers and “End...” trailers must all be retained.

```
VQQGEwJVUzETMBEG
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
MIIEMTCCA5qgAwIBAgIQI2yXHivGDQv5dGDe8QjDwzANBgkq
hkiG9w0BAQIFADBfMQswCQYDVQQGEwJVUzEXMBUGA1UEChMO
VmVyaVNpZ24sIEluYy4xNzA1BgNVBAsTLkNsYXNzIDMgUHVi
bGljIFByaW1hcnkgQ2VydGlmaWNhdGlvbiBBdXRob3JpdHkw
HhcNOTcwNDE3MDAwMDAwWhcN
:
OTk3IFZlcmlTaWduMA0GCSqGSIb3DQEBAgUAA4GBALiMmMMr
SPVyzWgNGrN0Y7uxWLaYRSLsEY3HTjOLYlohJGyawEK0Rak6
+2fwkb4YH9VIGZNrjcs3S4bmfZv9jHiZ/4PC/
NlVBp4xZkZ9G3hg9FXUbFXIaWJwfE22iQYFm8hDjswMKNXRj
M1GUOMxlmaSESQeSltLZl5lVR5fN5qu
-----END CERTIFICATE-----<Enter>
...<Enter>
Import successful!
HP SA7120>
```

Redirection: Clients and Unsupported Ciphers

NOTE: *The user must provide the redirect URL and ensure that it is available, as well as define the content of the redirect page.*

WARNING: *If the redirect URL causes a client to access the same SA7100/SA7120 mapping that invoked the redirection an infinite loop condition will occur.*

When a client that does not support the selected cipher suite attempts to connect to the SA7100/SA7120, the default behavior is to reject the connection, resulting in the client system reporting a fatal error. However, the SA7100/SA7120 allows you to specify a "redirect address" where you can provide clients with additional information. The **set redirect** command allows you to specify a redirect Web address for any Map ID. The **show redirect** command displays any redirect addresses currently configured.

```
HP SA7120> list map
Map                Net  Ser  Cipher  Re-   Client
ID KeyID Server IP Port Port Suites  direct Auth
== ===== ========= ==== ==== ======  =====  ====
1  default Any     443  80   all(v2+v3) n   n
2  sample 10.1.2.5 443  80   med(v2+v3) n   n
HP SA7120> set redirect 2
Enter a redirect URL at following prompt
e.g. http://www.e-comm_site.com/somebrowser.html
Enter redirect URL []:http://www.e-
comm_site.com/cipher_info.html
HP SA7120> list map
Map                Net  Ser  Cipher  Re-   Client
ID KeyID Server IP Port Port Suites  direct Auth
== ===== ========= ==== ==== ======  =====  ====
1  default Any     443  80   all(v2+v3) n    n
2  sample 10.1.2.5 443  80   med(v2+v3) y    n
HP SA7120> show redirect 2
Redirect URL for map 2 is set: http://www.e-
comm_site.com/cipher_info.html
```

To disable a redirect URL for a mapping:

```
HP SA7120> set redirect 2 none
HP SA7120> show redirect 2
Redirect URL for map 2 is not set
```

Client Authentication

By default, the SA7100/SA7120 does not authenticate client identities, however specific map IDs can be configured to request client certificates for the purpose of verifying identities. When this feature is enabled, the SA7100/SA7120 verifies that client certificates are signed by a known CA. This feature is controlled by the **import client_ca** command.

Example:

First, use the **list map** command to display the current map IDs and their configurations including, in the last column, Client Authentication, enabled (y) or disabled (n).

```
HP SA7120> list map
Map               Net  Ser  Cipher  Re-   Client
ID KeyID Server IP Port Port Suites  direct Auth
== ===== ========= ==== ==== ======  =====  ====
1 default Any       443  80  all(v2+v3) n      n
2 sample  10.1.2.57 443  80  med(v2+v3) n      n
```

Next, import the client CA certificate for Map ID 2.

```
HP SA7120> import client_ca 2
Import protocol: (paste, xmodem) [paste]:
<Enter>
Type or paste in data, end with ... alone on line
-----BEGIN CERTIFICATE-----
MIIDxzCCAzCgAwIBAgIBADANBgkqhkiG9w0BAQQFADCBpDEL
MAkGA1UEBhMCVVMxEzARBgNVBAgTCkNhbGlmb3JuaWExEjAQ
BgNVBAcTCVNhbiBEaWVnbzEUMBIGA1UE
.
.
.
XcCabZcfBRuYcZeUoNrGUl8tD80jp2YNG1vidgLEaD1YCli5
I9/mNrcB25mSfdAR
/08ROTMxm4VKOSA=
-----END CERTIFICATE-----<Enter>
...<Enter>
```

Verify the import by using the **list map** command again. Note that the Client Auth column now shows client authentication for Map ID 2 enabled.

```
HP SA7120> list map
Map                Net  Ser  Cipher  Re-   Client
ID KeyID Server IP Port Port Suites  direct Auth
== ===== ========= ==== ==== ======  =====  ====
1 default Any       443  80  all(v2+v3) n      n
2 sample  10.1.2.57 443  80  med(v2+v3) n      y
```

Clients connecting to “map 2” are required to present a client certificate signed by the CA whose certificate was imported above. If they do not present a properly signed certificate, their connection attempt is refused.

Creating a Client CA Certificate using OpenSSL*

There are software packages available that handle the details of client certificate generation, however, you can implement them manually. The following example illustrates the appropriate steps using OpenSSL*:

1. Generate the key pair for the client CA:
   ```
   openssl genrsa -out ca_key.pem 1024
   ```

To acquire a copy of OpenSSL* for your environment, access the OpenSSL* Web site at www.openssl.org.

NOTE: *Generate the client CA certificate:*

```
openssl req -new -x509 -config hp.cnf -key
ca_key.pem -days 365 -out ca_cert.pem
```

NOTE: *In this example, ca_cert.pem is your trusted CA and signing certificate.*

2. Using the **import client_ca** command, import ca_cert.pem

For each client:

1. Generate a key pair:
   ```
   openssl genrsa -out key.pem 1024
   ```
2. Generate a certificate signing request:
   ```
   openssl req -new -config hp.cnf -days 365
   -key key.pem -out csr.pem
   ```

3. Sign the client certificate signing request with the client CA certificate:
   ```
   openssl x509 -req -CAcreateserial -CAkey
   ca_key.pem -CA ca_cert.pem -days 365 -in csr.pem
   -out cert.pem
   ```
4. Combine the `key.pem` and `cert.pem` keys into one file by typing this command:
   ```
   cat key.pem cert.pem > all.pem
   ```
5. Convert to p12 format by typing this command:
   ```
   openssl pkcs12 -export -in all.pem -out
   <file>.p12 - name "MY NAME"
   ```

The output file <file>.p12 will be imported into the browser as a personal certificate.

SSL Processing

The SA7100/SA7120 handles several SSL protocols, for example, HTTPS (which is the default). For security purposes, you can block access to specified IPs or ports (see "Blocking" section). Traffic that is not mapped or blocked flows through transparently. Supported protocols are listed below. (Ports listed are "well-known" port assignments. Any available port may be used.)

- HTTPS 443 (default)
- IMAPS 993
- POP3S 995
- SMTPS 465
- NNTPS 563
- LDAPS 636

Server Assignment ("Mapping")

Keypairs and their associated certificates are referenced by a keyID. A server is identified by a unique combination of server IP and network port. *Mapping* is the process of associating a keyID with a server (using server IP, network port, and server port). The SA7100/SA7120 supports two types of mapping:

- Automapping
- Manual mapping

Automapping

*NOTE: Remember to save the configuration (with the **config save** command) after making mapping changes.*

Automapped entries are identified by a server IP address of zero (0.0.0.0). When a server IP address of zero is specified, the SA7100/SA7120 intercepts packets to any server IP address with the matching network ports. As with any mapping entry, the combination of server IP address and network port must be unique.

The initial configuration for the SA7100/SA7120 provides an automapping entry for network port 443 and server port 80. This is associated with the internally generated default keypair and certificate with the keyID of "default." Under this initial configuration, automapping occurs on any server with this network port (443) when traffic is routed through the SA7100/SA7120.

Automapping with user-specified key and certificate

When a user-specified key and certificate are to be automapped, the user can replace the initial automapping entry with the **create map** command. By specifying the same unique identifier (server IP of 0.0.0.0, and network port of 443) with a user-generated keyID, the user can overwrite the initial automapping entry. (The key and certificate may be obtained through any of the methods described previously in this chapter.)

Automapping with multiple port combinations

The user can specify multiple automapping entries when the network port is unique. For example, a user might specify, in addition to the initial network (443) and server (80) port combination, a combination of network (8010) and server (80) port.

Deleting automapping entries

Any automapping entry can be deleted, but if the initial automapping is deleted and no other mapping entry is specified, the SA7100/SA7120 automatically recreates the initial automapping entry. Either replace the initial automapping entry or create another mapping/automapping entry and then delete the initial automapping entry using the **delete map** command.

Manual mapping

The user can create (with the **create map** command) one or more mapping entries for individual servers. This is the only way to specify unique keyIDs for each server. Normally, when manual mapping is performed, the initial automapping entry is deleted, but this is not a requirement.

Combining automapping and manual mapping

NOTE: *If both manual mappings and applicable automappings are available, the SA7100/ SA7120* ***always*** *uses the manual mapping.*

Any combination of automapping and manual mapping entries, up to a total of 1000, can be used provided the server IP address and network port combinations are unique. Several of the scenarios in Chapter 4 include step-by-step mapping procedures.

Blocking

NOTE: *Blocking operations apply to both TCP and UDP traffic.*

For security purposes, the SA7100/SA7120 allows the blocking of particular IP addresses and ports. IP/port combinations can be blocked on the basis of:

- Specific IP, specific port
- Subnet, specific port
- All IPs, specific port

Specific IP, Specific Port

To block a specific server IP and specific port combination:

1. Type the **create block** command.
2. Type the IP address.
3. Press **Enter** to accept the default IP mask.
4. Type the specific port.
5. Press **Enter** to accept the default port mask.

Example:

```
HP SA7120> create block
Client IP to block [0.0.0.0]: 10.1.2.1
Client IP mask [0.0.0.0]: 255.255.255.255
Server IP to block [0.0.0.0]: 20.1.2.1
Server IP mask [0.0.0.0]: 255.255.255.255
Server Port to block: 80
Server Port mask [0xffff]:<Enter>
```

Use the **show block** command to verify:

```
HP SA7120> show block
--------
 blocks :
---------
(1) block 10.1.2.1 255.255.255.255 20.1.2.1
255.255.255.255 80 0xffff
```

Subnet, Specific Port

To block a subnet, and specific port combination:

1. Specify a subnet, using **0** as the address's final octet. (In the example below, all IPs from "10.1.2.x" to "20.1.2.x" are blocked on port 80.)
2. Type the subnet mask, with **0** indicating the portion of the IP address to be ignored.
3. Type the specific port.
4. Press **Enter** to accept the default port mask.

Example:

```
HP SA7120> create block
Client IP to block [0.0.0.0]: 10.1.2.0
Client IP mask [0.0.0.0]: 255.255.255.0
Server IP to block [0.0.0.0]: 20.1.2.0
Server IP mask [0.0.0.0]: 255.255.255.0
Server Port to block: 80
Server Port mask [0xffff]:<Enter>
```

Use **show block** to verify:

```
HP SA7120> show block
-----------
blocks :
-----------
(1) block 10.1.2.0 255.255.255.0 20.1.2.0
255.255.255.0 80 0xffff
-----------
```

All IPs, Specific Port

To block a specific port on all IP addresses:

1. Type all zeroes as the IP address to be blocked.
2. Type all zeroes as the IP wildcard mask to be blocked.
3. Type the specific port.

4. Press **Enter** to accept the default port mask.

Example:

```
HP SA7120> create block
Client IP to block [0.0.0.0]: <Enter>
Client IP mask [0.0.0.0]: <Enter>
Server IP to block [0.0.0.0]:<Enter>
Server IP mask [0.0.0.0]:<Enter>
Server Port to block: 80
Server Port mask [0xffff]:<Enter>
```

5. Use the **show block** command to confirm the block:

```
HP SA7120> show block
-----------
blocks :
-----------
(1) block
0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 80 0xffff
-----------
```

Delete a Block

The example below illustrates how to delete a subnet block. Type the **delete block** command with the block ID (block ID is **1** in the example):

1. Use the **show block** command to identify the block to be deleted.

```
HP SA7120> show block
-----------
blocks :
-----------
(1) block 10.1.2.1 255.255.255.255 20.1.2.1
255.255.255.255 80 0xffff
-----------
```

2. Use the **delete block** command followed by the block ID to delete the block.

```
HP SA7120> delete block 1
```

Failure Conditions, Fail-safe, and Fail-through

During any failure condition of the SA7100/SA7120, unprocessed data packets can either pass through or not, depending on whether Fail-safe or Fail-through mode is enabled. The Fail-through switch is by default in Fail-safe mode, meaning that during a failure no data packets will pass from one side of the SA7100/SA7120 to the other. For details, see “Failure/Bypass Modes” in Appendix B.

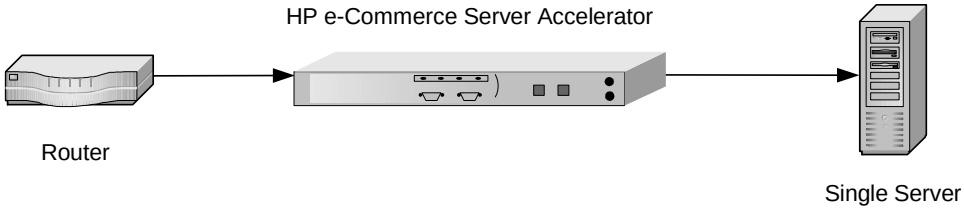
4 Scenarios

This section contains scenarios illustrating examples of HP e-Commerce Server Accelerator SA7100/SA7120 configurations:

- Scenario 1: Single server
- Scenario 2: Multiple servers
- Scenario 3: Multiple SA7100/SA7120s, cascaded
- Scenario 4: Different ingress and egress routers
- Scenario 5: Configuring a Firewall

Scenario 1—Single Server

This scenario describes a typical configuration of a SA7100/SA7120 with one server, using either automapping or manual configuration/ mapping. This scenario describes the fastest way to get up and running with a SA7100/SA7120.



Single SA7100/SA7120, Single Server Installation

Procedure for Scenario 1

Automapping

1. Physically connect the SA7100/SA7120 to the router and to one server.
2. Initiate HTTPS traffic to the server. The SA7100/SA7120 monitors traffic and uses the initial mapping (with associated default key and certificate) to decrypt HTTPS traffic and pass clear text HTTP traffic to the server.

Manual Configuration

1. Perform the installation as described in Chapter 2. Access the SA7100/SA7120 command prompt.
2. Acquire the appropriate keys and certificates following the procedure in the “Keys and Certificates” section in Chapter 3.
3. Create a mapping for the server. Use the **create map** command to specify the server IP address, ports, and keyID.

```
HP SA7120> create map
Server IP (0.0.0.0): 10.1.1.30
SSL (network) port [443]: <Enter>
Cleartext (server) port [80]: <Enter>
KeyID to use for mapping: myserver
```

4. You can delete the default mapping. After the user has manually created the mapping, the default mapping can be deleted. In this case, delete MapID number 1. MapID number 2 becomes MapID number 1 when the default is deleted.

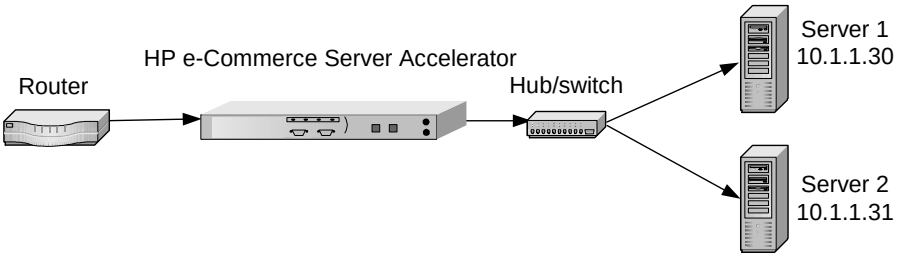
```
HP SA7120> delete map 1
HP SA7120> list maps
Map                Net  Ser  Cipher  Re-  Client
ID KeyID  Server IP Port Port Suites direct Auth
== =====  ========= ==== ==== ======  =====
====
1  myserver 10.1.1.30 443 80 med(v2+v3) n   n
HP SA7120>
```

5. Save the configuration when the server has been mapped.

```
HP SA7120> config save
Saving configuration to flash...
Configuration saved to flash
HP SA7120>
```

Scenario 2—Multiple Servers

This scenario shows how to configure two or more servers.



