Installing the Cisco ENCS-INLN-GE-4T (FTW-NIM) in a Cisco ENCS 5400-W Series Device

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Contents

This document provides prerequisite information and the installation procedure for the Cisco ENCS-INLN-GE-4T Fail-To-Wire Network Interface Module (FTW-NIM) in the Cisco ENCS 5400-W Series for the FTW feature.

This document contains the following sections:

Product Overview

This section contains the following topics:

About the Cisco ENCS-INLN-GE-4T (FTW-NIM)

The Cisco ENCS-INLN-GE-4T (FTW-NIM) is a 4-port Ethernet inline network adapter supported on ENCS-5400 appliances for vWAAS for WAAS Software Version 6.4.3 or later.

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The Cisco FTW-NIM adapter provides an inline traffic interception capability for your ENCS-5400 appliance. When you configure the inline interception mode, you can set attributes to control, which interfaces are to be used over which VLANs.

The Cisco FTW-NIM adapter ports can be configured for any of the following operations:

- Port-channel
- Standby
- Inline capable interfaces

You can configure the WCCP or Inline interception feature using the WAAS CLI or Central Manager GUI using WAAS Software Version 6.4.3 or later.

- When WCCP interception method is selected—All the four FTW-NIM ports (interface Virtual 3/0 to 3/3) will be available for configuring Port-Channel or Standby groups.
- When Inline interception method is selected—The WAAS software defines two new interface types: A group interface that represents an inline pair grouping and a port interface that represents the individual port. These interfaces are referred to as inlineGroup and inlinePort.
  - InlineGroup interfaces are numbered using the format slot/group. The slot number is the slot in which the adapter is inserted. (In the ENCS 5400 appliances, slot number is 3.) The group number is either 0 or 1.
  - InlinePort interfaces are numbered slot/group/lan or slot/group/wan. The last attribute is the LAN or WAN designator.

The numbering of the FTW-NIM interfaces will be in range from 0-3 and in general will be accessed as interface virtual 3/0 - 3/3 at the WAAS CLI or Central Manager GUI. In the case of Inline interception, the interface group available will be 3/0 and 3/1 only.

With Inline interception method, the FTW NIM is programmable to mention the watch dog timer, that is, the inline failover timeout that allows you to set the time to wait after a failure event, such as a power outage or a kernel crash, before the unit begins to operate in mechanical bypass mode. In mechanical bypass mode, traffic is bridged between the LAN and WAN ports of each group. Mechanical bypass mode prevents the WAAS from becoming a single point of failure and allows traffic to continue to flow between the router and the client while it passes through an unresponsive WAAS without being processed.

Table 1 shows the NIM SKU and description.

Table 1   *Cisco NIM SKU for ENCS 5400-W Series*

NIM SKU	Description
ENCS-INLN-GE-4T	4-port GE connectivity

For more information about configuring the inline network adapter, see the *Cisco Virtual Wide Area Application Services Installation and Configuration Guide* (for WAAS 6.4.3x).

NIM LEDs

This section contains the following topics:

- Enable LED
- RJ45 Status LED

Enable LED

The NIM has a dual-color green/amber Enable LED that is mounted on the NIM and visible through the faceplate of the NIM on the bottom left on top of the interface.

- On device power up, the Enable LED default state is off.
- The Enable LED is fully controlled by the host.

Table 2 shows the Enable LED color and state indications.

Table 2   Enable LED Color and State Indications

Enable LED Color	State
Solid green	The module is powered on and is functioning correctly.
Solid amber	The vWAAS installation is in progress or the module has some failure.
OFF	Default state when the module is powered on for the first time. This state is persistent until changed by the host software.

RJ45 Status LED

Each RJ45 port has two single LEDs to indicate the status. These LEDs are embedded within the MAGJACK RJ45. Table 3 shows the RJ45 Status LED functions, color, and state indications.

Table 3   RJ45 LED Function, Color, and State Indications

RJ45	Function	Color/State	Description
GE0, GE1, GE2, and GE3	L (RJ45 Link Status)	Solid green	The link is active.
		OFF	The link is OFF.
	S (RJ45 Speed Status)	3 Blink	1G speed
		2 Blink	100M speed
		1 Blink	10M speed
		OFF	The link is OFF.

