Cisco ASR 5000 Series Gateway GPRS Support Node Application Note

Version 12.2

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About this Guide

This document pertains to the features and functionality that run on and/or that are related to the Cisco® ASR 5000 Chassis, formerly the Starent Networks ST40.

Conventions Used

The following tables describe the conventions used throughout this documentation.

Icon	Notice Type	Description
	Information Note	Provides information about important features or instructions.
	Caution	Alerts you of potential damage to a program, device, or system.
	Warning	Alerts you of potential personal injury or fatality. May also alert you of potential electrical hazards.
	Electro-Static Discharge (ESD)	Alerts you to take proper grounding precautions before handling a product.

Typeface Conventions	Description
Text represented as a *screen display*	This typeface represents displays that appear on your terminal screen, for example: *Login:*
Text represented as **commands**	This typeface represents commands that you enter, for example: **show ip access-list** This document always gives the full form of a command in lowercase letters. Commands are not case sensitive.
Text represented as a **command** *variable*	This typeface represents a variable that is part of a command, for example: **show card** *slot_number* slot_number is a variable representing the desired chassis slot number.
Text represented as menu or sub-menu names	This typeface represents menus and sub-menus that you access within a software application, for example: Click the **File** menu, then click **New**

Command Syntax Conventions	Description
{ **keyword** or *variable* }	Required keywords and variables are surrounded by grouped brackets. Required keywords and variables are those components that are required to be entered as part of the command syntax.

Command Syntax Conventions	Description
[**keyword** or *variable*]	Optional keywords or variables, or those that a user may or may not choose to use, are surrounded by square brackets.
|	With some commands there may be a group of variables from which the user chooses one. These are called alternative variables and are documented by separating each variable with a vertical bar (also known as a pipe filter). Pipe filters can be used in conjunction with required or optional keywords or variables. For example: **{ nonce | timestamp }** OR [**count** *number_of_packets* | **size** *number_of_bytes*]

Contacting Customer Support

Use the information in this section to contact customer support.

For New Customers: Refer to the support area of http://www.cisco.com for up-to-date product documentation or to submit a service request. A valid username and password is required to this site. Please contact your local sales or service representative for additional information.

For Existing Customers with support contracts through Starent Networks: Refer to the support area of https://support.starentnetworks.com/ for up-to-date product documentation or to submit a service request. A valid username and password is required to this site. Please contact your local sales or service representative for additional information.

Important: For warranty and repair information, please be sure to include the Return Material Authorization (RMA) tracking number on the outside of the package.

Chapter 1
GGSN Release 12.2: Application Note

This application note provides information on new and enhanced features supported on Cisco Gateway GPRS Support Node in 12.2 release.

Applicable Software Build

The information contained in this document applies to Cisco ASR5000 Series Gateway GPRS Support Node build 12.2 release.

New Features

This section provides information on the new features that are supported in the GGSN 12.2 release.

Rf Interface

This interface enables offline accounting functions on the GGSN in accordance with the 3GPP Release 8 specifications. The charging data information is recorded at the GGSN for each mobile subscriber UE pertaining to the radio network usage. Due to the transfer of charging information to GGSN, the services being rendered are not affected in real time.

The offline charging functionality is based on the network elements that report the accounting information via different type of messages which trigger the charging generation. Following diameter accounting requests are sent from the network elements to the charging data function (CDF) to achieve this reporting:

- START
- INTERIM
- STOP
- EVENT

Important: For more information on configuration of the Rf interface, refer the *Configuration Procedures and Examples* section of this document.

IPv4v6 PDP Support

GGSN now supports IPv4v6 type PDP from release 12.2 onwards. With this support, on single PDP context, both IPv4 and IPv6 user plane can run simultaneously according to 3GPP TS 23.060 V9.8.0 specification.

Enhanced Features

This section provides information on the new features that are supported in the GGSN 12.2 release.

S6b Interface

This is an optional Diameter protocol-based interface over which the GGSN communicates with 3G AAA/HSS in LTE/SAE network for subscriber authorization.

S6b interface has ability to pull SGSN-MCC-MNC from either GTP or AAA-I and send to OCS. When customer roams into GSM environment, OCS needs location information for online charging and metering. 3GPP-SGSN-MCC-MNC AVP and Location Information AVP are defined in Gy and can be used to identify customer location. With this feature, the GGSN collects the value of SGSN-MCC-MNC from the S6b AAA message, so that it can be available to OCS through Gy interface while passing CCR and CCA messages.

