



Alcatel-Lucent 9412

eNodeB | Release TLA6.0

Counters Reference Guide

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About this document

Purpose

This document provides a list of LTE access network observation counters collected by the performance server.

Reason for reissue

The reissue history of this document is described in the following paragraphs.

Issue 0.02

The reissue history for Issue 0.02 is shown in the following table.

Location	Change
“Object hierarchy” (p. 1-5)	Updated the object hierarchy diagram to reflect the TLA6.0 model.

Issue 0.01

The reissue history for Issue 0.01 is shown in the following table.

Location	Change
Entire document	First draft of the document. RMD file version is <i>RMD ENB Counters 12W06 (V1)</i>

Intended audience

This document is intended for operations and maintenance personnel responsible for performance management of LTE access network.

Supported systems

This document applies to the System Release LTE RAN TLA6.0 (time division duplex - TDD).

How to use this document

The following table describes how to use this document.

Document organization	When to use
Part I: “eNodeB counter description”	This part describes the eNodeB counter description and provides information on counter definition template, counter types on the OAM GUI, counter hierarchy, and access network observation counters.
Part II: “eNodeB TDD counters”	This part provides a list of TDD counter families and their counters. Each counter is described separately in a table, and these tables are arranged in alphanumerical order.

Conventions used

Vocabulary conventions

The following vocabulary conventions are used in this document:

Terms used	Description
CC	Cumulative Counter
CFN	Connection Frame Number
CUM	CUMulative
DER	Discrete Event Registration counter
DTD	Document Type Definition
mW	milliWatt
NEI	NEIghbouring
SI	Status Inspection
VAL	VALue counter

Term conventions

The following terms are used in this document:

Terms used	Description
Access Stratum Configuration	<p>Pointer to a pre-defined set of Radio Bearers providing a given Radio Access Bearer service.</p> <p>For example:</p> <ul style="list-style-type: none"> the Downlink (DL) access stratum configuration with number 1 is dedicated to voice support. It comprises the following Radio Bearers: <ul style="list-style-type: none"> 3 x 12.2-Kbps CS RBs on DTCH 3 x 3.4-Kbps SRB on DCCH the DL access stratum configuration with number 2 is dedicated to packet support at 64 Kbps. It comprises the following Radio Bearers: <ul style="list-style-type: none"> 1 x 64-Kbps PS RB on DTCH 3 x 3.4-Kbps SRB for DCCH. <p>Refer to the following configurations:</p> <ol style="list-style-type: none"> Downlink Access Stratum Configuration (DASC) Downlink Radio Bearer Set Configuration (DRBS) Uplink Access Stratum Configuration (UASC) Uplink Radio Bearer Set Configuration (URBS)
Connection Frame Number (CFN)	<p>CFN is the frame counter used for the L2/transport channel synchronization between UE and LTE RAN. A CFN value is associated to each Transport Block Set (TBS) and it is passed together with it through the MAC-L1 SAP. CFN provides a common frame reference (at L2) to be used that is for synchronized transport channel reconfiguration.</p>
Measurement	<p>Term used in 3GPP TS 32.104 specifications. It has the same meaning as the word <i>counter</i> and is used in this document to distinguish a counter from a (<i>radio</i>) <i>measurement</i>.</p>
Reference cell	<p>Cell ranking first in a UE active set considering a radio criteria, that means the cell is supposed to provide on average the best radio quality for the reception of the next frames. The reference cell is the primary cell considered in RRM.</p>

Related information

The following document is referenced in this document or it includes additional information relevant to this document. Refer to *Alcatel-Lucent 9400 LTE Radio Access Network - Customer Documentation Overview*, 9YZ-04619-0002-ACZZA for the purpose of the document listed.

- *Alcatel-Lucent 9400 LTE Radio Access Network – Terminology Overview*, 9YZ-04619-0003-TQZZA.
- *Alcatel-Lucent 9400 LTE Radio Access Network Release Operational Impact (ROI) - TDD Reference Guide - Configuration Management, Fault Management and Performance Measurement*, 9YZ-04619-0002-RKZZA to get the list of changes to Time division duplex (TDD) alarms, parameters, counters, and indicators in the LTE RAN System Release TLA6.0 in comparison to the LTE RAN System Release TLA5.1.

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Part I: eNodeB counter description

Overview

Purpose

This part provides detailed description of the counter definition template, counter hierarchy, and counter types on the Operations, Administration and Maintenance (OAM) GUI. It also describes the access network observation counters.

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1 Counter presentation

Overview

Purpose

A standard observation counter is a device in performance management to calculate the number of occurrences of an event. For more information on the definitions for observation counters, see 3GPP TS 32.104 specifications. This chapter explains the conventions and the format used in the counter families.

Each counter contains the following descriptions:

- Counter attributes (3GPP name, counter type, location, and so on)
- Counter definition (triggering event)

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Wording assumption

Overview

Wording counter and measurement terms are being used in this document to identify the same concept. Usually, Alcatel-Lucent uses the term counter to distinguish a counter from a (radio) measurement.

A counter is periodically elaborated on periods expressed in minutes or hours. For example, 15 min., while a measurement is elaborated on periods expressed in milliseconds as 500 ms.

3GPP Performance Management specifications preferably uses measurement. When the context refers to 3GPP specifications, measurement is used, while counter is used in Alcatel-Lucent specific part, but both wordings are equivalent.

Counter families

Overview

The counters in this document are grouped into counter families. A counter family is attached to a given LTE feature. For example, the UE Context Management family groups all the counters involved with UE Context Management (set up, modification, deletion, release).

The Alcatel-Lucent defined counter families are not the same as the 3GPP measurement families defined in 3GPP TS 32.425.

For counters specific to Alcatel-Lucent, the counter name (referred to as “3GPP Name” (p. 1-11) in the following section) starts with the prefix "VS". For example, *VS.IncomingInterENodeBS1HOFailure.CACFailure*.

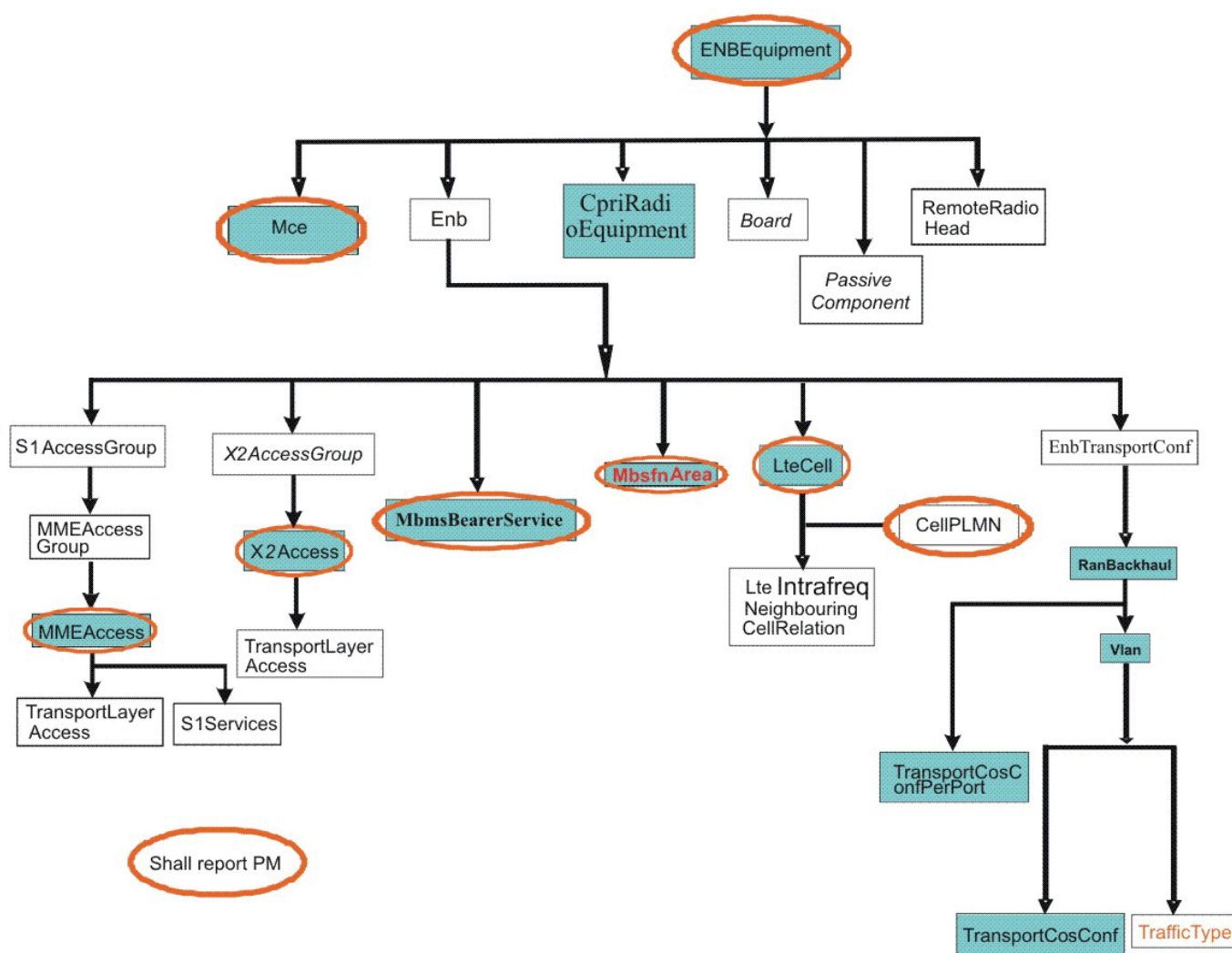
For counters defined in 3GPP TS 32.425, the counter name (referred to as “3GPP Name” (p. 1-11) in the following section) is compliant to this specification and starts with a prefix corresponding to the 3GPP measurement family. For example, *S1SIG.ConnEstabAtt*.

Object hierarchy

Overview

Counters are reported on objects that are located according to the hierarchy. The resource objects are defined as a subset of the managed objects of eNodeB native Management Information Model (MIM). This model is used in Service Aware Manager (SAM) interface with eNodeB. In the performance monitoring object model, each object class has a unique set of defined counters supported by each and every instance of the class. It presents a subset of the eNodeB MIM. The figure depicts a potential future Measured Object containment tree of the eUTRAN.

Figure 1-1 Object hierarchy



The following subset is extended:

- The subnetwork object marked is added as the root of the containment tree to reflect the LTE RAN topology.
- LteCell object, MbmsBearerService object, X2Access object, MMEAccess object, TransportLayerAccess object, S1 Services object, CellPLMN object have counters defined in Release TLA6.0.

Counter types on the OAM GUI

Overview

The user-accessible observation counters available on the OAM GUI are as follows:

- CC – Cumulative (or TOTAL) Counter
- DER – Discrete Event Registration (or VALUE) Counter
- Load Counter

CC - Cumulative (or TOTAL) Counter

Cumulative counters provide raw counts. A Cumulative counter is a CUM (CC) type counter, as identified in 3GPP TS 32.104 specifications. It is incremented by one each time the counted event occurs, and it provides the cumulative value. One NE cumulative counter provides one counter at the OAM GUI level. The cumulative counter type is the simplest type of counter. It captures the measurement data from the occurrences of a given type of event detected during the granularity period and offers the means of counting measurement data related to predefined events. The result is a single field with cumulated value.

DER - Discrete Event Registration (or VALUE) Counter

VALUE Counters are also known as Discrete Event Registration (DER). Value counters can provide the minimum, maximum and average values. Each event provides a value that is added to the cumulated value. The average corresponds to the cumulated value divided by the number of events and is not reported by the eNodeB but computed at the NPO level. The VALUE counters are elaborated according to the mechanism defined by 3GPP TS 32.104 to implement a DER (VALUE) type measurement. This mechanism provides average values from raw counts obtained by internal events (the time interval between two events is random and is not accessible to users). The counter is incremented by a value attached to the event itself.

A VALUE counter captures measurement data from the occurrences of a given type of event detected during the granularity period. A measurement is extracted from each occurrence of the event. The individual measurement is contributed towards the summary counter for the corresponding granularity period.

Each value counter reports the following values at the granularity period:

- cumulated value (.Cum in XML files)
- number of events (.NbEvt in XML files)
- maximum added value (.Max in XML files)
- minimum added value (.Min in XML files)

Note: The reported value counter is collected by a non real-time task at the end of each observation period. The collection period (usually 1 hr.) for the performance management file does not imply that all *.NbEvt* of *LOAD counters* are exactly equal to the number of counter periods included in one collection (12 for counters with 5 mn granularity). Due to the low priority of the performance management task, it is possible when the *PM* file is built that some samples can miss. This can be included in the next file. This can lead to one file with *NbEvt* equal to 11 (for a 5-mn counter), followed later by one with 13 (possibly with some 12 between). The average values calculated by computing *.Cum/.NbEvt* are still meaningful, as the samples added in *.Cum* are coherent with the *.NbEvt* value.

Load Counter

Load counters are elaborated according to the mechanism defined by 3GPP TS 32.104 to implement an SI type measurement. This mechanism provides average values from raw counts obtained by internal sampling (the time interval between two events is not accessible to users). The counter is incremental by a sample value on the sampling event occurrence. A load counter is a time-based counter.

There are two types of load counters:

1. **Load counter with periodic sampling (SI – status inspection)**, is derived from samplings of a specified measurement, taken at regular intervals during the granularity period. That is, the individual samplings contribute toward the summary counter for the corresponding granularity period. The summary counter is useful to analyze the averages, trends, or cycles. Load counters with periodic sampling are also known as status inspection.

Load counters with periodic sampling provides the minimum, maximum and average values. This counter type is based on a self-generated sampling method at a defined tempo. This counter offers the means of getting rapidly changing data.

2. **Load counter with sampling on event occurrence**, is a specified measurement done without sampling at regular intervals, but with sampling triggered by predefined events occurring during the granularity period. Each individual sampling contributes toward the summary counter for the corresponding granularity period. The summary counter is useful to analyze the averages, trends, or cycles. This is a second type of load counter which does not refer to status inspection as defined in the standard.

However, both types of load counters, report same values and apply the same algorithm to calculate these values:

Alcatel-Lucent provides the following:

- Cumulated value
- Elapsed time
- Maximum value
- Minimum value

Note: Alcatel-Lucent does not implement *GAUGE* type measurements because providing the current value of a measurement by increasing it by one when a positive event occurs and by decreasing it by one when a negative event occurs, it can lead to some shifts when an event is missed.

Subcounter

The subcounters are known as screenings. Counters support screenings or subcounters as elements of the main counter.

For example, a cumulative counter, recording the number of occurrences of a given type of event observed during the granularity period, is defined to record the number of instances of the event that belong within a given defined subclass of the event. In the case of a connection event, for example, the establishment causes can define subclasses of the event.

DER or load counter is defined to generate the following four subcounters:

- Cumulated value (.Cum in the XML files)
- Number of samplings / Elapsed time (.NbEvt in the XML files)
- Maximum sampled value (.Max in the XML files)
- Minimum sampled value (.Min in the XML files)

The following subcounters are implied to determine the average measurement:

- The Cumulated value
- The number of samplings is for DER or the elapsed time for load counter

Any applicable subcounter is identified using a suffix which is appended to the counter-name, but separated from it by a dot. For example, `<counter-name>.<subcounter-name>` (VS. `CellULL1ThroughputLoad.Min`)

Counter definition template

Overview

The following template is used to describe the counters extracted from 3GPP TS 32.104 specifications.

Description

This section contains an explanation of the measurement operation.

Counter Name

This section contains the counter name.

Counter Code

This section contains the counter code.

Counter Type

This section contains the counter field, which is used to identify the counter type such as cumulative, load and value in the result files.

Triggering Event

This section contains the condition that causes the measurement result data to be updated. The condition is defined by identifying protocol-related triggering events that either starts or stops the measurement processes or by updating the current measurement result value. When a precise condition cannot be provided, the conditional circumstances behind the update is stated.

Subcounter

This section contains a description of expected result values.

For example,

- A single integer value. If more than one value is provided, the measurement is screened according to criteria.
- A number of call releases is screened according to the cause of the call releases.

The number of call releases related to a given cause can be considered a subcounter. The measurement result specification item includes a *screening paragraph* that specifies various subcounters and their meanings.

Subfamily

This section states the Subfamily that the counter belongs to.

Report group

This section states the Report group that the counter belongs to. Based on the selection at the Service Aware Manager (SAM) the operator can choose to select the Report groups which are reported by the eNodeB to SAM.

3GPP Name

This section provides the name of the counter as it is reported by the eNodeB in the Performance Management xml files.

Object Class

This section contains the object class value. For example, Eutrancell means that object class value is being measured. The object class values used for this purpose is in accordance with 3GPP TS 32.106. This means the Network Element (NE) or resource object model is defined in the Basic CM IRP Information Model - 3GPP TS 32.106-5 and naming conventions are defined in the Naming Convention for Managed Objects - 3GPP TS 32.106-8. If applicable, this parameter is provided in the measurement job.

Range

This section contains the counter range.

Unit

This section contains the counter unit.

Notes

This section contains notes associated with the counters.

Performance and service measurement reporting

PM job reporting

The following data is obtained from the eNodeB in reply to a request from the SAM pertaining to each PM job. The information available is:

- PM job ID
- PM job type
- Administrative state
- Operational state
- The number of objects that are elements of the range of measurements
- The number of activated threshold observations
- The number of activated measurement types
- An estimation of the size of the uncompressed measurement result file, if the file is generated by the data upload command.
- The size of all stored uncompressed measurements.
- An estimation of the size of the uncompressed measurement result file created during the subsequent 24 h with the current scanner configuration.

Counter hierarchy

Overview

An observation counter stored in XML files can contain one or several levels. A dot (.) separates two successive levels.

