Compact GARP VLAN Registration Protocol

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The Compact (c) Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) feature reduces CPU time for transmittal of 4094 VLAN states on a port.

Finding Feature Information in This Module

Your Cisco IOS software release may not support all of the features documented in this module. To reach links to specific feature documentation in this module and to see a list of the releases in which each feature is supported, use the "Feature Information for cGVRP" section on page 31.

Finding Support Information for Platforms and Cisco IOS and Catalyst OS Software Images

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

Contents

Restrictions for cGVRP

- A device other than a Cisco device can only interoperate with a Cisco device through .1Q trunks.

Americas Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

- VLAN mapping is not supported with GVRP.
- cGVRP and Connectivity Fault Management (CFM) can coexist but if the line card (LC) or supervisor does not have enough mac-match registers to support both protocols, the cGVRP ports on those LCs are put in error disabled state. To use Layer 2 functionality, disable cGVRP on those ports and configure shut/no shut.
- cGVRP functionality applies only to interfaces configured for Layer 2 (switchport) functionality.
- Native VLAN tagging causes frames sent to the native VLAN of the .1Q trunk ports to be encapsulated with .1Q tags. Problems may arise with other GVRP participants on the LAN if they cannot admit tagged GVRP Protocol Data Unit (PDU)s. Caution must be exercised if both features are enabled at the same time.
- 802.1X authentication and authorization takes place after the port becomes link-up and before the Dynamic Trunking Protocol (DTP) negotiations start prior to GVRP running on the port.
- Port security works independently from GVRP and it may be limited to the number of other GVRP participants on a LAN with which a GVRP enabled port on a device can communicate.
- GVRPs cannot be configured and run on a subinterface.
- GVRP and UniDirectional Link Routing (UDLR) should not be enabled on the same interface because UDLR limits frames in one direction on the port and GVRP is a two way communication protocol.
- Additional memory is required to store GARP/GVRP configurations and states per GVRP enabled port, but it can be dynamically allocated on demand.
- GARP Multicast Registration Protocol (GMRP) is not supported.

Information About cGVRP

To configure cGVRP, you should understand the following concepts:

- GARP/GVRP Definition, page 2
- cGVRP Overview, page 2
- GVRP Interoperability with VTP and VTP Pruning, page 3
- GVRP interoperability with Other Software Features and Protocols, page 3

GARP/GVRP Definition

GVRP enables automatic configuration of switches in a VLAN network allowing network devices to dynamically exchange VLAN configuration information with other devices. GVRP is based on GARP which defines procedures for registering and deregistering attributes with each other, eliminating unnecessary network traffic by preventing attempts to transmit information to unregistered users.

GVRP is defined in IEEE 802.1Q.

cGVRP Overview

GVRP is a protocol that requires extensive CPU time in order to transmit all 4094 VLAN states on a port. In Compact mode only one PDU is sent and it includes the states of all the 4094 VLANs on a port.

VLAN pruning can be accomplished more quickly by running in a special mode, Fast Compact Mode, and on point-to-point links.

In Compact GVRP a GVRP PDU may be sent from the port if the port is in a forwarding state of a spanning tree instance. GVRP PDUs must be transmitted in the native VLAN of .1Q trunks.

GVRP Interoperability with VTP and VTP Pruning

VLAN Trunk Protocol (VTP) Pruning is an extension of VTP. It has its own Join message that can be exchanged with VTP PDUs. VTP PDUs can be transmitted on both .1Q trunks and Inter-Switch Link (ISL) trunks. A VTP capable device is in either one of the three VTP modes: Server, Client, or Transparent.

When VTP Pruning and GVRP are both enabled globally, VTP Pruning is run on ISL trunks, and GVRP is run on .1Q trunks.

Compact GVRP has two modes: Slow Compact Mode, and Fast Compact Mode. A port can be in Fast Compact Mode if it has one GVRP enabled peer on the same LAN segment and if the peer is capable of operating in Compact Mode. A port is in Slow Compact Mode if there are multiple GVRP participants on the same LAN segment operating in Compact Mode.

