

STONESOFT



Appliance Installation Guide

StoneGate SG-4000

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Introduction

Thank you for choosing Stonesoft's StoneGate™ appliance. This guide provides instructions for the initial hardware installation and the maintenance of the SG-4000 appliances.

You must have a working Management Center on a separate server to bring the appliance(s) operational. The system architecture is explained on the next page. See the *StoneGate Installation Guide* for details.

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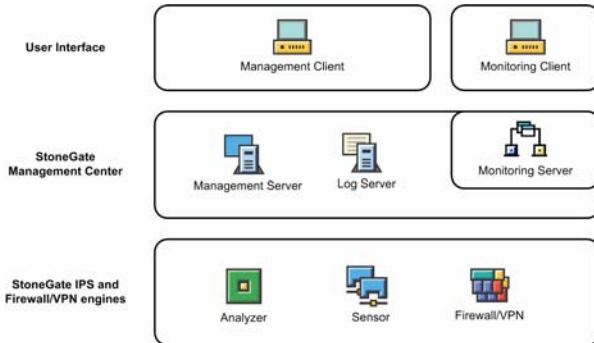


Caution – Read the [Safety Precautions](#), on page 6 before you conduct any installation or maintenance operations on the appliance.

Getting Started

StoneGate System Components

Illustration 1 StoneGate Components



The illustration above shows all available StoneGate components. Out of these, you need the following components to have an operational Firewall/VPN system:

1. A **Management Server**, which stores the configuration of the system. In most environments, it is best to have just one common Management Server for all firewall and IPS engines.
2. At least one **Log Server** to handle and store logs and alerts (can be installed simultaneously on the same machine with the Management Server).
3. At least one **Management Client** that you use to connect to the Management Server to change settings and monitor the system.
4. The **Firewall Engines** that handle the actual traffic processing (in this case, the SG-4000 appliance).
5. **Licenses** for each component except the Management Client(s).

The **Monitoring Server** and the **Monitoring Client** are optional components that are available on separate order.

StoneGate IPS engines can be added to the same system for unified management and incident handling.

Installation Procedure

The appliance installation involves the following mandatory steps:

1. Configure the firewalls in the Management Center (see the separate *StoneGate Installation Guide* or the online help of the Management Client).
2. Save the initial configuration to receive a one-time password for establishing trust between the appliance and the Management Server (see the separate *StoneGate Installation Guide*).
3. Install the appliance into a rack and connect the cables as instructed in this guide.
4. Perform the initial configuration and establish contact between the appliance and the Management Server (see [Initial Configuration](#), on page 20).

Product Documentation

The following documentation covers the StoneGate Firewall/VPN products:

- The *Installation Guide* explains how to install the Management Center and configure your firewalls' basic settings.
- The *online help system* of the Management Client contains the step-by-step instructions for the daily configuration and management of your system.
- The *Administrator's Guide* contains the same information as the online help system, but in PDF form.
- The *Reference Guide* contains background and reference information that helps you to plan and understand your system.

Finding the Documentation

Press F1 while in any Management Client window to view the online help.

All PDF guides are available:

- On the Management Center CD-ROM (in the Documentation folder)
- At the Stonesoft Website at my.stonesoft.com/download/doc

The *Installation Guide* and *Reference Guide* are delivered as printed books if so requested in your order.

Install the free Adobe Reader program to view the PDF documents (available at www.adobe.com/reader/).

Safety Precautions

The following safety information and procedures should be followed whenever working with electronic equipment.

Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the appliance from damage:

- Be aware of the location of the power on/off switch as well as the room's emergency power-off switch, disconnection switch, or electrical outlet. If an electrical accident occurs, you can then quickly cut power to the system.
- Do not work alone when working with high voltage components.
- Before removing or installing main system components, be sure to disconnect the power first. Turn off the system before you disconnect the power cord.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- The power supply cord must include a grounding plug and must be plugged into a grounded electrical outlet. Use only the cord supplied with the appliance.
- Use the exact type of power cords as required.
- The power cord(s) must be compliant with the AC voltage requirements in your region.
- The power cord plug cap must have an electrical current rating that is at least 125% of the electrical current rating of this product.
- The power cord plug cap that plugs into the AC receptacle on the power supply must be an IEC 320, sheet C13, type female connector.
- If you have to replace the motherboard battery, install it the same way as the original battery. Make sure that the positive side faces up on the motherboard. This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- Do not open the enclosures of power supplies or CD-ROM to avoid injury.

