Quick Start Guide for Cisco NetFlow Generation Appliance (NGA) 3340

This guide explains how to quickly set up and configure the Cisco NetFlow Generation Appliance using the graphical user interface (GUI). The Quick Start section summarizes the steps you need to perform and references detailed instructions, if you require them, on how to prepare your site for installation, install the appliance hardware in an equipment rack, install and configure a single monitor instance, and troubleshoot the appliance.

Warranty, service, and support information is located in the *Cisco Information Packet* that is shipped with your appliance.

This guide contains the following sections:

If you want to configure the Cisco NGA using the CLI, see the *Cisco NetFlow Generation Appliance Command Reference Guide* on Cisco.com.

Overview

This section provides an introduction to the Cisco NetFlow Generation Appliance and describes the appliance hardware and major components.

The Cisco NetFlow Generation Appliance 3340 comes preloaded with Cisco NetFlow Generation 1.1 (1) software. The software generates NetFlow records where native NetFlow generation capability is missing or is limited due to performance impact to your switches.

You can direct packets to the Cisco NetFlow Generation Appliance using either or both of the following methods:

- A Switched Port Analyzer (SPAN) session (also known as port mirroring) from the Cisco Nexus or Catalyst device to Cisco NGA using the Nexus supervisor command line interface. Port mirroring selects network traffic for analysis by a network analyzer.
- A network tap. A network tap is a hardware device which provides a copy of the data that flows across a network link.

See your router or switch device documentation for details on how to set up these monitoring configurations.The SPAN function or a hardware network tap from any Ethernet link can support multiple network devices.

The appliance includes an embedded, web-based GUI that provides quick access to the configuration menus and presents easy-to-access administrative information about your appliance.

For detailed product specifications, see the Cisco NetFlow Generation Appliance *Data Sheet*.

Requirements and Restrictions

This section contains the requirements that are necessary for the product to run successfully:

- For physical, environmental, and power requirements, see Appliance Specifications, page 21.
- The Cisco NGA supports:
  - Cisco SFP+ Short Range transceiver, 10 Gb 850 nm
  - Cisco SFP+ Long Range transceiver, 10 Gb 1310 nm
  - Cisco SFP+ Long Range Multimode (SFP-10G-LRM) transceiver, 10 Gb 1310 nm
  - Cisco SFP+ Copper (Twinax) cables (Use active mode cables or only one meter passive mode cable. Longer passive mode cables may have CRC errors at high speed.)

  You can find more information about Cisco 10GBASE SFP+ Modules on Cisco.com at the following URL:

  http://www.cisco.com/en/US/products/hw/modules/ps5455/products_data_sheets_list.html
- Browser support includes the following tested browsers:
  - Mozilla Firefox ESR 31.x
  - Microsoft Internet Explorer 11

  Enable popup windows in your browser if they are disabled. You can complete the configuration tasks only if popup windows are enabled.
- If you are using a static IP address for your Cisco NGA (recommended), obtain the following information:
  - IP address and subnet mask to assign to the Cisco NGA appliance.
  - IP addresses of the default network gateway as well as the primary DNS server.
- Device support includes:
  - Nexus 7000 Series switch with F- and M-Series modules. Software image version NX-OS 5.2(1) or later.)
  - Nexus 5000 Series switches. Software image version NX-OS 5.1.3N1(1) or later.

  - Any of the following combinations: NetFlow Data Export version 5, 9, and/or IP Flow Information Export (IPFIX).
  - NetFlow collector support. This includes third-party collectors and Cisco collectors such as the Cisco Prime Network Analysis Module (NAM), Cisco NetFlow Collector (NFC), and Cisco Prime Infrastructure (PI).
- No license is required to use Cisco NetFlow Generation.

Quick Start

This section includes the information you need to quickly set up and get started using Cisco NetFlow Generation Appliance.

Table 1 provides a high-level overview of the installation and configuration process. After configuration is complete, see the *Cisco NetFlow Generation Appliance User Guide* or the online help for advanced configuration, administrative and troubleshooting tasks.

Table 1 Installation and Configuration Overview

Task	Description	References
Install the Cisco NetFlow Generation Appliance.	Includes set up overview and initial Cisco NGA system configuration.	Prepare and Install the Cisco NetFlow Generation Appliance, page 4
Configure a single NetFlow monitor instance on the Cisco NGA.	Includes logging in and configuring a monitor, exporter, and collector.[1]	Configure Your Appliance to Export NetFlow V5 or V9 Records, page 8
Verify the installation and initial configuration.	Verify that the system can communicate with the network.	Verify Flow Records Generated, page 9
View optional post-installation tasks.	Includes managed device configuration (optional), configuring multiple NetFlow monitor instances using Advanced Setup, viewing system parameters, diagnostics, and reference information such as troubleshooting, upgrading and recovery details.	See the *Cisco NetFlow Generation Appliance User Guide.*

1. For optional and advanced tasks such as creating filters, records, managed devices and multiple NetFlow monitor instances, see the *Cisco NetFlow Generation User Guide.*

Prepare and Install the Cisco NetFlow Generation Appliance

This section provides a summary of how to prepare and install the Cisco NetFlow Generation Appliance NGA).

Note Before you install, operate, or service your appliance, review the *Regulatory Compliance and Safety Information* for important safety information. This document has been verified for the Cisco NGA.

Warning **IMPORTANT SAFETY INSTRUCTIONS**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030

Use Figure 1 to determine which physical interface on Cisco NetFlow Generation Appliance (indicated by the location 1) to use when connecting it to the network. Figure 2 depicts the front panel and indicates where to connect your console cable. For a description of all components on the front and rear panels of your appliance, see Cisco.com.

To install and connect the Cisco NetFlow Generation Appliance to your Cisco Nexus switch:

Procedure

Step 1 Unpack the equipment from its container and verify that all components are present. See Unpacking and Inspecting the Server, page 14.

Step 2 Install the Cisco NGA in a rack. See Preparing for Installation, page 15 and Install the Appliance In a Rack, page 16.

Note Rear panel port numbers mirror the location numbers in Figure 1. They are unlike standard port numbers, so take special note.

Step 3 Install any components into Cisco NGA. See Install SFP+ Modules, page 19.

Step 4 Connect a 1 Gb Management Ethernet port on the rear of the appliance to your network. This could be your switch or router port. See location number 6 in Figure 1.

Note Do not confuse the Cisco NGA Management Ethernet port with the UCS Cisco Integrated Management Interface (CIMC) port.

Figure 1 NGA3340-K9 Rear Panel

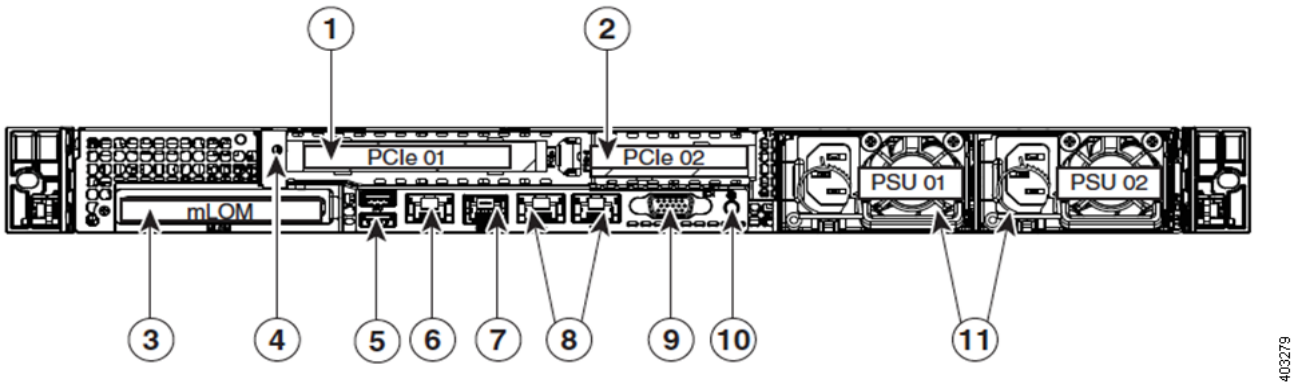


Table 2 Rear Panel Location Numbers

Location Number	Description	Location Number	Description
1	PCIe riser 1/slot 1	**7**	Serial port (RJ-45 connector)
2	PCIe riser 2/slot 2	**8**	Dual 1-Gb Ethernet ports (LAN1 and LAN2)
3	Modular LAN-on-motherboard (mLOM) card slot	**9**	VGA video port (DB-15)
4	Grounding-lug hole (for DC power supplies)	**10**	Rear unit identification button/LED
5	USB 3.0 ports (two)	**11**	Power supplies (up to two, redundant as 1+1)
6	1-Gb Ethernet dedicated management port		

Step 5 Connect up to four 10 Gb Ethernet Cisco NGA data ports to your traffic sources (for example, a Nexus 7000 Series switch SPAN port). See location numbers 1 to 4 in Figure 1.

