



Planning to Configure GDM

This chapter describes information that you should know as you prepare to configure the GDM in the Cisco IOS GGSN software. It provides information about important planning and configuration dependencies for the other entities in the GPRS/UMTS network that support the GDM environment.

This chapter includes the following sections:

- [Prerequisites, page 14-1](#)
- [Restrictions, page 14-4](#)
- [Supported Platforms, page 14-4](#)
- [Supported Standards, MIBs, and RFCs, page 14-5](#)
- [Related Documents, page 14-5](#)

Prerequisites

Successful implementation of GDM involves proper configuration of the Cisco Systems router as well as proper configuration of some other network entities within the GPRS/UMTS PLMN to support the GDM environment.

This section describes the following other planning aspects and configuration in the GPRS/UMTS network that you need to consider before configuring GDM:

- [Planning Access Points, page 14-2](#)
- [Provisioning the HLR, page 14-2](#)
- [Configuring DNS Servers, page 14-3](#)
- [Configuring a Route From the SGSN to GDM, page 14-3](#)
- [Implementing Multiple GDM Routers, page 14-4 \(Optional\)](#)

Planning Access Points

GDM supports the use of both real and virtual access points to access destination networks through one or more GGSNs.

Real access points always direct access to a physical, target network. A virtual access point name (APN) is a non-physical entity used by Cisco Systems to represent an access point that does not itself provide direct access to a real target network. Cisco Systems provides virtual APN support in the GPRS/UMTS PLMN.

You can use virtual access points to consolidate access to multiple, physical target networks through a single access point. GDM always uses real access points to direct PDP contexts to an external network through a GGSN. Therefore, virtual access points should be used in combination with real access points on a GGSN.

To implement virtual APN support using GDM, you need to determine the name(s) of the virtual access point(s) that you want subscribers to use for access to one or more real APNs that are configured on your GGSNs.

GDM determines how to process a PDP context according to the content found in the APN Information Element (IE) and the Protocol Configuration Option (PCO) of the create PDP context request. For more information about GDM's request processing and how GDM processes different request scenarios, see the [“Request Processing by GDM”](#) section on page 13-2 in the [“Overview of GDM”](#) chapter.

What's Next

Once you determine your real and virtual APNs, you need to be sure that the APN information is properly implemented in other areas of the network by performing the following tasks:

- Provision the HLR.
- Configure the DNS server that provides support to the SGSN and the DNS server that provides support to GDM.
- If you are implementing virtual APN support, inform subscribers that they need to specify the appropriate virtual APN when requesting access to the network. By specifying the virtual APN, and by fully qualifying their username in their initial request in the form of login@domain, these subscribers are allowed access to the real target networks through the GGSNs accessible by GDM.

Provisioning the HLR

If you plan to support both real and virtual access points for create PDP context requests, then you will need to provision the HLR with both the real and virtual APNs for the applicable subscribers.

However, if you are using virtual APN support, you do not need to specify the names of each of the real APNs in the HLR's subscriber information, as long as those real APNs are available through GDM. Therefore, when support of additional network access points are added to GGSNs in the GDM environment using a virtual APN, there is no need to do any further provisioning of the HLR subscriber information. This is the primary benefit for using virtual APN support.

After you determine the name of the virtual access point that you want to support, you need to provision the HLR with the virtual APN information for the applicable subscribers. You need to specify the virtual APN for those subscribers with permission to reach any of the real target networks that are accessible from the GGSNs supported by GDM using virtual APN.

To reach different networks, users continue to specify the same virtual APN, but designate the real target network by fully qualifying their username in the form of login@domain, where domain is the name of the real APN, or target network.

Configuring DNS Servers

To support GDM, there are two aspects of DNS server support that you need to configure:

- [Configuring the DNS Server for the SGSN, page 14-3](#)
- [Configuring the DNS Server for GDM, page 14-3](#)

Configuring the DNS Server for the SGSN

When the SGSN receives a real or virtual APN in the APN IE of a create PDP context request and verifies the user's subscription information with the HLR for that APN, the SGSN queries a DNS server for the IP address associated with that APN. For GDM to work properly, the DNS server must resolve the real and virtual APNs to the IP address of the virtual template interface that you have configured on GDM.