GVRP interoperability with Other Software Features and Protocols

STP

Spanning Tree Protocol (STP) may run in one of the three STP modes: Multiple Spanning Tree (MST), Per VLAN Spanning Tree (PVST), or Rapid PVST. An STP mode range causes the forwarding ports to leave the forwarding state as STP has to reconverge. The need to reconverge may cause GVRP to have its own topology change because Join messages may be received on some new ports and Leave timers may expire on some others.

DTP

Dynamic Trunking Protocol (DTP) negotiates the port mode (trunk vs. nontrunk and the trunk encapsulation type between two DTP enabled ports. After negotiation DTP may set the port to either ISL trunk, or .1Q trunk, or nontrunk. DTP negotiation occurs after ports become link-up and before they become forwarding in spanning trees. If GVRP is administratively enabled on a port and the device, it should be initialized after the port is negotiated to be a .1Q trunk.

VTP

VTP version 3 expands the range of VLANs that can be created and removed via VTP. VTP Pruning is available for VLAN states 1 to 1005 only.

EtherChannel

When multiple .1Q trunk ports are grouped by either Port Aggregation Protocol (PAgP) or Link Aggregation Control Protocol (LACP) to become an EtherChannel, the EtherChannel can be configured as a GVRP participant. The physical ports in the EtherChannel cannot be GVRP participants by

themselves. Since an EtherChannel is treated like one virtual port by STP, the GVRP application can learn the STP state change of the EtherChannel just like any physical port. The EtherChannel, not the physical ports in the channel, constitutes the GARP Information Propagation (GIP) context.

High Availability

High Availability (HA) is a redundancy feature in Cisco IOS software. On platforms that support HA and State SwitchOver (SSO), many features and protocols may resume working in a couple of seconds after the system encounters a failure such as a crash of the active supervisor in a Catalyst 7600 switch. GVRP needs to be configured to enable user configurations, and protocol states should be synched to a standby system. If there is a failure of the active system, the GVRP in the standby system, which now becomes active, has all the up-to-date VLAN registration information.

How to Configure cGVRP

This procedure contains the following tasks:

Configuring Compact GVRP

To configure compact GVRP, perform the following task.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **gvrp global**
4. **interface** *type number*
5. **gvrp timer join** *timer-value*
6. **gvrp registration normal**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**grvp global** **Example:** `Router(config)# gvrp global`	Configures global GVRP and enables GVRP on all .1Q trunks.
Step 4	**interface** *type number* **Example:** `Router(config)# interface GigabitEthernnet 12/15`	Exits configuration mode.
Step 5	**gvrp timer join** *timer-value* **Example:** `Router(config-if)# gvrp timer join 1000`	Sets the period timers.
Step 6	**gvrp registration normal** **Example:** `Router(config-if)# gvrp registration normal`	Sets the registrar for normal response to incoming GVRP messages.

Disabling MAC Learning on VLANs

To disable MAC learning on VLANs, perform the following task.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **gvrp mac-learning auto**
4. **exit**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**gvrp mac-learning auto** **Example:** `Router(config)# gvrp mac-learning auto`	Disables learning of MAC entries.
Step 4	**exit** **Example:** `Router(config)# exit`	Exits global configuration mode.

Enabling a Dynamic VLAN

To enable a dynamic VLAN, perform the following task.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **gvrp vlan create**
4. **exit**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.

	Command or Action	Purpose
Step 3	**gvrp vlan create** **Example:** `Router(config)# gvrp vlan create`	Enables a dynamic VLAN when cGRVP is configured.
Step 4	**exit** **Example:** `Router(config)# exit`	Exits global configuration mode.

Troubleshooting the cGVRP Configuration

Perform this task to troubleshoot the cGVRP configuration.

SUMMARY STEPS

1. **enable**
2. **show gvrp summary**
3. **show gvrp interface**
4. **debug gvrp**
5. **clear gvrp statistics interface** *number*

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**show gvrp summary** **Example:** `Router# show gvrp summary`	Displays the GVRP configuration information.
Step 3	**show gvrp interface** **Example:** `Router# show gvrp interface`	Displays information about the GVRP interface states.