Then configure your traffic source, by doing one of the following:

- Create one or more Switched Port Analyzer (SPAN) sessions (also known as port mirroring) from the Nexus device to Cisco NGA using the Nexus supervisor command line interface.

  Then verify replication via the SPAN destination of the Cisco Nexus switch, by entering on the switch console:

  show interface ethernet <module>/<port>

- Connect a network tap.

See your router or switch device documentation for details on how to set up this monitoring configuration. For details on how to optionally configure the IP address of your switch as a managed device, see the *Cisco NetFlow Generation Appliance User Guide*.

Step 6 To access the console remotely, connect the COM1 serial port to a terminal server. See location number 5 in Figure 1.

Step 7 To access the console locally using a monitor and keyboard, connect the KVM cable to the front panel. See location number 4 in Figure 2.

Figure 2 Front Panel Cisco NGA

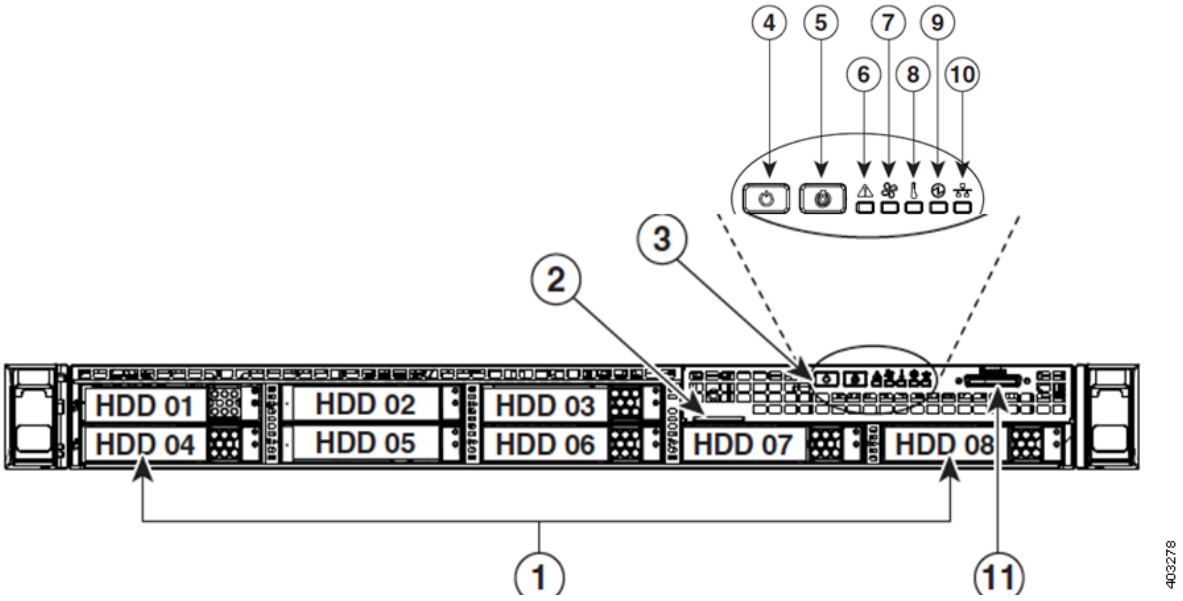


Table 3 Front Panel

Location Number	Description	Location Number	Description
1	Drives (up to eight 2.5-inch drives)	7	Fan status LED
2	Pull-out asset tag	8	Temperature status LED
3	Operations panel buttons and LEDs	9	Power supply status LED
4	Power button/Power status LED	10	Network link activity LED
5	Unit identification button/LED	11	KVM connector (used with KVM cable that provides two USB 2.0, one VGA, and one serial connector)
6	System status LED		

Step 8 Plug in the power cable on the rear of the appliance. See location number 8 in Figure 1.

Step 9 Power on the appliance. Make sure you do not turn on the power until you have completed all cable connections for the Cisco NGA.

See location 8 in Figure 2 for the location of the Power button. Power status LED corresponds to the following states:

- Off—No AC power is present.
- Green, blinking—The appliance is in standby power mode.
- Green—The appliance is in main power mode.

For additional front panel LED status descriptions, see Front-Panel LEDs, page 34.

After you turn power on and boot Cisco NGA for the first time, the login prompt displays on the attached console.

Step 10 Log into appliance. Use **root** as user and **root** as password.

The system prompts you to change the password. When shipped from the factory, the root user is preconfigured on Cisco NGA. The default password for the root user is *root*. The root user has privileged access to the root (read/write) level of Cisco NGA and can enter command-line interface (CLI) commands.

Note We require you to change the user root password during the first login session. Use a password that contains at least eight characters and contains numbers, uppercase and lowercase letters, and symbols.

Step 11 Enter the following information using the **ip** CLI command:

- Cisco NetFlow Generation Appliance's management address.
- The subnet mask.
- The default gateway IP address.
- (Optional) The primary DNS server IP address.

Step 12 Enter **show ip** to verify that you entered the correct network settings.

Step 13 (Required for GUI users) Enter **ip http server enable** to create the web user account. To enable the HTTPS secure web server, enter **ip http secure server enable**.

The web server requires at least one properly-configured web administrator. If the appliance does not prompt you for a web username and password, then at least one web administrator was previously configured.

Note Cisco NetFlow Generation Appliance supports only one web user account.

Enter the username of the web administrator. Press **Enter** to use the default web administrator username *admin*.

Enter a password for the web administrator, then reenter the same password again to ensure accuracy.

Step 14 Load the user interface for Cisco NetFlow Generation Appliance in a web browser, for example, enter *http://<NetFlow_Generation_Appliance_management_address>*. You can use the fully-qualified domain name that you configured in Step 11 for the appliance name or Cisco NGA IP address.

Step 15 Log into Cisco NetFlow Generation Appliance by entering the username and password entered in Step 13.

Step 16 Verify that traffic is being replicated to the appliance. To verify replication, enter:

show dataport statistics cumulative

show dataport statistics rates

Step 17 Set the time and time zone settings by selecting **Administration > System > System Time**. Optionally, you can perform this task from the CLI. The appliance will restart some processes.

Step 18 Set the SNMP Agent community string and system information by selecting **Administration > System > SNMP Agent**.

Step 19 Continue to Configure Your Appliance to Export NetFlow V5 or V9 Records, page 8 to complete the quick start setup.

Configure Your Appliance to Export NetFlow V5 or V9 Records

This section describes how to quickly configure a single NetFlow monitor instance (monitor, exporter, and collector) on one instead of multiple web pages using the Quick Setup graphical user interface (GUI).

The Advanced Setup GUI allows you to configure multiple NetFlow monitor instances in separate windows. You can also configure filters that will limit the amount of traffic from the Cisco NetFlow Generation Appliance to the collectors you designate from the Advanced Setup GUI. To configure IPv6 or Layer2 records, you must use the Advanced Setup tab or the CLI. This guide covers only quick setup details. To complete any of the configuration scenarios described above, see the *Cisco NetFlow Generation Appliance User Guide*.

In more diverged network traffic environments, Cisco NetFlow Generation Appliance is capable of processing and generating NetFlow records for a mixture of IPv4 and IPv6 traffic.

NetFlow v5 supports only IPv4. V9 is template-based and is used to report flows like IPv6, MPLS, or IPv4.

This configuration enables Cisco NGA to monitor the data ports and export v5 or v9 NetFlow records of either IPv4, IPv6, or both flow data to a specified collector.