Therefore, at the SGSN DNS server, you must define the IP address of the virtual template interface on GDM for each of the real and virtual APNs that you want to support for MS requests.

For more information about configuring the virtual template interface, see the [“Configuring the Virtual Template Interface on GDM” section on page 15-2](#).

Configuring the DNS Server for GDM

GDM uses a DNS server to obtain the IP addresses of the GGSNs that support connectivity to the target network specified in the create PDP context request. Therefore, you must configure the GDM DNS server (such as the Cisco Network Registrar) to return the IP address of the virtual template interface for one or more GGSNs that provide connectivity to the real APNs that you want to support.

When GDM receives a create PDP context request using virtual APN support, it looks at the domain specified in the username of the protocol configuration option (PCO) information element (IE) to determine the real target network. Then, GDM queries the DNS server to provide the IP addresses of the GGSNs for that domain. In this case, GDM replaces the original content of the APN field so that it now contains the APN of the target network (as specified in the PCO IE), not the virtual APN. Once GDM receives an IP address from the DNS server, it sends the create PDP context request to the GGSN at the IP address returned by DNS.

For other create PDP context requests where no domain is specified, or the PCO IE is null, GDM uses the value of the APN IE as the real APN for its DNS query.

Configuring a Route From the SGSN to GDM

To reach GDM, you must be sure that the SGSN can successfully route to the IP address of the virtual template interface on GDM.

If you are configuring multiple GDMs using Cisco Systems Hot Standby Router Protocol (HSRP), you should configure each GDM with the same IP address at the virtual template interface. Then, you should be sure that the SGSN can route the IP address of the virtual template interface through the LAN segment where you are running HSRP, as specified by the **standby ip** interface configuration command.

For more information about configuring GDM, see the [Chapter 15, “Configuring GDM.”](#)

Implementing Multiple GDM Routers

You can implement multiple GDM routers to provide backup services in the GPRS/UMTS PLMN. To do this, you can use the HSRP.

There are certain configuration restrictions that you need to follow to support HSRP with GDM:

- Each GDM router must be configured with the same IP address for the virtual template interface.
- Each GDM router must use the same standby IP address, and be in the same HSRP group. GDM does not support multiple HSRP groups.
- The SGSN must be able to route the IP address of the GDM virtual template interface to the IP address that you specified in the **standby ip** interface configuration command.

For information about the configuration commands to use to configure HSRP on GDM, see the [“Configuring HSRP on GDM” section on page 15-6](#). For a configuration example using HSRP, see the [“GDM Configuration Example” section on page 15-11](#).

For more detailed information about HSRP in the Cisco IOS software, refer to the *Cisco IOS IP Configuration Guide*.

Restrictions

When implementing GDM, be aware of the following configuration restrictions:

- GDM supports a single HSRP group only. Therefore, a GDM router cannot be configured to support more than one HSRP group.
- GDM cannot simultaneously support GGSN functions. Although the GDM functionality is part of the Cisco IOS GGSN software, a Cisco Systems router cannot perform the functions of both a GGSN and GDM at the same time.

Supported Platforms

- Cisco 7206 router
- Cisco 7206 VXR NPE-300 router
- Cisco 7206 VXR NPE-400 router

Supported Standards, MIBs, and RFCs

Standards

No new or modified standards are supported by GDM.

MIBs

- CISCO-GTP-DIRECTOR-MIB

To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB website on Cisco.com at the following URL:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

RFCs

No new or modified RFCs are supported by GDM.

Related Documents

- *Cisco IOS Interface Configuration Guide*, Release 12.2
- *Cisco IOS Interface Command Reference*, Release 12.2
- *Cisco IOS IP Configuration Guide*, Release 12.2
- *Cisco IOS IP Command Reference, Volume 1 of 3: Addressing and Services*, Release 12.2
- *Cisco IOS IP Command Reference, Volume 2 of 3: Routing Protocols*, Release 12.2
- *Cisco IOS IP Command Reference, Volume 3 of 3: Multicast*, Release 12.2
- *Cisco IOS Switching Services Configuration Guide*, Release 12.2
- *Cisco IOS Switching Services Command Reference*, Release 12.2