General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the appliance clean and free of clutter.
- The appliance weighs approximately 27 kg (60 lbs.) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.
- We recommend using a regulating uninterruptible power supply (UPS) to protect the device from power surges, voltage spikes and to keep your system operating in case of a power failure.

ESD Precautions

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. Use a grounded wrist strap designed to prevent static discharge.

Note – Use a UPS (Uninterruptible Power Supply) in critical environments with your StoneGate appliance. If after a brief power outage your StoneGate appliance only partially starts up (for example, the power light is on, but the NIC LEDs are off and the appliance does not connect) turn the appliance off for five seconds and then back on.

Operating Precautions

For proper cooling, make sure to install all appliance covers before turning on the system. If this rule is not strictly followed, warranty may become void. Do not open the casing of a power supply. Power supplies can only be accessed and serviced by a qualified technician of the manufacturer.

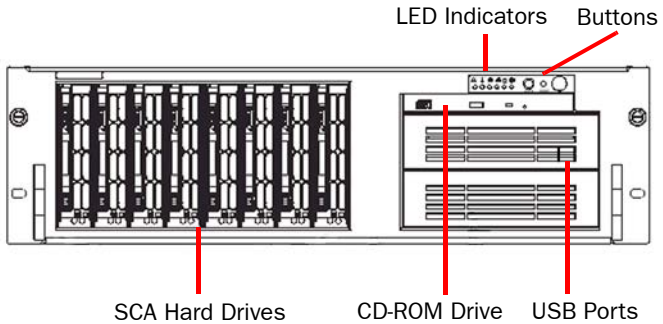
Lithium Battery Precautions



Caution – The battery must be replaced by authorized service personnel only. Danger of explosion if battery is incorrectly replaced. Replacement battery must be same or equivalent type recommended by the manufacturer. Used batteries must be discarded according to the manufacturer's instructions. Short-circuiting the battery may heat the battery and cause severe injuries.

Front Panel

Illustration 2 Front Panel of the SG-4000



The front panel has hot swappable SCA hard drives, a CD-ROM drive, and two USB ports (there are two more USB ports on the back of the appliance, see [Connecting the Cables](#), on page 18). The front panel also has six LED indicators and three buttons, which are explained below.

Front Panel Indicators

The front panel has six LED indicators in the upper right corner. The LEDs provide you with critical information related to different parts of the system. They are (from left to right):



- Indicates that there is no power being supplied to a redundant power supply or that a power supply is not operating correctly.



- Indicates an overheat condition in the appliance. This may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm.



- Indicates traffic on LAN2 Ethernet interface.



- Indicates traffic on interface eth 6 (identically to the corresponding LED in the connector at the back).



- Indicates hard drive activity when flashing.



- Indicates power is being supplied to the system's power supply unit. This LED is illuminated when the system is operating normally.

Front Panel Buttons

There are three push-buttons in the upper right corner of the front panel. Do not press them if the appliance is online (processing traffic) and operating normally.



MUTE

- This is the appliance alarm reset button, which reactivates the appliance alarm function after an alarm.



RESET

- This is the reset button, which reboots the system. Use the button only if it is not possible to reboot using either the Management Client or command line command.



- This is the main power button, which is used to turn on/off the main system power. Turning off the appliance keeps standby power supplied to the system.

Unpacking the Appliance

Inspect the box the appliance was shipped in and note if it was damaged in any way. If the device itself shows damage, file a damage claim with the carrier who delivered it. Confirm that the Stonesoft anti-tamper tape on the appliance is intact.

Rack-Mounting

This section provides information on installing the StoneGate SG-4000 into a rack unit. There are a variety of rack units on the market, so the assembly procedure may differ slightly from what is instructed. Refer to the instructions that came with the rack unit you are using.

The rail assemblies supplied with the appliance are designed for rack depths from 28 to 33 inches.



Caution – Read the [Safety Precautions](#), on page 6 before proceeding.

Choosing a setup location

Decide on a suitable location for the rack unit that will hold the appliance:

- The appliance must be situated in a clean, dust-free area that is well ventilated.
- Avoid areas where heat, electrical noise and electromagnetic fields are generated.
- Leave enough clearance in front of the rack to enable you to open the front door completely (~63 cm/25 inches).
- Leave enough clearance in the back of the rack to allow for sufficient airflow and ease in servicing (~76 cm/30 inches).