The following example displays the counter hierarchy with two levels:

Example: *VS.IntraENodeBHOFailure.IntegrityFailure*

Counters with one level do not end with a dot:

Example: *VS.IntraENodeBHOFailureSum*

Aggregation rules

Overview

When aggregating counters over different periods of observation (temporal aggregation), follow the rules described in [Table 1-1, “Aggregation rules” \(p. 1-14\)](#). Let X_1, X_2, \dots, X_n the measurements from periods 1,2,...,n and X the resulting value over the total period.

[Table 1-1, “Aggregation rules” \(p. 1-14\)](#) presents a rule for each counter.

Table 1-1 Aggregation rules

Rule	Results	Results
Rtotal	$X.\text{cum} = X_1.\text{cum} + X_2.\text{cum} + \dots + X_n.\text{cum}$	CUM (CC) counters
Rload/Rval	$X.\text{cum} = X_1.\text{cum} + \dots + X_n.\text{cum}$	Some LOAD and VAL counters
	$X.\text{nbevt} = X_1.\text{nbevt} + \dots + X_n.\text{nbevt}$	
	$X.\text{avg} = (X_1.\text{cum} + \dots + X_n.\text{cum}) / (X_1.\text{nbevt} + \dots + X_n.\text{nbevt})$	
	$X.\text{min} = \min(X_1.\text{min}, \dots, X_n.\text{min})$	
	$X.\text{max} = \max(X_1.\text{max}, \dots, X_n.\text{max})$	
Rload*	Same as Rload but resulting $X.\text{cum}$ has no physical meaning due to the nature of the measurement (like percents) and is not interpreted but is necessary for intermediate computations.	Some LOAD counters
Ravg	$X = X_i / n$ where X_i ($i = 1$ to n) represent average values	MSS counters
Radd	$X = S X_i$ where X_i ($i = 1$ to n) represent cumulative values	MSS counters

Table 1-1 Aggregation rules (continued)

Rule	Results	Results
Rmin	$X = \min (X_i)$ where X_i ($i = 1$ to n) represent minimum values	MSS counters
Rmin	$X = \max (X_i)$ where X_i ($i = 1$ to n) represent maximum values	MSS counters

eNodeB observation XML files

Overview

This topic describes the file tree structure, the data formats, and the file naming conventions that the PM collector uses to store the eNodeB observation data.

The SAM periodically uploads the observation files stored on the eNodeB. The eNodeB XML observation files are generated on the main server in the following directory.

/opt/oam/data/eutran/observations/<YYYYMMDD>/<eNodeB-uniqueName>

The XML format is compliant with the 3GPP DTD file: 32.401-02.dtd.

The generated eNodeB XML file has the following format:

```
<type><startdate>.<starttime>-<endtime>_<eNodeB-uniqueName>
```

Where:

- *type*
The default value is A, indicating the observation file contains data originated from a single eNodeB.
- *startdate*
Refers to the beginning date of the granularity period, its format is <YYYYMMDD>.
- *starttime*
Refers to the beginning time of the granularity period, its format is <hhmm+#GMT>.
- *endtime*
Refers to the end time of the granularity period, its format is <hhmm+#GMT>.

To generate LTE RAN access observation reports from NPO, see *Alcatel-Lucent NPO - User Guide*, 3BK 21376 AAAA PCZZA.

eNodeB counter observation data

Overview

Each eNodeB observation counter is attached to managed object instances. The eNodeB observation counter families available for this release are classified as follows:

Call admission control

These counters are related to Call admission control.

Capacity Counter

This counter monitors the number of UEs that are simultaneously in RRC_CONNECTED state in the cell.

E-UTRAN Radio Access Bearer (E-RAB) Management counters

These observation counters are dedicated to E-RAB management monitoring.

eNodeB synchronization

These counters are related to eNodeB synchronization.

Interface

These counters are related to Interface.

Ip transport

These counters are related to Ip transport.

L1 Traffic and throughput

These observation counters are dedicated to L1 Traffic and throughput.

L2 Traffic and throughput

These observation counters are dedicated to L2 Traffic and throughput.

M1 traffic

These counters are related to M1 traffic.

Mobility

These counters aim at monitoring mobility (that is, handover) procedures but also redirections to other networks.

PDCP SDU

These counters are related to Packet Data Convergence Protocol (PDCP) Service Data Unit (SDU).

Radio scheduler

These counters are related to the uplink and downlink Radio schedulers.

Radio Resource Control (RRC) connection counters

These observation counters are related to the status of the RRC connection.

S1 Traffic and throughput

These counters are related to S1 Traffic and throughput.

SCTP

These counters are related to Stream Control Transport Protocol (SCTP).

UE Context management

These counters are related to the UE context.

UE radio parameter management

These counters are generated to get information on 1U8E radio parameter management.

X2 Traffic and throughput

These counters are related to X2 Traffic and throughput.

eNodeB observation activation

Overview

The eNodeB observation session is automatically created after building the eNodeB. At the eNodeB, the counter collection cannot be deactivated. The granularity period is configurable. The eNodeB generates and stores one observation file per granularity period with a maximum latency of one minute after the end of this granularity period. The guaranteed storage duration is 72 hours for all granularity period files. The observation files are generated in XML format and the event is sent to the primary main server.

Counter collection

Performance counter periodic collection

The performance counter data is collected periodically according to the interval parameter configured in the eNodeB. The minimum configurable time interval for base-level functionality is 15 min.

The collected performance information is stored as a performance counter file. The following are the two types of performance data:

- Value collected (accumulated) during the measurement cycle
- Value reported at a single point during the measurement interval

Note: The collection method depends on the counter type

The granularity period is the time between the initiations of two successive Performance Monitoring (PM) jobs. The granularity period selectable is 15 min.

From the Operations, Administration and Maintenance (OAM) point of view, the PM collector retrieves the PM files from the eNodeB and stores them on SAM. The Network Performance Optimizer (NPO) retrieves the stored performance monitoring data for post processing.

eNodeB counter collection

The SAM autonomously starts the collection of the observation files from all the supervised eNodeBs using Simple Network Management Protocol (SNMP). The counter collection starts at least two minutes after the end of the considered granularity period.

The eNodeB retains the performance monitoring data files for a minimum of 72 hours and deletes the PM files that exceed 72 hours.

In case of file retrieval failure during the nominal collection process, the SAM retries to retrieve the file on subsequent time periods; that is, between the end of the current collection process and the beginning of the next collection process. The targeted observation files must not be older than 72 hours for all granularity period files.

Note: The eNodeB compresses the PM data files. The SAM then retrieves the compressed PM files using SNMP protocol.

XML observation file compression

Overview

The eNodeB compresses the performance monitoring data file and stores the file in SAM in the following format.

`<Type><Date>.<StartTime>-<Endtime>_<NeType>-<NeUniqueName>.gz`

Type

Refers to the observation data file of a single eNodeB. The default value is A.

Date

Refers to the date of monitoring as in directory name.

StartTime

Refers to the beginning time of the granularity period, its format is `<hhmm+#GMT>`.

Endtime

Refers to the end time of the granularity period, its format is `<hhmm+#GMT>`.

NeType

Refers to the type of NE, that is, eNodeB.

NeUniqueName

Refers to the name of the NE.

Counter data

Observation counter identification

Observation counters available on OAM GUI are of three types:

- Cumulative (or Total)
Counts the number of events. This counter increments by one each time the counted event occurs and it provides the cumulated value for the observation period.
- Value
Records the value accumulation. It offers the means of measuring minimum, maximum, and the average values. The average value is an event weighted average.
- Load
Offers the means of sampling rapidly changing data and obtaining an average a minimum or maximum value of the sampled data. The average value is a time weighted average.

Zero, one, or more screenings are associated with each counter. The screening mechanism provides a further specialization of the counters. For example, the screening *TimeOut* of the counter *VS.S1ConnectionEstablishmentFailure* counts the number of unsuccessful connection failures because of time-out.

A counter record refers to a counter screening value for a given measured object instance. When a Cumulative counter screening is measured on an object instance, the result is one-counter record. Similarly when a Load or Value counter screening is measured on an object instance, the result is four-counters record.

Observation counter name

Use the counter name to identify the type of counter. The counter measurements include screening names and either Cumulated value or the following fields:

- Cumulated value
- Maximum value
- Minimum value
- Number of events

The average value is computed by the NPO which is outside the eNodeB, by dividing the cumulated value by the Number of events.

The Cumulative counter has one value, while Value and Load counters have four values.

The associated counters are identified using an period (.) notation:

- *VS.<CounterName>*
Example:
VS.RadioLinkFailureSum
- *VS.<CounterName>.Cum*

Example:

VS.NbUeScheduledPerDLTTI.Cum

- *VS.<CounterName>.Max*

Example:

VS.NbUeScheduledPerDLTTI.Max

- *VS.<CounterName>.Min*

Example:

VS.NbUeScheduledPerDLTTI.Min

- *VS.<CounterName>.NbEvt*

Example:

VS.NbUeScheduledPerDLTTI.NbEvt

- *VS.<CounterName>.<Screening>*

Example:

VS.InitialERABSetupRequest.QCII

Managed object format

The managed objects contained in the observation record files are identified according to the 3GPP TS 32.300.

The following conventions are only used in the XML record file. For the NE identifiers used in file naming conventions, refer to the file naming convention for observations section.

A *Distinguished Name* (DN) is built as a series of comma-separated name components referred to as *Relative Distinguished Names* (RDN).

DN ::= RDN [',' RDN] *

The syntax of these name components is

RDN ::= className '=' identifierValue

There is no space between RDNs; the only possible separator is a comma (",").

Note: The *className* element is not the name of the naming attribute but the name of the class. The *<identifierValue>* is processed as a string.

Observation file DTD versioning

The release of DTD used for the XML output is identified using the observation file.

The name of the DTD referred to in the XML document header includes the protocol name and the release of this DTD as shown in the following example:

```
<?xml version="1.0" standalone="no" ?>
<!DOCTYPE mdc SYSTEM "/opt/nortel/data/observation/32.401-02.dtd">
```

Performance Management Collector

Overview

Performance Management (PM) collection starts when the eNodeB is started. The PM data collector manages the PM data and also introduces the performance management framework to have enhanced PM capabilities. It retrieves the PM file from the eNodeB to the SAM. At the end of every granularity period, the eNodeB calculates PM results for the last granularity period and stores them in a file.

The performance collector provides the following functionality:

- It allows the collection of counter files from the equipment managed by SAM.
- It allows the mediation of collected counter files to make them available on the Northbound interface of the SAM system.

Part II: eNodeB TDD counters

Overview

Purpose

This part describes the eNodeB counters based on the Counter family for TDD.

Contents

Chapter 2, Call Admission Control	2-1
Chapter 3, Capacity	3-1
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2 Call Admission Control

Overview

Purpose

The following counters are generated to get information on Call Admission Control:

Contents

13801 - Call admission control request	2-2
13802 - Call admission control failure	2-5

13801 - Call admission control request

This counter provides the number of times a request to start Call Admission Control procedure (CAC) for user admission, or SRB admission or TRB admission.

Counter Information	Counter Value/Description
Counter Code	13801
Counter Type	CUMULATE
Triggering (Event)	<p>This counter is pegged when CAC checks are invoked by user admission, SRB admission or TRB admission. Take S1AP Handover request with two E-RABs as example, it is pegged with screening 'EmergencyCallAdmission' or 'NonEmergencyCallAdmission' for call admission. After CAC checks on call admission succeeds, it is pegged with screening 'SRBAdmission'. And CAC checks on SRB admission succeeds, it is pegged with screening 'LowPriorityTRBAdmission' or 'HighPriorityTRBAdmission' for the first E-RAB admission. And after CAC checks on this admission finishes, if the second E-RAB is checked, it is again pegged with screening 'LowPriorityTRBAdmission' or 'HighPriorityTRBAdmission' for the second E-RAB admission. Generally following cases are involved: - RRCConnectionRequest is received - RRCConnectionRequestComplete is received - X2/S1AP Handover Request is received - Intra-eNB inter-cell handover is triggered (target cell) - Intra-cell handover - RRCConnectionReestablishmentRequest is received - S1AP Initial Context Setup Request is received - S1AP E-RAB Setup Request is received - S1AP E-RAB Modify Request is received.</p>
Subcounters	Type of admission.

Counter Information	Counter Value/Description
	<p><i>#0: Description:</i> Emergency call admission.</p> <p><i>Suffix 3GPP:</i> NewUserAdmissionAsEmergencyCall</p> <p><i>Triggering Event:</i> A call is identified as an emergency call for CAC purposes if: - IMS VoIP EC is enabled (no matter CSFB is enabled or not): Its RRCConnectionRequest has the field EstablishmentCause set to 'emergency', or at least one of the E-RAB(s) has an ARP priority equal to PlmnIdentity::arpPriorityEmergency. - IMS VoIP EC is disabled but CSFB is enabled: During during RRC connection setup phase, the RRCConnectionRequest has the field EstablishmentCause set to 'emergency'. In other phase, its RRCConnectionRequest has the field EstablishmentCause set to 'emergency' and there is CSFB indicator. This screening is pegged, only for emergency call, when: - RRCConnectionRequest is received - X2/S1AP Handover Request is received - Incoming intra-eNB inter-cell handover is triggered - RRCConnectionReestablishment is received on non-serving cell and non-target cell.</p> <p><i>#1: Description:</i> Non-emergency call admission.</p> <p><i>Suffix 3GPP:</i> NewUserAdmissionAsNonEmergencyCall</p> <p><i>Triggering Event:</i> A call is identified as a non-emergency call for CAC purposes if it is out of above emergency call definition. This screening is pegged, only for non-emergency call, when: - RRCConnectionRequest is received - X2/S1AP Handover Request is received - Incoming intra-eNB inter-cell handover is triggered - RRCConnectionReestablishment is received on non-serving cell and non-target cell.</p> <p><i>#2: Description:</i> SRB admission.</p> <p><i>Suffix 3GPP:</i> SRBAdmission</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> Low priority TRB admission.</p> <p><i>Suffix 3GPP:</i> LowPriorityTRBAdmission</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> High priority TRB admission.</p> <p><i>Suffix 3GPP:</i> HighPriorityTRBAdmission</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	L2 Traffic - SYNC PDU
3GPP name	VS.CACRequest
Object Class	EutranCell

Counter Information	Counter Value/Description
Range	0 to $2^{32}-1$
Unit	EVENT

13802 - Call admission control failure

This counter provides the number of times a Call Admission Control procedure has failed.

Counter Information	Counter Value/Description
Counter Code	13802
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when Call Admission Control procedure for a call admission, or a SRB/TRB admission fails.
Subcounters	<p>Failure cause.</p> <p><i>#0: Description:</i> Lack of number of users per eNB for EC admission. <i>Suffix 3GPP:</i> LackOfNbOfUserPerEnbForECAdmission <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Lack of number of users per eNB for non-EC admission. <i>Suffix 3GPP:</i> LackOfNbOfUserPerEnbForNonECAdmission <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> Lack of number of users per cell for EC admission. <i>Suffix 3GPP:</i> LackOfNbOfUserPerCellForECAdmission <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> Lack of number of users per cell for non-EC admission. <i>Suffix 3GPP:</i> LackOfNbOfUserPerCellForNonECAdmission <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> Lack of number of modem UE context per cell. <i>Suffix 3GPP:</i> LackOfNbOfModemUeContextPerCell <i>Triggering Event:</i> Please refer to common triggering event (this is only checked for non-EC admission).</p> <p><i>#7: Description:</i> Lack of DL PRB resource per cell for SRB admission. <i>Suffix 3GPP:</i> LackOfDLPRBResourcePerCellForSRBAdmission <i>Triggering Event:</i> Please refer to common triggering event.</p>

Counter Information	Counter Value/Description
	<p>#8: <i>Description:</i> Lack of UL PRB resource per cell for SRB admission.</p> <p><i>Suffix 3GPP:</i> LackOfULPRBResourcePerCellForSRBAdmission</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p>#9: <i>Description:</i> Lack of number of data bearers per eNB.</p> <p><i>Suffix 3GPP:</i> LackOfNbOfDBsPerEnb</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p>#10: <i>Description:</i> Lack of number of data bearers per cell for high priority TRB admission.</p> <p><i>Suffix 3GPP:</i> LackOfNbOfDBsPerCellForHighPriorityTRBAdmission</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p>#11: <i>Description:</i> Lack of number of data bearers per cell for low priority TRB admission.</p> <p><i>Suffix 3GPP:</i> LackOfNbOfDBsPerCellForLowPriorityTRBAdmission</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p>#12: <i>Description:</i> Lack of number of data bearers per QCI group. A QCI group contains one or more QCIs. There is no limitation/restriction on the QCIs included in a group. QCI group is on cell level.</p> <p><i>Suffix 3GPP:</i> LackOfNbOfDBsPerQCIGroup</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p>#13: <i>Description:</i> Lack of number of VoIP data bearers per cell.</p> <p><i>Suffix 3GPP:</i> LackOfNbOfVoipPerCell</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p>#18: <i>Description:</i> Lack of DL PRB resource per cell for high priority TRB admission.</p> <p><i>Suffix 3GPP:</i> LackOfDLPRBResourcePerCellForHighPriorityTRBAdmission</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p>#19: <i>Description:</i> Lack of UL PRB resource per cell for high priority TRB admission.</p> <p><i>Suffix 3GPP:</i> LackOfULPRBResourcePerCellForHighPriorityTRBAdmission</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p>

Counter Information	Counter Value/Description
	<p><i>#20: Description:</i> Lack of DL PRB resource per cell for low priority TRB admission.</p> <p><i>Suffix 3GPP:</i> LackOfDLPRBResourcePerCell-ForLowPriorityTRBAdmission</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#21: Description:</i> Lack of UL PRB resource per cell for low priority TRB admission.</p> <p><i>Suffix 3GPP:</i> LackOfULPRBResourcePerCell-ForLowPriorityTRBAdmission</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	L2 Traffic - SYNC PDU
3GPP name	VS.CACFailure
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

3 Capacity

Overview

Purpose

The following counters are generated to get information on Capacity:

Contents

13204 - Number of VoIP bearers per cell	3-2
13205 - Number of GBR bearers per cell	3-3
13206 - Number of non-GBR bearers per cell	3-4
13207 - Number of bearers per cell	3-5
13208 - Number of VoIP bearers per eNodeB	3-6
13209 - Number of GBR bearers per eNodeB	3-7
13210 - Number of non-GBR bearers per eNodeB	3-8
13211 - Number of bearers per eNodeB	3-9
13212 - Number of active users per eNodeB	3-10
13213 - Downlink PRBs pool overload screened	3-11
13214 - Uplink PRBs pool overload screened	3-13
13215 - Number of active UEs in uplink per type of service	3-15
13216 - Number of active UEs in downlink per type of service	3-16
13217 - Number of bearers per cell per QCI	3-17
13218 - Number of bearers per eNodeB per QCI	3-19

13204 - Number of VoIP bearers per cell

This counter provides the average, maximum and minimum number of VoIP bearers in the cell. The average value is obtained by dividing the cumulative value of the bearers by the number of events.