Safety and Usage Guidelines for Cisco ENCS-INLN-GE-4T (FTW-NIM)

This section contains the following topics:

- Safety Recommendations
- Preventing Electrostatic Discharge Damage
- General Maintenance Guidelines
- Safety Warnings

Safety Recommendations

To prevent hazardous conditions, follow these safety recommendations while working with this equipment:

- Observe and follow service markings. Do not service any Cisco product except as explained in your system documentation.

- Keep your system components away from radiators and heat sources. Also, do not block cooling vents.

- Do not spill food or liquids on your system components, and never operate the product in a wet environment.

- Do not push any objects into the openings of your system components. Doing so can cause fire or electric shock by shorting out interior components.

- Use the product only with other Cisco-approved equipment.

- Allow the product to cool before removing covers or touching internal components.

Preventing Electrostatic Discharge Damage

Electrostatic discharge can damage equipment and electrical circuitry. Electrostatic discharge occurs when electronic printed circuit cards, such as those used in Cisco service modules and network modules, are improperly handled and can result in complete or intermittent equipment failure. Always observe the following electrostatic discharge damage (ESD) prevention procedures when installing, removing, or replacing any electronic printed circuit cards:

- Make sure that the ENCS-W device is electrically connected to earth ground.

- Wear an ESD-preventive wrist strap, and make sure that it makes good contact with your skin.

- Connect the wrist strap clip to an unpainted portion of the chassis frame to channel unwanted ESD voltages to ground.

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Caution The wrist strap and clip must be used correctly to ensure proper ESD protection. Periodically confirm that the resistance value of the ESD-preventive wrist strap is between 1 and 10 megohms (Mohm).

- If no wrist strap is available, ground yourself by touching the metal part of the router chassis.

- You can also take the following steps to prevent damage from electrostatic discharge (ESD):

  – Limit your movement. Movement can cause static electricity to build up around you.

  – When transporting a sensitive component, first place it in an anti-static container or packaging.

  – Just before unwrapping the anti-static packaging, be sure to discharge static electricity from your body by touching it to an unpainted metal part of the system unit for at least 2 seconds.

  – Remove the adapter from its packaging and install it directly into your system unit without setting it down. If it is necessary to set the adapter down, place it in its static-protective package. Do not place the adapter on your system unit cover or on a metal table.

  – Handle all sensitive components in a static-safe area. If possible, use anti-static floor pads and workbench pads.

  – Handle the adapter carefully, holding it by its edges or its frame.

  – Do not touch solder joints, pins, or exposed printed circuitry.

- Do not leave the adapter where others can handle and possibly damage the adapter.
- Take additional care when handling adapters during cold weather because heating reduces indoor humidity and increases static electricity.

General Maintenance Guidelines

The following maintenance guidelines apply to the Cisco ENCS 4-port CU FTW NIM:

- Keep the router chassis area clear and dust-free during and after installation.
- If you remove the chassis cover for any reason, store it in a safe place.
- Do not perform any action that creates a hazard to people or makes equipment unsafe.
- Keep walk areas clear to prevent falls or damage to equipment.
- Follow installation and maintenance procedures as documented by Cisco Systems, Inc.

Safety Warnings

This section contains the following topics:

- Statement 1071—Warning Definition
- Safety Warnings

Note The following safety warning statements apply to all hardware procedures involving the Cisco ENCS-INLN-GE-4T (FTW-NIM) for the Cisco ENCS 5400-W Series. For translations of these warnings, see *Cisco Network Modules and Interface Cards Regulatory Compliance and Safety Information*. A paper copy of this document is also shipped with all individual Cisco ENCS 4-Port CU FTW NIM orders.