Rack precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- Extend only one component at a time—extending two or more simultaneously may cause the rack to become unstable.

Device precautions

- Review the electrical and general safety precautions in [Safety Precautions](#), on page 6.
- Determine the placement of each component in the rack before you install the rails.
- Install the heaviest device components on the bottom of the rack first, and then work up.
- The appliance must be connected to grounded power outlets.
- Use a regulating uninterruptible power supply (UPS) to protect the device from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Always keep the rack's front door and all panels and components on the devices closed when not servicing to maintain proper cooling.

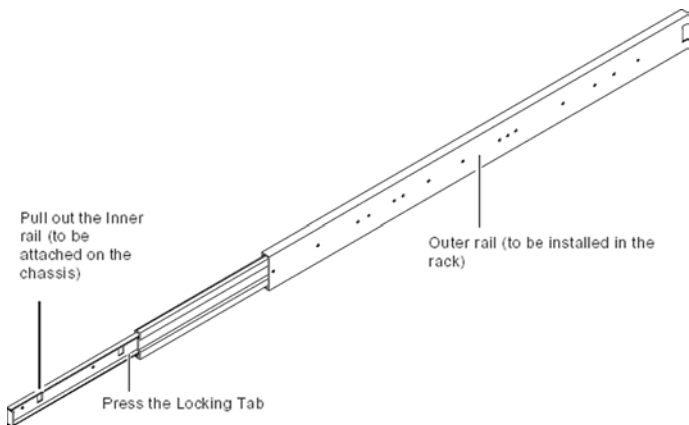
Before installing the appliance into a rack

1. Make sure that the rack is securely anchored onto an unmovable surface or structure before installing the appliance into the rack.
2. Unplug the power cord(s) of the rack before installing the appliance into the rack.
3. Make sure that the system is adequately supported. Make sure that all the components are securely fastened to the appliance to prevent components falling off from the appliance.
4. Be sure to install an AC power disconnect for the entire rack assembly. This power disconnect must be clearly marked.
5. The rack assembly shall be properly grounded to avoid electric shock.
6. The rack assembly must provide sufficient airflow to the appliance for proper cooling.

▼ To detach the inner rails

The StoneGate appliance package includes one pair of rack rail assemblies. Each of these assemblies consist of two sections: the inner rack rail that secures to the appliance ([Illustration 3](#)) and the outer rack rail that secures directly to the rack. The inner rail must be detached before installing.

Illustration 3 Identifying the Sections of the Rack Rails



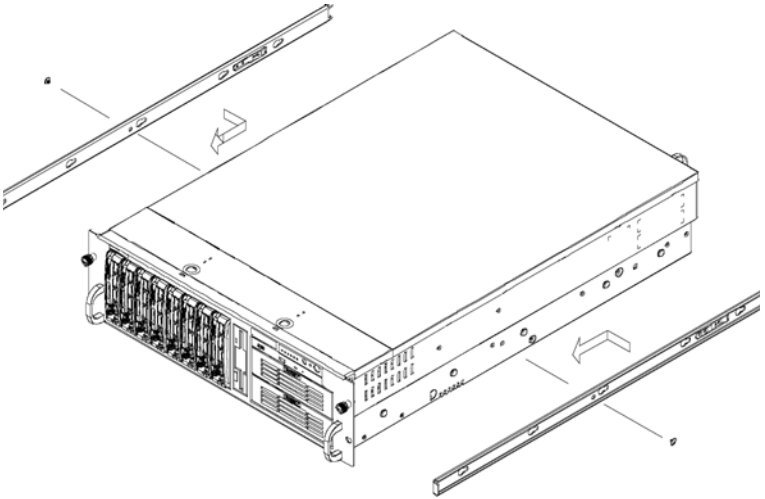
1. Pull the inner rail out as far as possible. You should hear a “click” sound as a locking tab emerges from inside the rail assembly and locks the inner rail.
2. Depress the locking tab and pull the inner rail completely out.
3. Repeat for the other side’s rack rail assembly.

Locking Tabs: As you have seen, both rails have a locking tab, which serves two functions.

- To lock the appliance into place when installed and pushed fully into the rack, which is its normal position.
- To lock the appliance in place when fully extended from the rack to prevent the appliance from coming completely out of the rack when you pull it out for servicing.

