gprs charging cdr-aggregation-limit

To specify the maximum number of call detail records (CDRs) that the GGSN aggregates in a charging data transfer message to a charging gateway, use the **gprs charging cdr-aggregation-limit** global configuration command. To return to the default value, use the **no** form of this command.

> **gprs charging cdr-aggregation-limit** *cdr-limit*

> **no gprs charging cdr-aggregation-limit** *cdr-limit*

Syntax Description		
cdr-limit	An integer between 1 and 255 that specifies the number of CDRs that can be accumulated in a charging data transfer message. The default is 255 CDRs.	

Defaults   255 CDRs

Command Modes   Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines   Use the **gprs charging cdr-aggregation-limit** command to specify the maximum number of CDRs that can be accumulated in a charging data transfer message to a charging gateway connected to the GGSN.

When the aggregation limit is reached, the GGSN puts the CDRs into a message and immediately sends it to the charging gateway.

To view the configured CDR aggregation limit, use the **show gprs charging parameters** command.

Examples   The following example specifies 128 CDRs:

```
gprs charging cdr-aggregation-limit 128
```

Related Commands

Command	Description
gprs charging container volume-threshold	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.
gprs charging packet-queue-size	Specifies the maximum number of unacknowledged charging data transfer requests that the GGSN maintains in its queue.

Command	Description
gprs charging transfer interval	Specifies the number of seconds that the GGSN waits before it transfers charging data to the charging gateway.
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging cdr-option apn-selection-mode

To enable the GGSN to provide the reason code for APN selection in G-CDRs, use the **gprs charging cdr-option apn-selection-mode** global configuration command. To disable APN selection mode, use the **no** form of this command**.**

> **gprs charging cdr-option apn-selection-mode**

> **no gprs charging cdr-option apn-selection-mode**

Syntax Description   This command has no arguments or keywords.

Defaults   Disabled

Command Modes   Global configuration

Command History

Release	Modification
12.2(4)MX	This command was introduced.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines   Use the **gprs charging cdr-option apn-selection-mode** command to enable the GGSN to provide the reason code for APN selection in G-CDRs.

The following list shows the possible APN selection reason codes:

- 0—MS or network provided, subscription verified
- 1—MS provided, subscription not verified
- 2—Network provided, subscription not verified

To verify configuration of APN selection in G-CDRs, use the **show gprs charging parameters** command.

Examples   The following example enables the GGSN to provide the APN selection mode in G-CDRs:

```
gprs charging cdr-option apn-selection-mode
```

Related Commands

Command	Description
gprs charging cdr-option local-record-sequence-number	Enables the GGSN to use the local record sequence number field in CDRs.
gprs charging cdr-option node-id	Enables the GGSN to specify the node that generated the CDR in the node ID field in G-CDRs.

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Command	Description
gprs charging cdr-option no-partial-cdr-generation	Disables the GGSN from creating partial G-CDRs.
gprs charging cdr-option packet-count	Enables the GGSN to provide uplink and downlink packet counts in the optional record extension field of G-CDRs.
gprs charging cdr-option served-msisdn	Enables the GGSN to provide the MSISDN number from the create PDP context request in G-CDRs.
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging cdr-option local-record-sequence-number

To enable the GGSN to use the local record sequence number field in G-CDRs, use the **gprs charging cdr-option local-record-sequence-number** global configuration command. To disable use of the local record sequence number, use the **no** form of this command**.**

gprs charging cdr-option local-record-sequence-number

no gprs charging cdr-option local-record-sequence-number

Syntax Description

This command has no arguments or keywords.

Defaults

Disabled

Command Modes

Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines

Certain charging data systems use the local record sequence number field in CDRs to associate the partial records generated in the SGSN and GGSN with a particular PDP context. If the charging gateway implements this feature, use the **gprs charging cdr-option local-record-sequence-number** command to enable the feature on the GGSN.

To verify configuration of the local record sequence number in G-CDRs, use the **show gprs charging parameters** command.

Examples

The following example enables the GGSN to provide the local record sequence number field in G-CDRs:

```
gprs charging cdr-option local-record-sequence-number
```

Related Commands

Command	Description
gprs charging cdr-option apn-selection-mode	Enables the GGSN to provide the reason code for APN selection in G-CDRs.
gprs charging cdr-option node-id	Enables the GGSN to specify the node that generated the CDR in the node ID field in G-CDRs.

Command	Description
gprs charging cdr-option no-partial-cdr-generation	Disables the GGSN from creating partial G-CDRs.
gprs charging cdr-option packet-count	Enables the GGSN to provide uplink and downlink packet counts in the optional record extension field of G-CDRs.
gprs charging cdr-option served-msisdn	Enables the GGSN to provide the MSISDN number from the create PDP context request in G-CDRs.
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging cdr-option node-id

To enable the GGSN to specify the node that generated the CDR in the node ID field in G-CDRs, use the **gprs charging cdr-option node-id** global configuration command. To disable specifying the node ID, use the **no** form of this command.

> **gprs charging cdr-option node-id**
>
> **no gprs charging cdr-option node-id**

Syntax Description   This command has no arguments or keywords.

Defaults   Disabled

Command Modes   Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines   Certain charging data systems use the node ID field in CDRs to identify the node that generated the CDR. If the charging gateway that your GGSN communicates with uses this feature, use the **gprs charging cdr-option node-id** command to enable the feature.

To verify configuration of the node ID field in G-CDRs, use the **show gprs charging parameters** command.

Examples   The following example enables the GGSN to use the node ID field in G-CDRs:

```
gprs charging cdr-option node-id
```

Related Commands

Command	Description
gprs charging cdr-option apn-selection-mode	Enables the GGSN to provide the reason code for APN selection in G-CDRs.
gprs charging cdr-option local-record-sequence-number	Enables the GGSN to use the local record sequence number field in G-CDRs.
gprs charging cdr-option no-partial-cdr-generation	Disables the GGSN from creating partial G-CDRs.

Command	Description
gprs charging cdr-option packet-count	Enables the GGSN to provide uplink and downlink packet counts in the optional record extension field of G-CDRs.
gprs charging cdr-option served-msisdn	Enables the GGSN to provide the MSISDN number from the create PDP context request in G-CDRs.
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging cdr-option no-partial-cdr-generation

To disable the GGSN from creating partial CDRs, use the **gprs charging cdr-option no-partial-cdr-generation** global configuration command. To enable partial CDR creation, use the **no** form of this command.

> **gprs charging cdr-option no-partial-cdr-generation**

> **no gprs charging cdr-option no-partial-cdr-generation**

Syntax Description
This command has no arguments or keywords.

Defaults
Non-primary partial CDR generation is enabled.

Command Modes
Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines
Use the **gprs charging cdr-option no-partial-cdr-generation** command when you want all of the fields in the primary G-CDR to be included in any subsequent G-CDRs (partial G-CDRs) for the same PDP context request. By default, partial G-CDRs do not contain the following fields: network initiated PDP context, access point name (network identifier), PDP type, served PDP address, and dynamic address flag.