Follow the procedure below and use the online help if you need additional details. You can also use CLI commands to configure the appliance.

To configure your appliance to export NetFlow traffic:

Procedure

Step 1 To complete a quick setup (which consists of one monitor, exporter, and collector), choose **Setup > NetFlow > Quick Setup**.

Step 2 Enter the required data.

For v9 records, select your desired match and collect fields in the Quick Setup pane. This allows you to configure flow records for IPv4 only. IPv6 record is available in the Advanced Setup only. See online help for details.

If you have a more advanced requirements, for example, you need to configure IPv6 records, you must manually add the components using the Advanced Setup window. See the Cisco NetFlow Generation Appliance *User Guide* for complete details on this configuration.

Step 3 Click **Submit**.

The Monitor tab appears displaying the newly added *name_monitor*.

Step 4 To activate the flow monitor, choose the monitor you created in the **Monitor** tab and click **Activate/Inactivate**. This enables the flow monitor to generate NetFlow information to the collector.

Step 5 Continue to Verify Flow Records Generated, page 9 to ensure records reach their destination.

Verify Flow Records Generated

To verify flow records have reached their destination, check the collector data by entering both of the following commands:

- **show cache statistics rates** ***monitor_name*** command. Counters begin to increment only after a minute has passed. This command displays the rate of raw traffic being processed and the number of flows being created and forwarded to the exporter engine.
- **show collector statistics** ***collector_name*** command. This displays the information about NetFlow packets being sent to the collector.

After you verify that the collector has received the flow record data, you have completed the quick start configuration. To configure additional monitor instances, repeat the quick start configuration or review the steps in the User Guide on how to configure multiple monitor instances using the Advanced Setup.

How to Shut Down and Start Up Cisco NGA

If you must shut down the Cisco NetFlow Generation Appliance for maintenance purposes, use the **shutdown** command in the CLI.

Do not use the Cisco NGA Power button unless the shutdown command is unsuccessful. Remember to disconnect the power cords from the power supply to completely power off the appliance.

Preparing for Installation—Details

This section contains detailed instructions and reference information on the following:

The preparation for installation of the Cisco NetFlow Generation Appliance is similar to the Cisco UCS C220 M4 instructions. If you are already familiar with this server, then installing the Cisco NGA may use the same safety, preparation, and installation instructions where noted.

Caution Do not disassemble or open the appliance. Failure to comply will void the warranty. Only supported field replaceable units are allowed in the Cisco NetFlow Generation Appliance. See the Cisco Ordering Guide on Cisco.com for more details.

Safety Guidelines

Before you install the Cisco NetFlow Generation Appliance, review the safety guidelines in this section and Install the Appliance In a Rack, page 16 to avoid injuring yourself or damaging the equipment.

In addition, before replacing, configuring, or maintaining the appliance, review the safety warnings listed in the *Regulatory Compliance and Safety Information* document.

General Precautions

Observe the following general precautions for using and working with your appliance:

- Observe and follow service markings. Do not service any Cisco product except as explained in your appliance documentation. Opening or removing covers that are marked with the triangular symbol with a lightning bolt might expose you to electrical shock. Components inside these compartments should be serviced only by an authorized service technician.

- If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your authorized service provider:
  - The power cable, extension cord, or plug is damaged.
  - An object has fallen into the product.
  - The product has been exposed to water.
  - The product has been dropped or damaged.
  - The product does not operate correctly when you follow the operating instructions.
- Keep your appliance away from radiators and heat sources. Also, do not block cooling vents.
- Do not spill food or liquids on your appliance, and never operate the product in a wet environment.
- Do not push any objects into the openings of your appliance. Doing so can cause fire or electric shock by shorting out interior components.
- Use the product only with other equipment approved by Cisco.
- Allow the product to cool before removing covers or touching internal components.
- Use the correct external power source. Operate the product only from the type of power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service representative or local power company.
- Use only approved power cables. If you have not been provided with a power cable for your appliance or for any AC-powered option intended for your appliance, purchase a power cable that is approved for use in your country. The power cable must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cable should be greater than the ratings marked on the product.
- To help prevent electric shock, plug the appliance and power cables into properly grounded electrical outlets. These cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cord, use a three-wire cord with properly grounded plugs.
- Observe extension cord and power strip ratings. Make sure that the total ampere rating of all products plugged into the extension cord or power strip does not exceed 80 percent of the extension cord or power strip ampere ratings limit.
- Do not use appliance or voltage converters or kits sold for appliances with your product.
- To help protect your appliance from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Position cables and power cords carefully; route cables and the power cord and plug so that they cannot be stepped on or tripped over. Be sure that nothing rests on your appliance cables or power cord.
- Do not modify power cables or plugs. Consult a licensed electrician or your power company for site modifications. Always follow your local or national wiring rules.

Safety with Equipment

The following guidelines will help ensure your safety and protect the equipment. However, this list does not include all potentially hazardous situations, so be *alert*.

Warning **Read the installation instructions before connecting the system to the power source.** Statement 1004

- Always disconnect all power cords and interface cables before moving the appliance.
- Never assume that power is disconnected from a circuit; *always* check.
- Keep the appliance chassis area clear and dust-free before and after installation.
- Keep tools and assembly components away from walk areas where you or others could fall over them.
- Do not work alone if potentially hazardous conditions exist.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Do not wear loose clothing that might get caught in the appliance chassis.
- Wear safety glasses when working under conditions that might be hazardous to your eyes.

Safety with Electricity

Warning **This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.** Statement 1017

Warning **To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors.** Statement 1021

Warning **Do not touch the power supply when the power cord is connected. For systems with a power switch, line voltages are present within the power supply even when the power switch is off and the power cord is connected. For systems without a power switch, line voltages are present within the power supply when the power cord is connected.** Statement 4

Warning **Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.** Statement 43

Warning **Before working on a chassis or working near power supplies, unplug the power cord on AC units; disconnect the power at the circuit breaker on DC units.** Statement 12

Warning **Do not work on the system or connect or disconnect cables during periods of lightning activity.** Statement 1001

Warning **This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.** Statement 39

Warning **When installing or replacing the unit, the ground connection must always be made first and disconnected last.** Statement 1046

Follow these guidelines when working on equipment powered by electricity:

- Locate the room's emergency power-off switch. Then, if an electrical accident occurs, you can quickly turn off the power.
- Disconnect all power before doing the following:
  - Working on or near power supplies
  - Installing or removing an appliance
  - Performing most hardware upgrades
- Never install equipment that appears damaged.
- Carefully examine your work area for possible hazards, such as moist floors, ungrounded power extension cables, and missing safety grounds.
- Never assume that power is disconnected from a circuit; *always* check.
- Never perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Never work alone when potentially hazardous conditions exist.
- If an electrical accident occurs, proceed as follows:
  - Use caution, and do not become a victim yourself.
  - Turn off power to the appliance.
  - If possible, send another person to get medical aid. Otherwise, determine the condition of the victim, and then call for help.
  - Determine whether the person needs rescue breathing, external cardiac compressions, or other medical attention; then take appropriate action.

In addition, use the following guidelines when working with any equipment that is disconnected from a power source but still connected to telephone wiring or network cabling:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for it.
- Never touch uninsulated telephone wires or terminals unless the telephone line is disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD can occur when electronic printed circuit cards are improperly handled and can cause complete or intermittent failures. Always follow ESD-prevention procedures when removing and replacing modules:

- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component in your appliance. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
- When transporting a sensitive component, first place it in an antistatic container or packaging.

- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.
- Ensure that the appliance is electrically connected to earth ground.
- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the clip to an unpainted surface of the appliance to channel unwanted ESD voltages safely to ground. To guard against ESD damage and shocks, the wrist strap and cord must operate effectively.
- If no wrist strap is available, ground yourself by touching a metal part of the appliance.

Caution For the safety of your equipment, periodically check the resistance value of the antistatic wrist strap. It should be between 1 and 10 Mohm.

Lifting Guidelines

The appliance weighs approximately 33 lbs. The appliance is not intended to be moved frequently. Before you install the appliance, ensure that your site is properly prepared so you can avoid having to move the appliance later to accommodate power sources and network connections.