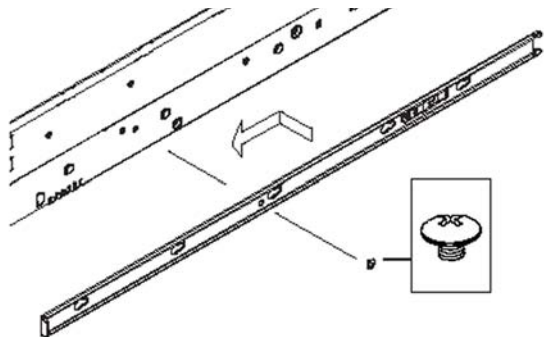
▼ To attach the inner rails to the appliance

Illustration 4 Attaching the Inner Rails to Appliance



4. Locate the five rail buttons on each side of the appliance and the five corresponding holes on the inner rails.
5. Align the larger end of each hole against its corresponding button. Once all are aligned, push the holes toward their corresponding buttons.

Illustration 5 Securing the Inner Rails with Screws



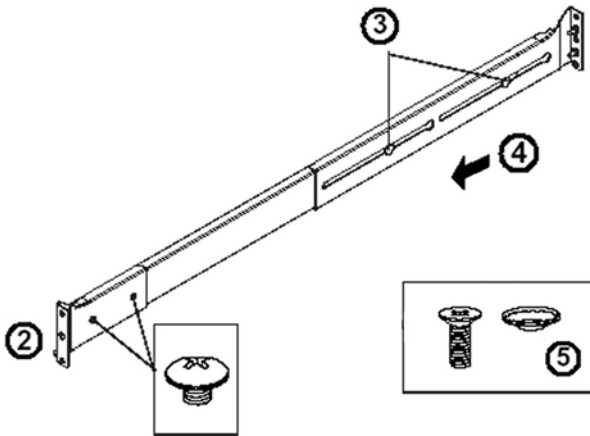
6. Once the rail is placed on the appliance, pull the rail toward the front of the appliance until the rail buttons lock in the small ends of the corresponding holes.
7. Secure the rail to the appliance with a screw ([Illustration 5](#)). Repeat the above steps to install the other rail on the appliance.

▼ To attach the outer rails to the rack

After you have installed the inner rails on the appliance, you are ready to install the outer rails of rail assemblies to the rack.

1. Find the front and rear rack brackets in the package. The short front brackets are marked with “up/front” arrows and the long rear brackets with “up/rear” arrows.

Illustration 6 Attaching Brackets to Outer Rack Rails

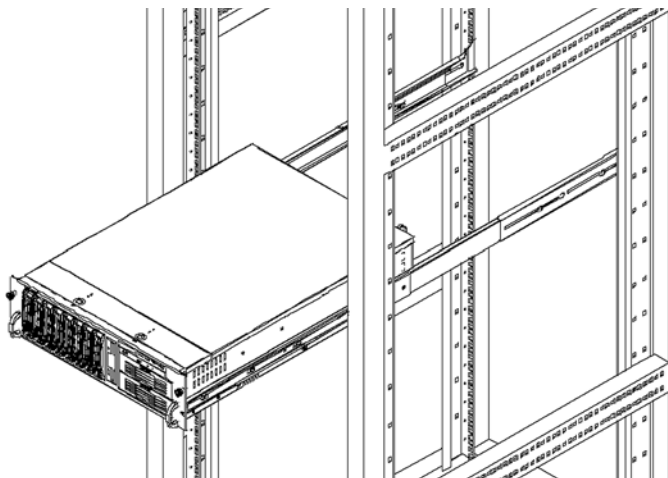


2. Secure the short front bracket to the outer rail (Illustration 6).
3. Locate the two buttons on the outer rack rail and attach the long rear bracket to it by sliding the opening of the rear rail through the button.
4. Measure the depth of your rack and adjust the length of the rails accordingly.
5. Repeat the same steps for the other side.
6. Secure the outer rack rails to the rack using screws and washers.

Note – Do not install the appliance upside down.

