

Monitoring the Service

This chapter provides information for monitoring service status and performance using the **show** commands found in the Command Line Interface (CLI). These command have many related keywords that allow them to provide useful information on all aspects of the system ranging from current software configuration through call activity and status.

The selection of keywords described in this chapter is intended to provided the most useful and in-depth information for monitoring the system. For additional information on these and other **show** command keywords, refer to the *Command Line Interface Reference*.

In addition to the CLI, the system supports the sending of Simple Network Management Protocol (SNMP) traps that indicate status and alarm conditions. Refer to the *SNMP MIB Reference* for a detailed listing of these traps.

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Monitoring System Status and Performance

This section contains commands used to monitor the status of tasks, managers, applications and other software components in the system. Output descriptions for most of the commands are located in the *Counters and Statistics Reference*.

Table 1: System Status and Performance Monitoring Commands

To do this:	Enter this command:
View Congestion-Control Information	
View Congestion-Control Statistics	**show congestion-control statistics {a11mgr | ipsecmgr}**
View GTP Information	
View eGTP-C service statistics for a specific service	**show egtpc statistics egtpc-service** *name*
View GTP-U service statistics for all GTP-U data traffic on the system	**show gtpu statistics**

To do this:	Enter this command:
View Infrastructure-DNS Queries	
Verify Infrastructure-DNS queries to resolve P-CSCF FQDN	**dns-client query client-name** *client_name* **query-type AAAA query-name** <*p-cscf.com*>
View IP Information	
Display BGP Neighbors	
Verify BGP neighbors on egress P-GW context	**context** *egress_pgw_context_name* **show ip bgp summary**
Verify BGP neighbors on ingress P-GW context	**context** *ingress_pgw_context_name* **show ip bgp summary**
Display IP Connectivity State	
Verify IP connectivity to the diameter servers for various components/interfaces; all peers should be in OPEN or WAIT_DWR state	**show diameter peers full all |grep State**
Display IP Interface Status	
Verify IP interfaces are up on each context	**show ip interface summary** **show ipv6 interface summary**
Display IP Pool Configuration	
Verify IPv4 pools have been created and are available	**context** *egress_pgw_context_name* **show ip pool summary**
Verify IPv6 pools have been created and are available	**context** *egress_pgw_context_name* **show ipv6 pool summary**
View LMA Service Information	
View LMA service statistics for a specific service	**show lma-service statistics lma-service** *service_name*
View P-GW Service Information	
View P-GW service statistics	**show pgw-service statistics all**
Verify P-GW services	**context** *ingress_pgw_context_name* **show pgw-service all |grep Status** **show lma-service all |grep Status** **show egtp-service all |grep Status** **show gtpu-service all |grep State**
View QoS/QCI Information	

To do this:	Enter this command:
View QoS Class Index to QoS mapping tables	**show qci-qos-mapping table all**
View RF Accounting Information	
Confirm the PGW is sending Rf accounting records: • Verify "Message sent" is non-zero • Verify active charging sessions are present	**show diameter accounting servers |grep Message** **show active-charging sessions all |more**
View Session Subsystem and Task Information	
Display Session Subsystem and Task Statistics **Important** Refer to the *System Software Task and Subsystem Descriptions* appendix in the *System Administration Guide* for additional information on the Session subsystem and its various manager tasks.	
View AAA Manager statistics	**show session subsystem facility aaamgr all**
View AAA Proxy statistics	**show session subsystem facility aaaproxy all**
View LMA Manager statistics	**show session subsystem facility hamgr all**
View Session Manager statistics	**show session subsystem facility sessmgr all**
View Session Disconnect Reasons	
View session disconnect reasons with verbose output	**show session disconnect-reasons**
View Session Recovery Information	
View session recovery status	**show session recovery status [verbose]**
View Subscriber Information	
Display NAT Information	
View the private IP assigned to the NAT user, along with any other public IPs assigned	**show subscriber full username** *user_name*
View NAT realms assigned to this user	**show subscriber full username** *user_name* **|grep -i nat**
View active charging flows for a specific NAT IP address	**show active-charging flows full nat required nat-ip** *ip_address*
Display Session Resource Status	
View session resource status	**show resources session**
View Statistics for Subscribers using LMA Services on the System	
View statistics for subscribers using a specific LMA service on the system	**show subscribers lma-service** *service_name*