Statement 1071—Warning Definition

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

Safety Warnings

Warning **Read the installation instructions before using, installing or connecting the system to the power source. Statement 1004**

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

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Warning **Ultimate disposal of this product should be handled according to all national laws and regulations. Statement 1040**

Installing the Cisco ENCS-INLN-GE-4T (FTW-NIM) in an ENCS 5400-W Device

This section contains the following topics:

- ENCS 5400-W Chassis Internal View
- Tools and Equipment Required for Installation
- Installing the Cisco ENCS-INLN-GE-4T (FTW-NIM) in an ENCS 5400-W Device

ENCS 5400-W Chassis Internal View

Figure 1 shows an internal view of the ENCS 5400-W chassis. Table 4 provides identification and description of each component shown in Figure 1.

Figure 1   *Internal View of the ENCS 5400-W Chassis*
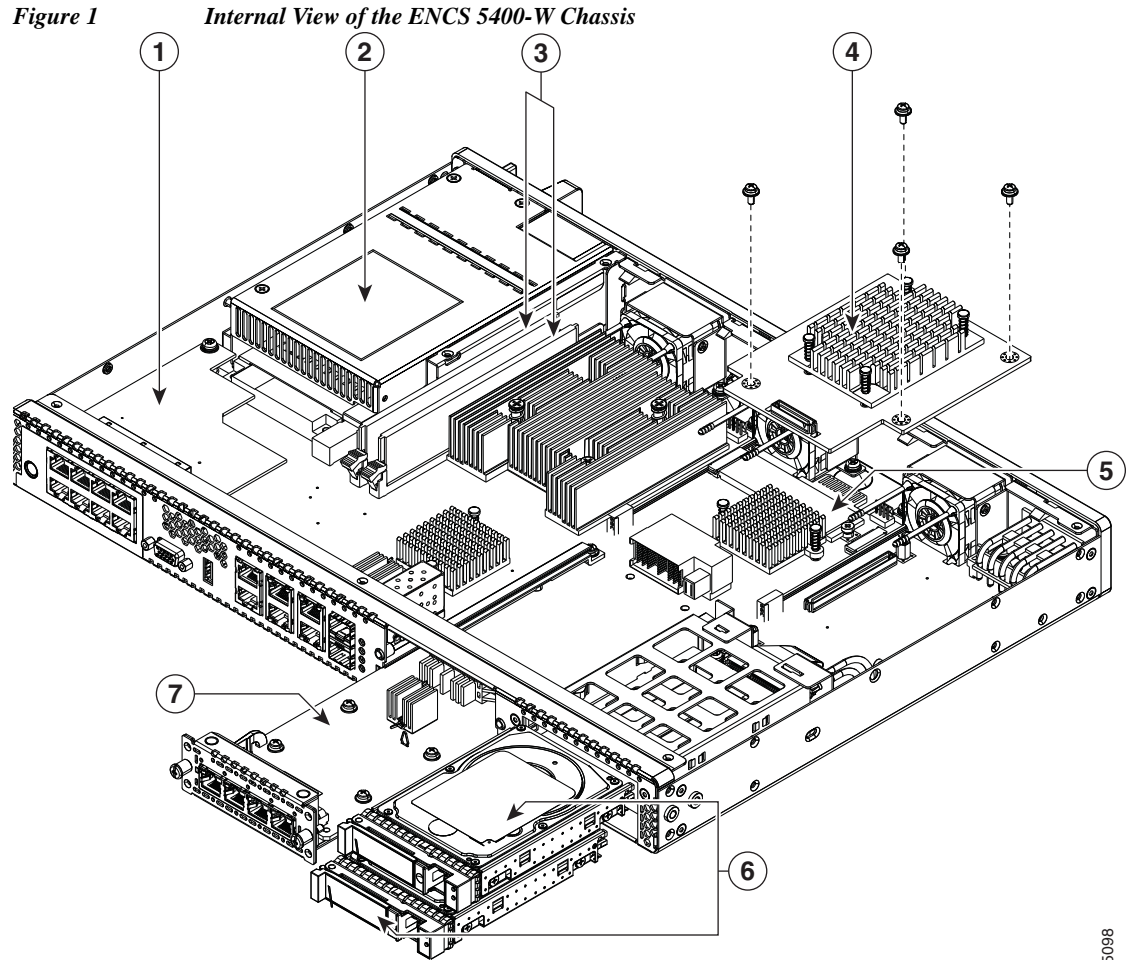
Table 4   *ENCS 5400-W Components shown in Figure 1*

