



Installing the Cisco AppNav Controller Interface Module



Note

The most current Cisco documentation for released products is available on [Cisco.com](https://www.cisco.com).

Contents

This document contains the following sections:

- [Product Overview, page 2](#)
- [Safety Guidelines, page 7](#)
- [Operating Considerations, page 9](#)
- [Installing an AppNav Controller Interface Module, page 9](#)
- [Cabling Requirements, page 12](#)
- [Related Documentation, page 18](#)
- [Obtaining Documentation and Submitting a Service Request, page 19](#)



Warning

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



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Product Overview

AppNav Controller Interface Modules are modules that can be inserted in Cisco Wide Area Virtualization Engines (WAVE), WAVE-594, WAVE-694, WAVE-7541, WAVE-7571, and WAVE-8541, to expand WAN optimization capacity. [Table 1](#) lists the AppNav Controller Interface Modules.

Table 1 *AppNav Controller Interface Module*

AppNav Controller Interface Module Product ID	Description
WAVE-APNV-GE-12T	AppNav I/O Module (IOM) for WAVE that supports twelve 1 Gigabit Ethernet copper ports
WAVE-APNV-GE-12SFP	AppNav IOM for WAVE that supports twelve 1 Gigabit Ethernet small form-factor pluggable(SFP) ports.
WAVE-APNV-10GE	<p>AppNav IOM bundled with a Cisco WAVE-594 that supports four 10 Gigabit Ethernet AppNav IOM.</p> <p>Note WAVE-APNV-10GE (10 Gigabit Ethernet appNav IOM and Cisco WAVE-594) does not provide WAAS acceleration or optimization. It only supports AppNav services.</p> <p>Note WAVE-APNV-10GE is enclosed in its own chassis.</p>

This section contains the following topics:

- [Ports and LED Indicators, page 2](#)
- [Specifications, page 5](#)
- [Configuring AppNav Interception, page 6](#)



Note

The minimum software release required to support an AppNav Controller Interface Module is Cisco WAAS Software Version 5.0.

Ports and LED Indicators

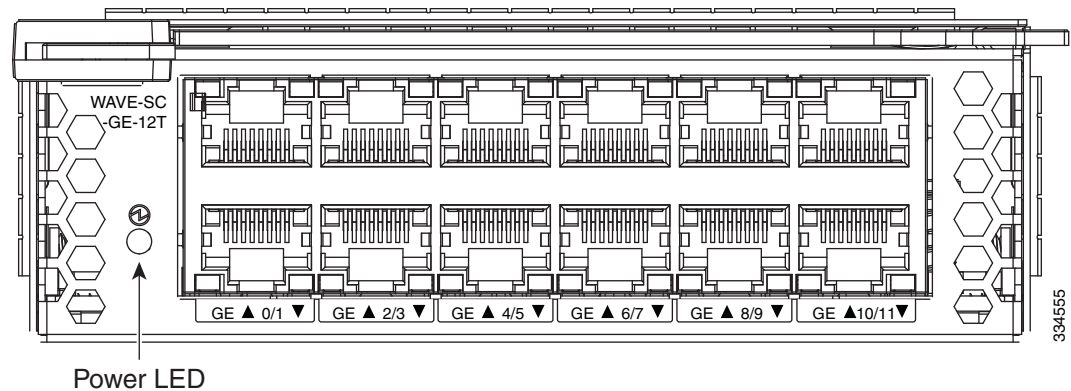
This section contains the port and LED indicator information for the following AppNav Controller Interface Modules:

- [12-Port Copper Gigabit Ethernet AppNav Controller Interface Module, page 3](#)
- [12-Port Fiber Optic Gigabit Ethernet AppNav Controller Interface Module, page 4](#)
- [4-Port Fiber Optic 10 Gigabit Ethernet SFP+ AppNav Controller Interface Module, page 4](#)

12-Port Copper Gigabit Ethernet AppNav Controller Interface Module

Figure 1 shows the 12-port Copper Gigabit Ethernet Interface Module port numbers, interface designations, and LEDs.

Figure 1 12-Port Copper Gigabit Ethernet Interface Module—Port Numbering and LEDs



When the Interface Module power LED is green, the Interface Module is receiving power. If the power LED is off, the Interface Module is not installed or a power supply failure has occurred.

Figure 2 shows the Gigabit Ethernet ports and LEDs for the 12-port Copper Interface Module.

Figure 2 Copper Interface Module—Gigabit Ethernet LEDs

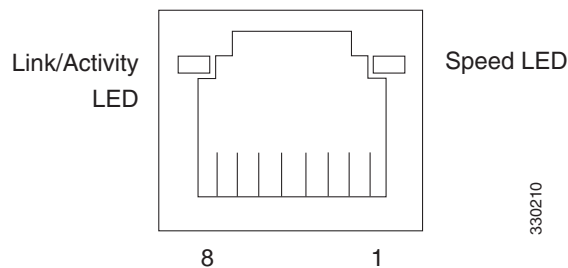


Table 2 describes the Gigabit Ethernet port LEDs.

