Cisco GGSN Release 10.1 Commands

This book documents the Cisco Gateway GPRS Support Note (GGSN) commands available with Cisco IOS Release 12.4(24)YE, in alphabetical order.

The following commands are new or modified with Cisco GGSN Release 10.1, Cisco IOS Release 12.4(24)YE3:

- **redirect rule**
- **show gprs gtp pdp-context tid**

aaa-accounting

To enable or disable accounting for a particular access point on the gateway GPRS support node (GGSN), and optionally configure a periodic accounting timer, use the **aaa-accounting** command in access point configuration mode.

aaa-accounting [**enable** | **disable** | **interim** {**update** | **periodic** *minutes* | **periodic radius**}]

Syntax Description		
	enable	(Optional) Enables accounting on the APN. When you configure an access point name (APN) for non-transparent access, this is the default value.
	disable	(Optional) Disables accounting on the APN. When you configure an APN for transparent access, this is the default value.
	interim update	(Optional) Enables interim periodic accounting records to be sent to an accounting server when a routing area update (resulting in a serving GPRS support node [SGSN] change) or quality of service (QoS) change has occurred.
	interim periodic *minutes*	(Optional) Enables interim periodic accounting records to be sent to an accounting server on regular configured intervals.
	interim periodic radius	(Optional) Enables GGSN to accept the periodic accounting value (Attribute 85) sent by RADIUS.

Defaults

enable—For non-transparent APNs

disable—For transparent APNs

Interim accounting is disabled.

Interim periodic accounting is disabled.

By default, the GGSN ignores Attribute 85 sent by the RADIUS.

Command Modes

Access point configuration

Command History	Release	Modification
	12.2(4)MX	This command was introduced.
	12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
	12.2(8)B	This command was integrated into Cisco IOS Release 12.2(8)B.
	12.2(8)YY	This command was integrated into Cisco IOS Release 12.2(8)YY and the ability to enable interim accounting records was added.
	12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
	12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
	12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
	12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
	12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
	12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.

Release	Modification
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15) XQ and the following keyword options were added: • **interim periodic** • **interim periodic radius**
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines

You can configure authentication, authorization, and accounting (AAA) accounting services at an access point. However, for accounting to occur, you must also complete the configuration by specifying the following other configuration elements on the GGSN:

- Enable AAA services using the **aaa new-model** global configuration command.

- Define a server group with the IP addresses of the RADIUS servers in that group using the **aaa group server** global configuration command.

- Configure the following AAA services:

  – AAA authentication using the **aaa authentication** global configuration command

  – AAA authorization using the **aaa authorization** global configuration command

  – AAA accounting using the **aaa accounting** global configuration command

- Assign the type of services that the AAA server group should provide. If you want the server group to only support accounting services, then you need to configure the server for accounting only. You can assign the AAA services to the AAA server groups either at the GGSN global configuration level using the **gprs default aaa-group** command, or at the APN using the **aaa-group** command.

- Configure the RADIUS servers using the **radius-server host** command.

Note For more information about AAA and RADIUS global configuration commands, see *Cisco IOS Security Command Reference.*

You can verify whether AAA accounting services are configured at an APN using the **show gprs access-point** command.

There is not a **no** form of this command.

Enabling and Disabling Accounting Services for an Access Point

The Cisco Systems GGSN has different defaults for enabling and disabling accounting services for transparent and non-transparent access points:

- If you configure an APN for non-transparent access using the **access-mode** command, the GGSN automatically enables accounting with authentication at the APN.

- If you configure an APN for transparent access, which is the default access mode, the GGSN automatically disables accounting at the APN.

To selectively disable accounting at specific APNs where you do not want that service, use the **aaa-accounting disable** access-point configuration command.

Configuring Interim Accounting for an Access Point

Using the **aaa-accounting interim update** access-point configuration commands, you can configure the GGSN to send Interim-Update Accounting requests to the AAA server when a routing area update (resulting in an SGSN change) or QoS change has occurred for a PDP context. These changes are conveyed to the GGSN by an Update PDP Context request.

Using the **aaa-accounting interim periodic** access-point configuration command, you can configure the GGSN to send Interim-Periodic Accounting requests to the AAA server at configured time intervals.

> **Note** Interim accounting support requires that accounting services be enabled for the APN and that the **aaa accounting update newinfo** global configuration command be configured.

There is not a **no** form of this command.

Examples

Example 1

The following configuration example disables accounting at access point 1:

```
interface virtual-template 1
 gprs access-point-list abc
!
gprs access-point-list abc
 access-point 1
  access-point-name gprs.pdn.com
  access-mode non-transparent
  aaa-accounting disable
```

Example 2

The following configuration example enables accounting on transparent access point 4. Accounting is disabled on access point 5 because it is configured for transparent mode and the **aaa-accounting enable** command is not explicitly configured.

Accounting is automatically enabled on access point 1 because it is configured for non-transparent access mode. Accounting is explicitly disabled at access point 3, because accounting is automatically enabled for non-transparent access mode.

Examples of some of the AAA and RADIUS global configuration commands are also shown in the following example:

```
aaa new-model
!
aaa group server radius abc
 server 10.2.3.4
 server 10.6.7.8
aaa group server radius abc1
 server 10.10.0.1
aaa group server radius abc2
 server 10.2.3.4
 server 10.10.0.1
aaa group server abc3
 server 10.6.7.8
 server 10.10.0.1
!
aaa authentication ppp abc group abc
aaa authentication ppp abc2 group abc2
aaa authorization network default group radius
aaa accounting exec default start-stop group abc
aaa accounting network abc1 start-stop group abc1
aaa accounting network abc2 start-stop group abc2
!
gprs access-point-list gprs
 access-point 1
  access-mode non-transparent
  access-point-name www.pdn1.com
  aaa-group authentication abc
!
 access-point 3
  access-point-name www.pdn2.com
  access-mode non-transparent
  aaa-accounting disable
  aaa-group authentication abc
!

 access-point 4
  access-point-name www.pdn3.com
  aaa-accounting enable
  aaa-group accounting abc1
!
 access-point 5
  access-point-name www.pdn4.com
!
gprs default aaa-group authentication abc2
gprs default aaa-group accounting abc3
!
radius-server host 10.2.3.4 auth-port 1645 acct-port 1646 non-standard
radius-server host 10.6.7.8 auth-port 1645 acct-port 1646 non-standard
radius-server host 10.10.0.1 auth-port 1645 acct-port 1646 non-standard
radius-server key ggsntel
```

Related Commands	Command	Description
	aaa accounting	Enables AAA accounting of requested services for billing or security purposes.
	aaa authorization	Sets parameters that restrict user access to a network.
	aaa group server	Groups different server hosts into distinct lists and distinct methods.

Command	Description
aaa-group	Specifies a RADIUS server group and assigns the type of AAA services to be supported by the server group for a particular access point on the GGSN.
gprs default aaa-group	Specifies a default RADIUS server group and assigns the type of AAA services to be supported by the server group for all access points on the GGSN.
radius-server host	Specifies a RADIUS server host.
show gprs access-point	Displays information about access points on the GGSN.

aaa-group (access-point)

To specify an authentication, authorization, and accounting (AAA) server group and assign the type of AAA services to be supported by the server group for a particular access point on the gateway GPRS support node (GGSN), use the **aaa-group** command in access point configuration mode. To remove an AAA server group, use the **no** form of this command.

> **aaa-group** {**authentication** | **accounting**} *server-group*

> **no aaa-group** {**authentication** | **accounting**} *server-group*

Syntax Description

authentication	Assigns the selected server group for authentication services on the access point name (APN).
accounting	Assigns the selected server group for accounting services only on the APN.
server-group	Specifies the name of an AAA server group to use for AAA services on the APN.
	Note The name of the AAA server group that you specify must correspond to a server group that you configure using the **aaa group server** command.

Defaults   No default behavior or values.

Command Modes   Access point configuration

Command History

Release	Modification
12.2(4)MX	This command was introduced.
12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.

Release	Modification
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   The Cisco GGSN supports authentication and accounting at APNs using AAA server groups. By using AAA server groups, you gain the following benefits:

- You can selectively implement groups of servers for authentication and accounting at different APNs.

- You can configure different server groups for authentication services and accounting services in the same APN.

- You can control which RADIUS services you want to enable at a particular APN, such as AAA accounting.

The GGSN supports the implementation of AAA server groups at both the global and access point configuration levels. You can minimize your configuration by specifying the configuration that you want to support across most APNs, at the global configuration level. Then, at the access point configuration level, you can selectively modify the services and server groups that you want to support at a particular APN. Therefore, you can override the AAA server global configuration at the APN configuration level.

To configure a default AAA server group for all APNs on the GGSN to use, use the **gprs default aaa-group** global configuration command. To specify a different AAA server group to use at a particular APN for authentication or accounting, use the **aaa-group** access point configuration command.

If accounting is enabled on the APN, then the GGSN looks for an accounting server group to use for the APN in the following order:

- First, at the APN for an accounting server group—configured in the **aaa-group accounting** command.

- Second, for a global GPRS default accounting server group—configured in the **gprs default aaa-group accounting** command.

- Third, at the APN for an authentication server group—configured in the **aaa-group authentication** command.

- Last, for a global GPRS default authentication server group—configured in the **gprs default aaa-group authentication** command.

If none of the above commands is configured on the GGSN, then AAA accounting is not performed.

If authentication is enabled on the APN, then the GGSN first looks for an authentication server group at the APN, configured in the **aaa-group authentication** command. If an authentication server group is not found at the APN, then the GGSN looks for a globally configured, GGSN default authentication server group, configured in the **gprs default aaa-group authentication** command.

To complete the configuration, you also must specify the following configuration elements on the GGSN:

- Enable AAA services using the **aaa new-model** global configuration command.

- Configure the RADIUS servers using the **radius-server host** command.

- Define a server group with the IP addresses of the RADIUS servers in that group using the **aaa group server** global configuration command.

- Configure the following AAA services:
  - AAA authentication using the **aaa authentication** global configuration command
  - AAA authorization using the **aaa authorization** global configuration command
  - AAA accounting using the **aaa accounting** global configuration command
- Enable the type of AAA services (accounting and authentication) to be supported on the APN.
  - The GGSN enables accounting by default for non-transparent APNs.

    You can enable or disable accounting services at the APN using the **aaa-accounting** command.
  - Authentication is enabled by default for non-transparent APNs. There is not any specific command to enable or disable authentication. Authentication cannot be enabled for transparent APNs.

Up to 500 AAA method lists are supported by the GGSN on the Cisco 7600 router platform. This enables up to 500 APNs to each have their own method list.

Note Increasing the number of AAA method lists supported on the GGSN to 500 can result in a very large router configuration file. Therefore, all configurations stored locally on the Cisco Service and Application Module for IP (SAMI) will automatically be compressed. If the configuration is stored on the supervisor engine, it is stored in the uncompressed format. Therefore, the **service compress-configuration** command is disabled.

You can verify the AAA server groups that are configured for an APN using the **show gprs access-point** command.

Note For more information about AAA and RADIUS global configuration commands, see *Cisco IOS Security Command Reference.*

Examples The following configuration example defines four AAA server groups on the GGSN: abc, abc1, abc2, and abc3, shown by the **aaa group server** commands.

Using the **gprs default aaa-group** command, two of these server groups are globally defined as default server groups: abc2 for authentication, and abc3 for accounting.

At access point 1, which is enabled for authentication, the default global authentication server group of abc2 is overridden and the server group named abc is designated to provide authentication services on the APN. Notice that accounting services are not explicitly configured at that access point, but are automatically enabled because authentication is enabled. Because there is a globally defined accounting server-group defined, the server named abc3 will be used for accounting services.

At access point 2, which is enabled for authentication, the default global authentication server group of abc2 is used. Because there is a globally defined accounting server-group defined, the server named abc3 will be used for accounting services.

At access point 4, which is enabled for accounting by the **aaa-accounting enable** command, the default accounting server group of abc3 is overridden and the server group named abc1 is designated to provide accounting services on the APN.

Access point 5 does not support any AAA services because it is configured for transparent access mode, and accounting is not enabled.

```
aaa new-model
!
aaa group server radius abc
 server 10.2.3.4
 server 10.6.7.8
aaa group server radius abc1
 server 10.10.0.1
aaa group server radius abc2
 server 10.2.3.4
 server 10.10.0.1
aaa group server abc3
 server 10.6.7.8
 server 10.10.0.1
!
aaa authentication ppp abc group abc
aaa authentication ppp abc2 group abc2
aaa authorization network default group radius
aaa accounting exec default start-stop group abc
aaa accounting network abc1 start-stop group abc1
aaa accounting network abc2 start-stop group abc2
aaa accounting network abc3 start-stop group abc3
!
gprs access-point-list gprs
 access-point 1
  access-mode non-transparent
  access-point-name www.pdn1.com
  aaa-group authentication abc
!
 access-point 2
  access-mode non-transparent
  access-point-name www.pdn2.com
!
 access-point 4
  access-point-name www.pdn4.com
  aaa-accounting enable
  aaa-group accounting abc1
!
 access-point 5
  access-point-name www.pdn5.com
!
gprs default aaa-group authentication abc2
gprs default aaa-group accounting abc3
!
radius-server host 10.2.3.4 auth-port 1645 acct-port 1646 non-standard
radius-server host 10.6.7.8 auth-port 1645 acct-port 1646 non-standard
radius-server host 10.10.0.1 auth-port 1645 acct-port 1646 non-standard
radius-server key ggsntel
```

	Command	Description
Related Commands	**aaa accounting**	Enables AAA accounting of requested services for billing or security purposes.
	aaa authorization	Sets parameters that restrict user access to a network.
	aaa group server	Groups different server hosts into distinct lists and distinct methods.
	aaa-accounting	Enables or disables accounting for a particular access point on the GGSN.

Command	Description
gprs default aaa-group	Specifies a default RADIUS server group and assigns the type of AAA services to be supported by the server group for all access points on the GGSN.
radius-server host	Specifies a RADIUS server host.
show gprs access-point	Displays information about access points on the GGSN.

access-mode

To specify whether the gateway GPRS support node (GGSN) requests user authentication at the access point to a public data network (PDN), use the **access-mode** command in access point configuration mode. To remove an access mode and return to the default value, use the **no** form of this command.

access-mode {**transparent** | **non-transparent**}

no access-mode {**transparent** | **non-transparent**}

Syntax Description		
transparent		Specifies that the users who access the PDN through the access point associated with the current virtual template are allowed access without authorization or authentication.
non-transparent		Specifies that the users who access the PDN through the current virtual template must be authenticated by the GGSN acting as a proxy for the authentication.

Defaults   **transparent**

Command Modes   Access point configuration

Command History	Release	Modification
	12.1(1)GA	This command was introduced.
	12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
	12.2(4)MX	This command was integrated into Cisco IOS Release 12.2(4)MX.
	12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
	12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
	12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
	12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
	12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
	12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
	12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
	12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
	12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
	12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
	12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
	12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
	12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
	12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
	12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
	12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
	12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **access-mode** command to specify whether users accessing a PDN through a particular access point associated with the virtual template interface will have transparent or non-transparent access to the network.

Transparent access means that users who access the PDN through the current virtual template are granted access without further authentication.

Non-transparent access means that users who access the PDN through the current virtual template must be authenticated by the GGSN. You must configure non-transparent access to support RADIUS services at an access point. Authentication is performed by the GGSN while establishing the PDP context.

Examples   **Example 1**

The following example specifies transparent access to the PDN, gprs.pdn2.com, through access point 2:

```
interface virtual-template 1
 gprs access-point-list abc
!
gprs access-point-list abc
 access-point 2
  access-point-name gprs.pdn2.com
```

Example 2

The following example specifies non-transparent access to the PDN, gprs.pdn.com, through access point 1:

```
interface virtual-template 1
 gprs access-point-list abc
!
gprs access-point-list abc
 access-point 1
  access-point-name gprs.pdn.com
  access-mode non-transparent
```

Note   Because transparent is the default access mode, it does not appear in the output of the **show running-configuration** command for the access point.

Related Commands

Command	Description
aaa-group	Specifies an AAA server group and assigns the type of AAA services to be supported by the server group for a particular access point on the GGSN.
access-point	Specifies an access point number and enters access point configuration mode.
gprs default aaa-group	Specifies a default AAA server group and assigns the type of AAA services to be supported by the server group for all access points on the GGSN.

aaa-group accounting (csg group)

To specify the Cisco Content Services Gateway- 2nd Generation (CSG2) RADIUS interface for accounting services for a CSG group, use the **aaa-group accounting** command in CSG group configuration mode. To remove an interface, use the **no** form of this command.

aaa-group accounting *server-group*

no aaa-group accounting *server-group*

Syntax Description

| accounting | Assigns the selected server group for accounting services for the CSG group. |
| *server-group* | Specifies the name of an AAA server group to use for AAA services on the APN. |

Defaults

No default behavior or values.

Command Modes

CSG group configuration

Command History

Release	Modification
12.4(24)YE	This command was introduced.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   To configure the RADIUS interface for a Cisco CSG2 group, use the **aaa-group accounting** CSG group configuration command.

You can verify the AAA server group that is configured for a CSG group using the **show ggsn csg** command.

> **Note**   For more information about AAA and RADIUS global configuration commands, see *Cisco IOS Security Command Reference.*

> **Note**   The CSG group **aaa-accounting** configuration takes precedence over the accounting configuration under the APN.