	Command or Action	Purpose
Step 4	**debug gvrp** **Example:** `Router# debug gvrp`	Use the debug gvrp command to enable all or limited output messages with respect to an interface.
Step 5	**clear gvrp statistics interface** *number* **Example:** `Router# clear gvrp statistics interface 12/15`	Clears GVRP statistics on all interfaces.

Configuration Examples for cGVRP

This section provides the following configuration examples:

Verifying CE Ports Configured as Access Ports: Example

Topology:

CE1 - gi3/15 R1 gi3/1 - dot1q trunk - gi3/1 R2 gi12/15 - CE2

```
R1# show running-config interface GibabitEthernet3/15
Building configuration...

Current configuration : 129 bytes
!
interface GigabitEthernet3/15
 switchport
 switchport access vlan 2
 switchport mode access
 spanning-tree portfast trunk
end

R1# show running-config interface GigabitEthernet3/1
Building configuration...

Current configuration : 109 bytes
!
interface GigabitEthernet3/1
 switchport
 switchport trunk encapsulation dot1q
```

```
 switchport mode trunk
end

R2# show running-config interface GigabitEthernet12/15
Building configuration...

Current configuration : 168 bytes
!
interface GigabitEthernet12/15
 switchport
 switchport access vlan 2
 switchport trunk encapsulation dot1q
 switchport mode access
 spanning-tree portfast trunk
end

R2# show running-config interface GigabitEthernet3/1
Building configuration...

Current configuration : 144 bytes
!
interface GigabitEthernet3/1
 switchport
 switchport trunk encapsulation dot1q
 switchport mode trunk
 switchport backup interface Gi4/1
end

R1# show gvrp summary

GVRP global state           : enabled
GVRP VLAN creation          : disabled
VLANs created via GVRP      : none
MAC learning auto provision : disabled
Learning disabled on VLANs  : none

R1# show gvrp interface

Port      Status    Mode            Registrar State
Gi3/1     on        fastcompact        normal

Port      Transmit Timeout   Leave Timeout   Leaveall Timeout
Gi3/1     200                600             10000

Port      Vlans Declared
Gi3/1     2

Port      Vlans Registered
Gi3/1     2

Port      Vlans Registered and in Spanning Tree Forwarding State
Gi3/1     2

R2# show gvrp summary

GVRP global state           : enabled
GVRP VLAN creation          : disabled
VLANs created via GVRP      : none
MAC learning auto provision : disabled
Learning disabled on VLANs  : none

R2# show gvrp interface

Port      Status    Mode            Registrar State
```

```
Gi3/1     on        fastcompact        normal

Port      Transmit Timeout   Leave Timeout   Leaveall Timeout
Gi3/1     200                600             10000

Port      Vlans Declared
Gi3/1     2

Port      Vlans Registered
Gi3/1     2

Port      Vlans Registered and in Spanning Tree Forwarding State
Gi3/1     2
```