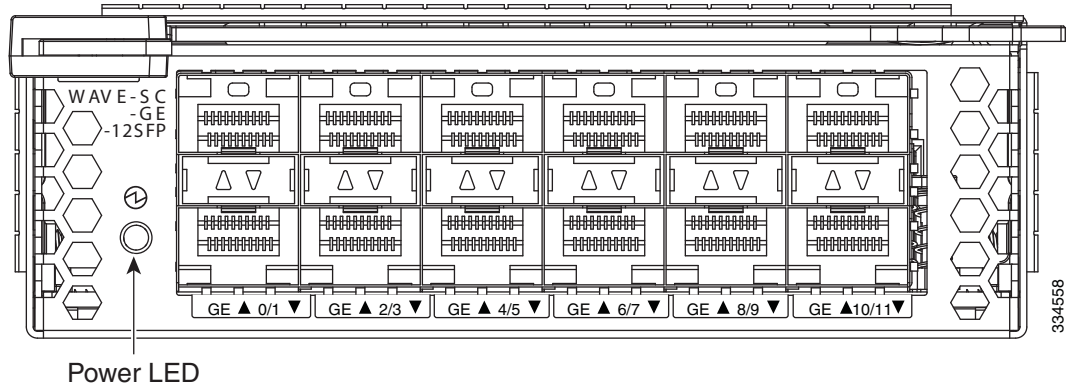
Table 2 Copper Interface Module—Gigabit Ethernet LEDs

Name	Color	State	Description
NIC link/activity	Green	On	Link exists.
	Blinking	Off	Activity exists.
	—	Off	No link detected.
NIC speed	—	Off	10Mbps connection.
	Green	On	100Mbps connection.
	Yellow	On	1000Mbps connection.

12-Port Fiber Optic Gigabit Ethernet AppNav Controller Interface Module

Figure 3 shows the 12-port Fiber Optic Gigabit Ethernet Interface Module port numbers, interface designations, and LEDs.

Figure 3 12-Port Fiber Optic Gigabit Ethernet Interface Module—Port Numbering and LEDs

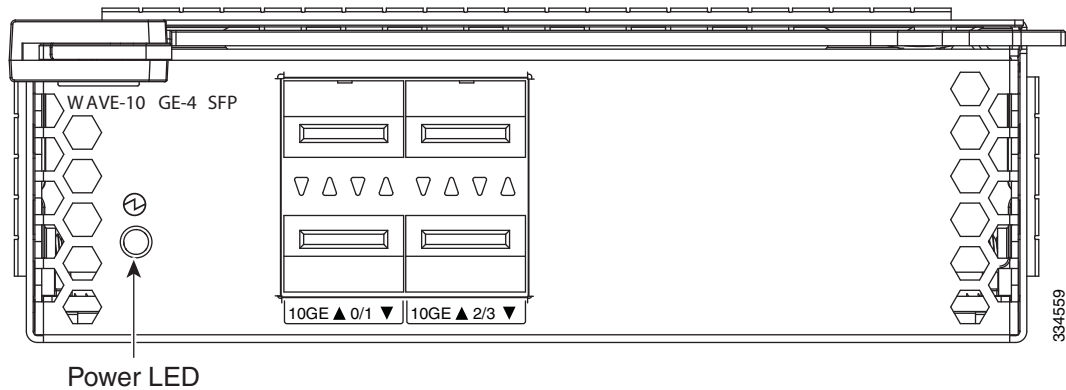


When the Interface Module power LED is green, the Interface Module is receiving power. If the power LED is off, the Interface Module is not installed or a power supply failure has occurred.

4-Port Fiber Optic 10 Gigabit Ethernet SFP+ AppNav Controller Interface Module

Figure 4 shows the 4-port Fiber Optic 10 Gigabit Ethernet SFP+ Interface Module port numbers, interface designations, and LEDs.

Figure 4 4-Port Fiber Optic 10 Gigabit Ethernet SFP+ Interface Module—Port Numbering and LEDs



Specifications

Table 3 describes the Interface Module technical and general specifications.