Single SA7100/SA7120, Multiple Server Installation

Procedure for Scenario 2

1. Perform the installation as described in Chapter 2. Access the SA7120 command prompt.
2. Acquire the appropriate keys and certificates following the procedure in the *Keys and Certificates* section in Chapter 3.
3. Create a mapping for Server 1. Use the **create map** command to specify the server IP address, ports, and keyID.
   ```
   HP SA7120> create map
   Server IP: 10.1.1.30
   SSL (network) port [443]: <Enter>
   Cleartext (server) port [80]: <Enter>
   KeyID to use for mapping: myserver
   ```
4. Create a mapping for Server 2. As in the previous step, use the **create map** command to specify the server IP address, ports for the second server, and the keyID.
   ```
   HP SA7120> create map
   Server IP: 10.1.1.31
   SSL (network) port [443]: <Enter>
   Cleartext (server) port [80]: <Enter>
   KeyID to use for mapping: myserver2
   ```
5. Use the **list map** command to view the mapping. (Multiple keys and certificates can also be imported and each mapped to individual servers. If you do this, at least one field in the certificate information—usually the common name—must be unique.)
   ```
   HP SA7120> list map
   ```

```
Map                    Net  Ser Cipher       Re-    Client
ID  KeyID     Server IP   Port Port Suites        direct  Auth
==  =====     =========   ==== ==== ============  ======  ====
1  default   Any       443 80    all(v2+v3)  n      n
2  myserver  10.1.1.30 443 80    med(v2+v3)  n      n
3  myserver2 10.1.1.31 443 80    med(v2+v3)  n      n
HP SA7120>
```

6. After you have manually created a mapping, the default mapping can be deleted. In this case, delete MapID number 1. MapID number 2 becomes MapID number 1 when the default is deleted.

```
HP SA7120> delete map 1
HP SA7120> list map
Map                  Net  Ser  Cipher Re-  Client
ID KeyID   Server IP Port Port Suites direct
Auth
== =====   ========= ==== ==== ======  =====
====
1 myserver  10.1.1.30 443 80   med(v2+v3) n   n
2 myserver2 10.1.1.31 443 80   med(v2+v3) n   n
HP SA7120>
```

7. To configure a third or fourth web server to operate with the SA7100/SA7120, repeat the steps above, specifying a different IP address for each server.

8. Save the configuration when mapping is completed for the server(s).

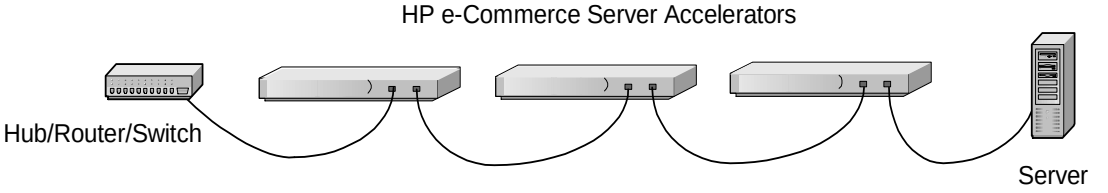
```
HP SA7120> config save
Saving configuration to flash...
Configuration saved to flash
HP SA7120>
```

Scenario 3—Multiple SA7100/SA7120s, Cascaded

This scenario shows how to cascade SA7100/SA7120s for additional performance and availability. The same procedures apply that were performed in Scenario 3. In addition, the complete configuration of the first SA7100/SA7120 is exported to the second SA7100/SA7120 in line.

Initial Configuration

- Two or more SA7100/SA7120s must be physically installed on the same network. To cascade multiple SA7100/SA7120s, connect from the server port of the first SA7100/SA7120 to the network port of the next SA7100/SA7120 in line, and then again connect from the server port to the network port of the next SA7100/SA7120 in line, or to the server. (See Chapter 2 for more information.)
- On the first SA7100/SA7120, the **set spill enable** command is used to enable spilling so that the next SA7100/SA7120 in line can handle the overflow. Spill is then enabled for each subsequent SA7100/SA7120, except the last one. Do not configure the last SA7100/SA7120 to spill to the server.
- The first SA7100/SA7120 should be fully configured; any necessary keys, certificates or maps must exist. The complete configuration is exported from the first, then imported to the next SA7100/SA7120 in line. This procedure is repeated for any additional SA7100/SA7120s in line.



Multiple (Cascaded) SA7100/SA7120s

Procedure for Scenario 3

1. Configure the SA7100/SA7120 farthest from the server as described in any of the preceding scenarios. Remain connected to that specific SA7100/SA7120 for the export configuration procedure.
2. At the command prompt, type the **set spill enable** command. This allows overflow traffic to be transferred to the second SA7100/SA7120 for processing.
3. Save configuration.
   ```
   HP SA7120> config save
   Saving configuration to flash...
   Configuration saved to flash
   HP SA7120>
   ```
4. Export the configuration. Use the **export config** command. Choose xmodem mode to export.
   ```
   HP SA7120> export config
   Export protocol: (xmodem, ascii) [ascii]: xmodem
   <Enter>
   Beginning export...
   ```
5. Select **Receive** from the HyperTerminal* **Transfer** menu.
6. Type or use the **Browse** button to specify the directory in which you want to place the received file.
7. Select xmodem as the receiving protocol.
8. Click the **Receive** button**.**
9. Specify a filename for the received file and click **OK**. The operation concludes and the normal prompt reappears.
   ```
   Use Ctrl-X to kill transmission
   Export successful!
   HP SA7120>
   ```
10. Connect to the second SA7100/SA7120 (“Device 2”), either through the console connection or another window (if both are connected to the same PC).
11. Press the **Bypass** button on Device 2’s front panel to put the machine in bypass mode.
12. Import the configuration. Use the **import config** command to begin the process. Select xmodem and press **Enter** to begin the import process.
    ```
    HP SA7120> import config
    Import protocol: (paste, xmodem) [paste]: xmodem
    ```

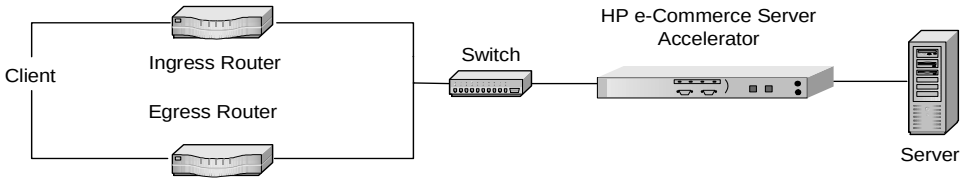
```
<Enter>
Use Ctl-X to cancel upload
```

13. Select **Send** from the HyperTerminal* **Transfer** menu.
14. Type or use the **Browse** button to specify the file to send.
15. Select xmodem as the sending protocol.
16. Click the **Send** button. The transfer completes and then you are prompted to verify that you want to install this configuration.
    ```
    Do you want to install this config ? [y]:
    ```
17. After verification (**y**) or refusal (**n**), the prompt reappears.
    ```
    HP SA7120>
    ```
18. Change Device 2's IP address using the **set ip** command.
    ```
    HP SA7120> set ip
    Enter IP Address ('none' to delete) [10.1.2.65]:
    1.1.1.1
    Enter Netmask ('none' to delete)
    [255.255.255.0]: 2.2.2.2
    ```
19. Save the configuration.
    ```
    HP SA7120> config save
    Saving configuration to flash...
    Configuration saved to flash
    HP SA7120>
    ```
20. Press the **Bypass** button on Device 2's front panel to put the machine in inline mode.
21. Repeat steps 11-20 for any additional SA7100/SA7120s. On the last SA7100/SA7120 in the chain, disable spilling with the **set spill disable** command.

Scenario 4—Different Ingress and Egress Routers

This scenario describes the configuration of a SA7100/SA7120 when the ingress and egress traffic paths are different. This scenario includes:

- One or more servers
- One or more cascaded SA7100/SA7120s
- One or more ingress routers
- One egress router



Installation with Ingress and Egress Routers

Procedure for Scenario 4

NOTE: *Execute an "arp –a" (or equivalent command for your OS) on the server to display the MAC address of the default gateway. This is the address you should use.*

1. Configure your SA7100/SA7120 (as described in any of the previous scenarios).
2. Determine the MAC address of the egress router through which you want to route outbound traffic.
3. At the CLI prompt, enter the default egress router.

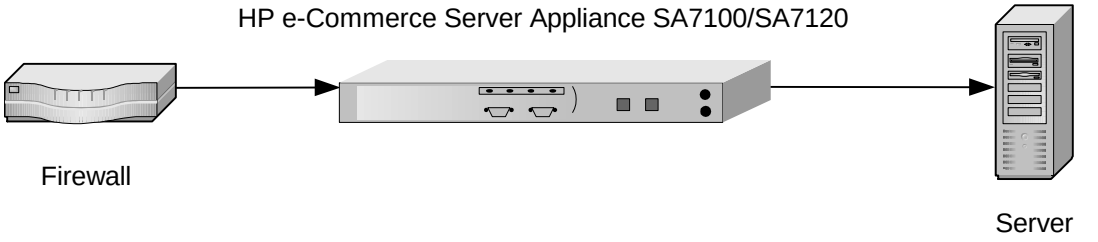
```
HP SA7120> set egress_mac 00:11:22:33:44:55
Egress MAC set to 00:11:22:33:44:55
HP SA7120> config save
Saving configuration to flash...
Configuration saved to flash
HP SA7120>
```

4. To reverse this process:

```
HP SA7120> set egress_mac none
```

Scenario 5—Configuring a Firewall

This scenario describes the recommended network configuration to allow a SA7100/SA7120 to provide SSL services for a single server that also serves plain-text HTTP documents. Actual procedures for adjusting the firewall and server configurations vary widely depending upon the products used, so the steps outlined here are necessarily approximations and must be adjusted as required by the particulars of your environment. Please consult your server and firewall documentation for additional information.



Single SA7100/SA7120 configured with single server and firewall

Server Configuration

Servers providing both HTTP and HTTPS services typically have two instances of the Web Server process configured:

- One listening on the standard HTTP port of 80, providing unencrypted access to non-sensitive information, and
- Another listening on port 443 providing access to SSL encrypted sensitive information.

Port Number	Connection Type	Content Served
80	HTTP	Non-sensitive
443	HTTPS	Sensitive

For the SA7120 to provide SSL services, the web server process providing port 443 services requires two modifications.

- First, because the SA7120 performs all of the SSL processing, the web server process must be configured to expect only standard HTTP (unencrypted) connections, even for sensitive content.
- Second, the web server process must be configured to listen for these HTTP connections on a port other than the standard HTTPS port (443). In this scenario we configure the port 443 service to listen on port 81.

Port Number	Connection Type	Content Served
80	HTTP	Non-sensitive
81	HTTP	Sensitive

SA7120 Configuration

The SA7120 must be configured to intercept HTTPS connections on port 443 and forward them to the server. In the preceding section, we configured the server to provide access to sensitive data through port 81, so that should be the clear text port when creating a server assignment (or "map") on the SA7120. Perform the following steps to create the server assignment:

1. Perform the installation as described in Chapter 2 and access the command line prompt.
2. Acquire the appropriate keys and certificates following the procedure in the "Keys and Certificates" section in Chapter 3.
3. Create a mapping for the server. Use the **create map** command to specify the server IP address, ports, and keyID.

```
HP SA7120> create map
Server IP (0.0.0.0): 10.1.1.30
SSL (network) port [443]: <Enter>
Cleartext (server) port [80]: 81
KeyID to use for mapping: serv1
```

NOTE: *The device automatically adjusts the list of MapIDs as they are created and deleted, thus MapID 2 becomes MapID 1 when the default (the original MapID 1) is deleted.*

4. Once a user-created server assignment exists, the default mapping can be deleted. In this example, delete MapID number 1.

```
HP SA7120> > delete map 1
HP SA7120> list maps
Map                Net  Ser  Cipher     Re-    Client
ID KeyID Server IP Port Port Suites     direct Auth
== ===== ========= ==== ==== ========== =====  ====
1  serv1 10.1.1.30 443  80   med(v2+v3) n      n
HP SA7120>
```

5. Save the configuration.

```
HP SA7120> config save
Saving configuration to flash...
Configuration saved to flash
HP SA7120>
```

Firewall Configuration

Absent a firewall, outside clients would be able to connect to services on the web server and possibly gain access to sensitive data—on port 80 using HTTP to access non-sensitive data, on port 443 using HTTPS to access sensitive data, and on port 81 using HTTP to access that same sensitive data. Obviously, allowing access to sensitive data over an unencrypted connection on port 81 is not desirable. Consequently a firewall should be configured to prevent such access.

NOTE: *In this configuration, the firewall may occasionally report the blocking of outbound packets from the Server on port 81. This is normal—a side-effect of the varying latencies characteristic of Internet traffic—and does not indicate a problem with the configuration*

Port	Access
80	Allowed
443	Allowed
All Others	Denied

5 Command Reference

The HP e-Commerce Server Accelerator SA7100/SA7120 is fully configurable through the Command Line Interface (CLI). The CLI is accessible through both the console and aux console RS232 ports or remotely via Telnet and SSH.

Online Help

The SA7100/SA7120 provides online help with the following options:

- Type `help` to display a summary of commands.
- Type `help <command>` (or `? <command>`) for a description of a specific command or, if relevant, a list of subcommands you can enter from within `<command>`.
- Type `help usage` (or `? <usage>`) to display all commands and their usage.

- Type `tty_char` to display a list of special terminal editing characters.

Command Line Interface

The CLI handles all user interactions on the console and auxiliary console RS232 ports. One instance per port runs at all times.

User Authentication

To gain access to the CLI, the user must first be authenticated by providing a password at the logon banner prompt. The logon banner provides build version information and the serial number.

Command Line Prompt

The standard command line prompt for the SA7120 is:

```
HP SA7120>
```

The prompt for the SA7100 is:

```
HP SA7100>
```

The prompt can be changed with the **set prompt** command.

Syntax

The CLI uses the following syntax:

Symbol	Significance
Angled Brackets (<>)	Angled brackets designate where you type variable parameters.
Straight Brackets ([ ])	Choices of parameters appear between straight brackets, separated by vertical bars.
Braces ({})	Optional commands or parameters appear between braces.
Boldface	Commands shown as they are typed after the CLI prompt appear in **boldface** type. (The prompt appears in normal typeface to distinguish it from the command text.)
Vertical Bar (|)	Separates choices of input parameters within straight brackets. You can choose only one of a set of choices separated by the vertical bar. (Do not include the vertical bar in the command.)

Abbreviation to Uniqueness

It is not always necessary to type the entire command. CLI commands can be abbreviated to uniqueness. For example, "**del"** as show below is sufficient to represent the **delete** command:

```
HP SA7120> del
Usage: delete item [arg]
       block     blockID
       cert      keyID
       client_ca mapID
       key       keyID
       logs      logID|all
       map       mapID
       patch
       permit    permitID
       sign      keyID
       snmp_community
       trap_community
```

However, "**sh**" as shown below, is not an abbreviation to uniqueness in that it does not distinguish between **show** and **showsnmp**.

```
HP SA7120> sh
```

The solitary letter "**e**" in the context of the next example, (i.e., preceded by "**ssh**"), uniquely indicates **ssh enable**.

```
HP SA7120> set ssh e
SSH Service started.
```

Input Editing Commands

Moving the Insertion Point

Command	Description
ctrl-b	Move back one character.
ctrl-f	Move forward one character.
ctrl-a	Move to the start of the current line.
ctrl-e	Move to the end of the line.
ctrl-l	Clear the screen and redraw the current line, leaving the current line at the top of the screen.

Command History

A history of recently executed commands is stored in a buffer and can be accessed with the following commands:

Command	Description
ctrl-p	Move “up” through the history list
ctrl-n	Move “down” through the history list
ctrl-r	(Reverse-search-history) Search backward starting at the current line and moving up incrementally through the command history.
ctrl-s	(Forward-search-history) Search forward starting at the current line and moving down incrementally through the command history.

Cutting Text

Command	Description
ctrl-d	Delete the character underneath the cursor.
ctrl-k	Delete the text from the current cursor position to the end of the line.
ctrl-u	Delete backward from the cursor to the beginning of the current line.
ctrl-w	Delete the word behind the cursor, using white space as a word boundary.
ctrl-y	Paste text that has been cut using any of the four above deletion commands.
backspace/del	Delete the character to the left of the cursor.

Command Summary

This section contains a high-level view of the SA7100/SA7120's command structure. Details appear in the Command Reference.

Command	Command Options
bypass	
config	default compare reset save
create	block cert <keyID> key <keyID> map permit sign <keyID>
delete	block <blockID> cert <keyID> client_ca <mapID> key <keyID> logs<logID | all> map <mapID> patch permit <permitID> sign <keyID> snmp_community trap_community
exit	
export	key <keyID> cert <keyID> sign <keyID> log <logID> config
factory_default	
help	help help <command> help usage

Command	Command Options
import	cert <keyID> client_ca <mapID> config key <keyID> patch upgrade
inline	
list	blocks filters (shows blocks and permits) keys logs maps permit monitoring procs snmp_community system trap_community
nic	
password	
reboot	

Command	Command Options
set	alarms <all none esc rsc utl ovl nls> cache <enable | disable> ciphers <mapID> ciphers <mapID> default client_tmo <seconds> date defcert egress_mac x:x:x:x:x:x egress_mac none ether idleto <timeout> ip <ip> <netmask> kstrength max_remote_sessions<0-5> monitoring <enable | disable> monitoring_interval <seconds> monitoring_fields <seconds> more ovl_window <seconds> prompt redirect <mapID> redirect <mapID> none route x.x.x.x rsc_window <seconds> serial server_tmo <seconds> ssh <enable | disable> ssh_port <port> spill <enable | disable> system telnet <enable | disable> telnet_port <port> utl_highwater <percentage> utl_lowwater <percentage> utl_window <seconds>

Command	Command Options
show	alarms blocks cache ciphers <mapID> cert <keyID> client_ca <mapID> client_tmo config config default config saved date defcert egress_mac ether filters idleto info ip key <keyID> kstrength logs map max_remote_sessions monitoring monitoring_interval monitoring_fields more ovl_window permits rsc_window redirect <mapID> route serial server_tmo ssh ssh_port sign <keyID> spill status <arg> telnet

Command	Command Options
show	telnet_port utl_highwater utl_lowwater utl_window
setsnmp	snmp <enable | disable> snmp_community snmp_port <port> snmp_info sys_contact sys_location sys_name trap_authen <enable | disable> trap_community trap_port <port>
showsnmp	snmp snmp_community snmp_info snmp_port sys_contact sys_location sys_name trap_authen trap_community trap_port
status	line realtime alarms <log>
tty_char	

Command Reference

Help Commands

Command	Description
help	Display the list of available commands.
help <command>	Display usage for a single command.
help usage	Display all commands and their usage.
tty_char	View the available list of keyboard shortcut commands.