▼ To install the appliance into the rack

Illustration 7 Install the Appliance into the Rack



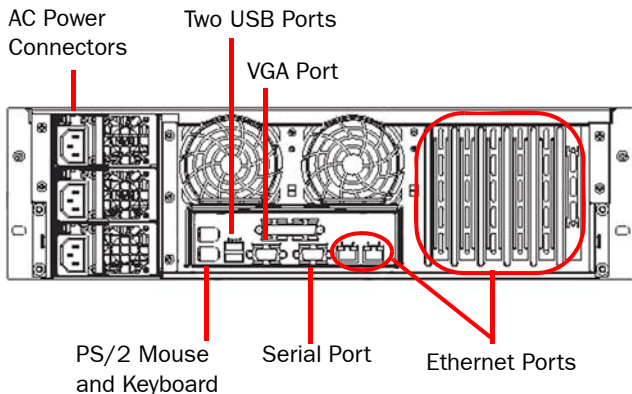
1. Line up the rear of the inner rails with the front of the outer rails.
2. Slide the inner rails into the outer rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). When the appliance has been pushed completely into the rack, you should hear the locking tabs "click".
3. Insert and tighten the thumbscrews that hold the front of the appliance to the rack.

Proceed to [Connecting the Cables](#), on page 18.

Connecting the Cables

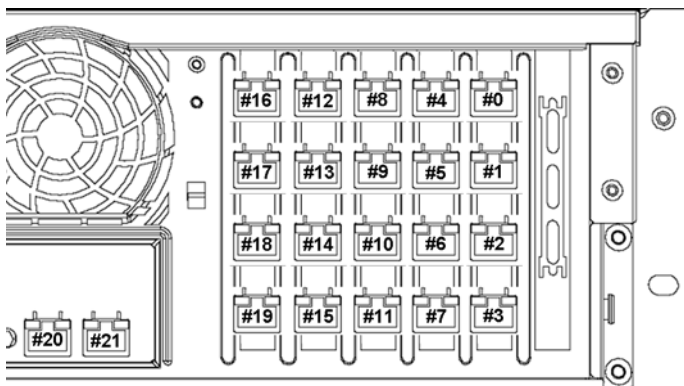
Connect the cables after installing the appliance into the rack, see [Illustration 8](#).

Illustration 8 Back Panel of the SG-4000



▼ To connect the cables

1. Choose one of the following:
 - Connect a monitor to the VGA and a keyboard to the PS/2 keyboard port.
 - Or connect a monitor to the VGA and a keyboard to a USB port.
 - Or connect the supplied null-modem cable to the serial port and to another computer that you will use for a terminal connection.
2. Connect the power cable(s) to the AC power connector(s) on the back of the appliance.



3. Connect network cables to the ethernet ports (see [Illustration 9](#) above).
 - The ethernet ports are mapped to Interface IDs during the initial configuration.

Connecting the Appliance to the Power Supply

Plug the power cords into grounded, high-quality power strips that offer protection from electrical noise and power surges. We highly recommend using uninterruptible power supplies (UPS) to ensure continuous operation and minimize the risk of damage to the appliance in case of sudden loss of power. For a truly redundant power supply, connect each AC power connector on the appliance to a different UPS, so that the failure of one UPS will not cut off the power to both power supplies.

Initial Configuration

Your StoneGate appliance comes pre-loaded with StoneGate engine software. However, before a security policy can be loaded on the appliance, you must configure the engine software. To successfully complete the configuration:

- The Firewall element must be defined in the Management Center
- You must have created a one-time password for this engine. See the *StoneGate Installation Guide* for details.

Note – The appliance must contact the Management Server before it can be operational.

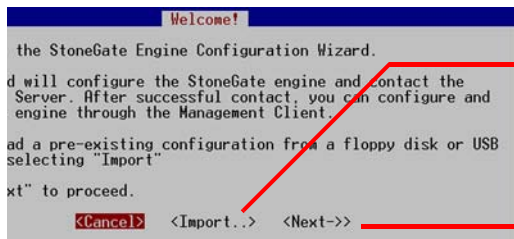
▼ To start the appliance

1. Make sure you have a physical connection to the appliance using a monitor and keyboard or a serial cable (see [Connecting the Cables](#), on page 18).
 - When using a serial line connection, use the terminal settings 9600bps, 8 databits, 1 stopbit, no parity.
2. Turn on the power using the power on/off button. The engine bootup process is shown in the console and, after some time, the engine configuration wizard starts.
 - You can return to the engine configuration wizard at any time using the `sg-reconfigure` command on the engine command line.

Configuring the Firewall

▼ To select the configuration method

Illustration 10 Welcome



To import a saved configuration, highlight **Import** using the arrow keys and press ENTER.

To skip the import, highlight **Next** and press ENTER.

▼ To set the keyboard layout

Illustration 11 Configure OS Settings

Highlight the entry field for **Keyboard Layout** using the arrow keys and press ENTER. The Select Keyboard Layout dialog opens.