Table 3 AppNav-IOM Specifications

Specification	Description
Copper Gigabit Ethernet (12-port)	
IEEE standard	Gigabit Ethernet, 1000BASE-T, IEEE 802.3-2000 Fast Ethernet, 100BASE-T, IEEE 802.3-2000 Ethernet, 10BASE-T, IEEE 802.3-2000
Duplex	Supports both half-duplex and full-duplex operation in all operating speeds
Autonegotiation	Autonegotiates between full-duplex and half-duplex operations and between 1000 Mbps, 100 Mbps, and 10 Mbps speeds
Data transfer rate	1000 Mbps, 100 Mbps, and 10 Mbps speeds per port in half-duplex mode 2000 Mbps, 200 Mbps, and 20 Mbps speeds per port in full-duplex mode
Ports	12-Port Interface Module: 12 × RJ-45 socket connectors
Fiber Optic Gigabit Ethernet (12-port)	
IEEE standard	Gigabit Ethernet, 1000BASE-SX, IEEE 802.3-2000
Duplex	Supports full-duplex only
Optical reach	137 m (449 ft) to any individual port to account for 274 m (899 ft) total when operating in bypass mode
Data transfer rate	2000 Mbps in full-duplex
Ports	12 fixed LC duplex connectors
SFP+ 10 Gigabit Ethernet (4-port)	
IEEE standard	The Cisco 10 Gigabit Ethernet Interface Module for WAAS only supports Cisco pluggable optical transceiver modules. Consult the following data sheet URL for supported modules: Cisco 10GBASE SFP+ Modules
Duplex	Supports full-duplex only
Autonegotiation	Autonegotiates pluggable transceiver type 1 Gbps or 10 Gbps
Data transfer rate	2000 Mbps and 20000 Mbps
Ports	4 pluggable SFP/SFP+ sockets
Optical reach	Varies per module type. Consult the following data sheet URL for supported modules: Cisco 10GBASE SFP+ Modules

Table 3 AppNav-IOM Specifications (continued)

Specification	Description
General Technical Specifications	
Dimensions	1 Gigabit Ethernet: 38 mm (1.5 in) H x 121 mm (4.75 in) W x 264 mm (10.38 in) D 10 Gigabit Ethernet: 42 mm (1.69 in) H x 429 mm (16.89 in) W x 516 mm (20.33 in) D
Weight	1 Gigabit Ethernet: 973g (2.14 lb) 10 Gigabit Ethernet: 10.21kg (22.51 lb)
Operating humidity	8 to 80% RH (noncondensing)
Operating temperature	10 to 35°C (50 to 95°F)
Operating altitude	3,050 m (10,000 ft)
Non-operating temperature	-40 to 60°C (-40 to 140°C)
Non-operating humidity	8 to 80% RH (noncondensing)
Non-operating altitude	4,572 m (15,000 ft)

Configuring AppNav Interception

For Wide Area Application Engines (WAE) that are part of an AppNav deployment and are configured as WAAS nodes (WNs) in an AppNav Cluster, you must configure them to use the appnav-controller interception method. These WNs receive traffic only from the ANCs, not directly from routers. It is on the AppNav Controller (ANC) that you configure an interception method, such as WCCP, or inline to intercept network traffic by using the AppNav Cluster Wizard on the WAAS Central Manager.



Note

You must have all the cabling in place prior to using one of the four predefined deployment models on the AppNav Cluster Wizard. Use the custom template if you do not have the cabling in place or if you choose to use a different deployment model.

For more information on cabling the AppNav IOM, see the [“Connecting the AppNav Controller Interface Module” section on page 15](#).

For more information about an AppNav deployment, see the “Configuring AppNav” chapter in the [Cisco Wide Area Application Services Configuration Guide](#).

If you create an AppNav Cluster by using the Central Manager wizard, or you add WNs to a cluster through the AppNav Clusters window, the Central Manager automatically configures WNs with the appnav-controller interception method. Once the WN is added to a cluster, its interception method cannot be changed.

To manually configure appnav-controller interception on a WN device, follow these steps:

- Step 1 From the WAAS Central Manager menu, choose **Devices** > *device-name*.
- Step 2 Choose **Configure** > **Interception** > **Interception Configuration**. The Interception Configuration window appears.

- Step 3** From the Interception Method drop-down list, choose **appnav-controller** to enable the appnav-controller interception method.
- Step 4** Click **Submit**.
-

Safety Guidelines

To reduce the risk of bodily injury, electrical shock, fire, and damage to the equipment, observe the precautions in this section.

This section contains the following topics:

- [Warnings, page 7](#)
- [General Precautions, page 8](#)
- [Protecting Against Electrostatic Discharge, page 9](#)

Warnings

Before you install the WAVE-694, WAVE-7541, WAVE-7571, and WAVE-8541, observe the following safety warnings:



Warning

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



Warning

This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024



Warning

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



Warning

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



Warning

Blank faceplates (filler 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 and faceplates are in place. Statement 156



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

General Precautions

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

- Observe and follow service markings. Do not service any Cisco product except as explained in your system documentation. Opening or removing covers that are marked with the triangular symbol with a lightning bolt may 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 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 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.
- 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 Content Engine or for any AC-powered option intended for your system, 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 system components and peripheral 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.
- Do not use appliance or voltage converters or kits sold for appliances with your product.
- To help protect your system components from sudden, transient increases and decreases in electrical power, use a surge suppressor or line conditioner.
- 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 system components' 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.

Protecting Against Electrostatic Discharge

Static electricity can harm delicate components inside your system. To prevent static damage, discharge static electricity from your body before you touch any of your system's electronic components. You can do so by touching an unpainted metal surface on the 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 antistatic container or packaging.
- Just before unwrapping the antistatic 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 antistatic 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.