The CDR fields identify its uniqueness and association with a particular PDP context. When you enable the **gprs charging cdr-option no-partial-cdr-generation** command, the GGSN creates any subsequent G-CDRs for the same PDP context request with the same fields in all G-CDRs and maintains sequence numbering.

If the **gprs charging cdr-option no-partial-cdr-generation** command is configured, and a G-CDR is closed due to any triggers (such as tariff times, or QoS changes), then the GGSN copies the last SGSN (the current SGSN) in the list in the new G-CDR. If the **gprs charging cdr-option no-partial-cdr-generation** command is not configured, the current SGSN is not included in the subsequent partial G-CDR.

If the **gprs charging container sgsn-change-limit** command is configured when the **gprs charging cdr-option no-partial-cdr-generation** command is configured, the list is not sent. This is a reason that the **gprs charging cdr-option no-partial-cdr-generation** command is not compatible with the **gprs charging container sgsn-change-limit** command.

Note Enable this command only when there are no active PDP contexts. Enabling this feature will affect all subsequent PDP contexts.

To verify whether non-primary partial CDR creation is enabled or disabled on the GGSN, use the **show gprs charging parameters** command.

Examples The following example disables non-primary partial CDRs on the GGSN:

```
gprs charging cdr-option no-partial-cdr-generation
```

Related Commands

Command	Description
gprs charging cdr-option apn-selection-mode	Enables the GGSN to provide the reason code for APN selection in G-CDRs.
gprs charging cdr-option local-record-sequence-number	Enables the GGSN to use the local record sequence number field in G-CDRs.
gprs charging cdr-option node-id	Enables the GGSN to specify the node that generated the CDR in the node ID field in G-CDRs.
gprs charging cdr-option packet-count	Enables the GGSN to provide uplink and downlink packet counts in the optional record extension field of G-CDRs.
gprs charging cdr-option served-msisdn	Enables the GGSN to provide the MSISDN number from the create PDP context request in G-CDRs.
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging cdr-option packet-count

To enable the GGSN to provide uplink and downlink packet counts in the optional record extension field of a G-CDR, use the **gprs charging cdr-option packet-count** global configuration command. To disable providing packet counts, use the **no** form of this command.

> **gprs charging cdr-option packet-count**

> **no gprs charging cdr-option packet-count**

Syntax Description   This command has no arguments or keywords.

Defaults   Disabled

Command Modes   Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines   When you issue the **gprs charging cdr-option packet-count** command, then the GGSN provides a packet count in the optional record extension field for all uplink and downlink packets transferred since the CDR was opened and subsequently closed.

The following object IDs (OIDs) are used in the optional record extension field of the CDR for the uplink and downlink packet counts:

- OID of the uplink packet count—1.3.6.1.4.1.9.10.48.1.2.2.98
- OID of the downlink packet count—1.3.6.1.4.1.9.10.48.1.2.2.99

To verify whether the packet count CDR option is enabled or disabled on the GGSN, use the **show gprs charging parameters** command.

Examples   The following example enables uplink and downlink packet counts in CDRs on the GGSN:

```
gprs charging cdr-option packet-count
```

Related Commands	Command	Description
	gprs charging cdr-option apn-selection-mode	Enables the GGSN to provide the reason code for APN selection in G-CDRs.
	gprs charging cdr-option local-record-sequence-number	Enables the GGSN to use the local record sequence number field in G-CDRs.
	gprs charging cdr-option node-id	Enables the GGSN to specify the node that generated the CDR in the node ID field in G-CDRs.
	gprs charging cdr-option no-partial-cdr-generation	Disables the GGSN from creating partial G-CDRs.
	gprs charging cdr-option served-msisdn	Enables the GGSN to provide the MSISDN number from the create PDP context request in G-CDRs.
	show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging cdr-option served-msisdn

To enable the GGSN to provide the mobile station integrated services digital network (MSISDN) number from the create PDP context request in a G-CDR, use the **gprs charging cdr-option served-msisdn** global configuration command. To disable providing the MSISDN number, use the **no** form of this command.

gprs charging cdr-option served-msisdn

no gprs charging cdr-option served-msisdn

Syntax Description   This command has no arguments or keywords.

Defaults   Disabled

Command Modes   Global configuration

Command History

Release	Modification
12.2(2)	This command was introduced.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines   Use the **gprs charging cdr-option served-msisdn** command to enable the GGSN to provide the mobile station ISDN number from the create PDP context request in a G-CDR.

To verify whether the served MSISDN option is enabled or disabled on the GGSN, use the **show gprs charging parameters** command.

Examples   The following example enables the GGSN to provide the MSISDN number from the create PDP context request in G-CDRs:

```
gprs charging cdr-option served-msisdn
```

Related Commands

Command	Description
gprs charging cdr-option apn-selection-mode	Enables the GGSN to provide the reason code for APN selection in G-CDRs.
gprs charging cdr-option local-record-sequence-number	Enables the GGSN to use the local record sequence number field in G-CDRs.
gprs charging cdr-option node-id	Enables the GGSN to specify the node that generated the CDR in the node ID field in G-CDRs.

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Command	Description
gprs charging cdr-option no-partial-cdr-generation	Disables the GGSN from creating partial G-CDRs.
gprs charging cdr-option packet-count	Enables the GGSN to provide uplink and downlink packet counts in the optional record extension field of G-CDRs.
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging cg-path-requests

To specify the number of minutes that the GGSN waits before trying to establish the TCP path to the charging gateway when TCP is the specified path protocol, use the **gprs charging cg-path-requests** global configuration command. To return to the default value, use the **no** form of this command.

gprs charging cg-path-requests *minutes*

no gprs charging cg-path-requests

Syntax Description

minutes	Number of minutes the GGSN waits before retrying a charging request. The default value is 0 minutes, which disables the timer.

Defaults   0 minutes

Command Modes   Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines   Use the **gprs charging cg-path-requests** command to specify the number of minutes that the GGSN waits before trying to establish the TCP path to the charging gateway when TCP is the specified path protocol.

Examples   The following example specifies that the GGSN waits 5 minutes before trying to establish the TCP path to the charging gateway:

```
gprs charging cg-path-requests 5
```

Related Commands

Command	Description
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging container change-limit

To specify the maximum number of charging containers within each CDR from the GGSN, use the **gprs charging container change-limit** global configuration command. To return to the default value, use the **no** form of this command.

gprs charging container change-limit *number*

no gprs charging container change-limit *number*

Syntax Description	*number*	Integer from 1 to 100. The default value is 5.

Defaults

5 containers

Command Modes

Global configuration

Command History

Release	Modification
12.2(4)MX	This command was introduced.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines

For each activated PDP context on the GGSN, the GGSN creates a G-CDR to collect charging information to be sent to the charging gateway. When certain conditions occur for a PDP context, the GGSN adds information to the CDR or closes the CDR, depending on the trigger condition.

When a CDR is open for a PDP context and the GGSN detects a trigger condition, the GGSN collects the current charging data for that PDP context and appends it to the existing G-CDR in what is called a CDR container.

