



iWAG-GTP: S2a Interface Support and High Availability Enhancements

This chapter describes the enhancements for Intelligent Wireless Access Gateway-General Packet Radio Service Tunneling Protocol (iWAG-GTP) to support S2a interface type and related features for the trusted Wireless LAN (WLAN) Access Network deployment.

This chapter also covers iWAG-GTP high availability and In-Service Software Upgrade (ISSU) enhancements to support different GTP-C and GTP-U addresses from Cisco Packet Data Network Gateway (PGW) and Gateway GPRS Support Node (GGSN).

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Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table at the end of this module.

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

Information About S2a Interface Support for GTPv2

iWAG-GTP supports the S2a interface for trusted networks. Earlier, the implementation of GPRS Tunneling Protocol Version 2 (GTPv2) on iWAG-GTP supported only the S5 interface and S8 interface that connect a serving gateway (SGW) and a packet data network gateway (PGW). Effective from Cisco IOS XE Release 3.14, by default, GTPv2 supports the S2a interface on the iWAG side for trusted WLAN Access Network deployment, according to the specifications provided in 3GPP TS 29.274 V11.5.0.

In the new S2a interface, GTPv2 supports some new information elements like Additional Protocol Configuration Options (APCO) for Domain Name System (DNS) provisioning, and IPv4 Configuration Parameters (IP4CP) for dynamic default gateway provisioning.

The interface that connects the iWAG to PGW is configurable for backwards compatibility, and S2a interface is used by default.

ISSU and High Availability Support for GTPv2

Because GTPv2 supports both S5/S8 interface and S2a interface, the interface type should be stored on a per-PDP basis, so that the same interface type is used when deleting the PDP.

In a high availability (HA) scenario, the interface type should be checkpointed to the standby RP so that after switchover, a PDP on the newly active RP has the interface type information.

Table 1: ISSU and High Availability Support for GTPv2

| | S5/S8 | S2a |
|----------------|-----------|--|
| ISSU Upgrade | Supported | ISSU upgrade is not applicable for S2a interface. In releases prior to Cisco IOS XE 3.14, S2a interface type was not supported. |
| ISSU Downgrade | Supported | Not supported. After downgrade, only the S5/S8 interface type is supported, it may not be possible to delete sessions. |
| SSO Checkpoint | Supported | Supported from Cisco IOS XE Release 3.14 onwards. |

Example: Configuring the S2a Interface for GTPv2

The following example shows how to configure the S2a interface for GTPv2:

```
Router(config)#gtp
Router(config-gtp)#apn 1
Router(config-gtp-apn)#gtpv2 interface-type ?
```

```
s2a  Interface between TWAG and PGW (default value for backwards compatibility)
s5s8 Interface between SGW and PGW
```

GTP Control and GTP User Tunnel Address Separation for GTPv1 and GTPv2

In Cisco IOS XE Release 3.11 and earlier, iWAG-GTP did not support separate GTP-C and GTP-U paths to GGSN and PGW.

Effective from Cisco IOS XE Release 3.12, iWAG-GTP partially supports GTP-C and GTP-U address separation. The separation works only on non-high availability boxes because there is no checkpointing of the GGSN and PGW data path (GTP-C) address to standby RPs.

Effective from Cisco IOS XE Release 3.14, iWAG-GTP supports different GTP-C and GTP-U addresses in an HA setup for both GTPv1 and GTPv2.



Note

GTP path version is not checkpointed to standby RPs. Therefore, GTPv1 and GTPv2 sessions are not supported on the same path.

Additional PCO Support on S2a Interface for DNS Provisioning

Effective from Cisco IOS XE Release 3.14, GTPv2 supports a new information element type called additional PCO to support DNS provisioning over the S2a interface.

Additional PCO applies only to transparent single-connection mode. You can use PCO or additional PCO options for DNS provisioning, but the default option is additional PCO.

Example: Configuring Additional PCO for GTPv2

The following example shows how to configure additional PCO for GTPv2:

```
Router(config)#gtp
Router(config-gtp)#apn 1
Router(config-gtp-apn)#gtpv2 pco-type ?
  apco  Using APCO for DNS provisioning (default value for backwards compatibility)
  pco   Using PCO for DNS provisioning
```

IP4CP Support on S2a Interface for Dynamic Provisioning of Default Gateway

The S2a interface supports IPv4 Configuration Parameters (IP4CP) information element type. IP4CP information element enables the PGW to dynamically provision the default gateways instead of tedious local configuration on the iWAG. IP4CP is applicable only to transparent single-connection mode.

In order to be backward compatible, local configuration of default gateways is supported.

- If the default gateway address and subnet prefix length provisioned from PGW are the same as for the locally configured default gateway, the default gateway is created as a static default gateway.
- If local configuration does not exist, the dynamically provisioned default gateway is used.
- If there is no IP4CP to provision the dynamic default gateway and there is no local configuration, session creation fails due to the absence of a default gateway.

APN-AMBR Support for GTPv2

APN aggregate maximum bit rate (AMBR) is the maximum allowed total nonguaranteed bit rate (GBR) throughput to a specific APN. It is specified interdependently for uplink and downlink. The APN-AMBR IE type is used to define the per-APN uplink and downlink aggregate maximum bit rate for a specific UE.

Effective from Cisco IOS XE Release 3.14, GTPv2 supports the APN-AMBR IE type for uplink and downlink.

Example: Configuring APN-AMBR Uplink and Downlink for GTPv2

The following example shows how to configure APN-AMBR uplink and downlink for GTPv2:

```
Router(config)#gtp
Router(config-gtp)#apn 1
Router(config-gtp-apn)#gtpv2 apn-ambr ?
  uplink  Configure uplink ambr
Router(config-gtp-apn)#gtpv2 apn-ambr uplink ?
  <0-2147483647>  Uplink Aggregate Maximum Bit Rate (kbps)
Router(config-gtp-apn)#gtpv2 apn-ambr uplink 128 ?
  downlink  Configure downlink ambr
Router(config-gtp-apn)#gtpv2 apn-ambr uplink 128 downlink ?
  <0-2147483647>  Downlink Aggregate Maximum Bit Rate (kbps)
```

Additional References

Related Documents

| Related Topic | Document Title |
|--------------------|---|
| Cisco IOS commands | Cisco IOS Master Commands List, All Releases |
| iWAG commands | Cisco IOS Intelligent Wireless Access Gateway Command Reference |

MIBs

| MIB | MIBs Link |
|--|---|
| No new or modified MIBs are supported by this feature. | To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs |

Technical Assistance

| Description | Link |
|---|---|
| <p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p> | http://www.cisco.com/cisco/web/support/index.html |

Feature Information for iWAG-GTP: S2a Interface Support and High-Availability Enhancements

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

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

Table 2: Feature Information for iWAG-GTP: S2a Interface Support and High-Availability Enhancements

| Feature Name | Releases | Feature Information |
|--|---------------------------|---|
| iWAG-GTP: S2a Interface Support and High-Availability Enhancements | Cisco IOS XE Release 3.14 | In Cisco IOS XE Release 3.14, this feature was implemented on the Cisco ASR 1000 Series Aggregation Services Routers. |