Counter Information	Counter Value/Description
Counter Code	13204
Counter Type	LOAD
Triggering (Event)	This counter is triggered when a VoIP bearer is setup or released in the cell (successful or with partial failures procedures, EPC-initiated procedures, incoming and outgoing mobility procedures and generally all procedures involved in E-RABs setup and E-RABs release may trigger this counter when performing the CAC).
Subcounters	Not defined
Subfamily	Bearers
3GPP name	VS.NbVoIPBearersPerCell
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	Bearer

13205 - Number of GBR bearers per cell

This counter provides the average, maximum and minimum number of GBR bearers in the cell. The average value is obtained by dividing the cumulative value of the bearers by the number of events.

Counter Information	Counter Value/Description
Counter Code	13205
Counter Type	LOAD
Triggering (Event)	This counter is triggered when a GBR bearer is setup or released in the cell (successful or with partial failures procedures, EPC-initiated procedures, incoming and outgoing mobility procedures and generally all procedures involved in E-RABs setup and E-RABs release may trigger this counter when performing the CAC).
Subcounters	Not defined
Subfamily	Bearers
3GPP name	VS.NbGBRBearersPerCell
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	Bearer

13206 - Number of non-GBR bearers per cell

This counter provides the average, maximum and minimum number of non-GBR bearers in the cell. The average value is obtained by dividing the cumulative value of the bearers by the number of events.

Counter Information	Counter Value/Description
Counter Code	13206
Counter Type	LOAD
Triggering (Event)	This counter is triggered when a non-GBR bearer is setup or released in the cell (successful or with partial failures procedures, EPC-initiated procedures, incoming and outgoing mobility procedures and generally all procedures involved in E-RABs setup and E-RABs release may trigger this counter when performing the CAC).
Subcounters	Not defined
Subfamily	Bearers
3GPP name	VS.NbNonGBRBearersPerCell
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	Bearer

13207 - Number of bearers per cell

This counter provides the average, maximum and minimum number of bearers in the cell. The average value is obtained by dividing the cumulative value of the bearers by the number of events.

Counter Information	Counter Value/Description
Counter Code	13207
Counter Type	LOAD
Triggering (Event)	This counter is triggered when a bearer is setup or released in the cell (successful or with partial failures procedures, EPC-initiated procedures, incoming and outgoing mobility procedures and generally all procedures involved in E-RABs setup and E-RABs release may trigger this counter when performing the CAC).
Subcounters	Not defined
Subfamily	Bearers
3GPP name	VS.NbBearersPerCell
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	Bearer

13208 - Number of VoIP bearers per eNodeB

This counter provides the average, maximum and minimum number of VoIP bearers in the eNodeB. The average value is obtained by dividing the cumulative value of the bearers by the number of events.

Counter Information	Counter Value/Description
Counter Code	13208
Counter Type	LOAD
Triggering (Event)	This counter is triggered when a VoIP bearer is setup or released in the eNodeB (successful or with partial failures procedures, EPC-initiated procedures, incoming and outgoing mobility procedures and generally all procedures involved in E-RABs setup and E-RABs release may trigger this counter when performing the CAC).
Subcounters	Not defined
Subfamily	Bearers
3GPP name	VS.NbVoIPBearersPerENodeB
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Bearer

13209 - Number of GBR bearers per eNodeB

This counter provides the average, maximum and minimum number of GBR bearers in the eNodeB. The average value is obtained by dividing the cumulative value of the bearers by the number of events.

Counter Information	Counter Value/Description
Counter Code	13209
Counter Type	LOAD
Triggering (Event)	This counter is triggered when a GBR bearer is setup or released in the eNodeB (successful or with partial failures procedures, EPC-initiated procedures, incoming and outgoing mobility procedures and generally all procedures involved in E-RABs setup and E-RABs release may trigger this counter when performing the CAC).
Subcounters	Not defined
Subfamily	Bearers
3GPP name	VS.NbGBRBearersPerENodeB
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Bearer

13210 - Number of non-GBR bearers per eNodeB

This counter provides the average, maximum and minimum number of non-GBR bearers in the eNodeB. The average value is obtained by dividing the cumulative value of the bearers by the number of events.

Counter Information	Counter Value/Description
Counter Code	13210
Counter Type	LOAD
Triggering (Event)	This counter is triggered when a non-GBR bearer is setup or released in the eNodeB (successful or with partial failures procedures, EPC-initiated procedures, incoming and outgoing mobility procedures and generally all procedures involved in E-RABs setup and E-RABs release may trigger this counter when performing the CAC).
Subcounters	Not defined
Subfamily	Bearers
3GPP name	VS.NbNonGBRBearersPerENodeB
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Bearer

13211 - Number of bearers per eNodeB

This counter provides the average, maximum and minimum number of bearers in the eNodeB. The average value is obtained by dividing the cumulative value of the bearers by the number of events.

Counter Information	Counter Value/Description
Counter Code	13211
Counter Type	LOAD
Triggering (Event)	This counter is triggered when a bearer is setup or released in the eNodeB (successful or with partial failures procedures, EPC-initiated procedures, incoming and outgoing mobility procedures and generally all procedures involved in E-RABs setup and E-RABs release may trigger this counter when performing the CAC).
Subcounters	Not defined
Subfamily	Bearers
3GPP name	VS.NbBearersPerENodeB
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Bearer

13212 - Number of active users per eNodeB

This counter provides the average, maximum and minimum number of active users in the eNodeB. The average value is obtained by dividing the cumulative value of the bearers by the number of events.

Counter Information	Counter Value/Description
Counter Code	13212
Counter Type	LOAD
Triggering (Event)	The pegging of this counter is linked to procedures when CAC is accepted on context setup (+1) and when UE context is to be deleted (-1).
Subcounters	Not defined
Subfamily	Users
3GPP name	VS.NbActiveUsersPerENodeB
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	User

13213 - Downlink PRBs pool overload screened

This counter is a value counter with sampling on event occurrence. On each event occurrence: - The sample value is set to the percentage of the downlink PRBs pool occupancy if this percentage is above the MIM parameter `DLAdmissionThreshold` in `RadioCacCellMO`. This counter provides the averaged (by dividing the cumulated value by the elapsed time), maximum and minimum percentage of the downlink PRBs pool occupancy when this pool is in overload.

Counter Information	Counter Value/Description
Counter Code	13213
Counter Type	VALUE
Triggering (Event)	This counter is triggered each time that (the consumption pool has been updated when measurements were reported from modem and the DL PRB Pool occupancy is above the MIM parameter <code>DLAdmissionThreshold</code> in <code>RadioCacCellMO</code>) OR (Call Admission Control has been performed on new call or bearer admission on the cell and failed due to lack of PRB resource ' DL PRB Pool occupancy is above the MIM parameter <code>DLAdmissionThreshold</code> in <code>RadioCacCellMO</code>). The screening updated depends on the triggering event.
Subcounters	<p>Type of Event.</p> <p><i>#0: Description:</i> The consumption pool has been updated when measurements were reported from modem.</p> <p><i>Suffix 3GPP:</i> ModemReport</p> <p><i>Triggering Event:</i> Modem report received and the DL PRB Pool occupancy is above the MIM parameter <code>DLAdmissionThreshold</code> in <code>RadioCacCellMO</code>.</p> <p><i>#1: Description:</i> Call Admission Control has been performed on new call or bearer admission on the cell.</p> <p><i>Suffix 3GPP:</i> CAC</p> <p><i>Triggering Event:</i> Call Admission Control has been performed on new call or bearer admission on the cell and failed due to lack of PRB resource ' DL PRB Pool occupancy is above the MIM parameter <code>DLAdmissionThreshold</code> in <code>RadioCacCellMO</code>.</p>
Subfamily	Physical Resource Block
3GPP name	VS.DLPRBsPoolOverloadScreened
Object Class	EutranCell
Range	0 to 100

Counter Information	Counter Value/Description
Unit	%

13214 - Uplink PRBs pool overload screened

This counter is a value counter with sampling on event occurrence. On each event occurrence: - The sample value is set to the percentage of the uplink PRBs pool occupancy if this percentage is above the MIM parameter `UAdmissionThreshold` in `RadioCacCellMO`. This counter provides the averaged (by dividing the cumulated value by the elapsed time), maximum and minimum percentage of the uplink PRBs pool occupancy when this pool is in overload.

Counter Information	Counter Value/Description
Counter Code	13214
Counter Type	VALUE
Triggering (Event)	This counter is triggered each time that (the consumption pool has been updated when measurements were reported from modem and the UL PRB Pool occupancy is above the MIM parameter <code>UAdmissionThreshold</code> in <code>RadioCacCellMO</code>) OR (Call Admission Control has been performed on new call or bearer admission on the cell and failed due to lack of PRB resource ' UL PRB Pool occupancy is above the MIM parameter <code>UAdmissionThreshold</code> in <code>RadioCacCellMO</code>). The screening updated depends on the triggering event.
Subcounters	<p>Type of Event.</p> <p><i>#0: Description:</i> The consumption pool has been updated when measurements were reported from modem.</p> <p><i>Suffix 3GPP:</i> ModemReport</p> <p><i>Triggering Event:</i> Modem report received and the UL PRB Pool occupancy is above the MIM parameter <code>UAdmissionThreshold</code> in <code>RadioCacCellMO</code>.</p> <p><i>#1: Description:</i> Call Admission Control has been performed on new call or bearer admission on the cell.</p> <p><i>Suffix 3GPP:</i> CAC</p> <p><i>Triggering Event:</i> Call Admission Control has been performed on new call or bearer admission on the cell and failed due to lack of PRB resource ' UL PRB Pool occupancy is above the MIM parameter <code>UAdmissionThreshold</code> in <code>RadioCacCellMO</code>.</p>
Subfamily	Physical Resource Block
3GPP name	VS.ULPRBsPoolOverloadScreened
Object Class	EutranCell
Range	0 to 100

Counter Information	Counter Value/Description
Unit	%

13215 - Number of active UEs in uplink per type of service

This counter provides the average, maximum and minimum number of active UEs which has buffered uplink data at MAC/RLC/PDCP per QCI. The average value is obtained by dividing the cumulative value by the number of events.

Counter Information	Counter Value/Description
Counter Code	13215
Counter Type	LOAD
Triggering (Event)	This counter is triggered each sampling period. Each sampling period, the number of UEs for which there is buffered data for the UL in MAC, RLC or PDCP protocol layers for a Data Radio Bearer is added to the cumulative value of the screening corresponding to the traffic class. This is a Node B estimation that is expected to be based on Buffer Status Reporting, provided semi-persistent grants and progress of ongoing HARQ transmissions (by including buffered data for which HARQ transmission has not yet terminated in buffered data). In addition, the eNodeB can use the analysis of received data in the estimation. In such case, when QCI cannot be determined at the time of the sampling occasion, eNodeB can determine QCI after successful reception of data.
Subcounters	<p>Type of service.</p> <p><i>#0: Description:</i> Voice over IP E-RAB. <i>Suffix 3GPP:</i> VoIP <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Guaranteed Bit Rate E-RAB. <i>Suffix 3GPP:</i> OtherGBR <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> Non-GBR E-RAB. <i>Suffix 3GPP:</i> NonGBR <i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	Active users
3GPP name	VS.NbActiveUEInULPerTypeService
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	User
Notes	Counter specific TDD.

13216 - Number of active UEs in downlink per type of service

This counter provides the average, maximum and minimum number of active UEs which has buffered downlink data at MAC/RLC/PDCP per QCI. The average value is obtained by dividing the cumulative value by the number of events.

Counter Information	Counter Value/Description
Counter Code	13216
Counter Type	LOAD
Triggering (Event)	This counter is triggered each sampling period. Each sampling period, the number of UEs for which there is buffered data for the DL in MAC, RLC or PDCP protocol layers for a Data Radio Bearer is added to the cumulative value of the screening corresponding to the traffic class. In RLC and PDCP layers, buffered data corresponds to data available for transmission according to the definitions in TS 36.322 and TS 36.323. Buffered data includes data for which HARQ transmission has not yet terminated.
Subcounters	Type of service. <i>#0: Description: Voice over IP E-RAB.</i> <i>Suffix 3GPP: VoIP</i> <i>Triggering Event: Please refer to common triggering event.</i> <i>#1: Description: Guaranteed Bit Rate E-RAB.</i> <i>Suffix 3GPP: OtherGBR</i> <i>Triggering Event: Please refer to common triggering event.</i> <i>#2: Description: Non-GBR E-RAB.</i> <i>Suffix 3GPP: NonGBR</i> <i>Triggering Event: Please refer to common triggering event.</i>
Subfamily	Active users
3GPP name	VS.NbActiveUEInDLPerTypeService
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	User

13217 - Number of bearers per cell per QCI

This counter provides the average, maximum and minimum number of bearers in the cell. The average value is obtained by dividing the cumulative value of the bearers by the number of events.

Counter Information	Counter Value/Description
Counter Code	13217
Counter Type	LOAD
Triggering (Event)	This counter is triggered when a bearer is setup or released in the cell (successful or with partial failures procedures, EPC-initiated procedures, incoming and outgoing mobility procedures and generally all procedures involved in E-RABs setup and E-RABs release may trigger this counter when performing the Call Admission control (CAC) procedure.
Subcounters	<p>E-RAB QCI.</p> <p>#0: <i>Description:</i> QCI 1 bearer. <i>Suffix 3GPP:</i> QCI1 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p>#1: <i>Description:</i> QCI 2 bearer. <i>Suffix 3GPP:</i> QCI2 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p>#2: <i>Description:</i> QCI 3 bearer. <i>Suffix 3GPP:</i> QCI3 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p>#3: <i>Description:</i> QCI 4 bearer. <i>Suffix 3GPP:</i> QCI4 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p>#4: <i>Description:</i> QCI 5 bearer. <i>Suffix 3GPP:</i> QCI5 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p>#5: <i>Description:</i> QCI 6 bearer. <i>Suffix 3GPP:</i> QCI6 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p>#6: <i>Description:</i> QCI 7 bearer. <i>Suffix 3GPP:</i> QCI7 <i>Triggering Event:</i> Please refer to common triggering event.</p>

Counter Information	Counter Value/Description
	<i>#7: Description:</i> QCI 8 bearer. <i>Suffix 3GPP:</i> QCI8 <i>Triggering Event:</i> Please refer to common triggering event. <i>#8: Description:</i> QCI 9 bearer. <i>Suffix 3GPP:</i> QCI9 <i>Triggering Event:</i> Please refer to common triggering event. <i>#9: Description:</i> Customer QCIs bearer. <i>Suffix 3GPP:</i> CustomerQCIs <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	Bearers
3GPP name	VS.NbBearersPerCellPerQCI
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	Bearer

13218 - Number of bearers per eNodeB per QCI

This counter provides the average, maximum and minimum number of bearers in the eNodeB. The average value is obtained by dividing the cumulative value of the bearers by the number of events.

Counter Information	Counter Value/Description
Counter Code	13218
Counter Type	LOAD
Triggering (Event)	This counter is triggered when a bearer is setup or released in the eNodeB (successful or with partial failures procedures, EPC-initiated procedures, incoming and outgoing mobility procedures and generally all procedures involved in E-RABs setup and E-RABs release may trigger this counter when performing the Call Admission Control (CAC) procedure.
Subcounters	<p>E-RAB QCI.</p> <p><i>#0: Description:</i> QCI 1 bearer. <i>Suffix 3GPP:</i> QCI1 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> QCI 2 bearer. <i>Suffix 3GPP:</i> QCI2 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> QCI 3 bearer. <i>Suffix 3GPP:</i> QCI3 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> QCI 4 bearer. <i>Suffix 3GPP:</i> QCI4 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> QCI 5 bearer. <i>Suffix 3GPP:</i> QCI5 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#5: Description:</i> QCI 6 bearer. <i>Suffix 3GPP:</i> QCI6 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#6: Description:</i> QCI 7 bearer. <i>Suffix 3GPP:</i> QCI7 <i>Triggering Event:</i> Please refer to common triggering event.</p>

Counter Information	Counter Value/Description
	<i>#7: Description: QCI 8 bearer. Suffix 3GPP: QCI8 Triggering Event: Please refer to common triggering event. #8: Description: QCI 9 bearer. Suffix 3GPP: QCI9 Triggering Event: Please refer to common triggering event. #9: Description: Customer QCIs bearer. Suffix 3GPP: CustomerQCIs Triggering Event: Please refer to common triggering event.</i>
Subfamily	Bearers
3GPP name	VS.NbBearersPerENodeBPerQCI
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Bearer

4 E-RAB management

Overview

Purpose

The following counters are generated to get information on E-RAB management:

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12610 - Incoming E-RAB to be setup on intra-LTE handover

This counter provides the number of E-RAB establishment requested during the incoming intra-LTE handover procedures: X2AP Handover, S1AP Handover and intra-eNodeB Handover.