Verifying CE Ports Configured as ISL Ports: Example

```
Topology

CE1 – gi3/15 R1 gi3/1 - dot1q trunk - gi3/1 R2 gi12/15 – CE2

R1# show running-config interface GigabitEthernet3/15
Building configuration...

Current configuration : 138 bytes
!
interface GigabitEthernet3/15
 switchport
 switchport trunk encapsulation isl
 switchport mode trunk
 spanning-tree portfast trunk
end

R1# show running-config interface GigabitEthernet3/1
Building configuration...

Current configuration : 109 bytes
!
interface GigabitEthernet3/1
 switchport
 switchport trunk encapsulation dot1q
 switchport mode trunk
end

R2# show running-config interface GigabitEthernet12/15
Building configuration...

Current configuration : 139 bytes
!
interface GigabitEthernet12/15
 switchport
 switchport trunk encapsulation isl
 switchport mode trunk
 spanning-tree portfast trunk
end

R2# show running-config interface GigabitEthernet3/1
Building configuration...

Current configuration : 144 bytes
!
interface GigabitEthernet3/1
 switchport
```

```
 switchport trunk encapsulation dot1q
 switchport mode trunk
 switchport backup interface GigabitEthernet4/1
end

R1# show gvrp summary

GVRP global state           : enabled
GVRP VLAN creation          : disabled
VLANs created via GVRP      : none
MAC learning auto provision : disabled
Learning disabled on VLANs  : none

R1# show gvrp interface

Port      Status    Mode            Registrar State
Gi3/1     on        fastcompact        normal

Port      Transmit Timeout   Leave Timeout   Leaveall Timeout
Gi3/1     200                600             10000

Port      Vlans Declared
Gi3/1     1-10

Port      Vlans Registered
Gi3/1     1-2

Port      Vlans Registered and in Spanning Tree Forwarding State
Gi3/1     1-2

R1# show vlan summary

Number of existing VLANs           : 14
 Number of existing VTP VLANs      : 14
 Number of existing extended VLANs : 0

R2# show gvrp summary

GVRP global state           : enabled
GVRP VLAN creation          : disabled
VLANs created via GVRP      : none
MAC learning auto provision : disabled
Learning disabled on VLANs  : none

R2# show gvrp interface

Port      Status    Mode            Registrar State
Gi3/1     on        fastcompact        normal

Port      Transmit Timeout   Leave Timeout   Leaveall Timeout
Gi3/1     200                600             10000

Port      Vlans Declared
Gi3/1     1-2

Port      Vlans Registered
Gi3/1     1-10

Port      Vlans Registered and in Spanning Tree Forwarding State
Gi3/1     1-2

R2# show vlan summary

Number of existing VLANs           : 6
```

```
 Number of existing VTP VLANs      : 6
 Number of existing extended VLANs : 0
```

Verifying CE Ports Configured in Fixed Registration Mode: Example

```
Router1# show running-config interface GigabitEthernet3/15
Building configuration...

Current configuration : 165 bytes
!
interface GigabitEthernet3/15
 gvrp registration fixed
 switchport
 switchport trunk encapsulation dot1q
 switchport mode trunk
 spanning-tree portfast trunk
end

Router1# show gvrp interface GigabitEthernet 3/15
Port      Status    Mode            Registrar State
Gi3/15    on        fastcompact        fixed

Port      Transmit Timeout   Leave Timeout   Leaveall Timeout
Gi3/15    200                600             10000

Port      Vlans Declared
Gi3/15    1-2

Port      Vlans Registered
Gi3/15    1-4094

Port      Vlans Registered and in Spanning Tree Forwarding State
Gi3/15    1-10
```

Verifying CE Ports Configured in Forbidden Registration Mode: Example

```
Router1# show running-config interface GigabitEthernet3/15
Building configuration...

Current configuration : 169 bytes
!
interface GigabitEthernet3/15
 gvrp registration forbidden
 switchport
 switchport trunk encapsulation dot1q
 switchport mode trunk
 spanning-tree portfast trunk
end

Router1# show gvrp interface GigabitEthernet 3/15

Port      Status    Mode            Registrar State
Gi3/15    on        fastcompact     forbidden

Port      Transmit Timeout   Leave Timeout   Leaveall Timeout
Gi3/15    200                600             10000

Port      Vlans Declared
```

```
Gi3/15    1-2

Port      Vlans Registered
Gi3/15    none

Port      Vlans Registered and in Spanning Tree Forwarding State
Gi3/15    none
```

Verifying cGVRP: Example

The following example shows how to verify the compact GVRP configuration:

```
Router# show gvrp summary

GVRP global state           : enabled
GVRP VLAN creation          : disabled
VLANs created via GVRP      : none
MAC learning auto provision : disabled
Learning disabled on VLANS  : none
```