Examples   The following configuration example defines AAA server group "abc" as the RADIUS interface for accounting services for a CSG group.

```
aaa-group accounting abc
```

Related Commands

Command	Description
ggsn csg-group	Configures a CSG group on the GGSN for quota server-to-CSG communication.
port	Configures the port number on which the CSG listens for quota server traffic.
real-address	Configures the IP address of a real CSG for source checking on inbound messages from a CSG.
show ggsn csg	Displays the parameters used by the CSG group or the number of path and quota management messages sent and received by the quota server.
virtual-address	Configures a virtual IP address to which the quota server will send all requests.

access-point

To specify an access point number and enter access point configuration mode, use the **access-point** command in access point list configuration mode. To remove an access point number, use the **no** form of this command.

access-point *access-point-index*

no access-point *access-point-index*

Syntax Description	*access-point-index*	Integer from 1 to 65535 that identifies a gateway GPRS support node (GGSN) access point.

Defaults   No default behavior or values.

Command Modes   Access point list configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was integrated into Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines Use the **access-point** command to create an access point to a public data network (PDN).

To configure an access point, first set up an access point list using the **gprs access-point-list** command, and then add the access point to the access point list.

You can specify access point numbers in any sequence.

Note Memory constraints might occur if you define a large number of access points to support VPN routing and forwarding (VRF).

Examples The following example configures an access point with an index number of 7 in an access point-list named "abc" on the GGSN:

```
gprs access-point-list abc
 access-point 7
```

Related Commands

Command	Description
access-point-name	Specifies the network (or domain) name for a PDN that users can access from the GGSN at a defined access point.
gprs access-point-list	Configures an access point list that you use to define PDN access points on the GGSN.

access-point-name

To specify the network (or domain) name for a public data network (PDN) that users can access from the gateway GPRS support node (GGSN) at a defined access point, use the **access-point-name** command in access point configuration mode. To remove an access point name, use the **no** form of this command.

access-point-name *apn-name*

no access-point-name

Syntax Description	*apn-name*	Specifies the network or domain name of the private data network that can be accessed through the current access point.

Defaults   There is no default value for this command.

Command Modes   Access point configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was integrated into Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines Use the **access-point-name** command to specify the PDN name of a network that can be accessed through a particular access point. An access point name is mandatory for each access point.

To configure an access point, first set up an access point list using the **gprs access-point-list** command, and then add the access point to the access point list.

The access point name typically is the domain name of the service provider that users access—for example, www.isp.com.

Examples The following example specifies the access point name for a network:

```
access-point 1
 access-point-name www.isp.com
 exit
```

Related Commands

Command	Description
access-point	Specifies an access point number and enters access point configuration mode.

access-type

To specify whether an access point is real or virtual on the gateway GPRS support node (GGSN), use the **access-type** command in access point configuration mode. To return to the default value, use the **no** form of this command.

access-type {**virtual** [**pre-authenticate** [**default-apn** *apn-name*]] | **real**}

no access-type

Syntax Description		
	virtual [pre-authenticate [default-apn *apn-name*]]	Specifies an access point name (APN) type that is not associated with any specific physical target network on the GGSN.
		Optionally, specify the **pre-authenticate** keyword to enable a virtual APN to be dynamically mapped, per-user, to a target APN during a pre-authentication phase, and if desired, specify a default real APN to use if the target APN is not resolved.
	real	Specifies an APN type that corresponds to an external physical network to a public data network (PDN) on the GGSN. This is the default value.

Defaults   **real**

Command Modes   Access point configuration

Command History	Release	Modification
	12.2(4)MX	This command was introduced.
	12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
	12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
	12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
	12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
	12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
	12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
	12.3(14)YU	This command was integrated into the Cisco IOS Release 12.3(14)YU and the **pre-authenticate** keyword option was added.
	12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
	12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
	12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
	12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
	12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
	12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
	12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
	12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.

Release	Modification
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **access-type** command to specify whether an access point is real or virtual on the GGSN.

The default access-type is real. Therefore, you need to configure this command only if the APN is a virtual access point.

Virtual access types are used to configure virtual APN support on the Cisco GGSN to minimize provisioning issues in other GPRS/UMTS network entities that require configuration of APN information.

By default, using the virtual APN feature on the GGSN, home location register (HLR) subscription data can simply provide the name of the virtual APN. Users can still request access to specific target networks that are accessible by the GGSN without requiring each of those destination APNs to be provisioned at the HLR.

The default keyword, **real**, identifies a physical target network that the GGSN can reach. Real APNs must always be configured on the GGSN to reach external networks.

Virtual APNs can be configured in addition to real access points to ease provisioning in the GPRS/UMTS public land mobile network (PLMN).

> **Note**   If the access type is virtual, some of the access point configuration commands are not applicable, and if configured, will be ignored.

The default virtual APN support relies on the domain portion of the username to resolve the target APN. Once, the target is resolved, the user is then connection to that APN on the GGSN.

Cisco GGSN Release 6.0, Cisco IOS Release 12.3(14) and later, supports pre-authentication-based virtual access points. The pre-authentication-based virtual APN feature utilizes AAA servers to provide dynamic, per-user mapping of a virtual APN to a target (real) APN.

When the **pre-authenticate** keyword option is specified when configuring a virtual APN, a pre-authentication phase is applied to Create PDP Context requests received that include a virtual APN in the APN information element.

Pre-authentication-based virtual APN requires that the AAA server be configured to provision user profiles to include the target APN. The AAA maps a user to the target using user identifications such as the IMSI, user name, or MSISDN, etc. Additionally, the target APN must be locally configured on the GGSN.

The following is the typical call flow with regard to external AAA servers when a virtual APN is involve:

1. The GGSN receives a Create PDP Context Request that includes a virtual APN. It locates the virtual APN and starts a pre-authentication phase for the PDP context by sending an Access-Request message to an AAA server.

2. The AAA server does a lookup based on the user identification (username, MSISDN, IMSI, etc.) included in the Access-Request message, and determines the target-APN for the user from the user profile. The target APN is returned as a Radius attribute in the Access-Accept message to the GGSN.

3. The GGSN checks for a locally-configured APN that matches the APN name in the target APN attribute in the Access-Accept message.

   – I f a match is found, the virtual APN is resolved and the Create PDP Context Request is redirected to the target APN and is further processed using the target APN (just as if the target APN was included in the original Create PDP Context request). If the real APN is non-transparent, another Access-Request is sent out. Typically, the AAA server should be different.

   – If a match is not found, the Create PDP Context Request is rejected.

   – If there is no target APN included in the RADIUS attribute in the access-accept message to the GGSN, or if the target APN is not locally configured, the Create PDP Context Request is rejected.

4. GGSN receives an access-accept from the AAA server for the second round of authentication.

When configuring pre-authentication-based virtual APN functionality:

- If a user profile on the AAA server is configured to include a target APN, then the target APN should be a real APN, and it should be configured on the GGSN.

- An APN can only be configured for domain-based virtual APN functionality or pre-authentication-based APN functionality, not both.

- The target APN returned from AAA must be a real APN, and if more than one APN is returned, the first one is used and the rest ignored.

- Configure anonymous user access under the virtual APN (by the **anonymous user** access point configuration command) to mobile stations (MS) to access without supplying the username and password (the GGSN uses the common password configured on the APN).

- At minimum, an AAA access-method must be configured under the virtual APN, or globally. If a method is not configured, the create PDP request will be rejected.

- The associated real APN name is used in G-CDRs and authentication requests sent to a virtual APN

Note For virtual APNs, the domain is always removed from the username attribute. The associated real APN name is used in G-CDRs and authentication requests sent to a virtual APN.

Examples

Example 1

The following example shows configuration of a virtual access point type and a real access point type:

```
access-point 1
 access-point-name corporate
 access-type virtual
 exit
access-point 2
 access-point-name corporatea.com
 ip-address-pool dhcp-client
 dhcp-server 10.21.21.1
```

Example 2

The following example enables pre-authentication-based virtual APN functionality for virtual access point and specifies "cisco.com" as the default APN if a target APN is not resolved.

```
access-point 1
 access-point-name virtual-apn-all
 access-type virtual pre-authenticate default-apn cisco.com
 anonymous user anyone abc
 radius attribute user-name msisdn
 exit
```

Related Commands	Command	Description
	access-point	Specifies an access point number and enters access point configuration mode.
	access-point-name	Specifies the network (or domain) name for a PDN that users can access from the GGSN at a defined access point.

access-violation deactivate-pdp-context

To specify that a user's session be ended and the user packets discarded when a user attempts unauthorized access to a public data network (PDN) through an access point, use the **access-violation deactivate-pdp-context** command in access point configuration mode. To return to the default value, use the **no** form of this command.

> **access-violation deactivate-pdp-context**

> **no access-violation deactivate-pdp-context**

Syntax Description   This command has no arguments or keywords.

Defaults   The user's session remains active and the user packets are discarded.

Command Modes   Access point configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was integrated into Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW and the **discard-packets** option was removed.
12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **access-violation deactivate-pdp-context** command to specify the action that is taken if a user attempts unauthorized access through the specified access point.

The default is that the gateway GPRS support node (GGSN) simply drops user packets when an unauthorized access is attempted. However, if you specify **access-violation deactivate-pdp-context**, the GGSN terminates the user's session in addition to discarding the packets.

Examples   The following example shows deactivation of a user's access and discarding of the user packets:

```
access-point 1
 access-point-name pdn.aaaa.com
 ip-access-group 101 in
 access-violation deactivate-pdp-context
 exit
```

Related Commands

Command	Description
access-point-name	Specifies the network (or domain) name for a PDN that users can access from the GGSN at a defined access point.

advertise downlink next-hop

To configure the next hop address (the user address) on the gateway GPRS support node (GGSN) downlink traffic to be advertised in Accounting Start requests, use the **advertise downlink next-hop** command in access point configuration mode. To remove a next hop address configuration, use the **no** form of this command.

> **advertise downlink next-hop** *ip-address*

> **no advertise downlink next-hop** *ip-address*

Syntax Description		
	ip-address	IP address of the next hop for downlink traffic destined for the GGSN.

Defaults   No default behavior or values.

Command Modes   Access point configuration

Command History

Release	Modification
12.3(14)YQ	This command was introduced.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **advertise downlink next-hop** command to configure the next hop IP address, to which downlink traffic destined for the GGSN is to be routed (Cisco Content Services Gateway [CSG]-to-GGSN), to be advertised in Accounting Start requests.

Examples   The following configuration example configures 10.10.150.2 as the next hop address to be advertised:

```
advertise downlink next-hop 10.10.150.2
```

Related Commands

Command	Description
show access-point	Displays information about access points on the GGSN.

aggregate

To configure the gateway GPRS support node (GGSN) to create an aggregate route in its IP routing table, when receiving packet data protocol (PDP) requests from mobile stations (MSs) on the specified network, for a particular access point on the GGSN, use the **aggregate** command in access point configuration mode. To remove an aggregate route, use the **no** form of this command.

aggregate {**auto** | *ip-network-prefix*{*/mask-bit-length* | *subnet-mask*}} [*csg-group-name*]

no aggregate {**auto** | *ip-network-prefix*{*/mask-bit-length* | *subnet-mask*}} [*csg-group-name*]

Syntax Description

auto	IP address mask sent by the DHCP or RADIUS server is used by the access point for route aggregation.
ip-network-prefix	Dotted decimal notation of the IP network address, in the format *a.b.c.d.*, for the GGSN to use for route aggregation.
	To configure a default subnet mask for subnet management and enable dynamic subnet creation in an eGGSN implementation with Cisco CSG2, specify **0.0.0.0** *subnet-mask.*
/mask-bit-length	Number of bits (as an integer) that represent the network portion of the specified IP network address. A forward slash is required before the integer.
	Note There is no space between the *ip-network-prefix* and the slash (/).
subnet-mask	Dotted decimal notation of the IP network mask (in the format *e.f.g.h.*), which represents the network and host portion of the specified IP network address.
csg-group-name	(Optional) Name of the CSG group to which you want to configure subnet-to-Cisco CSG2 static mapping.

Defaults   No default behavior or values.

Command Modes   Access point configuration

Command History

Release	Modification
12.2(4)MX	This command was introduced.
12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.

Release	Modification
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE and the *csg-group-name* variable was added.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   The GGSN uses a static host route to forward user data packets received from the Gi interface to the Gn interface, using the virtual template interface of the GPRS tunneling protocol (GTP) tunnel.

Without the **aggregate** command or **gprs default aggregate** command, the GGSN creates a static host route for each PDP context. For example, for 45,000 PDP contexts supported, the GGSN creates 45,000 static host routes in its IP routing table.

You can use the **aggregate** command to reduce the number of static routes implemented by the GGSN for PDP contexts at a particular access point. The **aggregate** command allows you to specify an IP network prefix to combine the routes of PDP contexts from the same network as a single route on the GGSN.

Note   The **aggregate** command configuration applies to IPv4 PDPs only.

Automatic Route Aggregation

To configure the GGSN to automatically aggregate routes that are returned by a DHCP or RADIUS server, use the **aggregate auto** command at the APN.

Note   The **aggregate auto** command will not aggregate routes when using local IP address pools.

Automatic route aggregation can be configured only at the access point configuration level on the GGSN. The **gprs default aggregate** global configuration command does not support the **auto** option; therefore, you cannot configure automatic route aggregation globally on the GGSN.

Multiple Network Aggregates

You can specify multiple **aggregate** commands at each access point to support multiple network aggregates. However, if you use the **aggregate auto** command at the access point name (APN), you cannot specify any other aggregate route ranges at the APN.

Globally Defined Aggregate IP Address Range

To globally define an aggregate IP network address range for all access points on the GGSN for statically derived addresses, you can use the **gprs default aggregate** command. You can use the **aggregate** command to override this default address range at a particular access point.

The GGSN responds in the following manner to manage routes for MSs through an access point, when route aggregation is configured in the following scenarios:

- No aggregation is configured on the GGSN, at the APN or globally—The GGSN inserts the 32-bit host route of the MS into its routing table as a static route.

- A default aggregate route is configured globally, but no aggregation is configured at the APN:

  - If a statically or dynamically derived address for an MS matches the default aggregate route range, the GGSN inserts an aggregate route into its routing table.

  - If the MS address does not match the default aggregate route, the GGSN inserts the 32-bit host route as a static route into the routing table.

- A default aggregate route is configured globally, and automatic route aggregation is configured at the APN:

  - If a statically derived address for an MS matches the default aggregate route range, the GGSN inserts an aggregate route into its routing table.

  - If a statically derived address for an MS does not match the default aggregate route, the GGSN inserts the 32-bit host route as a static route into its routing table.

  - If a dynamically derived address for an MS is received, the GGSN aggregates the route, based on the address and mask returned by the DHCP or RADIUS server.

- A default aggregate route is configured globally, and an aggregate route is also configured at the APN:

  - If a statically or dynamically derived address for an MS matches the aggregate range at the APN through which it was processed, or otherwise matches the default aggregate range, the GGSN inserts an aggregate route into its routing table.

  - If a statically or dynamically derived address for an MS does not match either the aggregate range at the APN or the global default aggregate range, the GGSN inserts the 32-bit host route as a static route into its routing table.

Use care when assigning IP addresses to an MS before you configure the aggregation ranges on the GGSN. A basic guideline is to aggregate as many addresses as possible, but to minimize your use of aggregation with respect to the total amount of IP address space being used by the access point.

Subnet-to-Cisco CSG2 Static Mapping

When you specify the *csg-group-name* with the **aggregate** command, a subnet-to-Cisco CSG2 static mapping is formed and used for Cisco CSG2 selection during the creation of PDP contexts.

To delete the mapping, use the **no aggregate** *subnet mask csg-group-name*, or configure the **aggregate** command without specifying the *csg-group-name*.

Dynamic IP Address Management

To configure a default subnet mask for subnet management and enable dynamic subnet creation in an eGGSN implementation with Cisco CSG2, specify **aggregate 0.0.0.0** *subnet-mask*. Dynamic subnet creation requires the **router mobile** command configuration on the Cisco GGSN. For more information, see *Cisco GGSN Release 10.0 Configuration Guide*.

Note   The **aggregate** command and **gprs default aggregate** commands affect routing on the GGSN. Use care when planning and configuring IP address aggregation.

Use the **show gprs access-point** command to display information about the aggregate routes that are configured on the GGSN. The aggregate output field appears only when aggregate routes have been configured on the GGSN or when the **auto** option is configured.

Use the **show ip route** command to verify whether the static route is in the current IP routing table on the GGSN. The static route created for any PDP requests (aggregated or non-aggregated) appears with the code "U" in the routing table, indicating a per-user static route.

> **Note** The **show ip route** command displays a static route for aggregated PDP contexts only if PDP contexts on that network have been created on the GGSN. If you configure route aggregation on the GGSN, but no PDP requests have been received for that network, the static route does not appear.

Examples

Example 1

The following example specifies two aggregate network address ranges for access point 8. The GGSN will create aggregate routes for PDP context requests received from MSs with IP addresses on the networks 172.16.0.0 and 10.0.0.0:

```
gprs access-point-list gprs
 access-point 8
   access-point-name pdn.aaaa.com
   aggregate 172.16.0.0/16
   aggregate 10.0.0.0/8
```

> **Note** Regardless of the format in which you configure the **aggregate** command, the output from the **show running-configuration** command always displays the network in the dotted decimal/integer notation.