Counter Information	Counter Value/Description
Counter Code	12610
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered due to any of the following reasons: - X2-AP HANDOVER REQUEST is received - S1-AP HANDOVER REQUEST is received - RRC Connection Reconfiguration is sent to the UE, after performing an intra-eNodeB handover procedure.
Subcounters	<p>Requested QCI.</p> <p><i>#0: Description: QCI 1 requested.</i> <i>Suffix 3GPP: QCI1</i> <i>Triggering Event: Please refer to common triggering event.</i></p> <p><i>#1: Description: QCI 2 requested.</i> <i>Suffix 3GPP: QCI2</i> <i>Triggering Event: Please refer to common triggering event.</i></p> <p><i>#2: Description: QCI 3 requested.</i> <i>Suffix 3GPP: QCI3</i> <i>Triggering Event: Please refer to common triggering event.</i></p> <p><i>#3: Description: QCI 4 requested.</i> <i>Suffix 3GPP: QCI4</i> <i>Triggering Event: Please refer to common triggering event.</i></p> <p><i>#4: Description: QCI 5 requested.</i> <i>Suffix 3GPP: QCI5</i> <i>Triggering Event: Please refer to common triggering event.</i></p> <p><i>#5: Description: QCI 6 requested.</i> <i>Suffix 3GPP: QCI6</i> <i>Triggering Event: Please refer to common triggering event.</i></p> <p><i>#6: Description: QCI 7 requested.</i> <i>Suffix 3GPP: QCI7</i> <i>Triggering Event: Please refer to common triggering event.</i></p>

Counter Information	Counter Value/Description
	<i>#7: Description:</i> QCI 8 requested. <i>Suffix 3GPP:</i> QCI8 <i>Triggering Event:</i> Please refer to common triggering event. <i>#8: Description:</i> QCI 9 requested. <i>Suffix 3GPP:</i> QCI9 <i>Triggering Event:</i> Please refer to common triggering event. <i>#9: Description:</i> Customer QCIs requested. <i>Suffix 3GPP:</i> CustomerQCIs <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	E-RAB Setup
3GPP name	VS.IncomingERABToBeSetupOnIntraLteHO
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12611 - Incoming E-RAB setup on intra-LTE handover

This counter provides the number of E-RAB establishment performed during the incoming intra-LTE handover procedures: X2AP Handover, S1AP Handover and intra-eNodeB Handover.

Counter Information	Counter Value/Description
Counter Code	12611
Counter Type	CUMULATE
Triggering (Event)	<p>This counter is triggered due to any of the following reasons: - After a successful X2_based handover preparation procedure, RRC Reconfiguration Complete message is received and X2-AP S1 STATUS TRANSFER is consistent with the UE context if least one TRB is subject to PDCP SN status preservation and S1-AP PATH SWITCH REQUEST ACKNOWLEDGE. - After a successful S1_based handover preparation procedure, RRC Reconfiguration Complete message is received and S1-AP MME STATUS TRANSFER is consistent with the UE context if least one TRB is subject to PDCP SN status preservation. - After a successful intra-eNodeB handover preparation procedure, RRC Reconfiguration Complete message is received. Note: RRC re-establishment is not a trigger for this counter, that is, re-establishment either in prepared cell or not prepared cell.</p>
Subcounters	<p>Requested QCI.</p> <p><i>#0: Description:</i> QCI 1 requested. <i>Suffix 3GPP:</i> QCI1 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> QCI 2 requested. <i>Suffix 3GPP:</i> QCI2 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> QCI 3 requested. <i>Suffix 3GPP:</i> QCI3 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> QCI 4 requested. <i>Suffix 3GPP:</i> QCI4 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> QCI 5 requested. <i>Suffix 3GPP:</i> QCI5 <i>Triggering Event:</i> Please refer to common triggering event.</p>

Counter Information	Counter Value/Description
	<p>#5: <i>Description</i>: QCI 6 requested. <i>Suffix 3GPP</i>: QCI6 <i>Triggering Event</i>: Please refer to common triggering event.</p> <p>#6: <i>Description</i>: QCI 7 requested. <i>Suffix 3GPP</i>: QCI7 <i>Triggering Event</i>: Please refer to common triggering event.</p> <p>#7: <i>Description</i>: QCI 8 requested. <i>Suffix 3GPP</i>: QCI8 <i>Triggering Event</i>: Please refer to common triggering event.</p> <p>#8: <i>Description</i>: QCI 9 requested. <i>Suffix 3GPP</i>: QCI9 <i>Triggering Event</i>: Please refer to common triggering event.</p> <p>#9: <i>Description</i>: Customer QCIs requested. <i>Suffix 3GPP</i>: CustomerQCIs <i>Triggering Event</i>: Please refer to common triggering event.</p>
Subfamily	E-RAB Setup
3GPP name	VS.IncomingERABSetupOnIntraLteHO
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12612 - E-RAB modify request

This counter provides the number of E-RAB modify requests received from the MME. Remark: In LA3.0, 'partial failure' is supported. That is, some E-RAB may be modified and some other may be not modified. As this procedure can modify several E-RABs, it is possible that several screenings may be pegged simultaneously, or one screening can be pegged several times.

Counter Information	Counter Value/Description
Counter Code	12612
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when an E-RAB MODIFY REQUEST message is received.
Subcounters	<p>Requested QCI.</p> <p><i>#0: Description:</i> QCI 1 requested. <i>Suffix 3GPP:</i> QCI1 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> QCI 2 requested. <i>Suffix 3GPP:</i> QCI2 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> QCI 3 requested. <i>Suffix 3GPP:</i> QCI3 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> QCI 4 requested. <i>Suffix 3GPP:</i> QCI4 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> QCI 5 requested. <i>Suffix 3GPP:</i> QCI5 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#5: Description:</i> QCI 6 requested. <i>Suffix 3GPP:</i> QCI6 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#6: Description:</i> QCI 7 requested. <i>Suffix 3GPP:</i> QCI7 <i>Triggering Event:</i> Please refer to common triggering event.</p>

Counter Information	Counter Value/Description
	<i>#7: Description:</i> QCI 8 requested. <i>Suffix 3GPP:</i> QCI8 <i>Triggering Event:</i> Please refer to common triggering event. <i>#8: Description:</i> QCI 9 requested. <i>Suffix 3GPP:</i> QCI9 <i>Triggering Event:</i> Please refer to common triggering event. <i>#9: Description:</i> Customer QCIs requested. <i>Suffix 3GPP:</i> CustomerQCIs <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	E-RAB Modify
3GPP name	SAEB.ModQoSAttNbr
Object Class	EutranCell
Range	0 to 2 ³² -1
Unit	EVENT

12613 - E-RAB modify success

This counter provides the number of E-RAB modify requests that succeeded. Remark: In LA3.0, 'partial failure' is supported. That is, some E-RAB may be modified and some other may be not modified. As this procedure can modify several E-RABs, it is possible that several screenings may be pegged simultaneously, or one screening can be pegged several times.

Counter Information	Counter Value/Description
Counter Code	12613
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when an E-RAB MODIFY RESPONSE message is sent with E-RAB Modify List indicating that at least one requested E-RABs has been successfully modified.
Subcounters	<p>Requested QCI.</p> <p><i>#0: Description:</i> QCI 1 requested. <i>Suffix 3GPP:</i> QCI1 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> QCI 2 requested. <i>Suffix 3GPP:</i> QCI2 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> QCI 3 requested. <i>Suffix 3GPP:</i> QCI3 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> QCI 4 requested. <i>Suffix 3GPP:</i> QCI4 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> QCI 5 requested. <i>Suffix 3GPP:</i> QCI5 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#5: Description:</i> QCI 6 requested. <i>Suffix 3GPP:</i> QCI6 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#6: Description:</i> QCI 7 requested. <i>Suffix 3GPP:</i> QCI7 <i>Triggering Event:</i> Please refer to common triggering event.</p>

Counter Information	Counter Value/Description
	<i>#7: Description:</i> QCI 8 requested. <i>Suffix 3GPP:</i> QCI8 <i>Triggering Event:</i> Please refer to common triggering event. <i>#8: Description:</i> QCI 9 requested. <i>Suffix 3GPP:</i> QCI9 <i>Triggering Event:</i> Please refer to common triggering event. <i>#9: Description:</i> Customer QCIs requested. <i>Suffix 3GPP:</i> CustomerQCIs <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	E-RAB Modify
3GPP name	SAEB.ModQoSuccNbr
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12614 - E-RAB modify failed

This counter provides the number of E-RAB modify requests that failed Remark: In LA3.0, 'partial failure' is supported. That is, some E-RAB may be modified and some other may be not modified. As this procedure can modify several E-RABs, it is possible that several screenings may be pegged simultaneously, or one screening can be pegged several times.

Counter Information	Counter Value/Description
Counter Code	12614
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when an E-RAB MODIFY RESPONSE message is sent with E-RAB Failed to Modify List indicating that at least one requested E-RABs modify has failed.
Subcounters	<p>Failure Cause.</p> <p><i>#0: Description:</i> E-RAB modify cannot be performed due to OAM intervention. <i>Suffix 3GPP:</i> OAMIntervention <i>Triggering Event:</i> Sending of S1AP E-RAB MODIFY RESPONSE message to the MME with E-RAB Failed to Modify List and Cause = 'Miscellaneous Cause / OAM Intervention'.</p> <p><i>#1: Description:</i> Invalid E-RAB Modify Request due to Invalid IE Combination. <i>Suffix 3GPP:</i> InvalidIECombination <i>Triggering Event:</i> Sending of S1AP E-RAB MODIFY RESPONSE message to the MME with E-RAB Failed to Modify List and Cause = 'Radio Network Layer Cause / Invalid QoS Combination'.</p> <p><i>#2: Description:</i> CAC failure for E-RAB to modify requested (lack of resource). <i>Suffix 3GPP:</i> CACFailure <i>Triggering Event:</i> Sending of S1AP E-RAB MODIFY RESPONSE message to the MME with E-RAB Failed to Modify List and Cause = 'Radio Network Layer Cause / Radio Resources not Available'.</p>

Counter Information	Counter Value/Description
	<p><i>#3: Description:</i> Internal failure. <i>Suffix 3GPP:</i> InternalFailure <i>Triggering Event:</i> Sending of S1AP E-RAB MODIFY RESPONSE message to the MME with E-RAB Failed to Modify List and Cause = 'Miscellaneous Cause / Unspecified'.</p> <p><i>#4: Description:</i> Timeout (no answer from the UE). <i>Suffix 3GPP:</i> Timeout <i>Triggering Event:</i> Sending of S1AP E-RAB MODIFY RESPONSE message to the MME with E-RAB Failed to Modify List and Cause = 'Radio Network Layer Cause / Failure in the Radio Interface Procedure' due to no answer from the UE.</p> <p><i>#5: Description:</i> RRC Connection Reestablishment. <i>Suffix 3GPP:</i> RRCConnectionReestablishment <i>Triggering Event:</i> Sending of S1AP E-RAB MODIFY RESPONSE message to the MME with E-RAB Failed to Modify List and Cause = 'Radio Network Layer Cause / Failure in the Radio Interface Procedure' due to receipt of RRC Connection Reestablishment Request valid with old key.</p> <p><i>#6: Description:</i> Interaction with another procedure. <i>Suffix 3GPP:</i> InteractionWithOtherProcedure <i>Triggering Event:</i> Sending of S1AP E-RAB MODIFY RESPONSE message to the MME with E-RAB Failed to Modify List and Cause = 'Radio Network Layer Cause / Interaction with other procedure'.</p> <p><i>#7: Description:</i> Failure due to overload condition. <i>Suffix 3GPP:</i> OverloadConditionFailure <i>Triggering Event:</i> Sending of S1AP E-RAB MODIFY RESPONSE message to the MME with E-RAB Failed to Modify List and Cause = 'Radio Network Layer Cause / Radio Resources not Available' due to PRB license check failure.</p>
Subfamily	E-RAB Modify
3GPP name	SAEB.ModQoSFailNbr
Object Class	EutranCell
Range	0 to 2 ³² -1
Unit	EVENT

12615 - E-RAB release indication E-RAB released per QCI

This counter provides the number of E-RABs released in E-RAB release indication, sorted by QCI.

Counter Information	Counter Value/Description
Counter Code	12615
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when eNodeB sends E-RAB release indication to the MME.
Subcounters	<p>E-RAB QCI.</p> <p><i>#0: Description:</i> QCI 1 E-RAB. <i>Suffix 3GPP:</i> QCI1 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> QCI 2 E-RAB. <i>Suffix 3GPP:</i> QCI2 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> QCI 3 E-RAB. <i>Suffix 3GPP:</i> QCI3 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> QCI 4 E-RAB. <i>Suffix 3GPP:</i> QCI4 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> QCI 5 E-RAB. <i>Suffix 3GPP:</i> QCI5 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#5: Description:</i> QCI 6 E-RAB. <i>Suffix 3GPP:</i> QCI6 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#6: Description:</i> QCI 7 E-RAB. <i>Suffix 3GPP:</i> QCI7 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#7: Description:</i> QCI 8 E-RAB. <i>Suffix 3GPP:</i> QCI8 <i>Triggering Event:</i> Please refer to common triggering event.</p>

Counter Information	Counter Value/Description
	<i>#8: Description:</i> QCI 9 E-RAB. <i>Suffix 3GPP:</i> QCI9 <i>Triggering Event:</i> Please refer to common triggering event. <i>#9: Description:</i> CustomerQCIs E-RAB. <i>Suffix 3GPP:</i> CustomerQCIs <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	E-RAB Release
3GPP name	VS.ERABReleaseIndicationERABReleasedPerQCI
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12616 - E-RAB release indication E-RAB released per cause

This counter provides the number of E-RABs released in E-RAB release indication, sorted by cause.

Counter Information	Counter Value/Description
Counter Code	12616
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when eNodeB sends E-RAB release indication to the MME.
Subcounters	<p>Release cause.</p> <p><i>#0: Description:</i> Radio Network Layer Cause: No Radio Resources Available in Target Cell (intra-eNB Handover partial failure in TLA2.1).</p> <p><i>Suffix 3GPP:</i> NoRadioResourceAvailableInTargetCell</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Radio Network Layer Cause: Reduce load in serving cell (CAC pre-emption).</p> <p><i>Suffix 3GPP:</i> ReduceLoadInServingCell</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	E-RAB Release
3GPP name	VS.ERABReleaseIndicationERABReleasedPerCause
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12617 - E-RAB release command E-RAB requested to be released per QCI

This counter provides the number of E-RABs requested to be released in E-RAB release command, sorted by QCI.

Counter Information	Counter Value/Description
Counter Code	12617
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when eNodeB receives E-RAB release command from the MME.
Subcounters	<p>E-RAB QCI.</p> <p><i>#0: Description:</i> QCI 1 E-RAB. <i>Suffix 3GPP:</i> QCI1 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> QCI 2 E-RAB. <i>Suffix 3GPP:</i> QCI2 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> QCI 3 E-RAB. <i>Suffix 3GPP:</i> QCI3 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> QCI 4 E-RAB. <i>Suffix 3GPP:</i> QCI4 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> QCI 5 E-RAB. <i>Suffix 3GPP:</i> QCI5 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#5: Description:</i> QCI 6 E-RAB. <i>Suffix 3GPP:</i> QCI6 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#6: Description:</i> QCI 7 E-RAB. <i>Suffix 3GPP:</i> QCI7 <i>Triggering Event:</i> Please refer to common triggering event.</p>

Counter Information	Counter Value/Description
	<i>#7: Description:</i> QCI 8 E-RAB. <i>Suffix 3GPP:</i> QCI8 <i>Triggering Event:</i> Please refer to common triggering event. <i>#8: Description:</i> QCI 9 E-RAB. <i>Suffix 3GPP:</i> QCI9 <i>Triggering Event:</i> Please refer to common triggering event. <i>#9: Description:</i> CustomerQCIs E-RAB. <i>Suffix 3GPP:</i> CustomerQCIs <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	E-RAB Release
3GPP name	VS.ERABReleaseCommandERABRequestedToBeReleasedPerQCI
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12618 - E-RAB release command E-RAB requested to be released per cause

This counter provides the number of E-RABs requested to be released in E-RAB release command, sorted by cause.

Counter Information	Counter Value/Description
Counter Code	12618
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when eNodeB receives E-RAB release command from the MME.
Subcounters	Release cause. <i>#0: Description:</i> NAS Cause: Normal Release. <i>Suffix 3GPP:</i> NormalRelease <i>Triggering Event:</i> Please refer to common triggering event. <i>#1: Description:</i> NAS Cause: unspecified. <i>Suffix 3GPP:</i> Unspecified <i>Triggering Event:</i> Please refer to common triggering event. <i>#2: Description:</i> Other causes. <i>Suffix 3GPP:</i> OtherCause <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	E-RAB Release
3GPP name	VS.ERABReleaseCommandERABRequestedToBeReleasedPerCause
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12619 - E-RAB release response E-RAB release success

This counter provides the number of E-RAB that is released successfully in E-RAB release response.

Counter Information	Counter Value/Description
Counter Code	12619
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when eNodeB sends E-RAB release response to the MME.
Subcounters	Not defined
Subfamily	E-RAB Release
3GPP name	VS.ERABReleaseResponseERABReleaseSuccess
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12620 - E-RAB release response E-RAB release failure

This counter provides the number of E-RAB that failed to be released in E-RAB release response.