The following conditions cause the GGSN to create a CDR container and send updates to the charging gateway:

- Quality of service (QoS) change
- Tariff time change
- Periodic collection interval
- Destination change
- CDR closure

The following conditions cause the GGSN to create a CDR container and close the G-CDR:

- End of PDP context
- Partial record reason

To control the maximum number of these trigger conditions, and therefore CDR containers in each G-CDR, use the **gprs charging container change-limit** command.

When the number of containers added to a G-CDR reaches the limit specified in the **gprs charging container change-limit** command, the G-CDR is closed and sent as a partial CDR to the charging gateway. If the PDP context remains active, the GGSN opens another G-CDR with a subsequent sequence number associated with that PDP context and its charging data.

Examples   The following example specifies that each CDR includes 25 charging containers:

```
gprs charging change-condition-limit 25
```

Related Commands

Command	Description
gprs charging container volume-threshold	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.
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging container sgsn-change-limit

To specify the maximum number of SGSN changes before closing a G-CDR for a particular PDP context, use the **gprs charging container sgsn-change-limit** global configuration command. To return to the default value, use the **no** form of this command.

gprs charging container sgsn-change-limit *number*

no gprs charging container sgsn-change-limit *number*

Syntax Description

number	Integer from 0 to 15. The default value is disabled.

Defaults   Disabled

Command Modes   Global configuration

Command History

Release	Modification
12.2(4)MX	This command was introduced.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD, with the following changes: • The **no** form of the command was added. • The default value changed from 15 to disabled.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines   A value of 0 means that a G-CDR is closed each time that a new SGSN begins handling the PDP context.

The command specifies the number of changes, not the number of SGSNs to be supported. The number of SGSNs supported is equal to 1 more than the change limit. For example, if the SGSN change limit is 2, the maximum number of SGSNs in the list before the GGSN closes the G-CDR is 3.

The CDR fields identify its uniqueness and association with a particular PDP context. When you enable the **gprs charging cdr-option no-partial-cdr-generation** command, the GGSN creates any subsequent G-CDRs for the same PDP context request with the same fields in all G-CDRs and maintains sequence numbering.

If the **gprs charging container sgsn-change-limit** command is not configured when **gprs charging cdr-option no-partial-cdr-generation command** is configured, and a G-CDR is closed due to any other trigger (such as tariff times or QoS changes), the GGSN copies the last SGSN (the current SGSN) in the list in the new G-CDR.

If the **gprs charging container sgsn-change-limit** command is configured when the **gprs charging cdr-option no-partial-cdr-generation** command is configured, the list is not sent. This is a reason that the **gprs charging container sgsn-change-limit** command is not compatible with the **gprs charging cdr-option no-partial-cdr-generation** command.

Examples   The following example specifies that a G-CDR closes after 5 SGSN changes in a list for a particular PDP context. If the PDP context is still active, then a partial CDR is opened:

```
gprs charging container sgsn-change-limit 5
```

gprs charging container volume-threshold

To specify the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the G-CDR, use the **gprs charging container volume-threshold** global configuration command. To return to the default value, use the **no** form of this command.

> **gprs charging container volume-threshold** *threshold-value*
>
> **no gprs charging container volume-threshold** *threshold-value*

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 Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines While a PDP context (mobile session) is active, charging events are generated based on various actions. One way that users can be charged is based on the amount of data transmitted between the PDN and the mobile station. Data volume is recorded in each of the containers of a G-CDR record. Service providers can use this recorded data volume to bill users by volume usage.

Use the **gprs charging container volume-threshold** command to control the maximum amount of data volume that can be reported in each G-CDR from an active PDP context before the G-CDR is eligible for an update to the charging gateway for subsequent billing. The GGSN opens another partial G-CDR for that PDP context while it remains in session on the GGSN.

For example, consider that a volume threshold setting of 1 MB is configured on the GGSN. The GGSN opens a container in a G-CDR for a new PDP context. A trigger occurs for the PDP context, and at that time the GGSN has registered transmission of 500 KB of data for the PDP context. The trigger causes the GGSN to close the container for the PDP context, which has occurred before the volume limit is reached (500 KB of data transmitted, and 1 MB allowed).

As transmission for the PDP context continues, the GGSN opens a new container in the G-CDR. The GGSN now has up to 500 KB more data that can be processed for that PDP context before reaching the volume threshold limit for the G-CDR. When the volume threshold is reached across all containers for the PDP context (that is, the sum of all of the byte counts across all containers for the PDP context

reaches 1 MB), the GGSN closes the G-CDR with a volume limit cause so that the G-CDR can be sent to the charging gateway. The GGSN opens another partial G-CDR for the PDP context while it remains in session.

Examples

The following example specifies a threshold value of 2097152:

```
gprs charging container volume-threshold 2097152
```

Related Commands

Command	Description
gprs charging container change-limit	Specifies the maximum number of charging containers within each CDR from the GGSN
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging disable

To disable charging transactions on the GGSN, use the **gprs charging disable** global configuration command. To re-enable charging transactions, use the **no** form of this command.

> **gprs charging disable**

> **no gprs charging disable**

Syntax Description   This command has no arguments or keywords.

Defaults   Charging is enabled.

Command Modes   Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines   Use the **gprs charging disable** command to disable charging. By default, charging processing is enabled on the GGSN.

Before the GGSN can disable charging, any currently open CDRs must be cleared. To clear any open CDRs, use the **clear gprs charging cdr** command.

If you disable charging on the GGSN using the **gprs charging disable** command, then you can re-enable charging using the **no gprs charging disable** command.

⚠
Caution   The **gprs charging disable** command removes charging data processing on the GGSN, which means that the data required to bill customers for network usage is not being collected by the GGSN nor sent to the charging gateway. Cisco Systems recommends that you avoid using this command in production GPRS network environments. If you must configure this command, use it with extreme care and reserve its usage only for non-production network conditions.

Examples   The following example disables GPRS charging processing:

```
gprs charging disable
```

gprs charging flow-control private-echo

To implement an echo request with private extensions for maintaining flow control on packets transmitted to the charging gateway, use the **gprs charging flow-control private-echo** global configuration command. To disable private extensions for flow control, use the **no** form of this command.

gprs charging flow-control private-echo

no gprs charging flow-control private-echo

Syntax Description   This command has no arguments or keywords.

Defaults   Private flow control is disabled.

Command Modes   Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines   If the charging gateway that the GGSN communicates with implements a proprietary private extension to the echo signal that maintains flow control, use the **gprs charging flow-control private-echo** command to enable private echo signaling. If your charging gateway does not implement this feature, disable the feature.

Examples   The following example enables an echo request:

```
gprs charging flow-control private-echo
```

Related Commands

Command	Description
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging header short

To enable the GGSN to use the GTP short header (6-byte header), use the **gprs charging header short** global configuration command. To return to the default value, use the **no** form of this command.

> **gprs charging header short**
>
> **no gprs charging header short**

Syntax Description	This command has no arguments or keywords.
Defaults	Disabled. The GGSN uses the GTP long header.
Command Modes	Global configuration

Command History

Release	Modification
12.2(8)YW	This command was introduced.