From Release 12.2 onwards, the S6b interface has been enhanced to pass on the UE assigned IPv6 address (IPv6 prefix and IPv6 interface ID) to the AAA server. S6b interface also has support for Framed-IPv6-Pool, Framed IP Pool, and served party IP address AVPs based IP allocation. With this support, based on the Pool name and APN name received from AAA server, the selection of a particular IP pool from the configuration is made for assigning the IP address.


Important: This interface is supported through license-enabled feature. For more information on this support, refer *Common Gateway Access Support* section of *Cisco ASR5000 Series GGSN Administration Guide*.

Configuration Procedures and Examples

This section provides step-by-step instructions for configuring different interfaces/features mentioned in the New and Enhanced Features sections of this guide.

Configuring Rf Interface for Offline Charging

This section describes the step-by-step procedure for the configurations that are required to setup the Rf interface on GGSN to support offline charging.

These instructions assume that you have already configured the system level configuration as described in *System Administration Guide* and GGSN service as described in the GGSN Service Configuration Procedures chapter of *Cisco ASR5000 Series GGSN Administration Guide*.

To configure the Rf interface on GGSN node:

Step 1 Create and configure the accounting policy by applying the example configuration in the *Accounting Policy Configuration* section.

Step 2 Configure a AAA group to associate the diameter accounting dictionary with the by applying the example configuration in the *AAA Group Configuration* section.

Step 3 Configuring an APN to associate the accounting policy by applying the example configuration in *APN Configuration for Rf Interface* section.

Step 4 Verify your Rf interface configuration by following the steps in the *Rf Interface Configuration Verification.*

Step 5 Save your configuration as described in the *Verifying and Saving Your Configuration* chapter of *Cisco ASR5000 Series GGSN Administration Guide*.

Accounting Policy Configuration

Use the following example to configure the accounting policy for this feature:

```
configure
  context <ctxt_name>
    policy accounting <policy_name>
      operator-string <ip_address>
      accounting-level [ sdf | flow ]
      cc profile [ 2 | 4 | 6 | 8 ] [ buckets | interval | sdf-interval | sdf-
volume | serving nodes | tariff | volume ]
      end
```

Diameter End-Point Configuration

Use the following example to define the diameter accounting end-point and associate a diameter accounting dictionary for this feature:

```
configure

  context <ctxt_name>

    diameter endpoint <endpoint_name>

      origin host <diameter_host_name> address <ip_address>

      peer <peer_name> realm <peer_realm_name>
address <ip_address>
port <port_number>

      end
```

AAA Group Configuration

Use the following example to create/modify the AAA group for this feature:

```
configure

  context <ctxt_name>

    aaa group <group_name>

      diameter accounting endpoint <endpoint_name>

      diameter accounting dictionary [ aaa-custom1 | aaa-custom10 | aaa-custom2
| aaa-custom3 | aaa-custom4 | aaa-custom5 | aaa-custom6 | aaa-custom7 | aaa-
custom8 | aaa-custom9 ]

      diameter accounting server <diameter_hostname> priority <number>

      end
```

APN Configuration for Rf Interface

Use the following example create/modify the APN configuration for this feature:

```
configure

  context <ctxt_name>
```

```
apn <apn_name>
  associate accounting-policy <policy_name>
  end
```

Rf Interface Configuration Verification

Verify that your Rf interface configuration for offline charging support is configured properly by entering the following command in Exec Mode:

show configuration context*ctxt_name*

The output from this command should look similar to the sample shown below. In this example accounting policy named *test_policy* was configured in the *rf_context* context.

```
config
  context rf_context
    subscriber default
    exit
    apn apn
      associate accounting-policy test_policy
    exit
    aaa group default
    #exit
    aaa group rf_aaa
      diameter accounting dictionary aaa-custom6
      diameter accounting endpoint rf_endpoint
      diameter accounting server rf_server priority 2
    #exit
    gtpp group default
    #exit
    policy accounting test_policy
      accounting-level flow
      operator-string Rf_string
```

```
      cc profile 2 buckets 5
    #exit
    diameter endpoint rf_endpoint
      origin host rf_diameter address 1.2.3.4
      peer ak realm ak_realm address 2.3.4.5 port 52
    #exit
    ip igmp profile default
    #exit
  #exit
end
```

Commands

This section provides information on all new added commands, modified commands, and obsolete commands.

New Commands

No new command added for this release.

Modified Commands

No existing command modified for this release.

Obsolete Commands

No command obsoleted for this release