Example 2

The following example shows a route aggregation configuration for access point 8 using DHCP on a GGSN, along with the associated output from the **show gprs gtp pdp-context all** command and the **show ip route** commands.

Notice that the **aggregate auto** command is configured at the access point where DHCP is being used. The **dhcp-gateway-address** command specifies the subnet addresses to be returned by the DHCP server. This address should match the IP address of a loopback interface on the GGSN. In addition, to accommodate route aggregation for another subnet 10.80.0.0, the **gprs default aggregate** global configuration command is used.

In this example, the GGSN aggregates routes for dynamically derived addresses for MSs through access point 8, based on the address and mask returned by the DHCP server. For PDP context requests received for statically derived addresses on the 10.80.0.0 network, the GGSN also implements an aggregate route into its routing table, as configured by the **gprs default aggregate** command.

```
interface Loopback0
 ip address 10.80.0.1 255.255.255.255
!
interface Loopback2
 ip address 10.88.0.1 255.255.255.255
!
gprs access-point-list gprs
 access-point 8
   access-point-name pdn.aaaa.com
   ip-address-pool dhcp-proxy-client
   aggregate auto
   dhcp-server 172.16.43.35
```

```
      dhcp-gateway-address 10.88.0.1
      exit
!
gprs default aggregate 10.80.0.0 255.255.255.0
```

In the following output for the **show gprs gtp pdp-context all** command, 5 PDP context requests are active on the GGSN for pdn.aaaa.com from the 10.88.0.0/24 network:

```
GGSN# show gprs gtp pdp-context all
TID              MS Addr         Source  SGSN Addr      APN
6161616161610001 10.88.0.1       DHCP    172.16.123.1   pdn.aaaa.com
6161616161610002 10.88.0.2       DHCP    172.16.123.1   pdn.aaaa.com
6161616161610003 10.88.0.3       DHCP    172.16.123.1   pdn.aaaa.com
6161616161610004 10.88.0.4       DHCP    172.16.123.1   pdn.aaaa.com
6161616161610005 10.88.0.5       DHCP    172.16.123.1   pdn.aaaa.com
```

The following output for the **show ip route** command shows a single static route in the IP routing table for the GGSN, which routes the traffic for the 10.88.0.0/24 subnet through the virtual template (or Virtual-Access1) interface:

```
GGSN# show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter
area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     10.80.0.0/16 is subnetted, 1 subnets
C       10.80.0.0 is directly connected, Loopback0
     10.113.0.0/16 is subnetted, 1 subnets
C       10.113.0.0 is directly connected, Virtual-Access1
     172.16.0.0/16 is variably subnetted, 3 subnets, 3 masks
C       172.16.43.192/28 is directly connected, FastEthernet0/0
S       172.16.43.0/24 is directly connected, FastEthernet0/0
S       172.16.43.35/32 is directly connected, Ethernet2/3
     10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
U       10.88.0.0/24 [1/0] via 0.0.0.0, Virtual-Access1
C       10.88.0.0/16 is directly connected, Loopback2
```

Related Commands	Command	Description
	gprs default aggregate	Configures the GGSN to create an aggregate route in its IP routing table when receiving PDP requests from MSs on the specified network for any access point on the GGSN.
	show gprs access-point	Displays information about access points on the GGSN.
	show ip route	Displays all static IP routes, or those installed using the AAA route download function.

anonymous user

To configure anonymous user access at an access point, use the **anonymous user** command in access point configuration mode. To remove the username configuration, use the **no** form of this command.

anonymous user *username* [*password*]

no anonymous user

Syntax Description		
username		Alphanumeric string identifying user. The username argument can be only one word. It can contain any combination of numbers and characters.
password		Alphanumeric string. The password argument can be only one word. It can contain any combination of numbers and characters.

Defaults   No default behavior or values.

Command Modes   Access point configuration

Command History	Release	Modification
	12.2(4)MX	This command was introduced.
	12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
	12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
	12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
	12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
	12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
	12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
	12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
	12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
	12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
	12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
	12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
	12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
	12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
	12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
	12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
	12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
	12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use this command to allow a mobile station (MS) to access a non-transparent mode access point name (APN) without supplying the username and password in the GPRS tunneling protocol (GTP) protocol configuration option (PCO) information element (IE) of the Create PDP Context request message. The GGSN will use the username and password configured on the APN for the user session.

This command enables anonymous access, which means that a PDP context can be created by an MS to a specific host without specifying a username and password.

Examples   The following example specifies the username george and the password abcd123 for anonymous access at access point 49:

```
gprs access-point-list abc
 access-point 49
   access-point-name www.pdn.com
   anonymous user george abcd123
```

authorization

To define a method of authorization (AAA method list), in the Diameter credit control application (DCCA) client profile, that is used to specify the Diameter server groups, use the **authorization** command in DCCA client profile configuration mode. To remove the method list configuration, use the **no** form of this command

authorization *method-list*

no authorization *method-list*

Syntax Description

method-list	Name of the method list defined using the **aaa authorization** command that describes the authorization methods to be queried for a user.

Defaults

No default behavior or values.

Command Modes

DCCA client profile configuration

Command History

Release	Modification
12.3(14)YQ	This command was introduced.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines

Use the **authorization** command to define the method list for the DCCA client to use to authorize users. The method list specifies the Diameter server groups for authorization and is created by the **aaa authorization** global configuration command.

Examples

The following configuration example defines dcca-method1 as the method of authorization for a DCCA client:

```
gprs dcca profile dcca-profile1
  authorization dcca-method
```

Related Commands

Command	Description
ccfh	Configures the CCFH AVP locally for a credit-control session when the CCA sent by the DCCA server does not contain CCFH value.
content dcca profile	Defines a DCCA client profile under a charging profile.
destination-realm	Configures the destination realm to be sent in CCR initial requests to a DCCA server.
gprs dcca profile	Defines a DCCA client profile on the GGSN and enters DCCA client profile configuration mode.
session-failover	Configures CCSF AVP support when a CCA message from the DCCA server does not contain a value for the CCSF AVP.
trigger	Specifies that SGSN and QoS changes will trigger a DCCA client to request quota-reauthorization
tx-timeout	Configures a TX timeout value used by the DCCA client to monitor the communication of CCRs with a Diameter server.

bandwidth

To define the total bandwidth for a bandwidth pool, use the **bandwidth** command in bandwidth pool configuration mode. To return to the default value, use the **no** form of this command.

bandwidth *value*

no bandwidth *value*

Syntax Description

value	Specifies the total bandwidth, in kilobits per second, for a bandwidth pool. Valid value is a number from 1 to 4294967295.

Defaults   No default behavior or values.

Command Modes   Bandwidth pool configuration

Command History

Release	Modification
12.3(8)XU	This command was introduced.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines Use the **bandwidth** bandwidth pool configuration command to define the total bandwidth for a bandwidth pool.

Note   Before configuring the total bandwidth for a bandwidth pool, the pool must be created by the **gprs qos bandwidth-pool** global configuration command.

The total bandwidth defined for a bandwidth pool can be subdivided among traffic classes by the **traffic-class** bandwidth pool configuration command.

Examples   The following example allocates 10000 kilobits per second for the bandwidth pool "poolA":

```
gprs qos bandwidth-pool poolA
 bandwidth 10000
```

Related Commands

Command	Description
bandwidth	Defines the total bandwidth, in kilobits per second, for a bandwidth pool. Valid values are 1 to 4292967295.
bandwidth-pool	Enables the CAC bandwidth management function and applies a bandwidth pool to an APN.
gprs qos bandwidth-pool	Creates or modifies a bandwidth pool.
traffic-class	Allocates bandwidth pool bandwidth to a specific traffic class.

bandwidth-pool

To enable the Call Admission Control (CAC) bandwidth management function and apply a bandwidth pool to an access point name (APN), use the **bandwidth-pool** command in access point configuration mode. To return to the default value, use the **no** form of this command.

> **bandwidth-pool {input | output}** *pool-name*

> **no bandwidth-pool {input | output}** *pool-name*

Syntax Description		
input		Specifies that the bandwidth pool applies to the output (Gn) interface in the downlink direction.
output		Specifies that the bandwidth pool applies to the output (Gi) interface in the uplink direction.
pool-name		Name (up to 40 characters) of the bandwidth pool that is being associated to an APN.

Defaults   Disabled

Command Modes   Access point configuration

Command History	Release	Modification
	12.3(8)XU	This command was introduced.
	12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
	12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
	12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
	12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
	12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
	12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
	12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
	12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
	12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
	12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
	12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
	12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
	12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **bandwidth-pool** access point configuration command to enable the CAC bandwidth management function and apply a bandwidth pool to an APN.

> **Note**   A CAC bandwidth pool can be applied to one or multiple APNs. If a bandwidth pool is not applied to an APN, the bandwidth management function is disabled.

Examples   The following example enables the CAC bandwidth management function and applies bandwidth pool "pool A" to the Gn interface of an APN:

```
bandwidth-pool input poolA
```

Related Commands

Command	Description
bandwidth	Defines the total bandwidth, in kilobits per second, for a bandwidth pool. Valid values are 1 to 4292967295.
gprs qos bandwidth-pool	Creates or modifies a bandwidth pool.
traffic-class	Allocates bandwidth pool bandwidth to a specific traffic class.

block-foreign-ms

To restrict GPRS access based on the mobile user's home public land mobile network (PLMN) (where the MCC and MNC are used to determine the point of origin), use the **block-foreign-ms** command in access point configuration mode. To disable blocking of foreign subscribers, use the **no** form of this command.

> **block-foreign-ms**

> **no block-foreign-ms**

Syntax Description   This command has no arguments or keywords.

Defaults   Disabled

Command Modes   Access point configuration

Command History

Release	Modification
12.2(8)YD	This command was introduced.
12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   The **block-foreign-ms** command enables the gateway GRPS support node (GGSN) to block foreign mobile stations (MSs) from accessing the GGSN via a particular access point.

When you use this command, the GGSN determines if an MS is inside or outside of the PLMN, based on the MCC and MNC. The MCC and MNC are specified by the **gprs mcc mnc** command.

Note   The MCC and MNC values used to determine whether a request is from a roaming MS must be configured by the **gprs mcc mnc** global configuration command before the GGSN can be enabled to block foreign mobile stations.

Examples   The following example blocks access to foreign MSs at access point 49:

```
gprs access-point-list abc
 access-point 49
   access-point-name www.pdn.com
   block-foreign-ms
```

Related Commands

Command	Description
gprs mcc mnc	Configures the MCC and MNC that the GGSN uses to determine whether a Create PDP Context request is from a foreign MS.

cac-policy

To enable the maximum quality of service (QoS) policy function of the Call Admission Control (CAC) feature and apply a policy to an access point name (APN), use the **cac-policy** command in access point configuration mode. To return to the default value, use the **no** form of this command.

cac-policy *policy-name*

cac-policy *policy-name*

Syntax Description	*policy-name*	Name of the policy (between 1 and 40 characters).

Defaults   There is no policy attached to an APN.

Command Modes   Access point configuration

Command History

Release	Modification
12.3(8)XU	This command was introduced.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **cac-policy** command to enable maximum QoS policy function of the CAC feature and apply a policy to an APN.

Note   The CAC feature requires that UMTS QoS is configured. For information on configuring UMTS QoS, see *Cisco GGSN Configuration Guide*.

Examples   The following example attaches maximum QoS policy A to an access point:

```
cac-policy A
```

Related Commands

Command	Description
gbr traffic-class	Specifies the maximum guaranteed bit rate (GBR) that can be allowed in uplink and downlink directions for real-time classes (conversational and streaming) at an APN.
gprs qos cac-policy	Creates or modifies a CAC maximum QoS policy.
maximum delay-class	Defines the maximum delay class for R97/R98 (GPRS) QoS that can be accepted.
maximum peak-throughput	Defines the maximum peak throughput for R97/R98 (GPRS) QoS that can be accepted.
maximum pdp-context	Specifies the maximum PDP contexts that can be created for a particular APN.
maximum traffic-class	Defines the highest traffic class that can be accepted.
mbr traffic-class	Specifies the highest maximum bit rate (MBR) that can be allowed for each traffic class for both directions (downlink and uplink).

category

To identify the subscriber billing method category to which a charging profile applies, use the **category** command in charging profile configuration mode. To return to the default value, issue the **no** form of this command.

category {hot | flat | prepaid | normal}

no category {hot | flat | prepaid | normal}

Syntax Description	hot	Specifies that the profile apply to subscribers who use a hot billing scheme.
	flat	Specifies that the profile apply to subscribers who use a flat-rate billing scheme.
	prepaid	Specifies that the profile apply to subscribers who use a prepaid billing scheme.
	normal	Specifies that the profile apply to subscribers who use a normal billing scheme.

Defaults Flat

Command Modes Charging profile configuration

Command History	Release	Modification
	12.3(8)XU	This command was introduced.
	12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
	12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
	12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
	12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
	12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
	12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
	12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
	12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
	12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
	12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
	12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
	12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
	12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **category** charging profile configuration command to identify to which subscriber billing method category a charging profile applies.

Examples   The following example indicates hot is the subscriber billing method category to which the profile applies:

```
category hot
```

Related Commands.

Command	Description
cdr suppression	Specifies that CDRs be suppressed as a charging characteristic in a charging profile.
charging profile	Associates a default charging profile to an access point.
content dcca profile	Defines a DCCA client profile under a charging profile.
content postpaid time	Configures for postpaid subscribers when service-aware billing is enabled, the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
content postpaid validity	Configures for postpaid subscribers when service-aware billing is enabled, the amount of time quota granted to a postpaid subscriber is valid.
content postpaid volume	Specifies for postpaid subscribers when service-aware billing is enabled, the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
content rulebase	Associates a default rule-base ID with a charging profile.
description	Specifies the name or a brief description of a charging profile.
gprs charging characteristics reject	Specifies that Create PDP Context requests for which no charging profile can be selected be rejected by the GGSN.
gprs charging container time-trigger	Configures a global time limit tha causes the GGSN to close and update the G-CDR for a PDP context when exceeded.
gprs charging profile	Creates a new charging profile (or modifies an existing one), and enters charging profile configuration mode.
limit duration	Configures the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
limit sgsn-change	Configures the maximum number of SGSN changes that can occur before closing and updating the G-CDR for a particular PDP context.
limit volume	Specifies the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
tariff-time	Specifies that a charging profile use the tariff changes configured by the **gprs charging tariff-time** global configuration command.

ccfh

To configure a default Credit Control Failure Handling (CCFH) action to apply to credit control (CC) sessions (PDP context) when a failure occurs and the credit control answer (CCA) received from the Diameter credit control application (DCCA) server does not contain a value for the CCFH attribute-value pair (AVP), use the **ccfh** command in DCCA client profile configuration mode. To return to the default value, use the **no** form of this command

ccfh [continue | terminate | retry_terminate]

no ccfh [continue | terminate | retry_terminate]

Syntax Description	continue	Allows the PDP context and user traffic for the relevant category (or categories) to continue, regardless of the interruption. Quota management of other categories is not affected.
	terminate	Terminates the PDP context and the CC session, affecting all categories.
	retry_terminate	Allows the PDP context and user traffic for the relevant category or categories to continue. Hard-coded quota (1 GB) is passed to the CSG when the first DCCA server is unavailable.
		The DCCA client retries to send the credit control request (CRR) to an alternate server and if a failure-to-send condition occurs with the alternate server, the PDP context is terminated.

Defaults   Terminate.

Command Modes   DCCA client profile configuration

Command History	Release	Modification
	12.3(14)YQ	This command was introduced.
	12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
	12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
	12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
	12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
	12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
	12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
	12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
	12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
	12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
	12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
	12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines Use the **ccfa** command to configure the CCFH AVP locally. The CCFH determines the behavior of the DCCA client in fault situations. The CCFH AVP can also be received from the Diameter home authentication, authorization, and accounting (AAA) server and DCCA server. A CCFH value received from the DCCA server in a CCA overrides the value configured locally.

The CCFH AVP is determines the action the DCCA client takes on a session, when the following fault conditions occur:

- Transmission time (Tx timeout) expires.
- CCA message containing protocol error (Result-Code 3xxx) is received.
- CCA fails (for example, a CCA with a permanent failure notification [Result-Code 5xxx]) is received).
- Failure-to-send condition exists (the DCCA client is not able to communicate with the desired destination).
- An invalid answer is received

Examples The following configuration example configures the DCCA client to allow a CC session and user traffic for the relevant category (or categories) to continue:

```
gprs dcca profile dcca-profile1
  authorization dcca-method
  tx-timeout 12
  ccfh continue
```

Related Commands

Command	Description
authorization	Defines a method of authorization (AAA method list), in the DCCA client profile, that specifies the Diameter server groups.
content dcca profile	Defines a DCCA client profile under a charging profile.
destination-realm	Configures the destination realm to be sent in CCR initial requests to a DCCA server.
gprs dcca profile	Defines a DCCA client profile on the GGSN and enters DCCA client profile configuration mode.
session-failover	Configures Credit Control Session Failover (CCSF) AVP support when a credit control answer (CCA) message from the DCCA server does not contain a value for the CCSF AVP.
trigger	Specifies that SGSN and QoS changes will trigger a DCCA client to request quota-reauthorization
tx-timeout	Configures a TX timeout value used by the DCCA client to monitor the communication of Credit Control Requests (CCRs) with a Diameter server.

cdr suppression

To specify that call detail records (CDRs) be suppressed as a charging characteristic in a charging profile, use the **cdr suppression** command in charging profile configuration mode. To return to the default value, use the **no** form of the command.