Operating Considerations

To help ensure proper cooling and system reliability, make sure that the following occurs:

- The Interface Module bay has either a Cisco Interface Module or a filler panel installed.
- Cables for optional adapters are routed according to the instructions provided with the adapters.

Installing an AppNav Controller Interface Module



Note

Interface Modules are not hot-swappable therefore it is necessary to power the system down before installing or replacing.



Caution

To maintain proper system cooling, do not operate the appliance for more than 1 minute without either a Cisco Interface Module or a filler panel installed in the bay.

To install a Cisco Interface Module in the Interface Module slot, follow these steps:

- Step 1 Review the information in the [“Safety Guidelines” section on page 7](#).
- Step 2 Power down the appliance.

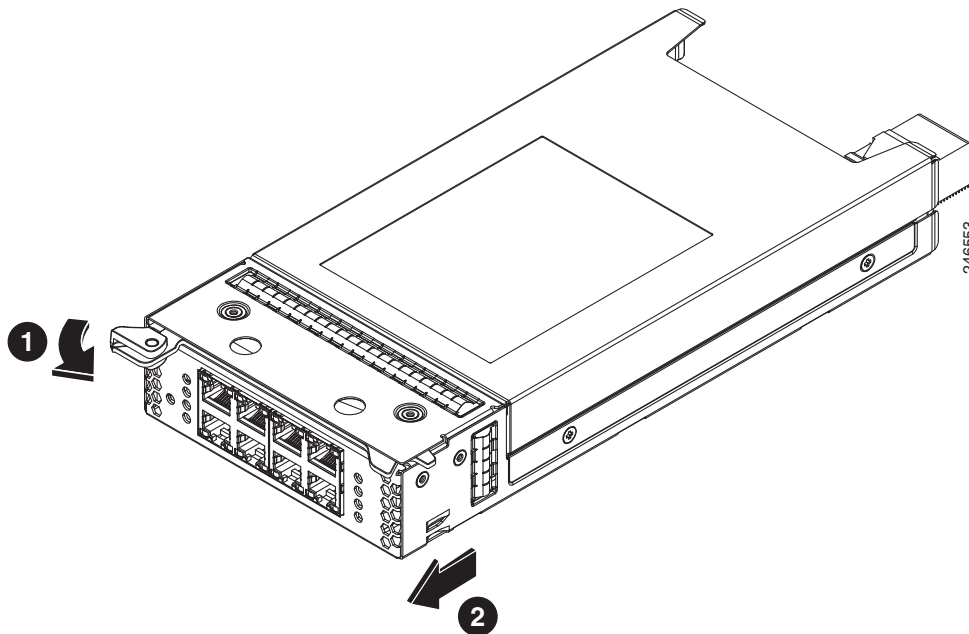


Note You must power down the appliance before installing or removing an Interface Module. Interface Modules are not hot-swappable.

- Step 3** Locate the interface module slot in the appliance chassis and slide the Cisco Interface Module into the slot until the ejector lever is seated.

To remove the Interface Module, first use the ejector lever to unlatch and then pull out the Interface Module. (See [Figure 5](#).)

Figure 5 *Interface Module—Removal*



- Step 4** Power on the appliance.
- Step 5** Configure the Interface Module. See the “[Configuring the AppNav Controller Interface Module](#)” section on page 11.
- Step 6** For information about connecting cables to the Cisco WAVE Interface Module ports, see the “[Cabling Requirements](#)” section on page 12.

Configuring the AppNav Controller Interface Module

To configure the interface module as a AppNav Controller, perform the following tasks.



Note

Use the console port serial to directly access the Cisco WAAS device.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **device mode appnav-controller**
4. **end**
5. **write memory**
6. **reload**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: WAE> enable	Enables privileged EXEC mode.
Step 2	configure terminal Example: WAE# configure terminal	Enters global configuration mode.
Step 3	device mode appnav controller Example: WAE(config)# device mode appnav-controller	Specifies that the Cisco WAAS device will function as an AppNav Controller.
Step 4	end Example: WAE(config)# end	Returns to privileged EXEC mode
Step 5	write memory Example: WAE> write memory	Saves the startup configuration on the Cisco WAAS device.
Step 6	reload Example: WAE> reload	Reloads and restarts the Cisco WAAS device.

Cabling Requirements

This section contains the following topics:

- [Gigabit Ethernet—Copper, page 12](#)
- [Gigabit Ethernet—Fiber Optic, page 14](#)
- [Connecting the AppNav Controller Interface Module, page 15](#)

Gigabit Ethernet—Copper

The AppNav-IOM ships with two types of cables: crossover and straight-through. When you connect the WAVE AppNav-IOM, the cable that you use depends on the link speed (Gigabit Ethernet or Fast Ethernet) and the types of devices (DCE or DTE) being connected.