Counter Information	Counter Value/Description
Counter Code	12620
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when eNodeB sends E-RAB release response to the MME.
Subcounters	<p>Failure cause.</p> <p><i>#0: Description:</i> Radio Network Layer Cause: Unknown E-RAB ID. <i>Suffix 3GPP:</i> UnknownERABId <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Radio Network Layer Cause: Failure in the Radio Interface Procedure. <i>Suffix 3GPP:</i> FailureInTheRadioInterfaceProcedure <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> Radio Network Layer Cause: Radio Connection With UE Lost. <i>Suffix 3GPP:</i> RadioConnectionWithUELost <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> Miscellaneous Cause: Unspecified. <i>Suffix 3GPP:</i> Unspecified <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> X2 handover triggered. <i>Suffix 3GPP:</i> X2HandoverTriggered <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#5: Description:</i> S1 intra system Handover triggered. <i>Suffix 3GPP:</i> S1IntraSystemHandoverTriggered <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#6: Description:</i> S1 inter system Handover triggered. <i>Suffix 3GPP:</i> S1InterSystemHandoverTriggered <i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	E-RAB Release

Counter Information	Counter Value/Description
3GPP name	VS.ERABReleaseResponseERABReleaseFailure
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12621 - Incoming E-RAB to be setup on IRAT handover

This counter provides the number of E-RAB establishment requested during the incoming inter-RAT handover procedures: PS handover from UTRAN.

Counter Information	Counter Value/Description
Counter Code	12621
Counter Type	CUMULATE
Triggering (Event)	Incoming E-RAB to be setup on IRAT handover.
Subcounters	<p>Requested QCI.</p> <p><i>#0: Description:</i> QCI 1 requested. <i>Suffix 3GPP:</i> QCI1 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> QCI 2 requested. <i>Suffix 3GPP:</i> QCI2 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> QCI 3 requested. <i>Suffix 3GPP:</i> QCI3 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> QCI 4 requested. <i>Suffix 3GPP:</i> QCI4 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> QCI 5 requested. <i>Suffix 3GPP:</i> QCI5 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#5: Description:</i> QCI 6 requested. <i>Suffix 3GPP:</i> QCI6 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#6: Description:</i> QCI 7 requested. <i>Suffix 3GPP:</i> QCI7 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#7: Description:</i> QCI 8 requested. <i>Suffix 3GPP:</i> QCI8 <i>Triggering Event:</i> Please refer to common triggering event.</p>

Counter Information	Counter Value/Description
	<i>#8: Description:</i> QCI 9 requested. <i>Suffix 3GPP:</i> QCI9 <i>Triggering Event:</i> Please refer to common triggering event. <i>#9: Description:</i> Customer QCIs requested. <i>Suffix 3GPP:</i> CustomerQCIs <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	E-RAB Setup
3GPP name	VS.IncomingERABToBeSetupOnIRATHO
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12622 - Incoming E-RAB setup on IRAT handover

This counter provides the number of E-RAB establishment performed during the incoming inter-RAT handover procedures: PS handover from UTRAN.

Counter Information	Counter Value/Description
Counter Code	12622
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered due to any of the following reasons: - After a successful incoming inter-RAT handover preparation procedure, RRC Reconfiguration Complete message is received.
Subcounters	<p>Requested QCI.</p> <p><i>#0: Description:</i> QCI 1 requested. <i>Suffix 3GPP:</i> QCI1 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> QCI 2 requested. <i>Suffix 3GPP:</i> QCI2 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> QCI 3 requested. <i>Suffix 3GPP:</i> QCI3 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> QCI 4 requested. <i>Suffix 3GPP:</i> QCI4 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> QCI 5 requested. <i>Suffix 3GPP:</i> QCI5 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#5: Description:</i> QCI 6 requested. <i>Suffix 3GPP:</i> QCI6 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#6: Description:</i> QCI 7 requested. <i>Suffix 3GPP:</i> QCI7 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#7: Description:</i> QCI 8 requested. <i>Suffix 3GPP:</i> QCI8 <i>Triggering Event:</i> Please refer to common triggering event.</p>

Counter Information	Counter Value/Description
	<i>#8: Description:</i> QCI 9 requested. <i>Suffix 3GPP:</i> QCI9 <i>Triggering Event:</i> Please refer to common triggering event. <i>#9: Description:</i> Customer QCIs requested. <i>Suffix 3GPP:</i> CustomerQCIs <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	E-RAB Setup
3GPP name	VS.IncomingERABSetupOnIRATHO
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12630 - E-RAB released due to reactive load control

This counter provides the number of E-RABs released due to reactive load control.

Counter Information	Counter Value/Description
Counter Code	12630
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when E-RAB release indication is sent due to reactive load control.
Subcounters	Not defined
Subfamily	E-RAB Release
3GPP name	VS.ERABReleasedDueToReactiveLoadControl
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

5 eNodeB synchronization

Overview

Purpose

The following counters are generated to get information on eNodeB synchronization:

Contents

13404 - Errored SYNC messages received	5-2
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13404 - Errored SYNC messages received

This counter provides the number of Errored Sync messages that have been received.

Counter Information	Counter Value/Description
Counter Code	13404
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered every time an Errored Sync message is received.
Subcounters	Not defined
Subfamily	1588V2
3GPP name	VS.ErroredSyncMessagesReceived
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	EVENT

6 Interface management

Overview

Purpose

The following counters are generated to get information on Interface management:

Contents

14101 - S1 error indication by eNodeB	6-2
14102 - S1 error indication by MME	6-3

14101 - S1 error indication by eNodeB

This counter provides the number of times that a S1 Error indication message is sent by the eNodeB towards the MME.

Counter Information	Counter Value/Description
Counter Code	14101
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered on sending of S1 Error indication message towards the MME.
Subcounters	<p>Cause.</p> <p><i>#0: Description:</i> Unknown or already allocated MME UE S1AP ID. <i>Suffix 3GPP:</i> UnknownOrAlreadyAllocatedMMEUES1apId <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Unknown or already allocated eNodeB UE S1AP ID. <i>Suffix 3GPP:</i> UnknownOrAlreadyAllocatedeNodeBUES1apId <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> Unknown or already allocated pair of UE S1AP ID. <i>Suffix 3GPP:</i> UnknownOrAlreadyAllocatedPairOfUES1apId <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> Any protocol error. <i>Suffix 3GPP:</i> ProtocolError <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> All other causes. <i>Suffix 3GPP:</i> Other <i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	Error indication
3GPP name	VS.S1ErrorIndicationByENodeB
Object Class	ENBEquipment
Range	0 to 2 ³² -1
Unit	EVENT

14102 - S1 error indication by MME

This counter provides the number of times that a S1 Error indication message is received by the eNodeB from the MME.

Counter Information	Counter Value/Description
Counter Code	14102
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered on reception of S1 Error indication message from the MME.
Subcounters	<p>Cause.</p> <p><i>#0: Description:</i> Unknown or already allocated MME UE S1AP ID. <i>Suffix 3GPP:</i> UnknownOrAlreadyAllocatedMMEUES1apId <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Unknown or already allocated eNodeB UE S1AP ID. <i>Suffix 3GPP:</i> UnknownOrAlreadyAllocatedeNodeBUES1apId <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> Unknown or already allocated pair of UE S1AP ID. <i>Suffix 3GPP:</i> UnknownOrAlreadyAllocatedPairOfUES1apId <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> Any protocol error. <i>Suffix 3GPP:</i> ProtocolError <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> All other causes. <i>Suffix 3GPP:</i> Other <i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	Error indication
3GPP name	VS.S1ErrorIndicationByMME
Object Class	ENBEquipment
Range	0 to 2 ³² -1
Unit	EVENT

7 Ip transport

Overview

Purpose

The following counters are generated to get information on Ip transport:

Contents

13301 - If in octets	7-2
13302 - If in ucast pkts	7-3
13303 - If in ncast pkts	7-4
13304 - If in discards	7-5
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13306 - If in unknown protos	7-7
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13301 - If in octets

This counter provides the total number of Kbytes received on the eNodeB external GEthernet interface, including framing characters.

Counter Information	Counter Value/Description
Counter Code	13301
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when packets on the eNodeB external GEthernet interface are received.
Subcounters	Not defined
Subfamily	GEthernet interface
3GPP name	VS.IfInOctets
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	KiBytes

13302 - If in ucast pkts

This counter provides the number of subnetwork-unicast packets received on the eNodeB external GEthernet interface, delivered to a higher-layer protocol.

Counter Information	Counter Value/Description
Counter Code	13302
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when subnetwork-unicast packets received on the eNodeB external GEthernet interface are delivered to higher level protocols.
Subcounters	Not defined
Subfamily	GEthernet interface
3GPP name	VS.IfInUcastPkts
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Packet

13303 - If in nucast pkts

This counter provides the number of non-unicast (broadcast and multicast) packets received on the eNodeB external GEthernet interface, delivered to a higher-layer protocol.

Counter Information	Counter Value/Description
Counter Code	13303
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when non-unicast (broadcast and multicast) packets received on the eNodeB external GEthernet interface are delivered to higher level protocols.
Subcounters	Not defined
Subfamily	GEthernet interface
3GPP name	VS.IfInNucastPkts
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Packet

13304 - If in discards

This counter provides the number of inbound packets received on the eNodeB external GEthernet interface. These packets were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol. One possible reason for discarding such a packet could be to free up buffer space.

Counter Information	Counter Value/Description
Counter Code	13304
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when inbound packets received on the eNodeB external GEthernet interface without any error are discarded.
Subcounters	Not defined
Subfamily	GEthernet interface
3GPP name	VS.IfInDiscards
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Packet

13305 - If in errors

This counter provides the number of inbound packets received on the eNodeB external GEthernet interface. These packets contain errors preventing them from being delivered to a higher-layer protocol.

Counter Information	Counter Value/Description
Counter Code	13305
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when the inbound packets that contains errors are received on the eNodeB external GEthernet interface and are discarded.
Subcounters	Not defined
Subfamily	GEthernet interface
3GPP name	VS.IfInErrors
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Packet

13306 - If in unknown protos

This counter provides the number of inbound packets received on the eNodeB external GEthernet interface, which were discarded because of an unknown or unsupported protocol.

Counter Information	Counter Value/Description
Counter Code	13306
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when inbound packets received on the eNodeB external GEthernet interface are discarded because of an unknown or unsupported protocol.
Subcounters	Not defined
Subfamily	GEthernet interface
3GPP name	VS.IfInUnknownProtos
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Packet

13307 - If out octets

This counter provides the total number of KBytes transmitted out of the eNodeB external GEthernet interface, including framing characters.

Counter Information	Counter Value/Description
Counter Code	13307
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when the packets are transmitted out of the eNodeB external GEthernet interface.
Subcounters	Not defined
Subfamily	GEthernet interface
3GPP name	VS.IfOutOctets
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	KiBytes

13308 - If out ucast pkts

This counter provides the total number of packets that are requested by the higher-level protocols to be transmitted out of the eNodeB external G Ethernet interface to a unicast address. The packets also include those that were discarded or not sent.

Counter Information	Counter Value/Description
Counter Code	13308
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when the higher level protocol requests the packets to be transmitted out of the eNodeB external G Ethernet interface to a unicast address.
Subcounters	Not defined
Subfamily	G Ethernet interface
3GPP name	VS.IfOutUcastPkts
Object Class	ENBEquipment
Range	0 to 2 ³² -1
Unit	Packet

13309 - If out nucast pkts

This counter provides the total number of packets that are requested by the higher-level protocols to be transmitted out of the eNodeB external GEthernet interface to a non-unicast (broadcast or multicast) address. The packets also include those that were discarded or not sent.

Counter Information	Counter Value/Description
Counter Code	13309
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when the higher level protocol requests the packets to be transmitted out of the eNodeB external GEthernet interface to a non-unicast address.
Subcounters	Not defined
Subfamily	GEthernet interface
3GPP name	VS.IfOutNucastPkts
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Packet

13310 - If out discards

This counter provides the number of outbound packets chosen to be discarded even though no errors had been detected to prevent their delivery to a higher-layer protocol. One possible reason for discarding such a packet could be to free up buffer space.

Counter Information	Counter Value/Description
Counter Code	13310
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when outbound packets without any error are discarded.
Subcounters	Not defined
Subfamily	GEthernet interface
3GPP name	VS.IfOutDiscards
Object Class	ENBEquipment
Range	0 to 2 ³² -1
Unit	Packet

13311 - If out errors

This counter provides the number of outbound packets that could not be transmitted because of errors.

Counter Information	Counter Value/Description
Counter Code	13311
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when outbound packets with errors are discarded.
Subcounters	Not defined
Subfamily	GEthernet interface
3GPP name	VS.IfOutErrors
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Packet

13312 - If in link utilisation

This counter provides information to monitor the eNodeB G Ethernet link utilisation for the incoming traffic. This is the division of the bandwidth used by 1 Giga. The result is shown as a percentage with a granularity of 1%.

Counter Information	Counter Value/Description
Counter Code	13312
Counter Type	LOAD
Triggering (Event)	This counter is triggered at each sampling period. The sampling period is 1 second in LA1.1.
Subcounters	Not defined
Subfamily	GEthernet interface
3GPP name	VS.IfInLinkUtilisation
Object Class	ENBEquipment
Range	0 to 100
Unit	%

13313 - If out link utilisation

This counter provides information to monitor the eNodeB GEthernet link utilisation for the outgoing traffic. This is the division of the bandwidth used by 1 Giga. The result is shown as a percentage with a granularity of 1%.

Counter Information	Counter Value/Description
Counter Code	13313
Counter Type	LOAD
Triggering (Event)	This counter is triggered at each sampling period. The sampling period is 1 second in LA1.1.
Subcounters	Not defined
Subfamily	GEthernet interface
3GPP name	VS.IfOutLinkUtilisation
Object Class	ENBEquipment
Range	0 to 100
Unit	%

8 L1 Traffic and throughput

Overview

Purpose

The following counters are generated to get information on L1 Traffic and throughput:

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12011 - Downlink data volume with dynamic scheduling per user category

This counter provides the total amount of L1 new data sent by the downlink dynamic scheduler on PDSCH for users that have been categorized as either Frequency Diverse users or Frequency Selective users. HARQ retransmission data are not included.

Counter Information	Counter Value/Description
Counter Code	12011
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when downlink dynamic scheduler makes a scheduling decision for a new PDSCH transmission (including Transport Block Size, Resource Block Group assignment, etc) for a user bearer. Action: the total amount of downlink data sent for this user is added to the screening that corresponds to the user category (frequency diverse user or frequency selective user).
Subcounters	Category of user: Frequency Selective or Frequency Diverse user. <i>#0: Description:</i> Downlink data volume for Frequency Diverse users. <i>Suffix 3GPP:</i> FDUsers <i>Triggering Event:</i> Please refer to common triggering event. <i>#1: Description:</i> Downlink data volume for Frequency Selective users. <i>Suffix 3GPP:</i> FSUsers <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	Dynamic scheduling
3GPP name	VS.DLDataVolumeWithDynamicSchedulingPerUserCategory
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	KiBytes

12013 - Uplink data volume with dynamic scheduling per user category

This counter provides the total amount of L1 new data (useful data + padding bytes) scheduled by the uplink dynamic scheduler on PUSCH for users that have been categorized as either Frequency Diverse users or Frequency Selective users. HARQ retransmission data are not included.

Counter Information	Counter Value/Description
Counter Code	12013
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when uplink dynamic scheduler makes a scheduling decision for a new PUSCH transmission (including Transport Block Size, Resource Block Group assignment, etc) for a user bearer. Action: the total amount of uplink data received for this user is added to the screening that corresponds to the user category (frequency diverse user or frequency selective user).
Subcounters	Category of user: Frequency Selective or Frequency Diverse user. <i>#0: Description:</i> Uplink data volume for Frequency Diverse users. <i>Suffix 3GPP:</i> FDUsers <i>Triggering Event:</i> Please refer to common triggering event. <i>#1: Description:</i> Uplink data volume for Frequency Selective users. <i>Suffix 3GPP:</i> FSUsers <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	Dynamic scheduling
3GPP name	VS.ULDataVolumeWithDynamicSchedulingPerUserCategory
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	KiBytes

12015 - Downlink PRB used with dynamic scheduling per user category

This counter provides the total number of PRBs that have been assigned by the downlink dynamic scheduler on PDSCH for users that have been categorized as either Frequency Diverse users or Frequency Selective users. PRBs used for both initial packet transmissions and HARQ retransmissions are included.

Counter Information	Counter Value/Description
Counter Code	12015
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when downlink dynamic scheduler makes a scheduling decision (including Transport Block Size, Resource Block Group assignment, etc) for a user bearer. Both initial packet transmissions and HARQ retransmissions are included. Action: the total number of downlink PRBs that have been assigned for this user is added to the screening that corresponds to the user category (frequency diverse user or frequency selective user).
Subcounters	Category of user: Frequency Selective or Frequency Diverse user. <i>#0: Description:</i> Downlink number of PRBs for Frequency Diverse users. <i>Suffix 3GPP:</i> FDUsers <i>Triggering Event:</i> Please refer to common triggering event. <i>#1: Description:</i> Downlink number of PRBs for Frequency Selective users. <i>Suffix 3GPP:</i> FSUsers <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	Dynamic scheduling
3GPP name	VS.DLPRBUsedWithDynamicSchedulingPerUserCategory
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	PRB

12017 - Uplink PRB used with dynamic scheduling per user category

This counter provides the total number of PRBs that have been assigned by the uplink dynamic scheduler on PUSCH for users that have been categorized as either Frequency Diverse users or Frequency Selective users. PRBs used for both initial packet transmissions and HARQ retransmissions are included.

Counter Information	Counter Value/Description
Counter Code	12017
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when uplink dynamic scheduler makes a scheduling decision (including Transport Block Size, Resource Block Group assignment, etc) for a user bearer. Both initial packet transmissions and HARQ retransmissions are included. Action: the total number of uplink PRBs that have been assigned for this user is added to the screening that corresponds to the user category (frequency diverse user or frequency selective user).
Subcounters	Category of user: Frequency Selective or Frequency Diverse user. <i>#0: Description:</i> Uplink number of PRBs for Frequency Diverse users. <i>Suffix 3GPP:</i> FDUsers <i>Triggering Event:</i> Please refer to common triggering event. <i>#1: Description:</i> Uplink number of PRBs for Frequency Selective users. <i>Suffix 3GPP:</i> FSUsers <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	Dynamic scheduling
3GPP name	VS.ULPRBUsedWithDynamicSchedulingPerUserCategory
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	PRB

12019 - PUCCH messages per type

This counter provides the average and maximum number of PUCCH messages per type received in the cell. The average value is obtained by dividing the cumulative value of the messages by the number of events.