> **cdr suppression**

> **no cdr suppression**

Syntax Description   This command has no arguments or keywords.

Defaults   CDRs are not suppressed.

Command Modes   Charging profile configuration

Command History

Release	Modification
12.3(8)XU	This command was introduced.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **cdr suppression** charging profile configuration command to specify that CDRs be suppressed as a charging characteristic in a charging profile.

Examples   The following example specifies that CDRs be suppressed:

```
cdr suppression
```

Related Commands.	Command	Description
	category	Identifies the subscriber category to which a charging profile applies.s
	charging profile	Associates a default charging profile to an access point.
	content dcca profile	Defines a DCCA client profile under a charging profile.
	content postpaid time	Configures for postpaid subscribers when service-aware billing is enabled, the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
	content postpaid validity	Configures for postpaid subscribers when service-aware billing is enabled, the amount of time quota granted to a postpaid subscriber is valid.
	content postpaid volume	Specifies for postpaid subscribers when service-aware billing is enabled, the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
	content rulebase	Associates a default rule-base ID with a charging profile.
	description	Specifies the name or a brief description of a charging profile.
	gprs charging characteristics reject	Specifies that Create PDP Context requests for which no charging profile can be selected be rejected by the GGSN.
	gprs charging container time-trigger	Specifies a global time limit that, when exceeded by a PDP context, causes the GGSN to close and update the G-CDR for that particular PDP context.
	gprs charging profile	Creates a new charging profile (or modifies an existing one), and enters charging profile configuration mode.
	limit duration	Specifies the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
	limit sgsn-change	Specifies the maximum number of SGSN changes that can occur before closing and updating the G-CDR for a particular PDP context.
	limit volume	Specifies the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
	tariff-time	Specifies that a charging profile use the tariff changes configured by the **gprs charging tariff-time** global configuration command.

cdr suppression prepaid

To specify that call detail records (CDRs) be suppressed for prepaid subscribers, use the
cdr suppression prepaid command in charging profile configuration mode. To return to the default
value, use the **no** form of the command.

> **cdr suppression prepaid**

> **no cdr suppression prepaid**

Syntax Description   This command has no arguments or keywords.

Defaults   Disabled (CDRs are generated for users).

Command Modes   Charging profile configuration

Command History

Release	Modification
12.3(14)YQ	This command was introduced.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **cdr suppression prepaid** charging profile configuration command to specify that CDRs be
suppressed users with an active connection to a DCCA server.

Charging for prepaid subscribers is handled by the DCCA client, therefore G-CDRs do not need to be
generated for prepaid subscribers.

Note   When CDR suppression for prepaid subscribers is enabled, if a Diameter server error occurs while a
session is active, the user is reverted to postpaid status, but CDRs for the PDP context are not generated.

Examples   The following example specifies that CDRs be suppressed for online users:

```
cdr suppression prepaid
```

Related Commands.

Command	Description
category	Identifies the subscriber category to which a charging profile applies.s
charging profile	Associates a default charging profile to an access point.
content dcca profile	Defines a DCCA client profile under a charging profile.
content postpaid time	Specifies for postpaid subscribers when service-aware billing is enabled, the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
content postpaid validity	Specifies for postpaid subscribers when service-aware billing is enabled, the amount of time quota granted to a postpaid subscriber is valid.
content postpaid volume	Specifies for postpaid subscribers when service-aware billing is enabled, the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
content rulebase	Associates a default rule-base ID with a charging profile.
description	Specifies the name or a brief description of a charging profile.
gprs charging characteristics reject	Specifies that Create PDP Context requests for which no charging profile can be selected be rejected by the GGSN.
gprs charging container time-trigger	Specifies a global time limit that, when exceeded by a PDP context, causes the GGSN to close and update the G-CDR for that particular PDP context.
gprs charging profile	Creates a new charging profile (or modifies an existing one), and enters charging profile configuration mode.
limit duration	Specifies the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
limit sgsn-change	Specifies the maximum number of SGSN changes that can occur before closing and updating the G-CDR for a particular PDP context.
limit volume	Specifies the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
tariff-time	Specifies that a charging profile use the tariff changes configured by the **gprs charging tariff-time** global configuration command.

charging group

To associate a charging group to an access point, use the **charging group** command in access-point configuration mode. To remove the charging group association, use the **no** form of this command.

charging group *number*

no charging group *number*

Syntax Description

number	Number of the charging gateway group. Valid value is a number between 1 and 29.

Defaults
No charging gateway group is associated with an APN.

Command Modes
Access point configuration

Command History

Release	Modification
12.4(22)YE	This command was introduced.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines
Use the **charging group** command to associate a charging group to an access point.

When associating a charging group with an APN:

- By default, all APNs use the default charging gateways defined at the global level, unless a charging group is associated with the APN.

- A charging group can be associated with multiple APNs, but only one charging group can be assigned per APN.

- Once an APN is associated with a charging group, the APN will only switchover inside the charging group, it will not fall back to the globally configured charging gateways or iSCSI target.

- If an APN is associated with an empty charging group (a group for which the charging gateways or iSCSI target have not been defined), CDRs for that APN will not be generated unless the charging group is placed in maintenance mode.

Examples   The following example configures an access point to use charging group 5:

```
Router(access-point-config)# charging group 5
```

Related Commands.

Command	Description
gprs charging group	Defines or modifies a charging gateway group.
show gprs access-point	Displays information about access points on the GGSN.

charging profile

To specify a default charging profile for a user type on an access point, use the **charging profile** command in access point configuration mode. To remove the profile, use the **no** form of this command.

charging profile {home | roaming | visiting | any} [trusted] *profile-number* **[override]**

no charging profile {home | roaming | visiting | any} *profile-number* **[trusted]** *profile-number* **[override]**

Syntax Description		
	home	Specifies that the charging profile applies to home users.
	roaming	Specifies that the charging profile applies to roaming users (users whose serving GPRS support node [SGSN] public land mobile network [PLMN] ID differs from the gateway GPRS support node's [GGSN's]).
	visiting	Specifies that the charging profile applies to visiting users (users whose International Mobile Subscriber Identity [IMSI] contains a foreign PLMN ID).
	any	Specifies that the charging profile will apply to all types of users.
	trusted	(Optional) Specifies that the charging profile applies if the user is a visiting or roaming user (depending on whether **roaming** or **visiting** is specified) whose PLMN ID is a trusted one (as configured by the **gprs mcc mnc** command).
	profile-number	Number of the charging profile that is being associated with the access point. Valid values are 0 to 15. If 0 is specified, charging behavior is defined by global charging characteristics (those not defined in a charging profile).
	override	(Optional) Specifies that the charging characteristic value received from the SGSN in the Create PDP Context request be ignored and the APN default used instead.

Defaults   No profile is associated with an APN.

Command Modes   Access point configuration

Command History	Release	Modification
	12.3(8)XU	This command was introduced.
	12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
	12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
	12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
	12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
	12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
	12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
	12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.

Release	Modification
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **charging profile** access point configuration command to apply a default charging profile to an access point name (APN) for a specific type of use.

For complete information on configuring and using charging profiles, and the order in which charging profiles are selected for a PDP context, see the "Configuring Charging Profiles" section of the "Configuring Charging on the GGSN" chapter of *Cisco GGSN Configuration Guide*.

Examples   The following example specifies charging profile number 10 to be the APN default for home users:

```
charging profile 10 home
```

Related Commands.

Command	Description
category	Identifies the subscriber category to which a charging profile applies.s
cdr suppression	Specifies that CDRs be suppressed as a charging characteristic in a charging profile.
description	Specifies the name or a brief description of a charging profile.
gprs charging characteristics reject	Specifies that Create PDP Context requests for which no charging profile can be selected be rejected by the GGSN.
gprs charging container time-trigger	Specifies a global time limit that, when exceeded by a PDP context, causes the GGSN to close and update the G-CDR for that particular PDP context.
gprs charging profile	Creates a new charging profile (or modifies an existing one), and enters charging profile configuration mode.
limit duration	Specifies the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
limit sgsn-change	Specifies the maximum number of SGSN changes that can occur before closing and updating the G-CDR for a particular PDP context.
limit volume	Specifies the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
tariff-time	Specifies that a charging profile use the tariff changes configured by the **gprs charging tariff-time** global configuration command.

charging record type

To configure a charging record type for an access point, use the **charging record type** command in access-point configuration mode. To remove the charging record type configuration, use the **no** form of the command.

charging record type [**gcdr** | **egcdr** | **none**]

no charging record type [**gcdr** | **egcdr** | **none**]

Syntax Description		
gcdr	G-CDRs are generated.
egcdr	Enhanced G-CDRs (eG-CDRs) are generated.
none	No CDRs are generated.

Defaults   G-CDRs are generated.

Command Modes   Access point configuration

Command History

Release	Modification
12.4(22)YE2	This command was introduced.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **charging record type** command to configure the charging record type for an APN. This command is supported when one of the following conditions exists:

- You have configured the APN to be service-aware (**service-aware** command) or PCC-enabled (**pcc** command).

- You have configured the quota server interface to support the exchange service control messages (**ggsn quota-server** command with the **service-msg** keyword option specified).

- You have configured GPRS Charging Release 7 (**gprs charging release** command).

Note   The **no** form of this command is supported only when there are no active PDP contexts under the APN.

By default, G-CDR generation is enabled, however, it can be disabled by using the **cdr suppression** access-point configuration command

You can configure the charging record type while in the following modes:

- global configuration
- charging profile configuration
- access-point configuration

When configuring the charging record type at the APN level, note that the charging profile configuration overrides the global configuration, and the APN level configuration overrides the charging profile configuration.

For example, you can enable eG-CDR generation globally by using the **gprs charging cdr-option service-record** command, and then configure the **charging record type gcdr** command under an APN to restrict the user of that APN to generate G-CDRs. The remaining service aware users will generate eG-CDRs.

If the charging record type command is not configure at the APN level, the default behavior is based on the existing eG-CDR generation global configuration set by using the **gprs charging cdr-option service-record** command.

Examples   The following example configures the GGSN to generate eG-CDRs for an APN:

```
charging record type egcdr
```

Related Commands.

Command	Description
gprs redundancy charging sync-window	Configures the window size used to determine when the call detail record (CDR) record sequence number is synchronized to the standby gateway GPRS support node (GGSN).
show gprs access-point	Displays information about access points on the GGSN.

clear aaa counters server sg

To clear the counters for all RADIUS servers that are part of a specific server group, use the **clear aaa counters servers sg** command in privileged EXEC mode.

clear aaa counters servers sg *sg-name*

Syntax Description

sg-name	Name of the server group for which you want to clear counters for all the RADIUS servers in the group.

Defaults   No default behavior or values.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.4(9)XG	This command was introduced.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **clear aaa counters server sg** command to clear counters for all the RADIUS servers in a specific server-group, and to reset the counters to 0.

Use the **show aaa servers sg** command to display the counters that are reset by this command.

Examples   The following example clears the counters for all the RADIUS servers in server group "group1":

```
clear aaa counters servers sg group1
```

Related Commands

Command	Description
show aaa servers sg	Displays counters and statistics for all RADIUS servers that are a part of a server group.

clear ggsn quota-server statistics

To clear statistics (message and error counts) related to quota server processing, use the **clear ggsn quota-server statistics** command in privileged EXEC mode.

clear ggsn quota-server statistics

Syntax Description   This command has no arguments or keywords.

Defaults   No default behavior or values.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.3(14)YQ	This command was introduced.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **clear ggsn quota-server statistics** command to clear statistics related to quota server process operations (displayed by the **show ggsn quota server statistics** command).

Examples   The following configuration example clears all statistics related to quota server operations:

```
clear ggsn quota-server statistics
```

Related Commands .

Command	Description
show ggsn quota-server	Displays quota server parameters or statistics about the message and error counts.

clear gprs access-point statistics

To clear statistics counters for a specific access point or for all access points on the gateway GPRS support node (GGSN), use the **clear gprs access-point statistics** command in privileged EXEC mode.

clear gprs access-point statistics {*access-point-index* [**no-wait-ggsn** | **local-delete**] | **all**}

Syntax Description	*access-point-index*	Index number of an access point. Information about that access point is cleared.
	all	Information about all access points on the GGSN is cleared.

Defaults   No default behavior or values.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.2(4)MX	This command was introduced.
12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   This command clears the statistics that are displayed by the **show gprs access-point statistics** command and **show policy-map apn** command.

Examples   The following example clears the statistics at access point 2:

```
clear gprs access-point statistics 2
```

The following example clears the statistics for all access points:

```
clear gprs access-point statistics all
```

Related Commands

Command	Description
show gprs access-point statistics	Displays data volume and PDP context activation and deactivation statistics for access points on the GGSN.

clear gprs charging cdr

To clear GPRS call detail records (CDRs), use the **clear gprs charging cdr** command in privileged EXEC configuration mode.

> **clear gprs charging cdr** {**access-point** *access-point-index* [**no-transfer**]| **all** | **partial-record** | **tid** *tunnel-id* | **charging-group** *group-num* [**no-transfer**]}

Syntax Description

access-point *access-point-index*	Closes CDRs for a specified access point index.
no-transfer	Deletes the charging data for the specified access point.
all	Closes all CDRs on the GGSN.
partial-record	Closes all CDRs, and opens partial CDRs for any existing PDP contexts.
tid *tunnel-id*	Closes CDRs by tunnel ID.
charging-group *group-num*	Closes all CDRs on the GGSN for the specified charging group.

Defaults   No default behavior or values.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was integrated into Cisco IOS Release 12.2(4)MX and the **partial-record** keyword was added.
12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE and the **no-transfer** and the **charging-group** keyword options were added.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.

Release	Modification
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines

Use the **clear gprs charging cdr** command to clear the CDRs for one or more PDP contexts.

To clear CDRs by tunnel ID (TID), use the **clear gprs charging cdr** command with the **tid** keyword and specify the corresponding TID for which you want to clear the CDRs. To determine the tunnel ID (TID) of an active PDP context, you can use the **show gprs gtp pdp-context all** command to obtain a list of the currently active PDP contexts (mobile sessions).

To clear CDRs by access point, use the **clear gprs charging cdr** command with the **access-point** keyword and specify the corresponding access point index for which you want to clear CDRs. To obtain a list of access points, you can use the **show gprs access-point** command.

When you clear CDRs for a tunnel identifier (TID), an access point, or for all access points, charging data records for the specified TID or access point(s) are sent immediately to the charging gateway. When you run these versions of this command, the following things occur:

- The GGSN no longer sends charging data that has accumulated for the PDP context to the charging gateway.
- The GGSN closes the current CDRs for the specified PDP contexts.
- The GGSN no longer generates CDRs for existing PDP contexts.

To close all CDRs and open subsequent partial CDRs for existing PDP contexts on the GGSN (so that the PDPs will continue to be charged), use the **clear gprs charging cdr partial-record** command.

The **clear gprs charging cdr** command is normally used before disabling the charging function.

Examples

The following example shows how to clear CDRs by tunnel ID:

```
Router# show gprs gtp pdp-context all
TID              MS Addr         Source  SGSN Addr       APN
1234567890123456 10.11.1.1       Radius  10.4.4.11       www.pdn1.com
2345678901234567 Pending         DHCP    10.4.4.11       www.pdn2.com
3456789012345678 10.21.1.1       IPCP    10.1.4.11       www.pdn3.com
4567890123456789 10.31.1.1       IPCP    10.1.4.11       www.pdn4.com
5678901234567890 10.41.1.1       Static  10.4.4.11       www.pdn5.com

Router# clear gprs gtp charging cdr tid 1234567890123456
```

The following example shows how to clear CDRs for access point 1:

```
Router# clear gprs charging cdr access-point 1
```

Related Commands

Command	Description
show gprs charging statistics	Displays current statistics about the transfer of charging packets between the GGSN and charging gateways.
show gprs access-point	Displays information about an access point.

clear gprs charging cdr all no-transfer

To clear all stored call detail records (CDRs) when a gateway GPRS support node (GGSN) is in charging and global maintenance mode, including those in the pending queue, use the **clear gprs charging cdr all no-transfer** command in privileged EXEC configuration mode.

> **clear gprs charging cdr all no-transfer**

Syntax Description   This command has no arguments or keywords.

Defaults   No default behavior or values.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.3(8)XU	This command was introduced.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **clear gprs cdr all no-transfer** command to clear stored and pending CDRs when the GGSN is in charging and global maintenance modes.

When you clear stored CDRs, the GGSN does not send the charging data accumulated for packet data protocol (PDP) contexts to the charging gateway when the global and charging service-mode states are returned to operational. Additionally, once the service-mode states are returned to operational, the GGSN no longer generates CDRs for the existing PDP contexts. Therefore, to return to normal CDR generation, clear existing PDP contexts by the **clear gprs gtp pdp-context** global configuration command.

> **Note** To clear CDRs, the GGSN must be in global maintenance mode (by the **gprs service-mode maintenance** command) and charging maintenance mode (by the **gprs charging service-mode maintenance** command.

> **Note** When the GGSN is in charging and global maintenance mode, the GGSN no longer creates CDRs for existing PDPs.