Whenever you lift the appliance or any heavy object, follow these guidelines:

- Always disconnect all external cables before lifting or moving the appliance.
- Ensure that your footing is solid, and balance the weight of the object between your feet.
- Lift the appliance slowly; never move suddenly or twist your body as you lift.
- Keep your back straight and lift with your legs, not your back. If you must bend down to lift the appliance, bend at the knees, not at the waist, to reduce the strain on your lower back muscles.
- Lift the appliance from the bottom; grasp the underside of the appliance exterior with both hands.

Unpacking and Inspecting the Server

Caution When handling internal appliance components, wear an ESD strap and handle modules by the carrier edges only.

Tip Keep the shipping container in case the appliance requires shipping in the future.

Note The chassis is thoroughly inspected before shipment. If any damage occurred during transportation or any items are missing, contact your customer service representative immediately.

To inspect the shipment:

Procedure

Step 1 Remove the appliance from its cardboard container and save all packaging material.

Step 2 Compare the shipment to the equipment list provided by your customer service representative.Verify that you have all items.

Step 3 Check for damage and report any discrepancies or damage to your customer service representative. Have the following information ready:

- Invoice number of shipper (see the packing slip)
- Model and serial number of the damaged unit
- Description of damage
- Effect of damage on the installation

Preparing for Installation

This section provides information about preparing for appliance installation, and it includes the following topics:

Installation Guidelines

Warning **To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of: 40° C (104° F).**
Statement 1047

Warning **The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.**
Statement 1019

Warning **This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 15 A.**
Statement 1005

Warning **Installation of the equipment must comply with local and national electrical codes.**
Statement 1074

When you are installing a appliance, use the following guidelines:

- Plan your site configuration and prepare the site before installing the appliance. Since the Cisco NGA is based on the UCS C220 M4 server, you can see the *Cisco UCS Site Preparation Guide* for the recommended site planning tasks.

- Ensure that there is adequate space around the appliance to allow for servicing the appliance and for adequate airflow. The airflow in this appliance is from front to back.
- Ensure that the air-conditioning meets the thermal requirements listed in the Appliance Specifications, page 21.
- Ensure that the cabinet or rack meets the requirements listed in the Rack Requirements, page 16.
- Ensure that the site power meets the power requirements listed in the Appliance Specifications, page 21. If available, you can use an uninterruptible power supply (UPS) to protect against power failures.

Caution Avoid UPS types that use ferroresonant technology. These UPS types can become unstable with systems such as the Cisco UCS, which can have substantial current draw fluctuations from fluctuating data traffic patterns.

Rack Requirements

This section provides the requirements for the standard open racks.

The rack must be of the following type:

- A standard 19-in. (48.3-cm) wide, four-post EIA rack, with mounting posts that conform to English universal hole spacing, per section 1 of ANSI/EIA-310-D-1992.
- The rack post holes can be square 38-inch (9.6 mm), round .28-inch (7.1 mm), #12-24 UNC, or #10-32 UNC when you use the supplied slide rails.
- The minimum vertical rack space per appliance must be one RU, equal to 1.75 in. (44.45 mm).

Equipment Requirements

The slide rails supplied by Cisco Systems for this appliance do not require tools for installation. The inner rails (mounting brackets) are pre-attached to the sides of the appliance.

Install the Appliance In a Rack

This section describes how to install the appliance in a rack.

Warning **To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**
This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.
Statement 1006

To install the slide rails and the appliance into a rack:

Procedure

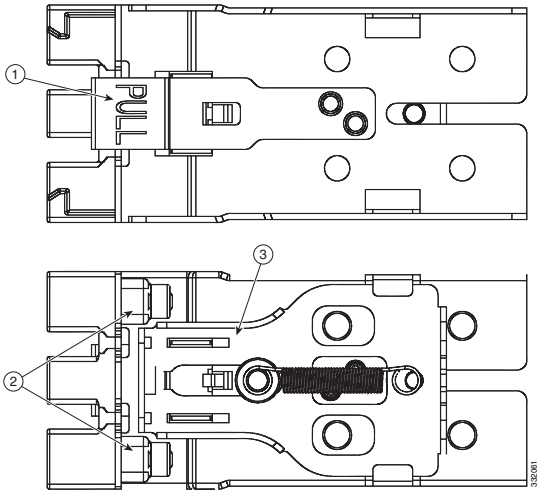
Step 1 Open the front securing latch (see Figure 3). The end of the slide-rail assembly marked "FRONT" has a spring-loaded securing latch that must be open before you can insert the mounting pegs into the rack-post holes.

a. On the rear side of the securing-latch assembly, hold open the clip marked "PULL."

b. Slide the spring-loaded securing latch away from the mounting pegs.

c. Release the clip marked "PULL" to lock the securing latch in the open position.

Figure 3 Front Securing Latch



1	Clip marked "PULL" on rear of assembly	**3**	Spring-loaded securing latch on front of assembly
2	Front mounting pegs		

Step 2 Install the slide rails onto the rack:

a. Position a slide-rail assembly inside the two left-side rack posts (see Figure 4).

Use the "FRONT" and "REAR" markings on the slide-rail assembly to orient the assembly correctly with the front and rear rack posts.

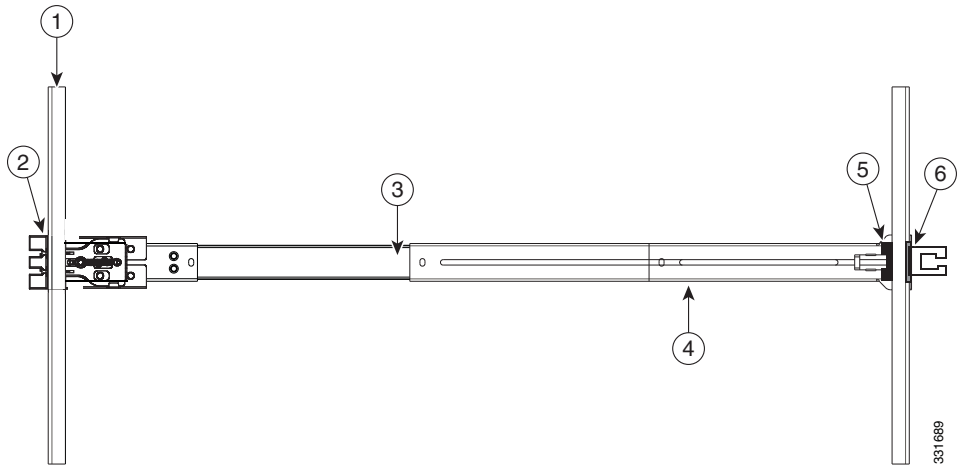
b. Position the front mounting pegs so that they enter the desired front rack-post holes from the front.

Note The mounting pegs that protrude through the rack-post holes are designed to fit round or square holes, or smaller #10-32 round holes when the mounting peg is compressed. If your rack has #10-32 rack-post holes, align the mounting pegs with the holes and then compress the spring-loaded pegs to expose the #10-32 inner peg.

c. Expand the length-adjustment bracket until the rear mounting pegs protrude through the desired holes in the rear rack post.

Use your finger to hold the rear securing latch open when you insert the rear mounting pegs to their holes. When you release the latch, it wraps around the rack post and secures the slide-rail assembly.

Figure 4 Attaching a Slide-Rail Assembly



1	Front-left rack post	**4**	Length-adjustment bracket
2	Front mounting pegs	**5**	Rear mounting pegs
3	Slide-rail assembly	**6**	Rear securing latch

d. Attach the second slide-rail assembly to the opposite side of the rack. Ensure that the two slide-rail assemblies are level and at the same height with each other.

e. Pull the inner slide rails on each assembly out toward the rack front until they hit the internal stops and lock in place.

Step 3 Insert the appliance into the slide rails:

Note The inner rails are pre-attached to the sides of the appliance at the factory. You can order replacement inner rails if these are damaged or lost (Cisco PID UCSC-RAIL1-I).

a. Align the inner rails that are pre-attached to the appliance sides with the front ends of the empty slide rails.

b. Push the appliance into the slide rails until it stops at the internal stops.

c. Push in the plastic release clip on each inner rail (labeled PUSH), and then continue pushing the appliance into the rack until its front latches engage the rack posts.