Status Command

Command	Description
status	Display device statistics. Several modes are available, as described below. (Default: realtime.) Syntax: `HP SA7120> status <arg>` where: <line> specifies a line-oriented display of statistics. <realtime> specifies that statistics be displayed in realtime. <alarms> shows current alarm events. <log> shows statistics and alarm events in log file.

SSL Commands

Command	Description
create key	Create a new keypair and associate it with a Key ID. **Example**: `HP SA7120> create key` `Key strength (512/1024) [512]: 1024` `New keyID [001]:<Enter>` `Keypair was created for keyID: 001.` `HP SA7120>`
delete key	Delete a specified keypair for a given Key ID. **Syntax**: `HP SA7120> delete key <keyID>` where `<keyID>` is the Key ID whose associated keypair you want to delete.
import key	Import a keypair for the specified Key ID. **Syntax**: `HP SA7120> import key <keyID>` where `<keyID>` is the ID of the keypair you want to import.

Command	Description
export key	Export a keypair for a specified Key ID (ASCII or xmodem). **Syntax**: `HP SA7120> export key <keyID>` `Export protocol: (xmodem, ascii) [ascii]: <Enter>` `Press any key to start, then again when done...<Enter>` `-----BEGIN RSA PRIVATE KEY-----` `MIIBOgIBAAJBALqeajCDgfa8fY8FROLi0B8fVp3m4EI` `2MpOzKvEKKe6Kk5pDBkH83tUBkssGBtbnDYHkiAyGzA` `.` `.` `.` `UFFSNgBRvbkiNvaNiVqKeutwDEhgCL0PDueo` `-----END RSA PRIVATE KEY-----<Enter>` `HP SA7120>` where <keyID> is the identifier of the keypair you want to export.
show key	Display the expanded keypair (including PEM format) for a specified Key ID. If no Key ID is specified, displays all keys. **Syntax**: `HP SA7120> show key <keyID>` where <keyID> is the Key ID whose associated keypair you want to view.
list keys	List available Key IDs. **Example**: `HP SA7120> list keys` `001` `default` `HP SA7120>`

Command	Description
create cert	Create a new certificate for a specified Key ID. **Syntax**: `HP SA7120> create cert <keyID>` where `<keyID>` is the Key IDfor which you want to create a certificate.
delete cert	Delete the certificate associated with a specified Key ID. **Syntax**: `HP SA7120> delete cert <keyID>` where `<keyID>` is the Key ID whose associated certificate you want to delete.
import cert	Import a certificate to associate with a specified Key ID. **Syntax**: `HP SA7120> import cert <keyID>` where `<keyID>` is the Key ID whose associated certificate you want to import.
export cert	Export the certificate for a specified Key ID. **Syntax**: `HP SA7120> export cert <keyID>` where `<keyID>` is the Key ID whose associated certificate you want to export.

Command	Description
show cert	Display the expanded certificate (including PEM format) associated with a specified Key ID. If no Key ID is specified, displays all certificates. Syntax: `HP SA7120> show cert <keyID>` where `<keyID>` is the Key ID whose associated certificate you want to view.
set ciphers	Establish the list of ciphers and cipher strengths that will be recognized by the specified Map ID. **Syntax**: `HP SA7120> set ciphers <mapID>` `1 - all` `2 - high` `3 - medium` `4 - low` `5 - export only` `6 - Customized Ciphers` `Select cipher strength [1]: 1` `1 - SSLv2` `2 - SSLv3` `3 - SSLv2 and SSLv3` `Select ciphers from SSL version [3]: 2` `HP SA7120>` where `mapID` is the identifier of the mapping whose ciphers you want to set.

Command	Description
set redirect	Set an alternative address to which a client is directed in the event it doesn't support the specified Map ID's selected cipher suites. **Syntax**: `HP SA7120> set redirect <mapID> [none]` `Enter redirect URL []: <URL>` where <mapID> is the Map ID for which you want to define a redirect URL, and <URL> is the Web address to which you want to redirect clients that don't support the selected cipher suites. Enter the optional parameter [none] to disable an existing redirect URL for the specified Map ID.
show redirect	Displays the alternative address, if one is configured for the specified Map ID, to which a client is directed in the event it doesn't support the selected cipher suite. **Syntax**: `HP SA7120> show redirect <mapID>` where <mapID> is the Map ID whose redirect URL you want to display. If no redirect address is defined, a command line message informs you of the fact: `HP SA7120> show redirect 1` `Redirect URL for map 1 is not set.` `HP SA7120>`
show client_ca	Displays the expanded client certificate (including PEM format) associated with the specified Map ID. If no client certificate has been imported this command displays a message to that effect. If no Map ID is specified, all client certificates are displayed. **Syntax**: `HP SA7120> show client_ca <mapID>` where <mapID> is the mapID number of the key whose imported client certificate you want to display.

Command	Description
import client_ca	If you want to authenticate a client, use this command to import the trusted CA's certificate. When enabled, clients without certificates or with invalid certificates are refused connection. **Syntax**: `HP SA7120> import client_ca <mapID>` `Import protocol: (paste, xmodem) [paste]: <Enter>` `Type or paste in data, end with ... alone on line` (certificate pasted here...) `...` where `<mapID>` is the mapID number with which the client certificate will be associated.
delete client_ca	Deletes the client certificate associated with the specified Map ID. **Syntax**: `HP SA7120> delete client_ca <mapID>` where `<mapID>` is the mapID number whose associated client certificate you wish to delete.
create sign	Create the signing request for a specified Key ID. **Syntax**: `HP SA7120> create sign <keyID>` where `<keyID>` is the Key ID number of the Key for which you want to create a signing request.

Command	Description
delete sign	Delete the signing request for a specified Key ID. **Syntax**: `HP SA7120> delete sign <keyID>` where `<keyID>` is the Key ID number of the Key whose signing request you want to delete.
export sign	Export signing request (PEM format) for specified Key ID. **Syntax**: `HP SA7120> export sign <keyID>` where `<keyID>` is the Key ID number of the Key whose signing request you want to export.
show sign <keyID>	Display expanded signing request (PEM format) for specified Key ID. If no Key ID is specified, all signing requests are displayed. **Syntax**: `HP SA7120> show sign <keyID>` where `<keyID>` is the Key ID number of the key whose signing request you want to display.

Command	Description
set defcert	Set the default certificate creation information. For example, country, state, city, organization, organization unit, issuer name, and issuer e-mail address. You can change all, some or none of the fields. Press **Enter** to accept a default and move to the next field. **Example**: `HP SA7120> set defcert` `Country name [US]:` `State [California]:` `City [Palo Alto]:` `Organization [Hewlett-Packard Company]:` `Organization unit [Server Appliances Division]:` `Issuer name [www.hp.com]:` `Issuer email address [support@hp.com]:` `Make changes [y]:` `Changes applied` `HP SA7120>`
show defcert	Display the default certificate creation information. **Example**: `HP SA7120> show defcert` `Country : US` `State : California` `City : Palo Alto` `Organization : Hewlett-Packard Company` `Unit : Server Appliances Division` `Name : www.hp.com` `Email : support@hp.com` `HP SA7120>`

Command	Description
set kstrength	Set the default key strength. Usable values are 512 or 1024. The default value is 512. **Syntax**: `HP SA7120> set kstrength <512 | 1024>` where <512> allows you to specify low key strength and <1024> allows you to specify high key strength.
show kstrength	Display the default key strength value. **Example**: `HP SA7120> show kstrength` `Default key strength: 512`
set client_tmo	Interval that the connection between the client and server can remain idle (i.e., no data crosses the connection in either direction) following a client request. **Syntax**: `HP SA7120> set client_tmo <n>` where <n> is a value in seconds between 5 and 36000.
show client_tmo	Displays the currently specified client timeout value. **Example**: `HP SA7120> show client_tmo` `Client timeout is 5 seconds` `HP SA7120>`

Command	Description
set server_tmo	Limits the period of time to establish a connection with the server. If the connection is not established within the specified time, the client request is rejected. ***NOTE:*** *Typical causes for server timeout include: server powered off, server not accessible, application is not available on the specified port.* **Syntax**: `HP SA7120> set server_tmo <n>` where <n> is a value in seconds between 5 and 36000.
show server_tmo	Displays the currently specified server timeout value. **Example**: `HP SA7120> show server_tmo` `Server timeout [secs]: 5` `HP SA7120>`

Port Mapping Commands

These commands are used to execute the operations described in Chapter 3's *Mapping* and *Blocking* sections.

Command	Definition
create block	Create a block to preclude access to specified IP addresses or through specified ports. A single IP, a single port, or all ports can be blocked. If fewer than all ports are to be blocked, you must repeat the **create block** command for each one. **Example**: `HP SA7120> create block` `Client IP to block [0.0.0.0]: 10.1.2.1` `Client IP mask [0.0.0.0]: 255.255.0.0` `Server IP to block [0.0.0.0]: 20.1.2.1` `Server IP mask [0.0.0.0]: 255.255.0.0` `Server Port to block: 80` `Server Port mask [0xffff]:<Enter>` `HP SA7120>`

Command	Definition
delete block	Delete a block specified by index number. Use **show block** (see below) to correlate existing blocks with their numbers. **Example**: `HP SA7120> delete block 1` `HP SA7120>`
show block	Display all existing blocks. **Example**: `HP SA7120> show block` `--------` `blocks :` `---------` `(1) block 10.1.2.1 255.255.0.0 20.1.2.1 255.255.0.0 80 0xffff` `----------`
create permit	Create a configuration allowing a specified user access to specified servers and ports, and/or denying the specified user access to specified servers and ports. **Example**: `HP SA7120> create permit` `Client IP to permit [0.0.0.0]:10.1.2.1` `Client IP mask [0.0.0.0]:255.255.0.0` `Server IP to permit [0.0.0.0]:20.1.2.1` `Server IP mask [0.0.0.0]:255.255.0.0` `Server Port to permit: 443` `Server Port mask [0xffff]:<Enter>` `HP SA7120>`
delete permit	Delete a permit specified by index number. Use **show permit** (see below) to correlate existing permits with their numbers. **Example**: `HP SA7120> delete permit 1` `HP SA7120>`

Command	Definition
show permit	Display permits currently in force. **Example**: `HP SA7120> show permit` `--------` `permits :` `---------` `(1) permit 10.1.2.1 255.255.0.0 20.1.2.1 255.255.0.0 443 0xffff` `----------` `HP SA7120>`
create map	Create a mapping that associates server IP, SSL port, clear text port, and Key ID. **Example**: `HP SA7120> create map` `Server IP (0.0.0.0): 1.1.1.1` `SSL (network) port [443]: 443` `Cleartext (server) port [80]: 8080` `KeyID to use for mapping: 4` `HP SA7120>` ***NOTE:*** *The Key ID used with a new mapping must exist prior to executing* ***create map****. Use* ***create key*** *to create a new Key ID. Also, a certificate must be associated with the key ID prior to using the mapping. (See Chapter 3 for details.)*
delete map <mapID>	Delete a mapping. ***NOTE:*** *All MapIDs of a higher number than the one specified for deletion are decremented by one when this command is executed.* **Syntax**: `HP SA7120> delete map <n>` where <n> is the Map ID of the mapping you want to delete.
show map	Display all mappings. (Same as **list maps**.)

Command	Definition
list maps	List all mappings. (Same as **show map**.) **Example**: `HP SA7120> list maps` `Map Net Ser Cipher Re- Client` `ID KeyID Server IP Port Port Suites direct Auth` `== ===== ========= ==== ==== ====== ===== ====` `1 default Any 443 80 all(v2+v3) n n` `2 sample 1.1.2.5 443 80 med(v2+v3) n n` `HP SA7120>`

Operational Commands

Command	Description
bypass ***WARNING:*** *Do not issue the **bypass** command from a remote management session (Telnet or SSH). Doing so will result in an immediate disconnect from the SA7100/SA7120.*	Enables bypass mode, in which traffic flows through SA7100/ SA7120 without being processed. See *Failure/Bypass Modes* in Appendix B for details. See the **inline** command below for reversing bypass. **Example**: `HP SA7120> bypass` The LED labeled “inline” on the SA7120’s front panel turns off when bypass is enabled. ***NOTE:*** *The SA7100/SA7120 can be placed in bypass mode simultaneously with the bypass switch and the CLI’s **bypass** command. When this occurs, you must use both the bypass switch and the CLI’s **insert** command to return the unit to inline mode.*

Command	Description
inline	Enables inline mode, in which the SA7100/SA7120 processes traffic normally. (As opposed to bypass mode, in which traffic may flow through the device unprocessed.) **Example**: `HP SA7120> inline` The LED labeled "inline" on the SA7100/SA7120's front panel is illuminated when inline mode is enabled. ***NOTE:*** *Other factors may preclude the use of inline mode. See* Failure/Bypass Modes *in Appendix B.*
set route	Specify the address of the router or gateway through which the SA7100/SA7120 communicates with the Internet. **Syntax:** `HP SA7120> set route` `Enter Default Route ('none' to delete) [none]:` `255.255.255.001` `HP SA7120>`
show route	Display the currently specified address of the router or gateway through which the SA7100/SA7120 communicates with the Internet. **Syntax:** `HP SA7120> show route` `Default Route: 255.255.255.001` `HP SA7120>`

Command	Description
set spill	Allows you to enable or disable spill mode. "Spill" is used to offload processing of a request, when the SA7100/SA7120 has reached a specified queue threshold, to a secondary SA7100/ SA7120 or to the server. **Example**: `HP SA7120> set spill enable` Verify spill setting with the **show spill** command: `HP SA7120> show spill` `Spill on overload: enabled` `HP SA7120>`
show spill	Display spill setting (enabled or disabled). **Example**: `HP SA7120> show spill` `Spill on overload: disabled`
reboot	Reboots the SA7100/SA7120. ***WARNING:*** *Any configuration changes made during the current CLI session will be lost upon rebooting. Refer to the* ***config save*** *command for details regarding saving configuration changes.* **Example**: `HP SA7120> reboot` `Are you sure you want to reboot [n]: y` `System rebooting...done` (System reboots, eventually prompting you for your password.)

Remote Management Commands

Command	Description
list procs	List all processes associated with the CLI and remote management commands (inetd, telnetd, sshd2, and snmpd). **Example:** `HP SA7120> list procs` `PID: 40 PROG: cli` `PID: 41 PROG: cli` `HP SA7120>`
set ip	Assign an IP address and netmask to the SA7100/SA7120's network interface for Telnet and SSH sessions. ***CAUTION:*** *The assignment of an IP address introduces security issues. Please refer to the "Access Control" section of Chapter 6.* ***NOTE:*** *To disable a currently configured IP, use* ***set ip*** *followed by* ***none****.* **Example:** `HP SA7120> set ip` `Enter IP Address ('none' to delete)` `[10.1.2.124]:` `Enter Netmask [255.255.0.0]:`
set max_remote_sessions	Set the maximum allowed number of concurrently running Telnet and SSH sessions. **Syntax:** `HP SA7120> set max_remote_sessions <0-5>` where `<0-5>` is the maximum number of remote sessions you want to allow. Default: 5.

Command	Description
set telnet	Enables or disables Telnet sessions. When this command is set to "enable" and an IP address is assigned to the SA7100/SA7120's network interface, you can access the device's CLI via remote Telnet session. When disabled, the device refuses Telnet connections. The console prompts for any missing parameters. Default: disable. **Syntax:** `HP SA7120> set telnet enable` `Need an IP address to start Telnet service.` `Enter IP Address [209.218.240.67]: 10.1.2.124` `Need a netmask to start Telnet service.` `Enter Netmask [255.255.255.0]:` `Optional Default Route to start Telnet service.` `Enter Default Route ('none' to delete) [none]:` `Telnet Services started.` `HP SA7120>`
show telnet	Displays current Telnet status: enabled or disabled. **Example:** `HP SA7120> show telnet` `Telnet: enabled`
set telnet_port	Set the port on which Telnet connections are accepted. (Default port: 23.) **Syntax:** `HP SA7120> set telnet_port <port>` where `<port>` is the number of the port to which Telnet sessions will connect.
show telnet_port	Display the port on which Telnet sessions are currently accepted. **Example:** `HP SA7120> show telnet_port` `Telnet Port Number: 23`

Command	Description
set ssh	Enable or disable Secure Shell (SSH) sessions. When this command is set to "enable" and an IP address is assigned to the SA7100/SA7120's network interface, you can access the device's CLI via remote SSH session. When disabled, the device refuses SSH connections. Default: disable. **Syntax:** `HP SA7120> set ssh <enable|disable>`
show ssh	Display current SSH status: enabled or disabled. **Example:** `HP SA7120> show ssh` `SSH: disabled`
set ssh_port	Set the port on which SSH connections are accepted. (Default port: 22.) **Syntax:** `HP SA7120> set ssh_port <port>` where `<port>` is the number of the port to which SSH sessions will connect.
show ssh_port	Display port on which SSH sessions are currently accepted. **Example:** `HP SA7120> show ssh_port` `SSH Port Number: 22`
setsnmp	Enable or disable the SNMP agent. When enabled, you can set configure SNMP information and parameters (see **setsnmp snmp_info**, below) for the SA7100/SA7120. Default: disable. **Syntax:** `HP SA7120> setsnmp <enable|disable>`
showsnmp snmp	Displays the current status of the SNMP agent: enabled or disabled. **Example:** `HP SA7120> showsnmp snmp` `SNMP: Enabled`

Command	Description
setsnmp snmp_info	Set the following SNMP information and parameters: • SNMP port (Default: 161) • SNMP trap port (Default: 162) • Contact person • System name • System location **Example:** HP SA7120> **setsnmp snmp_info** SNMP Port [161]: **161** SNMP Trap Port [162]: **162** Contact Person []: **support** System Location []:**Palo Alto** System Name []: **SA7120**
showsnmp snmp_info	Display the currently effective SNMP information and parameters. **Example:** HP SA7120> **showsnmp snmp_info** SNMP Port Number : 161 SNMP Trap Port Number: 162 SNMP System Contact : support SNMP System Name : SA7120 SNMP System Location : Palo Alto System IP Address : 10.1.2.124 System Netmask : 255.255.255.0 Default Route : None
setsnmp snmp_community	Set SNMP community strings. **Example:** HP SA7120> **setsnmp snmp_community** IP []:**xxx.xxx.xxx.xxx** Community String []:**<string>**