To do this:	Enter this command:
View Statistics for Subscribers using P-GW Services on the System	
View statistics for subscribers using any P-GW service on the system	**show subscribers pgw-only full**
Display Subscriber Configuration Information	
View locally configured subscriber profile settings (must be in context where subscriber resides)	**show subscribers configuration username** *subscriber_name*
View remotely configured subscriber profile settings	**show subscribers aaa-configuration username** *subscriber_name*
View Subscribers Currently Accessing the System	
View a listing of subscribers currently accessing the system	**show subscribers all**
Display UE Attach Status	
Confirm that a UE has attached: • Displays IMSI with one entry for each bearer per APN connection • Verify active charging sessions are present • Verify peers are active. Peers should correspond to S-GW EGTP addresses • Verify "Create Session Request" and "Create Session Response" categories are incrementing • Verify "Total Data Stats:" are incrementing eHRPD: • Verify lma-sessions are present • Verify "Binding Updates Received:" categories are incrementing	**show subscriber pgw-only imsi** *ue_imsi* **show active-charging sessions all |more** **show egtpc peers** **show egtpc statistics** **show gtpu statistics** **eHRPD only** **show lma-service session username** *user_name* **show lma-service statistics**

Including the IMSI/IMEI in System Event Logs of Type Error and Critical

The P-GW can be configured to provide the IMSI/IMEI in the event log details for the following system event logs of type error and critical, if available. If the IMSI is not available, the P-GW will make a best effort to obtain the IMEI.

Table 2: New and Modified System Event Logs with IMSI/IMEI in System Event Log Details

Event Log	Description
New Events	
12225	Represents misc_error3 in format "[IMSI <IMSI>] Misc Error3: s, error code d"

Event Log	Description
12226	Represents recover_call_from_crr_failed1 error in format "[IMSI <IMSI>]Sessmgr-d Recover call from CRR failed for callid:0xx reason=s"
12227	Represents aaa_create_session_failed_no_more_sessions1 error in format "[IMSI <IMSI>] Sessmgr-d Ran out of session handles"
140075	Represents error_log1 in format "[IMSI <IMSI>]s"
Modified Events	
139001	To print miscellaneous PGW error log.
191006	To print miscellaneous SAEGW error log.
10034	Represents FSM error in format "[IMSI <IMSI>] default call fsm error: ostate=s(d) state=s(d) event=s(d)"
10035	Represents FSM INVALID event in format "[IMSI <IMSI>] default call fsm invalid event: state=s(d) event=s(d)"
12382	Represents SN_LE_SESSMGR_PGW_REJECT_BEARER_OP in format "[IMSI <IMSI>] Sessmgr-d: Request to s bearer rejected. Reason: s". For example "[IMSI 112233445566778 Sessmgr-1: Request to Create bearer rejected. Reason: Create Bearer Request denied as session recovery is in progress"
12668	Represents fsm_event_error in format "[IMSI <IMSI>] Misc Error: Bad event in sessmgr fsm, event code d"
12774	Represents pgw_purge_invalid_crr in format "[IMSI <IMSI>] Local s TEID [lu] Collision: Clp Connect Time: lu, Old Clp Callid: d, Old Clp Connect Time: lu s"
12855	Represents ncqos_nrspca_trig_err in format "[IMSI <IMSI>] NCQOS NRSPCA trig rcvd in invalid bcm mode."
12857	Represents ncqos_nrupc_tft_err in format "[IMSI <IMSI>] NCQOS NRUPC Trig : TFT validation failed for nsapi <u>."
12858	Represnts ncqos_nrxx_trig_already in format "[IMSI <IMSI>] NCQOS NRSPCA/NRUPC is already triggered on sess with nsapi <u>."
12859	Represents ncqos_nrxx_tft_check_fail in format "[IMSI <IMSI>] NCQOS TFT check failed as TFT has invalid opcode for nsapi <u>:pf_id_bitmap 0xx and tft_opcode: d"
12860	Represents ncqos_sec_rej in format "[IMSI <IMSI>] NCQOS Secondary ctxt with nsapi <u> rejected, due to <s>."
12861	Represents ncqos_upc_rej in format "[IMSI <IMSI>] UPC Rejected for ctxt with nsapi <u>, due to <s>."
12862	Represents ggsn_subsession_invalid_state in format "[IMSI <IMSI>] GGSN subsession invalid state state:<s>,[event:<s>]"

