Separation of 2G 3G 4G WLAN Bulkstatistics

Feature Summary and Revision History

Summary Data

Applicable Product(s) or Functional Area	• GGSN
	• P-GW
	• SAEGW
Applicable Platform(s)	All
Feature Default	Disabled - Configuration Required
Related Changes in This Release	Not Applicable
Related Documentation	• *Command Line Interface Reference*
	• *GGSN Administration Guide*
	• *P-GW Administration Guide*
	• *SAEGW Administration Guide*

Revision History

Revision Details	Release
In this release, separation of 2G 3G 4G WLAN Bulk Statistics is introduced	21.23
First introduced.	21.5

Feature Description

Some of the contractual Key Performance Indicators (KPIs) are monitored by operations that require reporting per Radio Access Technology (RAT) type (2G, 3G, 4G). A few of the bulkstat counters implemented currently do not separate the RAT type. To enable and disable per APN RAT types statistics, the newly introduced RAT types are"gtpv2-s2a" and "gtpv2-s2b".These types provide RAT separation (2G, 3G, 4G, WLAN).

This separation enables the operations team to report the usage by RAT type separately, as well as enhance the troubleshooting tools used to detect any network issues.

Configuring RAT types in Stats Profile

The configuration command gtpv2-s2a and gtpv2-s2b has been added to the stats-profile configuration mode. It integrates the per APN per RAT type (2G, 3G, 4G, gtpv2-s2a, gtpv2-s2b) statistics with the existing stats-profile implementation.

To enable per APN per RAT types statistics collection, execute the following command:

```
configure
   stats-profile stats_profile_name
      [ no ]  rat-type { gtpv2-s2a | gtpv2-s2b }
   end
```

After the association of stats-profile with APN, the statistics are collected for and this requires APN per RAT level statistics.

Per APN per RAT level statistics are lost if stats-profile association is removed from APN and RAT type option is removed from stats-profile.

To assoicate stats-profile with APN , execute the following command:

```
configure
   context context_name
      apn apn_name
         stats-profile stats_profile_name
   end
```

NOTES:

- **stats-profile** : Configures statistics profile to collect packet drop counters and/or ARP level stats.

- **rat-type** Configures collection of RAT level statistics.

- **gtpv2-s2a** Configures collection of statistics for RAT Type WLAN S2A.

- **gtpv2-s2b** Configures collection of statistics for RAT Type WLAN S2B.

Monitoring and Troubleshooting

This section provides information on the show commands and bulk statistics available to support the 2G, 3G, 4G, WLAN bulkstat separation.

Show Command and Output

show stats-profile all

The output of this command displays the collection of statistics for RAT Type gtpv2-S2A and gtpv2-S2B as follows:

- stats profile name
- RAT Type
- gtpv2-s2a
- gtpv2-s2b

show apn statistics all

The output of this command displays the statistics of dynamic address allocation, uplink and downlink of gtpv2-s2a and gtpv2-s2b as follows:

- Data Statistics
  - gtpv2-s2a
    - Uplnk Bytes
    - Dnlnk Bytes
  - gtpv2-s2b
    - Uplnk Bytes
    - Dnlnk Bytes

- RAT Type Statistics
  - gtpv2-s2a
    - Ipv4
    - Ipv6
    - Ipv4v6
  - gtpv2-s2b
    - Ipv4
    - Ipv6

• Ipv4v6

show gtpc statistics

The output of this command displays the statictics of updated pdp context transmission and reception of GERAN and UTRAN:

- • Tunnel Management Messages
  - • Total GERAN Accepted
  - • Total UTRAN Accepted
  - • GERAN UPC RX
  - • Accepted

Note The above Accepted counter is for GERAN UPC RX.

  - • UTRAN UPC RX
  - • Accepted

Note The above Accepted counter is for UTRAN UPC RX.

  - • GERAN UPC TX
  - • Accepted

Note The above Accepted counter is for GERAN UPC TX.