Command	Description
list snmp_community	Display currently configured SNMP community strings. **Example:** `HP SA7120> list snmp_community` `<2> Current SNMP Community String(s):` `1.) IP: 0.0.0.0 => String: public` `2.) IP: 0.0.0.0 => String: private`
delete snmp_community	Delete SNMP community strings. **Example:** `HP SA7120> delete snmp_commmunity` `SNMP Community String(s) Deletion.` `<2> Current Available SNMP Community String(s):` `1.) IP: 0.0.0.0 => String: public` `2.) IP: 0.0.0.0 => String: private` `Enter number (1 to 2) to delete (q to quit) [1]: 2` `Enter number (1 to 2) to delete (q to quit) [1]: q`
setsnmp trap_authen	When enabled, the SNMP manager receives traps upon failed authentication attempts. **Example**: `HP SA7120> setsnmp trap_authen <enable|disable>`
shownmp trap_authen	Displays current status of trap authentication trap. **Example:** `HP SA7120> showsnmp trap_authen` `Trap Authentication: enabled`
setsnmp trap_community	Sets SNMP trap community strings. **Example:** `HP SA7120> setsnmp trap_commmunity` `SNMP Trap Community String(s) Setting.` `Enter a SNMP Trap Community IP (q to quit): 0.0.0.0` `Enter a SNMP Trap Community String (q to quit):` `private` `Enter a SNMP Trap Community IP (q to quit): 0.0.0.0` `Enter a SNMP Trap Community String (q to quit):` `public` `Enter a SNMP Trap Community IP (q to quit): q`

Command	Description
list trap_community	Display SNMP trap community strings. **Example:** `HP SA7120> list trap_community` `SNMP Trap Community String(s) information.` `<2> Current SNMP Trap Community String(s):` `1.) IP: 0.0.0.0 => String: public` `2.) IP: 0.0.0.0 => String: private`
delete trap_community	Delete SNMP trap community strings. **Example:** `HP SA7120> delete trap_community` `SNMP Trap Community String(s) Deletion.` `<2> Current Available SNMP Trap Community String(s):` `1.) IP: 0.0.0.0 => String: public` `2.) IP: 0.0.0.0 => String: private` `Enter number (1 to 2) to delete (q to quit) [1]: 2` `Enter number (1 to 2) to delete (q to quit) [1]: q`

Alarms and Monitoring Commands

Command	Description
set alarms	Enable all or a selection of the SA7120's alarms. **Syntax:** `HP SA7120> set alarms` `<all none esc rsc utl ovl nls>` where `all` enables all five of the SA7120's alarms. `esc` enables the Encryption Status Change Alarm. `rsc` enables the Refused SSL Connection Alarm `utl` enables the Utilization Threshold Alarm `ovl` enables the Overload Alarm `nls` enables the Network Link Status Alarm To disable all alarms, use **none**: **Example:** `HP SA7120> set alarms all` `HP SA7120> show alarms` `Alarms set: esc rsc utl ovl nls`
show alarms	Display the list of currently enabled alarms. **Example:** `HP SA7120> set alarms none` `HP SA7120> show alarms` `Alarms set:` ***NOTE:*** *When no alarms are set (i.e., when **none** is specified in **set alarms**), the display shows an empty field.*
set rsc_window	Set interval (window) at which the device checks for refused SSL connections and, if any are detected, issues an RSC Alarm. (Range: 5-65000 seconds, default: 15) **Syntax:** `HP SA7120> set rsc_window <sec>` where <sec> is the number of seconds of the desired interval.

Command	Description
show rsc_window	Display current Refused SSL Connections Alarm interval. **Syntax:** `HP SA7120> show rsc_window` `Check for refused SSL connections [secs]:`
set utl_window	Set interval (window) at which the device checks for exceeded utilization thresholds (CPU load, Connections per Second, or Total Open Connections) and, if any are detected, issues a Utilization Threshold Alarm. (Range: 5-65000 seconds, default: 15) ***NOTE:*** *The data collected for utilization threshold metrics tends to be bursty, so a smoothing algorithm is used to prevent continuous alarms. The utilization window is a user-specified sliding interval during which data is collected and averaged. Consequently, shorter intervals are likely to result in some extraneous alarms.* ***NOTE:*** *See also* ***set utl_highwater*** *and* ***set utl_lowwater****.* **Syntax:** `HP SA7120> set utl_window <sec>` where <sec> is the number of seconds of the desired interval.
set utl_highwater	Set the Utilization Threshold Alarm high-water value. Expressed as a percentage, the high-water value represents the highest CPU utilization, Connections per Second, or Total Open Connections required to trigger a UTL Alarm. (Range: 2-100%, default: 90) ***NOTE:*** *See also* ***set utl_window*** *and* ***set utl_lowwater****.* **Syntax:** `HP SA7120> set utl_highwater <%>` where <%> is the percentage defining the upper threshold of CPU utilization, Connections per Second, or Total Open Connections required to trigger a Utilization Threshold Alarm.

Command	Description
set utl_lowwater	Set the Utilization Threshold Alarm low-water value. Expressed as a percentage, the low-water value represents the lowest CPU utilization, Connections per Second, or Total Open Connections required to trigger a UTL Alarm. (Range: 1-99%, default: 60) ***NOTE:*** *See also* ***set utl_window*** *and* ***set utl_highwater****.* **Syntax:** `HP SA7120> set utl_lowwater <%>` where <%> is the percentage defining the lower threshold of CPU utilization, Connections per Second, or Total Open Connections required to trigger a Utilization Threshold Alarm.
show utl_window	Display the current Utilization Threshold Alarm window. **Example:** `HP SA7120> show utl_window` `Utilization window set [secs]: 10.`
show utl_highwater	Display the Utilization Threshold Alarm's current upper threshold. **Example:** `HP SA7120> show utl_highwater` `Utilization High water mark [%]: 80`
show utl_lowwater	Display the Utilization Threshold Alarm's current lower threshold. **Example:** `HP SA7120> show utl_lowwater` `Utilization Low water mark [%]: 60`
set ovl_window	Set interval (window) at which the device checks for overloads resulting in the device executing a spill or throttle and, if any are detected, issues an Overload Alarm. (Range: 5-65000, default: 15) **Syntax:** `HP SA7120> set ovl_window 10`

Command	Description
show ovl_window	Display the current Overload Alarm window. **Example:** `HP SA7120> show ovl_window` `Check for overload conditions [sec]: 10`

Configuration Commands

Command	Description
show config	Display current volatile configuration settings. **Example**: `HP SA7120> show config` `# default config file created on Tues July 25 06:56:46 2000` *(Configuraton parameters are displayed here...)* `HP SA7120>`
show config saved	Display saved non-volatile configuration settings. **Example**: `HP SA7120> show config saved` `Saved configuration` `==========` *(Configuraton parameters are displayed here...)* `HP SA7120>`

Command	Description
show config default	Display default configuration settings. These are values used when factory default commands are executed. **Example**: HP SA7120> **show config default** Default configuration ========== conlog 0xfffffef ilog 0xffffffff trace 0xfffff3dd media auto logport tty01 cache 3 server_tmo 5 client_tmo 30 serverif exp1 netif exp0 map 0.0.0.0 443 80 default kpanic reboot monitoring_interval 15 monitoring_fields 0x1F alarm_mask 0x00000000 ovl_window 15 rsc_window 15 utl_window 15 utl_highwater 90 utl_lowwater 60 idle 300 kstrength 512 con_speed 9600 con_bits 8 con_stop 1 con_parity n max_remote_sessions 5 trap_authen 1 defcert_cname US defcert_state California defcert_city San Diego defcert_orgname Company Name defcert_orgunit Company Division defcert_name www.company.com defcert_email support@company.com prompt HP SA7120> HP SA7120>

Command	Description
config compare	Display differences between saved and current configuration. For optimal flexibility in configuration and testing, the SA7100/ SA7120 supports both "current" (volatile) and "saved" (non-volatile) configurations. The config compare command displays the differences, if any, between the two configurations. **Example**: `HP SA7120> config compare` `Only in /keys: 4` `HP SA7120>`
config reset	Restore saved configuration. ***WARNING:*** *Executing this command causes the system to reboot.* **Example**: `HP SA7120> config reset` `Reverting to saved configuration` `Reset (y/n) [n]: y` `Reset to saved configuration` `System rebooting...`
config default	Clears current and saved configurations and restores factory defaults. ***WARNING:*** *Executing this command causes the system to reboot.* **Example**: `HP SA7120> config default` `Reset to factory default configuration [n]: y` `Reset to factory defaults` `System rebooting...`
config save	Save the current configuration to the flash (non-volatile) memory. **Example**: `HP SA7120> config save` `Saving configuration to flash...` `Configuration saved to flash` `HP SA7120>`

Command	Description
export config ***WARNING:*** *Do not edit an exported configuration file.*	Export all configuration, key, sign and certificate information (ASCII, xmodem). **Example**: `HP SA7120> export config` `Export protocol: (xmodem, ascii) [ascii]:` `Press any key to start, then again when done...` `# default config file created on Fri Jul 28 06:56:46 2000` (...configuration specifics are displayed...) `HP SA7120>`
import config	Import a configuration file (paste, xmodem). **Example**: `HP SA7120> import config` `Import protocol: (paste, xmodem) [paste]:` `Type or paste in data, end with ... alone on line` `.` `.` `.` `Do you want to install this config ? [y]: n` `HP SA7120>`

Command	Description
import upgrade	Import a complete software release. (See Chapter 8 for details regarding software updates.) **Example**: `HP SA7120> import upgrade` `Import protocol: (xmodem) [xmodem]:` `Start xmodem upload now` `Use Ctl-x to cancel upload` `Verifying upgrade image...` `upgrade image valid` `version x.x, build xxx` `Continue with the upgrade? [n]:y` ***NOTE:*** *All saved logs will be deleted and the system will reboot upon sucessful completion of the upgrade.*
import patch	Import a partial software upgrade **Example:** `HP SA7120> import patch` `Enter patch name [80.patch] <patch name>` `Import protocol: (xmodem)` `[xmodem]:` `Start xmodem upload now` `Use Ctl-x to cancel upload` `Patch: Imported.`
list system	Displays the device's CPU, memory and crypto card information. `HP SA7120> list system` `================================================` `SYSTEM INFO` `================================================` `* CPU : Pentium II (498 MHz)` `* Real MEM : 536870912 (512.00 MB)` `* Crypto : 3`

Command	Description
factory_default	Returns to factory configuration settings. **Example**: `HP SA7120> factory_default` `Reset to default configuration [n]: y` `Reset to factory defaults` `System rebooting...done` `T944 V2.31 DXC.` `..` `868242+3611880/S running` `Generating 512 bit default key` `Generating default certificate` `Saving default key/cert to flash` `Restricted Rights Legend` *(...copyright and version information displayed here...)* `Serial 0:a0:a5:11:4:9d` `password:`

Administration Commands

Command	Description
password	Set the password. **Example**: `HP SA7120> password` `Old password:<xxxxx>` `Enter new admin password (5 chars min.):<yyyyy>` `Retype new password:<yyyyy>` `admin Password changed...` `HP SA7120>`

Command	Description
show info	Display software version information. **Example**: `HP SA7120> show info` `==========` `===  hp e-commerce server accelerator sa7120` `===  Copyright (c) 2001 Hewlett-Packard Company` `===` `===  Version 2.3.2, Build xx` `==========`
set date	Set the date and time. ***WARNING:*** *Execution of this command reboots the SA7100/SA7120.* **Example**: `HP SA7120> set date` `Year [2000]:` `Month [2]:` `Day [16]:` `Hour (24 hour clock) [15]:` `Minute [10]:` `The system must reboot for changes to take affect. Reboot [y]: n` `HP SA7120>`
show date	Displays current date and time.
set egress_mac	Allows the configuration of a SA7100/SA7120 when the ingress and egress traffic paths are different. (See Chapter 4, Scenario 4.)

Command	Description
set ether	Specify ethernet settings. **Example**: `HP SA7120> set ether` `1 - auto` `2 - 10baseT, half duplex` `3 - 10baseT, full duplex` `4 - 100baseTX, half duplex` `5 - 100baseTX, full duplex` `Select media type [1]:` `Media set to auto` `HP SA7120>`
show ether	Display ethernet settings. **Example**: `HP SA7120> show ether` `Ethernet media set to auto` `HP SA7120>`
set idleto	Set the console idle interval. After <n > minutes absence of keyboard activity, the user is automatically logged off. **Syntax**: `HP SA7120> set idleto <n>` where <n> is a value in minutes from 0 to 525600. A value of “0” specifies that the console never goes idle.
show idleto	Display console timeout. **Example**: `HP SA7120> show idleto` `Idle timeout is 5 minutes` `HP SA7120>`
set more	Set the page length of the console display. Default is 300. **Syntax**: `HP SA7120> set more <n>` where <n> is the desired number of lines. Valid inputs are 0 (to disable), or 23 or greater.

Command	Description
show more	Display the current setting for the console display's page length. Default is 300. **Example**: `HP SA7120> show more` `Set 23 lines per page`
nic	Allows you to set the network interface card configuration. **Example**: `HP SA7120> nic` `1 - auto` `2 - 10baseT, half duplex` `3 - 10baseT, full duplex` `4 - 100baseTX, half duplex` `5 - 100baseTX, full duplex` `Select media type [1]:`
set prompt	Change the prompt from "`HP SA7120>`" to the desired prompt. **Example**: `HP SA7120> set prompt` `Prompt [HP SA7120> ]: <Enter>` `HP SA7120>`
set serial	Allows user to set the console port to monitor the CLI or the output logging, and set the speed, data bits, stop bits, and parity bits. The aux console port is fixed at 115200, 8, 1, N. This command returns the user to the "password" prompt after setting the console port. **Example**: `HP SA7120> set serial` `Baud rate (9600/115200) [9600]: <Enter>` `Data bits (7/8) [8]: <Enter>` `Stop bits (1/2) [1]: <Enter>` `Parity (n/e/o) [n]: <Enter>` `Set serial parameters [y]: <Enter>` `HP SA7120>`

Command	Description
show serial	Display console serial parameters. **Example**: `HP SA7120> show serial` `Speed: 9600` `Bits: 8` `Stop bits: 1` `Parity: n` `HP SA7120>`
exit	Log the user out of the CLI. If the current configuration has changed, the user is allowed to save the current configuration as the active configuration. **Example**: `HP SA7120> exit` `Exiting CLI...` `.` `.` `.` `password:`

Logging Commands

Command	Description
export log ***NOTE:*** *Log files referred to here are not human-readable.*	Export a saved log/trace file. **Syntax**: `HP SA7120> export log <logID>` where `<logID>` is the ID of the specific log you want to export. **Example**: `HP SA7120> export log a` `Export protocol: (xmodem) [xmodem]:` `Use Ctrl-X to kill transmission` `Beginning export...`

Command	Description
delete log	Delete saved log/trace files from /flash/logs. **Syntax**: `HP SA7120> delete log <logID> | all` where `<logID>` is the ID of the specific log you want to delete, and `all` deletes all logs.
list logs	List all log files.

6 Remote Management

Overview

The current software release allows you to remotely manage the SA7100/SA7120. Remote management is available via three protocols:

- Telnet
- Secure Shell (SSH)
- SNMP

NOTE: *Remote management functions can be enabled and configured only through the local serial console.*

When enabled, remote management allows you to access the device's Command Line Interface (CLI) from Telnet or SSH sessions running on remotely located machines. Up to five remote sessions can be configured, including both Telnet and SSH sessions (Default: 5). Before you can use the device's remote management function, you must enable and configure it at the local serial console. Remote management requires that the device's network interface be assigned an IP address.

Remote SNMP management is supported to the extent of allowing control of the System group of MIB-II.

Limitations

Note that several CLI capabilities available at the local console are unavailable in remote sessions. These are:

- Assignment of an IP address to the SA7100/SA7120's network interface
- Enable/disable Telnet, SSH, or SNMP
- Change Telnet, SSH, or SNMP ports
- Set maximum number of Telnet or SSH sessions
- If import or export operations are carried out while any of the device's monitors are enabled, the monitors' periodic output will be inserted into the data flow of the import or export.
  Workaround: Before performing an import or export operation, turn off all monitors:
  `HP SA7120> set monitoring disable`

The CLI commands that control remote management potentially affect the device's configuration files, thus if a remote management configuration is to persist across a shutdown/startup of the device, you must follow remote management configuration with the CLI command **config save**. This ensures that the configuration will be restored upon startup.

Remote Management CLI Commands

Remote management is enabled or disabled and configured by using a series of CLI commands available only at the local serial console. The exact sequence varies depending on the type and configuration of the remote session you want to enable. (Usage is detailed in subsequent sections.) These commands are:

General:

- **set ip <ip> <netmask>** assigns an IP address and netmask to the SA7100/SA7120's network interface.
- **set max_remote_sessions <1-5>** sets the maximum allowed number of concurrently running Telnet and SSH sessions.

Telnet-specific:

- **set telnet enable|disable** enables or disables Telnet sessions.
- **show telnet** displays current Telnet status: enabled or disabled.
- **set telnet_port <port>** sets the Telnet port. (Default: 23.)

- **show telnet_port** displays current Telnet port.

  SSH-specific:

- **set ssh enable|disable** enables or disables SSH sessions.
- **show ssh** displays current SSH status: enabled or disabled.
- **set ssh_port <port>** sets the SSH port. (Default: 22.)
- **show ssh_port** displays current SSH port.