Verifying Disabled MAC Learning on VLANs: Example

The following examples show how to verify that MAC learning has been disabled:

```
Router# show gvrp summary

GVRP global state           : enabled
GVRP VLAN creation          : enabled
VLANs created via GVRP      : 2-200
MAC learning auto provision : enabled
Learning disabled on VLANs  : 1-200

Router# show gvrp interface

Port      Status    Mode            Registrar State
Gi3/15    on        fastcompact        normal
Gi4/1     on        fastcompact        normal

Port      Transmit Timeout   Leave Timeout   Leaveall Timeout
Gi3/15    200                600             10000
Gi4/1     200                600             10000

Port      Vlans Declared
Gi3/15    1-200
Gi4/1     none

Port      Vlans Registered
Gi3/15    none
Gi4/1     1-200

Port      Vlans Registered and in Spanning Tree Forwarding State
Gi3/15    none
Gi4/1     1-200

Router# show mac-learning
Legend: * - primary entry
        age - seconds since last seen
        n/a - not available

  vlan   mac address     type    learn     age              ports
```

```
------+---------------+--------+-----+----------+-------------------------
No entries present.
```

Verifying Dynamic VLAN: Example

The following examples show how to verify the GVRP summary and interface:

```
Router# show gvrp summary

GVRP global state           : enabled
GVRP VLAN creation          : enabled
VLANs created via GVRP      : 2-200
MAC learning auto provision : disabled
Learning disabled on VLANs  : none

Router# show gvrp interface

Port      Status    Mode            Registrar State
Gi3/15    on        fastcompact         normal
Gi4/1     on        fastcompact         normal

Port      Transmit Timeout   Leave Timeout   Leaveall Timeout
Gi3/15    200                600             10000
Gi4/1     200                600             10000

Port      Vlans Declared
Gi3/15    1-200
Gi4/1     none

Port      Vlans Registered
Gi3/15    none
Gi4/1     1-200

Port      Vlans Registered and in Spanning Tree Forwarding State
Gi3/15    none
Gi4/1     1-200
```

Verifying Local Association Due to .1q Trunk: Example

Topology

CE1 – gi3/15 R1 gi3/1 - dot1q trunk - gi3/1 R2 gi12/15 – CE2

```
Router1# show running-config interface GigabitEthernet3/15
Building configuration...

Current configuration : 165 bytes
!
interface GigabitEthernet3/15
 gvrp registration fixed
 switchport
 switchport trunk encapsulation dot1q
 switchport mode trunk
 spanning-tree portfast trunk
end

Router2# show running-config interface GigabitEthernet12/15
Building configuration...

Current configuration : 166 bytes
```

```
!
interface GigabitEthernet12/15
 gvrp registration fixed
 switchport
 switchport trunk encapsulation dot1q
 switchport mode trunk
 spanning-tree portfast trunk
end

Router1# show gvrp summary

GVRP global state           : enabled
GVRP VLAN creation          : disabled
VLANs created via GVRP      : none
MAC learning auto provision : disabled
Learning disabled on VLANs  : none


Router1# show gvrp interface

Port      Status    Mode            Registrar State
Gi3/1     on        fastcompact        normal
Gi3/15    on        fastcompact        fixed

Port      Transmit Timeout   Leave Timeout   Leaveall Timeout
Gi3/1     200                600             10000
Gi3/15    200                600             10000

Port      Vlans Declared
Gi3/1     1-10
Gi3/15    1-2

Port      Vlans Registered
Gi3/1     1-2
Gi3/15    1-4094

Port      Vlans Registered and in Spanning Tree Forwarding State
Gi3/1     1-2
Gi12/15   1-10

R2# show gvrp summary

GVRP global state           : enabled
GVRP VLAN creation          : disabled
VLANs created via GVRP      : none
MAC learning auto provision : disabled
Learning disabled on VLANs  : none

R2# show gvrp interface

Port      Status    Mode            Registrar State
Gi3/1     on        fastcompact         normal
Gi12/15   on        fastcompact         fixed

Port      Transmit Timeout   Leave Timeout   Leaveall Timeout
Gi3/1     200                600             10000
Gi12/15   200                600             10000

Port      Vlans Declared
Gi3/1     1-2
Gi12/15   1-2

Port      Vlans Registered
Gi3/1     1-10
```

```
Gi12/15   1-4094

Port      Vlans Registered and in Spanning Tree Forwarding State
Gi3/1     1-2
Gi12/15   1-2
```

Additional References

The following sections provide references related to the cGVRP feature.

