

show sms statistics

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show sms statistics gprs only verbose

Table 1: show subscribers sms statistics gprs only verbose Command Output Descriptions

Field	Description
Session Statistics	Session statistics includes parameters related to SMS session between the MS and network. It includes parameters such as: • MO SMS (in progress) • MT SMS (in progress) • MT SMS (in queue) • SMMA (in progress) • MO SMS (Attempted) • MT SMS (Attempted) • SMMA (Attempted) • MO SMS (successful) • MT SMS (successful) • SMMA (successful)
MO SMS (In Progress)	Total number SMS messages that are Mobile Originated (MO) i.e. sent from an UE or MS and are being received by network.

Field	Description
MT SMS (In Progress)	Total number of SMS messages that are Mobile Terminated (MT) i.e. being sent to a UE or MS and are being delivered by network.
MT SMS (In Queue)	Total number of SMS messages that are mobile Terminated i.e. being sent to UE or MS and are in queue for being delivered by the network.
SMMA (In Progress)	Total number of SMMA messages in progress for the reception by the network.An SMMA message is used by the MS to indicate the network about availability of the memory in MS, to receive one or more short messages.
MO SMS (Attempted)	Total number of SMS messages that are Mobile Originated (MO) i.e. sent from an UE or MS and are being attempted to be received by the network.
MO SMS (Successful)	Total number of SMS messages that are Mobile Originated (MO) i.e. being sent to the network by UE or MS and are successfully received by the network.
MT SMS (Attempted)	Total number of SMS messages that are Mobile Terminated i.e. being sent to a UE or MS and are being attempted to be delivered by the network.
MT SMS (Successful)	Total number of SMS messages that are Mobile Terminated (MT) i.e. being sent to a UE or MS and are successfully delivered by the network.
SMMA (Attempted)	Total number of SMMA messages that the network has attempted to receive. An SMMA message is used by the MS to indicate the network about the availability of the memory in MS, to receive one or more short messages.
SMMA (Successful)	Total number of SMMA messages that are successfully received by the network. An SMMA message is used by the MS to indicate the network about the availability of the memory in MS to receive one or more short messages.
Message Statistics	Specifies received and transmitted data, acknowledgement and error messages between the MS and network for RP as well as CP layers along with the message drop counters. Message statistics includes, parameters related to: • CP layer messages • RP layer messages • Message drop counters

Field	Description
CP Layer Messages	Short Message Service Control Protocol (SM –CP) is used for communication by the SMC entities from MS and network. Following are components of CP layer messages: • **CP Data**: This message is sent between an MS and MSC in both directions. It contains the user data to be relayed between CM – users and associated parameters such as protocol discriminator, transaction identifier, message type and CP user data. • **CP Ack**: This message is sent between MS and MSC in both directions and is used to acknowledge the reception of a CP-Data message. It contains protocol discriminator, transaction identifier and message type. • **CP Error**: This message is sent between an MS and MSC in both directions and is used to convey the error information. It contains protocol discriminator, transaction identifier, message type and CP cause.
CP Data (Tx)	Total number of transmitted CP data messages.
CP Ack (Tx)	Total number of transmitted CP acknowledgement messages.
CP Error (Tx)	Total number of transmitted CP error messages.
CP Data (Rx)	Total number of received CP data messages.
CP Ack (Rx)	Total number of received CP acknowledgement messages.
CP Error (Rx)	Total number of received CP error messages.
CP Error Cause Stats	The CP error message conveys error information that is sent between MS and network in **both** directions. The message contains protocol discriminator, transaction identifier, message type and CP cause. CP error cause statistics includes: • Network failure • Congestion • Inlaid sematic • Invalid mandatory information • Invalid message type • Invalid protocol state • Invalid IE • Protocol error • Unidentified cause

Field	Description
Network Failure (Tx)	Total number of errors caused due to network failure while transmitting the message.
Congestion (Tx)	Total number of errors caused due to congestion while transmitting the message.
Inlaid Sematic (Tx)	Total number of errors caused due to invalid sematic while transmitting the message.
Invalid Mandatory Info (Tx)	Total number of errors caused due to invalid mandatory information while transmitting the message.
Invalid Message Type(Tx)	Total number of errors caused due to invalid schematic while transmitting the message.
Invalid Protocol State(Tx)	Total number of errors caused due to invalid protocol state while transmitting the message.
Invalid IE (Tx)	Total number of errors caused due to invalid Information Element (IE) while transmitting the message.
Protocol Error (Tx)	Total number of errors caused due to protocol error or mismatched protocols while transmitting the message.
Undefined Cause (Tx)	Total number of errors caused due to unknown or undefined causes while transmitting the message.
Network Failure (Rx)	Total number of errors caused due to network media failure while receiving the message.
Congestion (Rx)	Total number of errors caused due to congestion while receiving the message.
Inlaid Sematic (Rx)	Total number of errors caused due to invalid message sematic while receiving the message.
Invalid Mandatory Info (Rx)	Total number of errors caused due to invalid mandatory information while receiving the message.
Invalid Message Type(Rx)	Total number of errors caused due to invalid message type while receiving the message.
Invalid Protocol State(Rx)	Total number of errors caused due to invalid protocol state while receiving the message.
Invalid IE (Rx)	Total number of errors caused due to invalid Information Element (IE) while receiving the message.
Protocol Error (Rx)	Total number of errors caused due to protocol error while receiving the message the message.
Undefined Cause (Rx)	Total number of errors caused due to unknown or un-defined cause while receiving the message.

Field	Description
Memory Capacity Exceeded (Rx)	Total number of errors caused due to lack of storage capacity in the MS while receiving the message.
Invalid Reference Number (Tx)	Total number of errors caused due to wrong or non-existent reference number while transmitting the message.
Invalid Semantic (Tx)	Total number of errors caused due to wrong or non-existent semantic information while transmitting the message.
Invalid Mandatory Info (Tx)	Total number of errors caused due to non-semantic mandatory information while transmitting the message.
Invalid Message Type (Tx)	Total number of errors caused due to non-existent or non-implemented message type while transmitting the message.
Invalid Protocol State (Tx)	Total number of errors caused due to wrong or non-implemented protocol state used while transmitting the message.
Invalid IE (Tx)	Total number of errors caused due to wrong or un-implemented Information Element (IE) used while transmitting the message.
Protocol Error (Tx)	Total number of errors caused due to wrong or non-implemented protocol used while transmitting the message.
Invalid Reference Number (Rx)	total number of errors caused due to wrong or non-existent reference number while receiving the message.
Invalid Semantic (Rx)	Total number of errors caused due to wrong or non-existent semantic information while receiving the message.
Invalid Mandatory Info (Rx)	Total number of errors caused due to invalid mandatory information while receiving the message.
Invalid Message Type (Rx)	Total number of errors caused due to non-existent or non-implemented message type while receiving the message.
Invalid Protocol State (Rx)	Total number of errors caused due to wrong or non-implemented protocol state used while receiving the message.
Invalid IE (Rx)	Total number of errors caused due to wrong or un-implemented Information Element (IE) used while receiving the message.
Protocol Error (Rx)	Total number of errors caused due to wrong or non-implemented protocol used while receiving the message.
Undefined Error(Rx)	Total number of errors caused due to unknown or un-defined cause while receiving the message.

Field	Description
Message Drop Counters	Message drop counter for CP layer comprises number of CP layer messages that were dropped by the MS or network. The message drop counters are categorized as: • CP Data • CP Ack • CP Error
CP Data	Total number of CP data messages that were dropped.
Retransmission Drops	Total number of CP data re-transmission messages that were dropped.
Unknown TID Drops	Tunnel Identifier TID) is an identity provided by the Gprs Tunneling Protocol (GTP) to every packet. The TID identifies the destination and transaction to which the packet belongs. Transactions are identified using logical Identifiers as well as IMSI. A Control Protocol message is composed of • Protocol discriminator • Transaction Identifier • Message type • Other required Information Elements (IEs) This specifies total number of messages dropped due to unknown TID.
CP Ack	Total number of CP acknowledgement messages that were dropped.
CP Error	Total number of CP error messages that were dropped.

Field	Description
CP Error Drop for Invalid TId Received	Tunnel Identifier TID) is an identity provided by the Gprs Tunneling Protocol (GTP) to every packet. The TID identifies the destination and transaction to which the packet belongs. Transactions are identified using logical Identifiers as well as IMSI. A Control Protocol message is composed of • Protocol discriminator • Transaction Identifier • Message type • Other required Information Elements (IEs) This specifies total number of CP error messages that were dropped due to reception of wrong or non-existent Transaction Identifier.
RP Layer Messages	Short Message Relay Protocol (SM-RP), that is used for communication between the SMR entities from MS and network. Following are the components of RP layer messages: • **RP Data**: This message is sent between MS and the MSC in both directions. It contains message type, message reference, originator address, destination address along with the user data. • **RP Ack**: This message sent between the MS and MSC in both directions. This message is used to relay the acknowledgement of received RP- data or RP-SMMA messages. It contains message type, message reference and user data. • **RP –Error** : This message is sent between the MS and the MSC in both directions and is used to relay the cause of erroneous short message or notification transfer attempt. It contains message type, message reference, and cause and user data.
RP Data (Tx)	Total number of transmitted RP data messages.
RP AcK (Tx)	Total number of transmitted RP acknowledge messages.
RP Error (Tx)	Total number of transmitted RP error messages.
RP Data (Rx)	Total number of received RP data messages.
RP AcK (Rx)	Total number of received RP acknowledgement messages.
RP Error (Rx)	Total number of received RP error messages.
RP SMMA (Rx)	Total number of received RP SMMA messages.