Illustration 12 Select Keyboard Layout

Highlight the correct layout and press ENTER.

Tip: Type in the first letter to move forward more quickly.



Note – If the desired keyboard layout is not available, use the best-matching available layout, or select US_English.

▼ To set the engine's timezone

Illustration 13 Configure OS Settings

1. Highlight the entry field for **Local Timezone** using the arrow keys and press ENTER.
2. Select the correct timezone in the dialog that opens.



Note – The timezone setting affects only the way the time is displayed on the engine command line. The actual operation always uses UTC time.

Note – The appliance’s clock is automatically synchronized with the Management Server clock.

▼ To set the rest of the OS settings

Illustration 14 Configure OS Settings

1. Type in the name of the firewall.
2. Type in the password for the user root. This is the only account for engine command line access.
3. Highlight **Enable SSH Daemon** and press the spacebar on your keyboard to select the option and allow remote access to engine command line using SSH.



4. Highlight **Next** and press ENTER. The Configure Network Interfaces window is displayed.

Configuring the Network Interfaces

The configuration utility can automatically detect which network cards are in use. You can also add interfaces manually, if necessary.

▼ To add the network interfaces

Illustration 15 Configure Network Interfaces



Highlight **Autodetect** and press ENTER.

Check that the automatically detected drivers are correct and that all interfaces have been detected. To add interfaces manually, click **Add** and select a device driver.

▼ To map the physical interfaces to interface IDs

Illustration 16 Assigning Network Interfaces

1. Type in the IDs to define how physical interfaces are mapped to the Interface IDs you defined in the Firewall element. Ethernet ports are detailed in [Illustration 8](#) in *Connecting the Cables*, on page 18.

Id	Name	Driver	Link	Media	Mgmt
0	eth0	e1000	ok	<Auto/10/HD>	<Sniff>
1	eth1	e1000	down	<Auto>	<Sniff>
2	eth2	e1000	ok	<Auto/10/HD>	<Sniff>

2. Highlight and press ENTER to match the speed/duplex settings to those used in each network.

3. Highlight the **Mgmt** column and press the spacebar on your keyboard to select the correct interface for contact with the Management Server.

Note – The Management interface must be the same that you configured as the Primary Control Interface for the corresponding Firewall element in the Management Center.

Highlight **Next** and press ENTER to continue.

Contacting the Management Server

The Prepare for Management Contact window opens. If the initial configuration was imported, most of this information is filled in.

This task has two parts. First, you activate an initial configuration on the firewall.

- The initial configuration contains the information that the engine needs to connect to the Management Server for the first time.
- The initial configuration is replaced with a working configuration when you install a Firewall Policy from the Management Server on this engine using the Management Client.

▼ To activate the initial configuration

Illustration 17 Prepare for Management Contact - Upper part

1. Highlight **Switch Firewall Node to Initial Configuration** and press spacebar to activate.



2. Fill in according to your environment. The information must match to what you defined for the Firewall element (Primary Control IP Address). If the engine and the Management Server are on the same network, you can leave the **Gateway to management** field empty.

The initial configuration contains a simple firewall policy that allows only administration-related connections and blocks everything else.

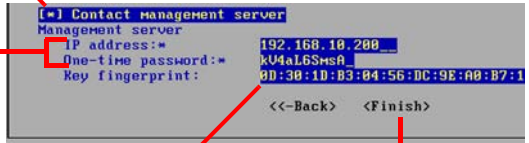
▼ To fill in the Management Server information

In the second part of the configuration, you define the information needed for establishing a trust relationship between the engine and the Management Server.

If you do not have a one-time password for this firewall, see the *Installation Guide* for instructions on how to save an initial configuration.

1. Highlight **Contact Management Server** and press spacebar to activate.

2. Fill in the Management Server IP address and the one-time password that was created for this engine when you saved the initial configuration.



3. (Optional) Fill in the Key fingerprint (also shown when you saved the initial configuration). Filling it in increases the security of the communications.

4. Highlight **Finish** and press ENTER.

Note – Once initial contact has been made, the engine receives a certificate from the Management Center for identification. If the certificate is deleted or expires, you must repeat the initial contact using a new one-time password.

The engine now tries to make initial Management Server contact.

- If you see a “connection refused” error message, ensure that the one-time password is correct and the Management Server IP address is reachable from the node. Save a new initial configuration if unsure about the password.
- If the engine is unable to contact the Management Server, make sure there are no networking problems, that all information defined in the Firewall element corresponds to what you entered in the Configuration wizard and, if NAT is in use, that you have configured contact addresses for NAT as explained in the *Installation Guide*.