Related Documents

Related Topic	Document Title
LAN Switching commands: complete command syntax, command mode, defaults, command history, usage guidelines, and examples	*Cisco IOS LAN Switching Command Reference*, Release 12.2SR

Standards

Standard	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

MIBs

MIB	MIBs Link
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	—

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register on Cisco.com.	http://www.cisco.com/techsupport

Command Reference

This section documents new commands.

- **clear gvrp statistics**
- **debug gvrp**
- **gvrp global**
- **gvrp mac-learning auto**
- **gvrp registration**
- **gvrp timer**
- **gvrp vlan create**
- **show gvrp interface**
- **show gvrp summary**

clear gvrp statistics

To clear Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) related statistics recorded on one or all GVRP enabled ports, use the **clear gvrp statistics** command in privileged EXEC mode.

clear gvrp statistics [**interface** *number*]

Syntax Description

interface *number*	(Optional) Clears GVRP information on a specific interface.

Command Default

Clears GVRP statistics on all interfaces.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(33)SRB	This command was introduced.

Examples

The following example shows how to clear GVRP statistics on one interface:

```
clear gvrp statistics interface 12/15
```

debug gvrp

To display Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) debugging information, use the **debug gvrp** command in privileged EXEC mode. To disable debugging output, use the **no** form of this command.

debug gvrp {**all** | **config** | **error** | **event** | **ha** | **packets** | **switch**}

no debug gvrp

Syntax Description

all	(Optional) Enables all levels of debugging
config	(Optional) Displays user configuration.
error	(Optional) Enables error level debugging.
event	(Optional) Enables event debugging.
ha	(Optional) Enables High Availability debugging.
packets	(Optional) Enables packet level debugging.
switch	(Optional) Enables switch level debugging.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(33)SRB	This command was introduced.

Usage Guidelines

Conditional interface debugging can be used to limit the debugging output messages related to an interface.

Examples

The following example shows sample debug output:

Related Commands

Command	Description
show gvrp interface	Displays Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) interface states.
show gvrp summary	Displays the GVRP configuration at the device level.

gvrp global

To enable Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) globally on a device and on an interface, use the **gvrp global** command in global configuration mode. To disable GRVP, use the **no** form of this command.

gvrp global

no gvrp global

Syntax Description

This command has no arguments or keywords.

Command Default

GVRP is administratively disabled.

GRVP is administratively enabled on each interface.

Command Modes

Global configuration

Command History

Release	Modification
12.2(33)SRB	This command was introduced.

Usage Guidelines

GVRP is operational on an interface only if GVRP is administratively enabled globally at the device level and at the interface level.

When GVRP is operational on an interface GVRP Protocol Data Unit (PDU)s are transmitted from the interface, which is a forwarding .1Q trunk.

Examples

The following example shows how to enable gvrp globally on the device and interfaces:

```
gvrp global
```

Related Commands

Command	Description
clear gvrp statistics	Clears GVRP related statistics recorded on one or all GVRP enabled ports.
debug gvrp	Displays GVRP debugging information.
gvrp mac-learning	Disables learning of dynamic MAC entries.
gvrp registration	Sets the registrars in a GID instance associated with an interface.
gvrp timer	Sets period timers that are used in GARP on a given interface.
gvrp vlan create	Enables a GVRP dynamic VLAN.
show gvrp summary	Displays the GVRP configuration at the device level.
show gvrp interface	Displays Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) interface states.

gvrp mac-learning

To disable learning of dynamic MAC entries, use the **gvrp mac-learning** command in global configuration mode. To enable learning of dynamic MAC entries, use the **no** form of this command.

gvrp mac-learning auto

no gvrp mac-learning auto

Syntax Description

auto	Disables MAC learning on VLANs that are configured with Compact Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (cGVRP).

Command Default

MAC learning is enabled

Command Modes

Global configuration

Command History

Release	Modification
12.2(33)SRB	This command was introduced.

Usage Guidelines

Enable with cGVRP to limit the number of MAC entries.