Note

You must retain the same link speed from one end of the connection to the other end. AppNav-IOM are able to autonegotiate link speeds. If you configure any of your connecting interfaces for Fast Ethernet (whether on a switch or a router), your AppNav-IOM uses Fast Ethernet. If you configure any of your connecting interfaces for Gigabit Ethernet, your AppNav-IOM uses Gigabit Ethernet. Speed and duplex settings are port specific so that two inline ports can negotiate different speeds independently.

If you are connecting an AppNav-IOM between two devices using Gigabit Ethernet, you can use either straight-through cables, crossover cables, or any combination of the two cable types, regardless of the type of device. However, for consistency, we recommend that you use straight-through cables for all Gigabit Ethernet connections.

[Table 4](#) shows the cable requirements for WAVE appliance and non-WAVE appliance connections when you are using Gigabit Ethernet end to end.

Table 4 Cable Requirements for WAVE Connections Using Gigabit Ethernet

Connection	Required Cable
Switch to switch (no WAVE)	Crossover or straight-through
Switch to router (no WAVE)	Crossover or straight-through
Router to router (no WAVE)	Crossover or straight-through
Switch to WAVE and	Crossover or straight-through
WAVE to Router	Crossover or straight-through
Switch to WAVE and	Crossover or straight-through
WAVE to Switch	Crossover or straight-through
Router to WAVE and	Crossover or straight-through
WAVE to Router	Crossover or straight-through
WAVE to WAVE	Crossover or straight-through

Some switches support automatic medium-dependent interface crossover (MDIX). You can configure MDIX by using the **mdix auto** global configuration switch command. If your switch supports MDIX, you do not need to follow these cabling rules because MDIX automatically adjusts transmit and receive

pairs when an incorrect cable type (crossover or straight-through) is installed on a 10/100 Fast Ethernet port. However, when you configure MDIX, you must also configure the port to use autosense (not manual selection of speed/duplex).

**Caution**

If you are connecting to Fast Ethernet ports on both the LAN and the WAN sides of the AppNav-IOM, you must consider the types of devices that are being connected, and you must use the correct cables. You must follow these cabling instructions for the AppNav-IOM controller to work properly. (See [Table 5](#). For illustrations and examples, see the “Installation Scenarios and Cabling Examples for Fast Ethernet Connections” section in the *Cisco Wide Area Virtualization Engine 7541, 7571, and 8541 Hardware Installation Guide*.

To connect the AppNav-IOM controller using the correct cables for Fast Ethernet connections, follow these steps:

Step 1

Determine the type of cable that you would use for a direct connection between your two end devices (without a AppNav-IOM connected between them) by using the following standard cabling rules:

- When you are directly connecting two network devices that are similar, such as two switches, use a crossover cable.
- When you are directly connecting two network devices that are different, such as a switch and router, use a straight-through cable.

**Note**

Because the AppNav-IOM has an internal crossover connection that becomes active when the InlineGroup interface is placed in mechanical bypass mode, you must decide which cable you would use to connect the two network devices directly, and then you must install the other cable type (on one side, usually the WAN side of the AppNav-IOM) instead.

[Table 5](#) shows the cable requirements for WAVE and non-WAVE connections when you are using Fast Ethernet end to end.

Table 5 Cable Requirements for WAVE Connections Using Fast Ethernet

Connection	Required Cable
Switch to switch (no WAVE)	Crossover
Switch to router (no WAVE)	Straight-through
Router to router (no WAVE)	Crossover
Switch to WAVE and	Straight-through
WAVE to Router	Crossover
Switch to WAVE and	Straight-through
WAVE to Switch	Straight-through

Table 5 Cable Requirements for WAVE Connections Using Fast Ethernet (continued)

Connection	Required Cable
Router to WAVE and	Straight-through
WAVE to Router	Straight-through
WAVE to WAVE	Crossover

Step 2 Connect Fast Ethernet ports on both the LAN and the WAN sides of the AppNav-IOM by using the following cable types:

- On the LAN side of the connection, use a straight-through cable between the AppNav-IOM and the network device.
- On the WAN side of the connection, use the cable that is different from the cable that you would use to connect the two network devices directly (as determined in [Step 1](#)).

For example, if you are connecting a router and a switch (two different devices) through the AppNav-IOM, use a straight-through cable on the LAN side of the connection and use a crossover cable on the WAN side of the connection. (If you were connecting the two different devices directly, you would use a straight-through cable, so use the crossover cable instead.)

If you are connecting two switches (or two similar devices), use straight-through cables on both the LAN and the WAN sides of the AppNav-IOM.

For more information on the type of cables to use for the WAVE LAN and WAN connections between Fast Ethernet ports, see the “Installation Scenarios and Cabling Examples for Fast Ethernet Connections” section in the *Cisco Wide Area Virtualization Engine 7541, 7571, and 8541 Hardware Installation Guide*.

Gigabit Ethernet—Fiber Optic

The following three SFP+ pluggable transceiver modules are supported for use with the 2-port Fiber Optic 10 Gigabit Ethernet Interface Module:

- SFP-10G-SR—Short range fiber xcvr
- SFP-10G-LR—Long range fiber xcvr
- SFP-H10G-CU3M— Three meter captive copper cable with xcvs
- SFP-H10G-CU5M— Five meter captive copper cable with xcvs

Transceivers not supported will be rejected by the software.