Field	Description
RP Error Cause Statistics	The RP error message conveys the information that is sent between MS and the MSC in both directions. An RP error message comprises message type, message reference, and cause and user data. RP error cause statistics includes: • Unsigned number • Operator determined barring • Call barred • Reserved • SM transfer rejected • Destination out of order • Unidentified subscriber • Facility rejected • Unknown subscriber • Network out of order • Temporary failure • Congestion • Not subscribed • Not implemented • Interworking error • Resource unavailable
Unassigned Number (Tx)	Total number of errors caused due to un-signed or un-known number while transmitting the message from MS to network.
Operator Determined Barring (Tx)	Total number of errors caused due to operator determined barring while transmitting the message from MS to network.
Call Barred (Tx)	Total number of errors caused due to calls barred while transmitting the message from MS to network.
Reserved (Tx)	Total number or errors caused due to calls reserved while transmitting the message from MS to network.
SM Transfer Rejected (Tx)	Total number of errors caused to Short Message (SM) transfer rejection while transmitting the message from MS to network.
Destination Out of Order (Tx)	Total number of errors caused due to destination out of order while transmitting the message from MS to network.
Unidentified Subscriber (Tx)	Total number of errors caused due to unidentified subscriber while transmitting the message form MS to network.

Field	Description
Facility Rejected (Tx)	Total number of errors caused due to rejection of the facility while transmitting the message from MS to network.
Unknown Subscriber (Tx)	Total number of errors caused due to un-known subscriber while transmitting the message from MS to network.
Network Out of Order (Tx)	Total number of errors caused due to un-arability of the network while transmitting the message from MS to network.
Temporary Failure (Tx)	Total number of errors caused due to temporary failure of the network while transmitting the message from MS to network.
Congestion (Tx)	Total number of errors caused due to congestion in the network while transmitting the message from MS to network.
Not Subscribed (Tx)	Total number of errors caused due to the status as not subscribed while transmitting the message from MS to network.
Not Implemented (Tx)	Total number of errors caused due to non-implementation while transmitting the message from MS to network.
Interworking Error (Tx)	Network interworking is required when for the service execution, a packet domain PLMN works with any other network.The interworking takes place mostly using Gi and Gp interfaces. Total number of errors caused due to interworking errors while transmitting the message from MS to network.
Resource Un-available (Tx)	Total number of errors caused due to un availability of the resource while transmitting the message from MS to network.
Message Drop Counters	Number of RP layer messages that were dropped by the MS or network. The message drop counters are categorized as: • RP Data • RP Ack • RP Error • RP Decode Failure
RP Data	Total number of RP data messages that were dropped.
RP Ack	Total number of RP acknowledgement messages that were dropped.
RP Error	Total number of RP error messages that were dropped.
RP Decode Failures	Total number of RP decode failure messages that were dropped.

Field	Description
General Statistics	General statistical parameters related to SMS. Along with GMM interaction statistics parameters, It includes: • Concatenated MO SMS • CP Timer Expiry • TR1N Timer • TR2N Timer • CP Data Retransmissions • RP Msg Encode Fail • CP Data Tx Fail • CP Data Inv TID • Max Retransmissions Reached • SMSC Addr Restricted • MO SMSC Addr Restricted • MT SMSC Addr Restricted • CP-DATA No Cp Ack Rx
Concatenated MO SMS	Concatenated MO SMS specifies that the SMC has received the data (CP-Data) as well as associated acknowledgement (CP-Ack) messages. This parameter indicates the number of SMCs in such state.
TR1N timer	Specifies current status of TR1N timer. TR1N is a timer for Point to Point Short SMS Service (POPSMS). The timer is associated with the wait for RP acknowledgement message. Refer 3GPP TS 4.011 and 0.12 for more information.
TR2N Timer	Specifies current status of TR2N timer. TR2N timer is a timer for Point to Point Short Message Service (PPSMS). The timer is associated with wait to send for RP acknowledgment message. Refer 3GPP 4.0.11 and 0.12 for more information.
CP Data Retransmissions	Total number of Control Protocol data (CP-Data) messages that were re-transmitted between MS and network.
RP Message Encode Fail	Total number of messages with failed Short Message Rely Protocol (SM RP) encoding.

Field	Description
CP Data Inv TID	Tunnel Identifier TID) is an identity provided by the Gprs Tunneling Protocol (GTP) to every packet. The TID identifies the destination and transaction to which the packet belongs. Transactions are identified using logical Identifiers as well as IMSI. A Control Protocol (CP) message is composed of • Protocol discriminator • Transaction Identifier • Message type • Other required Information Elements (IEs) This specifies total number of errors due to invalid transaction identifier.
Max Retransmissions Reached	Total number of messages that have completed the maximum allowed retransmission attempts.
SMSC Addr Restricted	Total number of restricted Short Message Service Center (SMSC) addresses.
MO SMSC Addr Restricted	Total number of SMSC address restricted for the Mobile Originated (MO) messages, i.e. the messages that are being sent from MS to network.
MT SMSC Addr Restr.	Total number of SMSC address restricted for the Mobile Terminated(MT) messages, i.e. the messages that are being sent from network to MS.
GMM Interaction Stats	GMM interaction statistics comprises GPRS Mobility Management (GMM) entities in the network. IT can be used to track the subscriber location within the current or other PLMN. It includes: • Page Request Sent • Page Response Successful • Page Response Fail • Release Indication
Page Request Sent	The paging function is used by the network to retrieve the current cell information from an MS that is in the power saving mode. This is the total number of page requests sent by the network.
Page Response Successful.	Total number of success full responses, received by the network for the paging requests that were sent to the mobile stations in power saving mode.

Field	Description
Page Response Fail	Total number of response failures, received by the network for the paging requests that were sent to mobile stations in power saving mode.
Release Indication	GMM allows packet service continuity when the MS moves from one GPRS Location Area (LA) to another. MS as well as the network can use the IMSI detach procedure to remove the Mobility Management (MM) context when it is not required. These are the number of release indications transmitted between MS and network.
Release Indication Waiting (MO)	These are number of release indications waiting to be delivered for MO messages such as: • MO CP Ack • MO CP Data • MO CP ERR
MO CP Ack Delivery	Total number of release indications waiting to be transferred between network and MS for mobile originated control protocol acknowledgement messages that are being delivered.
MO CP Data Delivery	Total number of release indications waiting to be transferred between network and MS for mobile originated control protocol data messages that are being delivered.
MO CP ERR Delivery	Total number of release indications waiting to be transferred between network and MS for mobile originated control protocol error messages that are being delivered.
Release Indication Waiting (MT)	These are total number of release indications waiting to be delivered for MT messages such as: • MT GMM Connection • MT CP Data • MT CP Ack • MT CP ERR
MT GMM Connection	Total number of release indications waiting to be transferred between the network and MS for mobile terminated GPRS mobility management connections.
MT CP Data Delivery	Total number of release indications waiting to be transferred between network and MS for mobile terminated control protocol data messages that are being delivered.

Field	Description
MT CP Ack Delivery	Total number of release indications waiting to be transferred between network and MS for mobile terminated control protocol acknowledgement messages that are being delivered.
MT CP Err Delivery	Total number of release indications waiting to be transferred between the network and MS for mobile terminated control protocol error messages that are being delivered.
MT- SMS Failures	Mobile terminated SM S failure statistics specifies total number of SMS messages that failed to reach designated MS. The failure reasons can be: • IMSI record not found • Busy subscriber • Detached subscriber • MT queue full
IMSI Record not Found	Total number of SMS messages that failed to reach the MS due to unavailability of International Mobile Subscriber Identity record.
Busy Subscriber	Total number of SMS messages that failed to reach the MS due to busy status of the subscriber.
Detached Subscriber	Total number of SMS messages that failed to reach MS because the intended subscriber was detached.
MT Queue Full	Total number of SMS messages that failed to reach MS because the MT message queue was full.

show sms statistics mme-only verbose

Table 2: show sms statistics mme-only verbose Command Output Descriptions

Field	Description
Session Statistics:	
MO SMS (In Progress)	The total number of mobile originated (MO) SMS messages that are waiting in the MME to be delivered.
MT SMS (In Progress)	The total number of mobile terminated (MT) SMS messages that are waiting in the MME to be delivered.
MT SMS (In Queue)	The total number of mobile terminated SMS messages in the queue.