Examples

The following example disables MAC entries when using cGVRP:

```
gvrp mac-learning auto
```

Related Commands

Command	Description
clear gvrp statistics	Clears GVRP related statistics recorded on one or all GVRP enabled ports.
debug gvrp	Displays GVRP debugging information.
gvrp global	Enables GVRP globally on a device and on a particular interface.
gvrp vlan create	Enables a GVRP dynamic VLAN.
gvrp registration	Sets the registrars in a GID instance associated with an interface.
gvrp timer	Sets period timers that are used in GARP on a given interface.
show gvrp summary	Displays the GVRP configuration at the device level.
show gvrp interface	Displays Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) interface states.

gvrp registration

To set the registrars in a Global information distribution (GID) instance associated with an interface, use the **gvrp registration** command in interface configuration mode. To disable the registrars, use the **no** form of this command.

gvrp registration {**normal** | **fixed** | **forbidden**}

no gvrp registration

Syntax Description

normal	Registrar responds normally to incoming Generic Attribute Registration Protocol (GARP)VLAN Registration Protocol (GVRP) messages.
fixed	Registrar ignores all incoming GVRP messages and remains in the IN state.
forbidden	Registrar ignores all incoming GVRP messages and remains in the EMPTY mode trunk (MT) state.

Command Default

Disabled

Command Modes

Interface configuration

Command History

Release	Modification
12.2(33)SRB	This command was introduced.

Usage Guidelines

The **gvrp registration** command is only operational if GVRP is configured on an interface.

The **no gvrp registration** command sets the registrar state to the default.

The maximum number of registrars is 4094.

Examples

The following example sets a fixed, forbidden and normal registrar on a GID instance:

```
gvrp global
!
int g6/1
gvrp registration fixed
!
int g6/2
gvrp registration forbidden
!
int g6/3
normal gvrp registration
```

Related Commands

Command	Description
clear gvrp statistics	Clears GVRP related statistics recorded on one or all GVRP enabled ports.
debug gvrp	Displays GVRP debugging information.
gvrp global	Enables GVRP globally on a device and on a particular interface.
gvrp mac-learning	Disables learning of dynamic MAC entries.
gvrp vlan create	Enables a GVRP dynamic VLAN.
gvrp timer	Sets period timers that are used in GARP on a given interface.
show gvrp summary	Displays the GVRP configuration at the device level.
show gvrp interface	Displays Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) interface states.

gvrp timer

To set period timers that are used in Generic Attribute Registration Protocol (GARP) on an interface, use the **gvrp timer** command in interface configuration mode. To remove the timer value, use the **no** form of this command.

gvrp timer {**join** | **leave** | **leave-all**} [*timer-value*]

no gvrp timer

Syntax Description

join	Specifies the time interval between two transmit Protocol Data Unit (PDU)s.
leave	Specifies the elapsing time before a Registrar is moved to mode trunk (MT) from leave (LV).
leave-all	Specifies the time it takes for a LeaveAll timer to expire.
timer-value	(Optional) Join timer value range: 200 to 100000000 milliseconds Leave timer value range: 600 to 100000000 milliseconds LeaveAll timer value range: 10000 to 100000000 milliseconds

Command Default

Disabled

Command Modes

Interface configuration

Command History

Release	Modification
12.2(33)SRB	This command was introduced.

Examples

The following example sets timer levels on an interface:

```
gvrp global
!
int g6/1
!
gvrp timer join 1000
!
gvrp timer leave 1200
```

Related Commands

Command	Description
clear gvrp statistics	Clears GVRP related statistics recorded on one or all GVRP enabled ports.
debug gvrp	Displays GVRP debugging information.
gvrp global	Enables GVRP globally on a device and on a particular interface.

Command	Description
gvrp mac-learning	Disables learning of dynamic MAC entries.
gvrp vlan create	Enables a GVRP dynamic VLAN.
gvrp registration	Sets the registrars in a GID instance associated with an interface.
show gvrp summary	Displays the GVRP configuration at the device level.
show gvrp interface	Displays Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) interface states.

gvrp vlan create

To enable a Generic Attribute Registration Protocol (GARP) VLAN Registration protocol (GRVP) dynamic VLAN on a device, use the **gvrp vlan create** command in global configuration mode. To disable a dynamic VLAN, use the **no** form of this command.

gvrp vlan create

no gvrp vlan create

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Global configuration

Command History

Release	Modification
12.2(33)SRB	This command was introduced.