For fiber cable length reach and IEEE standards for the supported transceivers, refer to the pluggable 10G optics data sheet on Cisco.com:

http://www.cisco.com/en/US/prod/collateral/modules/ps5455/data_sheet_c78-455693.html

Optical reach is 137 m (449 ft) to any individual port. This allows for a total of 274 m (899 ft) when operating in bypass mode.

Connecting the AppNav Controller Interface Module

The AppNav Cluster Wizard has four predefined deployment models to assist you in configuring an interception method.



Note

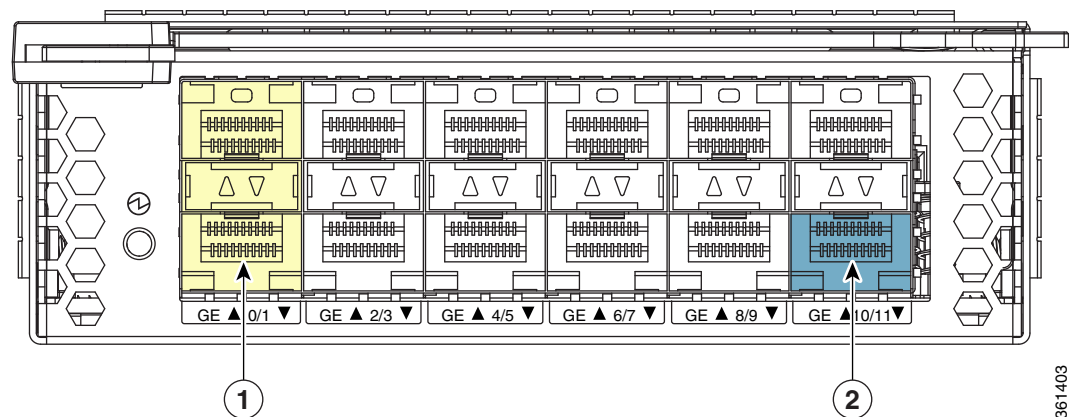
If you are deploying one of the four predefined interception method, you must first connect devices to the AppNav IOM before you configure the interface with AppNav Cluster Wizard. Otherwise, you should choose the custom configuration option in the AppNav Cluster Wizard.

- [Single AppNav Controller Inline Interception, page 15](#)
- [Single AppNav Controller WCCP Interception, page 15](#)
- [Dual AppNav Controllers Inline Interception, page 16](#)
- [Dual AppNav Controller WCCP Interception, page 17](#)

Single AppNav Controller Inline Interception

Figure 6 shows the port connections to use for a Single AppNav Controller Inline Interception deployment.

Figure 6 Single AppNav Controller Inline Deployment on a 12-port AppNav IOM

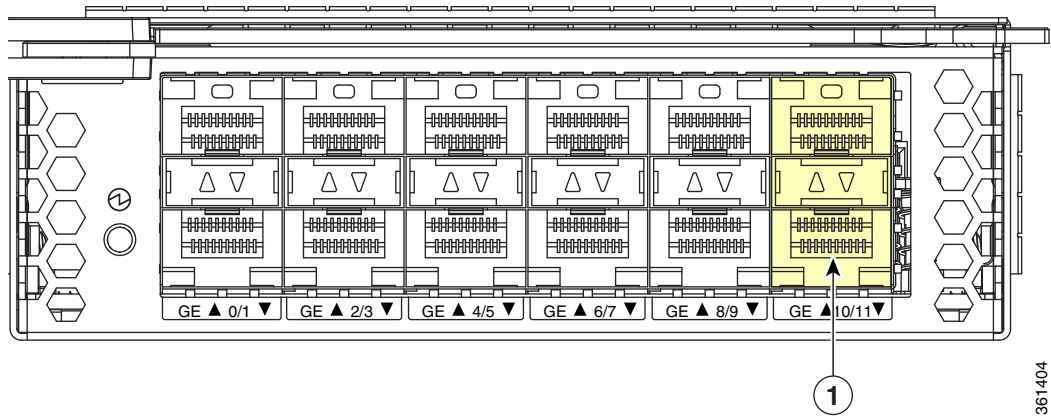


1	Inline Interception Bridge—Gigabit Ethernet Ports 0 and 1	2	Cluster Interface—Gigabit Ethernet Port 11
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Single AppNav Controller WCCP Interception

Figure 7 shows the port connections to use for a Single AppNav Controller WCCP Interception deployment. on a 12-port AppNav IOM.