Install SFP+ Modules

This section describes how to install or replace your SFP+ modules:

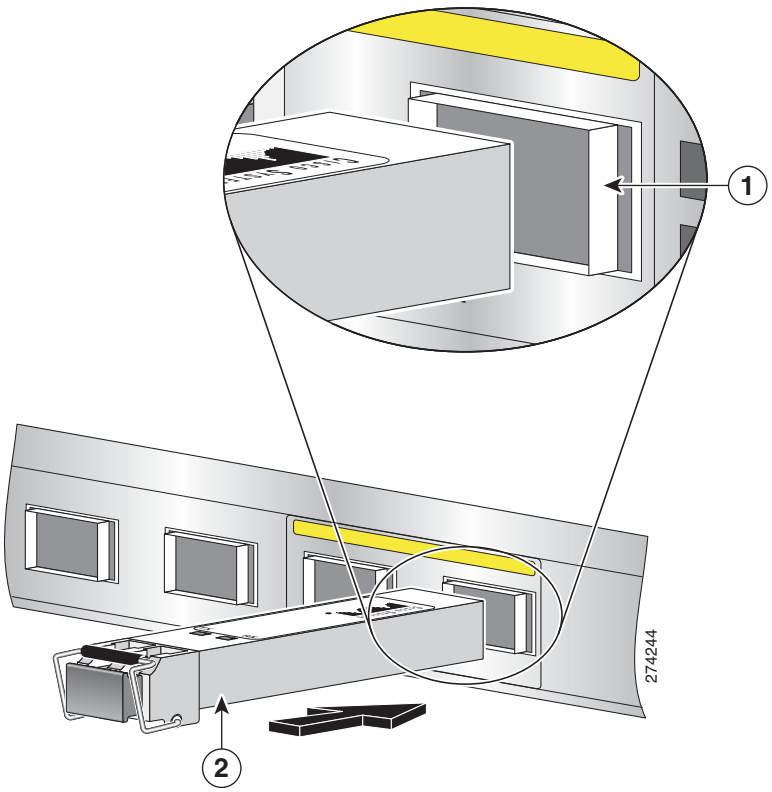
SFP+ Module Overview

The Cisco NetFlow Generation Appliance uses up to four 10 Gigabit Ethernet small form-factor pluggable modules (Cisco 10GBASE SFP+ modules) to connect fiber optical cables as data input sources. You can install any combination of long-range and short-range SFP+ modules. Depending on the type of SFP+ you use, you must use the correct fiber optical cables. The SFP of the interface at the monitored device must be the same type as the monitoring port you connect to on the Cisco NGA.

You can order SFP+ as hardware options or you can use SFPs you might already own as long as they meet the specifications described in the *Cisco 10GBASE SFP+ Modules Data Sheet* Because SFPs are delicate devices, they are packaged separately and are not installed in the appliance prior to shipping. The Cisco NGA supports both the short range and long range Cisco standard SFP+ (10G SFP).

You install the SFP+ modules into slots on the rear panel of the Cisco NGA. Make sure you review the slot locations for data ports 1 through 4 as they are not numbered logically (see Figure 3). Figure 5 shows a detailed view of an SFP+ module installation.

Figure 5 Installing an SFP+ Module



1	SFP slot in rear panel	**2**	SFP+ positioned for rear panel slot

The SFP+ module uses the bail clasp latching mechanism as shown unlatched in Figure 6 and latched in Figure 7. See the label on the SFP+ for technology type and model.

SFP+ dimensions are:

- Height 0.33 inches (8.5 mm)
- Width 0.72 inches (18.3 mm)
- Depth 3.1 inches (78 mm)

SFP+ temperature ranges are:

- COM—Commercial operating temperature range between 23 degrees Fahrenheit to 158 degrees Fahrenheit (-5 degrees Celsius to 70 degrees Celsius)
- EXT—Extended operating temperature range between 23 degrees Fahrenheit it to 185 degrees Fahrenheit (-5 degrees Celsius to 85 degrees Celsius)
- IND—Industrial operating temperature range between -40 degrees Fahrenheit to 185 degrees Fahrenheit (-40 degrees Celsius to 85 degrees Celsius)

Caution Do not add labels or markings to the SFPs.

Install an SFP+

To install an SFP+ into the Cisco NetFlow Generation Appliance:

Procedure

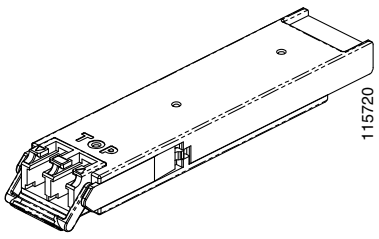
Step 1 Locate the SFP+ you plan to install and remove any protective packaging.

Step 2 Determine into which of the slots you will install the SFP+. See Figure 1 on page 5

Step 3 With its latch open, slide the SFP+ into the slot until you feel resistance, then push the SFP+ harder until you feel (or hear) it click into its socket.

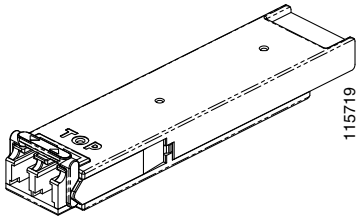
Figure 6 shows an example of an SFP+ with its latch open.

Figure 6 SFP+ (unlatched)



Step 4 With your finger, pull the latch upwards to lock the SFP+ into its slot. See Figure 7.

Figure 7 SFP+ (latched)



The SFP+ is now ready to receive the fiber optical cable input.

Replace an SFP+

To replace an SFP+ in the Cisco NetFlow Generation Appliance:

Procedure

Step 1 Locate the new SFP+ you plan to install and remove any protective packaging. Examine the SFP+ for any signs of damage.

Step 2 Determine which SFP+ you want to replace on the Cisco NGA rear panel.

Step 3 Remove the fiber optical cable from the SFP+.

Step 4 With your finger, pull the latch down to release the SFP+ from its latched position.

See Figure 6.

Step 5 Using the latch, pull the SFP+ out of the appliance and place it in a safe location.

Step 6 Insert the new SFP+ into the slot and slide it in until you feel resistance, then push the SFP+ harder until you feel (or hear) it click into its socket.

Step 7 With your finger, pull the latch upwards to lock the SFP+ into its slot. See Figure 7.

Step 8 Replace the fiber optical cable.

Replace Cisco NGA FRU Components

For detailed instructions on how to replace your field replaceable units (hard disk or power supply), see the *Cisco NetFlow Generation Appliance User Guide*.

Appliance Specifications

This section lists the technical specifications for the appliance and includes the following:

This appliance is based on the UCS C220 M4 server. For details on the cable and power cord specifications, see the *UCS C220 Installation and Service Guide* on Cisco.com.

Physical Specifications

Table 4 lists the physical specifications for the appliance.

Table 4 Physical Specifications

Description	Specification
Height	1.7 in. (4.3 cm)
Width	16.9 in. (42.9 cm)
Depth	29.8 in. (75.8 cm)
Maximum weight (fully loaded chassis)	SFF 8-drive: 37.9 lb. (17.2 Kg) LFF 4-drive: 39.9 lb. (18.1 Kg)

Environmental Specifications

Table 5 lists the environmental specifications for the appliance.

Table 5 Environmental Specifications

Description	Specification
Temperature, operating:	50 to 95°F (10 to 35°C) Derate the maximum temperature by 1°C per every 1,000 ft (304 m) of altitude of 10,000 ft (3048 ft *3048 m)
Temperature, non-operating	–40 to 149°F (–40 to 65°C) within altitude: 0 to 40,000 feet (0 to 12,000 meters)
Humidity (RH), noncondensing	5 to 93%
Altitude, operating	0 to 10,000 feet
Altitude, non-operating	0 to 40,000 feet
Sound power level Measure A-weighted per ISO7779 LwAd (Bels) Operation at 73°F (23°C)	54.7 dBA
Sound pressure level Measure A-weighted per ISO7779 LpAm (dBA) Operation at 73°F (23°C)	35.7 Bels

Power Specifications

Table 6 lists the specifications for the power supply.