Usage Guidelines

VLAN Trunk Protocol (VTP) must be in transparent mode in order to configure a GRVR dynamic VLAN.

Examples

The following example configures a GVRP dynamic VLAN:

```
vtp mode transparent
!
gvrp vlan create
```

Related Commands

Command	Description
clear gvrp statistics	Clears GVRP related statistics recorded on one or all GVRP enabled ports.
debug gvrp	Displays GVRP debugging information.
gvrp global	Enables GVRP globally on a device and on a particular interface.
gvrp mac-learning	Disables learning of dynamic MAC entries.
gvrp registration	Sets the registrars in a GID instance associated with an interface.
gvrp timer	Sets period timers that are used in GARP on a given interface.
show gvrp summary	Displays the GVRP configuration at the device level.
show gvrp interface	Displays Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) interface states.

show gvrp interface

To display Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) interface states, use the **show gvrp interface** command in privileged EXEC mode.

show gvrp interface

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(33)SRB	This command was introduced.

Usage Guidelines

Use this command to obtain GRVP interface details of the administrative and operational GVRP states of all or one particular .1Q trunk port in the device.

Examples

The following example shows sample summary output:

```
Router# show gvrp interface

Port      Status    Mode            Registrar State
Fa3/1     on        slow compact    normal
Gi6/13    on        fast compact    normal
Gi6/14    on        fast compact    normal

Port      Transmit Timeout   Leave Timeout   Leaveall Timeout
Fa3/1     200                600             10000
Gi6/13    200                600             10000
Gi6/14    200                600             10000

Port      Vlans Declared
Fa3/1     1,1200,4000,4094
Gi6/13    2-40,100,200,1200,4000,4094
Gi6/14    1200,4000,4094

Port      Vlans Registered
Fa3/1     1-40,100,200
Gi6/13    1,10
Gi6/14    1-40,100,200

Port      Vlans Registered and in Spanning Tree Forwarding State
Fa3/1     1
Gi6/13    10
Gi6/14    none
```

The following example shows sample summary output on one particular .1Q trunk port:

```
Router# show gvrp interface Fa3/1
Port      Status    Mode            Registrar State
Fa3/1     on        slow compact    normal
```

```
Port      Transmit Timeout   Leave Timeout   Leaveall Timeout
Fa3/1     200                600             10000

Port      Vlans Declared
Fa3/1     1,1200,4000,4094

Port      Vlans Registered
Fa3/1     1-40,100,200

Port      Vlans Registered and in Spanning Tree Forwarding State
Fa3/1     1
```

Related Commands

Command	Description
show gvrp summary	Displays the GVRP configuration at the device level.

show gvrp summary

To display the Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) configuration, use the **show gvrp summary** command in privileged EXEC mode.

show gvrp summary

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(33)SRB	This command was introduced.

Usage Guidelines

Use this command to obtain GVRP VLAN configuration details.

Examples

The following example shows sample summary output:

```
Router# show gvrp summary

GVRP global state           : enabled
GVRP VLAN creation          : disabled
VLANs created via GVRP      : 2-200
MAC learning auto provision : disabled
Learning disabled on VLANS : none
```

Related Commands

Command	Description
show gvrp interface	Displays Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) interface states.

Feature Information for cGVRP

Table 1 lists the release history for this feature.

Not all commands may be available in your Cisco IOS software release. For release information about a specific command, see the command reference documentation.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS and Catalyst OS software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on Cisco.com is not required.

Note Table 1 lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release train. Unless noted otherwise, subsequent releases of that Cisco IOS software release train also support that feature.

Table 1 Feature Information for cGVRP

Feature Name	Releases	Feature Information
Compact GARP VLAN Registration Protocol	12.2(33)SRB	The Compact Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) feature reduces CPU time for transmittal of 4094 VLAN states on a port.