After Successful Management Server Contact

After you see a notification that Management Server contact has succeeded, the firewall engine installation is complete and the firewall is ready to receive a policy. In a while, the firewall’s status changes in the Management Client from **Unknown** to **No Policy Installed**, and the connection state is **Connected** indicating that the Management Server can connect to the node.

The next step is creating a security policy and installing it on the engine. Please see the online help system of the Management Client for detailed instructions.



Caution – When using the command prompt, use the `reboot` command to reboot and `halt` command to shut down the node. Do not use the `init` command. You can also reboot the node using the Management Client.

Maintenance Operations

Common maintenance operations for this StoneGate appliance are described below.

Note – The only user-serviceable units are the hard drives, fans, and the power supply units. Any other changes can void the hardware warranty.

Caution – Read [Safety Precautions](#), on page 6, before proceeding.

Before accessing the appliance

1. Turn off all peripheral devices connected to the StoneGate appliance.
2. Press the power button to power off the system.
3. Unplug all power cords from the system or the wall outlets.
4. Disconnect all the cables and label the cables for easy identification.
5. Use a grounded wrist strap designed to prevent static discharge when handling components.

Removing the appliance covers

1. After completing the above steps, you can remove the covers and install components into the appliance.
2. Unlock and remove the screws and fasteners to remove the cover or components.
3. Save all the screws and fasteners for later use.
4. Follow the instructions given in this Guide to remove the appliance cover.

Reinstalling the appliance covers

To maintain proper system cooling and airflow, do not operate the system without installing all covers back to the appliance. To reinstall the appliance cover, please follow the steps listed below:

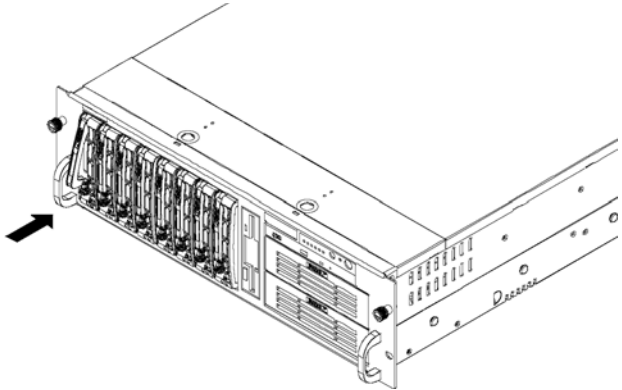
1. Make sure that all components and devices are securely fastened on the appliance and there are no loose parts inside the appliance.
2. Make sure that all cables are properly connected to the connectors and ports.

3. Use the original screws or fasteners to install the covers to the appliance.
4. For proper cooling, enclose the appliance with covers before operating the system.

Installing Hot Swap SCA Hard Drives

To install a hot swappable SCA hard drive into the StoneGate appliance, you need to first remove the drive tray from the appliance.

Illustration 19 Installing a Hard Drive



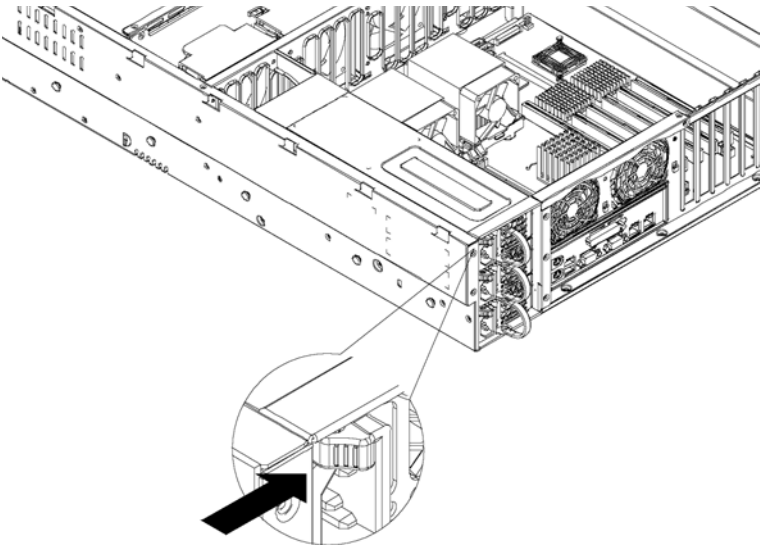
1. Press the release tab located on the drive tray door to release the drive tray from its locking position.
2. Pull the drive tray door upward and then pull the tray out from the appliance.
3. Mount a hard drive in the drive tray.
4. Install the drive tray back to its slot and lock the drive tray door.