Table 6 Power Supply Specifications

Description	Specification
AC input voltage range	90 to 264 VAC (self-ranging, 100 to 264 VAC nominal)
AC input frequency	Range: 47 to 63 Hz (single phase, 50 to 60Hz nominal)
AC line input current (steady state)	9.5 A peak at 100 VAC 4.5 A peak at 208 VAC
Maximum output power for each power supply	770 W
Power supply output voltage	Main power: 12 VDC Standby power: 12 VDC

Upgrade and Recovery Procedures

Cisco occasionally provides upgrades to NGA software you can download and install on your Cisco NetFlow Generation Appliance. You might also use the downloadable software to restore your appliance software in the case of a catastrophic failure.

After you upgrade or restore your appliance software, if you have backed up your NGA configuration, you can restore that configuration and resume network monitoring without undue delay.

This section contains the following sections:

- Backing Up Your Configuration

  After you complete any changes to your NGA configuration, use the command line interface to upload your NGA configuration to an archive server.
- Restoring Your Configuration

  Use the command line interface to restore your previous NGA configuration.
- Upgrading Your Software

  Download a version of the current NGA software and use a single CLI command to perform the software upgrade.
- Recovery Installation

  Use the helper utility to perform a recovery installation.

Backing Up Your Configuration

Before you begin the upgrade process, we recommend that you perform a complete backup of your current NGA configuration.

Note Having a backup configuration file can save you time and frustration if your NGA appliance should suffer a hard disk failure that requires you to reformat or repartition your hard disk drives. This procedure does not back up the capture files and the monitoring data.

To back up your current configuration, use the NGA CLI **config upload** command like the following:

config upload ftp://*user:password@server//path backup_file_name*

For example:

config upload ftp://*admin:secret@172.20.104.11/archive/nga_config*

In NGA 3340, besides ftp, secure transfer protocol such as sftp, scp and https is also supported. You can run **config upload ?** to get the latest help info and example.

The **config upload** command sends a copy of the NGA running configuration to the destination you specify. The copy of your configuration is stored in a back-up configuration file with an ending suffix of **.config** as in **NGA_host-nga-1.1-1.config**. The destination address should be a valid server name and directory path where you have read and write permissions.

Restoring Your Configuration

If you have stored your NGA configuration file at a remote server location that you can access using FTP or HTTP (see Backing Up Your Configuration, page 23), you can restore your NGA configuration file after a system recovery or upgrade. This, however, is optional.

Use the **config network** command to restore your previous NGA configuration, as in the following:

config network ftp://*user:password@server//path backup_file_name*

For example:

config network
ftp://*admin:secret@172.20.104.11/archive/nga_config/NGA_host-nga-1.1-1.config or NGA_host-nga-1.1.1.ngaconf.tar*

In NGA 3340, besides ftp, secure transfer protocol such as sftp, scp and https is also supported. You can run **config upload ?** to get the latest help info and example.

Upgrading Your Software

To upgrade the software for a Cisco NetFlow Generation Appliance:

Step 1 Download the NGA application software for the Cisco NetFlow Generation Appliance from the Cisco.com at the following URL:

http://www.cisco.com/cgi-bin/tablebuild.pl/nam-appl

Step 2 Look for a file that begins with nfa-app, as in **nfa-app-x86_64.x-x-x.bin.gz** (where **x-x-x** is the NGA software release number). The file will be described as the NGA Application Image.

Step 3 Store the NGA application software on the same server where you archived your NGA configuration.

Step 4 Use the commands as needed from the list of upgrade commands shown in Table 1-7.

Table 1-7 Common Upgrade Commands

Configuration Mode	Command[1]	Purpose
`host.domain#`	**upgrade ftp://user:password@server/path/filename**	Enter the command with the path to the location of the upgrade application image.
	upgrade ftp://*user:password@server/path/filename* reformat	Reformats the existing installation. In NGA 3340, besides ftp, secure transfer protocol such as sftp, scp and https is also supported. You can run **config upload ?** to get the latest help info and example. **Caution** All configuration and data will be lost.

1. You may also use HTTP instead of FTP.

Recovery Installation

You can use the helper utility to reinstall NGA application software on your Cisco NetFlow Generation Appliance if your appliance should suffer a catastrophic event, such as a hard disk crash, and you can no longer boot the NGA application.

To access the helper utility, use the Cisco Image Management Controller (the CIMC, not the NGA management port) to map the NGA recovery ISO file to the virtual media CD.

Note You must log in with user or admin privileges to perform this task.

Step 1 Download the ISO file from CCO (where all of the other NGA images are).

Step 2 Log in to the CIMC web interface (default: **`admin/password`**) using your web browser.

For more information about configuring the CIMC, see Set up CIMC for the UCS C-Series Server.

Step 3 Click **Launch KVM Console** (requires Java).

A Java Launcher file (.jnlp) will be download.

Step 4 Open the Java Launcher file using Java Web Start Launcher.

Step 5 In the Java applet, click the **Virtual Media** tab.

Step 6 Click **Accept this session** to accept the unencrypted session for Virtual Media to server.

Step 7 Click **Apply**.

The Virtual Media menu will show the virtual devices.

Step 8 Choose **Virtual Media > Map CD/DVD**.

Step 9 Click **Browse** and select the ISO file.

Step 10 Check **Map**.

Step 11 In the CIMC web interface, click **Power Cycle Server**.

Step 12 The appliance will boot up from the mapped ISO image and will stop at the Helper Utility menu.

Step 13 Choose one of these options:

a. **Option 3** to install the image bundled in the ISO.

b. **Option 1** to pull a new image down from the network.

See the next section, Using the Helper Utility, for more information about the options.

Using the Helper Utility

This section describes the Helper Utility Menu, what each option does, and any requirements for using a particular option. We recommend you use the helper utility only if you want to reformat the disk. Otherwise, you should use the recovery CD or upgrade software instructions.

Note Before you can use menu items 1 and 2, you must first use menu item **n** to configure network parameters for the appliance.

Possible selections for the top level of the helper utility menu are **1, 2, 3, 4, 5, 6, n, r,** and **h**.

Option n - Configure Network

Use **Option n** to configure the network parameters for the appliance.

Step 1 When the Configure Network Interface menu displays, enter **2** to configure manually.

```
-----
Configure Network interface:
1 - Use application image configuration
2 - Configure manually
3 - Show config
r - return to main menu
```

```
Selection [123r]: 2
```

Step 2 The utility prompts you for the IP address, netmask, and default gateway for the appliance.

```
Enter IP configuration:
IP address []: 172.20.122.93
netmask []: 255.255.255.128
default gateway []: 172.20.122.1

-----
Configure Network interface:
1 - Use application image configuration
2 - Configure manually
3 - Show config
r - return to main menu

Selection [123r]
```

Step 3 Check your network configuration using Configure Network menu option 3.

```
Selection [123r]: 3

eth0      Link encap:Ethernet  HWaddr 00:0E:0C:EE:50:3E
          inet addr:172.20.122.93  Bcast:172.20.122.127  Mask:255.255.255.128
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:210 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:13632 (13.3 KiB)  TX bytes:0 (0.0 b)

Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref     Use Iface
172.20.122.0     0.0.0.0        255.255.255.128 U       0      0      0 eth0
0.0.0.0          172.20.122.1    0.0.0.0      UG   0     0      0 eth0
-----
Configure Network interface:
1 - Use application image configuration
2 - Configure manually
3 - Show config
r - return to main menu

Selection [123r]:
```

Option 1 - Download Application Image and Write to HDD

Prior to using **Option 1**, first use **Option n** to configure the network.

Use **Option 1** to download a version of the application image from an FTP server location and write the image to the hard disk drive. This option requires network connectivity and that network parameters be configured for the appliance using helper menu item **n**.

This option enables you to download an image you might have stored at an FTP location or at a location you can access using **http**. You can download the latest version of software from the following URL:

http://www.cisco.com/cgi-bin/tablebuild.pl/nga-appl

This URL requires you to have a Cisco service agreement and access to the internet to download the zipped software.

Option 2 - Download Application Image and Reformat HDD

Prior to using **Option 2**, first use **Option n** to configure the network.

Use **Option 2** to download the application image and write the image to the hard disk drive. This option downloads a version of the application image from an FTP server location or at a location you can access using **http**.