  - • UTRAN UPC TX
  - • Accepted

Note The above Accepted counter is for UTRAN UPC TX.

show gtpc statistics apn <apn_name> verbose

The output of this command displays the statistics of RAT type create pdp context statistics of GERAN and UTRAN:

- • Tunnel Management Messages
  - • Total GERAN Accepted

- Total UTRAN Accepted

- GERAN UPC RX

- Accepted

Note The above Accepted counter is for GERAN UPC RX.

- UTRAN UPC RX

- Accepted

Note The above Accepted counter is for UTRAN UPC RX.

- GERAN UPC TX

- Accepted

Note The above Accepted counter is for GERAN UPC TX.

- UTRAN UPC TX

- Accepted

Note The above Accepted counter is for UTRAN UPC TX.

- GERAN PDP Context Denied

  - No Resources

  - Memory

  - All Dyn Addr Occupied

  - User Auth Failed

  - Unknown Missing/APN

  - System Failure

  - Service Not Supported

  - No APN Subscription

- UTRAN PDP Context Denied

  - No Resources

  - Memory

- All Dyn Addr Occupied

- User Auth Failed

- Unknown Missing/APN

- System Failure

- Service Not Supported

- No APN Subscription

show gtpc statistics apn <apn_name>

The output of this command displays the statictics of updated pdp context transmission and reception of GERAN and UTRAN:

- Tunnel Management Messages

  - Total GERAN Accepted

  - Total UTRAN Accepted

  - GERAN UPC RX

  - Accepted

Note The above Accepted counter is for GERAN UPC RX.

  - UTRAN UPC RX

  - Accepted

Note The above Accepted counter is for UTRAN UPC RX.

  - GERAN UPC TX

  - Accepted

Note The above Accepted counter is for GERAN UPC TX.

  - UTRAN UPC TX

  - Accepted

Note The above Accepted counter is for UTRAN UPC TX.

Bulk Statistics

APN Schema

The following bulk statistics are added in the APN schema to support the 2G, 3G, 4G, WLAN bulkstats separation feature:

Bulk Statistics	Description
uplnk-bytes-gtpv2-s2a	Indicates the total number of bytes sent from the APN for a GTPV2 based S2A RAT type towards the Internet/PDN on the Gi interface.
dnlnk-bytes-gtpv2-s2a	Indicates the total number of bytes received for a GTPV2 based S2A RAT type on the Gi interface for the APN.
uplnk-bytes-gtpv2-s2b	Indicates the total number of bytes sent from the APN for a GTPV2 based S2B RAT type towards the Internet/PDN on the Gi interface.
dnlnk-bytes-gtpv2-s2b	Indicates the total number of bytes received for a GTPV2 based S2B RAT type on the Gi interface for the APN.
dyn-ipv4-success-eutran	Indicates the total number of IPv4 contexts requesting dynamically assigned IP addresses that were successfully setup for a EUTRAN RAT type.
dyn-ipv4-success-gtpv2-s2a	Indicates the total number of IPv4 contexts requesting dynamically assigned IP addresses that were successfully setup for a GTPV2 based S2A RAT type.
dyn-ipv4-success-gtpv2-s2b	Indicates the total number of IPv4 contexts requesting dynamically assigned IP addresses that were successfully setup for a GTPV2 based S2B RAT type.
dyn-ipv6-success-eutran	Indicates the total number of IPv6 contexts requesting dynamically assigned IP addresses that were successfully setup for a EUTRAN RAT type.
dyn-ipv6-success-gtpv2-s2a	Indicates the total number of IPv6 contexts requesting dynamically assigned IP addresses that were successfully setup for a GTPV2 based S2A RAT type
dyn-ipv6-success-gtpv2-s2b	Indicates the total number of IPv6 contexts requesting dynamically assigned IP addresses that were successfully setup for a GTPV2 based S2B RAT type.
dyn-ipv4v6-success-eutran	Indicates the total number of IPv4v6 contexts requesting dynamically assigned IP addresses that were successfully setup for a EUTRAN RAT type.