  SNMP-specific:

- **setsnmp snmp enable|disable** enables or disables SNMP management.
- **showsnmp snmp** displays current SNMP status: enabled or disabled.
- **setsnmp snmp_info** sets the following SNMP information and parameters:
  - SNMP port (Default: 161)
  - SNMP trap port (Default: 162)
  - SNMP agent IP address
  - Contact person
  - System name
  - System location
- **showsnmp snmp_info** displays current SNMP information and parameters.
- **setsnmp snmp_community** sets SNMP community strings.
- **list snmp_community** displays SNMP community strings.
- **delete snmp_community** deletes SNMP community strings.
- **setsnmp trap_community** sets SNMP permission strings.
- **list trap_community** displays SNMP permission strings.
- **delete trap_community** deletes SNMP permission strings.

Remote Telnet Sessions

*NOTE: The default password for Telnet sessions is **admin**.*

This section contains procedures for accessing the SA7100/SA7120's CLI via remote Telnet session.

Local Serial Console

Assign an IP address to the SA7100/SA7120's network interface using the following procedure:

```
HP SA7120> set ip
Enter IP [10.1.2.56]: 10.1.1.1
Enter Netmask [255.255.255.0]:
```

Verify the IP and netmask (optional):

```
HP SA7120> show ip
System IP Address : 10.1.1.1
System Netmask    : 255.255.255.0
HP SA7120>
```

Enable remote Telnet sessions:

```
HP SA7120> set telnet enable
```

Configure the network route:

```
HP SA7120> set route
Enter Default Route ('none' to delete)
[10.1.1.1] : <Enter>
```

Verify the route configuration (optional):

```
HP SA7120> show route
Default Route : 10.1.1.1
```

Delete a route configuration (optional):

```
HP SA7120> set route none
```

*NOTE: To ensure that this remote management configuration persists across a device shutdown and startup, run the **config save** command.*

Remote Telnet management is now enabled and configured on the SA7100/SA7120. Now you can access the CLI from a remote Telnet session.

Remote Console, Telnet

With remote Telnet enabled on the SA7100/SA7120, use the following procedure to access it's CLI:

```
Unix-prompt> telnet 10.1.1.1
Trying 10.1.1.1...
Connected to 10.1.1.1.
Escape character is '^]'.
.
.
.
Serial 0:a0:a5:11:4:2e
password:<password>
```

After you enter your password, the Telnet session displays the SA7100/SA7120's CLI. From this point, you can manage the device as you would from the local serial console, minus the few disallowed commands listed in the "Limitations" section near the beginning of this chapter.

NOTE: *If other remote sessions are already running and the new one exceeds the number allowed as configured with the* ***set max_remote_sessions*** *command, the CLI displays the message, "Max Remote Session Limit of (5) exceeded!" Either close a session, or increase the maximum number allowed.*

Changing the Telnet Port

The Telnet port is set and displayed by using the CLI commands **set telnet_port <port>** and **show telnet_port**.

These commands are available only at the local serial console and when the remote management is enabled. By default, the Telnet port number is 23.

To set the Telnet port:

```
HP SA7120> set telnet_port 230
```

To display the Telnet port:

```
HP SA7120> show telnet_port
Telnet Port Number: 230
```

Disabling Telnet

Telnet sessions are disabled at the SA7100/SA7120's local serial console. To disable, follow the steps below:

```
HP SA7120> set telnet disable
```

To verify Telnet disable:

```
HP SA7120> show telnet
Telnet: disable
```

To ensure that Telnet sessions remain disabled across a device shutdown and startup, run the **config save** command.

Remote SSH Sessions

NOTE: *The default user name and password for SSH sessions are* ***admin****.*

This section contains procedures for accessing the SA7100/SA7120's CLI via remote Secure Shell (SSH) session. The table below illustrates ciphers supported by the domestically available SA7120 under SSH1 and SSH2. The export version of the product supports only the SSH2 cipher DES.

	SSH1	SSH2
Cipher	3DES, DES, Blowfish	3DES, Twofish, RC4, "None"
MAC		MD5, "None"

Supported Ciphers

Local Serial Console

Assign an IP address to the SA7100/SA7120's network interface using the following procedure:

```
HP SA7120> set ip
Enter IP [10.1.2.56]: 10.1.1.1
Enter Netmask [255.255.255.0]:
```

Verify the IP and netmask (optional):

```
HP SA7120> show ip
System IP Address: 10.1.1.1
System Netmask: 255.255.255.0.
```

Enable remote SSH sessions:

```
HP SA7120> set ssh enable
```

Configure the network route:

```
HP SA7120> set route
Enter Default Route ('none' to delete)
[10.1.1.1] : <Enter>
```

Verify the route configuration (optional):

```
HP SA7120> show route
Default Route : 10.1.1.1
```

Delete a route configuration (optional):

```
HP SA7120> set route none
```

NOTE: *To ensure that this remote management configuration persists across a device shutdown and startup, run the* ***config save*** *command.*

Remote SSH management is now enabled and configured on the SA7100/SA7120. Now you can access the CLI from a remote SSH session.

Remote Console, SSH

With remote SSH enabled on the SA7100/SA7120, use the following procedure to access it's CLI:

```
Unix-prompt> ssh -1 admin 10.1.1.1
.
.
.
Serial 0:a0:a5:11:4:2e
password:<password>
```

NOTE: *If other remote sessions are already running and the new one exceeds the number allowed as configured with the* ***set max_remote_sessions*** *command, the CLI displays the message, "Max Remote Sesion Limit of (5) exceeded!" Either close a session, or increase the maximum number allowed.*

After you enter your password, the SSH session displays the SA7100/SA7120's CLI. From this point, you can manage the device as you would from the local serial console, minus the few disallowed commands listed in the "Limitations" section near the beginning of this chapter.

Changing the SSH Port

The SSH port is set and displayed by using the CLI commands **set ssh_port <port>** and **show ssh_port**.

These commands are available only at the local serial console and when the remote management is enabled. By default, the SSH port number is 22.

To set the SSH port:

```
HP SA7120> set ssh_port 220
```

To display the SSH port:

```
HP SA7120> show ssh_port
SSH Port Number: 220
```

Disabling SSH

SSH sessions are disabled at the SA7100/SA7120's local serial console. To disable, follow the steps below:

```
HP SA7120> set ssh disable
```

To verify SSH disable:

```
HP SA7120> show ssh
SSH: disable
```

To ensure that SSH sessions remain disabled across a device shutdown and startup, run the **config save** command.

SNMP

The HP e-Commerce Server Accelerator SA7100/SA7120 has a fully compliant, embedded SNMP agent that supports SNMPv1 and SNMPv2c requests. In addition to standard MIB-II, HP private enterprise MIBs provide the following capabilities:

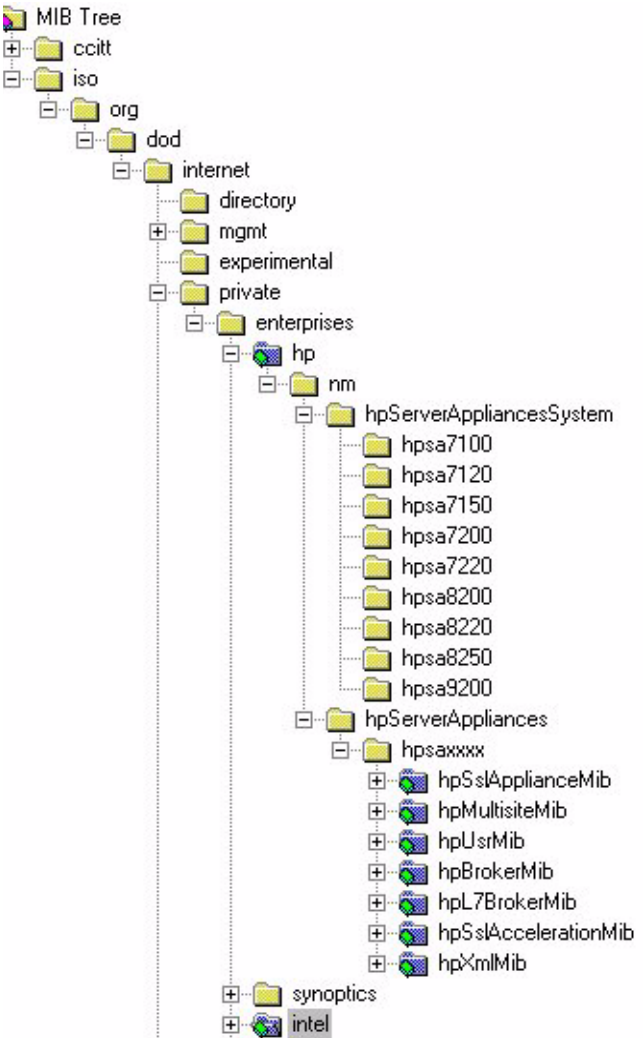
- Monitor the health of the SA7100/SA7120's hardware and network links
- Monitor the flags used to enable and disable alarms and monitors
- Monitor the SA7100/SA7120's load as indicated by CPU utilization, connection count, and connections per second
- Monitor status and performance of SSL encryption and decryption functions
- Monitor overloads, spills, and throttles

Standards Compliance

The SA7100/SA7120 SNMP agent is bilingual and can support both SNMPv1 and SNMPv2c requests. HP private enterprise MIB files are compliant with SMIv2 as specified in RFC 1902. SET operations are not allowed for any private MIB objects for the SA7100/SA7120, although you can change MIB variable values by way of commands issued on the CLI.

HP MIB Tree

The figure below illustrates the top level of HP's MIB tree.



HP's MIB Tree (top level)

All HP enterprise MIBs and MIB objects are defined under the mib2ext branch of the tree. All system object IDs that identify products are defined under the `hpServerAppliancesSystem` branch of the tree.

Supported MIBs

Management Information Base-II (MIB-II)

HP Enterprise MIBs:

```
hpserver-header.my
hpssl-appliance-mib.my
```

Where to find MIB Files

Electronic copies of the HP MIB files used by the SA7100/SA7120 are shipped with the product on CD-ROM.

Write access through SNMP SET is not allowed for any MIB variables or SNMP groups. An SNMP SET on any group returns an error.

The standard SNMP traps, `coldStart`, `warmStart`, `authenticationfailure`, `linkUp` and `linkDown` are supported.

hpserver-header.my

`hpserver-header.my` contains all the system object IDs defined for HP products. All system object IDs are defined under the `hpServerAppliancesSystem` branch of the `hp` tree.

Enterprise Private MIB Summary

Following is a summary of the SA7100/SA7120 private MIB:

```
mode
   inline(1): Device is configured to accelerate
   SSL traffic
   bypass(2): Device is configured to pass through
   all SSL traffic
failMode
   safe(1): Two ethernet segments fail open,
   stopping traffic
   through(2): Two ethernet segments fail shorted,
   allowing traffic to continue
spillMode
   throttle(1): Device will throttle SSL
   connections when utilization reaches 100%
```

```
   spill(2): Device will spill SSL connections when
   utilization reaches 100%
sslSessionCache
   enabled(1): SSL session caching is turned on
   disabled(2): SSL session caching is turned off
restarts
   Number of times the system has restarted
appLastRestart
   The value of sysUpTime at the time the last
   restart of the application process happened
encryptionAlarm
   enabled(1): Encryption status change alarm is
   turned on
   disabled(2): Encryption status change alarm is
   turned off
sslConnectionAlarm
   enabled(1): SSL connection alarm is turned on
   disabled(2): SSL connection alarm is turned off

thresholdAlarm
   enabled(1): Threshold alarm is turned on
   disabled(2): Threshold alarm is turned off
overloadAlarm
   enabled(1): Overload alarm is turned on
   disabled(2): overload alarm is turned off
linkStatusAlarm
   enabled(1): Network link status alarm is turned
   on
   disabled(2): Network link status alarm is turned
   off
encryptProcessingState
   on(1): SSL processing on
   off(2):SSL processing halted
encryptProcessingStateReason
   normal(1): Normal
   hardware(2): Change caused by hardware fault
   consoleBypass(3): Bypass mode enabled at
   console
   consoleInline(4): Inline mode enabled at
   console
   frontPanelBypass(5): Bypass mode enabled at
   front panel
   frontPanelInline(6): Inline mode enabled at
   front panel
serverInterfaceState
   State of the server-side interface
```

```
networkInterfaceState
   State of the network-side interface
utilWindow
   Sliding window (in seconds) to calculate average
   connections, CPU utilization, and active
   connnection rates
cpuUtil
   CPU utilization percentage (0-100)
cpuUtilNetwork
   CPU utilization percentage processing network
   traffic (0-100)
cpuUtilProxy
   CPU proxy utilization percentage (0-100)
cpuUtilHiWater
   CPU utilization high water mark (2-100)
cpuUtilLoWater
   CPU utilization low water msrk (1-99)
cpuUtilState
   When CPU utilization exceeds the hi water mark,
   CPU utilization state is in alert and is not
   returned to normal until the lo water threshold
   is crossed
sslCps
   SSL connections per second
sslCpsMaximum
   Maximum SSL connection rate in connections per
   second since (re)start
sslCpsHiWater
   SSL connections per second high water mark
sslCpsLoWater
   SSL connections per second low water mark
sslCpsState
   When SSL connections per second exceeds the hi
   water mark, sslCpsState is in alert and is not
   returned to normal until the lo water threshold
   is crossed
sslConnCnt
   Current number of concurrent open SSL
   connections
sslConnCntMaximum
   Maximum number of concurrent open SSL
   connections since (re)start

sslConnTotal
   Total number of SSL connections processed
sslConnCntHiWater
```

```
   Concurrent open SSL connection count high water
   mark
sslConnCntLoWater
   Concurrent open SSL connection count low water
   mark
sslConnCntState
   When concurrent open SSL connection count
   exceeds the hi water mark, sslConnCntState is in
   alert and is not returned to normal until the lo
   water threshold is crossed
encryptedBps
   Encryption rate in bytes per second
encryptedBpsMaximum
   Maximum encryption rate in bytes per second
   since (re)start
encryptedBytesTotalMb
   Total number of megabytes of data encrypted
decryptedBps
   Decryption rate in bytes per second
decryptedBpsMaximum
   Maximum decryption rate in bytes per second
   since (re)start
decryptedBytesTotalMb
   Total number of megabytes of data decrypted
sslOverloadInterval
   The periodic interval (in seconds) used when
   counting the number of spilled or throttled SSL
   connections. If any SSLconnections were spilled
   or throttled in the lastsslOverloadInterval, a
   trap is generated. If sslOverloadInterval is 0,
   no trap is generated
throttlesPerSec
   Number of throttles per second
throttlesPerSecMaximum
   Maximum number of throttles per second since
   (re)start
throttlesTotal
   Total number of throttles since (re)start
   throttles
   Total number of throttles in the last
   sslOverloadInterval
spillsPerSec
   Number of spills per second
spillsPerSecMaximum
   Maximum number of spills per second since
   (re)start
```

```
spillsTotal
   Total number of spills since (re)start
spills
   Number of spills in the last sslOverloadInterval
refusedSslInterval
   The periodic interval (in seconds) used when
   counting the number of refused SSL connections.
   If any SSL connections were refused in this time
   interval, a trap is generated.
cipherSuiteMismatch
   Number of refused SSL connections in the last
   refusedSslInterval which are due to inability of
   the client and server to agree upon a cipher
   suite
clientCertAuthFail
   Number of refused SSL connections in the last
   refusedSslInterval which are due to
   authentication failure of the client
   certificate
```

Trap Summary

The following list summarizes the traps generated by the SA7100/ SA7120. For details about a particular trap, please read the description of each MIB above, or read the documentation within the MIB file. Traps are generated by SNMP.

Standard SNMP Traps

```
coldStart
warmStart
authenticationFailure
linkUp
linkDown
```

Private Traps in the HP private MIB (hpssl-appliance-mib.my)

```
encryptionStopped
   Alert issued whenever the device stops
   processing SSL traffic
encryptionResumed
   Resumes processing traffic after having been
   stopped
serverInterfaceStateChanged
   The server-side interface state changed
networkInterfaceStateChanged
   The network-side interface state changed
```

```
cpuUtilAlert
   The device has exceeded the CPU utilization high
   water threshold
cpuUtilNormal
   CPU utilization back to normal levels
sslCpsAlert
   The device has exceeded the SSL connections per
   second high water threshold
sslCpsNormal
   The SSL connections per second processed by the
   device is back to normal levels

sslConnCntAlert
   The device has exceeded the open SSL connection
   count high water threshold
sslConnCntNormal
   The open SSL connection count of the device is
   back to normal levels
sslConnectionRefusedMismatch
   SSL connections were refused in the past
   sslRefusedInterval due to cipher suite
   negotiation
 failuresslConnectionRefusedAuthFail
   SSL connections were refused in the past
   sslRefusedInterval due to authentication failure
   of the client certificate
sslOverloadSpills
   SSL connections were spilled in the past
   sslOverloadInterval
sslOverloadThrottles
   SSL connections were throttled in the past
   sslOverloadInterval
appRestartAlert
   SSL processing application has restarted
```

Enabling SNMP

Enabling and disabling SNMP is accomplished with the CLI command, **setsnmp snmp enable|disable**. Operational status can be verified using **showsnmp snmp**.