Examples   The following example shows how to clear CDRs:

```
Router# clear gprs cdr all no-transfer
```

Related Commands

Command	Description
gprs charging service-mode	Specifies the service-mode state of a GGSN's charging function.
gprs service-mode	Configures the service-mode state of a GGSN.
show gprs service-mode	Displays the current global service mode state of the GGSN and the last time it was changed.

clear gprs charging profile dcca statistics

To clear the requests received and responses received counters of the DCCA profiles configured under a charging profile, use the **clear gprs charging profile dcca statistics** command in privileged EXEC mode.

clear gprs charging profile *profile-num* **dcca statistics**

Syntax Description

profile-num	Number of the charging profile for which you want to clear DCCA profile requests/responses counters.

Defaults   No default behavior or values.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.4(24)YE	This command was introduced.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **clear gprs charging profile dcca statistics** command to clear counters for the requests received and responses sent for the DCCA profiles configured under a charging profile.

Examples   The following clears the counters for the DCCA profiles under Charging Profile 1:

```
clear gprs charging profile 1 dcca statistics
```

Related Commands.	Command	Description
	category	Identifies the subscriber category to which a charging profile applies.
	charging profile	Associates a default charging profile to an access point.
	content postpaid time	Specifies for postpaid subscribers when service-aware billing is enabled, the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
	content postpaid validity	Specifies for postpaid subscribers when service-aware billing is enabled, the amount of time quota is valid for postpaid subscribers.
	content postpaid volume	Specifies for postpaid subscribers when service-aware billing is enabled, the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
	content rulebase	Associates a default rule-base ID with a charging profile.
	description	Specifies the name or a brief description of a charging profile.
	gprs charging characteristics reject	Specifies that Create PDP Context requests for which no charging profile can be selected be rejected by the GGSN.
	gprs charging container time-trigger	Specifies a global time limit that, when exceeded by a PDP context, causes the GGSN to close and update the G-CDR for that particular PDP context.
	gprs charging profile	Creates a new charging profile (or modifies an existing one), and enters charging profile configuration mode.
	limit duration	Specifies the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
	limit sgsn-change	Specifies the maximum number of SGSN changes that can occur before closing and updating the G-CDR for a particular PDP context.
	limit volume	Specifies the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
	tariff-time	Specifies that a charging profile use the tariff changes configured by the **gprs charging tariff-time** global configuration command.

clear gprs gtp debug next-call

To clear debugs set for existing PDPs, use the **clear gprs gtp debug next-call** command while in privileged EXEC mode:

clear gprs gtp debug next-call {**hex-data** *tid* | **all**}

Syntax Description

hex-data *tid*	Clears next-call debugging on the PDP with a specific TID number.
all	Clears next-call debugging on all PDPs.

Defaults   No default behavior or values.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.4(22)YE	This command was introduced.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **clear gprs gtp pdp debug next-call** command to clear next-call debugs for existing PDPs.

Examples   The following example shows how to clear next-call debugging for a specific PDP:

```
Router# show debug condition next-call gprs pdp
TID             MS Addr         Source  SGSN Addr       APN
1234567890123456 10.11.1.1      Radius  10.4.4.11       www.pdn1.com
2345678901234567 Pending        DHCP    10.4.4.11       www.pdn2.com
3456789012345678 10.21.1.1      IPCP    10.1.4.11       www.pdn3.com
4567890123456789 10.31.1.1      IPCP    10.1.4.11       www.pdn4.com
5678901234567890 10.41.1.1      Static  10.4.4.11       www.pdn5.com

Router# clear gprs gtp pdp debug next-call 1234567890123456
```

The following example shows how to clear next-call debugging for all PDPs:

```
Router# clear gprs gtp pdp debug next-call all
```

Related Commands

Command	Description
show debug condition next-call	Displays existing debug next-call conditions or PDPs with next-call debug conditions.

clear gprs gtp pdp-context

To clear one or more packet data protocol (PDP) contexts (mobile sessions), use the **clear gprs gtp pdp-context** command in privileged EXEC configuration mode.

clear gprs gtp pdp-context {**tid** *tunnel-id* | **imsi** *imsi_value* | **path** *ip-address* [*remote_port_num*] | **access-point** *access-point-index* [**no-wait-sgsn** | **local-delete** | **pdp-type** {**ipv6** | **ipv4**} | **all**]}

Syntax Description

tid *tunnel-id*	Tunnel ID (TID) for which PDP contexts are to be cleared.
imsi *imsi_value*	International mobile subscriber identity (IMSI) value for which PDP contexts are to be cleared.
path *ip-address* [*remote_port_num*]	Remote serving GPRS support node (SGSN) IP address for which all PDP contexts associated with the SGSN are to be cleared. Optionally, the remote SGSN IP address and remote port number for which all PDP contexts are to be cleared.
access-point *access-point-index*	Access point index for which PDP contexts are to be cleared.
no-wait-sgsn	(Optional) Configures the GGSN to not wait for an SGSN response to a delete PDP context requests before clearing the PDP context. This keyword option is only available when the APN is in maintenance mode.
local-delete	(Optional) Configures the GGSN not send delete PDP context requests to the SGSN and to delete the PDP contexts locally. This keyword option is only available when the APN is in maintenance mode.
pdp-type {**ipv6** | **ipv4**}	Clears PDP contexts by IP version. • **ipv6**—Clears IPv6 PDPs • **ipv4**—Clears IPv4 PDPs.
all	Clear all active PDP contexts.

Defaults   No default behavior or values.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was integrated into Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.

Release	Modification
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG and the following keyword options were added: • **pdp-type** [**ipv6** | **ipv4**] • **no-wait-sgsn** • **local-delete**
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **clear gprs gtp pdp-context** command to clear one or more PDP contexts (mobile sessions). Use this command when operator intervention is required for administrative reasons—for example, when there are problematic user sessions or when the system must be taken down for maintenance.

After the **clear gprs gtp pdp-context** command is issued, those users who are accessing the public data network (PDN) through the specified TID, IMSI, path, or access point are disconnected.

⚠️
Caution   In a GTP session redundancy (GTP-SR) environment, *do not* use the **clear gprs gtp pdp-context** command on the standby gateway GPRS support node (GGSN). If you issue this command on the standby GGSN, you are prompted to confirm before the command is processed. Issue the **show gprs redundancy** command to confirm which GGSN is the standby GGSN in a GTP-SR configuration before you use this command.

TID

To determine the tunnel ID of an active PDP context, you can use the **show gprs gtp pdp-context** command to obtain a list of the currently active PDP contexts (mobile sessions). Then, to clear a PDP context by tunnel ID, use the **clear gprs gtp pdp-context** command with the **tid** keyword and the corresponding tunnel ID that you want to clear.

IMSI

If you know the IMSI of the PDP context, you can use the **clear gprs gtp pdp-context** with the **imsi** keyword and the corresponding IMSI of the connected user to clear the PDP context. If you want to determine the IMSI of a PDP context, you can use the **show gprs gtp pdp-context all** command, which displays a list of the currently active PDP contexts. Then, after finding the TID value that corresponds to the session that you want to clear, you can use the **show gprs gtp pdp-context tid** command to display the IMSI.

Access Point

To clear PDP contexts by access point, use the **clear gprs gtp pdp-context** command with the **access-point** keyword and the corresponding access point index. To display a list of access points that are configured on the GGSN, use the **show gprs access-point** command.

Access Point, Fast PDP Delete

As defined by 3GPP standards, by default, the GGSN sends a delete PDP context request to the SGSN, and waits for a response from the SGSN before deleting the PDP context. Also, only a certain number of PDP contexts can be deleted at one time when multiple PDP contexts are being deleted.

If an SGSN is not responding to the GGSN's delete PDP context requests, a long delay can occur before the task is completed. Therefore, you can use the Fast PDP Delete feature (the **no-wait-sgsn** and **local-delete** access point keyword options) when an access point is in maintenance mode. The Fast PDP Delete feature enables you to configure the GGSN to delete a PDP context without waiting for a response from the SGSN, or to delete PDP contexts locally without sending a delete PDP context request to the SGSN at all.

When using the Fast PDP Delete feature:

- The **no-wait-sgsn** and **local-delete** keyword options are available only when the APN is in maintenance mode.

- The **no-wait-sgsn** and **local-delete** keyword options are not available in a standby GGSN.

- When the **no-wait-sgsn** and **local-delete** keyword options are specified, and the command entered, the GGSN prompts you with the following caution:

  ```
  Deleting all PDPs without successful acknowledgements from the SGSN will result in the
  SGSN and GGSN going out of sync. Do you want to proceed ? [n]:
  ```

  The default is **no**. To cancel the delete, type **n** and press enter. To proceed with the delete, type **y** and press enter.

- When processing service-aware PDPs, while the GGSN does not wait for a response from the SGSN when the Fast PDP Delete feature is used, the GGSN must wait for a response from the Cisco CSG and Diameter server. Therefore, the Fast PDP Delete feature is not as useful for service-aware PDPs.

- If a delete PDP context requests is lost, the SGSN will not be able to delete the PDP context. This condition might result in inconsistent CDRs generated by the GGSN and the SGSN.

- When the **no-wait-sgsn** keyword option is specified, the GGSN does not throttle the delete PDP context requests to the SGSN, and therefore, the GGSN might flood the SGSN with delete PDP context requests.

- If the Fast PDP Delete feature is used when an SGSN is responding, the EXEC interface will be busy for a several seconds and then display normally.

- The Fast PDP Delete feature applies only to PDP deletion initiated by the **clear gprs gtp-context** privileged EXEC command. PDP deletion due to other circumstances, such as PDP deletion during a failure condition, is not impacted.

Examples   The following example shows how to clear PDP contexts by tunnel ID:

```
GGSN# show gprs gtp pdp-context all
TID              MS Addr          Source  SGSN Addr       APN
1234567890123456 10.11.1.1       Radius  10.4.4.11       www.pdn1.com
2345678901234567 Pending         DHCP    10.4.4.11       www.pdn2.com
3456789012345678 10.21.1.1       IPCP    10.1.4.11       www.pdn3.com
4567890123456789 10.31.1.1       IPCP    10.1.4.11       www.pdn4.com
5678901234567890 10.41.1.1       Static  10.4.4.11       www.pdn5.com

GGSN# clear gprs gtp pdp-context tid 1234567890123456
```

The following example shows how to clear PDP contexts at access point 1:

```
GGSN# clear gprs gtp pdp-context access-point 1
```

clear gprs gtp statistics

To clear the current gateway GPRS support node (GGSN) GPRS tunneling protocol (GTP) statistics, use the **clear gprs gtp statistics** command in privileged EXEC configuration mode.

clear gprs gtp statistics

Syntax Description　This command has no arguments or keywords.

Defaults　No default behavior or values.

Command Modes　Privileged EXEC

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was integrated into Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **clear gprs gtp statistics** command to clear the current GPRS GTP statistics. This command clears the counters that are displayed by the **show gprs gtp statistics** command.

⬙

Note   The **clear gprs gtp statistics** command does not clear the counters that are displayed by the **show gprs gtp status** command.

Examples   The following example clears the GPRS GTP statistics:

```
GGSN# clear gprs gtp statistics
```

clear gprs iscsi statistics

To clear the current GPRS-related iSCSI statistics, use the **clear gprs iscsi statistics** command in privileged EXEC configuration mode.

clear gprs iscsi statistics [*profile-name*]

Syntax Description	*profile-name* Name of the iSCSI target profile for which you want to clear GPRS-related iSCSI statistics.

Command Default   No default behavior or values.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.4(15)XQ	This command was introduced.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE and the *profile-name* option was added.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   The **clear gprs iscsi statistics** command clears the statistics displayed by the **show gprs iscsi statistics** privileged EXEC command.

Examples

Example 1

The following example clears GGSN iSCSI-related statistics:

```
Router# clear gprs iscsi statistics
```

Example 2

The following example clears GGSN iSCSI-related statistics for the iSCSI target named "TargetA":

```
Router# clear gprs iscsi statistics TargetA
```

Related Commands

Command	Description
show gprs iscsi statistics	Displays GPRS iSCSI-related statistics.

clear gprs prepaid quota sanity

To clear GPRS quota grant parameters sanity statistics, use the **clear gprs prepaid quota sanity** command in privileged EXEC mode.

> **clear gprs prepaid quota sanity**

Syntax Description   This command has no arguments or keywords.

Defaults   No default behavior or values.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.4(22)YE	This command was introduced.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **clear gprs prepaid quota sanity** command to clear the GPRS quota parameters sanity statistics that are displayed by the **show gprs prepaid quota sanity** privileged EXEC command.

Examples   The following example shows output from the **clear gprs prepaid quota sanity** command:

```
ggsn# clear gprs prepaid quota sanity
```

Related CommandsE

Command	Description
clear gprs prepaid statistics	Clears GGSN quota-manager statistics.
gprs prepaid quota threshold	Sets the internal maximum threshold, as a percentage, of the quota grant received from the DCCA server on the threshold received.
gprs prepaid stand-alone	Configures the GGSN to perform prepaid quota enforcement in standalone mode.

Command	Description
show gprs prepaid quota sanity	Displays sanity statistics of the GPRS quota grant parameters.
show gprs prepaid statistics	Displays GGSN quota-manager statistics.

clear gprs prepaid statistics

To clear GGSN quota-manager statistics, use the **clear gprs prepaid statistics** command in privileged EXEC mode.

clear gprs prepaid statistics

Syntax Description   This command has no arguments or keywords.

Defaults   No default behavior or values.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.4(22)YE	This command was introduced.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **clear gprs qos statistics** command to display the prepaid quota statistics that are displayed by the **show gprs prepaid statistics** privileged EXEC command.

Examples   The following example shows output from the **show gprs prepaid statistics** command:

```
ggsn# clear gprs prepaid statistics
```

Related CommandsE

Command	Description
clear gprs prepaid quota sanity	Clears sanity statistics of the GPRS quota grant parameters.
gprs prepaid quota threshold	Sets the internal maximum threshold, as a percentage, of the quota grant received from the DCCA server on the threshold received.
gprs prepaid stand-alone	Configures the GGSN to perform prepaid quota enforcement in standalone mode.

Cisco GGSN Release 10.1 Commands

clear gprs prepaid statistics

Command	Description
show gprs prepaid quota sanity	Displays sanity statistics of the GPRS quota grant parameters.
show gprs prepaid statistics	Displays GGSN quota-manager statistics.

Cisco GGSN Release 10.1 Command Reference, Cisco IOS Release 12.4(24)YE3

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clear gprs redundancy statistics

To clear statistics related to GPRS tunneling protocol (GTP) session redundancy (GTP-SR), use the **clear gprs redundancy statistics** command in privileged EXEC configuration mode.

clear gprs redundancy statistics

Syntax Description   This command has no arguments or keywords.

Defaults   Disabled.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.3(11)YJ	This command was introduced.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **clear gprs redundancy statistics** command to clear the GTP-SR statistics that are displayed by the **show gprs redundancy** command.

Examples   The following example clears all redundancy-related statistics:

```
clear gprs redundancy statistics
```

Related Commands

Command	Description
gprs redundancy	Enables GTP-SR on a GGSN.
gprs redundancy charging sync-window cdr rec-seqnum	Configures the window size used to determine when the CDR record sequence number is synchronized to the standby GGSN.

Command	Description
gprs redundancy charging sync-window gtpp seqnum	Configures the window size used to determine when the GTP' sequence number is synchronized with the standby GGSN.
show gprs redundancy	Displays statistics related to GTP-SR.

clear gprs service-aware statistics

To clear statistics (message and error counts) related to the service-aware features of the gateway GPRS support node (GGSN), use the **clear ggsn quota-server statistics** command in privileged EXEC configuration mode.

> **clear gprs service-aware statistics**

Syntax Description   This command has no arguments or keywords.

Defaults   No default behavior or values.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.3(14)YQ	This command was introduced.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **clear gprs service-aware statistics** command to clear statistics related to the service-aware features of the GGSN (displayed by the **show gprs service-aware statistics** command).

Examples   The following configuration example clears all statistics related to the service-aware features of the GGSN:

```
clear gprs service-aware statistics
```

Related Commands .

Command	Description
show gprs service-aware statistics	Displays statistics related to the service-aware features of the GGSN, such as packets sent to, and received from, the Diameter server or CSG.

clear gprs statistics all

To clear all gateway GPRS support node (GGSN) counters and statistics (both global and per-access point name [APN]), use the **clear gprs statistics** command in privileged EXEC mode.

> **clear gprs statistics all**

Syntax Description   This command has no arguments or keywords.

Defaults   No default behavior or values.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.4(9)XG	This command was introduced.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE and the command additionally clears the statistics displayed by the **show gprs prepaid statistics** command.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.

Usage Guidelines   Use the **clear gprs statistics all** command to clear, and to reset to 0, the global and per-APN GPRS and Universal Mobile Telecommunication Systems (UMTS) statistics displayed by the following **show** commands:

- **show ggsn csg statistics**
- **show ggsn quota-server statistics**
- **show gprs access-point statistics**
- **show gprs gtp path statistics remote-address**
- **show gprs gtp statistics**
- **show gprs prepaid statistics**
- **show gprs service-aware statistics**

After issuing the **clear gprs statistics all** command, you will be prompted for confirmation before the counters and statistics are cleared.

Examples   The following example clears all GPRS/UMTS global and access point counters and statistics:

```
clear gprs statistics all
```

Related Commands.

Command	Description
show gprs access-point statistics	Displays data volume and PDP activation and deactivation statistics for access points on the GGSN.
show gprs access-point status	Displays the current status of an APN, including the number of active PDPs, number of IPv4 addresses allocated, and the number of IPv6 addresses allocated.
show gprs gtp statistics	Displays the current GTP statistics for the GGSN, such as IE, GTP signaling, and GTP PDU statistics.
show gprs gtp status	Displays information about the current status of the GTP on the GGSN, such as activated PDP contexts, throughput, and QoS statistics.

clear gprs slb statistics

To clear Cisco IOS Server Load Balancing (SLB) statistics, use the **clear gprs slb statistics** command in privileged EXEC configuration mode.

