WCCP with Generic GRE Support

Extended Web Cache Communication Protocol (WCCP) supports multipoint generic routing encapsulation (mGRE) return method on Cisco IOS devices. GRE-negotiated return is not supported on the Cisco Wide Area Application Services (WAAS) AppNav I/O module (IOM), customers need to use generic GRE tunnels (multipoint GRE) on the devices.

- Restrictions for WCCP with Generic GRE Support, on page 1
- Information About WCCP with Generic GRE Support, on page 1
- How to Configure WCCP with Generic GRE Support, on page 2
- Configuration Examples for WCCP with Generic GRE Support, on page 7
- Additional References for WCCP with Generic GRE Support, on page 9
- Feature Information for WCCP with Generic GRE Support, on page 9

Restrictions for WCCP with Generic GRE Support

- Generic GRE tunnel does not work with a loopback source address. Because the highest numbered loopback is reserved for WCCP, customers need to use the second highest loopback address.
- WCCP traffic redirection does not work when a zone-based policy firewall is configured on a Cisco Aggregation Services Router that is configured with Cisco AppNav I/O modules. Cisco AppNav is a wide-area networking optimization solution. For WCCP traffic redirection to work, remove the zone-based policy firewall configuration from interfaces. If you are using a WAVE device, WCCP traffic redirection works correctly.
- Static and dynamic NAT with generic GRE and dynamic NAT with Layer 2 do not work when used with hardware-based Cisco AppNav appliances (for example, Wide Area Application Services [WAAS]).

Information About WCCP with Generic GRE Support

WCCP with Generic GRE Support

The generic routing encapsulation (GRE) negotiated return is not supported on AppNav I/O Module (IOM), the customers need to use Generic GRE tunnels (multipoint GRE [mGRE]) on devices. That is, a mGRE tunnel needs to be configured manually on the router if the AppNav is configured with Generic GRE return method.

Note If two multipoint generic routing encapsulation (mGRE) tunnels are configured (one programmatically generated and the other manually created) on a device, and have the same key or exist in the same VRF, do one of the following:

- Configure both tunnels with different loopback addresses.
- Configure a physical interface on manually created tunnel, and configure a loopback address on the programmatically generated tunnel.

This feature focuses on the interactions between AppNav IOM and the router. The Cisco Wide Area Application Services (WAAS) AppNav must be configured as a device mode application-accelerator and interception method WCCP.

Cisco WAAS AppNav Solution

Cisco Wide Area Application Services (WAAS) AppNav is a hardware and software solution that simplifies network integration of WAN optimization. It also overcomes the challenges related to provisioning, visibility, scalability, asymmetry, and high availability. Only a Wide Area Virtualization Engine (WAVE) appliance that contains a Cisco AppNav Controller (ANC) Interface Module can operate as an ANC. AppNav is configured as Web Cache Communication Protocol (WCCP) client of the router.

For more information on Cisco WAAS AppNav and how to configure Cisco WAAS AppNav, see "Configuring AppNav" chapter in *Cisco Wide Area Application Services Configuration Guide*.

How to Configure WCCP with Generic GRE Support

Configure WCCP Redirection with Generic GRE Configured on the Device Using a Loopback Interface

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface loopback** *loopback-nterface-number*
4. **ip address** *ip-address subnet-mask*
5. **no shutdown**
6. **exit**
7. **interface loopback** *loopback-interface-number*
8. **ip address** *ip-address subnet-mask*
9. **no shutdown**
10. **exit**
11. **ip wccp source-interface loopback** *loopback-interface-number*
12. **interface Tunnel** *tunnel-interface-number*
13. **ip address** *ip-address subnet-mask*

14. **no shutdown**
15. **no ip redirects**
16. **ip wccp redirect exclude in**
17. **tunnel source loopback** *loopback-interface-number*
18. **tunnel mode gre multipoint**
19. **end**
20. **show ip wccp summary**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**interface loopback** *loopback-nterface-number* **Example:** `Device(config)# interface loopback 100`	Enters interface configuration for the device.
Step 4	**ip address** *ip-address subnet-mask* **Example:** `Device(config-if)# ip address 10.10.10.1 255.255.255.255`	Sets a primary IP address for the loopback interface.
Step 5	**no shutdown** **Example:** `Device(config-if)# no shutdown`	Restarts the loopback interface if the interface is down.
Step 6	**exit** **Example:** `Device(config-if)# exit`	Returns to global configuration mode.
Step 7	**interface loopback** *loopback-interface-number* **Example:** `Device(config)# interface loopback 1000`	Enters interface configuration for the device.