Examples:

```
HP SA7120> setsnmp snmp enable
HP SA7120> showsnmp snmp
SNMP: enable
HP SA7120> setsnmp snmp disable
HP SA7120> showsnmp snmp
SNMP: disable
```

Specifying SNMP Information

Configurable SNMP parameters can be set collectively using the **setsnmp snmp_info** command as illustrated below:

```
HP SA7120> setsnmp snmp_info
SNMP Port      [161]: 161
SNMP Trap Port [162]: 162
Contact Person    []: support
System Location   []:
System Name       []: SA7120
```

Current values of SNMP parameters are displayed using the **shownmp snmp_info** command:

```
HP SA7120> showsnmp snmp_info
SNMP Port Number     : 161
SNMP Trap Port Number: 162
SNMP System Contact  : support
SNMP System Name     : SA7120
SNMP System Location :
System IP Address: x.x.x.x
System Netmask: y.y.y.y
Default Route: z.z.z.z
```

You can also configure SNMP information elements individually using the following commands:

- **setsnmp snmp_port** sets the SNMP port
- **setsnmp trap_port** sets the SNMP trap port
- **setsnmp sys_contact** sets the contact person
- **setsnmp sys_name** sets the system name
- **setsnmp sys_location** sets the system location

Correspondingly, the values set with the above commands are displayed using the commands:

- **showsnmp snmp_port**
- **showsnmp trap_port**
- **showsnmp sys_contact**
- **showsnmp sys_name**
- **showsnmp sys_location**

Community String

Use CLI commands **setsnmp snmp_community**, **list snmp_community** and **delete snmp_community** to set, list, and delete SNMP community strings.

```
HP SA7120> setsnmp snmp_community
SNMP Community String(s) Setting.
<2> Current SNMP Community String(s):
1.) IP: 1.1.1.1 => String:  1.1.1.2 => Rights: read
2.) IP: 1.1.1.3 => String:  1.1.1.4 => Rights: read
Enter a SNMP Community IP (q to quit) [1.1.1.4]:
1.1.1.5
Enter a SNMP Community String (q to quit)
[1.1.1.5]: 1.1.1.6
Enter a SNMP Community IP (q to quit) [1.1.1.1]: q
HP SA7120>

HP SA7120> list snmp_community
SNMP Community String(s) information.
<2> Current SNMP Community String(s):
1.) IP: 1.1.1.1 => String:  1.1.1.2 => Rights: read
2.) IP: 1.1.1.3 => String:  1.1.1.4 => Rights: read
3.) IP: 1.1.1.5 => String:  1.1.1.6 => Rights: read
HP SA7120>

HP SA7120> delete snmp_community
SNMP Community String(s) Deletion.
<2> Current Available SNMP Community String(s):
1.) IP: 1.1.1.1 => String:  1.1.1.2 => Rights: read
2.) IP: 1.1.1.3 => String:  1.1.1.4 => Rights: read
3.) IP: 1.1.1.5 => String:  1.1.1.6 => Rights: read
Enter number (1 to 2) to delete (q to quit) [1]: 2
Enter number (1 to 2) to delete (q to quit) [1]: q
HP SA7120>
```

Trap Community String

Use CLI commands **setsnmp trap_community**, **list trap_community** and **delete trap_community** to set, display, and delete trap community strings.

```
HP SA7120> setsnmp trap_community
SNMP Trap Community String(s) Setting.
Enter a SNMP Trap Community IP (q to quit): 0.0.0.0
Enter a SNMP Trap Community String (q to quit): private
Enter a SNMP Trap Community IP (q to quit): 0.0.0.0
```

Notes

7 Alarms and Monitoring

Overview

The HP e-Commerce Server Accelerator SA7100/SA7120 supports:

- Alarms that can be sent to the console upon pre-designated events
- Periodic status-monitoring reports

Both alarms and monitor reports are single lines of text. Both can be written either to the local administration console or to remote management sessions (Telnet or Secure Shell only). On the display, alarms are prefaced by the letter “A,” and monitor reports with the letter “M.” Both have timestamps.

Alarms can be configured to immediately notify the user of the following conditions:

- Encryption Status change
- Refused SSL connections
- Utilization (Threshold) alarms
- Overload alarms
- Network Link Status

All alarms are disabled by default and may be enabled in any combination.

Alarm format:

```
A:mm/dd/yyyy hh:mm:ss
ALARM_CODE:MODIFIER:EXTENDED_DATA:/*message*/
```

Where:

```
A: Identifies the message as an alarm (as
opposed to a monitor report).
mm/dd/yyyy hh:mm:ss The timestamp.
ALARM_CODE: The alarm type:
[ESC|RSC|UTL|OVL|NLS].
MODIFIER: The alarm modifier, a code identifying
the event that triggered the alarm.
```

NOTE: *The Encryption Status Change alarm (ESC) does not display extended data.*

```
EXTENDED_DATA: Any additional relevant data.
/*message*/: Human-readable text description of
the alarm.
```

The CLI commands for alarm configuration are:

Command	Parameters	Default
set alarm	all, esc, rsc, utl, ovl, nls	none
show alarm		

For example:

```
HP SA7120> set alarm
Usage: set alarms [args]
  all =>  All alarms turned on.
  esc =>  Encryption status change alarm.
  nls =>  Network link status alarm.
  none => All alarms turned off (disabled).
  ovl =>  Overload alarm.
```

```
  rsc =>  Refused SSL conections alarm.
  utl =>   Utilization threshold alarm.
HP SA7120> set alarm all
HP SA7120> show alarm
Alarms set:  esc rsc utl ovl nls.
HP SA7120> set alarm none
HP SA7120> show alarm
Alarms set:
```

Alarm Types

The configurable alarm types are detailed in separate sections below.

ESC: Encryption Status Change Alarm

When enabled, an alarm is issued when the device is changed between INLINE and BYPASS modes. This change can be made from the CLI using the commands **inline** or **bypass**, or at the device's front panel by pressing the BYPASS button.

Format:

```
A:mm/dd/yyyy hh:mm:ss ESC:HDWR|CONB|CONI|FNTB|
FNTI|APPR:/*message*/
```

Where:

```
A: identifies the message as an alarm.
mm/dd/yyyy hh:mm:ss is the timestamp.
ESC: identifies the message as an Encryption
Status Change Alarm.
```

Alarm Modifiers and Messages:

```
HDWR: indicates crypto card failure
CONB: indicates console-controlled bypass
CONI: indicates console-controlled inline
FNTB: indicates front panel-controlled bypass
FNTI: indicates front panel-controlled inline
APPR: indicates application restart
```

RSC: Refused SSL Connections

When enabled, an alarm is generated whenever SSL connections are refused for cipher suite mismatch or client certificate authentication failure during the current user-specified period (5 to 65000 seconds, default: 15 seconds). The total number of refused SSL connections is reported along with the reason for refusal. This alarm can be enabled or disabled at the CLI.

Format:

```
A:mm/dd/yyyy hh:mm:ss
RSC:CSMM|CCAF:XXX:
/*message*/
```

Where:

```
A: identifies the message as an alarm.
mm/dd/yyyy hh:mm:ss is the timestamp.
RSC: identifies the message as an Refused SSL
Connections Alarm.
```

Alarm Modifiers and Messages

```
CSMM: Cipher suite mismatch
CCAF: Client certificate authenticate failure
```

Extended Data

```
XXX: An integer value indicating the number of
refused SSL connections that occurred in the
current alarm period.
```

RSC Alarm CLI Commands

To set Refused SSL Connections Alarm time window:

```
set rsc_window <seconds> (Range: 5-65000,
default: 15)
```

To display Refused SSL Connections Alarm time window

```
show rsc_window
```

Examples:

```
HP SA7120> set rsc_window 10
HP SA7120> show rsc_window
Check for refused SSL connections [secs]: 10
```

UTL: Utilization Threshold Alarm

This alarm monitors three utilization threshold values:

- CPU
- Connections per Second
- Total Open Connections

When enabled, an alarm is issued whenever any of the utilization values exceeds its high-water mark, or, having exceeded the high-water mark, drops below the low-water mark. The user defines the high and low-water marks. By default, the high-water mark is 90% and the low-water mark is 60%.

The data collected for utilization threshold metrics tends to be bursty, so a smoothing algorithm is used to prevent continuous alarms.The utilization window is a user-specified sliding interval during which data is collected and averaged. Consequently, shorter intervals are likely to result in some extraneous alarms. The interval can be set from 5 to 65000 seconds (default: 15).

Format:

```
A:mm/dd/yyyy hh:mm:ss
UTL:ALRT|NMRL:CPU|CON|CPS:/*message*/
```

Where:

```
A: identifies the message as an alarm.
mm/dd/yyyy hh:mm:ss is the timestamp.
UTL: identifies the message as an Utilization
Threshold Alarm.
```

Alarm Modifiers and Messages

```
ALRT: Message: [CPU|Open connections|CPS] exceed
high water mark
NMRL: Message: [CPU|Open connections|CPS] drop
below low water mark
```

Extended Data

```
CPU: Indicates that CPU Utilization triggered
the alarm.
CON: Indicates that Total Active Connections
triggered the alarm.
CPS: Indicates that Connections per Second
triggered the alarm.
```

UTL Alarm CLI commands

To set Utilization Threshold Alarm time window:

```
set utl_window <seconds> (Range: 5-65000,
default: 15)
```

To set Utilization Threshold Alarm high-water value:

```
set utl_highwater <percentage> (Range: 2-100,
default: 90)
```

To set Utilization Threshold Alarm low-water value:

```
set utl_lowwater <percentage> (Range: 1-99,
default: 60)
```

To display current settings:

```
show utl_window
show utl_highwater
show utl_lowwater
```

Examples:

```
HP SA7120> set utl_window 10
HP SA7120> show utl_window
Utilization Window set [secs]: 10
HP SA7120> set utl_highwater 80
HP SA7120> show utl_highwater
Utilization High water mark [%]: 80
HP SA7120> set utl_lowwater 60
HP SA7120> show utl_lowwater
Utilization Low water mark [%]: 60
```

OVL: Overload Alarm

WARNING: *This alarm indicates loss of encryption/decryption. (Normal SSL operation resumes when the alarm ceases.)*

When enabled, an alarm is issued upon occurence of overloads resulting in spills or throttles during the current user-configured alarm period (5 to 65000 seconds, default: 15 seconds).

Format:

```
A:mm/dd/yyyy hh:mm:ss
OVL:SPIL|THRT:XXX:
/*message*/
```

Where:

```
A: identifies the message as an alarm.
mm/dd/yyyy hh:mm:ss is the timestamp.
OVL: identifies the message as an Overload
Alarm.
```

Alarm Modifiers and Messages

```
SPIL: indicates overload resulting in a spill.
Message: Spill mode.
THRT: indicates overload resulting in a
throttle. Message: Throttle mode.
```

Extended Data

```
XXX: An integer value indicating the total
number of overload events that occurred during
the most recent alarm period.
```

OVL Alarm CLI Commands

To set Overload Alarm time window:

```
HP SA7120> set ovl_window <seconds> (Range: 5-
65000, default: 15)
```

To display Overload Alarm time window:

```
HP SA7120> show ovl_window
```

Examples:

```
HP SA7120> set ovl_window 10
HP SA7120> show ovl_window
Check for overload conditions [sec]: 10
```

NLS: Network Link Status Alarm

An alarm is issued whenever the Network or Server link status is changed.

Format:

```
A:mm/dd/yyyy hh:mm:ss
NLS:NETL|SVRL:LNKD|10HDX|10FDX|100HDX|100FDX:/
*message*/
```

Where:

```
A: identifies the message as an alarm.
mm/dd/yyyy hh:mm:ss is the timestamp.
NLS: identifies the message as a Network Link
Status Alarm.
```

Alarm Modifiers and Messages

```
NETL: indicates the network port status.
Message: [No carrier|10Mb/s|100Mb/s][half
duplex|full duplex]
SVRL indicates the server port status. Message:
[No carrier|10Mb/s|100Mb/s] [half duplex|full
duplex]
```

Extended Data

```
LINKD: indicates no carrier.
10HDX: indicates 10Mb/s, half duplex.
10FDX: indicates 10Mb/s, full duplex.
100HDX: indicates 100Mb/s, half duplex.
100FDX: indicates 100Mb/s, full duplex.
```

Alarm Logging

The SA7100/SA7120 maintains a circular buffer of alarms issued. The most recent alarms, as well as historical logs generated and saved as a result of exceptional conditions, are viewable at the console or in Telnet or Secure Shell (SSH) remote sessions. Viewing the current alarms results in an immediate dump of the alarm buffer.

The historical logs consist of a snapshot of the information retrievable via the **status line** command followed by a dump of the alarm buffer existing at the time of the exceptional condition.

These alarms can be viewed on the console using the CLI command, **status alarms**. Additionally, any logs generated and saved as a result of an exceptional condition are viewable by using the CLI command, **status <log filename>**. (A list of the viewable log files is displayed using the **list logs** command.)

Alarms can be echoed to the console by enabling the monitoring function. Monitoring reports are disabled by default, and are enabled with the **set monitoring <enable | disable>** command. The monitoring application is aware of the port on which the enable command arrives, and accordingly sends reports to that same port, thus monitoring reports are displayed on the same console from which the feature is enabled.

Below are examples of the CLI commands for log viewing, the defaults, and ranges where applicable:

Example: *list logs* command:

```
HP SA7120> list logs
20000727_145544
```

Example: *status* command

```
HP SA7120> status 20000727_145544
================= STATE ====================
Boot time:                      Thu Jul 27 14:54:21
2000
Curr time:                      Thu Jul 27 14:55:43
2000
Restarts:                        3
KTR Mask:                        0xFFFFF3DD
Total Connections:               0
Active Connections:              0, 0 (cur, max)
Connections/Second:              0, 0 (cur, max)

Util Status:
Secure Bytes Read:               0
Plain Bytes Read:                0
Secure Bytes Wrote:              0
Plain Bytes Wrote:               0
Bytes Allocated to dbufs:        0
Bytes Per dbuf:                  0

Spill Mode:                      disable
Transactions Spilled:            0
Times Thottled Accepts:          0
Bypass Mode:                     disable
L&M board status:                RESPEND  INLINE
(0x00000060)
Network NIC:                     100baseTX Half
Duplex
                                 (0x00000026
0x00000003 0x00000026)
Server NIC:                      No carrier
                                 (0x00000023
0x00000001 0x00000023)
Network LED:                     on
Server LED:                      off
Next heartbeat deadline:         never
SSL Caching:                     Enabled.

--------------- Configuration --------------
conlog 0xffffffef
ilog 0xffffffff
trace 0xfffff3dd
media auto
logport tty01
cache 3
```

```
server_tmo 5
client_tmo 30
serverif exp1
netif exp0
map 0.0.0.0 443 80 default
kpanic reboot
monitoring_interval 0
monitoring_fields 0x1f
alarm_mask 0x0000001f
ovl_window 15
rsc_window 15
utl_window 15
utl_highwater 90
utl_lowwater 60
idle 300
kstrength 512
con_speed 9600
con_bits 8
con_stop 1
con_parity n
defcert_cname US
defcert_state California
defcert_city San Diego
defcert_orgname Company Name
defcert_orgunit Company Division
defcert_name www.company.com
defcert_email support@company.com
prompt HP SA7120>
trap_authen
remote_if exp0
ip 10.1.11.34
netmask 255.255.0.0
A:07/27/2000 14:54:47:NLS:SVRL:NC:/* Server port
status, No carrier */
A:07/27/2000 14:54:41:NLS:SVRL:100FDX:/* Server
port status, 100Mb/s, full dupl/
A:07/27/2000 14:54:21:NLS:NETL:100HDX:/* Network
port status, 100Mb/s, half dup/
A:07/27/2000 14:54:21:NLS:SVRL:NC:/* Server port
status, No carrier */
A:01/01/1970 00:00:00:ESC:APPR:3:/* Application
Restarted */
```

Example: status alarms command

```
HP SA7120> status alarms
A:07/27/2000 14:57:05:ESC:CONI:/* Console inline
*/
A:07/27/2000 14:57:05:NLS:NETL:100HDX:/* Network
port status, 100Mb/s, half dup/
A:07/27/2000 14:57:01:ESC:CONB:/* Console bypass
*/
A:07/27/2000 14:57:01:NLS:NETL:NC:/* Network port
status, No carrier */
A:07/27/2000 14:56:51:NLS:SVRL:NC:/* Server port
status, No carrier */
A:07/27/2000 14:56:46:NLS:SVRL:100FDX:/* Server
port status, 100Mb/s, full dupl/
A:07/27/2000 14:56:30:ESC:CONI:/* Console inline
*/
A:07/27/2000 14:56:30:NLS:NETL:100HDX:/* Network
port status, 100Mb/s, half dup/
A:07/27/2000 14:56:29:NLS:NETL:NC:/* Network port
status, No carrier */
A:07/27/2000 14:56:29:NLS:SVRL:NC:/* Server port
status, No carrier */
HP SA7120>
```

Monitoring

Monitoring Reports

A monitoring report is one line of user-configurable text displayed at the console at a user-configurable interval of between five and 65000 seconds. The interval default is 15 seconds. Monitoring reports are disabled by default, and are enabled with the **set monitoring <enable | disable>** command. The monitoring application is aware of the port on which the enable command arrives, and accordingly sends reports to that same port, thus monitoring reports are displayed on the same console from which the feature is enabled.

Report Configuration

Report output begins with the letter “M” (for Monitor report, to distinguish them from Alarm reports) and the timestamp. Other fields are user-selectable via CLI commands (discussed below in “Monitoring Reports CLI Commands”). The standard default fields are mode, failmode, CPU, CPS, and OVRLD. Monitor reports are disabled by default.