Field	Description
SMMA (In Progress)	The total number of procedures for retrieval of available SMS memory in progress.
MO-SMS Attempted	The total number of mobile originated SMS messages that are attempted to be delivered by the network.
MO-SMS Successful	The total number of mobile originated SMS messages that are successfully delivered by the network.
MT-SMS Attempted	The total number of mobile terminated SMS messages that are attempted to be delivered by the network.
MT-SMS Successful	The total number of mobile terminated SMS messages that are successfully delivered by the network.
SMMA Attempted	The total number of procedures for retrieval of available SMS memory attempted.
SMMA Successful	The total number of procedures for retrieval of available SMS memory successful.
Message Statistics:	
CP Layer Messages:	
CP Data (Tx)	The total number of protocol data units sent during connection setup.
CP Data (Rx)	The total number of protocol data units received during connection setup.
CP Ack (Tx)	The total number of Ack messages sent during connection setup.
CP Ack (Rx)	The total number of Ack messages received during connection setup.
CP Error (Tx)	The total number of protocol errors during connection setup in Tx message.
CP Error (Rx)	The total number of protocol errors during connection setup in Rx message.
CP Error Cause Stats:	
Network Failure (Tx)	The total number of protocol errors during connection setup due to network failure in Tx message.
Congestion (Tx)	The total number of protocol errors during connection setup due to congestion in Tx message.
Invalid TID (Tx)	The total number of protocol errors during connection setup due to invalid transaction ID (TID) in Tx message.

Field	Description
Invalid Semantic (Tx)	The total number of protocol errors during connection setup due to invalid semantics in Tx message.
Invalid Mand Info (Tx)	The total number of protocol errors during connection setup as mandatory information in Tx message is invalid.
Invalid Msg Type (Tx)	The total number of protocol errors during connection setup due to invalid Tx message type.
Invalid Prot State (Tx)	The total number of protocol errors during connection setup as protocol state in Tx message is invalid.
Invalid IE (Tx)	The total number of protocol errors during connection setup as information element in Tx message is invalid.
Protocol Error (Tx)	The total number of protocol errors during connection setup as protocol error in Tx message.
Undefined Cause (Tx)	The total number of protocol errors during connection setup due to unspecified error in Tx message.
Network Failure (Rx)	The total number of protocol errors during connection setup due to network failure in Rx message.
Congestion (Rx)	The total number of protocol errors during connection setup due to congestion in Rx message.
Invalid TID (Rx)	The total number of protocol errors during connection setup due to invalid transaction ID (TID) in Rx message.
Invalid Semantic (Rx)	The total number of protocol errors during connection setup due to invalid semantics in Rx message.
Invalid Mand Info (Rx)	The total number of protocol errors during connection setup as mandatory information in Rx message is invalid.
Invalid Msg Type (Rx)	The total number of protocol errors during connection setup due to invalid Rx message type.
Invalid Prot State (Rx)	The total number of protocol errors during connection setup as protocol state in Rx message is invalid.
Invalid IE (Rx)	The total number of protocol errors during connection setup as information element in Rx message is invalid.
Protocol Error (Rx)	The total number of protocol errors during connection setup as protocol error in Rx message.
Undefined Cause (Rx)	The total number of protocol errors during connection setup due to unspecified error in Rx message.
Message Drop Counters:	

Field	Description
CP Data	The total number of CP data packets dropped during connection setup.
Retransmission Drops	The total number of data packets dropped during retransmission.
Unknown TID Drops	The total number of data packets dropped during connection setup due to unknown transaction ID (TID).
Invalid TID Drops	The total number of data packets dropped during connection setup due to invalid transaction ID (TID) received.
CP Ack	The total number of CP acknowledgement messages dropped during connection setup.
CP-ACK Drop for Invalid TID Rcvd	The total number of CP-Ack messages dropped during connection setup due to invalid transaction ID (TID) received.
CP Error	The total number of CP data packets dropped during connection setup due to error in connection.
CP-ERR Drop for Invalid TID Rcvd	The total number of CP-ERR messages dropped during connection setup due to invalid transaction ID (TID) received.
RP Layer Messages:	
RP Data (Tx)	The total number of protocol data units sent during message relay.
RP Ack (Tx)	The total number of Ack messages sent during message relay.
RP Error (Tx)	The total number of protocol errors during message relay in Tx message.
RP Data (Rx)	The total number of protocol data units received during message relay.
RP Ack (Rx)	The total number of Ack messages received during message relay.
RP Error (Rx)	The total number of protocol errors during message relay in Rx message.
RP SMMA (Rx)	The total number of RP SMMA messages received.
RP Error Cause Stats:	
Unassigned Number (Tx)	The total number of protocol errors sent during message relay due to unassigned protocol number.
Opr. Determined Barring (Tx)	The total number of protocol errors sent during message relay due to operator determined barring.
Call Barred (Tx)	The total number of protocol errors sent during message relay due to call barring.

Field	Description
Reserved (Tx)	The total number of protocol errors sent during message relay due to reserved resources.
SM Transfer Rejected (Tx)	The total number of protocol errors sent during message relay due to session manager transfer rejection.
Destination Out of Order (Tx)	The total number of protocol errors sent during message relay due to out of order on destination.
Unidentified Subscriber (Tx)	The total number of protocol errors sent during message relay due to unidentified subscriber.
Facility Rejected (Tx)	The total number of protocol errors sent during message relay due to facility rejection.
Unknown Subscriber (Tx)	The total number of protocol errors sent during message relay due to unknown subscriber.
Network Out of Order (Tx)	The total number of protocol errors sent during message relay due to out-of-order network.
Temporary Failure (Tx)	The total number of protocol errors sent during message relay due to temporary failure in network.
Congestion (Tx)	The total number of protocol errors sent during message relay due to congestion in network.
Not Subscribed (Tx)	The total number of protocol errors sent during message relay as this service is not subscribed by subscriber.
Not Implemented (Tx)	The total number of protocol errors sent during message relay as this service is not yet implemented.
Interworking Error (Tx)	The total number of protocol errors sent during message relay due to interworking error between two networks or technology.
Resource Un-available (Tx)	The total number of protocol errors sent during message relay as resources are not available.
Memory Capacity Exceeded (Rx)	The total number of protocol errors received during message relay as capacity is exceeded.
Invalid Reference Number (Tx)	The total number of protocol errors during message relay as invalid reference in Tx message.
Invalid Semantic (Tx)	The total number of protocol errors during message relay due to invalid semantics in Tx message.
Invalid Mandatory Info (Tx)	The total number of protocol errors during message relay as mandatory information in Tx message is invalid.
Invalid Message Type (Tx)	The total number of protocol errors during message relay due to invalid Tx message type.

Field	Description
Invalid Protocol State (Tx)	The total number of protocol errors during message relay as protocol state in Tx message is invalid.
Invalid IE (Tx)	The total number of protocol errors during message relay as information element in Tx message is invalid.
Protocol Error (Tx)	The total number of RP ERROR messages sent with the cause Protocol Error in the message header.
Undefined Error (Tx)	The total number of protocol errors during message relay due to unspecified error in Tx message.
Invalid Reference Number (Rx)	The total number of protocol errors during message relay as invalid reference in Rx message.
Invalid Semantic (Rx)	The total number of protocol errors during message relay due to invalid semantics in Rx message.
Invalid Mandatory Info (Rx)	The total number of protocol errors during message relay as mandatory information in Rx message is invalid.
Invalid Message Type (Rx)	The total number of protocol errors during message relay due to invalid Rx message type.
Invalid Protocol State (Rx)	The total number of protocol errors during message relay as protocol state in Rx message is invalid.
Invalid IE (Rx)	The total number of protocol errors during message relay as information element in Rx message is invalid.
Protocol Error (Rx)	The total number of RP ERROR messages received with the cause Protocol Error in the message header.
Undefined Error (Rx)	The total number of protocol errors during message relay due to unspecified error in Rx message.
Message Drop Counters:	
RP Data	The total number of RP data packets dropped during message relay.
RP Ack	The total number of RP acknowledgement messages dropped during message relay.
RP Error	The total number of RP data packets dropped during message relay due to error in connection.
RP Decode Failures	The total number of messages dropped during message relay due to invalid transaction ID (TID) received.
General Statistics:	

Field	Description
Concatenated MO SMS	The total number of concatenated mobile originated SMS messages.
CP Timer Expiry	The total number of events when timer expired during connection setup.
TR1N timer	The total number of events when TR1N timer expired during mobile terminated SMS is in wait state for RP-ACK.
TR2N Timer	The total number of events when TR2N timer expired during mobile terminated SMS is in wait state to send RP-ACK.
CP Data Retrans	The total number of protocol data units retransmitted during connection setup.
RP Msg Encode Fail	The total number of message encoding failures during message relay.
CP Data Tx Fail	The total number of protocol data units with Tx messages failed during connection setup.
CP Data Inv TID	The total number of protocol data units with invalid transaction ID (TID) during connection setup.
Max Returns Reached	The total number of events when retransmission limit is exhausted during connection setup.
SMSC Addr Restricted	The total number of SMSC addresses restricted.
MO SMSC Addr Restr	The total number of mobile originated SMSC addresses restricted.
MT SMSC Addr Restr.	The total number of mobile terminated SMSC addresses restricted.
CP-DATA No Cp Ack Rx	The total number of mobile terminated messages failed as no acknowledgement is received during connection setup.
Release Indication Waiting MO CP-ACK Delivery	The total number of release indications waiting to be transferred between network and MS for mobile originated control protocol acknowledgement messages that are being delivered.
Release Indication Waiting MO CP-DATA Delivery	The total number of release indications waiting to be transferred between network and MS for mobile originated control protocol data messages that are being delivered.
Release Indication Waiting MO CP-ERR Delivery	The total number of release indications waiting to be transferred between network and MS for mobile originated control protocol error messages that are being delivered.
Release Indication Waiting MT CP-DATA Delivery	The total number of release indications waiting to be transferred between network and MS for mobile terminated control protocol data messages that are being delivered.