Usage Guidelines Use the **gprs charging header short** command to specify for the GGSN to use the GTP short header (6-byte header).

Examples The following example shows the use of the GTP short header being enabled:

```
gprs charging header short
```

Related Commands

Command	Description
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging map data tos

To specify an IP ToS mapping for GPRS charging packets, use the **gprs charging map data tos** global configuration command. To return to the default value, use the **no** form of this command.

gprs charging map data tos *tos-value*

no gprs charging map data tos *tos-value*

Syntax Description	*tos-value*	Specifies a ToS mapping value between 0 and 5. A higher number indicates a higher service priority. The default value is 3.

Defaults   3

Command Modes   Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines   Use the **gprs charging map data tos** command to specify a value for the ToS precedence bits in the IP header for charging packets transmitted by the GGSN.

Examples   The following example shows type of service mapping value of 5:

```
gprs charging map data tos 5
```

Related Commands

Command	Description
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging message transfer-request command-ie

To specify for the GGSN to include the Packet Transfer Command IE in the Data Record Transfer Response messages, use the **gprs charging message transfer-request command-ie** command. To return to the default value, use the no form of this command.

gprs charging message transfer-request command-ie

no gprs charging message transfer-request command-ie

Syntax Description
This command has no arguments or keywords.

Defaults
The GGSN does not include the Packet Transfer Command IE.

Command Modes
Global configuration

Command History

Release	Modification
12.2(8)YW	This command was introduced.

Usage Guidelines
GGSN Release 4.0 supports the Send Data Record Packet command.

Examples
The following example specifies for the GGSN to include the Packet Transfer Command IE in Data Record Transfer Response messages:

```
gprs charging message transfer-request command-ie
```

Related Commands

Command	Description
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging message transfer-response number-responded

To specify for the GGSN to use the Number of Requests Responded field instead of the Length field in the Requests Responded Information Element (IE) of Data Record Transfer Response messages, use the **gprs charging message transfer-response number-responded** command. To return to the default value, use the **no** form of this command.

> **gprs charging message transfer-response number-responded**

> **no gprs charging message transfer-response number-responded**

Syntax Description	This command has no arguments or keywords.
Defaults	The GGSN uses the Length field.
Command Modes	Global configuration

Command History

Release	Modification
12.2(8)YW	This command was introduced.

Usage Guidelines

Use the **gprs charging message transfer-response number-responded** command to specify for the GGSN to use the Number of Requests Responded field instead of the Length field in the Requests Responded IE of Data Record Transfer Response messages when connecting to a charging gateway that does not support the Length field.

Examples

The following example specifies for the GGSN to use the Number of Requests Responded field:

```
gprs charging message transfer-response number-responded
```

Related Commands

Command	Description
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging packet-queue-size

To specify the maximum number of unacknowledged charging data transfer requests that the GGSN maintains in its queue, use the **gprs charging packet-queue-size** global configuration command. To return to the default value, use the **no** form of this command.

gprs charging packet-queue-size *queue-size*

no gprs charging packet-queue-size *queue-size*

Syntax Description

queue-size	Value between 1 and 512 that specifies the maximum queue size for the GGSN charging packet data queue. The default is 128 packets.

Defaults   128 packets

Command Modes   Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines   Use the **gprs charging packet-queue-size** command to specify the maximum size of the GGSN queue of outstanding charging data transfer requests. This queue stores all unacknowledged charging data requests.

When the charging packet queue reaches the specified size, the GGSN stops queuing charging packets until a packet is cleared from the queue and stores new charging packets in memory.

If monitoring of the performance of the charging gateway indicates that it is processing charging packets slowly, you can increase the size of the charging packet queue. Conversely, if the performance of the charging gateway is fast, you can decrease the size of the charging packet queue.

Examples   The following example specifies a GGSN queue of 512 charging data transfer requests:

```
gprs charging packet-queue-size 512
```

Related Commands

Command	Description
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging path-protocol

To specify the protocol that the GGSN uses to transmit and receive charging data, use the **gprs charging path-protocol** global configuration command. To return to the default value, use the **no** form of this command.

> **gprs charging path-protocol** {**udp** | **tcp**}

> **no gprs charging path-protocol** {**udp** | **tcp**}

Syntax Description		
udp	User Datagram Protocol, which is a connectionless transport protocol.
tcp	Transport Control Protocol, which is a connection-based transport protocol.

Defaults UDP

Command Modes Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines Use the **gprs charging path-protocol** command to specify the protocol used by the GGSN to transfer charging data.

Examples The following example shows a UDP protocol:

```
gprs charging path-protocol udp
```

Related Commands

Command	Description
gprs charging cg-path-requests	Specifies the number of minutes that the GGSN waits before trying to establish the TCP path to the charging gateway when TCP is the specified path protocol.
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging port

To configure the destination port of the charging gateway, use the **gprs charging port** global configuration command. To return to the default value, use the **no** form of this command.

gprs charging port *port-num*

no gprs charging port *port-num*

Syntax Description

port-num	Integer from 1024 to 10000. The default port is 3386.

Defaults   Port 3386

Command Modes   Global configuration

Command History

Release	Modification
12.2(4)MX	This command was introduced.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Examples   The following example changes the default port of 3386 to 1055:

```
gprs charging port 1055
```

Related Commands

Command	Description
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging release

To specify that the GGSN present R98/R97 and R99 QoS profile formats in G-CDRs or present only R97/R98 QoS profile formats, use the **gprs charging release** global configuration command. To disable specifying the configuration, use the **no** form of this command.

gprs charging release {**99** | **98**}

no gprs charging release {**99** | **98**}

Syntax Description

99	Specifies for the GGSN to present R97/R98 and R99 QoS profile formats in G-CDRs.
98	Specifies for the GGSN to present only R97/R98 QoS profile formats in G-CDRs.

Defaults 99

Command Modes Global configuration

Command History

Release	Modification
12.2(8)YW	This command was introduced.

Usage Guidelines To verify configuration of the QoS profile format in G-CDRs, use the **show gprs charging parameters** command.

Examples The following example enables the GGSN to present both R97/R98 QoS profile formats and R99 QoS profile formats in G-CDRs:

```
gprs charging release 99
```

Related Commands

Command	Description
gprs charging cdr-option apn-selection-mode	Enables the GGSN to provide the reason code for APN selection in G-CDRs.
gprs charging cdr-option local-record-sequence-number	Enables the GGSN to use the local record sequence number field in G-CDRs.
gprs charging cdr-option no-partial-cdr-generation	Disables the GGSN from creating partial G-CDRs.
gprs charging cdr-option packet-count	Enables the GGSN to provide uplink and downlink packet counts in the optional record extension field of G-CDRs.

Command	Description
gprs charging cdr-option served-msisdn	Enables the GGSN to provide the MSISDN number from the create PDP context request in G-CDRs.
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging roamers

To enable charging for roamers on the GGSN, use the **gprs charging roamers** global configuration command. To disable charging for roamers on the GGSN, use the **no** form of this command.