Monitor report format:

```
M:mm/dd/yyyy hh:mm:ss
mode:failmode:CPU;i,k,a:CPS;c,m,t:OVRLD;r,c,m,t:
NetIF;s:SvrIF;s:BES;c,m,t;BDS;c,m,t
```

Where:

```
M Monitor report
mm/dd/yyyy hh:mm:ss Timestamp
mode Bypass mode status [INLINE|BYPASS]
failmode Fail mode status [SAFE|THRU]
CPU;i,k,a CPU%; (i)dle, (k)ernel, (a)pplication
CPS;c,m,t SSL Connections per Second; (c)urrent,
(m)ax, (t)otal
OVRLD;r,c,m,t Overload events; (r)esponse
[SPIL|THRT], (c)urrent, (m)ax,
(t)otal
NetIF;s Net interface; (s)tatus
[NC|10HDX|10FDX|100HDX|100FDX]
SvrIF;s Svr interface; (s)tatus
[NC|10HDX|10FDX|100HDX|100FDX]
BES;c,m,t Bytes Encrypted per Second; (c)urrent,
(m)ax, (t)otal
BDS;c,m,t Bytes Decrypted per Second; (c)urrent,
(m)ax, (t)otal
```

Monitoring Reports CLI Commands

CLI commands for console monitoring, with defaults and ranges where applicable are discussed below:

```
set monitoring_interval <seconds>
(Range: 5-65000; Default: 15 )
show monitoring_interval
set monitoring_fields <fields>
Usage: set monitoring_fields [args]
 all => All monitoring fields enabled.
 cps => SSl connections per second.
 cpu => CPU utilization.
 dec => Decrypted Data throughput.
 enc => Encrypted Data throughput.
 failmode => Fail-safe or Fail-through mode.
 link => Network and Server Link status.
 mode => INLINE or BYPASS mode.
 ovrld => Number of spills when spill is
    enabled or throttles when spill is
    disabled.
show monitoring_fields
```

set monitoring enable|disable (Default: disable)
show monitoring

Examples:

```
HP SA7120> set monitoring_interval 15
HP SA7120> show monitoring_interval
Monitoring report interval [secs]: 15
HP SA7120> set monitoring disable
HP SA7120> show monitoring
Monitoring for this terminal: disabled
HP SA7120> set monitoring_fields all
HP SA7120> show monitoring_fields
Monitoring report fields:  mode failmode cpu cps
ovrld link enc dec
HP SA7120> set monitoring enable
HP SA7120> show monitoring
Monitoring for this terminal: enabled
HP SA7120> set monitoring_fields
Select monitoring fields (all, mode, failmode,
cpu, cps, ovrld, link, enc,
dec) [all]: all
HP SA7120> show monitoring_fields
Monitoring report fields:  mode failmode cpu cps
ovrld link enc
HP SA7120> set monitoring enable
HP SA7120> show monitoring
Monitoring for this terminal: enabled
```

Notes

8 Software Updates

Use the **import upgrade** command to upgrade your HP e-Commerce Server Accelerator SA7100/SA7120 software. When you upgrade your SA7100/SA7120 software, the configuration (including all keys, certificates, and mapping) is saved. However, all log files are cleared. The software is in the form of an image file (*.IMG).

Use the **import patch** command to install a patch to a current software release. Patches typically effect fixes to minor software issues. Customer Support can provide guidance regarding patches appropriate to your system, if any.

Before Upgrading

Monitoring output data can interfere with import/ export operations

If import or export operations are carried out while any of the device's monitors are enabled, the monitors' periodic output will be inserted into the data flow of the import or export. Workaround: Before performing an import or export operation, turn off all monitors:

```
HP SA7120> set monitoring disable
```

Details on the device's monitoring functions are found in Chapter 6.

IP blocks may not persist across software upgrade

The device may, after the automatic reboot following an import upgrade, experience a problem with reestablishing any IP blocks created before the upgrade. If this is the case, the console displays a message similar to either of the following examples:

```
Upgrading...
System rebooting...09/20 13:41:43 Build 122 Tue
Sep 19 02:40:36 PDT 2000 09/20 13:41:44 "block
9.8.7.6 255.255.255.255 99 0xffff" is incomplete
and ignored
Warning: "ciphers ALL:!ADH:!EDH" at line # 11
ignored.
Warning: "block 9.8.7.6 255.255.255.255 99
0xffff" at line # 30 ignored.
Do you want to install this config ? [y]:
```

Use the **create block** command to recreate any desired IP blocks after the upgrade is complete:

```
HP SA7120> create block
Client IP to block [0.0.0.0]:<n.n.n.n>
Client IP mask [0.0.0.0]:<n.n.n.n>
Server IP to block [0.0.0.0]:<n.n.n.n>
Server IP mask [0.0.0.0]:<n.n.n.n>
Server Port to block:<nn>
Server Port mask [0xffff]:
HP SA7120>
```

Using Windows* HyperTerminal*

Command: **import upgrade**

Use the SA7100/SA7120's aux console port, which defaults to 115.2 kbps, for greater speed. The import procedure (using xmodem) requires approximately 7 minutes at 115.2 kbps.

1. Download the image file (.IMG) to the local PC.
2. Connect the serial cable from COM1 or COM2 to the SA7100/SA7120 auxiliary console.
3. Log in to the SA7100/SA7120.
4. Type the **import upgrade** command. The command prompts for xmodem. Press **Enter** to use the default (xmodem).
   ```
   HP SA7120> import upgrade
   Import protocol: (xmodem) [xmodem]: <Enter>
   Start xmodem upload now
   Use Ctl-X to cancel upload
   ```
5. In HyperTerminal*, click **Send File** from the Transfer menu, select the file (you can type the filename or click the **Browse** button to find the file), click to select the transfer protocol (1K xmodem), and click **Send**.
   ```
   Verifying upgrade image...
   Upgrade image valid
   ===  Release x.x
   ===  Load xx, Fri Aug 25 05:31:51 2000
   ```

WARNING: *All saved logs will be deleted and the system will reboot upon successful completion of the upgrade.*

6. Press **y** (for yes) at the "Continue with upgrade?" prompt.
   ```
   Continue with upgrade? [n]: y
   Upgrading...
   System rebooting...done
   ```

Command: **import patch**

Use the SA7100/SA7120's aux console port, which defaults to 115.2 kbps, for greater speed. The import procedure (using xmodem) requires approximately 7 minutes at 115.2 kbps.

1. Download the patch file (.patch) to the local PC.
2. Connect the serial cable from COM1 or COM2 to the SA7100/SA7120 auxiliary console.
3. Log in to the SA7100/SA7120.

4. Type the **import patch** command. The command prompts for xmodem. Press **Enter** to use the default (xmodem).
```
HP SA7120> import patch
Import protocol: (xmodem) [xmodem]: <Enter>
Start xmodem upload now
Use Ctl-X to cancel upload
```
5. In HyperTerminal*, click **Send File** from the Transfer menu, select the file (you can type the filename or click the **Browse** button to find the file), click to select the transfer protocol (1K xmodem), and click **Send**.
```
Verifying patch image...
Patch successfully imported.
```

The patch becomes effective upon the next system reboot. Should a patch fail upon import, the last successfully imported patch is reapplied.

9 Troubleshooting

Item	Symptom	Probable Cause	Remedy
1	Server and/or Network LEDs not illuminated.	• Unit is in Bypass mode. • Improper cabling.	• If the Inline LED is not illuminated (solid or blinking) take the SA7100/ SA7120 out of Bypass mode by either pressing the Bypass switch on the unit's front panel or using the CLI's **inline** command. • Depending on what type of equipment the SA7100/SA7120 is connected to, either straight-through or crossover Cat-5 network cables are required for both Network and Server ports. Switch out the different cable types at each port until both Network and Server LEDs are illuminated.

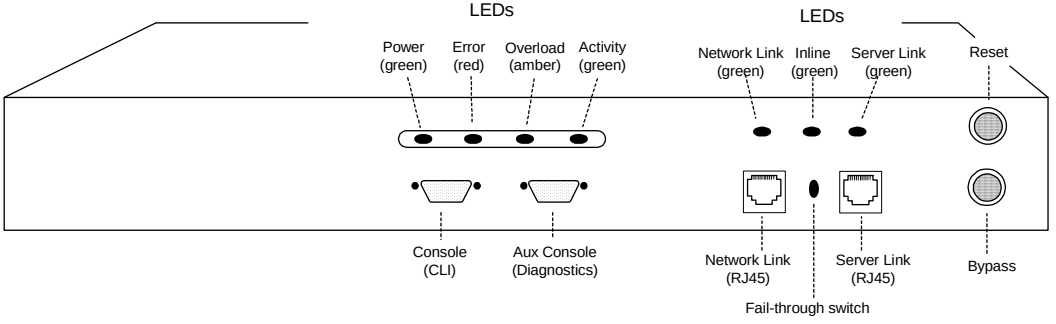
Item	Symptom	Probable Cause	Remedy
2	Non-SSL data does not pass through SA7100/SA7120.	Improper cabling.	• Refer to Item 1 in this table. • If both Network and Server LEDs are illuminated, configure the SA7100/SA7120 to Fail-through mode (see Appendix B) and place the unit in Bypass mode. This effectively bypasses the SA7100/SA7120, so if the problem persists its origin is elsewhere in the network.
3	Web pages are not completely displayed, or an error message such as, “Document Contains No Data” appears.	The client timeout value is too small. “Client timeout” is the interval that the connection between the client and server can remain idle (i.e., no data crosses the connection in either direction) following a client request.	Increase the interval with the following command: `HP SA7120> set client_tmo <n>` where <n> is the interval in seconds. The default is five seconds. The recommended value is 1.5 times the longest server response time.
4	SSL traffic does not pass through SA7100/SA7120	• Improper mappings. • Improper cabling.	• See *Mapping* in Chapter 3. • See Item 1 in this table.

Item	Symptom	Probable Cause	Remedy
5	Error message: The page cannot be displayed.	The digital certificate and/or private key is corrupt.	Use the default key and certificate, or create new key and unsigned certificate. Try the page again. If the error no longer appears, recreate your private key and certificate signing request (CSR) and resubmit to the certificate authority to get a new certificate.
6	Error message indicates that the browser does not recognize the signer of this certificate after loading global server ID.	The intermediate certificate is not installed or is installed improperly.	See *Global Site Certificates* in Chapter 3 for correct procedures.

Item	Symptom	Probable Cause	Remedy
7	Error message: Server/Network media mismatch	Server and network ports have autonegotiated to different media settings.	Use the **status** command to determine the media settings: `HP SA7120> status` `.` `.` `Network port 100baseTX Full Duplex` `Server port  10baseT, Half Duplex` Then use the **nic** command to force common media attributes, e.g.: `HP SA7120> nic` `1 - auto` `2 - 10baseT, half duplex` `3 - 10baseT, full duplex` `4 - 100baseTX, half duplex` `5 - 100baseTX, full duplex` `Select media type [1] 2` In the example above, 2 is the correct choice because the setting must reflect the “least common denominator” of both media speed and duplex attribute, i.e., the server port is determinative because it has both the lower speed and lower (half) duplex attribute.

A Front Panel

The following diagram shows the LEDs, buttons, switches and connections for the HP e-Commerce Server Accelerator SA7100/ SA7120. Note that there is no power switch or button. Power is applied to the device by connecting the power cable.



Front Panel Connectors, Controls, and Indicators

Buttons and Switches

There are two buttons and one switch on the front panel of the SA7100/SA7120.

Button/Switch	Action
Reset button	Press momentarily to issue a soft reset to the SA7100/SA7120. Press for 5 seconds to reset the SA7100/SA7120 and restore the factory defaults.
Bypass button	Press to physically force bypass mode (bypass SA7100/SA7120 processing).
Fail-through/ Fail-safe switch	**Default**: Fail-safe (up position), the network connection is broken during a SA7100/SA7120 failure. Fail-through (down position), the network connection is maintained during a SA7100/SA7120 failure. Refer to *Failure/ Bypass Modes* in Appendix B for details.

Front Panel LEDs

The LED display provides high-level SA7100/SA7120 information. There are seven LEDs on the SA7100/SA7120's front panel, in two groups of four and three, respectively.

LED	Status
Power	ON – Power is supplied to SA7100/SA7120.
	OFF – No Power to SA7100/SA7120.
Error	ON – Error condition found.
	OFF – Normal operation.

LED	Status
Overload	ON – SA7100/SA7120 is saturated with SSL requests. LED ranges from dim flickering to bright steady, indicating low to high spillover. Refer to the spill command for ways to offload requests to another SA7100/SA7120.
	OFF – Normal operation.
Activity	ON – SSL processing is being performed. Ranges from dim, when processing loads are low to bright, when greater amounts of processing are occuring.
	OFF – No SSL processing is being performed.
Network Link	ON – Operational network connection.
	OFF – No operational network connection.
Inline (See Appendix B, *Failure/ Bypass Modes*)	BLINKING GREEN – Fail-safe mode, which is the default. In the event of a SA7100/SA7120 failure, traffic will not pass through.
	STEADY GREEN – Fail-through mode, which allows traffic to pass even with SA7100/SA7120 failure.
	OFF – SA7100/SA7120 is not operational, or is in Bypass mode.
Server Link	ON – Operational server connection.
	OFF – No operational server connection.

Connectors

The following table describes the SA7100/SA7120's connectors.

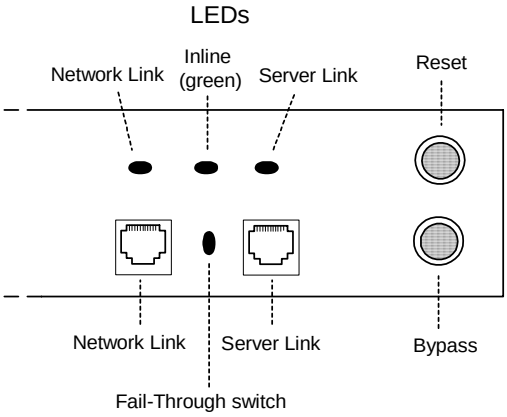
Designator	Type	Purpose
Network	RJ45	100baseTX/10baseT connection to network (clients), wired as a host port.
Server	RJ45	100baseTX/10baseT connection to server (or servers), wired as a hub port.
Console	DB9	RS-232 DTE console port (9600 8, N, 1)
Aux Console	DB9	RS-232 DTE console port (115200, 8, N, 1) includes kernel diagnostics at boot.
Power		Power input

B Failure/Bypass Modes

WARNING: *Enabling bypass mode will instantly and without warning terminate all active remote management sessions.*

The HP e-Commerce Server Accelerator SA7100/SA7120 is designed with the ability to automatically bypass e-Commerce traffic in the event of a failure. If necessary, the user can force a bypass with the Bypass button or from the command line interface using the bypass command. There is also a security feature (Fail-through switch). In the default Fail-safe position, this switch prevents traffic from passing through unprocessed in the event of a failure or if Bypass mode is manually activated.

The following discussion about the Bypass button and Fail-through switch assumes that normal conditions for SA7100/SA7120 processing are in effect (i.e., the user has entered the appropriate CLI commands to enable SA7100/SA7120 processing).



Front Panel Detail: Failure/Bypass Mode Controls and Indicators

Bypass Button

Forcing a bypass of the SA7100/SA7120 may be necessary when certain actions must be performed offline (e.g., configuration changes, entering certificates, or problem isolation).

To force a bypass of SA7100/SA7120 processing, push the Bypass button ON. The Network Link, Inline, and Server Link LEDs are off in Bypass mode. ON disables the SA7100/SA7120's ability to process e-Commerce traffic. The mode of the Fail-through switch controls whether traffic continues to flow unprocessed between the client and the server (discussed below).

Fail-through Switch (Security Level)

This switch allows the user to control what happens in the event of a failure. It is located in a recess between the network link and server link connectors. Use a small screwdriver or paper clip to manipulate the switch. The two options are to either let traffic flow through the SA7100/SA7120 in the event of a failure (or the Bypass Switch being on) or to block traffic. When the switch is in Fail-through mode (down position), traffic is allowed to pass through unprocessed in the event of a failure of the SA7100/SA7120 or if the Bypass toggle is ON.

During normal processing, the Inline (green) LED on the front panel indicates whether e-Commerce traffic will pass through in the event of a failure (depending on Fail-through switch state). Steady green or blinking green both mean that the SA7100/SA7120 is processing traffic; blinking green indicates traffic will be blocked if the SA7100/SA7120 fails (Fail-safe mode), and steady green indicates traffic will continue (unprocessed) in the event of a failure (Fail-through mode). When the Inline LED is off, no SSL processing is taking place, which means either no traffic is passing through (Fail-safe), or the traffic that is passing through is unprocessed (Fail-through).

The following conditions and Inline LED behavior are possible with the Fail-through switch and Bypass button:

Device Mode	Bypass Button	Fail-through Switch Mode	Traffic Status	Inline LED
Failed	N/A	Fail-safe (Up position)	No traffic (either direction)	off
Failed	N/A	Fail-through (Down position)	Passes through unprocessed	off
N/A	ON (Bypass)	Fail-safe (Up position)	No traffic (either direction)	off
N/A	ON (Bypass)	Fail-through (Down position)	Passes through unprocessed	off
Operational	OFF (Inline)	Fail-safe (Up position)	Processing	Blinking green
Operational	OFF (Inline)	Fail-through (Down position)	Processing	Steady green

Notes

C Supported Ciphers

The HP e-Commerce Server Accelerator SA7100/SA7120 supports only RSA key exchange and authentication. Diffie-Hellman (including Anonymous and Ephemeral) key exchange/authentication and DSS authentication are not supported.

Use the **set cipher** command to specify the cipher. The command prompts you for the cipher strength and SSL version level. Options for these values are:

Cipher Strength

- **All** - all supported ciphers (including export ciphers)
- **High** - all ciphers with 168-bit encryption (Triple-DES)
- **Medium** - all ciphers with 128-bit and higher encryption (including High)
- **Low** - all ciphers with 64-bit and higher encryption (including Medium and High)
- **Export only** - all export ciphers

SSL Version Level

- **SSLv2** - all SSL version 2.0 ciphers
- **SSLv3** - all SSL version 3.0 ciphers
- **SSLv2** and **SSLv3** - all SSL version 2.0 and 3.0 ciphers

The default cipher value is **all supported ciphers** (both SSLv2 and SSLv3).

The following table provides ciphers supported by the SA7100/ SA7120. Note that the export version of the software supports only the ciphers marked “E” in the Profile column.