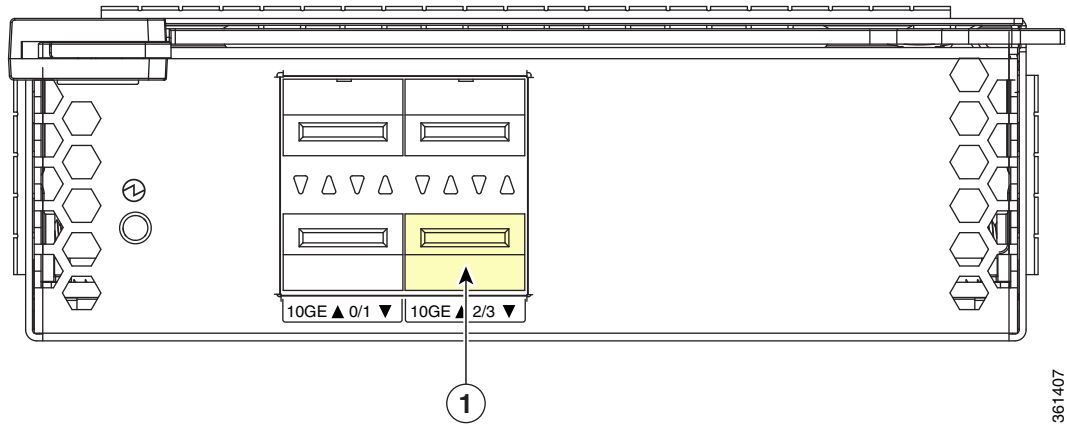
Figure 7 Single AppNav Controller WCCP Interception Deployment on a 12-port AppNav IOM



- | | |
|---|--|
| 1 | Cluster Interface (Port Channel 1)—Gigabit Ethernet Ports 10 and 11. |
|---|--|

Figure 8 shows the port connections for a Single AppNav Controller WCCP Interception deployment on the 4-port AppNav IOM.

Figure 8 Single AppNav Controller WCCP Interception Deployment on a 4-Port AppNav IOM

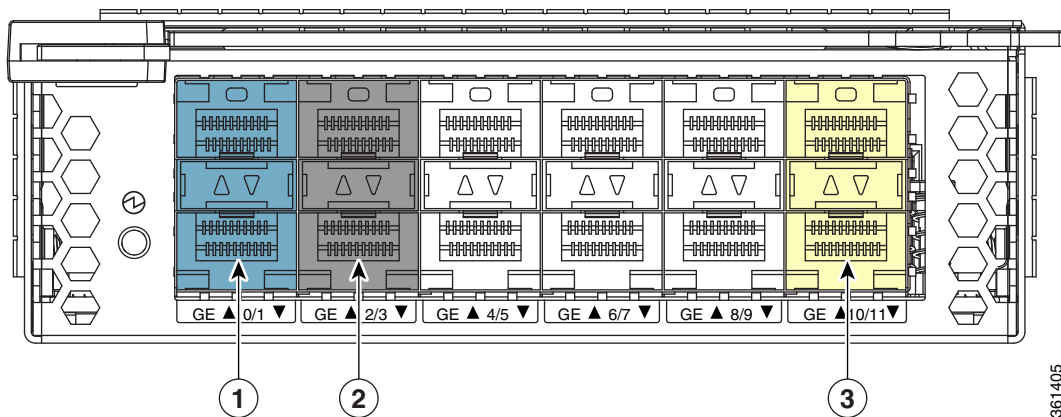


- | | |
|---|---|
| 1 | Cluster Interface—Gigabit Ethernet Port 3 |
|---|---|

Dual AppNav Controllers Inline Interception

Figure 9 shows the port connections to use for a Dual AppNav Controller Inline Interception deployment on a 12-port AppNav IOM.

Figure 9 Dual AppNav Controller Inline Deployment on a 12-port AppNav IOM

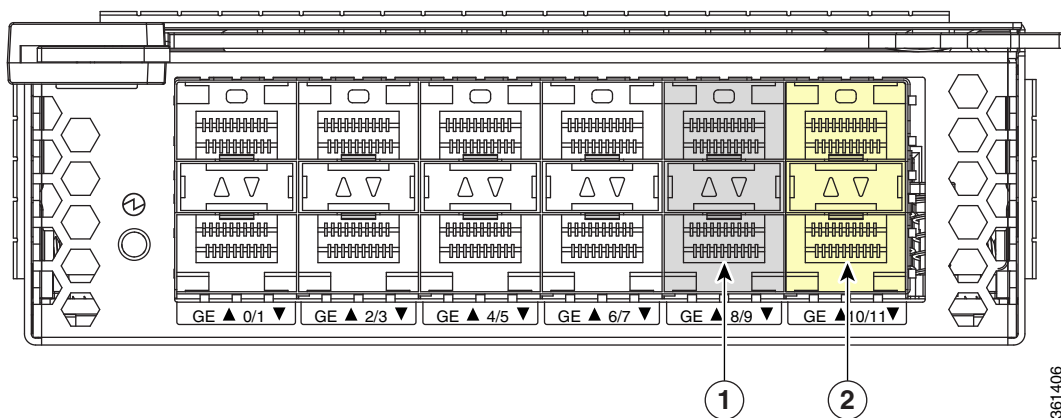


1	Inline Interception Bridge 1—Gigabit Ethernet Ports 0 and 1	2	Inline Interception Bridge 2—Gigabit Ethernet Port 2 and 3
3	Cluster Interface (Standby Group 1)—Gigabit Ethernet Ports 10 and 11 (Primary)		

Dual AppNav Controller WCCP Interception

Figure 10 shows the port connections to use for a Dual AppNav Controller WCCP Interception deployment. on a 12-port AppNav IOM.