Field	Description
Release Indication Waiting MT CP-Ack Delivery	The total number of release indications waiting to be transferred between network and MS for mobile terminated control protocol acknowledgement messages that are being delivered.
Release Indication Waiting MT CP-Err Delivery	The total number of release indications waiting to be transferred between the network and MS for mobile terminated control protocol error messages that are being delivered.
MT-SMS Failures:	
IMSI Record not Found	The total number of mobile terminated messages failed as IMSI record is not available.
Busy Subscriber	The total number of mobile terminated messages failed due to busy subscriber.
Detached Subscriber	The total number of mobile terminated messages failed due to detached subscriber.
MT Queue Full	The total number of mobile terminated messages failed as messaged queue was full.

show sms statistics name

Table 3: show subscribers sms statistics name Command Output Descriptions

Field	Description
Session statistics	Session statistics includes parameters related to SMS session between the MS and network. It includes parameters such as: • MO SMS (in progress) • MT SMS (in progress) • SMMA (in progress) • MO SMS (Attempted) • MT SMS (Attempted) • SMMA (Attempted) • MO SMS (successful) • MT SMS (successful) • SMMA (successful)
MO SMS (In progress)	Total number SMS messages that are Mobile Originated (MO) i.e. sent from an UE or MS and are being received by network.

Field	Description
MT SMS (In Progress)	Total number of SMS messages that are Mobile Terminated (MT) i.e. being sent to a UE or MS and are being delivered by network.
SMMA (In Progress)	Total number of SMMA messages in progress for the reception by the network. The SMMA message is used by the MS to indicate the network about the availability of the memory in MS, to receive one or more short messages.
MO SMS (Attempted)	Total number of SMS messages that are Mobile Originated (MO) i.e. sent from an UE or MS and are being attempted to be received by the network.
MT SMS (Attempted)	Total number of SMS messages that are Mobile Terminated (MT) i.e. being sent to a UE or MS and are being attempted to be delivered by the network.
SMMA (Attempted)	Total number of SMMA messages that the network has attempted to receive.The SMMA message is used by the MS to indicate the network about the availability of the memory in MS, to receive one or more short messages.
MO SMS (Successful)	Total number of SMS messages that are Mobile Originated (MO) i.e. being sent to the network by UE or MS and are successfully received by the network.
MT SMS (Successful)	Total number of SMS messages that are Mobile Terminated (MT) i.e. being sent to a UE or MS and are successfully delivered by the network.
SMMA (Successful)	Total of SMMA messages that are successfully received by the network. The SMMA message is used by the MS to indicate the network about the availability of the memory in MS, to receive one or more short messages.
Message Statistics	Message statistics comprises, received and transmitted data, acknowledgement and error messages between the MS and network for RP as well as CP layers along with the message drop counters. Message statistics includes, parameters related to: • CP layer messages • RP layer messages • Message drop counters

Field	Description
CP Layer Messages	Short Message Service Control Protocol (SM –CP) is used for communication by the SMC entities from MS and network. Following are components of CP layer messages: • **CP Data**: This message is sent between an MS and MSC in both directions. It contains the user data to be relayed between CM – users and associated parameters such as protocol discriminator, transaction identifier, message type and CP user data. • **CP Ack**: This message is sent between MS and MSC in both directions and is used to acknowledge the reception of a CP-Data message. It contains protocol discriminator, transaction identifier and message type. • **CP Error**: This message is sent between an MS and MSC in both directions and is used to convey the error information. It contains protocol discriminator, transaction identifier, message type and CP cause.
CP Data (Tx)	Total number of transmitted CP data messages.
CP Ack (Tx)	Total number of transmitted CP acknowledgement messages.
CP Error (Tx)	Total number of transmitted CP error messages.
CP Data (Rx)	Total number of received CP data messages.
CP Ack (Rx)	Total number of received CP acknowledgement messages.
CP Error (Rx)	Total number of received CP error messages.
Message Drop Counters	Message drop counter for CP layer comprises number of CP layer messages that were dropped by the MS or network. The message drop counters are categorized as: • CP Data • Retransmission Drops • Unknown TId Drops • CP Ack • CP Error
CP Data	Total number of CP data messages that were dropped.
Retransmission Drops	Total number of CP data re-transmission messages that were dropped.

Field	Description
Unknown TId Drops	Tunnel Identifier TID) is an identity provided by the Gprs Tunneling Protocol (GTP) to every packet. The TID identifies the destination and transaction to which the packet belongs. Transactions are identified using logical Identifiers as well as IMSI. A Control Protocol message is composed of: • Protocol discriminator • Transaction Identifier • Message type • Other required Information Elements (IEs) This specifies total number of messages dropped due to unknown TID.
CP Ack	Total number of CP acknowledgement messages that were dropped.
CP Error	Total number of CP error messages that were dropped.
RP Layer Messages	Short Message Relay Protocol (SM-RP), that is used for communication between the SMR entities from MS and network. Following are the components of RP layer messages: • **RP Data**: This message is sent between MS and the MSC in both directions. It contains message type, message reference, originator address, destination address along with the user data. • **RP Ack**: This message sent between the MS and MSC in both directions. This message is used to relay the acknowledgement of received RP- data or RP-SMMA messages. It contains message type, message reference and user data. • **RP –Error** : This message is sent between the MS and the MSC in both directions and is used to relay the cause of erroneous short message or notification transfer attempt. It contains message type, message reference, and cause and user data.
RP Data (Tx)	Total number of transmitted RP data messages.
RP Ack (Tx)	Total number of transmitted RP acknowledge messages.
RP Error (Tx)	Total number of transmitted RP error messages.
RP Data (Rx)	Total number of received RP data messages.
RP Ack (Rx)	Total number of received RP acknowledgement messages.
RP Error (Rx)	Total number of received RP error messages.

Field	Description
RP SMMA (Rx)	Total number of received RP SMMA messages.
Message Drop Counters	Number of RP layer messages that were dropped by the MS or network. The message drop counters are categorized as: • RP Data • RP Ack • RP Error • RP Decode Failure
RP Data	Total number of RP data messages that were dropped.
RP Ack	Total number of RP acknowledgement messages that were dropped.
RP Error	Total number of RP error messages that were dropped.
RP Decode Failures	Total number of RP decode failure messages that were dropped.
General Statistics	General statistical parameters related to SMS. Along with GMM interaction statistics parameters, It includes: • Concatenated MO SMS • CP Timer Expiry • TR1N Timer • TR2N Timer • CP Data Retransmissions. • RP Msg Encode Fail • CP Data Tx Fail • CP Data Inv TID • Max Retransmissions Reached • SMSC Addr Restricted
Concatenated MO SMS	Concatenated MO SMS indicates that the SMC has received the data (CP-Data) as well as associated acknowledgement (CP-Ack) messages.This parameter indicates the number of SMCs in such state.
TR1N Timer	Specifies current status of TR1N timer. TR1N is a timer for Point to Point Short SMS Service (POPSMS). It is associated with the wait for RP acknowledgement message. Refer 3GPP TS 4.011 and 0.12 for more information.