Using this option reformats the hard disk drives before writing the application image and will destroy all data such as reports or data captures.

You can also download the latest version from Cisco.com.

Option 3 - Display Software Versions

Use **Option 3** to display the current application image version stored on your hard disk.

```
Selection [123456789dnfrh]:3

-----
NGA application version: 1.0

Selection [123456789dnfrh]:
```

Option 4 - Reset Application Image CLI Passwords to Default

Use **Option 4** to reset the password for users root and admin to their default values.

Option 5- Send Ping

Use **Option 5** to send a ping to determine if network connectivity exists. When prompted, enter the IP address or full domain name of the location to send the ping.

```
IP address to ping []: 172.20.122.91

Sending 5 ICPM ECHO_REQUEST packets to 172.20.122.91.
PING 172.20.122.91 (172.20.122.91) 56(84) bytes of data.
64 bytes from 172.20.122.91: icmp_seq=1 ttl=64 time=0.151 ms
64 bytes from 172.20.122.91: icmp_seq=2 ttl=64 time=0.153 ms
64 bytes from 172.20.122.91: icmp_seq=3 ttl=64 time=0.125 ms
64 bytes from 172.20.122.91: icmp_seq=4 ttl=64 time=0.102 ms
64 bytes from 172.20.122.91: icmp_seq=5 ttl=64 time=0.166 ms

--- 172.20.122.91 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4000ms
rtt min/avg/max/mdev = 0.102/0.139/0.166/0.025 ms
```

Option 6- Display RAID Settings

Use **Option 6** to display the current RAID settings.

Option r- Exit and Reset Services Engine

Use **Option r** to reset the appliance prior to rebooting the newly installed application image.

Before using **Option r**, remove the recovery CD from the CD drive to enable the appliance to boot the application image.

Option h- Exit and Shutdown Services Engine

Use **Option h** to reset and shut down the appliance.

```
--------------------------------------------------------------------------------
Option h for recovery CD
Selection [123456789dnfrh]: h
About to exit and reset NGA.
Are you sure? [y/N] :y
Stopping internet superserver: inetd.
Stopping OpenBSD Secure Shell server: sshd.
Stopping internet superserver: xinetd.
Stopping internet superserver: xinetd-ipv4.
: done.
Shutting down NGA, part 1:
Stopping klogd . . .
Stopping syslogd . . .
Sending all processes the TERM signal... done.
Sending all processes the KILL signal... done.
Unmounting remote filesystems... done.
Deactivating swap...done.
Unmounting local filesystems...done.
Starting halt command: halt
md: stopping all md devices.
Synchronizing SCSI cache for disk sdb:
FAILED
  status = 1, message = 00, host = 0, driver = 08
  <6>sd: Current: sense key=0x5
    ASC=0x20 ASCQ=0x0
Synchronizing SCSI cache for disk sda:
FAILED
  status = 1, message = 00, host = 0, driver = 08
  <6>sd: Current: sense key=0x5
    ASC=0x20 ASCQ=0x0
ACPI: PCI interrupt for device 0000:07:00.1 disabled
ACPI: PCI interrupt for device 0000:07:00.0 disabled
Power down.
acpi_power_off called
--------------------------------------------------------------------------------
```

Setting up the CIMC

The Cisco Integrated Management Controller (CIMC) is a built-in feature of Cisco UCS servers that provides a web-based GUI or SSH-based CLI to access, configure, administer, and monitor the server remotely. The NGA is based on the Cisco UCS server platform, and thus include the CIMC functionality.

While setting up the CIMC is not strictly necessary to use the NGA, certain administrative and troubleshooting tasks can only be performed via the CIMC. Therefore, it is highly recommended to configure the CIMC with an IP address so that it can be accessed if needed.

To configure an IP address for the CIMC, reboot the NGA and press F8 when prompted to enter the “Cisco IMC Configuration Utility”. Set the “NIC mode” to “Shared LOM”, and configure the IP and VLAN parameters as appropriate. For more details on the CIMC configuration process, see the *Cisco UCS C240 M3 Server Installation and Service Guide*.

Setting up Serial Console Connection

There are two ways to connect to the NGA serial console:

- Serial over LAN (SoL)–Allows access to the NGA serial console through the web-based GUI or SSH-based CLI of CIMC. This access method is configured by default.
- Physical external serial console connector (RJ-45)–Allows access to the NGA serial console through a direct serial cable or terminal server. See section Setting up Serial Console Access through External RJ-45 Port, page 30 for details.

NGA supports two serial console ports: com0 and com1. The NGA CLI can be accessed through either of these ports. However, only the com0 port provides full output and interactivity during the bootup process. The two serial console options (SoL or RJ-45 connector) cannot use com0 at the same time, so you should assign com0 to the option you would customarily use within your environment. By default, the NGA is configured with SoL on com0, so if SoL is your preferred method of access, then you need not do anything more. If you prefer to assign com0 to the RJ-45 serial port, then follow the steps in section Setting up Serial Console Access through External RJ-45 Port.

Setting up Serial Console Access through External RJ-45 Port

See Figure 1 for Serial connector (RJ-45) location.

To setup serial console access through the external RJ-45 port:

Step 1 Log into the CIMC GUI.

Step 2 Click the **Server** tab and then click **Remote Presence**.

Step 3 Click the **Serial over LAN** tab.

Step 4 If you do not want to use Serial over LAN, uncheck the **Enabled** check box. This will make the serial console accessible on com0 through the RJ-45 port. Alternatively, if you prefer to use the RJ-45 serial console primarily, but maintain Serial over LAN as a secondary method for access to the NGA CLI, then keep Serial over LAN enabled, but change **Com Port** to com1.

Step 5 Click the **Save Changes** button.

Console access through the RJ-45 console port will be enabled. Configure your terminal emulator or terminal server to use 9600 baud/bps, 8-N-1 when connecting to the console.

In some cases, it may be necessary to power cycle the NGA before the serial console works. From the CIMC GUI, click the **Server** tab and click **Summary**, and then click **Power Cycle Server**.

Troubleshooting

This section does not cover every possible trouble event that might occur on an appliance but instead focuses on those events that may be frequently seen by the customer.

The following sections are included:

Troubleshooting Overview

Before and at initial system boot, you should verify the following:

- External power cable is connected, and the proper power source is being applied.
- The appliance fan and blower are operating.
- The appliance software boots successfully.
- The adapter cards (if installed) are properly installed in their slots, and each initializes (is enabled by the appliance software) without problems.

When each of these conditions is met, the hardware installation is complete, and you should proceed to perform a basic configuration (see the software installation guide or user guide that supports your appliance for proper configuration procedures).

If you cannot locate the source of the problem, contact a customer service representative for information on how to proceed. For technical support information, see the *Cisco Information Packet* publication that shipped with your appliance. Before you call, have the following information ready:

- Appliance chassis type and serial number
- Maintenance agreement or warranty information (see the *Cisco Information Packet*)
- Type of software and version number (if applicable)
- Date you received the new appliance
- Brief description of the problem you are having and the steps you have taken to isolate and resolve the problem

Note Ensure you provide the customer service representative with any upgrade or maintenance information that was performed on the Cisco NetFlow Generation Appliance after your initial installation. We recommend you create a site log that contains a description of the actions performed on your appliance as well as the date and responsible user.

Problem Solving

The key to problem solving is to isolate the problem to a specific location by comparing what the Cisco NetFlow Generation Appliance is doing to what it should be doing.

In other words, when troubleshooting, define the specific symptoms, identify all potential problems that could be causing the symptoms, and then systematically eliminate each potential problem (from most likely to least likely) until the symptoms disappear.

Note The LEDs on the front panel of the appliance enable you to determine appliance performance and operation. For a description of these LEDs, see the "Read the LEDs" section on page 33.

When problem solving, check the following appliance subsystems first:

- Power and cooling systems—External power source, AC power cable or DC power wires, and appliance fans. Also check for inadequate ventilation, air circulation, or environmental conditions.
- Adapter cards—Checking the LEDs on the adapter card can help you to identify a failure.
- Cables—Ensure that the external cables connecting the appliance to the network are all secure.

