



Cell Broadcast Center - SBc Interface

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Feature Description

The MME uses the SBc interface, between the MME and the Cell Broadcast Center (CBC), for warning message delivery and control functions.

The MME provides support for Commercial Mobile Alert System (CMAS): SBc interface and underlying protocols. Warning Messages can be received from a Cell Broadcast Center (CBC) over the SBc-AP interface and relayed to all relevant eNodeBs over the S1-AP interface.

Customers can now enable CMAS functionality in their networks to provide warning notifications to subscribers.



Important

Beginning with Release 18.4, a valid license key is required to enable the SBc interface. Contact your Cisco Account or Support representative for information on how to obtain a license.

How It Works

The MME accepts incoming SBc associations coming from multiple CBCs.

The MME is responsible for the delivery of the Warning Messages received from CBC to all relevant eNodeBs serving the given TAI list. In the absence of TAI list in the received Warning Message, MME sends the Warning Message to all connected eNodeBs.

The MME acknowledges to CBC when it has started distributing the Warning Message to all relevant eNodeBs. If a response is not received from any eNodeB, it shall not result in any exclusive error messaging to CBC.

Even if the MME node is experiencing congestion, Warning Messages are forwarded and not dropped.

When connected to multiple CBCs, the uniqueness of Warning Messages as identified by Message Type, Message Identifier and Serial Number, must be ensured across these CBCs.

DSCP Marking for SBc Interface

SBc services provides the Differentiated Services Code Point (DSCP) marking functionality. DSCP marking helps in packet traffic management. DSCP marking can be performed on both IPv4 and IPv6 packets leaving the SBc interface.

Either the pre-defined DSCP values can be used for marking, or any arbitrary value ranging from 0x01 to 0x3F can be assigned. The default DSCP value is 0x00 or be (Best Effort). The default DSCP value is automatically set when the configuration is disabled.

config

```
context context_name
  sbc-service service_name
    [no] ip qos-dscp dscp_value
  end
```

- ip defines the Internet Protocol parameters for the packets leaving through the SBc interface.
- qos-dscp designates the Quality of Service - Differentiated Services Code Point value to the packet leaving through the SBc interface.
- *dscp_value* is a value assigned to the packet for DSCP marking. The value can be a pre-defined DSCP value or an arbitrary value ranging from 0x01 to 0x3F.

Warning Message Call Flows

In compliance with 3GPP TS 29.168 v10.2.0, the MME supports the following procedures:

- Write-Replace Warning Procedure
- Stop Warning Procedure
- Error Indication Procedure

Standards Compliance

The MME's implementation of this feature complies with the following standards:

- 3GPP TS 23.041 v10.6.0 Technical realization of Cell Broadcast Service (CBS)
- 3GPP TS 29.168 v10.2.0 Cell Broadcast Centre Interfaces with the Evolved Packet Core
- 3GPP TS 22.268 v10.4.0 Public Warning System
- 3GPP TS 36.413 v10.6.0 S1-AP Interface

Configuring SBc Interface

Creating and Configuring SBc Service

An SBc service must be created within a context to configure the SBc-AP interface to accept connections from one or more CBCs.



Important

Beginning with Release 18.4, a valid license key is required to access the commands used to configure and manage the SBc interface. Contact your Cisco Account or Support representative for license information.

configure

```
context ctxt_name
  sbc-service sbc_svc_name
    associate sctp-param-template sctp_param_template_name
    bind ipv4-address ipv4_address_value1 ipv4-address ipv4_address_value2
    cbc-associations maximum number
    sbc-mme sctp port port_num
  end
```

Notes:

- Up to 8 SGs + MME + SBc + SLs Services can be configured on the system. The SBc service name must be unique across all contexts.
- Associating the SBc service to the SCTP parameter template is not required for the SBc service to be operational. However, if a template is associated, the template must exist before the SBc service is associated to it.
- The SBc service must be bound to at least 1 IP address. Up to 2 IPv4 or 2 IPv6 addresses can be specified for multi homing purposes.
- The **cbc-associations** command is used to define the maximum number of CBC connections allowed for this SBc service. The default setting is 1. Up to 2 connections are allowed per SBc service.
- The default SCTP port used is 29168. The MME listens for incoming SBc-AP connections from an CBC on this port.

Associating the SBc Service with the MME Service

Use the following sample configuration to associate the SBc service to an MME service.

configure

```
context ctxt_name
  mme-service mme_svc_name
    associate sbc-service sbc_svc_name [ context ctxt_name ]
  end
```

Notes:

- Each MME service can be associated with one unique SBc service.

- The SBc service is **not** a critical parameter for the MME service. Removing this configuration will **not** restart the MME service.
- The MME will always check for a valid SBc service that is up and connected to a CBC before performing any meaningful operations on the Warning Messages received on the S1-AP interface (like attempting to forward the messages).
- Use the optional context keyword if the SBc service and MME service are configured in separate contexts.
- The SBc service is not operationally STARTED unless the MME service to which it is associated is in a STARTED state.

Verifying the SBc Service Configuration

The following command displays configuration information for all SBc services, for the specified for the specified SBc service, or for the specified Cell Broadcast Center.

```
show sbc-service { all | cbc-associations { all | sbc-service-name sbc_svc_name [ path-info | summary ] } | sbc-service-name sbc_svc_name }
```

The following command displays the SBc Service name and SBc Service Context which has been associated with each MME service.

```
show mme-service all
```

The following command displays configuration errors and warnings related to all SBc services on the MME:

```
show configuration errors section sbc-service verbose
```

Monitoring SBc Services

This section lists the SNMP traps, bulk statistics, and show commands that display operational statistics relating to SBc services.

SNMP Traps

The following traps are available to track status and conditions relating to the SBc service.

- **starSBCServiceStart**: An SBc Service has started.
- **starSBCServiceStop**: An SBc Service has stopped.

The following traps are generated to track status and conditions of individual CBC associations.

- **starCBCAssocDown**: A CBC Association is down.
- **starCBCAssocUp**: A CBC Association is up.

SBc Bulk Statistics

SBc service related bulk statistics are provided within the **SBc** schema.

Use the following command to display a list of all variables available within this schema:

show bulkstats variables sbc

For more information about these statistics, refer to the **SBC Schema** chapter of the *Statistics and Counters Reference*.

SBC Service Show Commands and Outputs

The following command displays all statistics related to the SBC service. These statistics can be filtered based on CBC association (peer-id) or SBC service name.

show sbc statistics { all | peer-id *peer_id* | sbc-service-name *sbc_svc_name* }

The following command displays S1-AP statistics relating to the SBC interface. Check the lines for Kill Request and Kill Response in the sample below:

show mme-service statistics s1ap

SLAP Statistics:

Transmitted SLAP Data:

Kill Request: 0 Write-Replace Warning Request: 0

Received SLAP Data:

Kill Response: 0 Write-Replace Warning Response: 0

Event Logging

Event logging for the SBC interface can be enabled using the following command:

logging filter active facility sbc level *severity_level*

Refer to the *System Logs* chapter of the *System Administration Guide* for more information about event logging.