Field	Description
TR2N Timer	Specifies current status of TR2N timer. TR2N timer is a timer for Point to Point Short Message Service (PPSMS). The timer is associated with wait to send for RP acknowledgement message. Refer 3GPP 4.0.11 and 0.12 for more information.
CP Data Retransmissions	Total number of Control Protocol data (CP-Data) messages that were re-transmitted between MS and network.
RP Message Encode Fail	Total number of messages with failed Short Message Rely Protocol (SM RP) encoding.
CP Data Tx Fail	Total number of errors due to transmission failure for the CP-data messages.
CP Data Inv TID	Tunnel Identifier TID) is an identity provided by the Gprs Tunneling Protocol (GTP) to every packet. The TID identifies the destination and transaction to which the packet belongs. Transactions are identified using logical Identifiers as well as IMSI. A Control Protocol message is composed of • Protocol discriminator • Transaction Identifier • Message type • Other required Information Elements (IEs) his specifies total number messages with invalid transaction identifier.
Max Retransmissions Reached	Total number of messages that have completed the maximum allowed retransmission attempts.
SMSC Addr Restricted	Total number of restricted Short Message Service Center (SMSC) addresses.
GMM Interaction Stats	GMM interaction statistics comprises GPRS Mobility Management (GMM) entitles in the network. It includes: • Page Request Sent • Page Response Successful • Page Response Fail • Release Indication
Page Request Sent	The paging function is used by the network to retrieve the current cell information from an MS that is in the power saving mode. This is the total number of page requests sent by the network.

Field	Description
Page Response Successful	Total number of success full responses, received by the network for the paging requests that were sent to the mobile stations in power saving mode.
Page Response Fail	Total number of response failures, received by the network for the paging requests that were sent to mobile stations in power saving mode.
Release Indication	GMM allows packet service continuity when the MS moves from one GPRS Location Area (LA) to another. MS as well as the network can use the IMSI detach procedure to remove the Mobility Management (MM) context when it is not required. This specifies number of release indications transmitted between MS and network.

show sms statistics sgsn-only verbose

Table 4: show sms statistics sgsn-only verbose Command Output Descriptions

Field	Description
Session Statistics:	Session statistics includes parameters related to SMS session between the MS and network. It includes parameters such as: • MO SMS (In Progress) • MT SMS (In Progress) • MT SMS (In Queue) • SMMA (In Progress) • MO SMS (Attempted) • MO SMS (Successful) • MT SMS (Attempted) • MT SMS (Successful) • SMMA (Attempted) • SMMA (Successful)
MO SMS (In Progress)	Total number SMS messages that are Mobile Originated (MO) i.e. sent from an UE or MS and are being received by network. It includes parameters related to:
MT SMS (In Progress)	Total number of SMS messages that are Mobile Terminated (MT) i.e. being sent to a UE or MS and are being delivered by network.

Field	Description
MT SMS (In Queue)	Total number of SMS messages that are mobile Terminated i.e. being sent to UE or MS and are in queue for being delivered by the network.
SMMA (In Progress)	Total number of SMMA messages in progress for the reception by the network.The SMMA message is used by the MS to indicate the network about the availability of the memory in MS, to receive one or more short messages.
MO SMS (Attempted)	Total number of SMS messages that are Mobile Originated (MO) i.e. sent from an UE or MS and are being attempted to be received by the network.
MO SMS (Successful)	Total number of SMS messages that are Mobile Originated (MO) i.e. being sent to the network by UE or MS and are successfully received by the network.
MT SMS (Attempted)	Total number of SMS messages that are Mobile Terminated (MT) i.e. being sent to a UE or MS and are being attempted to be delivered by the network.
MT SMS (Successful)	Total number of SMS messages that are Mobile Terminated (MT) i.e. being sent to a UE or MS and are successfully delivered by the network.
SMMA (Attempted)	Total number of SMMA messages that the network has attempted to receive.The SMMA message is used by the MS to indicate the network about the availability of the memory in MS, to receive one or more short messages.
SMMA (Successful)	Total number of SMMA messages that are successfully received by the network. The SMMA message is used by the MS to indicate the network about the availability of the memory in MS, to receive one or more short messages.
Message Statistics	Message statistics comprises, received and transmitted data, acknowledgement and error messages between the MS and network for RP as well as CP layers along with the message drop counters. It includes parameters related to: • CP layer messages • RP layer messages • Message drop counters

Field	Description
CP Layer Messages	Short Message Service Control Protocol (SM –CP) is used for communication by the SMC entities from MS and network. Following are components of CP layer messages: • **CP Data**: This message is sent between an MS and MSC in both directions. It contains the user data to be relayed between CM – users and associated parameters such as protocol discriminator, transaction identifier, message type and CP user data. • **CP Ack**: This message is sent between MS and MSC in both directions and is used to acknowledge the reception of a CP-Data message. It contains protocol discriminator, transaction identifier and message type. • **CP Error**: This message is sent between an MS and MSC in both directions and is used to convey the error information. It contains protocol discriminator, transaction identifier, message type and CP cause.
CP Data (Tx)	Total number of transmitted CP data messages.
CP Ack (Tx)	Total number of transmitted CP acknowledgement messages.
CP Error (Tx)	Total number of transmitted CP error messages.
CP Data (Rx)	Total number of received CP data messages.
CP Ack (Rx)	Total number of received CP acknowledgement messages.
CP Error (Rx)	Total number of received CP error messages.
CP Error Cause Stats	The CP error message that conveys error information that is sent between MS and MSC in both directions. It contains protocol discriminator, transaction identifier, message type and CP cause. CP error cause statistics includes: • Network failure • Congestion • Inlaid sematic • Invalid mandatory information • Invalid message type • Invalid protocol state • Invalid IE • Protocol error • Unidentified cause

Field	Description
Network Failure (Tx)	Total number of errors caused due to network failure while transmitting the message from network to MS.
Congestion (Tx)	Total number of errors caused due to congestion while transmitting the message from network to MS.
Inlaid Sematic (Tx)	Total number of errors caused due to invalid sematic while transmitting the message from network to MS.
Invalid Mandatory Info (Tx)	Total number of errors caused due to invalid mandatory information while transmitting the message from network to MS.
Invalid Message Type(Tx)	Total number of errors caused due to invalid schematic while transmitting the message from network to MS.
Invalid Protocol State(Tx)	Total number of errors caused due to invalid protocol state while transmitting the message from network to MS.
Invalid IE (Tx)	Total number of errors caused due to invalid Information Element (IE) while transmitting the message from network to MS.
Protocol Error (Tx)	Total number of errors caused due to protocol error while receiving the message the message from network to MS.
Undefined Cause (Tx)	Total number of errors caused due to unknown or un-defined cause while receiving the message from network toMS.
Network Failure (Rx)	Total number of errors caused due to network media failure while receiving the message from MS to network.
Congestion (Rx)	Total number of errors caused due to congestion while receiving the message from MS to network.
Inlaid Sematic(Rx)	Total number of errors caused due to invalid sematic while receiving the message from MS to network.
Invalid Mandatory Information (Rx)	Total number of errors caused due to invalid mandatory information while receiving the message from MS to network.
Invalid Message Type(Rx)	Total number of errors caused due to invalid message type while receiving the message from MS to network.
Invalid Protocol State(Rx)	Total number of errors caused due to invalid protocol state while receiving the message from MS to network.
Invalid IE (Rx)	Total number of errors caused due to invalid Information Element (IE) while receiving the message from MS to network.
Protocol Error (Rx)	Total number of errors caused due to protocol error while receiving the message the message from MS to network.
Undefined Cause (Rx)	Total number of errors caused due to unknown or un-defined cause while receiving the message from MS to network.

Field	Description
Message Drop Counters	Message drop counter for CP layer comprises number of CP layer messages that were dropped by the MS or network. The message drop counters are categorized as: • CP Data • Retransmission Drops • Unknown TId Drops • CP Ack • CP Error
CP Data	Total number of CP data messages that were dropped.
Retransmission Drops	Total number of CP data re-transmission messages that were dropped.
Unknown TId Drops	Tunnel Identifier TID) is an identity provided by the Gprs Tunneling Protocol (GTP) to every packet. The TID identifies the destination and transaction to which the packet belongs. Transactions are identified using logical Identifiers as well as IMSI. Control Protocol (CP) message is composed of: • Protocol discriminator • Transaction Identifier • Message type • Other required Information Elements (IEs) This specifies total number of messages dropped due to unknown transaction identifier.
CP Ack	Total number of CP acknowledgement messages that were dropped.
CP Error	Total number of CP error messages that were dropped.
CP Error Drop for Invalid TId Received	Total number of CP error messages dropped due to reception of wrong or non-existent Transaction Identifier (TId).

Field	Description
RP Layer Messages	Short Message Relay Protocol (SM-RP), that is used for communication between the SMR entities from MS and network. Following are the components of RP layer messages: • **RP Data**: This message is sent between MS and the MSC in both directions. It contains message type, message reference, originator address, destination address along with the user data. • **RP Ack**: This message sent between the MS and MSC in both directions. This message is used to relay the acknowledgement of received RP- data or RP-SMMA messages. It contains message type, message reference and user data. • **RP –Error** : This message is sent between the MS and the MSC in both directions and is used to relay the cause of erroneous short message or notification transfer attempt. It contains message type, message reference, and cause and user data.
RP Data (Tx)	Total number of transmitted RP data messages.
RP AcK (Tx)	Total number of transmitted RP acknowledgement messages.
RP Error (Tx)	Total number of transmitted RP error messages.
RP Data (Rx)	Total number of received RP data messages.
RP Ack (Rx)	Total number of received RP acknowledgement messages.
RP Error (Rx)	Total number of received RP error messages.
RP SMMA (Rx)	Total number of received RP SMMA messages.