	Command or Action	Purpose
Step 8	**ip address** *ip-address subnet-mask* **Example:** `Device(config-if)# ip address 10.11.10.1 255.255.255.255`	Sets a primary IP address for the loopback interface.
Step 9	**no shutdown** **Example:** `Device(config-if)# no shutdown`	Restarts the loopback interface if the interface is down.
Step 10	**exit** **Example:** `Device(config-if)# exit`	Returns to global configuration mode.
Step 11	**ip wccp source-interface loopback** *loopback-interface-number* **Example:** `Device(config)# ip wccp source-interface loopback 1000`	Configures a preferred Web Cache Communication Protocol (WCCP) router ID.
Step 12	**interface Tunnel** *tunnel-interface-number* **Example:** `Device(config)# interface Tunnel 10`	Enters tunnel interface configuration mode.
Step 13	**ip address** *ip-address subnet-mask* **Example:** `Device(config-if)# ip address 10.10.20.1 255.255.255.0`	Sets a primary IP address for the tunnel interface.
Step 14	**no shutdown** **Example:** `Device(config-if)# no shutdown`	Restarts the tunnel interface if the interface is down.
Step 15	**no ip redirects** **Example:** `Device(config-if)# no ip redirects`	Disables the sending of ICMP redirect messages to learn routes. This command is enabled by default.
Step 16	**ip wccp redirect exclude in** **Example:** `Device(config-if)# ip wccp redirect exclude in`	Specifies that packets received on this interface be excluded from any egress redirection.

	Command or Action	Purpose
Step 17	**tunnel source loopback** *loopback-interface-number* **Example:** `Device(config-if)# tunnel source loopback 100`	Configures the loopback interface as the tunnel source.
Step 18	**tunnel mode gre multipoint** **Example:** `Device(config-if)# tunnel mode gre multipoint`	Sets the global encapsulation mode on all interfaces of a device to generic routing encapsulation (GRE).
Step 19	**end** **Example:** `Device(config-if)# end`	Returns to privileged EXEC mode.
Step 20	**show ip wccp summary** **Example:** `Device# show ip wccp summary`	Displays a summary of WCCP services.

Configure WCCP Redirection with Generic GRE Configured on a Device Using a Physical Interface

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface GigabitEthernet** *interface-id*
4. **ip address** *ip-address subnet-mask*
5. **no shutdown**
6. **exit**
7. **interface Tunnel** *tunnel-interface-number*
8. **ip address** *ip-address subnet-mask*
9. **no shutdown**
10. **no ip redirects**
11. **ip wccp redirect exclude in**
12. **tunnel source GigabitEthernet** *interface-id*
13. **tunnel mode gre multipoint**
14. **end**
15. **show ip wccp summary**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**interface GigabitEthernet** *interface-id* **Example:** `Device(config)# interface GigabitEthernet0/0/1`	Enters interface configuration for the device.
Step 4	**ip address** *ip-address subnet-mask* **Example:** `Device(config-if)# ip address 10.10.10.1 255.255.255.0`	Sets a primary IP address for the loopback interface.
Step 5	**no shutdown** **Example:** `Device(config-if)# no shutdown`	Restarts the loopback interface if the interface is down.
Step 6	**exit** **Example:** `Device(config-if)# exit`	Returns to global configuration mode.
Step 7	**interface Tunnel** *tunnel-interface-number* **Example:** `Device(config)# interface Tunnel 10`	Enters tunnel interface configuration mode.
Step 8	**ip address** *ip-address subnet-mask* **Example:** `Device(config-if)# ip address 10.10.20.1 255.255.255.0`	Sets a primary IP address for the tunnel interface.
Step 9	**no shutdown** **Example:** `Device(config-if)# no shutdown`	Restarts the tunnel interface if the interface is down.