Event Log	Description
11830	Represents gngp_handoff_rejected_for_pdn_ipv4v6 in format "[IMSI <IMSI>] Sessmgr-d Handoff from PGW-to-GGSN rejected, as GGSN doesnt support Deffered allocation for IPv4v6, dropping the call."
11832	Represents gngp_handoff_rejected_no_non_gbr_bearer_for_def_bearer_selection in format "[IMSI <IMSI>] Sessmgr-d Handoff from PGW-to-GGSN rejected, as GGSN Callline has no non-GBR bearer to be selected as Default bearer."
11834	Represents gngp_handoff_from_ggsn_rejected_no_ggsn_call in format "[IMSI <IMSI>] Sessmgr-d Handoff from GGSN-to-PGW rejected, as GGSN call with TEIDC <0xx> not found."
12960	Represents gtp_pdp_type_mismatch in format "[IMSI <IMSI>] Mismatch between PDP type of APN s and in create req. Rejecting call"
11282	Represents pcc_intf_error_info in format "[IMSI <IMSI>] s"
11293	Represents collision_error in format "[IMSI <IMSI>] Collision Error: Temp Failure Handling Delayed Pending Active Transaction: , error code d"
11917	Represents rcvd_invalid_bearer_binding_req_from_acs in format "[IMSI <IMSI>] Sessmgr d: Received invalid bearer binding request from ACS."
11978	Represents saegw_uid_error in format "[IMSI <IMSI>] s"
11994	Represents unwanted_pcc_intf_setup_req error in format "[IMSI <IMSI>] GGSN_INITIATE_SESS_SETUP_REQ is already fwded to PCC interface "
140005	Represents ue_fsm_illegal_event in format "[IMSI <IMSI>] Invalid/unhandled UE event <s> in state <s>"
140006	Represents pdn_fsm_illegal_event in format "[IMSI <IMSI>] Invalid/unhandled PDN event <s> in state <s>"
140007	Represents epsb_fsm_illegal_event in format "[IMSI <IMSI>] Invalid/unhandled EPSB event <s> in state <s>"
10726	Represents saegwdrv_generic_error "[IMSI <IMSI>] s"

Configuring the P-GW to Include the IMSI/IMEI in System Event Logs of Type Error and Critical

The **include-ueid** keyword has been added to the **logging** command in Global Configuration Mode. When enabled, the previously mentioned system events of type error and critical will provide the IMSI/IMEI in the logging details, if available.

```
configure
    logging include-ueid
    no logging include-ueid
    end
```

Notes:

- **no** disables the inclusion of the IMSI/IMEI in system event logs of type error and critical.

- Use the **show configuration** command to view the current configuration status of the **logging include-ueid** command.
  - logging include-ueid (when enabled)
  - no logging include-ueid (when disabled.

Clearing Statistics and Counters

It may be necessary to periodically clear statistics and counters in order to gather new information. The system provides the ability to clear statistics and counters based on their grouping (PPP, MIPHA, MIPFA, etc.).

Statistics and counters can be cleared using the CLI **clear** command. Refer to the *Command Line Reference* for detailed information on using this command.

64 Bit Conversion on SAEGW and P-GW Counters

Most of the P-GW and SAEGW bulk statistic counters are INT32 type and they do not provide accurate statistics during a specific period of time. These counters also roll over during a specific time period. In order to avoid the roll-over and stop the over flow of the counter, the Int32 to Int64 in bulk statistics schema and SessMgr is introduced. For more information see the *Statistics and Counters Reference Guide*.