Counter Information	Counter Value/Description
Counter Code	12019
Counter Type	LOAD
Triggering (Event)	This counter is triggered on each TTI. On reception of each message from PUCCH, the screening related to the type of message is pegged.
Subcounters	<p>Type of message.</p> <p><i>#0: Description:</i> Number of periodic Channel Quality Indication/Precoding Matrix Indicator /Rank Indicator (format-2) that have been configured. (Physical resources on PUCCH available for transmission of CQI, PMI, RI for each UE are defined by configured information and carried in the physical Config Dedicated Information Element of the RRCConnectionReconfiguration message).</p> <p><i>Suffix 3GPP:</i> PcqiPmiRiConf</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Number of Scheduling Request that have been received.</p> <p><i>Suffix 3GPP:</i> SRRec</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> Number of Scheduling Requests that have been configured. (Physical resources on PUCCH available for transmission of scheduling requests for each UE are defined by configured information and carried in the Scheduling Request Information Element of the RRCConnectionReconfiguration message).</p> <p><i>Suffix 3GPP:</i> SRConf</p> <p><i>Triggering Event:</i> This counter is triggered every TTI and provides the total number of Scheduling Requests configured.</p>
Subfamily	Dynamic scheduling
3GPP name	VS.PUCCHMessagesPerType
Object Class	EutranCell
Range	0 to $2^{32}-1$

Counter Information	Counter Value/Description
Unit	EVENT

12020 - L1 connection request

This counter provides the total number of L1 connection requests. This Radio Frequency connection request could come along with RRC connection request or handover request or out-of 'synchronisation UE trying to come back.

Counter Information	Counter Value/Description
Counter Code	12020
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered and incremented on reception of a L1 connection request.
Subcounters	Not defined
Subfamily	PUCCH
3GPP name	VS.L1ConnectionRequest
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12023 - PUCCH channel quality indication period histogram

This counter provides the histogram on the PUCCH channel quality indication period.

Counter Information	Counter Value/Description
Counter Code	12023
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when a new L1 connection request is accepted. The screening depending on the number of subframes assigned is pegged.
Subcounters	<p>Number of subframes.</p> <p><i>#0: Description:</i> Number of L1 connection with PUCCH scheduling request period equal 20 ms or less. <i>Suffix 3GPP:</i> LE20ms <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Number of L1 connection with PUCCH scheduling request period equal 40 ms. <i>Suffix 3GPP:</i> 40ms <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> Number of L1 connection with PUCCH scheduling request period equal 80 ms. <i>Suffix 3GPP:</i> 80ms <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> Number of L1 connection with PUCCH scheduling request period greater than 80 ms. <i>Suffix 3GPP:</i> GT80ms <i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	PUCCH
3GPP name	VS.PUCCHCQIPeriodHistogram
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12024 - PUCCH scheduling request period histogram

This counter provides the histogram on the PUCCH scheduling request period.

Counter Information	Counter Value/Description
Counter Code	12024
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when a new L1 connection request is accepted. The screening depending on the number of subframes assigned is pegged.
Subcounters	<p>Number of subframes.</p> <p><i>#0: Description:</i> Number of L1 connection with PUCCH scheduling request period equal 20 ms or less. <i>Suffix 3GPP:</i> LE20ms <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Number of L1 connection with PUCCH scheduling request period equal 40 ms. <i>Suffix 3GPP:</i> 40ms <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> Number of L1 connection with PUCCH scheduling request period equal 80 ms. <i>Suffix 3GPP:</i> 80ms <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> Number of L1 connection with PUCCH scheduling request period greater than 80 ms. <i>Suffix 3GPP:</i> GT80ms <i>Triggering Event:</i> Number of L1 connection with PUCCH scheduling request period equal 20 ms or less.</p>
Subfamily	PUCCH
3GPP name	VS.PUCCHSRPeriodHistogram
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12025 - PUCCH sounding reference symbol period histogram

This counter provides the histogram on the PUCCH sounding reference symbol period.

Counter Information	Counter Value/Description
Counter Code	12025
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when a new L1 connection request is accepted. The screening depending on the number of subframes assigned is pegged.
Subcounters	<p>Number of subframes.</p> <p><i>#0: Description:</i> Number of L1 connection with PUCCH scheduling request period equal 20 ms or less. <i>Suffix 3GPP:</i> LE20ms <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Number of L1 connection with PUCCH scheduling request period equal 40 ms. <i>Suffix 3GPP:</i> 40ms <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> Number of L1 connection with PUCCH scheduling request period equal 80 ms. <i>Suffix 3GPP:</i> 80ms <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> Number of L1 connection with PUCCH scheduling request period greater than 80 ms. <i>Suffix 3GPP:</i> GT80ms <i>Triggering Event:</i> Number of L1 connection with PUCCH scheduling request period equal 20 ms or less.</p>
Subfamily	PUCCH
3GPP name	VS.PUCCHSRSPeriodHistogram
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12026 - Control format indicator usage

This counter provides the distribution of the usage of each of the three possible CFI values.

Counter Information	Counter Value/Description
Counter Code	12026
Counter Type	CUMULATE
Triggering (Event)	This counter is pegged at every sub-frame. The screening corresponding to the CFI value used for the sub-frame is incremented by 1.
Subcounters	<p>CFI value.</p> <p><i>#0: Description:</i> Number of sub-frames in which CFI was set to 1. <i>Suffix 3GPP:</i> CFI1 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Number of sub-frames in which CFI was set to 2. <i>Suffix 3GPP:</i> CFI2 <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> Number of sub-frames in which CFI was set to 3. <i>Suffix 3GPP:</i> CFI3 <i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	PDCCH
3GPP name	VS.CFIUsage
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12028 - Uplink total PRB usage

This counter provides percentage of UL Physical Resource Block usage.

$M(T) = M1(T) * 100 / P(T)$ where: M(T): Total PRB usage. Percentage of PRBs used, averaged during sampling period. Value range: 0-100% M1(T): A count of full PRB. For the UL, all PRBs allocated for transmission shall be included. P(T): Total number of PRBs available during time period T. T: The sampling period during which the measurement is performed.

Counter Information	Counter Value/Description
Counter Code	12028
Counter Type	LOAD
Triggering (Event)	This counter is triggered every sampling period (1s).
Subcounters	Not defined
Subfamily	Physical Resource Block
3GPP name	VS.ULTotalPRBUsage
Object Class	EutranCell
Range	0 to 100
Unit	%
Notes	Counter specific TDD.

12029 - Downlink total PRB usage

This counter provides percentage of DL Physical Resource Block usage.

$M(T) = M1(T) * 100 / P(T)$ where: M(T): Total PRB usage. Percentage of PRBs used, averaged during sampling period . Value range: 0-100% M1(T): A count of full PRB. For the DL, all PRBs used for transmission shall be included. P(T): Total number of PRBs available during time period T. T: The sampling period during which the measurement is performed.

Counter Information	Counter Value/Description
Counter Code	12029
Counter Type	LOAD
Triggering (Event)	This counter is triggered each sampling period (1s).
Subcounters	Not defined
Subfamily	Physical Resource Block
3GPP name	VS.DLTotalPRBUsage
Object Class	EutranCell
Range	0 to 100
Unit	%
Notes	Counter specific TDD.

12030 - Cell downlink L1 throughput load

This counter provides the average, maximum and minimum downlink throughput (including HARQ retransmissions) experienced on the L1 shared channels of the cell. The counter is sampled every 5 seconds and updated based on throughput values computed globally for every mobiles scheduled on the cell during this sampling period.

Counter Information	Counter Value/Description
Counter Code	12030
Counter Type	LOAD
Triggering (Event)	1.Trigger: MAC entity sends a MAC PDU on the L1 channel (including HARQ retransmissions). Actions: L1DIPayload += TBS 2.Trigger: Every TTI. Actions: If at least one MAC PDU has been sent on L1 channel during this TTI then nbDIL1TTI++. 3.Trigger: At the end of the sampling period (5 seconds). Actions: L1DIThroughput = (L1DIPayload / (nbDIL1TTI * ttiDuration)). L1DIPayload = 0, nbDIL1TTI = 0.
Subcounters	Not defined
Subfamily	Cell Throughput
3GPP name	VS.CellDLL1ThroughputLoad
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	kbits/s

12031 - Cell uplink L1 throughput load

This counter provides the average, maximum and minimum uplink throughput (including HARQ retransmissions) experienced on the L1 shared channels of the cell. The counter is sampled every 5 seconds and updated based on throughput values computed globally for every mobiles scheduled on the cell during this sampling period.

Counter Information	Counter Value/Description
Counter Code	12031
Counter Type	LOAD
Triggering (Event)	1.Trigger: MAC entity receives a MAC PDU on the L1 channel. Actions: L1UIPayload += TBS 2.Trigger: Every TTI. Actions: If at least one PDU has been received on L1 channel during this TTI then nbUIL1TTI++. 3.Trigger: At the end of the sampling period (5 seconds). Actions: L1UIThroughput = (L1UIPayload / (nbUIL1TTI * ttiDuration)). L1UIPayload = 0, nbUIL1TTI = 0.
Subcounters	Not defined
Subfamily	Cell Throughput
3GPP name	VS.CellULL1ThroughputLoad
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	kbits/s

12034 - Uplink PRB usage per type of service

This counter provides the average, maximum and minimum PRB usage per traffic class. It is the percentage of full or partial PRB used for transmission of uplink transport blocks. This measurement is an aggregate for all UEs in a cell, and is applicable to Dedicated Traffic Channels (DTCH).

Counter Information	Counter Value/Description
Counter Code	12034
Counter Type	LOAD
Triggering (Event)	This counter is triggered each sampling period (1s). The sampled value is: $(\text{Sum over all } S(t) \{X(t) * B(t,qci) / (B(t) * W(p))\}) * 100 / P$ where: t: A transport block that contain DTCH data. Initial transmissions and HARQ retransmissions shall be counted S(t): the set of PRBs used for transmission of transport block t W(p): The number of PRB that are currently sharing PRB p. B(t,qci): The total number of DTCH bits for DTCHs with QCI = qci, carried in transport block t. B(t): The total number of DTCH and DCCH bits carried in transport block t. X(t): as concatenation is taken into account: X(t) = 1 always. P is the number of PRBs available during the sampling period.
Subcounters	Type of service. <i>#0: Description:</i> Voice over IP E-RAB. <i>Suffix 3GPP:</i> VoIP <i>Triggering Event:</i> Please refer to common triggering event. <i>#1: Description:</i> Guaranteed Bit Rate E-RAB. <i>Suffix 3GPP:</i> OtherGBR <i>Triggering Event:</i> Please refer to common triggering event. <i>#2: Description:</i> Non-GBR E-RAB. <i>Suffix 3GPP:</i> NonGBR <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	Physical Resource Block
3GPP name	VS.ULPRBUsagePerTypeService
Object Class	EutranCell
Range	0 to 100
Unit	%
Notes	Counter specific TDD.

12035 - Downlink PRB usage per type of service

This counter provides the average, maximum and minimum PRB usage per traffic class. It is the percentage of full or partial PRB used for transmission of downlink transport blocks. This measurement is an aggregate for all UEs in a cell, and is applicable to Dedicated Traffic Channels (DTCH).

Counter Information	Counter Value/Description
Counter Code	12035
Counter Type	LOAD
Triggering (Event)	This counter is triggered each sampling period (1s). The sampled value is: $(\text{Sum over all } S(t) \{X(t) * B(t,qci) / (B(t) * W(p))\}) * 100 / P$ where: t: A transport block that contain DTCH data. Initial transmissions and HARQ retransmissions shall be counted S(t): the set of PRBs used for transmission of transport block t W(p): The number of PRB that are currently sharing PRB p. B(t,qci): The total number of DTCH bits for DTCHs with QCI = qci, carried in transport block t. B(t): The total number of DTCH and DCCH bits carried in transport block t. X(t): as concatenation is taken into account: X(t) = 1 always. P is the number of PRBs available during the sampling period.
Subcounters	Type of service. <i>#0: Description: Voice over IP E-RAB.</i> <i>Suffix 3GPP: VoIP</i> <i>Triggering Event: Please refer to common triggering event.</i> <i>#1: Description: Guaranteed Bit Rate E-RAB.</i> <i>Suffix 3GPP: OtherGBR</i> <i>Triggering Event: Please refer to common triggering event.</i> <i>#2: Description: Non-GBR E-RAB.</i> <i>Suffix 3GPP: NonGBR</i> <i>Triggering Event: Please refer to common triggering event.</i>
Subfamily	Physical Resource Block
3GPP name	VS.DLPRBUsagePerTypeService
Object Class	EutranCell
Range	0 to 100
Unit	%
Notes	Counter specific TDD.

12039 - Downlink PRB used per type of service

This counter provides the average, maximum and minimum number of downlink PRBs that have been assigned by the downlink scheduler in the cell. The counter is sampled every time frame and updated based on the number of downlink PRBs computed globally for every mobiles scheduled on the cell during this sampling period.

Counter Information	Counter Value/Description
Counter Code	12039
Counter Type	LOAD
Triggering (Event)	This counter is triggered when downlink scheduler makes a scheduling decision (including Transport Block Size, Resource Block Group assignment, etc) for a user bearer. Action: add to the sample value, the total number of downlink PRBs that have been assigned for this user.
Subcounters	Type of service. <i>#0: Description:</i> VoIP Guaranteed Bit Rate E-RAB. <i>Suffix 3GPP:</i> VoIP <i>Triggering Event:</i> Please refer to common triggering event. <i>#1: Description:</i> Non-VoIP Guaranteed Bit Rate E-RAB. <i>Suffix 3GPP:</i> OtherGBR <i>Triggering Event:</i> Please refer to common triggering event. <i>#2: Description:</i> Non-Guaranteed Bit Rate E-RAB. <i>Suffix 3GPP:</i> NonGBR <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	Physical Resource Block
3GPP name	VS.DLPRBUsedPerTypeService
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	PRB

12040 - Uplink PRB used per type of service

This counter provides the average, maximum and minimum number of uplink PRBs that have been assigned by the uplink scheduler in the cell. The counter is sampled every time frame and updated based on the number of uplink PRBs computed globally for every mobiles scheduled on the cell during this sampling period.

Counter Information	Counter Value/Description
Counter Code	12040
Counter Type	LOAD
Triggering (Event)	This counter is triggered when uplink scheduler makes a scheduling decision (including Transport Block Size, Resource Block Group assignment, etc) for a user bearer. Action: add to the sample value, the total number of uplink PRBs that have been assigned for this user.
Subcounters	Type of service. <i>#0: Description:</i> VoIP Guaranteed Bit Rate E-RAB. <i>Suffix 3GPP:</i> VoIP <i>Triggering Event:</i> Please refer to common triggering event. <i>#1: Description:</i> Non-VoIP Guaranteed Bit Rate E-RAB. <i>Suffix 3GPP:</i> OtherGBR <i>Triggering Event:</i> Please refer to common triggering event. <i>#2: Description:</i> Non-Guaranteed Bit Rate E-RAB. <i>Suffix 3GPP:</i> NonGBR <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	Physical Resource Block
3GPP name	VS.ULPRBUsedPerTypeService
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	PRB

9 L2 Traffic and throughput

Overview

Purpose

The following counters are generated to get information on L2 Traffic and throughput:

Contents

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12116 - Total count of uplink transport blocks	9-3
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12118 - Total count of downlink transport blocks	9-5
12119 - Total count of error downlink transport blocks	9-6

12112 - GBR E-RAB satisfied

This counter provides the proportion of time during which GBR E-RABs have been satisfied with their required bit rate.

Counter Information	Counter Value/Description
Counter Code	12112
Counter Type	CUMULATE
Triggering (Event)	The counter is sampled and updated every second per GBR E-RAB according to whether or not the E-RAB's throughput matches the required bit rate. Note that the counter is only updated on active periods (when the RLC SDU buffer is not empty).
Subcounters	<p>satisfied/unsatisfied.</p> <p><i>#0: Description:</i> The E-RAB's throughput matches the required bit rate.</p> <p><i>Suffix 3GPP:</i> Satisfied</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> The E-RAB's throughput does not match the required bit rate.</p> <p><i>Suffix 3GPP:</i> Unsatisfied</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	E-RAB GBR
3GPP name	VS.GBRERABsatisfied
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12116 - Total count of uplink transport blocks

This counter provides total number of transport blocks received in one cell of eNodeB, no matter right or error transport block, both included. See 3GPP TS 36.321.

Counter Information	Counter Value/Description
Counter Code	12116
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when eNodeB receives one transport block.
Subcounters	Not defined
Subfamily	Transport Block
3GPP name	VS.TotalCountOfULTransportBlocks
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12117 - Total count of error uplink transport blocks

This counter provides total number of error transport blocks received in one cell of eNodeB. See 3GPP TS 36.321.

Counter Information	Counter Value/Description
Counter Code	12117
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when eNodeB detects one Cyclic Redundancy Check error for one received transport block.
Subcounters	Not defined
Subfamily	Transport Block
3GPP name	VS.TotalCountOfErrorULTransportBlocks
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12118 - Total count of downlink transport blocks

This counter provides total number of transport blocks transmitted by eNodeB, no matter right or error transport block, both included. See 3GPP TS 36.321.

Counter Information	Counter Value/Description
Counter Code	12118
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when eNodeB transmits one transport block.
Subcounters	Not defined
Subfamily	Transport Block
3GPP name	VS.TotalCountOfDLTransportBlocks
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12119 - Total count of error downlink transport blocks

This counter provides total number of error transport blocks transmitted by eNodeB. See 3GPP TS 36.321.