>   **gprs charging roamers**

>   **no gprs charging roamers**

Syntax Description   This command has no arguments or keywords.

Defaults   Charging for roamers is disabled.

Command Modes   Global configuration

Command History

Release	Modification
12.2(4)MX	This command was introduced.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.

Usage Guidelines   Use the **gprs charging roamers** command to enable support on the GGSN for the creation of call detail records (CDRs) for roaming mobile subscribers.

When charging for roamers is enabled on the GGSN, and a create PDP context message is received, the IE containing the SGSN Signalling Address field is matched against the list of PLMN IP address ranges defined using the **gprs plmn ip address** command. If the GGSN determines that an SGSN is not located within the same PLMN range, it generates a CDR. If the GGSN determines that an SGSN is located within the same PLMN, will not generate a CDR until the SGSN Address for Signalling field changes to that of a SGSN located in another PLMN.

When charging for roamers is enabled on the GGSN using the **gprs charging roamers** command, how the feature functions is dependent on how the PLMN IP address ranges have been defined using the **gprs plmn ip address** command.

Depending on how PLMN IP address ranges have been defined using the **gprs plmn ip address** *start_ip end_ip* [**sgsn**] command, the charging for roamers feature operates as follows:

- If no PLMN IP address ranges have been configured using the **gprs plmn ip address** *start_ip end_ip* [**sgsn**] command, the GGSN will generate CDRs for all initiated PDP contexts regardless of whether the GGSN and SGSN are located within the same PLMN.

- If a list of PLMN IP address ranges has been configured using the **gprs plmn ip address** *start_ip end_ip* [**sgsn**] command, but the **sgsn** keyword has not been specified for any of the ranges, the GGSN will use all the range entries when determining whether the SGSN is located within the same PLMN.

- If a list of PLMN IP address ranges has been configured using the **gprs plmn ip address** *start_ip end_ip* [**sgsn**] command, and one or more of those ranges has been defined using the **sgsn** key word, the GGSN will use those ranges with the **sgsn** keyword specified to determine whether an SGSN is located within the same PLMN.

  With this configuration, the following scenarios outline how the charging for roamers feature will function:

  – MS1 is subscribed to PLMN1 and attaches to an SGSN in PLMN2. From PLMN2, MS1 initiates a PDP context with the GGSN in PLMN1. In this case, MS1 is a roamer and the GGSN generates a CDR because it determines that the SGSN is located in a different PLMN.

  – MS1 is subscribed to PLMN1 and attaches to an SGSN in PLMN2. From PLMN2, MS1 initiates a PDP context with the GGSN in PLMN2. In this case, MS1 is not a roamer because the SGSN and GGSN are in the same PLMN. The GGSN does not create a G-CDR.

Configuration Guidelines

To enable charging for roamers on the GGSN, you should first define a set of IP address ranges for a PLMN using the **gprs plmn ip address** command.

It is important that you configure the **gprs plmn ip address** and **gprs charging roamers** commands in their proper order. After you configure the IP address range for a PLMN, use the **gprs charging roamers** command to enable charging for roamers on the GGSN. You can change the IP address range by reissuing the **gprs plmn ip address** command.

To verify your configuration, use the **show gprs charging parameters** command to see if the charging for roamers command is enabled. To verify your PLMN IP address ranges, use the **show gprs plmn ip address** command.

Examples
The following example enables the charging for roamers feature on the GGSN:

```
gprs charging roamers
```

Related Commands

Command	Description
gprs plmn ip address	Defines the IP address range for a PLMN that the GGSN uses to determine whether a create PDP context request is from a roamer.
show gprs charging parameters	Displays information about the current GPRS charging configuration.
show gprs plmn ip address	Displays a list of defined PLMN IP address ranges.

gprs charging send-buffer

To configure the size of the buffer that contains the GTP' PDU and signaling messages on the GGSN, use the **gprs charging send-buffer** global configuration command. To return to the default value, use the **no** form of this command.

gprs charging send-buffer *bytes*

no gprs charging send-buffer *bytes*

Syntax Description	*bytes*	Integer from 300 to 1460. The default value is 1460 bytes.

Defaults 1460 bytes

Command Modes Global configuration

Command History

Release	Modification
12.2(4)MX	This command was introduced.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.

Examples The following example specifies a buffer size of 512 bytes:

```
gprs charging send-buffer 512
```

Related Commands

Command	Description
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging server-switch-timer

To specify a timeout value that determines when the GGSN attempts to find an alternate charging gateway after a destination charging gateway cannot be located or becomes unusable, use the **gprs charging server-switch-timer** global configuration command. To return to the default value, use the **no** form of this command.

gprs charging server-switch-timer *seconds*

no gprs charging server-switch-timer *seconds*

Syntax Description	*seconds*	Timeout value (between 0 and 300 seconds), that the GGSN waits before attempting to contact an alternate charging gateway. The default value is 60 seconds.

Defaults 60 seconds

Command Modes Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.

Usage Guidelines Use the **gprs charging server-switch-timer** command to specify a timeout value that determines when the GGSN contacts an alternate charging gateway when the current charging gateway becomes unusable or cannot be located.

To specify that the switch-over to an alternate charging gateway takes place immediately, specify a value of 0.

Examples The following example configures a time-out value of 30 seconds:

```
gprs charging server-switch-timer 30
```

Related Commands

Command	Description
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs charging tariff-time

To specify a time of day when GPRS charging tariffs change, use the **gprs charging tariff-time** global configuration command. To remove an existing tariff time, use the **no** form of this command.

gprs charging tariff-time *time*

no gprs charging tariff-time *time*

Syntax Description

time	A time of day when the charging tariff changes. Specify the time format as hh:mm:ss.

Defaults

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.

Usage Guidelines

Use the **gprs charging tariff-time** command to specify when the charging tariff for using GPRS will change. When the tariff time changes, a container is attached to the CDR for the user.

You can set up a maximum of 32 tariff change times.

Examples

The following example specifies 14:30:00 as the time when the charging tariff changes:

```
gprs charging tariff-time 14:30:00
```

Related Commands

Command	Description
show gprs charging parameters	Displays information about the current GPRS charging configuration.

Cisco IOS Mobile Wireless Command Reference

gprs charging transfer interval

To specify the number of seconds that the GGSN waits before it transfers charging data to the charging gateway, use the **gprs charging transfer interval** global configuration command. To return to the default value, use the **no** form of this command.

gprs charging transfer interval *seconds*

no gprs charging transfer interval *seconds*

Syntax Description	*seconds*	Interval between charging transfers, in seconds. Can be a value between 1 and 4294967295 seconds. The default is 105 seconds.

Defaults   105 seconds

Command Modes   Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)B	This command was incorporated in Cisco IOS Release 12.2(8)B.

Usage Guidelines   Use the **gprs charging transfer interval** command to specify how often the GGSN transfers charging data for a given PDP context (mobile session) to a charging gateway.