Replacing Hot Swap Power Supply Modules

Note – The only user-serviceable units are the hard drives, fans, and the power supply units. Any other changes can void the hardware warranty.

Caution – Unplug the power cord from the power supply module before removing the power supply module from the appliance.

Illustration 20 Replacing a Power Supply Module



1. Locate the release tab on the left side of the power supply.
2. Push the release tab to the right to release the power supply from its locking position.
3. Remove the power supply module from the appliance and replace with a new one.

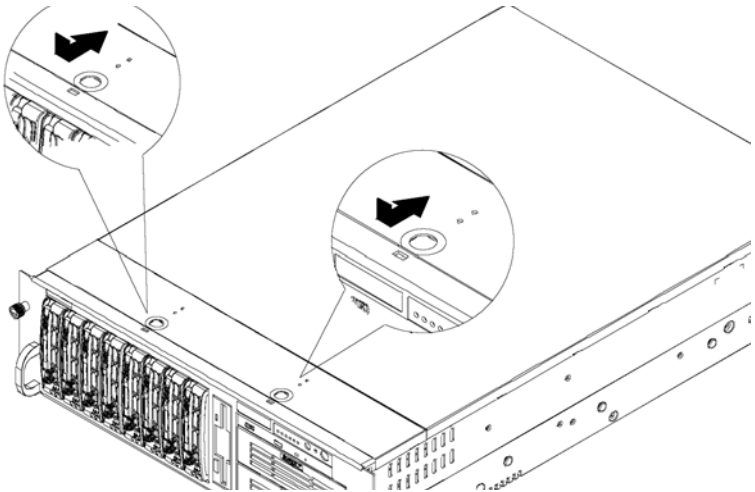
Caution – Do not open the casing of a power supply. Power supplies can only be accessed and serviced by a qualified technician from the manufacturer.

Replacing Appliance Fans

Before replacing appliance fans, you will first need to open the appliance's top cover.

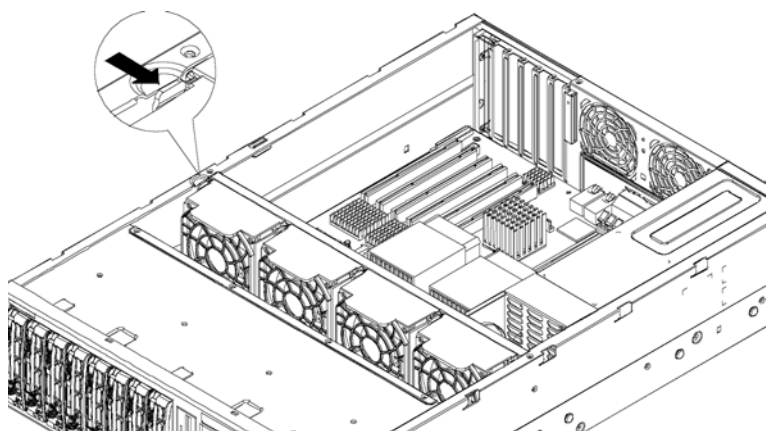
Note – The only user-serviceable units are the hard drives, fans, and the power supply units. Any other changes can void the hardware warranty.

Illustration 21 Opening the Appliance Cover



1. Press the release tabs to release the cover from its locking position.
2. Push the cover toward the rear of the appliance and slide it out from the appliance.

Illustration 22 Replacing an Appliance Fan



1. Press the release tab located on the left side of the appliance fan to release the fan from its locking position.
2. Remove the fan from the appliance and replace with a new one.

Stonesoft Experience

Stonesoft Corporation (HEX: SFT1V) is an innovative provider of integrated network security and business continuity. Stonesoft is a global company focused on enterprise level customers requiring advanced network security and always-on business connectivity with low TCO, best price-to-performance ratio, and highest ROI.

StoneGate™ Security Platform unifies firewall, VPN and IPS, blending network security, end-to-end availability and award-winning load balancing into a unified and centrally managed system for distributed enterprises.

Founded in 1990, Stonesoft Corporation has corporate headquarters in Helsinki, Finland and Americas headquarters in Atlanta, Georgia.

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