> **clear gprs slb statistics**

Syntax Description   This command has no arguments or keywords.

Defaults   No default behavior or values.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.3(8)XU	This command was introduced.
12.3(8)XU1	This command was integrated into Cisco IOS Release 12.3(8)XU1.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **clear gprs slb statistics** command to clear Cisco IOS SLB statistics. This command clears the counters that are displayed by the **show gprs slb statistics** command.

Examples   The following example clears the Cisco IOS SLB statistics:

```
GGSN# clear gprs slb statistics
```

Related Commands

Command	Description
gprs slb mode	Defines the Cisco IOS SLB operation mode.
gprs slb notify	Enables the GGSN to provide feedback to the Cisco IOS SLB about a certain condition, for example, a Create PDP Create request rejection because of a Call Admission Control failure.
gprs slb vserver	Configures the Cisco IOS SLB virtual servers to be notified about a condition if the **gprs slb notify** command is configured and the Cisco IOS SLB is in directed server NAT mode.
show gprs slb detail	Displays Cisco IOS SLB related information, such as the operation mode, virtual servers addresses, and statistics.
show gprs slb mode	Displays the Cisco IOS SLB mode of operation defined on the GGSN.
show gprs slb statistics	Displays Cisco IOS SLB statistics.
show gprs slb vservers	Displays the list of defined Cisco IOS SLB virtual servers.

clear ip iscsi statistics

To clear current iSCSI statistics, use the **clear ip iscsi statistics** command in privileged EXEC configuration mode.

clear ip iscsi statistics

Syntax Description This command has no arguments or keywords.

Command Default No default behavior or values.

Command Modes Privileged EXEC

Command History

Release	Modification
12.4(15)XQ	This command was introduced.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines The **clear ip iscsi statistics** command clears the statistics displayed by the **show ip iscsi stats** privileged EXEC command.

Examples The following example clears iSCSI-related statistics:

```
clear ip iscsi statistics
```

Related Commands

Command	Description
show ip iscsi stats	Displays iSCSI-related statistics.

clear record-storage-module stats

To clear current record storage module (RSM) statistics, use the **clear record-storage-module stats** command in privileged EXEC configuration mode.

clear record-storage-module stats

Syntax Description   This command has no arguments or keywords.

Command Default   No default behavior or values.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.4(15)XQ	This command was introduced.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   The **clear record-storage-module stats** command clears the statistics displayed by the **show record-storage-module stats** privileged EXEC command.

Examples   The following example clears RSM-related statistics:

```
clear record-storage-module stats
```

Related Commands

Command	Description
show record-storage-module stats	Displays RSM-related statistics.

content dcca profile

To specify a Diameter credit control application (DCCA) client to communicate with a DCCA server in a gateway GPRS support node (GGSN) charging profile, use the **dcca profile** command in charging profile configuration mode. To remove the profile configuration, use the **no** form of this command.

> **content dcca profile** *dcca-profile-name* [**weight** *weight*]

> **no content dcca profile** *dcca-profile-name*

Syntax Description

dcca-profile-name	Name of the DCCA profile configured on the GGSN that defines the DCCA client to communicate with the DCCA server.
weight *max-weight*	(Optional) Assigns a weight to the DCCA profile for weighted round robin load balancing. The valid range is a number from 1 to 255. The default is 1.

Defaults   No default behavior or values.

Command Modes   Charging profile configuration

Command History

Release	Modification
12.3(14)YQ	This command was introduced.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE and the **weight** keyword option was added in addition to support for the configuration of multiple DCCA profiles under a charging profile.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Presence of this configuration in a charging profile indicates that online charging should be applied. A DCCA profile defines the DCCA server group. If the DCCA profile is defined in a charging profile, any PDP using the charging profile has to contact the DCCA server first to determine if online charging should be used.

If a charging profile does not contain a **content dcca profile** configuration, users using the charging profile will be treated as postpaid (offline billing).

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Note This command cannot be modified if the profile is being used by PDP contexts or rules. If the profile is being used by rules, it must be disassociated with the APN before making such configuration changes.

In prior, non-Single IP releases of the Cisco GGSN, each Cisco SAMI PPC ran a GGSN instance, and the APNs of each of those GGSN instances mapped to a single DCCA profile. The same APN across the GGSNs on the Cisco SAMI PPCs could be mapped to different DCCA profiles, enabling an APN on a Cisco SAMI hosting six GGSNs to communicate with one or more DCCA servers. However, with the advent of the Single IP architecture, the GGSN instances on the Cisco SAMI PPCs function as a single GGSN. Therefore, for an APN to communicate with more than one DCCA server, you can configure more than one DCCA server under a charging profile applied to an APN.

For efficient utilization of the DCCA servers, subscribers are load balanced among the servers using a weighted round-robin selection of DCCA profiles defined in the charging profile applied to the APN. This means that the next DCCA profile defined in a charging profile is used whenever a new primary PDP context uses the charging profile. If you associate a weight to a DCCA profile (using the **weight** keyword option), that profile is used for the corresponding weight before the next DCCA profile is used. The GGSN uses the same OCS/DCCA for the duration of the primary and all secondary PDPs.

Examples The following configuration example defines a DCCA client profile named dcca-profile1 in Charging Profile 1:

```
gprs charging profile 1
  content dcca profile dcca-profile1 weight 3
  content dcca profile dcca-profile2 weight 1
```

Related Commands.

Command	Description
category	Identifies the subscriber category to which a charging profile applies.
charging profile	Associates a default charging profile to an access point.
content postpaid time	Specifies for postpaid subscribers when service-aware billing is enabled, the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
content postpaid validity	Specifies for postpaid subscribers when service-aware billing is enabled, the amount of time quota is valid for postpaid subscribers.
content postpaid volume	Specifies for postpaid subscribers when service-aware billing is enabled, the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
content rulebase	Associates a default rule-base ID with a charging profile.
description	Specifies the name or a brief description of a charging profile.
gprs charging characteristics reject	Specifies that Create PDP Context requests for which no charging profile can be selected be rejected by the GGSN.
gprs charging container time-trigger	Specifies a global time limit that, when exceeded by a PDP context, causes the GGSN to close and update the G-CDR for that particular PDP context.
gprs charging profile	Creates a new charging profile (or modifies an existing one), and enters charging profile configuration mode.

Command	Description
limit duration	Specifies the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
limit sgsn-change	Specifies the maximum number of SGSN changes that can occur before closing and updating the G-CDR for a particular PDP context.
limit volume	Specifies the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
tariff-time	Specifies that a charging profile use the tariff changes configured by the **gprs charging tariff-time** global configuration command.

content postpaid

To configure a condition in a charging profile for postpaid subscribers that, when the condition occurs, triggers the GGSN to request quota reauthorization for a PDP context, use the **content postpaid** charging profile configuration command. To return to the default value, use the **no** form of this command.

> **content postpaid** {**plmn-change** | **qos-change** | **rat-change** | **sgsn-change** | **user-loc-info-change** | **time** *number* | **validity** *seconds* | **volume** *threshold_value*}

> **no content postpaid** {**plmn-change** | **qos-change** | **rat-change** | **sgsn-change** | **user-loc-info-change** | **time** | **validity** | **volume**}

Syntax Description

plmn-change	Configures a public land mobile network (PLMN) change to trigger a quota reauthorization.
qos-change	Configures a quality of service (QoS) change to trigger a quota reauthorization.
rat-change	Configures a radio access technology (RAT) change to trigger a quota reauthorization. The RAT indicates whether the SGSN serves the user equipment (UE) UMTS or GSM/EDGE RAN (GERAN).
sgsn-change	Configures a serving GPRS support node (SGSN) change to trigger a quota reauthorization.
user-loc-info-change	Configures a user location information change to trigger a quota reauthorization.
time *number*	Configures a time duration limit for postpaid subscribers when service-aware billing is enabled that, when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the call detail record (CDR) for a PDP context.
	Valid value, in seconds, is a number between 300 and 4294967295 that specifies the time duration limit. The default is 1048576 seconds.
validity *seconds*	Configures the amount of time that quota granted is valid for a postpaid subscriber when service-aware billing is enabled.
	Valid value, in seconds, is a number between 900 and 4294967295.
volume *threshold_value*	Configures for postpaid subscribers, the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
	Valid value is a number between 1 and 4294967295 that specifies the container threshold value, in bytes. The default is 1,048,576 bytes (1 MB).

Defaults
QoS and SGSN changes trigger a quota reauthorization.

Command Modes
Charging profile configuration

Command History	Release	Modification
	12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG, and the **plmn-change** and **rat-change** keyword options were added.
	12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
	12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE and the **user-loc-info-change** keyword option was added.
	12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
	12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
	12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
	12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
	12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
	12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines The **content postpaid** command is configured under the charging profile. It is valid only for postpaid, service-aware PDP context; the command specifies what conditions trigger the reauthorization of quota for PDP by the GGSN.

Note The **plmn-change** and **rat-change** keyword options require that the GGSN is enabled to include the RAT or PLMN ID fields in the Service Record information element (IE) by the **gprs charging service record include** global configuration command.

Note With Cisco GGSN Release 9.2 and later, when an enhanced quota server interface is configured, the Cisco GGSN does not function as a quota server for service-aware postpaid users. Therefore, with Cisco IOS Release 12.2(22)YE2 and later, the **content** charging profile configuration commands are ignored as well as the charging profile configuration commands that configure trigger conditions for postpaid users not using an enhanced quota server interface.

For more information about configuring enhanced service-aware billing, see *Cisco GGSN Configuration Guide*.

Examples The following example configures multiple triggers for postpaid subscribers in Charging profile 1:

```
gprs charging profile 1
  category prepaid
  limit sgsn-change 0
  content rulebase badrulebase
  content dcca profile dcca-profile1
  content postpaid volume 100
  content postpaid time 300
  content postpaid validity 21600
  content postpaid sgsn-change
  content postpaid qos-change
  content postpaid rat-change
  content postpaid plmn-change
```

Related Commands..	Command	Description
	gprs charging service-record include	Configures the GGSN to include the PLMN ID, RAT, and User-Location-Info fields in the Service Record IE.

content postpaid time

To configure the time duration limit for postpaid subscribers when service-aware billing is enabled that, when exceeded, causes the gateway GPRS support node (GGSN) to collect upstream and downstream traffic byte counts and close and update the call detail record (CDR) for a particular packet data protocol (PDP) context, use the **content postpaid time** command in charging profile configuration mode. To return to the default value, use the **no** form of this command.

content postpaid time *number*

no content postpaid time

Syntax Description	*number*	A value, in seconds, between 300 and 4294967295 that specifies the time duration limit.

Defaults 1048576 seconds.

Command Modes Charging profile configuration

Command History	Release	Modification
	12.3(14)YQ	This command was introduced.
	12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
	12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
	12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
	12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
	12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
	12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
	12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
	12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
	12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
	12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
	12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **content postpaid time** charging profile configuration command to specify the time limit that, when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a PDP context for postpaid subscribers.

> **Note**   With Cisco GGSN Release 9.2 and later, when an enhanced quota server interface is configured, the Cisco GGSN does not function as a quota server for service-aware postpaid users. Therefore, with Cisco IOS Release 12.2(22)YE2 and later, the **content** charging profile configuration commands are ignored as well as the charging profile configuration commands that configure trigger conditions for postpaid users not using an enhanced quota server interface.

> For more information about configuring enhanced service-aware billing, see *Cisco GGSN Configuration Guide*.

Examples   The following configuration example specifies a postpaid time duration limit 400 minutes in Charging Profile 1:

```
gprs charging profile 1
  content dcca profile dcca-profile1
  content postpaid time 400
```

Related Commands.

Command	Description
category	Identifies the subscriber category to which a charging profile applies.s
charging profile	Associates a default charging profile to an access point.
content dcca profile	Defines a DCCA client profile in a GGSN charging profile.
content postpaid validity	Specifies for postpaid subscribers when service-aware billing is enabled, the amount of time quota granted to a postpaid subscriber is valid.
content postpaid volume	Specifies for postpaid subscribers when service-aware billing is enabled, the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
content rulebase	Associates a default rule-base ID with a charging profile.
description	Specifies the name or a brief description of a charging profile.
gprs charging characteristics reject	Specifies that Create PDP Context requests for which no charging profile can be selected be rejected by the GGSN.
gprs charging container time-trigger	Specifies a global time limit that, when exceeded by a PDP context, causes the GGSN to close and update the G-CDR for that particular PDP context.
gprs charging profile	Creates a new charging profile (or modifies an existing one), and enters charging profile configuration mode.
limit duration	Specifies the time duration limit that, when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
limit sgsn-change	Specifies the maximum number of SGSN changes that can occur before closing and updating the G-CDR for a particular PDP context.

Command	Description
limit volume	Specifies the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
tariff-time	Specifies that a charging profile use the tariff changes configured by the **gprs charging tariff-time** global configuration command.

content postpaid validity

To specifythe amount of time quota granted is valid for a postpaid subscriber when service-aware billing is enabled, use the **content postpaid validity** command in charging profile configuration mode. To return to the default value, use the **no** form of this command.

> **content postpaid validity** *seconds*

> **no content postpaid validity**

Syntax Description	*seconds*	A value between 900 and 4294967295 seconds that specifies the amount of time granted quota is valid.

Defaults	Disabled.

Command Modes	Charging profile configuration

Command History

Release	Modification
12.3(14)YQ	This command was introduced.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **content postpaid validity** charging profile configuration command to configure the amount of time quota granted to postpaid subscribers is valid.

> ✎
>
> **Note**   With Cisco GGSN Release 9.2 and later, when an enhanced quota server interface is configured, the Cisco GGSN does not function as a quota server for service-aware postpaid users. Therefore, with Cisco IOS Release 12.2(22)YE2 and later, the **content** charging profile configuration commands are ignored as well as the charging profile configuration commands that configure trigger conditions for postpaid users not using an enhanced quota server interface.
>
> For more information about configuring enhanced service-aware billing, see *Cisco GGSN Configuration Guide*.

Examples   The following example specifies a value of 21600:

```
gprs charging profile 1
  content dcca profile dcca-profile1
  content postpaid time 400
  content postpaid volume 2097152
  content postpaid validity 21600
```

Related Commands.

Command	Description
category	Identifies the subscriber category to which a charging profile applies.s
charging profile	Associates a default charging profile to an access point.
content dcca profile	Defines a DCCA client profile in a GGSN charging profile.
content postpaid time	Specifies for postpaid subscribers when service-aware billing is enabled, the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
content postpaid volume	Specifies for postpaid subscribers when service-aware billing is enabled, the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
content rulebase	Associates a default rule-base ID with a charging profile.
description	Specifies the name or a brief description of a charging profile.
gprs charging characteristics reject	Specifies that Create PDP Context requests for which no charging profile can be selected be rejected by the GGSN.
gprs charging container time-trigger	Specifies a global time limit that, when exceeded by a PDP context, causes the GGSN to close and update the G-CDR for that particular PDP context.
gprs charging profile	Creates a new charging profile (or modifies an existing one), and enters charging profile configuration mode.
limit duration	Specifies the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
limit sgsn-change	Specifies the maximum number of SGSN changes that can occur before closing and updating the G-CDR for a particular PDP context.

Command	Description
limit volume	Specifies the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
tariff-time	Specifies that a charging profile use the tariff changes configured by the **gprs charging tariff-time** global configuration command.

content postpaid volume

To specify for postpaid subscribers when service-aware billing is enabled, the maximum number of bytes that the gateway GPRS support node (GGSN) maintains across all containers for a particular packet data protocol (PDP) context before closing and updating the call detail record (CDR), use the **content postpaid volume** command in charging profile configuration mode. To return to the default value, use the **no** form of this command.

content postpaid volume *threshold_value*

no content postpaid volume

Syntax Description	*threshold_value*	A value between 1 and 4294967295 that specifies the container threshold value, in bytes. The default is 1,048,576 bytes (1 MB).

Defaults 1,048,576 bytes (1 MB).

Command Modes Charging profile configuration

Command History

Release	Modification
12.3(14)YQ	This command was introduced.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **content postpaid volume** charging profile configuration command to configure for postpaid subscribers, the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.

> **Note**   With Cisco GGSN Release 9.2 and later, when an enhanced quota server interface is configured, the Cisco GGSN does not function as a quota server for service-aware postpaid users. Therefore, with Cisco IOS Release 12.2(22)YE2 and later, the **content** charging profile configuration commands are ignored as well as the charging profile configuration commands that configure trigger conditions for postpaid users not using an enhanced quota server interface.
>
> For more information about configuring enhanced service-aware billing, see *Cisco GGSN Release Configuration Guide*.

Examples   The following example specifies a threshold value of 2097152:

```
gprs charging profile 1
  content dcca profile dcca-profile1
  content postpaid time 400
  content postpaid volume 2097152
```

Related Commands.