Figure 10 Dual AppNav Controller WCCP Deployment on a 12-port AppNav IOM

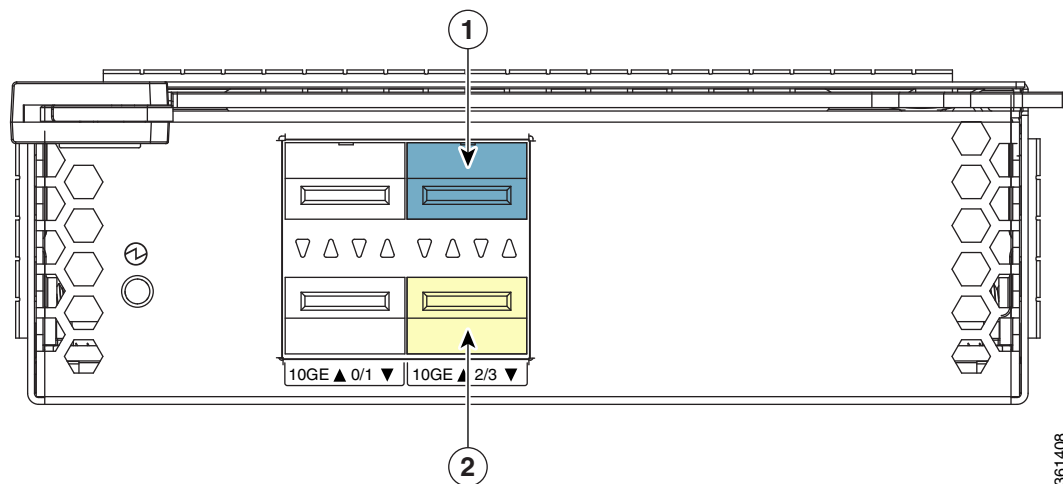


1	Cluster Interface (Port Channel 2) —Gigabit Ethernet Ports 8 and 9 ¹	2	Cluster Interface (Port Channel 1)—Gigabit Ethernet Ports 10 and 11(Primary) ¹
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1. The Standby Group 1 contains interface port channel 1 and port channel 2.

Figure 11. shows the port connections to use for a Dual AppNav Controller WCCP Interception deployment. on a 4-port AppNav IOM.

Figure 11 Dual AppNav Controller WCCP Deployment on a 4-port AppNav IOM



1	Cluster Interface (Standby Group1)—Gigabit Ethernet Port 2	2	Cluster Interface (Standby Group1)—Gigabit Ethernet Port 3 (Primary)
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Related Documentation

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

- [Cisco Wide Area Application Services Upgrade Guide](#)
- [Cisco Wide Area Application Services Quick Configuration Guide](#)
- [Cisco Wide Area Application Services Configuration Guide](#)
- [Cisco Wide Area Application Services Command Reference](#)
- [Cisco Wide Area Application Services API Reference](#)
- [Cisco Wide Area Application Services Monitoring Guide](#)
- [Cisco Wide Area Application Services vWAAS Installation and Configuration Guide](#)
- [Cisco WAAS Installation and Configuration Guide for Windows on a Virtual Blade](#)
- [Configuring WAAS Express](#)
- [Cisco WAAS Troubleshooting Guide for Release 4.1.3 and Later](#)
- [Cisco WAAS on Service Modules for Cisco Access Routers](#)
- [Cisco SRE Service Module Configuration and Installation Guide](#)
- [Configuring Cisco WAAS Network Modules for Cisco Access Routers](#)
- [WAAS Enhanced Network Modules](#)
- [Cisco Wide Area Application Services Online Help](#)

- [Regulatory Compliance and Safety Information for the Cisco Wide Area Virtualization Engines](#)
- [Cisco Wide Area Virtualization Engine 294 Hardware Installation Guide](#)
- [Cisco Wide Area Virtualization Engine 594 and 694 Hardware Installation Guide](#)
- [Cisco Wide Area Virtualization Engine 7541, 7571, and 8541 Hardware Installation Guide](#)
- [Cisco Wide Area Virtualization Engine 274 and 474 Hardware Installation Guide](#)
- [Cisco Wide Area Virtualization Engine 574 Hardware Installation Guide](#)
- [Regulatory Compliance and Safety Information for the Cisco Content Networking Product Series](#)
- [Cisco Wide Area Application Engine 7341, 7371, and 674 Hardware Installation Guide](#)
- [Installing the Cisco WAE Inline Network Adapter](#)

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

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