Field	Description
RP Error Cause Statistics	The RP error message conveys the information that is sent between MS and the MSC in both directions. An RP error message comprises message type, message reference, and cause and user data. RP error cause statistics includes: • Unsigned number • Operator determined barring • Call barred • Reserved • SM transfer rejected • Destination out of order • Unidentified subscriber • Facility rejected • Unknown subscriber • Network out of order • Temporary failure • Congestion • Not subscribed • Not implemented • Interworking error • Resource unavailable
Unassigned Number (Tx)	Total number of errors caused due to un-signed or un-known number while transmitting the message from MS to network.
Operator Determined Barring (Tx)	Total number of errors caused due to operator determined barring while transmitting the message from MS to network.
Call Barred (Tx)	Total number of errors caused due to calls barred while transmitting the message from MS to network.
Reserved (Tx)	Total number or errors caused due to calls reserved while transmitting the message from MS to network.
SM Transfer Rejected (Tx)	Total number of errors caused to Short Message (SM) transfer rejection while transmitting the message from MS to network.
Destination Out of Order (Tx)	Total number of errors caused due to destination out of order while transmitting the message from MS to network.
Unidentified Subscriber (Tx)	Total number of errors caused due to destination out of order while transmitting the message from MS to network.

Field	Description
Facility Rejected (Tx)	Total number of errors caused due to rejection of the facility while transmitting the message from MS to network.
Unknown Subscriber (Tx)	Total number of errors caused due to un-known subscriber while transmitting the message from MS to network.
Network Out of Order (Tx)	Total number of errors caused due to un-availability of the network while transmitting the message from MS to network.
Temporary Failure (Tx)	Total number of errors caused due to temporary failure of the network while transmitting the message from MS to network.
Congestion (Tx)	Total number of errors caused due to congestion in the network while transmitting the message from MS to network.
Not Subscribed (Tx)	Total number of errors caused due to the status as not subscribed while transmitting the message from MS to network.
Not Implemented (Tx)	Total number of errors caused due to non-implementation while transmitting the message from MS to network.
Interworking Error (Tx)	Network interworking is required when for the service execution, a packet domain PLMN works with any other network. The interworking takes place mostly using Gi and Gp interfaces. Total number of errors caused due to interworking errors while transmitting the message from MS to network.
Resource Un-available (Tx)	Total number of errors caused due to un availability of the resource while transmitting the message from MS to network.
Memory Capacity Exceeded	Total number of errors caused due to lack of storage capacity in the MS while receiving the message.
Invalid Reference Number (Tx)	Total number of errors caused due to wrong or non-existent reference number while transmitting the message.
Invalid Semantic (Tx)	Total number of errors caused due to wrong or non-existent semantic information while transmitting the message.
Invalid Mandatory Info (Tx)	Total number of errors caused due to non-semantic mandatory information while transmitting the message.
Invalid Message Type (Tx)	Total number of errors caused due to non-existent or non-implemented message type while transmitting the message.
Invalid Protocol State (Tx)	Total number of errors caused due to wrong or non-implemented protocol state used while transmitting the message.
Invalid IE (Tx)	Total number of errors caused due to wrong or un-implemented Information Element (IE) used while transmitting the message.

Field	Description
Protocol Error (Tx)	Total number of errors caused due to wrong or non-implemented protocol used while transmitting the message.
Invalid Reference Number (Rx)	Total number of errors caused due to wrong or non-existent reference number while receiving the message.
Invalid Semantic (Rx)	Total number of errors caused due to wrong or non-existent semantic information while receiving the message.
Invalid Mandatory Info (Rx)	Total number of errors caused due to invalid mandatory information while receiving the message.
Invalid Message Type (Rx)	Total number of errors caused due to non-existent or non-implemented message type while receiving the message.
Invalid Protocol State (Rx)	Total number of errors caused due to wrong or non-implemented protocol state used while receiving the message.
Invalid IE (Rx)	Total number of errors caused due to wrong or un-implemented Information Element (IE) used while receiving the message.
Protocol Error (Rx)	Total number of errors caused due to wrong or non-implemented protocol used while receiving the message.
Undefined Error (Rx)	Total number of errors caused due to unknown or un-defined cause while receiving the message.
Message Drop Counters	Message drop counter comprises RP layer messages that were dropped by the MS or network. The message drop counters are categorized as: • RP Data • RP Ack • RP Error • RP Decode Failure
RP Data	Total number of RP data messages that were dropped.
RP Ack	Total number of RP acknowledgement messages that were dropped.
RP Error	Total number of RP error messages that were dropped.
RP Decode Failures	Total number of RP decode failure messages that were dropped.

Field	Description
General Statistics	General statistics comprises statistical parameters related to SMS, along with GMM interaction statistics parameters, It includes: • Concatenated MO SMS • CP Timer Expiry • TR1N Timer • TR2N Timer • CP Data Retransmissions • RP Msg Encode Fail • CP Data Tx Fail • CP Data Inv TID • Max Retransmissions Reached • SMSC Addr Restricted • MO SMSC Addr Restricted • MT SMSC Addr Restricted
Concatenated MO SMS	Concatenated MO SMS indicates that the SMC has received the data (CP-Data) as well as associated acknowledgement (CP-Ack) messages.This parameter indicates the number of SMCs in such state.
TR1N timer	Specifies current status of TR1N timer. TR1N is a timer for Point to Point Short SMS Service (POPSMS). It is associated with the wait for RP acknowledgement message. Refer 3GPP TS 4.011 and 0.12 for more information.
TR2N Timer	Specifies current status of TR2N timer. TR2N timer is a timer for Point to Point Short Message Service (POPSMS). The timer is associated with wait to send for RP acknowledgement message. Refer 3GPP 4.0.11 and 0.12 for more information.
CP Data Retransmissions	Total number of Control Protocol data (CP-Data) messages that were re-transmitted between MS and network.
RP Message Encode Fail	Total number of messages with failed Short Message Rely Protocol (SM RP) encoding.

Field	Description
CP Data Inv TID	Tunnel Identifier TID) is an identity provided by the Gprs Tunneling Protocol (GTP) to every packet. The TID identifies the destination and transaction to which the packet belongs. Transactions are identified using logical Identifiers as well as IMSI. A Control Protocol message is composed of: • Protocol discriminator • Transaction Identifier • Message type • Other required Information Elements (IEs)
Max Returns Reached	Total number of messages that have completed the maximum allowed retransmission attempts.
SMSC Addr Restricted	Total number of restricted Short Message Service Center (SMSC) addresses.
MO SMSC Addr Restr	Total number of SMSC address restricted for the Mobile Originated (MO) messages, i.e. the messages that are being sent from MS to network.
MT SMSC Addr Restr.	Total number of SMSC address restricted for the Mobile Terminated(MT) messages, i.e. the messages that are being sent from network to MS.
GMM Interaction Stats	GMM interaction statistics comprises GPRS Mobility Management (GMM) entitles in the network. It includes: • Page Request Sent • Page Response Successful • Page Response Fail • Release Indication
Page Request Sent	The paging function is used by the network to retrieve the current cell information from an MS that is in the power saving mode. This is the total number of page requests sent by the network.
Page Response Succ	Total number of success full responses, received by the network for the paging requests that were sent to the mobile stations in power saving mode.
Page Response Fail	Total number of response failures, received by the network for the paging requests that were sent to mobile stations in power saving mode.

Field	Description
Release Indication	GMM allows packet service continuity when the MS moves from one GPRS Location Area (LA) to another. MS as well as the network can use the IMSI detach procedure to remove the Mobility Management (MM) context when it is not required. This specifies number of release indications transmitted between MS and network.
Release Indication Waiting (MO)	These are total number of release indications waiting to be delivered for MO messages such as: • MO CP Ack • MO CP Data • MO CP ERR
MO CP Ack Delivery	Total number of release indications waiting to be transferred between network and MS for mobile originated control protocol acknowledgement messages that are being delivered.
MO CP Data Delivery	Total number of release indications waiting to be transferred between network and MS for mobile originated control protocol data messages that are being delivered.
MO CP ERR Delivery	Total number of release indications waiting to be transferred between network and MS for mobile originated control protocol error messages that are being delivered.
Release Indication Waiting (MT)	These are total number of release indications waiting to be delivered for MT messages such as: • MT GMM Connection • MT CP Data • MT CP Ack • MT CP ERR
MT GMM Connection	Total number of release indications waiting to be transferred between the network and MS for mobile terminated GPRS mobility management connections.
MT CP Data Delivery	Total number of release indications waiting to be transferred between network and MS for mobile terminated control protocol data messages that are being delivered.
MT CP Ack Delivery	Total number of release indications waiting to be transferred between network and MS for mobile terminated control protocol acknowledgement messages that are being delivered.