Counter Information	Counter Value/Description
Counter Code	12119
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when eNodeB receives one NACK from UE.
Subcounters	Not defined
Subfamily	Transport Block
3GPP name	VS.TotalCountOfErrorDLTransportBlocks
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

10 M1 Traffic

Overview

Purpose

The following counters are generated to get information on M1 Traffic:

Contents

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14301 - M1 GTP payload Kbytes received

This counter provides, for each MBMS bearer service, the volume of M1 GTP payload received by eNodeB (expressed in Kbytes). This counter does not include in the count the GTP header.

Counter Information	Counter Value/Description
Counter Code	14301
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered at GTP SDU reception on M1 bearer.
Subcounters	Not defined
Subfamily	M1 Traffic
3GPP name	VS.M1GtpPayloadKbytesReceived
Object Class	MbmsBearerService
Range	0 to $2^{32}-1$
Unit	kBytes
Notes	Counter specific TDD.

14302 - MBMS SYNC sequences received too early

This counter provides the number of eMBMS sequences of PDU received too early at SYNC layer.

Counter Information	Counter Value/Description
Counter Code	14302
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered at reception of the first packet of each sequence received. The counter is incremented if the scheduling time is too far in the future. Such packet will be discarded to prevent from buffer overflow.
Subcounters	Not defined
Subfamily	L2 Traffic - SYNC sequence
3GPP name	VS.M1SyncSequencesReceivedTooEarly
Object Class	MbmsBearerService
Range	0 to $2^{32}-1$
Unit	Sequence
Notes	Counter specific TDD.

14303 - MBMS SYNC sequences received too late

This counter provides the number of eMBMS sequences of PDU received too late at SYNC layer.

Counter Information	Counter Value/Description
Counter Code	14303
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered at the reception of the last packet of each sequence (PDU 0 or 3) and if the scheduling time is in the past or if there is not enough time for the scheduler to process the packet.
Subcounters	Not defined
Subfamily	L2 Traffic - SYNC sequence
3GPP name	VS.M1SyncSequencesReceivedTooLate
Object Class	MbmsBearerService
Range	0 to $2^{32}-1$
Unit	Sequence
Notes	Counter specific TDD.

14304 - MBMS SYNC sequences delay

This counter provides the difference between the time given in the timestamp and the reception time for the first packet of each sequence. The modem will calculate this difference for each first packet and will return back the results. So this counter of type value allows giving the Min, the Max, the cumulative value and the Nb of events (the number of MBMS sequences received).

Counter Information	Counter Value/Description
Counter Code	14304
Counter Type	VALUE
Triggering (Event)	This counter is triggered at the reception of the first SYNC PDUs of each new sequence for the eMBMS services.
Subcounters	Not defined
Subfamily	L2 Traffic - SYNC sequence
3GPP name	VS.M1SyncSequencesDelay
Object Class	MbmsBearerService
Range	0 to $2^{32}-1$
Unit	ms
Notes	Counter specific TDD.

14305 - MBMS user packets expected by SYNC layer

This counter provides the number of eMBMS packet expected by the modem board in downlink direction related to traffic in the cell and for the eMBMS service.

Counter Information	Counter Value/Description
Counter Code	14305
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered at the reception of the last packet of a sequence (Type0 or Type3) for the eMBMS service. Inside this packet, the number of expected packets is given by the field Packet Number.
Subcounters	Not defined
Subfamily	L2 Traffic - SYNC PDU
3GPP name	VS.MbmsUserPacketsExpectedBySyncLayer
Object Class	MbmsBearerService
Range	0 to $2^{32}-1$
Unit	Packet
Notes	Counter specific TDD.

14306 - MBMS user packets received by SYNC layer

This counter gives the number of eMBMS packets received by the SYNC layer.

Counter Information	Counter Value/Description
Counter Code	14306
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when SYNC layer receives an eMBMS packet.
Subcounters	Not defined
Subfamily	L2 Traffic - SYNC PDU
3GPP name	VS.MbmsUserPacketsReceivedBySyncLayer
Object Class	MbmsBearerService
Range	0 to $2^{32}-1$
Unit	Packet
Notes	Counter specific TDD.

14307 - MBMS user packets received by RLC

This counter gives the number of eMBMS packets received by the RLC layer.

Counter Information	Counter Value/Description
Counter Code	14307
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when RLC layer receive an eMBMS packet.
Subcounters	Not defined
Subfamily	L2 Traffic - SYNC PDU
3GPP name	VS.MbmsUserPacketsReceivedByRlc
Object Class	MbmsBearerService
Range	0 to $2^{32}-1$
Unit	Packet
Notes	Counter specific TDD.

14308 - MBMS user packets dropped by RLC upon overflow

This counter gives the number of packet not scheduled due to the buffer overflow.

Counter Information	Counter Value/Description
Counter Code	14308
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when at the end of each MSP (MCCH Scheduling Period) there is some packets into the RLC buffer.
Subcounters	Not defined
Subfamily	L2 Traffic - SYNC PDU
3GPP name	VS.MbmsUserPacketsDroppedByRlcUponOverflow
Object Class	MbmsBearerService
Range	0 to $2^{32}-1$
Unit	Packet
Notes	Counter specific TDD.

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11 Mobility

Overview

Purpose

The following counters are generated to get information on Mobility:

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12716 - Redirection to GERAN

This counter provides the number of times that the procedure for an inter-RAT redirection to GERAN is required.

Counter Information	Counter Value/Description
Counter Code	12716
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when an event has been received for an inter-RAT redirection to GERAN.
Subcounters	<p>Family of event that may trigger inter-RAT redirection to GERAN.</p> <p><i>#0: Description:</i> Event B2 (LTE Serving becomes lower than threshold1_RSRP and inter RAT GERAN neighbour becomes higher than threshold2_GERAN).</p> <p><i>Suffix 3GPP:</i> MeasurementViaEventB2AndThreshold1RSRPThreshold2GERAN</p> <p><i>Triggering Event:</i> Upon receipt of event B2 (LTE Serving becomes lower than threshold1_RSRP and inter RAT GERAN neighbour becomes higher than threshold2_GERAN) and no CS fallback procedure is on-going.</p> <p><i>#1: Description:</i> Event B2 (LTE Serving becomes lower than threshold1_RSRQ and inter RAT GERAN neighbour becomes higher than threshold2_GERAN).</p> <p><i>Suffix 3GPP:</i> MeasurementViaEventB2AndThreshold1RSRQThreshold2GERAN</p> <p><i>Triggering Event:</i> Upon receipt of event B2 (LTE Serving becomes lower than threshold1_RSRQ and inter RAT GERAN neighbour becomes higher than threshold2_GERAN) and no CS fallback procedure is on-going.</p> <p><i>#2: Description:</i> Event A2 (LTE Serving becomes lower than threshold1_RSRP).</p> <p><i>Suffix 3GPP:</i> BlindViaEventA2AndThreshold1RSRP</p> <p><i>Triggering Event:</i> Upon receipt of event A2 (LTE Serving becomes lower than threshold1_RSRP) and no CS fallback procedure is on-going.</p>

Counter Information	Counter Value/Description
	<p><i>#3: Description:</i> Event A2 (LTE Serving becomes lower than threshold1_RSRQ).</p> <p><i>Suffix 3GPP:</i> BlindViaEventA2AndThreshold1RSRQ</p> <p><i>Triggering Event:</i> Upon receipt of event A2 (LTE Serving becomes lower than threshold1_RSRQ) and no CS fallback procedure is on-going.</p> <p><i>#4: Description:</i> CS Fallback Triggered.</p> <p><i>Suffix 3GPP:</i> CsFallbackTriggered</p> <p><i>Triggering Event:</i> This screening is triggered when the eNode B makes the decision to perform the redirection to GERAN. The eNodeB receives an S1AP Initial Context Setup Request or S1AP UE Context Modification Request containing the CsFallbackIndicator IE. Choice of GERAN as the target technology for CS fallback is driven by UE capabilities and operator preferences. The eNodeB may trigger the redirection to GERAN: - immediately upon reception of the Initial Context Setup Request or UE Context Modification Request - or as a fallback procedure, in different failure scenarios.</p> <p><i>#6: Description:</i> Off-load triggered upon eNodeB congestion detection. The redirection may be either measurement based using B1 (or B2 as fallback) or in blind mode.</p> <p><i>Suffix 3GPP:</i> OffLoadTriggered</p> <p><i>Triggering Event:</i> This screening is triggered when the eNode B makes the decision to perform the redirection to GERAN for off-load reason to solve eNodeB congestion.</p>
Subfamily	Redirection
3GPP name	VS.RedirectionToGeran
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12717 - Intra-cell handover attempt

This counter provides the number of times an intra-cell handover procedure has been attempted towards the cell.

Counter Information	Counter Value/Description
Counter Code	12717
Counter Type	CUMULATE
Triggering (Event)	This counter is pegged when the eNodeB application decides to trigger an intra-cell handover.
Subcounters	<p>Trigger for intra-cell handover.</p> <p><i>#0: Description:</i> Intra-cell handover due to rekeying request from MME.</p> <p><i>Suffix 3GPP:</i> Rekeying</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Intra-cell handover for KeNodeB refresh purpose.</p> <p><i>Suffix 3GPP:</i> KeNBRefresh</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> Intra-cell handover triggered during E-RAB Modify procedure.</p> <p><i>Suffix 3GPP:</i> ERABModify</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> Intra-cell handover triggered during E-RAB Setup procedure.</p> <p><i>Suffix 3GPP:</i> ERABSetup</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	HO Intra-Cell
3GPP name	VS.IntraCellHOAttempt
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12718 - Intra-cell handover success

This counter provides the number of times an intra-cell handover procedure has been successfully performed towards the cell.

Counter Information	Counter Value/Description
Counter Code	12718
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when the RrcReconfigurationComplete message is received from the UE, which indicates attachment to the cell.
Subcounters	<p>Trigger for intra-cell handover.</p> <p><i>#0: Description:</i> Intra-cell handover due to rekeying request from MME. <i>Suffix 3GPP:</i> Rekeying <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Intra-cell handover for KeNodeB refresh purpose. <i>Suffix 3GPP:</i> KeNBRefresh <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> Intra-cell handover triggered during E-RAB Modify procedure. <i>Suffix 3GPP:</i> ERABModify <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> Intra-cell handover triggered during E-RAB Setup procedure. <i>Suffix 3GPP:</i> ERABSetup <i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	HO Intra-Cell
3GPP name	VS.IntraCellHOSuccess
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12719 - Intra-cell handover re-keying failure

This counter provides the number of times an intra-cell handover re-keying procedure towards the cell has been failed.

Counter Information	Counter Value/Description
Counter Code	12719
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when the S1AP UE Context Modification Failure message is sent.
Subcounters	<p>Failure cause.</p> <p><i>#0: Description:</i> Intra-cell handover rekeying procedure failed due to an eNodeB internal failure. <i>Suffix 3GPP:</i> InternalFailure <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> No answer from the UE. <i>Suffix 3GPP:</i> Timeout <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> RRCConnectionReestablishment on the cell. <i>Suffix 3GPP:</i> RRCConnectionReestablishment <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> Integrity Protection failure detected. <i>Suffix 3GPP:</i> IntegrityFailure <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> No security algorithm selected. <i>Suffix 3GPP:</i> NoSecurityAlgorithm <i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	HO Intra-Cell
3GPP name	VS.IntraCellHORekeyingFailure
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12733 - Outgoing inter-eNodeB X2 handover abort

This counter provides the number of times an outgoing inter-eNodeB X2 handover procedure has been aborted from the cell.

Counter Information	Counter Value/Description
Counter Code	12733
Counter Type	CUMULATE
Triggering (Event)	Please refer to screening triggering events.
Subcounters	<p>Event.</p> <p><i>#0: Description:</i> Reception of RrcMeasurementReport (measId configured for mobility trigger) triggering a cascaded handover during Inter-EnodeB outgoing X2 handover procedure.</p> <p><i>Suffix 3GPP:</i> CascadedHandover</p> <p><i>Triggering Event:</i> Reception of RrcMeasurementReport (measId configured for mobility trigger).</p> <p><i>#1: Description:</i> S1AP Reset received from the MME or S1AP Reset eNodeB initiated or S1AP UE Context Release Command received from the MME (with cause other than Successful Handover).</p> <p><i>Suffix 3GPP:</i> Other</p> <p><i>Triggering Event:</i> S1AP Reset received from the MME or S1AP Reset eNodeB initiated.</p> <p><i>#2: Description:</i> Decision to perform a CS fallback.</p> <p><i>Suffix 3GPP:</i> CsFallback</p> <p><i>Triggering Event:</i> Decision to perform a CSfallback.</p> <p><i>#3: Description:</i> Inter-frequency Handover preparation cancelled upon reception of A1 event (leaving alarm conditions).</p> <p><i>Suffix 3GPP:</i> EventA1</p> <p><i>Triggering Event:</i> Reception of A1 event (leaving alarm conditions).</p> <p><i>#4: Description:</i> Reception of X2AP Reset before HO request ACK.</p> <p><i>Suffix 3GPP:</i> X2APReset</p> <p><i>Triggering Event:</i> Reception of X2AP Reset.</p>
Subfamily	HO Inter-Cell Inter-eNodeB via X2
3GPP name	VS.OutgoingInterENodeBX2HOAbort
Object Class	EutranCell

Counter Information	Counter Value/Description
Range	0 to $2^{32}-1$
Unit	EVENT

12736 - Total outgoing inter-eNodeB S1 handover abort

This counter provides the number of times that an outgoing inter-eNodeB S1 handover procedure towards the cell has been aborted.

Counter Information	Counter Value/Description
Counter Code	12736
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when there is any any event that interrupts the handover.
Subcounters	Not defined
Subfamily	HO Inter-Cell Inter-eNodeB via S1
3GPP name	VS.OutgoingInterENodeBS1HOAbortSum
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12738 - Intra-eNodeB handover abort

This counter provides the number of times an intra-eNodeB handover procedure towards the target cell has been aborted.

Counter Information	Counter Value/Description
Counter Code	12738
Counter Type	CUMULATE
Triggering (Event)	Please refer to screening triggering events.
Subcounters	<p>Event.</p> <p><i>#0: Description:</i> S1AP Reset received from the MME or S1AP Reset eNodeB initiated or Reception of S1AP UE Context Release Command.</p> <p><i>Suffix 3GPP:</i> S1APResetOrUEContextReleaseCommand</p> <p><i>Triggering Event:</i> S1AP Reset received from the MME or S1AP Reset eNodeB initiated or Reception of S1AP UE Context Release Command.</p> <p><i>#1: Description:</i> Decision to perform a CS fallback.</p> <p><i>Suffix 3GPP:</i> CsFallback</p> <p><i>Triggering Event:</i> Decision to perform a CS fallback.</p> <p><i>#2: Description:</i> Inter-frequency Handover preparation cancelled upon reception of A1 event (leaving alarm conditions).</p> <p><i>Suffix 3GPP:</i> EventA1</p> <p><i>Triggering Event:</i> Reception of A1 event (leaving alarm conditions).</p>
Subfamily	HO Inter-Cell Intra-eNodeB
3GPP name	VS.IntraENodeBHOOAbort
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12739 - Intra-cell handover KeNodeB refresh failure

This counter provides the number of times an intra-cell handover KeNodeB refresh procedure towards the cell has been failed.

Counter Information	Counter Value/Description
Counter Code	12739
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when the S1AP UE Context Modification Failure message is sent.
Subcounters	<p>Failure cause.</p> <p><i>#0: Description:</i> Intra-cell handover KeNodeB refresh procedure failed due to an eNodeB internal failure. <i>Suffix 3GPP:</i> InternalFailure <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> No answer from the UE. <i>Suffix 3GPP:</i> Timeout <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> RRCConnectionReestablishment on the cell. <i>Suffix 3GPP:</i> RRCConnectionReestablishment <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> Integrity Protection failure detected. <i>Suffix 3GPP:</i> IntegrityFailure <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> No security algorithm selected. <i>Suffix 3GPP:</i> NoSecurityAlgorithm <i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	HO Intra-Cell
3GPP name	VS.IntraCellHOKenodeBRefreshFailure
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12742 - Total intra-eNodeB handover abort

This counter provides the number of times an intra-eNodeB handover procedure towards the cell has been aborted.

Counter Information	Counter Value/Description
Counter Code	12742
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when there is any event that interrupts the handover.
Subcounters	Not defined
Subfamily	HO Inter-Cell Intra-eNodeB
3GPP name	VS.IntraENodeBHOOAbortSum
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12747 - Redirection to inter-frequency same frame structure

This counter provides the number of times that the procedure for an redirection to inter-frequency same frame structure is required.

Counter Information	Counter Value/Description
Counter Code	12747
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered by an inter-frequency same frame structure redirection.
Subcounters	<p>Family of event that may trigger such redirection.</p> <p><i>#0: Description:</i> Event A2 (LTE Serving becomes worse than threshold1_RSRP). <i>Suffix 3GPP:</i> BlindViaEventA2AndThreshold1RSRP <i>Triggering Event:</i> Upon receipt of event A2 (LTE Serving becomes worse than threshold1_RSRP).</p> <p><i>#1: Description:</i> Event A2 (LTE Serving becomes worse than threshold1_RSRQ). <i>Suffix 3GPP:</i> BlindViaEventA2AndThreshold1RSRQ <i>Triggering Event:</i> Upon receipt of event A2 (LTE Serving becomes worse than threshold1_RSRQ).</p> <p><i>#2: Description:</i> Event A3 or Event A5 (Handover fallback). <i>Suffix 3GPP:</i> EventA3OrA5 <i>Triggering Event:</i> Upon receipt of event A3 or event A5 (decision to process a redirection as handover fallback).</p> <p><i>#3: Description:</i> Off-load triggered upon eNodeB congestion detection. The redirection may be either measurement based using A4 or in blind mode. <i>Suffix 3GPP:</i> OffLoadTriggered <i>Triggering Event:</i> This screening is triggered when the eNode B makes the decision to perform the redirection to EUTRA for off-load reason to solve eNodeB congestion.</p>
Subfamily	Redirection
3GPP name	VS.RedirectionToInterFrequencySameFrameStructure
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12748 - Redirection to UTRA TDD

This counter provides the number of times that the procedure for an inter-RAT redirection to UTRA-TDD is required.