Command	Description
category	Identifies the subscriber category to which a charging profile applies.s
charging profile	Associates a default charging profile to an access point.
content dcca profile	Defines a DCCA client profile in a GGSN charging profile.
content postpaid time	Specifies for postpaid subscribers when service-aware billing is enabled, the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
content postpaid validity	Specifies for postpaid subscribers when service-aware billing is enabled, the amount of time quota granted to a postpaid subscriber is valid.
content rulebase	Associates a default rule-base ID with a charging profile.
description	Specifies the name or a brief description of a charging profile.
gprs charging characteristics reject	Specifies that Create PDP Context requests for which no charging profile can be selected be rejected by the GGSN.
gprs charging containter time-trigger	Specifies a global time limit that, when exceeded by a PDP context, causes the GGSN to close and update the G-CDR for that particular PDP context.
gprs charging profile	Creates a new charging profile (or modifies an existing one), and enters charging profile configuration mode.
limit duration	Specifies the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
limit sgsn-change	Specifies the maximum number of SGSN changes that can occur before closing and updating the G-CDR for a particular PDP context.

Command	Description
limit volume	Specifies the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
tariff-time	Specifies that a charging profile use the tariff changes configured by the **gprs charging tariff-time** global configuration command.

content rulebase

To associate a default rule-base ID to apply to packet data protocol (PDP) contexts using a particular charging profile, use the **rulebase** command in charging profile configuration mode. To return to the default value, use the **no** form of the command.

content rulebase *id*

no content rulebase

Syntax Description

name	16-character string that identifies the rulebase.

Defaults   Disabled.

Command Modes   Charging profile configuration

Command History

Release	Modification
12.3(14)YQ	This command was introduced.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **content rulebase** charging profile configuration command to define a default rulebase ID to a charging profile.

Rulebases contain the rules for defining categories of traffic; categories on which decisions such as whether to allow or disallow traffic, and how to measure the traffic, are based. The GGSN maps Diameter Rulebase IDs to Cisco Content Services Gateway (CSG) billing plans.

Note   The rulebase value presented in a RADIUS Access Accept message overrides the default rulebase ID configured in a charging profile. A rulebase ID received in a credit control answer (CCA) initial message from a Diameter credit control application (DCCA) server overrides the Rulebase ID received from the RADIUS server and the default rulebase ID configured in a charging profile.

For Gy:DCCA prepaid solution, the Rulebase ID cannot be received in a DCCA and the Rulebase ID does not apply to the standalone prepaid solution.

Examples   The following example specifies a default rulebase with the ID of "PREPAID" in Charging Profile 1:

```
gprs charging profile 1
  content dcca profile dcca-profile1
  content postpaid time 400
  content rulebase PREPAID
```

Related Commands.

Command	Description
category	Identifies the subscriber category to which a charging profile applies.s
charging profile	Associates a default charging profile to an access point.
content dcca profile	Defines a DCCA client profile in a GGSN charging profile.
content postpaid time	Specifies for postpaid subscribers when service-aware billing is enabled, the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
content postpaid volume	Specifies for postpaid subscribers when service-aware billing is enabled, the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
description	Specifies the name or a brief description of a charging profile.
gprs charging characteristics reject	Specifies that Create PDP Context requests for which no charging profile can be selected be rejected by the GGSN.
gprs charging container time-trigger	Specifies a global time limit that, when exceeded by a PDP context, causes the GGSN to close and update the G-CDR for that particular PDP context.
gprs charging profile	Creates a new charging profile (or modifies an existing one), and enters charging profile configuration mode.
limit duration	Specifies the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
limit sgsn-change	Specifies the maximum number of SGSN changes that can occur before closing and updating the G-CDR for a particular PDP context.

Command	Description
limit volume	Specifies the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
tariff-time	Specifies that a charging profile use the tariff changes configured by the **gprs charging tariff-time** global configuration command.

csg-group (access-point)

To configure one or more Cisco Content Services Gateway - 2nd Generation (CSG2) groups under an APN, use the **csg-group** command in access-point configuration mode. To remove the CSG group configuration, use the **no** form of the command.

> **csg-group** *csg-group-name*

> **no csg-group** *csg-group-name*

Syntax Description	*csg-group-name*	Name of the CSG group.

Defaults   No default behavior or values.

Command Modes   Access-point configuration

Command History

Release	Modification
12.2(24)YE	This command was introduced.

Usage Guidelines   Use the **csg-group** command to configure a CSG server group under an APN to use for quota server-to-CSG communication for that APN when service-aware billing is enabled.

Multiple CSG server groups can be defined.

> ✎
>
> **Note**   The **csg-group** access point configuration command and the **csg group** quota server configuration command are mutually exclusive. You cannot define a CSG group under an APN if one is already configured under the quota server interface.

Examples   The following configuration example configures a CSG server group named "csg1" under an APN:

```
csg-group csg1
```

Related Commands

Command	Description
aggregate	Configures the Cisco GGSN to create an aggregate route in its IP routing table.

csg group (quota server)

To associate the quota server to a Cisco Content Services Gateway (CSG) server group to use for quota server-to-CSG communication, use the **csg group** command in quota server configuration mode. To remove the association to a CSG group, use the **no** form of this command

csg group *csg-group-name*

no csg group *csg-group-name*

Syntax Description

csg-group-name	Specifies the name of a CSG server group to use for quota server-to-CSG communication.
	Note The name of the CSG group that you specify must correspond to a CSG server group you created using the **ggsn csg-group** global configuration command.

Defaults   No default behavior or values.

Command Modes   Quota server configuration

Command History

Release	Modification
12.3(14)YQ	This command was introduced.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **csg group** command to associate the quota server with the CSG server group for quota server-to-CSG communication.

This functionality requires that a CSG server group is defined on the gateway GPRS support node (GGSN) by the **ggsn csg-group** global configuration command and associated CSG group configuration commands.

⚠

Caution Deconfiguring this command will disassociate the quota server and CSG group and bring the path to the CSG down if it is up.

✎

Note The the **csg group** quota server configuration command and the **csg-group** access point configuration command are mutually exclusive. You cannot define a CSG group under the quota server interface if one has already been configured under an APN.

Examples The following configuration example specifies for the quota server to use CSG group "csg1" for quota server-to-CSG communication:

```
ggsn quota-server qs1
 interface loopback1
 echo-interval 90
 n3-requests 3
 t3-response 524
 csg group csg1
```

Related Commands .

Command	Description
echo-interval	Specifies the number of seconds that the quota server waits before sending an echo-request message to the CSG.
ggsn quota-server	Configures the quota server process that interfaces with the CSG for enhanced service aware billing.
interface	Specifies the logical interface, by name, that the quota server will use to communicate with the CSG.
n3-requests	Specifies the maximum number of times that the quota server attempts to send a signaling request to the CSG.
scu-timeout	Configures the amount of time, in seconds, the GGSN waits for service control usage from the Cisco CSG2 before deleting the service control request.
t3-response	Specifies the initial time that the quota server waits before resending a signaling request message when a response to a request has not been received.
show ggsn quota-server	Displays quota server parameters or statistics about the message and error counts.

description (charging group)

To add a description to a charging gateway group, use the **description** command in charging group configuration mode. To delete the description, use the **no** form of this command.

description *text-description*

no description *text-description*

Syntax Description

text-description	Charging gateway group.

Defaults No default behavior or values.

Command Modes Charging group configuration

Command History

Release	Modification
12.4(22)YE	This command was introduced.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines Use the **description** command to add a description to a charging gateway group.

Examples The following example configures a description for a charging group:

```
Router(config)# gprs charging group 5
Router(config-chrg-group)# description groupA
```

Related Commands

Command	Description
grps charging group	Defines or modifies a charging gateway group.
iscsi	Configures an iSCSI target to use for CDR storage for a charging gateway group when no charging gateway defined in the group is available.
primary	Configures a primary charging gateway for a charging gateway group.
secondary	Configures a secondary charging gateway for a charging gateway group.
service-mode	Configures the service-mode state of a charging group.

Command	Description
show gprs charging statistics	Displays cumulative charging statistics for the GGSN.
show gprs charging summary	Displays a summary of all charging groups defined on the GGSN.
switchover priority	Configures the GGSN to switch to the gateway of higher priority in a charging gateway group (1 through 29) when the gateway becomes active.
tertiary	Configures a tertiary charging gateway for a charging gateway group.

description (charging profile)

To specify the name or a brief description of a charging profile, use the **description** command in charging profile configuration mode. To delete a charging profile description, use the **no** form of the command.

description *string*

no description

Syntax Description

string	Text string (up to 99 characters) that describes the charging profile.

Defaults   There is no charging profile description.

Command Modes   Charging profile configuration

Command History

Release	Modification
12.3(8)XU	This command was introduced.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.o
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **description** charging profile configuration mode command to provide a description of a charging profile.

Examples   The following example describes a profile as access point name (APN)-level default for home users:

```
description APN-level_default_for_home_users
```

Related Commands.	Command	Description
	category	Identifies the subscriber category to which a charging profile applies.s
	cdr suppression	Specifies that CDRs be suppressed as a charging characteristic in a charging profile.
	charging profile	Associates a default charging profile to an access point.
	content dcca profile	Defines a DCCA client profile in a GGSN charging profile.
	content postpaid time	Specifies for postpaid subscribers when service-aware billing is enabled, the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
	content postpaid validity	Specifies for postpaid subscribers when service-aware billing is enabled, the amount of time quota granted to a postpaid subscriber is valid.
	content postpaid volume	Specifies for postpaid subscribers when service-aware billing is enabled, the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
	content rulebase	Associates a default rule-base ID with a charging profile.
	gprs charging characteristics reject	Specifies that Create PDP Context requests for which no charging profile can be selected be rejected by the GGSN.
	gprs charging container time-trigger	Specifies a global time limit that, when exceeded by a PDP context, causes the GGSN to close and update the G-CDR for that particular PDP context.
	gprs charging profile	Creates a new charging profile (or modifies an existing one), and enters charging profile configuration mode.
	limit duration	Specifies the time duration limit that when exceeded, causes the GGSN to collect upstream and downstream traffic byte counts and close and update the G-CDR for a particular PDP context.
	limit sgsn-change	Specifies the maximum number of SGSN changes that can occur before closing and updating the G-CDR for a particular PDP context.
	limit volume	Specifies the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR.
	tariff-time	Specifies that a charging profile use the tariff changes configured by the **gprs charging tariff-time** global configuration command.

destination-realm

To configure the destination realm to be sent in credit control response (CCR) initial requests to a Diameter credit control application (DCCA) server, use the **destination-realm** command in DCCA profile configuration mode. To remove the destination realm configuration, use the **no** form of this command

destination-realm *name*

no destination-realm

Syntax Description	*name*	Name of the domain (i.e. *cisco*.com) in which the DCCA client is located.

Defaults   No default behavior or values.

Command Modes   DCCA client configuration

Command History

Release	Modification
12.3(14)YQ	This command was introduced.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **diameter-realm** command to specify the destination realm to be sent in CCR initial requests to a DCCA server.

Examples   The following configuration example configures "cisco.com" as the destination realm:

```
Diameter peer dcca1
 address ipv4 10.10.10.1
 transport tcp port 4000
 security ipsec
 source interface fastEthernet0
 timer connection 120
 destination host dcca1.cisco.com
 destination realm cisco.com
```

Related Commands

Command	Description
authorization	Defines a method of authorization (AAA method list), in the DCCA client profile, that specifies the Diameter server groups.
ccfh	Configures the Credit Control Failure Handling (CCFH) AVP locally for a credit-control session when the Credit Control Answer (CCA) sent by the DCCA server does not contain CCFH value.
content dcca profile	Defines the DCCA client profile in a GGSN charging profile.
gprs dcca profile	Defines a DCCA client profile on the GGSN and enters DCCA client profile configuration mode.
session-failover	Configures Credit Control Session Failover (CCSF) AVP support when a credit control answer (CCA) message from the DCCA server does not contain a value for the CCSF AVP.
trigger	Specifies that SGSN and QoS changes will trigger a DCCA client to request quota-reauthorization
tx-timeout	Configures a TX timeout value used by the DCCA client to monitor the communication of Credit Control Requests (CCRs) with a Diameter server.

dhcp-gateway-address

To specify the subnet in which the DHCP server should return addresses for DHCP requests for mobile station (MS) users entering a particular public data network (PDN) access point, use the **dhcp-gateway-address** command in access point configuration mode. To remove a DHCP gateway address and return to the default, use the **no** form of this command.

> **dhcp-gateway-address** *ip-address*

> **no dhcp-gateway-address**

Syntax Description	*ip-address* The IPv4 address of the DHCP gateway to use in DHCP requests for users who connect through the specified access point.

Defaults   When you do not configure a **dhcp-gateway-address**, the gateway GPRS support node (GGSN) uses the virtual template interface address as the DHCP gateway address.

Command Modes   Access point configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was integrated into Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   The **dhcp-gateway-address** specifies the value of the giaddr field that is passed in DHCP messages between the GGSN and the DHCP server. If you do not specify a DHCP gateway address, the address assigned to the virtual template is used.

Though a default value for the virtual template address will occur, you should configure another value for the **dhcp-gateway-address** command whenever you are implementing DHCP services at an access point.

If the access point is configured for VPN routing and forwarding (VRF), then the dynamic (or static addresses) returned for MSs of packet data protocol (PDP) contexts at the access point will also be part of that VRF address space. If the DHCP server is located within the VRF address space, then the corresponding loopback interface for the **dhcp-gateway-address** must also be configured within the VRF address space.

Note   The **dhcp-gateway-address** configuration applies to IPv4 PDPs only.

Examples   The following example specifies an IP address of 10.88.0.1 for the giaddr field (the **dhcp-gateway-address**) of DHCP server requests. Note that the IP address of a loopback interface, in this case Loopback2, matches the IP address specified in the **dhcp-gateway-address** command. This is required for proper configuration of DHCP on the GGSN.

```
interface Loopback2
 ip address 10.88.0.1 255.255.255.255
!
gprs access-point-list gprs
 access-point 8
   access-point-name pdn.aaaa.com
   ip-address-pool dhcp-proxy-client
   aggregate auto
   dhcp-server 172.16.43.35
   dhcp-gateway-address 10.88.0.1
   exit
```

Related Commands

Command	Description
dhcp-server	Specifies a primary (and backup) DHCP server to allocate IP addresses to MS users entering a particular PDN access point.
gprs default ip-address-pool	Specifies a dynamic address allocation method using IP address pools for the GGSN.
ip-address-pool	Specifies a dynamic address allocation method using IP address pools for the current access point.

dhcp-server

To specify a primary (and backup) DHCP server to allocate IPv4 addresses to mobile station (MS) users entering a particular public data network (PDN) access point, use the **dhcp-server** command in access point configuration mode. To remove the DHCP server from the access point configuration, use the **no** form of this command.

dhcp-server {*ip-address*} [*ip-address*] [**vrf**]

no dhcp-server

Syntax Description		
ip-address	IPv4 address of a DHCP server. The first *ip-address* argument specifies the IP address of the primary DHCP server. The second (optional) *ip-address* argument specifies the IP address of a backup DHCP server.	
vrf	DHCP server uses the VPN routing and forwarding (VRF) table that is associated with the access point name (APN).	

Defaults Global routing table

Command Modes Access point configuration

Command History	Release	Modification
	12.1(1)GA	This command was introduced.
	12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
	12.2(4)MX	This command was integrated into Cisco IOS Release 12.2(4)MX, with the following changes:
		• The **vrf** keyword was added.
		• The *name* argument, as an option for a hostname in place of the IP address of a host, is removed.
	12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
	12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
	12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
	12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
	12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
	12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
	12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
	12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
	12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
	12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
	12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
	12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.

Release	Modification
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines
To configure DHCP on the gateway GPRS support node (GGSN), you must configure either the **gprs default ip-address-pool** global configuration command, or the **ip-address-pool** access point configuration command with the **dhcp-proxy-client** keyword option.

After you configure the access point for DHCP proxy client services, use the **dhcp-server** command to specify a DHCP server.

Use the *ip-address* argument to specify the IP address of the DHCP server. The second, optional *ip-address* argument can be used to specify the IP address of a backup DHCP server to use in the event that the primary DHCP server is unavailable. If you do not specify a backup DHCP server, then no backup DHCP server is available.

The DHCP server can be specified in two ways:

- At the global configuration level, by the **gprs default dhcp-server** command.
- At the access point configuration level, by the **dhcp-server** command.

If you specify a DHCP server at the access point level, using the **dhcp-server** command, then the server address specified at the access point overrides the address specified at the global level. If you do not specify a DHCP server address at the access point level, then the address specified at the global level is used.

Therefore, you can have both a global address setting one or more local access point level settings if you need to use different DHCP servers for different access points.

Use the **vrf** keyword when the DHCP server itself is located within the address space of a VRF interface on the GGSN. If the DHCP server is located within the VRF address space, then the corresponding loopback interface for the **dhcp-gateway-address** must also be configured within the VRF address space.

✎
Note The **dhcp-server** configuration applies to IPv4 PDPs only.

Examples
Example 1

The following example specifies both primary and backup DHCP servers to allocate IP addresses to mobile station users through a non-VPN access point. Because the **vrf** keyword is not configured, the default global routing table is used. The primary DHCP server is located at IP address 10.60.0.1, and the secondary DHCP server is located at IP address 10.60.0.2:

```
access-point 2
 access-point-name xyz.com
 dhcp-server 10.60.0.1 10.60.0.2
 dhcp-gateway-address 10.60.0.1
 exit
```

Related Commands	Command	Description
	dhcp-gateway-address	Specifies the subnet in which the DHCP server should return addresses for DHCP requests for MS users entering a particular PDN access point.
	ip-address-pool	Specifies a dynamic address allocation method using IP address pools for the current access point.
	vrf	Configures VPN routing and forwarding at a GGSN access point and associates the access point with a particular VRF instance.

dns primary

To specify a primary (and backup) Domain Name System (DNS) to be sent in IPv4 create packet data protocol (PDP) context responses at the access point, use the **dns primary** command in access point configuration mode. To remove the DNS from the access point configuration, use the **no** form of this command.