Field	Description
MT CP Err Delivery	Total number of release indications waiting to be transferred between the network and MS for mobile terminated control protocol error messages that are being delivered.
MT- SMS Failures	Mobile terminated SM S failure statistics specifies total number of SMS messages that failed to reach designated MS. The failure reasons can be: • IMSI record not found • Busy subscriber • Detached subscriber • MT queue full
IMSI Record not Found	Total number of SMS messages that failed to reach the MS due to unavailability of International Mobile Subscriber Identity record.
Busy Subscriber	Total number of SMS messages that failed to reach the MS due to busy status of the subscriber.
Detached Subscriber	Total number of SMS messages that failed to reach MS because the intended subscriber was detached.
MT Queue Full	Total number of SMS messages that failed to reach MS because the MT message queue was full.

show sms statistics verbose

Table 5: show subscribers sms statistics name Command Output Descriptions

Field	Description
Session Statistics	Session statistics includes parameters related to SMS session between the MS and network. It includes parameters such as: • MO SMS (in progress) • MT SMS (in progress) • MT SMS (in queue) • SMMA (in progress) • MO SMS (attempted) • MT SMS (attempted) • MT SMS (successful) • SMMA (Successful)
MO SMS (In Progress)	Total number SMS messages that are Mobile Originated (MO) i.e. sent from an UE or MS and are being received by network.
MT SMS (In Progress)	Total number of SMS messages that are Mobile Terminated (MT) i.e. being sent to a UE or MS and are being delivered by network.
MT SMS (In Queue)	Total number of SMS messages that are mobile Terminated i.e. being sent to UE or MS and are in queue for being delivered by the network.
SMMA (In Progress)	Total number of SMMA messages in progress for the reception by the network. An SMMA message is used by the MS to indicate the network about the availability of the memory in MS, to receive one or more short messages.
MO SMS (Attempted)	Total number of SMS messages that are Mobile Originated (MO) i.e. sent from an UE or MS and are being attempted to be received by the network.
MT SMS (Attempted)	Total number of SMS messages that are Mobile Terminated i.e. being sent to a UE or MS and are being attempted to be delivered by the network.
MT SMS (Successful)	Total number of SMS messages that are Mobile Terminated (MT) i.e. being sent to a UE or MS and are successfully delivered by the network.

Field	Description
SMMA Successful	Total number of SMMA messages that are successfully received by the network. The SMMA message is used by the MS to indicate the network about the availability of the memory in MS, to receive one or more short messages.
Message Statistics	Message statistics comprises received and transmitted data, acknowledgement and error messages between the MS and network for RP as well as CP layers along with the message drop counters. Message statistics includes, parameters related to: • CP layer messages • RP layer messages • Message drop counters
CP Layer Messages	Short Message Service Control Protocol (SM –CP) is used for communication by the SMC entities from MS and network. Following are components of CP layer messages: • **CP Data**: This message is sent between an MS and MSC in both directions. It contains the user data to be relayed between CM – users and associated parameters such as protocol discriminator, transaction identifier, message type and CP user data. • **CP Ack**: This message is sent between MS and MSC in both directions and is used to acknowledge the reception of a CP-Data message. It contains protocol discriminator, transaction identifier and message type. • **CP Error**: This message is sent between an MS and MSC in both directions and is used to convey the error information. It contains protocol discriminator, transaction identifier, message type and CP cause.
CP Data (Tx)	Total number of transmitted CP data messages.
CP Ack (Tx)	Total number of transmitted CP acknowledgement messages.
CP Error (Tx)	Total number of transmitted CP error messages.
CP Data (Rx)	Total number of received CP data messages.
CP Ack (Rx)	Total number of received CP acknowledgement messages.
CP Error (Rx)	Total number of received CP error messages.

Field	Description
CP Error Cause Stats	The CP error message conveys error information that is sent between MS and MSC in both directions. It contains protocol discriminator, transaction identifier, message type and CP cause. CP error cause statistics includes: • Network failure • Congestion • Inlaid sematic • Invalid mandatory information • Invalid message type • Invalid protocol state • Invalid IE • Protocol error • Unidentified cause
Network Failure (Tx)	Total number of errors caused due to network failure while transmitting the message from network to MS.
Congestion (Tx)	Total number of errors caused due to congestion while transmitting the message from network to MS.
Inlaid Sematic(Tx)	Total number of errors caused due to invalid sematic while transmitting the message from network to MS.
Invalid Mandatory Info (Tx)	Total number of errors caused due to invalid mandatory information while transmitting the message from network to MS.
Invalid Message Type(Tx)	Total number of errors caused due to invalid schematic while transmitting the message from network to MS.
Invalid Protocol State(Tx)	Total number of errors caused due to invalid protocol state while transmitting the message from network to MS.
Invalid IE (Tx)	Total number of errors caused due to invalid Information Element (IE) while transmitting the message from network to MS.
Protocol Error (Tx)	Total number of errors caused due to protocol error while transmitting the message from network to MS.
Undefined Cause (Tx)	Total number of errors caused due to unknown or undefined causes while transmitting the message from network to MS.
Network Failure (Rx)	Total number of errors caused due to network media failure while receiving the message from MS to network.
Congestion (Rx)	Total number of errors caused due to congestion while receiving the message from MS to network.

Field	Description
Inlaid Sematic(Rx)	Total number of errors caused due to invalid sematic while receiving the message from MS to network.
Invalid Mandatory Info (Rx)	Total number of errors caused due to invalid mandatory information while receiving the message from MS to network.
Invalid Message Type (Rx)	Total number of errors caused due to invalid message type while receiving the message from MS to network.
Invalid Protocol State(Rx)	Total number of errors caused due to invalid protocol state while receiving the message from MS to network.
Invalid IE (Rx)	Total number of errors caused due to invalid Information Element (IE) while receiving the message from MS to network.
Protocol Error (Rx)	Total number of errors caused due to protocol error while receiving the message the message from MS to network.
Undefined Cause (Rx)	Total number of errors caused due to unknown or un-defined cause while receiving the message from MS to network.
Message Drop Counters	Message drop counter for CP layer comprises number of CP layer messages that were dropped by the MS or network. The message drop counters are categorized as: • CP Data • Retransmission Drops • Unknown TId Drops • CP Ack • CP Error
CP Data	Total number of CP data messages that were dropped.
Retransmission Drops	Total number of CP data re-transmission messages that were dropped.

Field	Description
Unknown TID Drops	Tunnel Identifier TID) is an identity provided by the Gprs Tunneling Protocol (GTP) to every packet. The TID identifies the destination and transaction to which the packet belongs. Transactions are identified using logical Identifiers as well as IMSI. A Control Protocol (CP) message is composed of: • Protocol discriminator • Transaction Identifier • Message type • Other required Information Elements (IEs) This specifies total number of messages that were dropped due to unknown transaction identifier.
CP Ack	Total number of CP acknowledgement messages that were dropped.
CP Error	Total number of CP error messages that were dropped.
CP –Error Drop for Invalid TID Recvd.	Tunnel Identifier TID) is an identity provided by the Gprs Tunneling Protocol (GTP) to every packet. The TID identifies the destination and transaction to which the packet belongs. Transactions are identified using logical Identifiers as well as IMSI. A Control Protocol message is composed of • Protocol discriminator • Transaction Identifier • Message type • Other required Information Elements (IEs) Specifies total number of CP error messages dropped due to reception of wrong or non-existent Transaction Identifier (TID).

Field	Description
RP Layer Messages	Short Message Relay Protocol (SM-RP), that is used for communication between the SMR entities from MS and network. Following are the components of RP layer messages: • **RP Data**: This message is sent between MS and the MSC in both directions. It contains message type, message reference, originator address, destination address along with the user data. • **RP Ack**: This message sent between the MS and MSC in both directions. This message is used to relay the acknowledgement of received RP- data or RP-SMMA messages. It contains message type, message reference and user data. • **RP –Error** : This message is sent between the MS and the MSC in both directions and is used to relay the cause of erroneous short message or notification transfer attempt. It contains message type, message reference, and cause and user data.
RP Data (Tx)	Total number of transmitted RP data messages.
RP Ack (Tx)	Total number of transmitted RP acknowledge messages.
RP Error (Tx)	Total number of transmitted RP error messages.
RP Data (Rx)	Total number of received RP data messages.
RP Ack (Rx)	Total number of received RP acknowledgement messages.
RP Error (Rx)	Total number of received RP error messages.
RP SMMA (Rx)	Total number of received RP SMMA messages.