	Command or Action	Purpose
Step 10	**no ip redirects** **Example:** `Device(config-if)# no ip redirects`	Disables the sending of ICMP redirect messages to learn routes. This command is enabled by default.
Step 11	**ip wccp redirect exclude in** **Example:** `Device(config-if)# ip wccp redirect exclude in`	Specifies that packets received on this interface be excluded from any egress redirection.
Step 12	**tunnel source GigabitEthernet** *interface-id* **Example:** `Device(config-if)# tunnel source GigabitEthernet0/0/1`	Configures the loopback interface as the tunnel source.
Step 13	**tunnel mode gre multipoint** **Example:** `Device(config-if)# tunnel mode gre multipoint`	Sets the global encapsulation mode on all interfaces of a device to generic routing encapsulation (GRE).
Step 14	**end** **Example:** `Device(config-if)# end`	Returns to privileged EXEC mode.
Step 15	**show ip wccp summary** **Example:** `Device# show ip wccp summary`	Displays a summary of WCCP services.

Configuration Examples for WCCP with Generic GRE Support

Example: Configure WCCP Redirection with Generic GRE Configured on Device Using a Loopback Interface

The following example shows how to configure Web Cache Communication Protocol (WCCP) redirection on the device using loopback interface when generic routing encapsulation (GRE) is enabled on the Cisco Wide Area Application Services (WAAS) AppNav:

```
Device> enable
Device# configure terminal
Device(config)#  interface loopback 100
Device(config-if)#  ip address 10.10.10.1 255.255.255.255
Device(config-if)#  no shutdown
```

```
Device(config-if)#  exit
Device(config)#  interface loopback 1000
Device(config-if)#  ip address 10.11.10.1 255.255.255.255
Device(config-if)#  no shutdown
Device(config-if)#  exit
Device(config)#  ip wccp source-interface loopback 1000
Device(config)#  interface Tunnel 10
Device(config-if)#  ip address 10.12.10.1 255.255.255.0
Device(config-if)#  no shutdown
Device(config-if)#  no ip redirects
Device(config-if)#  ip wccp redirect exclude in
Device(config-if)#  tunnel source loopback 100
Device(config-if)#  tunnel mode gre multipoint
Device(config-if)#  end
Device# show ip wccp summary

WCCP version 2 enabled, 2 services

Service  Clients  Routers  Assign  Redirect  Bypass
-------  -------  -------  ------  --------  ------
Default  routing  table  (Router Id: 10.10.10.1):
61          1      1       MASK   GRE     GRE
62          1      1       MASK   GRE     GRE
```

Example: Configure WCCP Redirection with Generic GRE Configured on a Device Using a Physical Interface

The following example shows how to configure Web Cache Communication Protocol (WCCP) redirection on the device using a physical interface when generic routing encapsulation (GRE) is enabled on the Cisco Wide Area Application Services (WAAS) AppNav:

```
Device> enable
Device# configure terminal
Device(config)#  interface GigabitEthernet0/0/1
Device(config-if)# ip address 10.12.10.1 255.255.255.0
Device(config-if)# no shutdown
Device(config-if)# exit
Device(config)# interface Tunnel 10
Device(config-if)# ip address 10.13.10.1 255.255.255.0
Device(config-if)# no ip redirects
Device(config-if)# ip wccp redirect exclude in
Device(config-if)# tunnel source GigabitEthernet0/0/1
Device(config-if)# tunnel mode gre multipoint
Device(config-if)# end
Device# show ip wccp summary

WCCP version 2 enabled, 2 services

Service  Clients  Routers  Assign  Redirect  Bypass
-------  -------  -------  ------  --------  ------
Default  routing  table   (Router Id: 10.10.10.1):
61          1      1       MASK      GRE     GRE
62          1      1       MASK      GRE     GRE
```

Additional References for WCCP with Generic GRE Support

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Commands List, All Releases
IP addressing and services commands and configuration tasks	• IP Addressing: IPv4 Addressing Configuration Guide • Cisco IOS IP Addressing Services Command Reference
WCCP commands: complete command syntax, command mode, command history, defaults, usage guidelines, and examples	Cisco IOS IP Application Services Command Reference

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for WCCP with Generic GRE Support

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 1: Feature Information for WCCP with Generic GRE Support

Feature Name	Releases	Feature Information
WCCP with Generic GRE Support	Cisco IOS XE Release 3.10.2	This feature provides extended WCCP support to use Generic GRE tunnels (multipoint GRE) on the devices when generic routing encapsulation (GRE) negotiated return is not supported on AppNav I/O Module (IOM).