Name	Protocol	Key Exchange	Authentication	Encryption (key size)	Message Authentication	Profile (Hi/ Medium/ Low/ Export)
DES-CBC3-SHA	SSLv3	RSA	RSA	3DES(168)	SHA1	H
IDEA-CBC-SHA	SSLv3	RSA	RSA	IDEA(128)	SHA1	M
RC4-SHA	SSLv3	RSA	RSA	RC4(128)	SHA1	M
RC4-MD5	SSLv3	RSA	RSA	RC4(128)	MD5	M
DES-CBC-SHA	SSLv3	RSA	RSA	DES(56)	SHA1	L
DES-CBC3-MD5	SSLv2	RSA	RSA	3DES(168)	MD5	H
IDEA-CBC-MD5	SSLv2	RSA	RSA	IDEA(128)	MD5	M

Name	Protocol	Key Exchange	Authentication	Encryption (key size)	Message Authentication	Profile (Hi/ Medium/ Low/ Export)
RC2-CBC-MD5	SSLv2	RSA	RSA	RC2(128)	MD5	M
RC4-MD5	SSLv2	RSA	RSA	RC4(128	MD5	M
RC4-64-MD5	SSLv2	RSA	RSA	RC4(64)	MD5	L
DES-CBC-MD5	SSLv2	RSA	RSA	DES(56)	MD5	L
EXP-DES-CBC-SHA	SSLv3	RSA(512)	RSA	DES(40)	SHA1	E
EXP-RC2-CBC-MD5	SSLv3	RSA(512)	RSA	RC2(40)	MD5	E
EXP-RC4-MD5	SSLv3	RSA(512)	RSA	RC4(40)	MD5	E
EXP-RC2-CBC-MD5	SSLv2	RSA(512)	RSA	RC2(40)	MD5	E
EXP-RC4-MD5	SSLv2	RSA(512)	RSA	RC4(40)	MD5	E

Notes

D Regulatory Information

Taiwan Class A EMI Statement

警告使用者 ：
這是甲類的資訊產品， 在居住的環境中使用時，
可能會造成射頻干擾， 在這種情況下，使用者會
被要求採取某些適當的對策。

VCCI Statement

Class A ITE

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。

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). 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.

Internal access to the device is intended only for qualified service personnel.

FCC Part 15 Compliance Statement

This product 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 when the equipment is operated in a commercial environment.

This product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning this equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Change the direction of the radio or TV antenna.
- To the extent possible, relocate the radio, TV, or other receiver away from the product.
- Plug the product into a different electrical outlet so that the product and the receiver are on different branch circuits.

If these suggestions don’t help, consult your dealer or an experienced radio/TV repair technician for more suggestions.

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

CAUTION: If you make any modification to the equipment not expressly approved by HP, you could void your authority to operate the equipment.

Canada Compliance Statement (Industry Canada)

Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par le Ministre Canadien des Communications.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled: "Digital Apparatus," ICES-003 of the Canadian Department of Communications.

CE Compliance Statement

This HP e-Commerce Server Accelerator SA7100/SA7120 complies with the EU Directive, 89/336/EEC, using the EMC standards EN55022 (Class A) and EN55024:1998. This product also complies with the EU Directive, 73/23/EEC, using the safety standard EN60950.

CISPR 22 Statement

WARNING: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

VCCI Class A (Japan)

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Australia

WARNING

The system is designed to operate in a typical office environment. Choose a site that is:

- Clean and free of airborne particles (other than normal room dust).
- Well-ventilated and away from sources of heat including direct sunlight.
- Away from sources of vibration or physical shock.
- Isolated from strong electromagnetic fields produced by electrical devices.

- In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm.
- Provided with a properly grounded wall outlet.

Do not attempt to modify or use the supplied AC power cord if it is not the exact type required.

Ensure that the system is disconnected from its power source and from all telecommunications links, networks, or modem lines whenever the chassis cover is to be removed. Do not operate the system with the cover removed.

AVERTISSEMENT

Le système a été conçu pour fonctionner dans un cadre de travail normal. L'emplacement choisi doit être:

- Propre et dépourvu de poussière en suspension (sauf la poussière normale).
- Bien aéré et loin des sources de chaleur, y compris du soleil direct.
- A l'abri des chocs et des sources de ibrations.
- Isolé de forts champs magnétiques géenérés par des appareils électriques.
- Dans les régions sujettes aux orages magnétiques il est recomandé de brancher votre système à un supresseur de surtension, et de débrancher toutes les lignes de télécommunications de votre modem durant un orage.
- Muni d'une prise murale correctement mise à la terre.

Ne pas utiliser ni modifier le câble d'alimentation C. A. fourni, s'il ne correspond pas exactement au type requis.

Assurez vous que le système soit débranché de son alimentation ainsi que de toutes les liaisons de télécomunication, des réseaux, et des lignes de modem avant d'enlever le capot. Ne pas utiliser le système quand le capot est enlevé.

WARNUNG

Das System wurde für den Betrieb in einer normalen Büroumgebung entwickelt. Der entwickelt. Der Standort sollte:

- sauber und staubfrei sein (Hausstaub ausgenommen);
- gut gelüftet und keinen Heizquellen ausgesetzt sein (einschließlich direkter Sonneneinstrahlung);
- keinen Erschütterungen ausgesetzt sein;
- keine starken, von elektrischen Geräten erzeugten elektromagnetischen Felder aufweisen;
- in Regionen, in denen elektrische Stürme auftreten, mit einem Überspannungsschutzgerät verbunden sein; während eines elektrischen Sturms sollte keine Verbindung der Telekommunikationsleitungen mit dem Modem bestehen;
- mit einer geerdeten Wechselstromsteckdose ausgerüstet sein.

Versuchen Sie nicht, das mitgelieferte Netzkabel zu ändern oder zu verwenden, wenn es sich nicht um genau den erforderlichen Typ handelt.

Das System darf weder an eine Stromquelle angeschlossen sein noch eine Verbindung mit einer Telekommunikationseinrichtung, einem Netzwerk oder einer Modem-Leitung haben, wenn die Gehäuseabdeckung entfernt wird. Nehmen Sie das System nicht ohne die Abdeckung in Betrieb.

AVVERTENZA

Il sistema è progettato per funzionare in un ambiente di lavoro tipico. Scegliere una postazione che sia:

- Pulita e libera da particelle in sospensione (a parte la normale polvere presente nell'ambiente).
- Ben ventilata e lontana da fonti di calore, compresa la luce solare diretta.
- Al riparo da urti e lontana da fonti divibrazione.
- Isolata dai forti campi magnetici prodotti da dispositivi elettrici.

- In aree soggette a temporali, è consigliabile collegare il sistema ad un limitatore di corrente. In caso di temporali, scollegare le linee di comunicazione dal modem.
- Dotata di una presa a muro correttamente installata.

Non modificare o utilizzare il cavo di alimentazione in c. a. fornito dal produttore, se non corrisponde esattamente al tipo richiesto.

Prima di rimuovere il coperchio del telaio, assicurarsi che il sistema sia scollegato dall'alimentazione, da tutti i collegamenti di comunicazione, reti o linee di modem. Non avviare il sistema senza aver prima messo a posto il coperchio.

ADVERTENCIAS

El sistema está diseñado para funcionar en un entorno de trabajo normal. Escoja un lugar:

- Limpio y libre de partículas en suspensión (salvo el polvo normal)
- Bien ventilado y alejado de fuentes de calor, incluida la luz solar directa.
- Alejado de fuentes de vibración.
- Aislado de campos electromagnéticos fuertes producidos por dispositivos eléctricos.
- En regiones con frecuentes tormentas eléctricas, se recomienda conectar su sistema a un eliminador de sobrevoltage y desconectar el módem de las líneas de telecomunicación durante las tormentas.
- Previsto de una toma de tierra correctamente instalada.

No intente modificar ni usar el cable de alimentación de corriente alterna, si no se corresponde exactamente con el tipo requerido.

Asegúrese de que cada vez que se quite la cubierta del chasis, el sistema haya sido desconectado de la red de alimentación y de todos lo enlaces de telecomunicaciones, de red y de líneas de módem. No ponga en funcionamiento el sistema mientras la cubierta esté quitada

Wichtige Sicherheitshinweise

1. Bitte lesen Sie sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den spätern Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Vervenden Sie keine Flüssig- oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Um eine Beschädigung des Gerätes zu vermeiden sollten Sie nur Zubehörteile verwenden, die vom Hersteller zugelassen sind.
5. Das Gerät is vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sichern Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen. Verwenden Sie nur sichere Standorte und beachten Sie die Aufstellhinweise des Herstellers.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor Überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.
9. Die Netzanschlußsteckdose muß aus Gründen der elektrischen Sicherheit einen Schutzleiterkontakt haben.
10. Verlegen Sie die Netzanschlußleitung so, daß niemand darüber fallen kann. Es sollete auch nichts auf der Leitung abgestellt werden.
11. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
12. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
13. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. Elektrischen Schlag auslösen.
14. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.

15. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einerqualifizierten Servicestelle zu überprüfen:
    a. Netzkabel oder Netzstecker sint beschädigt.
    b. Flüssigkeit ist in das Gerät eingedrungen.
    c. Das Gerät war Feuchtigkeit ausgesetzt.
    d. Wenn das Gerät nicht der Bedienungsanleitung ensprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
    e. Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
    f. Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.
16. Bei Reparaturen dürfen nur Orginalersatzteile bzw. den Orginalteilen entsprechende Teile verwendet werden. Der Einsatz von ungeeigneten Ersatzteilen kann eine weitere Beschädigung hervorrufen.
17. Wenden Sie sich mit allen Fragen die Service und Repartur betreffen an Ihren Servicepartner. Somit stellen Sie die Betriebssicherheit des Gerätes sicher.
18. Zum Netzanscluß dieses Gerätes ist eine geprüfte Leitung zu verwenden, Für einen Nennstrom bis 6A und einem Gerätegewicht größer 3kg ist eine Leitung nicht leichter als H05VV-F, 3G, 0.75mm2 einzusetzen.

Notes

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F Support Services

Support for your SA7100/SA7120

U.S. and Canada

For hardware service and telephone support, contact:

- An HP-authorized reseller

  or

- HP Customer Support Center at 1-800-633-3600

Europe

For hardware service and telephone support, contact:

- An HP-authorized reseller

  or

- One of the following HP Customer Support Centers:

Country and Number
Austria – 0660 6386
Belgium (Dutch) – 02 626 8806
Belgium (French) – 02 626 8807
Czech Republic – 420 2 613 07 310
Denmark – 3929 4099
English (non-UK) – +44 0870 842 2339
Finland – 02 03 47 288
France – 01 43 62 3434
Germany – 0180 525 8143
Greece – +30 (0) 16196411
Hungary – 36 1 382 1111
Ireland – 01 662 5525
Israel – 972 9 952 4848
Italy – 02 2 641 0350
Netherlands – 020 6068751
Norway – 22 11 6299
Poland – +48 22 8659800
Portugal – 21 317 6333
Russia – 7095 797 3520
South Africa RSA – 086 000 1030
Outside RSA – +27 11 258 9301
Spain – 902 321 123
Sweden – 08 619 2170
Switzerland – 084 880 1111
Turkey – 90 212 221 6969
United Kingdom – 0870 842 2339

Asia

For hardware service and telephone support, contact an HP-authorized reseller or one of these support centers:

Country and Number
Australia – 03-8877-8000
Hong Kong – 800-96-2598
India – 91-11-6826035
Indonesia – 0800-21511
Japan – 0120-220-119
Korea – +82-2-32700911
Malaysia – 60 3 2931811 or 1-800-881811
New Zealand –
  Upper North Island – 09-356-6640
  Lower North Island – 04-499-2026
  South Island – 03-365-9805
People's Republic of China – 86-8008105959
Philippines – 63 2 811-0643
Singapore – +65-2725300
Taiwan – +866-080-010055 / 886-2-7170055
Thailand – 66 2 6613891
Vietnam –
  Hanoi – 84 4 9430101
  Ho Chi Minh City – 84 8 8324155

Latin America

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Argentina – (541) 4778-8380
Brazil –
  Sao Paulo – (11) 3747-7799
  All Others – 0800-15-77-51
Chile – 800-360-9999
Columbia – 9-800-91-9477
Guatemala – 1-800-999-5305
Mexico –
  Ciudad de Mexico – 5258-9922
  All Others – 800-472-6684
Peru – 0-800-10111
Puerto Rico – 1-877-232-0589
Venezuela –
  Caracas – 207-8488
  All Others – 800-47-777

Other Countries

For hardware service, contact your local authorized reseller or HP sales office. For telephone support, contact your authorized reseller.

Glossary

This section defines terms and acronyms used throughout the *HP e-Commerce Server Accelerator SA7100/SA7120 User Guide*.

Bypass User action causing traffic to bypass SA7100/SA7120 processing, done either through the CLI **bypass** command or Bypass button on the front panel of the SA7100/SA7120.

Cascading A configuration of two or more SA7100/SA7120s serially connected together to accommodate larger e-Commerce traffic processing (CPS) loads.

Certificate A digitally-signed token in an SSL-encrypted transaction containing information including the issuer (Certificate Authority that issued the certificate), the organization that owns the certificate, public key, the validity period for the certificate, and the hostname.

Cipher Any encryption algorithm, either symmetric or public key, operating either as a data stream or divided into blocks.

DNS Domain Name Server. A mechanism used in the Internet for translating the names of host computers into addresses.

Flash Permanent (non-volatile) storage for configuration changes.

Fulfillment Server	A server that stores content used to satisfy user requests.
HTTP	Hypertext Transfer Protocol: the protocol used between a Web browser and a server to request a document and transfer its contents.
HTTPS	HTTP exchanged over an SSL-encrypted session.
Inline	When the SA7100/SA7120 is able to process SSL traffic, the Inline LED on the front panel is lit (blinking or steadily illuminated).
IP	Internet Protocol
IP Address	A unique identifier for a node on an IP network. Expressed in "dotted decimal" notation. For example: 10.0.0.1.
IP Service	A network-accessible, IP-accessible Application Protocol. For example: HTTP, FTP, and the like.
Key	A public key and private key pair used to encrypt/decrypt messages.
Key Strength	Length, in bits, of keys used in data encryption or authentication. For example: 56, 128, 512.
Keypair	Matching public and private keys.
Load Balancing	The distribution of processing and communications activity across a computer network so that no single device is overwhelmed. Load balancing is particularly important for networks on which it is difficult to predict the volume of requests likely to be issued to a server. Busy Web sites typically employ two or more Web servers in load balancing roles.
Port	In the context of TCP/IP sessions, a unique protocol-specific handle.
Private Key	The part of a key in a public key system that is kept secret and used only by its owner. It is used for decrypting messages and for making digital signatures.
Public Key	The part of a key in a public key system that is distributed widely, and is not kept secure. Used for encryption or for verifying signatures.
Service	A service is an IP application paired with a port number. For example: "HTTP:80." This describes a service consisting of a server's HTTP application listening on port 80. Another example of a service: "FTP:21."

Signing Request	Required for a request for certificate authentication by a Certificate Authority.
SNMP	**S**imple **N**etwork **M**anagement **P**rotocol. An application-layer Intenet protocol by which multiple devices in a network can be monitored and to some extent configured.
SSL (Secure Socket Layer)	Protocol developed by Netscape for encrypted transmission over TCP/IP networks, setting up a secure end-to-end link.
*VeriSign**	A well-known certificate authority.

Notes

Index

A

Administration Commands 87
Alarms
  Encryption status change 113
  Logging 118
  Network link status 117
  Overload 116
  Refused SSL connections 113
  Utilization threshold 115
Automapping 30
Automapping with multiple port combinations 30
Automapping with user-specified key and certificate 30

B

Blocking 31
  All IPs, specific port 32
  Delete block 33
  Specific IP, specific port 31
  Subnet IP, subnet mask, specific port 32
Bypass mode 137

C

Cascading 14, 40
Certificate Authority 17
Certificates 16
Ciphers 142
Combining automapping and manual mapping 31
Commands for manipulating the history 50
config save 37, 39
Configuration Commands 70
Connectors 136
Cut and Paste 51

D

delete map 37, 39
Deleting a block 33

E

Egress routers 43
Encryption status change alarm 113

F

Failure/Bypass modes 137
Front panel LEDs 134

G

Getting Help 47
Global site certificates 23

H

Help 47

I

Import
    certificate 19, 21
import
    key 38
Ingress routers 43
Input Editing Commands 50
Installation
    Rack mounting 6
    Values to know before you begin 5
    Wiring connections 7

K

Keys 16

L

Logging alarms 118
Logging Commands 91

M

Manual mapping 30, 31
Mapping 29
Multiple 7100/7120s 40
Multiple servers 38

N

Network connections 7
Network link status alarm 117

O

Operational Commands 70
Overload alarm 116

P

PassThrough switch 137
Port Mapping Commands 67

R

Rack installation 6
Redirection for unsupported ciphers 26
Refused SSL connections alarm 113
Remote Management 93
    CLI commands 94
    Limitations 94
    Telnet 96
    Telnet, changing port 97
    Telnet, enabling/disabling 98
    Telnet, local console 96
    Telnet, remote console 97
Remote SSH sessions 98

S

Scenarios
- Cascading Multiple 7100/7120s 40
- Using the 7100/7120 43
- Using the 7100/7120 with Multiple Servers 38
- Using the 7100/7120 with One Server 36

SNMP 100
- Community string 109
- Enabling 107
- Private traps 106
- Specifying information 108
- Standard traps 106
- Trap community string 109
- Trap summary 106

software
- license agreement 155

Spill enable 41
Spilling 15
SSL Commands 58
SSL Processing 29
Status Commands 57
Support 171
- Asia 173
- Europe 172
- Latin America 174
- Other Countries 174
- US and Canada 171

T

Telnet 96
- Enabling/disabling 98

Throttling 15
Trap summary 106

U

Utilization threshold alarm 115

Notes