Field	Description
RP Error Cause Statistics	The RP error message conveys the information that is sent between MS and the MSC in both directions. An RP error message comprises message type, message reference, and cause and user data. RP error cause statistics includes: • Unsigned number • Operator determined barring • Call barred • Reserved • SM transfer rejected • Destination out of order • Unidentified subscriber • Facility rejected • Unknown subscriber • Network out of order • Temporary failure • Congestion • Not subscribed • Not implemented • Interworking error • Resource unavailable
Unsigned Number (Tx)	Total number of errors caused due to un-signed or un-known number while transmitting the message from MS to network.
Opr. Determined Barring (Tx)	Total number of errors caused due to operator determined barring while transmitting the message from MS to network.
Call Barred (Tx)	Total number of errors caused due to calls barred while transmitting the message from MS to network.
Reserved (Tx)	Total number or errors caused due to calls reserved while transmitting the message from MS to network.
SM Transfer Rejected (Tx)	Total number of errors caused to Short Message (SM) transfer rejection while transmitting the message from MS to network.
Destination Out of Order (Tx)	Total number of errors caused due to destination out of order while transmitting the message from MS to network.
Unidentified Subscriber (Tx)	Total number of errors caused due to unidentified subscriber while transmitting the message form MS to network.

Field	Description
Network Out of Order (Tx)	Total number of errors caused due to un-availability of the network while transmitting the message from MS to network.
Temporary Failure (Tx)	Total number of errors caused due to temporary failure of the network while transmitting the message from MS to network.
Congestion (Tx)	Total number of errors caused due to congestion in the network while transmitting the message from MS to network.
Not Subscribed (Tx)	Total number of errors caused due to the status as not subscribed while transmitting the message from MS to network.
Not Implemented (Tx)	Total number of errors caused due to non-implementation while transmitting the message from MS to network.
Interworking Error (Tx)	Network interworking is required when for the service execution, a packet domain PLMN works with any other network. The interworking takes place mostly using Gi and Gp interfaces. Total number of errors caused due to interworking errors while transmitting the message from MS to network.
Resource Un-available (Tx)	Total number of errors caused due to un availability of the resource while transmitting the message from MS to network.
Memory Capacity Exceed	Total number of errors caused due to lack of storage capacity in the MS while receiving the message.
Invalid Reference Number (Tx)	Total number of errors caused due to wrong or non-existent reference number while transmitting the message.
Invalid Semantic (Tx)	Total number of errors caused due to wrong or non-existent semantic information while transmitting the message.
Invalid Mandatory Info (Tx)	Total number of errors caused due to non-semantic mandatory information while transmitting the message.
Invalid Message Type (Tx)	Total number of errors caused due to non-existent or non-implemented message type while transmitting the message.
Invalid Protocol State (Tx)	Total number of errors caused due to wrong or non-implemented protocol state used while transmitting the message.
Invalid IE (Tx)	Total number of errors caused due to wrong or un-implemented Information Element (IE) used while transmitting the message.
Protocol Error (Tx)	Total number of errors caused due to wrong or non-implemented protocol used while transmitting the message.
Undefined Error (Tx)	Total number of errors caused due to unknown or un-defined cause while transmitting the message.

Field	Description
Invalid Reference Number (Rx)	Total number of errors caused due to wrong or non-existent reference number while receiving the message.
Invalid Semantic (Rx)	Total number of errors caused due to wrong or non-existent semantic information while receiving the message.
Invalid Mandatory Info (Rx)	Total number of errors caused due to invalid mandatory information while receiving the message.
Invalid Message Type (Rx)	Total number of errors caused due to non-existent or non-implemented message type while receiving the message.
Invalid Protocol State (Rx)	Total number of errors caused due to wrong or non-implemented protocol state used while receiving the message.
Invalid IE (Rx)	Total number of errors caused due to wrong or un-implemented Information Element (IE) used while receiving the message.
Protocol Error (Rx)	Total number of errors caused due to wrong or non-implemented protocol used while receiving the message.
Undefined Error (Rx)	Total number of errors caused due to unknown or un-defined cause while receiving the message.
Message Droop Counters	Message drop counters comprises number of RP layer messages that were dropped by the MS or network. The message drop counters are categorized as: • RP Data • RP Ack • RP Error • RP Decode Failure
RP Data	Total number of RP data messages that were dropped.
RP Ack	Total number of RP acknowledgement messages that were dropped.
RP Error	Total number of RP error messages that were dropped.
RP Decode Failure	total number of RP decode failure messages that were dropped.

Field	Description
General Statistics	General statistics comprises statistical parameters related to SMS, along with GMM interaction statistics parameters, It includes: • Concatenated MO SMS • CP Timer Expiry • TR1N Timer • TR2N Timer • CP Data Retransmissions • RP Msg Encode Fail • CP Data Tx Fail • CP Data Inv TID • Max Retransmissions Reached • SMSC Addr Restricted • MO SMSC Addr Restricted • MT SMSC Addr Restricted • CP-DATA No Cp Ack Rx
Concatenated MO SMS	Connected MO SMS indicates that the SMC has received the data (CP-Data) as well as associated acknowledgement (CP-Ack) messages.This parameter indicates the number of SMCs in such state.
TR1N timer	Specifies current status of TR1N timer. TR1N is a timer for Point to Point Short SMS Service (POPSMS). It is associated with the wait for RP acknowledgement message. Refer 3GPP TS 4.011 and 0.12 for more information.
TR2N Timer	Specifies current status of TR2N timer. TR2N timer is a timer for Point to Point Short Message Service (PPSMS). The timer is associated with wait to send for RP acknowledgement message. Refer 3GPP 4.0.11 and 0.12 for more information.
CP Data Retransmissions	Total number of Control Protocol data (CP-Data) messages that were re-transmitted between MS and network.
RP Message Encode Fail	Total number of messages with failed Short Message Rely Protocol (SM RP) encoding.

Field	Description
CP Data Inv TID	Tunnel Identifier TID) is an identity provided by the Gprs Tunneling Protocol (GTP) to every packet. The TID identifies the destination and transaction to which the packet belongs. Transactions are identified using logical Identifiers as well as IMSI. A Control Protocol message is composed of • Protocol discriminator • Transaction Identifier • Message type • Other required Information Elements (IEs) This specifies total number messages with invalid transaction identifier.
Max Returns Reached	Total number of messages that have completed the maximum allowed retransmission attempts.
SMSC Addr Restricted	Total number of restricted Short Message Service Center (SMSC) addresses.
MO SMSC Addr Restricted	Total number of SMSC address restricted for the Mobile Originated (MO) messages, i.e. the messages that are being sent from MS to network.
MT SMSC Addr Restricted.	Total number of SMSC address restricted for the Mobile Terminated(MT) messages, i.e. the messages that are being sent from network to MS.
GMM Interaction Stats	GMM interaction statistics comprises GPRS Mobility Management (GMM) entitles in the network. It includes: • Page Request Sent • Page Response Successful • Page Response Fail • Release Indication
Page Request Sent	The paging function is used by the network to retrieve the current cell information from an MS that is in the power saving mode. This is the total number of page requests sent by the network.
Page Response Successful	Total number of success full responses, received by the network for the paging requests that were sent to the mobile stations in power saving mode.

Field	Description
Page Response Fail	Total number of response failures, received by the network for the paging requests that were sent to mobile stations in power saving mode.
Release Indication	GMM allows packet service continuity when the MS moves from one GPRS Location Area (LA) to another. MS as well as the network can use the IMSI detach procedure to remove the Mobility Management (MM) context when it is not required. This specifies number of release indications transmitted between MS and network.
Release Indication Waiting (MO)	These are number of release indications waiting to be delivered for MO messages such as: • MO CP Ack • MO CP Data • MO CP ERR
MO CP Ack Delivery	Total number of release indications waiting to be transferred between network and MS for mobile originated control protocol acknowledgement messages that are being delivered.
MO CP Data Delivery	Total number of release indications waiting to be transferred between network and MS for mobile originated control protocol data messages that are being delivered.
MO CP ERR Delivery	Total number of release indications waiting to be transferred between network and MS for mobile originated control protocol error messages that are being delivered.
Release Indication Waiting (MT)	These are total number of release indications waiting to be delivered for MT messages such as: • MT GMM Connection • MT CP Data • MT CP Ack • MT CP ERR
MT GMM Connection	Total number of release indications waiting to be transferred between the network and MS for mobile terminated GPRS mobility management connections.
MT CP Data Delivery	Total number of release indications waiting to be transferred between network and MS for mobile terminated control protocol data messages that are being delivered.

Field	Description
MT CP Ack Delivery	Total number of release indications waiting to be transferred between network and MS for mobile terminated control protocol acknowledgement messages that are being delivered.
MT CP Err Delivery	Total number of release indications waiting to be transferred between the network and MS for mobile terminated control protocol error messages that are being delivered.
MT- SMS Failures	Mobile terminated SM S failure statistics specifies total number of SMS messages that failed to reach designated MS. The failure reasons can be: • IMSI record not found • Busy subscriber • Detached subscriber • MT queue full
IMSI Record not Found	Total number of SMS messages that failed to reach the MS due to unavailability of International Mobile Subscriber Identity record.
Busy Subscriber	Total number of SMS messages that failed to reach the MS due to busy status of the subscriber.
Detached Subscriber	Total number of SMS messages that failed to reach MS because the intended subscriber was detached.
MT Queue Full	Total number of SMS messages that failed to reach MS because the MT message queue was full.