Examples   The following example specifies an interval of 512 seconds:

```
gprs charging transfer interval 512
```

Related Commands

Command	Description
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs default aaa-group

To specify a default AAA server group and assign the type of AAA services to be supported by the server group for all access points on the GGSN, use the **gprs default aaa-group** global configuration command. To remove the default AAA server group, use the **no** form of this command.

    gprs default aaa-group {**authentication** | **accounting**} *server-group*

    no gprs default aaa-group {**authentication** | **accounting**} *server-group*

Syntax Description

authentication	Assigns the selected server group for authentication services on all APNs.
accounting	Assigns the selected server group for accounting services on all APNs.
server-group	Specifies the name of a AAA server group to be used for AAA services on all APNs.
	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   Global configuration

Command History

Release	Modification
12.2(4)MX	This command was introduced.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines   The Cisco Systems 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.

Cisco IOS Mobile Wireless Command Reference

To configure a default AAA server group to be used for all APNs on the GGSN, use the **gprs default aaa-group** global configuration command. To specify a different AAA server group to be used 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 at the APN or globally 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 authentication is enabled on the APN, then the GGSN first looks for an authentication server group at the APN. If an authentication server group is not found at the APN, then the GGSN looks for a globally configured, GPRS default authentication server group.

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

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

- Define a server group with the IP addresses of the AAA servers in that group using the **aaa group server** 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 disable accounting services at the APN using the **aaa-accounting disable** command.

    – You can enable authentication at the APN level by configuring the **access-mode non-transparent** command. When you enable authentication, the GGSN automatically enables accounting on the APN. There is not a global configuration command to enable or disable authentication.

- Configure AAA accounting and authentication using the **aaa accounting** and **aaa authentication** global configuration commands.

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

Examples The following configuration example defines four AAA server groups on the GGSN: foo, foo1, foo2, and foo3, 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: foo2 for authentication, and foo3 for accounting.

At access-point 1, which is enabled for authentication, the default global authentication server group of foo2 is overridden and the server group named foo 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 foo3 will be used for accounting services.

At access-point 4, which is enabled for accounting using the **aaa-accounting enable** command, the default accounting server group of foo3 is overridden and the server group named foo1 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.

```
aaa new-model
!
aaa group server radius foo
 server 10.2.3.4
 server 10.6.7.8
aaa group server radius foo1
 server 10.10.0.1
aaa group server radius foo2
 server 10.2.3.4
 server 10.10.0.1
aaa group server foo3
 server 10.6.7.8
 server 10.10.0.1
!
aaa authentication ppp foo group foo
aaa authentication ppp foo2 group foo2
aaa authorization network default group radius
aaa accounting exec default start-stop group foo
aaa accounting network foo1 start-stop group foo1
aaa accounting network foo2 start-stop group foo2
aaa accounting network foo3 start-stop group foo3
!
gprs access-point-list gprs
 access-point 1
  access-mode non-transparent
  access-point-name www.pdn1.com
  aaa-group authentication foo
!
 access-point 4
  access-mode transparent
  access-point-name www.pdn2.com
  aaa-accounting enable
  aaa-group accounting foo1
!
 access-point 5
  access-mode transparent
  access-point-name www.pdn3.com
!
gprs default aaa-group authentication foo2
gprs default aaa-group accounting foo3
!
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.
	aaa-accounting	Enables or disables accounting for a particular access point on the GGSN.

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.
radius-server host	Specifies a RADIUS server host.

gprs default aggregate

To configure 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, use the **gprs default aggregate** global configuration command. To remove a global aggregate route, use the **no** form of this command.

gprs default aggregate *ip-network-prefix* {*/mask-bit-length* | *ip-mask*}

no gprs default aggregate *ip-network-prefix* {*/mask-bit-length* | *ip-mask*}

Syntax Description

ip-network-prefix	Dotted decimal notation of the IP network address to be used by the GGSN for route aggregation, in the format *a.b.c.d*.
/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 (*/*).
ip-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.

Defaults

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
12.2(4)MX	This command was introduced.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

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 GTP tunnel.

Without the **gprs default aggregate** command or **aggregate** command, the GGSN creates a static host route for each PDP request. 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 **gprs default aggregate** command to reduce the number of static routes implemented by the GGSN for PDP requests at all access points on the GGSN. The **gprs default aggregate** command allows you to specify an IP network prefix to combine the routes of PDP requests from the same network as a single route on the GGSN.

If you use the **gprs default aggregate** command to globally define an aggregate IP network address range for all access points on the GGSN, you can use the **aggregate** command to override this default address range at a particular access point. Automatic route aggregation can be configured at the

access-point configuration level only 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.

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.

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

Examples The following example shows a route aggregation configuration for access point 8 using DHCP on the 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 upon 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:

```
router# 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:

```
router# 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
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 a particular access point on the GGSN.
show gprs access-point	Displays information about access points on the GGSN.

gprs default charging-gateway

To specify the default charging gateway, use the **gprs default charging gateway** global configuration command. To remove the charging gateway, use the **no** form of this command.

> **gprs default charging-gateway** {*ip-address* | *name*} [{*ip-address* | *name*}]

> **no gprs default charging-gateway** {*ip-address* | *name*} [{*ip-address* | *name*}]

Syntax Description

ip-address	IP address of a default gateway.
name	Host name for a default gateway.

Defaults

No default charging gateway is assigned.

Command Modes

Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines

Use the **gprs default charging-gateway** command to specify the IP address or host name of a default charging gateway that the GGSN uses to communicate charging information. If you specify two gateways, then the first gateway is the primary gateway, and the second gateway is the backup.

Examples

The following example specifies two default charging gateway IP addresses:

```
gprs default charging-gateway 10.100.0.3 10.100.0.2
```

Related Commands

Command	Description
gprs charging container volume-threshold	Specifies the maximum number of bytes that the GGSN maintains across all containers for a particular PDP context before closing and updating the CDR.
gprs charging flow-control private-echo	Implements an echo request with private extensions for maintaining flow control on packets transmitted to the charging gateway.

Command	Description
gprs charging packet-queue-size	Specifies the maximum number of unacknowledged charging data transfer requests that the GGSN maintains in its queue.
gprs charging server-switch-timer	Specifies a timeout value that determines when the GGSN attempts to find an alternate charging gateway after a destination charging gateway cannot be located or becomes unusable.
gprs charging tariff-time	Specifies a time of day when GPRS charging tariffs change.
gprs charging message transfer-response number-responded	Specifies the number of seconds that the GGSN waits before it transfers charging data to the charging gateway.
show gprs charging parameters	Displays information about the current GPRS charging configuration.

gprs default dhcp-server

To specify a default Dynamic Host Configuration Protocol (DHCP) server from which the GGSN obtains IP address leases for mobile users, use the **gprs default dhcp-server** global configuration command. To remove the default DHCP server, use the **no** form of this command.

    gprs default dhcp-server {*ip-address* | *name*} [{*ip-address* | *name*}]

    no gprs default dhcp-server {*ip-address* | *name*} [{*ip-address* | *name*}]

Syntax Description

ip-address	IP address of a DHCP server. The first IP address is the name of the primary DHCP server. The second (optional) *ip-address* argument specifies the IP address of a backup DHCP server.
name	Host name of a DHCP server. The second (optional) *name* argument specifies the host name of a backup DHCP server.

Defaults   No default behavior or values.

Command Modes   Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines   Use the **gprs default dhcp-server** command to specify a DHCP server from which the GGSN obtains IP address leases for mobile users across all access points. Use the optional second set of arguments to specify the name, or IP address, of a backup DHCP server to use if the primary DHCP server is unavailable. If you do not specify a backup DHCP server, then no backup DHCP server is available.

In addition to specifying a DHCP server for the GGSN, you must also specify the GGSN as a DHCP proxy client. You can configure the GGSN as a DHCP proxy client using either the **gprs default ip-address-pool dhcp-proxy-client** global configuration command, or the **ip-address-pool dhcp-proxy-client** access-point configuration command.

You can override the DHCP server that is configured globally, and specify a different DHCP server for a particular access point using the **dhcp-server** access-point configuration command. If you do not specify a DHCP server for a specified access point, then the DHCP server specified with the **gprs default dhcp-server** command is used for that access point.

> ✎
>
> **Note** You cannot specify a DHCP server that is located within a private network using VRF with the **gprs default dhcp-server global configuration** command. To specify a DHCP server that is within a VRF address space, you must use the **dhcp-server** access-point configuration command.

Examples The following example specifies 10.101.100.3 as the GPRS default DHCP server for GPRS, using the **gprs default dhcp-server** command. Although this DHCP server is also configured globally on the router using the **ip dhcp-server** global configuration command, this is not required.

Because DHCP is the default dynamic addressing method specified by the **gprs default ip-address-pool dhcp-proxy-client** command, access-point 3 will use the DHCP server located at 10.101.100.3 for IP addressing support. Access-point 1 and access-point 2 override the default DHCP server using the **dhcp-server** access-point configuration command to specify alternative DHCP servers:

```
interface Loopback1
 ip address 10.30.30.30 255.255.255.255
!
interface Loopback2
 ip address 10.27.27.27 255.255.255.255
!
interface Loopback3
 ip address 10.25.25.25 255.255.255.255
!
interface loopback 1
 ip address 10.15.10.1 255.255.255.0
!
interface Virtual-Template1
 ip unnumber loopback 1
 no ip directed-broadcast
 encapsulation gtp
 gprs access-point-list abc
!
gprs access-point-list abc
 access-point 1
  access-point-name gprs.pdn1.com
  dhcp-server 10.102.100.3
  dhcp-gateway-address 10.30.30.30
  exit
!
 access-point 2
  access-point-name gprs.pdn2.com
  dhcp-server 10.60.0.1
  dhcp-gateway-address 10.27.27.27
  exit
!
 access-point 3
  access-point-name www.pdn3.com
  access-mode non-transparent
  dhcp-gateway-address 10.25.25.25
  exit
!
gprs default ip-address-pool dhcp-proxy-client
gprs default dhcp-server 10.101.100.3
```

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.

gprs default ip-address-pool

To specify a dynamic address allocation method using IP address pools for the GGSN, use the **gprs default ip-address-pool** global configuration command. To disable dynamic address allocation, use the **no** form of this command.

> **gprs default ip-address-pool** {**dhcp-proxy-client** | **disable** | **radius-client**}

> **no gprs default ip-address-pool** {**dhcp-proxy-client** | **disable** | **radius-client**}

Syntax Description

dhcp-proxy-client	GGSN dynamically acquires IP addresses for an MS from a DHCP server.
disable	Disables dynamic address allocation by the GGSN.
radius-client	GGSN dynamically acquires IP addresses for an MS from a RADIUS server.

Defaults

IP address pools are disabled.

Command Modes

Global configuration

Command History

Release	Modification
12.1(1)GA	This command was introduced.
12.1(5)T	This command was integrated in Cisco IOS Release 12.1(5)T.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines

Use the **gprs default ip-address-pool** command to specify the method by which the GGSN obtains address leases for mobile stations across all access points.

If you specify **dhcp-proxy-client** for the GPRS default IP address pool, then you must specify a DHCP server for address allocation. To specify a DHCP server, use either the **gprs default dhcp-server** global configuration command, or the **dhcp-server** access-point configuration command.

If you specify **radius-client** as the method for IP address allocation, then you must configure RADIUS services at the GGSN. This involves configuring AAA server groups using the **gprs default aaa-group** or **aaa-group** commands, and configuring the **radius-server hos**t commands to specify the RADIUS servers that provide the address pool. You also need to configure AAA on the GGSN. For more information about configuring RADIUS on the GGSN, refer to the Usage Guidelines section for the **aaa-group** and **gprs default aaa-group** commands.

To disable the selected IP address allocation method, use the **no** form of this command or issue the command with the **disable** keyword (the default form of this command).

Examples

The following example specifies **gprs default ip-address-pool dhcp-proxy-client** as the dynamic address allocation method for the GGSN across all access points.

Access-point 3 overrides the default by specifying **ip-address-pool radius-client** as the dynamic address allocation method for that access point. The corresponding RADIUS and AAA configuration is also shown as an example.

```
aaa new-model
!
aaa group server radius foo
 server 10.2.3.4
 server 10.6.7.8
!
aaa authentication ppp foo group foo
aaa authorization network default group radius
aaa accounting exec default start-stop group foo
!
interface Loopback1
 ip address 10.30.30.30 255.255.255.255
!
interface Loopback2
 ip address 10.27.27.27 255.255.255.255
!
interface loopback 1
 ip address 10.15.10.1 255.255.255.0
!
interface Virtual-Template1
 ip unnumber loopback 1
 encapsulation gtp
 gprs access-point-list abc
!
gprs access-point-list abc
 access-point 1
  access-point-name gprs.pdn1.com
  dhcp-server 10.102.100.3
  dhcp-gateway-address 10.30.30.30
  exit
!
 access-point 2
  access-point-name gprs.pdn2.com
  dhcp-server 10.60.0.1
  dhcp-gateway-address 10.27.27.27
  exit
!
 access-point 3
  access-point-name www.pdn3.com
  access-mode non-transparent
  ip-address-pool radius-client
  aaa-group authentication foo
  exit
!
gprs default ip-address-pool dhcp-proxy-client
gprs default dhcp-server 10.101.100.3
!
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 key ggsntel
```

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 dhcp-server	Specifies a default DHCP server from which the GGSN obtains IP address leases for mobile users.
	ip-address-pool	Specifies a dynamic address allocation method using IP address pools for the current access point.
	aaa-group	Specifies a 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.
	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

gprs default map-converting-gsn

To specify the IP address or host name of the primary (and backup) GSN to communicate with the HLR in sending and receiving MAP messages, use the **gprs default map-converting-gsn** global configuration command. To remove the GSN configuration, use the **no** form of this command.

gprs default map-converting-gsn {*ip-address* | *hostname*} [*ip-address* | *hostname*]

no gprs default map-converting-gsn {*ip-address* | *hostname*} [*ip-address* | *hostname*]

Syntax Description

ip-address	IP address of the GSN handling MAP messages with the HLR. The first *ip-address* argument specifies the IP address of the primary GSN. The second (optional) *ip-address* argument specifies the IP address of a backup GSN.
hostname	Host name of the GSN handling MAP messages with the HLR. The second (optional) *name* argument specifies the host name of a backup GSN.

Defaults   No default behavior or values.

Command Modes   Global configuration

Command History

Release	Modification
12.2(4)MX	This command was introduced.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines   Use the **gprs default map-converting-gsn** command to identify an GSN that can convert GTP messages to and from Mobile Application Protocol (MAP) messages. This GTP-to-MAP and MAP-to-GTP conversion allows the GSN to communicate with an HLR.

The GGSN must be able to send MAP messages to an HLR to support network-initiated PDP requests. Network-initiated PDP requests are one example of an application that requires this MAP conversion function.

The GGSN supports a maximum of two protocol-converting GSNs. Therefore, you can specify both a primary and backup GSN using a single **gprs default map-converting-gsn** command. However, you cannot configure more than one instance of the **gprs default map-converting-gsn** command.

The GGSN uses the backup GSN when the GGSN reaches the maximum signaling threshold (N3 GTP signaling requests x T3).

In addition to configuring the **gprs default map-converting-gsn** command, you must configure the following other commands to support network-initiated PDP requests on the GGSN:

- **gprs ni-pdp ip-imsi single**
- **network-request-activation**

Examples   The following example configures the GSN, located at IP address 172.16.10.10, to convert MAP messages between the HLR and the GGSN:

```
gprs default map-converting-gsn 172.16.10.10
```

Related Commands

Command	Description
gprs ni-pdp ip-imsi single	Specifies a static IP address to IMSI mapping for a single MS for network-initiated PDP requests from a particular APN.
network-request-activation	Enables an access point to support network-initiated PDP requests to a MS.

gprs delay-qos map tos

To specify a QoS mapping from the delay QoS classes to an IP type of service (ToS) precedence value, use the **gprs delay-qos map tos class** global configuration command. To return to the default values, use the **no** form of this command.

> **gprs delay-qos map tos class1** *tos-value* [**class2** *tos-value* [**class3** *tos-value* [**class-best-effort** *tos-value*]]]

> **no gprs delay-qos map tos class1** *tos-value* [**class2** *tos-value* [**class3** *tos-value* [**class-best-effort** *tos-value*]]]

Syntax Description

class1 *tos-value*	ToS mapping for a delay1 class QoS. The *tos-value* can be a number from 0 to 4. The default is 3.
class2 *tos-value*	ToS mapping for a delay2 class QoS. The *tos-value* can be a number from 0 to 4. The default is 2.
class3 *tos-value*	ToS mapping for a delay3 class QoS. The *tos-value* can be a number from 0 to 4. The default is 1.
class-best-effort *tos-value*	ToS mapping for a delaybesteffort class QoS. The *tos-value* can be a number from 0 to 4. The default is 0.

Defaults

The default value for the class1 ToS category is 3.

The default value for the class2 ToS category is 2.

The default value for the class3 ToS category is 1.

The default value for the class-best-effort ToS category is 0.

Command Modes

Global configuration

Command History

Release	Modification
12.2(4)MX	This command was introduced.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines

Use the **gprs delay-qos map tos** command to specify a mapping between various QoS categories and the ToS precedence bits in the IP header for packets transmitted over the Gn interface (GTP tunnels).

Note   You must enable delay QoS mapping by configuring the **gprs qos map delay** command *before* configuring the **gprs delay-qos map tos** command.

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The **class2**, **class3** and **class-best-effort** keyword arguments are optional. However, if you specify a value for the **class3** argument, you must specify a value for the **class2** argument. And, if you specify a value for the **class-best-effort** argument, then you must specify a value for both the **class2** and the **class3** arguments.

Only ToS classes 0 through 5 will be used for GGSN signaling and user data. The GTP signaling message should have the highest precedence. ToS class 5 is the default ToS for GTP signaling. Use the **gprs gtp map signalling tos** command to specify an IP ToS mapping for GTP signaling packets.

The ToS precedence classes are defined as follows:

0 Routine

1 Priority

2 Immediate

3 Flash

4 Flash Override

5 Critical ECP

6 Internetwork Control

7 Network Control

Examples

The following example specifies a QoS mapping from the delay QoS classes to a class1 ToS category of four, a class2 ToS category of three, a class3 ToS category of two, and a best-effort ToS category of one.

```
gprs delay-qos map tos class1 4 class2 3 class3 2 class-best-effort 1
```

Related Commands

Command	Description
gprs gtp map signalling tos	Specifies an IP ToS mapping for GPRS signaling packets.
gprs qos default-response requested	Configures the GGSN to set its default QoS values in the response message exactly as requested in the create PDP context request message.
gprs qos map delay	Enables mapping of GPRS QoS categories to a delay QoS method that includes the delaybesteffort, delay1, delay2, and delay3 classes.

gprs dfp max-weight

To specify the maximum weight sent to a DFP manager by a GGSN acting as a DFP agent, use the **gprs dfp max-weight** global configuration command. To return to the default value, use the **no** form of this command.

gprs dfp max-weight [*max-weight-value*]

no gprs dfp max-weight [*max-weight-value*]

Syntax Description	*max-weight-value*	Specifies the maximum weight sent by the GGSN, acting as a DFP agent, to a DFP manager. The valid range is 1 to 100. The default value is 8.

Defaults

8

Command Modes

Global configuration

Command History

Release	Modification
12.1(9)E	This command was introduced.
12.2(4)MX	This command was incorporated in Cisco IOS Release 12.2(4)MX.
12.2(8)YD	This command was incorporated in Cisco IOS Release 12.2(8)YD.
12.2(8)YW	This command was incorporated in Cisco IOS Release 12.2(8)YW.

Usage Guidelines

If you use DFP with GPRS load balancing, you must also specify a maximum number of PDP contexts for each GGSN, using the **gprs maximum-pdp-context-allowed** command. *Do not* accept the default value of 10000 PDP contexts. A value of **45000** is recommended. Significantly lower values can impact performance in a GPRS load-balancing environment.

Note For more information about configuring GPRS load balancing, see the *IOS Server Load Balancing*, 12.1(9)E documentation located at Cisco.com at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121newft/121limit/121e/121e9/index.htm

Examples

The following example sets the maximum weight sent by GGSN to 43:

```
gprs dfp max-weight 43
```

Related Commands

Command	Description
agent	Identifies a DFP agent to which IOS SLB can connect.
gprs maximum-pdp-context-allowed	Specifies the maximum number of PDP contexts (mobile sessions) that can be activated on the GGSN.
ip dfp agent	Identifies a DFP agent subsystem and enters DFP agent configuration mode.
ip slb dfp	Configures DFP, supplies an optional password, and enters DFP configuration mode.