Table 8 provides troubleshooting tips for possible appliance subsystem problems.

Table 8 Troubleshooting Tips

Problem Description	What to Check?	What Should You Do?
The power LED on the front panel is not on.	Is the AC power cord connected properly?	If the power LED is still off, the problem might be a power supply failure.
The appliance shuts down after being on for only a short time.	• Check for an environmentally induced shutdown (see the "Read the LEDs" section on page 33). • Check the fans. If the fans are not working, the appliance will overheat and shut itself down. • Ensure that the appliance intake and exhaust vents are clear.	• If the fans are not working, you might need to check the power supply connections to the fans. • Check the environmental site requirements in the "Troubleshooting" section on page 30.
The appliance partially boots, but the LEDs do not light.	Check for a power supply failure by inspecting the power LED on the front panel of the appliance. If the LED is on, the power supply is functional.	If the LED is off, refer to the *Cisco Information Packet* for warranty information or contact your customer service representative.
Power supply shuts down or latches off.	Check to see if the fan has failed, the air conditioning in the room has failed or airflow is blocked to cooling vents.	Take steps to correct the problem. For information about environmental operating conditions, see the User Guide.
Adapter card is not recognized by the appliance.	• Make sure that the adapter card is firmly seated in its slot. • Check the LEDs on the adapter card. Each adapter card has its own set of LEDs. For information on these LEDs, see the "Read the LEDs" section on page 33. • Make sure that you have a version of software that supports the adapter card.	For information, see the documentation that was included with your adapter card.
Adapter card is recognized, but interface ports do not initialize.	• Make sure that the adapter card is firmly seated in its slot. • Check external cable connections. • Make sure that you have a version of software that supports the adapter card. Refer to the documentation that was included with your adapter card.	For information, see the documentation that was included with your adapter card.
The appliance does not boot properly, or it constantly or intermittently reboots.	• Make sure that the adapter card is firmly seated in its slot. • Check the appliance chassis or the application software.	• For information, see the documentation that was included with your adapter card. • For warranty information, see the *Cisco Information Packet* publication that shipped with your appliance or contact your customer service representative.

Table 8 Troubleshooting Tips (continued)

Problem Description	What to Check?	What Should You Do?
If you are using the console port with a terminal, and the appliance boots but the console screen is frozen.	• Check the external console connection. • Verify that the parameters for your terminal are set as follows: (a) The terminal should have the same data rate that the appliance has (9600 bps is the default). (b) 8 data bits. (c) No parity generated or checked. (d) 1 stop bit.	
The appliance powers up and boots only when an adapter card is removed.	– Check the adapter card. There might be a problem with the adapter card. Refer to the documentation that was included with your adapter card.	For warranty information, refer to the *Cisco Information Packet* publication that shipped with your appliance or contact your customer service representative.
The Cisco NetFlow Generation Appliance powers up and boots only when a particular cable is disconnected.	There might be a problem with the cable.	For warranty information, see the *Cisco Information Packet* publication that shipped with your appliance or contact your customer service representative.
Cannot locate the product serial ID on the Cisco NGA.	Before you submit a request for service online or by phone, use the CPI tool to locate your product serial number. This tool offers three search options: • Search by product ID or model name • Browse for Cisco model • Copy and paste the output of the **show** command to identify the product	On the Cisco NetFlow Generation Appliance, the serial number label is located on the right-hand corner above the RJ-45 serial connector on the front of the appliance. (See Figure 2.)

Read the LEDs

This section describes the following Cisco NetFlow Generation Appliance LEDs:

- Front-Panel LEDs
- Rear-Panel LEDs
- Built-In NIC LEDs

The LEDs serve the following purposes:

- Indicate that basic power is available to the appliance
- Guide you to a broken adapter card, or to one that has failed its diagnostics
- Give an indication that traffic is flowing through the adapter card to the appliance

The LEDs on the front and rear panels of the Cisco NetFlow Generation Appliance and corresponding adapter card are aids for determining appliance and adapter performance and operation.

Front-Panel LEDs

Table 9 describes these LEDs. See Figure 2 for the locations of the appliance front-panel LEDs.

Table 9 Front-Panel LEDs

LED	State
DVD activity	• Off—Not in use. • Green, blinking—Reading or writing data.
Hard drive fault	• Off—Operating properly. • Amber—Failed.
Hard drive activity	• Off—No drive in the hard drive sled. • Green—Ready. • Green, blinking—Reading or writing data.
Power supply fault	• Off—Operating properly. • Amber—At least one power supply has failed.
Memory fault	• Off—Operating properly. • Amber—At least one memory bank has a failed DIMM.
CPU fault	• Off—Operating properly. • Amber—At least one CPU has failed.
Network activity	• Off—The appliance is powered off or in standby power mode. • Green, blinking—Communicating with the network in main power mode. The blink rate is faster as network activity increases.
System fault	• Green—Operating properly. • Amber, blinking—An event that requires a service action has been detected. Investigate other LEDs and check logs to isolate the problem.
Identification/Locator (location 7)	• Off—Not in use. • Blue, flashing—The Locator LED button was pressed and the Locator LED flashes on the front and rear panels to help you find the appliance in a rack.
Appliance Power (location 8)	• Off—No AC power is present. • Green, blinking—Standby power mode. • Green—The server is in main power mode. For definitions of these power modes, see the *UCS C220 Installation and Service Guide* on Cisco.com.

Rear-Panel LEDs

Table 10 describes these LEDs. For read-panel LEDs, see Figure 1 or the *UCS C220 Installation and Service Guide* on Cisco.com.

Table 10 Rear-Panel LEDs

LED	State
Power supply status	• Off—No AC power is present in any power supplies. • Green—Operating properly in main power mode. • Green, blinking—Operating properly in standby power mode. • Amber, flashing—There is no AC power present in this power supply. • Amber and Green, blinking—This power supply has reached a Warning over-temperature condition: 176 °F (80 °C). The power supply auto-recovers from this condition when the temperature is within specification again: 167 °F (75 °C) • Amber—This power supply has failed. This could be because the power supply has reached a Critical Shutdown over-temperature condition: 194 °F (90 °C). The power supply auto-recovers from this condition when the temperature is within specification again: 167 °F (75 °C).
Locator	• Off—Not in use. • Blue, flashing—The Locator LED button on the front panel was pressed and the Locator LED flashes on the front and rear panels to help you find the server in a rack.

Built-In NIC LEDs

Figure 8 shows the NIC 1 and NIC 2 LEDs located on the rear of the appliance. These LEDs indicate the connection activity and speed of the NIC ports. Table 11 describes the activity and connection speed associated with each LED state. The 10 Gb Ethernet link status LED and the speed LED must be read in combination for the following interpretations.

Figure 8 NIC 1 and NIC 2 LEDs

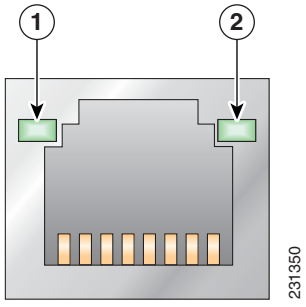


Table 11 NIC 1 and NIC 2 LED Descriptions

LED	Color	State	Description
10 Gb Ethernet speed (location 1)		Off	No network connection
	Green	Solid	Network connection
	Green	Blinking	Transmit/receive activity
10 Gb Ethernet link status (location 2)		Off	10-Mb/s connection (if left LED is on or blinking)
	Green	Solid	100-Mb/s connection
	Amber	Solid	1000-Mb/s (or 1-Gb/s) connection

For more detailed information about how to use Cisco NetFlow Generation Appliance, see the *Cisco NetFlow Generation Appliance User Guide*.

You can perform most tasks using either the Cisco NGA user interface or the command line interface (CLI). See the *Cisco NetFlow Generation Appliance Command Reference Guide* on Cisco.com.

Product Documentation

We sometimes update the documentation after original publication. Therefore, you should also review the documentation on Cisco.com for any updates.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see *What's New in Cisco Product Documentation*.

To receive new and revised Cisco technical content directly to your desktop, you can subscribe to the What's New in Cisco Product Documentation RSS feed. The RSS feeds are a free service.

This document is to be used in conjunction with the documents listed in the "Product Documentation" section on page 36.