dyn-ipv4v6-success-gtpv2-s2a	Indicates the total number of IPv4v6 contexts requesting dynamically assigned IP addresses that were successfully setup for a GTPV2 based S2A RAT type.
dyn-ipv4v6-success-gtpv2-s2b	The total number of IPv4v6 contexts requesting dynamically assigned IP addresses that were successfully setup for a GTPV2 based S2B RAT type.
upc-rx-geran	Indicates the total number of Update PDP Context Request messages received from the SGSN(s) for a GERAN RAT type per APN.
upc-tx-geran	Indicates the total number of Update PDP Context Request messages sent to the SGSN(s) for a GERAN RAT type per APN.
upc-rx-accept-geran	Indicates the total number of Update PDP Context Response messages received from SGSN(s) containing a cause value of 128 (80H, Request accepted) for a GERAN RAT type per APN.
upc-tx-accept-geran	Indicates the total number of Update PDP Context Response messages sent to the SGSN(s) containing a cause value of 128 (80H, Request accepted) for a GERAN RAT type per APN.
upc-rx-utran	Indicates the total number of Update PDP Context Request messages received from the SGSN(s) for a UTRAN RAT type per APN.
upc-tx-utran	Indicates the total number of Update PDP Context Request messages sent to the SGSN(s) for a UTRAN RAT type per APN.
upc-rx-accept-utran	Indicates the total number of Update PDP Context Response messages received from SGSN(s) containing a cause value of 128 (80H, Request accepted) for a UTRAN RAT type per APN.
upc-tx-accept-utran	Indicates the total number of Update PDP Context Response messages sent to the SGSN(s) containing a cause value of 128 (80H, Request accepted) for a UTRAN RAT type per APN.
cpc-accept-geran	Indicates the total number of Create PDP Context Response messages transmitted containing a cause value of 128 (80H, Request accepted)for a GERAN RAT type per APN.

cpc-accept-utran	Indicates the total number of Create PDP Context Response messages transmitted containing a cause value of 128 (80H, Request accepted) for a UTRAN RAT type per APN.
cpc-nomem-geran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent with a cause code of 212 (D4H, No memory is available) for a GERAN RAT type per APN.
cpc-nomem-utran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent with a cause code of 212 (D4H, No memory is available) for a UTRAN RAT type per APN.
cpc-noresource-geran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent with a cause code of 199 (C7H, No resources available) for a GERAN RAT type per APN.
cpc-noresource-utran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent with a cause code of 199 (C7H, No resources available) for a UTRAN RAT type per APN.
cpc-srv-not-supp-geran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent with a cause code of 200 (C8H, service not Supported) for a GERAN RAT type per APN.
cpc-srv-not-supp-utran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent with a cause code of 200 (C8H, service not Supported) for a UTRAN RAT type per APN.
cpc-sys-fail-geran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent with a cause code of 204 (CCH, System failure) for a GERAN RAT type per APN.
cpc-sys-fail-utran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent with a cause code of 204 (CCH, System failure) for a UTRAN RAT type per APN.
cpc-auth-fail-geran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent with a cause code of 209 for a GERAN RAT type per APN.

cpc-auth-fail-utran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent with a cause code of 209 for a UTRAN RAT type per APN.
cpc-no-apn-subscription-geran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent for a GERAN RAT type per APN because there was no apn subscription.
cpc-no-apn-subscription-utran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent for a UTRAN RAT type per APN because there was no apn subscription.
cpc-missing-apn-geran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent with a cause code of 219 (DBH, Missing or unknown APN) for a GERAN RAT type per APN.
cpc-missing-apn-utran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent with a cause code of 219 (DBH, Missing or unknown APN) for a UTRAN RAT type per APN.
cpc-addr-occupied-geran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent with a cause code of 211 (D3H, All dynamic PDP addresses are occupied) for a GERAN RAT type per APN.
cpc-addr-occupied-utran	Indicates the total number of reject Create PDP Context Response messages transmitted to the SGSN(s) sent with a cause code of 211 (D3H, All dynamic PDP addresses are occupied) for a UTRAN RAT type per APN.