#	Component	#	Component
1	PoE daughter card	5	M.2 storage module on motherboard
2	Modular power supply	6	Drive bays for hard drives and solid-state drives (SSDs)
3	DDR4 DIMM slots on motherboard - 2	7	Network Interface Module (NIM)
4	RAID card		

Tools and Equipment Required for Installation

You will need the following tools and equipment while working with the Cisco ENCS 4-Port CU FTW NIM:

- Number 1 Phillips screwdriver
- ESD-preventive wrist strap

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

Installing the Cisco ENCS-INLN-GE-4T (FTW-NIM) in an ENCS 5400-W Device

To install the Cisco ENCS-INLN-GE-4T (FTW-NIM) in an ENCS 5400-W device, follow these steps:

Step 1   Review the information in Safety and Usage Guidelines for Cisco ENCS-INLN-GE-4T (FTW-NIM).

Step 2   Power down the device and peripheral devices and disconnect all power cords and external cables.

Step 3   Shut down the electrical power to the slot in the router either by turning off the electrical power to the router or by issuing the online insertion and removal (OIR) commands. The online insertion and removal (OIR) operation lets you replace faulty data and voice modules without affecting system operations. The OIR is similar to hot-swapping.

Note   This equipment may be ESD sensitive. Always use an ESD ankle or wrist strap before handling equipment. Connect the equipment end of the ESD strap to an unfinished surface of the equipment chassis or to the ESD jack on the equipment if provided.

Step 4   Remove the blank faceplates installed over the network interface module slot that you intend to use.

Note   Save the blank faceplates for future use.

Step 5   Align the module with the guides in the ENCS 5400-W device or slot divider and slide it gently into the NIM slot on the router.

Step 6   Push the module into place until you feel the edge connector seat securely into the connector on the ENCS 5400-W device. The module faceplate should contact the device panel.

Step 7   Using a Number 1 Phillips screwdriver, tighten the captive screws on the network interface module.

Step 8   Connect the module to the network and re-enable the power to the slot in the router.

Removing the Cisco ENCS-INLN-GE-4T (FTW-NIM) from an ENCS 5400-W Device

This section contains the following topics:

• Tools and Equipment Required for Removal

• Removing the Cisco ENCS-INLN-GE-4T (FTW-NIM) from an ENCS 5400-W Device

Tools and Equipment Required for Removal

You will need the following tools and equipment while working with the Cisco ENCS 4-Port CU FTW NIM:

- Number 1 Phillips screwdriver or a small flat-blade screwdriver
- ESD-preventive wrist strap

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

Removing the Cisco ENCS-INLN-GE-4T (FTW-NIM) from an ENCS 5400-W Device

To remove the Cisco ENCS-INLN-GE-4T (FTW-NIM) from an ENCS 5400-W device, follow these steps:

Step 1 Review the information in Safety and Usage Guidelines for Cisco ENCS-INLN-GE-4T (FTW-NIM).

Step 2 Power down the device and peripheral devices and disconnect all power cords and external cables.

Step 3 Shut down the electrical power to the slot in the router either by turning off the electrical power to the router or by issuing the online insertion and removal (OIR) commands. The online insertion and removal (OIR) operation lets you replace faulty data and voice modules without affecting system operations. The OIR is similar to hot-swapping.

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Note This equipment may be ESD sensitive. Always use an ESD ankle or wrist strap before handling equipment. Connect the equipment end of the ESD strap to an unfinished surface of the equipment chassis or to the ESD jack on the equipment if provided.

Step 4 Using a Number 1 Phillips screwdriver, loosen the captive screws on the network interface module.

Step 5 Slide the network interface module out.

Step 6 If you are not replacing the module, install a blank faceplate over the empty slot to ensure proper air flow.

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Warning **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place. Statement 1029**

Related Documentation

In addition to this document, the WAAS documentation set includes the following publications:

- *Cisco Virtual Wide Area Application Services Installation and Configuration Guide*

- *Cisco 5400 Enterprise Network Computer System Install and Upgrade Guides*