> **dns primary** *ip-address* [**secondary** *ip-address*]

> **no dns primary** *ip-address* [**secondary** *ip-address*]

Syntax Description		
	ip-address	IPv4 address of the primary DNS.
	secondary *ip-address*	(Optional) Specifies the IPv4 address of the backup DNS.

Defaults   No default behavior or values.

Command Modes   Access point configuration

Command History

Release	Modification
12.2(8)YY	This command was introduced.
12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines Use the **dns primary** command to specify the primary (and backup) DNS at the access point level.

This feature benefits address-allocation schemes which have no mechanism for obtaining these addresses. Also, for a RADIUS-based allocation scheme, this feature prevents the operator from having to configure a NetBIOS Name Server (NBNS) and DNS for each user profile.

The DNS address can come from three possible sources: DHCP server, RADIUS server, or local access point name (APN) configuration. The criterion for selecting the DNS address depends on the IP address allocation scheme configured under the APN. Depending on the configuration, the criterion for selecting the DNS address is as follows:

1. DHCP-based IP address allocation scheme (local and external)—A DNS address returned from the DHCP server is sent to the mobile station (MS). If the DHCP server does not return a DNS address, the local APN configuration is used.

2. RADIUS-based IP address allocation scheme—A DNS address returned from the RADIUS server (in Access-Accept responses) is used. If the RADIUS server does not return a DNS address, the local APN configuration is used.

3. Local IP address pool-based IP address allocation scheme—A local APN configuration is used.

4. Static IP addresses—A local APN configuration is used.

> **Note** The gateway GPRS support node (GGSN) sends DNS addresses in the Create PDP Context response only if the MS is requesting the DNS address in the protocol configuration option (PCO) information element (IE).

Examples The following example specifies a primary DNS and a secondary DNS at the access point level:

```
access-point 2
 access-point-name xyz.com
 dns primary 10.60.0.1 secondary 10.60.0.2
 exit
```

Related Commands

Command	Description
ip-address-pool	Specifies a dynamic address allocation method using IP address pools for the current access point.
nbns primary	Specifies a primary (and backup) NBNS at the access point level.

echo-interval

To specify the number of seconds that the quota server waits before sending an echo-request message to the Cisco Content Services Gateway (CSG), use the **echo-interval** command in quota server configuration mode. To return to the default value, use the **no** form of this command

echo-interval *interval*

no echo-interval *interval*

Syntax Description	*interval*	Number of seconds that the quota server waits before sending an echo request message to the CSG. Valid values are 0 (quota server-initiated echo messages are disabled) or a value between 60 to 65535. The default is 60.

Defaults   60 seconds.

Command Modes   Quota server configuration

Command History

Release	Modification
12.3(14)YQ	This command was introduced.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **echo-interval** command to specify the interval that the quota server waits before sending an echo-request message to the CSG to check for GPRS tunneling protocol (GTP) path failure.

Note   A value of 0 seconds disables echo requests on the quota server.

Examples   The following example configures the quota server to wait 90 seconds before sending an echo-request message:

```
ggsn quota-server qs1
 interface loopback1
 echo-interval 90
```

Related Commands .

Command	Description
clear ggsn quota-server statistics	Clears the quota server-related statistics displayed by the **show ggsn quota-server statistics** command.
csg group	Associates the quota server to a CSG group to use for quota server-to-CSG communication.
ggsn quota-server	Configures the quota server process that interfaces with the CSG for enhanced service aware billing.
interface	Specifies the logical interface, by name, that the quota server will use to communicate with the CSG.
n3-requests	Specifies the maximum number of times that the quota server attempts to send a signaling request to the CSG.
scu-timeout	Configures the amount of time, in seconds, the GGSN waits for service control usage from the Cisco CSG2 before deleting the service control request.
t3-response	Specifies the initial time that the quota server waits before resending a signaling request message when a response to a request has not been received.
show ggsn quota-server	Displays quota server parameters or statistics about the quota server message and error counts.

encapsulation gtp

To specify the GPRS tunneling protocol (GTP) as the encapsulation type for packets transmitted over the virtual template interface, use the **encapsulation gtp** command in interface configuration mode. To remove the GTP encapsulation type and return to the default, use the **no** form of this command.

encapsulation gtp

no encapsulation gtp

Syntax Description   This command has no arguments or keywords.

Defaults   Point-to-point protocol (PPP) encapsulation

Command Modes   Interface configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was integrated into Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **encapsulation gtp** command to specify the GTP as the encapsulation type for a virtual template. This is a mandatory setting for the gateway GPRS support node (GGSN).

Examples   The following example specifies the GTP as the encapsulation type:

```
interface virtual-template 1
 ip unnumber loopback 1
 no ip directed-broadcast
 encapsulation gtp
```

gbr traffic-class

To define in a Call Admission Control (CAC) maximum quality of service (QoS) policy, the highest guaranteed bit rate (GBR) that can be allowed for real-time traffic, use the **gbr traffic-class** command in CAC maximum QoS policy configuration mode. To return to the default value, use the **no** form of this command.

gbr traffic-class *traffic-class-name bitrate* {**uplink** | **downlink**} [**reject**]

no gbr traffic-class *traffic-class-name bitrate* {**uplink** | **downlink**} [**reject**]

Syntax Description		
	traffic-class-name	Specifies the Universal Mobile Telecommunication System (UMTS) traffic class to which the GBR applies. Valid values are Conversational and Streaming.
	bitrate	Guaranteed bit rate in kilobits per second. Valid value is between 1 and 256000.
	uplink	Specifies GBR applies to a traffic-class for uplink traffic.
	downlink	Specifies GBR applies to a traffic-class for downlink traffic.
	reject	(Optional) Specifies that when the GBR exceeds the configured value, the Create PDP Context request is rejected. This option is ignored for Update PDP Context requests.

Defaults   If the GBR in a Create PDP Context request or Update PDP Context request is greater than the configured value, the requested GBR is downgraded to the configured value.

Command Modes   CAC maximum QoS policy configuration

Command History	Release	Modification
	12.3(8)XU	This command was introduced.
	12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
	12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
	12.3(14)YU	This command was integrated into the Cisco IOS Release 12.3(14)YU, and to support High Speed Downlink Packet Access, the maximum data transmission rate in the downlink direction was increased to 16000 kilobits.
	12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
	12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
	12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
	12.4(22)YE	This command was integrated into the Cisco IOS Release 12.4(22)YE and the maximum valid value for the bit rate was changed from 16000 to 256000 kbps.
	12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
	12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.

Release	Modification
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **gbr traffic-class** CAC maximum QoS policy configuration command to define the highest GBR that can be accepted for real-time traffic on an APN.

When the **reject** optional keyword is specified, if the requested GBR exceeds the configured value, the Create PDP Context is rejected.

If the **reject** keyword is not specified and the GBR in a create or update PDP context is greater than the configured value, the requested GBR is downgraded to the configured value.

Note   This command does not apply to non real-time traffic classes (Interactive or Background).

Examples   The following example configures the maximum GBR for conversational class as 1000 kilobits in the uplink direction:

```
gbr traffic-class conversational 1000 uplink
```

Related Commands

Command	Description
cac-policy	Enables the maximum QoS policy function of the CAC feature and applies a policy to an APN.
gprs qos cac-policy	Creates or modifies a CAC maximum QoS policy.
maximum delay-class	Defines the maximum delay class for R97/R98 (GPRS) QoS that can be accepted.
maximum peak-throughput	Defines the maximum peak throughput for R97/R98 (GPRS) QoS that can be accepted.
maximum pdp-context	Specifies the maximum PDP contexts that can be created for a particular APN.
maximum traffic-class	Defines the highest traffic class that can be accepted.
mbr traffic-class	Specifies the highest maximum bit rate that can be allowed for each traffic class for both directions (downlink and uplink).

ggsn csg-group

To configure a Cisco Content Services Gateway - 2nd Generation (CSG2) group on the gateway GPRS support node (GGSN), for quota server-to-CSG communication, use the **ggsn csg-group** command in global configuration mode. To unconfigure the CSG group, use the **no** form of this command

ggsn csg-group *csg-group-name*

no ggsn csg-group *csg-group-name*

Syntax Description	*csg-group-name* Name of the CSG group.

Defaults No default behavior or values.

Command Modes Global configuration

Command History

Release	Modification
12.3(14)YQ	This command was introduced.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE and support for the configuration of multiple CSG groups was added.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines Use the **ggsn csg-group** command to configure a CSG server group on the GGSN to use for quota server-to-CSG communication when service-aware billing is enabled. Multiple CSG server groups can be defined per GGSN.

One GPRS tunneling protocol (GTP) path is established between the quota server and a CSG2 at a time. On the GTP path, echo and node alive messages are exchanged.

Note Dynamic echo, recovery IE detection are not supported.

Issuing the **ggsn csg-group** command enters CSG server group configuration mode. In CSG server group configuration mode, you can define the virtual address of the CSG server group, the port number on which the CSG listens for quota server traffic, and the real addresses of up to two CSG2s (active and standby).

Examples   The following configuration example configures two CSG server groups named "csg1" and enters CSG server group configuration mode:

```
ggsn csg-group csg1
```

Related Commands

Command	Description
aaa-group accounting	Specifies the Cisco CSG2 RADIUS interface for accounting services for a CSG group.
port	Configures the port number on which the CSG listens for quota server traffic.
real-address	Configures the IP address of a real CSG for source checking on inbound messages from a CSG.
show ggsn csg	Displays the parameters used by the CSG group or the number of path and quota management messages sent and received by the quota server.
virtual-address	Configures a virtual IP address to which the quota server will send all requests.

ggsn quota-server

To configure the quota server process that interfaces with the Cisco Content Services Gateway (CSG) in a service-aware gateway GPRS support node (GGSN) implementation, use the **ggsn quota-server** command in global configuration mode. To disable the quota server process on the GGSN, use the **no** form of this command.

> **ggsn quota-server** *server-name* [**service-msg**]
>
> **no ggsn quota-server** [*server-name*]

Syntax Description

server-name	Name of the quota server process.
service-msg	(Optional) Enables the quota server process to exchange service control messages.

Defaults

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
12.3(14)YQ	This command was introduced.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2 and the **service-msg** keyword option was added.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines Use the **ggsn quota-server** command to configure the quota server process on a GGSN. Use the no form of the command to disable it. Disabling the quota server interface is supported only when there are no active PDP contexts using the interface.

The Cisco GGSN uses the quota server interface to the Cisco CSG2 to obtain usage information to generate eG-CDRs for the following types of users:

- Service-aware prepaid (Gy) and service-aware postpaid (QS) users

    For prepaid subscribers or for postpaid subscribers configured as postpaid on the CSG2, the GGSN functions as the quota server and adds service containers to the eG-CDRs whenever it receives usage from the CSG2 over the quota server interface.

The GGSN uses the enhanced quota server interface between the GGSN and Cisco CSG2 to exchange of service control messages that enable the GGSN to generate eG-CDRs for the following additional types of users:

- Service-aware prepaid (GTP') users

    In a service-aware GGSN implemented with OCS address selection, the GGSN does not function as a quota server for prepaid users. In a service-aware GGSN implementation with OCS address selection, the Cisco CSG2 has a direct GTP connection to an OCS server from which it obtains quota. The GGSN generates eG-CDRs by obtaining the service usage via the enhanced quota server interface.

- Service-aware postpaid users

    The GGSN does not function as the quota server for service-aware postpaid users. The GGSN uses the enhanced quota server interface to obtain usage from the Cisco CSG2 and adds the usage to the eG-CDRs.

- Policy and Charging Control (PCC)-enabled (Gx) users

    When Gx-enabled users are also prepaid (Gy) users support for eG-CDR generation is as present in releases before Cisco IOS Release 12.4(22)YE2 and the service containers are added to eG-CDRs based on the usage received in quota server messages.

    When a Gx user is also a prepaid user in an implementation in which the CSG2 has a direct OCS interface, or a postpaid user (either service-aware or nonservice-aware), the GGSN will obtain usage from the CSG2 via the enhanced quota server interface and add the usage to the eG-CDRs.

Note With Cisco IOS Release 12.4(22)YE2 and later, when an enhanced quota server interface is enabled on the GGSN, the GGSN does not function as the quota server for service aware postpaid users or Gx postpaid users, therefore, these uses must be configured as postpaid on the Cisco CSG2. For information about configuring the Cisco CSG2, see *Cisco Content Services Gateway 2nd Generation - Release 3.5 Installation and Configuration Guide*.

You can configure one quota server interface per GGSN. Configuring more than one quota server interface overwrites the existing interface.

To complete the quota server configuration, while in quota server configuration mode, you can also complete the following tasks:

- Configure a logical interface via which the quota server communicates with the CSG using the **interface** command

- Configure the duration of the echo interval for quota server path management using the **echo-interval** command. The GGSN quota server and CSG use echo timing to determine the health of the path between them.

- Configure the number of times a message is retransmitted to the CSG using the **n3-requests** command.

- Configure the amount of time the quota server waits for a response from the CSG using the **t3-response** command.

- Associate the quota server with a CSG group using the **csg group** command.

- Configure the amount of time that the GGSN waits to receive service control usage before deleting the service control request using the **scu-timeout** command.

Additionally, when configuring an enhance quota server interface:

- An APN has to be enabled for service-aware billing support (**service-aware** command) or PCC-enabled (**pcc** command) to trigger service control messages.

- GPRS Charging Release 7 must be configured (**gprs charging release 7** command).

- Configure a charging record type for participating APNs (**charging record type** command).

- Configure the sychronization for per-service local sequence number (**gprs redundancy charging sync-window svc-seqnum** command).

Examples   The following configuration example configures the GGSN quota server "gs1" and enters quota server configuration mode:

```
gprs quota-server qs1
```

The following example enables the same quota server process to exchange service control messages:

```
gprs quota-server qs1 service-msg
```

Related Commands .

Command	Description
csg group	Associates the quota server to a CSG group to use for quota server-to-CSG communication.
echo-interval	Specifies the number of seconds that the quota server waits before sending an echo-request message to the CSG.
interface	Specifies the logical interface, by name, that the quota server will use to communicate with the CSG.
n3-requests	Specifies the maximum number of times that the quota server attempts to send a signaling request to the CSG.
scu-timeout	Configures the amount of time, in seconds, the GGSN waits for service control usage from the Cisco CSG2 before deleting the service control request.
t3-response	Specifies the initial time that the quota server waits before resending a signaling request message when a response to a request has not been received.
show ggsn quota-server	Displays quota server parameters or statistics about the quota server message and error counts.

gprs access-point-list

To configure an access point list that you use to define public data network (PDN) access points on the gateway GPRS support node (GGSN), use the **gprs access-point-list** command in global configuration mode. To remove an existing access point list, use the **no** form of this command.

> **gprs access-point-list** *list_name*

> **no gprs access-point-list**

Syntax Description

list_name	The name of the access point list.

Defaults   No access point list is defined.

Command Modes   Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was integrated into Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was integrated into Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was integrated into Cisco IOS Release 12.2(8)YW.
12.3(2)XB	This command was integrated into Cisco IOS Release 12.3(2)XB.
12.3(8)XU	This command was integrated into Cisco IOS Release 12.3(8)XU.
12.3(11)YJ	This command was integrated into Cisco IOS Release 12.3(11)YJ.
12.3(14)YQ	This command was integrated into Cisco IOS Release 12.3(14)YQ.
12.3(14)YU	This command was integrated into Cisco IOS Release 12.3(14)YU.
12.4(2)XB	This command was integrated into Cisco IOS Release 12.4(2)XB.
12.4(9)XG	This command was integrated into Cisco IOS Release 12.4(9)XG.
12.4(15)XQ	This command was integrated into Cisco IOS Release 12.4(15)XQ.
12.4(22)YE	This command was integrated into Cisco IOS Release 12.4(22)YE.
12.4(22)YE1	This command was integrated into Cisco IOS Release 12.4(22)YE1.
12.4(22)YE2	This command was integrated into Cisco IOS Release 12.4(22)YE2.
12.4(24)YE	This command was integrated into Cisco IOS Release 12.4(24)YE.
12.4(24)YE1	This command was integrated into Cisco IOS Release 12.4(24)YE1.
12.4(24)YE2	This command was integrated into Cisco IOS Release 12.4(24)YE2.
12.4(24)YE3	This command was integrated into Cisco IOS Release 12.4(24)YE3.

Usage Guidelines   Use the **gprs access-point-list** command to configure an access list that you use to define PDN access points on the GGSN. Currently, only one access list can be defined per virtual template.

Examples   The following example sets up an access point list that is used to define two GGSN access points:

```
! Virtual Template configuration
interface virtual-template 1
 ip unnumber loopback 1
 no ip directed-broadcast
 encapsulation gtp
 gprs access-point-list abc
!
! Access point list configuration
gprs access-point-list abc
 access-point 1
  access-point-name gprs.somewhere.com
  exit
!
 access-point 2
  access-point-name xyz.com
  exit
```

Related Commands

Command	Description
access-point	Specifies an access point number and enters access point configuration mode.