Counter Information	Counter Value/Description
Counter Code	12748
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered by an inter-RAT redirection to UTRA-TDD.
Subcounters	<p>Family of event that may trigger inter-RAT redirection to UTRA-TDD.</p> <p><i>#0: Description:</i> Event A2 (LTE Serving becomes worse than threshold1_RSRP).</p> <p><i>Suffix 3GPP:</i> BlindViaEventA2AndThreshold1RSRP</p> <p><i>Triggering Event:</i> Upon receipt of event A2 (LTE Serving becomes worse than threshold1_RSRP).</p> <p><i>#1: Description:</i> Event A2 (LTE Serving becomes worse than threshold1_RSRQ).</p> <p><i>Suffix 3GPP:</i> BlindViaEventA2AndThreshold1RSRQ</p> <p><i>Triggering Event:</i> Upon receipt of event A2 (LTE Serving becomes worse than threshold1_RSRQ).</p> <p><i>#2: Description:</i> Event B2 (LTE Serving becomes worse than threshold1_RSRP and inter RAT UTRA-TDD neighbour becomes better than threshold2_P-CCPCH_RSCP).</p> <p><i>Suffix 3GPP:</i> MeasurementViaEventB2AndThreshold1RSRPTHreshold2RSCP</p> <p><i>Triggering Event:</i> Upon receipt of event B2 (LTE Serving becomes worse than threshold1_RSRP and inter RAT UTRA-TDD neighbour becomes better than threshold2_P-CCPCH_RSCP).</p> <p><i>#3: Description:</i> Event B2 (LTE Serving becomes worse than threshold1_RSRQ and inter RAT UTRA-TDD neighbour becomes better than threshold2_P-CCPCH_RSCP).</p> <p><i>Suffix 3GPP:</i> MeasurementViaEventB2AndThreshold1RSRQThreshold2RSCP</p> <p><i>Triggering Event:</i> Upon receipt of event B2 (LTE Serving becomes worse than threshold1_RSRQ and inter RAT UTRA-TDD neighbour becomes better than threshold2_P-CCPCH_RSCP).</p>

Counter Information	Counter Value/Description
	<p>#4: Description: Both regular and emergency CS Fallback triggered.</p> <p>Suffix 3GPP: CsFallbackTriggered</p> <p>Triggering Event: This screening is triggered when the eNode B makes the decision to perform the redirection to UTRAN. The eNodeB receives an S1AP Initial Context Setup Request or S1AP UE Context Modification Request containing the CsFallbackIndicator IE. Choice of UTRAN as the target technology for CS fallback is driven by UE capabilities and operator preferences. The eNodeB may trigger the redirection to UTRAN: - immediately upon reception of the Initial Context Setup Request or UE Context Modification Request - or as a fallback procedure, in different failure scenarios.</p> <p>#5: Description: Emergency CS fallback Triggered.</p> <p>Suffix 3GPP: EmergencyCsFallbackTriggered</p> <p>Triggering Event: This screening is triggered when the eNode B makes the decision to perform the redirection to UTRAN for emergency call. The eNodeB receives an S1AP Initial Context Setup Request or S1AP UE Context Modification Request containing the CsFallbackIndicator IE. Choice of UTRAN as the target technology for emergency CS fallback is driven by UE capabilities and operator preferences. The eNodeB may trigger the redirection to UTRAN: - immediately upon reception of the Initial Context Setup Request or UE Context Modification Request - or as a fallback procedure, in different failure scenarios.</p> <p>#6: Description: Off-load triggered upon eNodeB congestion detection. The redirection may be either measurement based using B1 (or B2 as fallback) or in blind mode.</p> <p>Suffix 3GPP: OffLoadTriggered</p> <p>Triggering Event: This screening is triggered when the eNode B makes the decision to perform the redirection to UTRAN-TDD for off-load reason to solve eNodeB congestion.</p>
Subfamily	Redirection
3GPP name	VS.RedirectionToUtraTdd
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12755 - Outgoing PS handover to UTRA TDD attempt

This counter provides the number of times that an outgoing PS handover procedure has been attempted from the cell.

Counter Information	Counter Value/Description
Counter Code	12755
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when S1AP HANDOVER REQUIRED message is sent to the MME.
Subcounters	<p>Family of event that may trigger inter-RAT PS Handover to UTRA-TDD.</p> <p><i>#0: Description:</i> Event B2 (LTE Serving becomes worse than threshold1_RSRP AND Neighbour becomes better than threshold2_P-CCPCH_RSCP).</p> <p><i>Suffix 3GPP:</i> PSHOViaEventB2AndThreshold1RSRP</p> <p><i>Triggering Event:</i> Upon receipt of event B2 (LTE Serving becomes worse than threshold1_RSRP AND Neighbour becomes better than threshold2_P-CCPCH_RSCP) configured for radio or off-loading decision.</p> <p><i>#1: Description:</i> Event B2 (LTE Serving becomes worse than threshold1_RSRQ AND Neighbour becomes better than threshold2_P-CCPCH_RSCP).</p> <p><i>Suffix 3GPP:</i> PSHOViaEventB2AndThreshold1RSRQ</p> <p><i>Triggering Event:</i> Upon receipt of event B2 (LTE Serving becomes worse than threshold1_RSRQ AND Neighbour becomes better than threshold2_P-CCPCH_RSCP) configured for radio or off-loading decision.</p> <p><i>#2: Description:</i> Event B1 (UTRA-TDD neighbour becomes higher than threshold_P-CCPCH_RSCP) configured upon off-loading decision.</p> <p><i>Suffix 3GPP:</i> MeasurementViaEventB1AndThresholdRSCP</p> <p><i>Triggering Event:</i> Upon event B1 (inter RAT UTRA-TDD neighbour becomes higher than threshold_P-CCPCH_RSCP).</p>
Subfamily	HO PS
3GPP name	VS.OutgoingPSHOTOtraTddAttempt
Object Class	EutranCell
Range	0 to 2 ³² -1
Unit	EVENT

Counter Information	Counter Value/Description
Notes	Counter specific TDD.

12756 - Outgoing PS handover to UTRA TDD success

This counter provides the number of times that an outgoing PS handover procedure has been successfully performed from the cell.

Counter Information	Counter Value/Description
Counter Code	12756
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when S1AP UE CONTEXT RELEASE COMMAND message with cause 'Successful handover' is received from the MME.
Subcounters	<p>Family of event that may trigger inter-RAT PS Handover to UTRA-TDD.</p> <p><i>#0: Description:</i> Event B2 (LTE Serving becomes worse than threshold1_RSRP AND Neighbour becomes better than threshold2_P-CCPCH_RSCP).</p> <p><i>Suffix 3GPP:</i> PSHOViaEventB2AndThreshold1RSRP</p> <p><i>Triggering Event:</i> Upon receipt of event B2 (LTE Serving becomes worse than threshold1_RSRP AND Neighbour becomes better than threshold2_P-CCPCH_RSCP) configured for radio or off-loading decision.</p> <p><i>#1: Description:</i> Event B2 (LTE Serving becomes worse than threshold1_RSRQ AND Neighbour becomes better than threshold2_P-CCPCH_RSCP).</p> <p><i>Suffix 3GPP:</i> PSHOViaEventB2AndThreshold1RSRQ</p> <p><i>Triggering Event:</i> Upon receipt of event B2 (LTE Serving becomes worse than threshold1_RSRQ AND Neighbour becomes better than threshold2_P-CCPCH_RSCP) configured for radio or off-loading decision.</p> <p><i>#2: Description:</i> Event B1 (UTRA-TDD neighbour becomes higher than threshold_P-CCPCH_RSCP)</p> <p><i>Suffix 3GPP:</i> MeasurementViaEventB1AndThresholdRSCP</p> <p><i>Triggering Event:</i> Upon event B1 (inter RAT UTRA-TDD neighbour becomes higher than threshold_P-CCPCH_RSCP) configured for off-loading purpose.</p>
Subfamily	HO PS
3GPP name	VS.OutgoingPSHOTOUtraTddSuccess
Object Class	EutranCell
Range	0 to 2 ³² -1

Counter Information	Counter Value/Description
Unit	EVENT
Notes	Counter specific TDD. The S1 UE CONTEXT RELEASE COMMAND should reach the source eNodeB before TS1RELOCoverall expiry.

12757 - Total outgoing PS handover to UTRA TDD failure

This counter provides the number of times that an outgoing PS handover procedure from the cell has been failed.

Counter Information	Counter Value/Description
Counter Code	12757
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when there is any failure, including protocol errors, that makes handover impossible to perform.
Subcounters	Not defined
Subfamily	HO PS
3GPP name	VS.OutgoingPSHOTOtraTddFailureSum
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12758 - Outgoing PS handover to UTRA TDD failure

This counter provides the number of times that an outgoing PS handover procedure from the cell has been failed for some failure causes.

Counter Information	Counter Value/Description
Counter Code	12758
Counter Type	CUMULATE
Triggering (Event)	Please refer to screening triggering events.
Subcounters	<p>Failure cause.</p> <p><i>#0: Description:</i> Handover preparation failure. <i>Suffix 3GPP:</i> HOPreparationFailure <i>Triggering Event:</i> S1AP HANDOVER PREPARATION FAILURE received from the MME.</p> <p><i>#1: Description:</i> TS1RelocPrepForPSHandoverToUtra timeout. <i>Suffix 3GPP:</i> TS1RelocPrepForPSHOTOtoUtraTimeout <i>Triggering Event:</i> Expiration of TS1RelocPrepForPSHandoverToUtra timer, supervising the Handover preparation procedure (i.e. no answer from the MME).</p> <p><i>#2: Description:</i> Radio link failure. <i>Suffix 3GPP:</i> RadioLinkFailure <i>Triggering Event:</i> Radio link failure detected by the eNodeB. Counter shall be pegged only in case RL failure is detected before RrcHandoverFromEUTRACommand has been sent to the UE.</p> <p><i>#3: Description:</i> RRC connection re-establishment On the source cell: reception of RrcConnectionReestablishmentRequest in the source cell as an answer to RrcConnectionReconfiguration sent. <i>Suffix 3GPP:</i> RRCCConnectionReestablishmentOnSourceCell <i>Triggering Event:</i> Reception of RrcConnectionReestablishmentRequest.</p> <p><i>#4: Description:</i> RRC connection re-establishment on another cell: reception of RrcConnectionReestablishmentRequest in another cell as an answer to RrcConnectionReconfiguration sent. <i>Suffix 3GPP:</i> RRCCConnectionReestablishmentOnOtherCell <i>Triggering Event:</i> Reception of RrcConnectionReestablishmentRequest.</p>

Counter Information	Counter Value/Description
	<i>#5: Description:</i> TS1RelocOverallForPSHandoverToUtra timeout. <i>Suffix 3GPP:</i> TS1RelocOverallForPSHOToUtraTimeout <i>Triggering Event:</i> Expiration of TS1RelocOverall timer, supervising Handover execution procedure (i.e. no S1AP UE CONTEXT RELEASE COMMAND from the MME).
Subfamily	HO PS
3GPP name	VS.OutgoingPSHOToUtraTddFailure
Object Class	EutranCell
Range	0 to 2 ³² -1
Unit	EVENT
Notes	Counter specific TDD.

12759 - Total outgoing PS handover to UTRA TDD abort

This counter provides the number of times that an outgoing PS handover to UTRA TDD procedure towards the cell has been aborted.

Counter Information	Counter Value/Description
Counter Code	12759
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when there is any failure, including protocol errors, that makes handover impossible to perform.
Subcounters	Not defined
Subfamily	HO PS
3GPP name	VS.OutgoingPSHOToUtraTddAbortSum
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12760 - Outgoing PS handover to UTRA TDD abort

This counter provides the number of times that an outgoing PS handover to UTRA TDD procedure from the cell has been aborted.

Counter Information	Counter Value/Description
Counter Code	12760
Counter Type	CUMULATE
Triggering (Event)	Please refer to screening triggering events.
Subcounters	<p>Event.</p> <p><i>#0: Description:</i> S1AP UE Context Release Command received from the MME (with cause other than Successful Handover). <i>Suffix 3GPP:</i> S1APUEContextReleaseCommand <i>Triggering Event:</i> S1AP UE Context Release Command received from the MME.</p> <p><i>#1: Description:</i> Reception of RrcMeasurementReport (measId configured for handover trigger) triggering a cascaded handover during PS handover to UTRA TDD procedure. <i>Suffix 3GPP:</i> CascadedHandover <i>Triggering Event:</i> Reception of RrcMeasurementReport (measId configured for handover trigger).</p> <p><i>#2: Description:</i> S1AP Reset received from the MME or S1AP Reset eNodeB initiated. <i>Suffix 3GPP:</i> Other <i>Triggering Event:</i> S1AP Reset received from the MME or S1AP Reset eNodeB initiated.</p> <p><i>#3: Description:</i> Decision to perform a CS fallback. <i>Suffix 3GPP:</i> CsFallback <i>Triggering Event:</i> Decision to perform a CS fallback.</p> <p><i>#4: Description:</i> Handover preparation cancelled upon reception of A1 event (leaving alarm conditions). <i>Suffix 3GPP:</i> EventA1 <i>Triggering Event:</i> Reception of A1 event (leaving alarm conditions).</p>

Counter Information	Counter Value/Description
	<p><i>#5: Description:</i> An off-loading mobility preparation procedure is in progress. Upon partial resource allocation done by target for a non VoIP call, or non admission by target of any VoIP bearer for a VoIP call or upon triggering a procedure having higher priority, the Handover is aborted by source eNodeB.</p> <p><i>Suffix 3GPP:</i> Offloading</p> <p><i>Triggering Event:</i> An off-loading mobility preparation procedure is in progress and eNodeB sends a S1AP HANDOVER CANCEL message towards MME. This message is sent upon receipt of S1 AP HANDOVER COMMAND with partial E-RAB or upon triggering of a procedure having higher priority.</p>
Subfamily	HO PS
3GPP name	VS.OutgoingPSHOToUtraTddAbort
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12762 - Cell change order to GERAN attempt

This counter provides the number of times a cell change order to GERAN procedure has been attempted from the cell.

Counter Information	Counter Value/Description
Counter Code	12762
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when RRC-MobilityFromEUTRA message with purpose 'cellChangeOrder' has been sent to UE and no CS fallback procedure is on-going.
Subcounters	<p>Family of event that may trigger cell change order to GERAN.</p> <p><i>#0: Description:</i> Event B2 (LTE Serving becomes worse than threshold1_RSRP and inter RAT GERAN neighbour becomes better than threshold2_GERAN) and GERAN system information is available.</p> <p><i>Suffix 3GPP:</i> EventB2AndThreshold1RSRPThreshold2GERANWithNACC</p> <p><i>Triggering Event:</i> Upon receipt of event B2 (LTE Serving becomes worse than threshold1_RSRP and inter RAT GERAN neighbour becomes better than threshold2_GERAN) and cell change order with NACC to GERAN is performed (that is RRC-MobilityFromEUTRA with GERAN System Information was sent to UE) and no CS fallback procedure is on-going.</p> <p><i>#1: Description:</i> Event B2 (LTE Serving becomes worse than threshold1_RSRQ and inter RAT GERAN neighbour becomes better than threshold2_GERAN) and GERAN system information is available.</p> <p><i>Suffix 3GPP:</i> EventB2AndThreshold1RSRQThreshold2GERANWithNACC</p> <p><i>Triggering Event:</i> Upon receipt of event B2 (LTE Serving becomes worse than threshold1_RSRQ and inter RAT GERAN neighbour becomes better than threshold2_GERAN) and cell change order with NACC to GERAN is performed (that is RRC-MobilityFromEUTRA with GERAN System Information was sent to UE) and no CS fallback procedure is on-going.</p>

Counter Information	Counter Value/Description
	<p><i>#2: Description:</i> Event B2 (LTE Serving becomes worse than threshold1_RSRP and inter RAT GERAN neighbour becomes better than threshold2_GERAN) and GERAN system information is NOT available.</p> <p><i>Suffix 3GPP:</i> EventB2AndThreshold1RSRPThreshold2GERANWithoutNACC</p> <p><i>Triggering Event:</i> Upon receipt of event B2 (LTE Serving becomes worse than threshold1_RSRP and inter RAT GERAN neighbour becomes better than threshold2_GERAN) and cell change order without NACC to GERAN is performed (that is RRC-MobilityFromEUTRA without GERAN System Information was sent to UE) and no CS fallback procedure is on-going.</p> <p><i>#3: Description:</i> Event B2 (LTE Serving becomes worse than threshold1_RSRQ and inter RAT GERAN neighbour becomes better than threshold2_GERAN) and GERAN system information is NOT available.</p> <p><i>Suffix 3GPP:</i> EventB2AndThreshold1RSRQThreshold2GERANWithoutNACC</p> <p><i>Triggering Event:</i> Upon receipt of event B2 (LTE Serving becomes worse than threshold1_RSRQ and inter RAT GERAN neighbour becomes better than threshold2_GERAN) and cell change order without NACC to GERAN is performed (that is RRC-MobilityFromEUTRA without GERAN System Information was sent to UE) and no CS fallback procedure is on-going.</p> <p><i>#4: Description:</i> Event B1 (GERAN neighbour becomes higher than threshold_GERAN) and GERAN system information is available. Event configured upon off-loading decision.</p> <p><i>Suffix 3GPP:</i> MeasurementViaEventB1AndThresholdGeranWithNACC</p> <p><i>Triggering Event:</i> Upon event B1 (inter RAT GERAN neighbour becomes higher than threshold_GERAN) and cell change order with NACC to GERAN is performed (that is RRC-MobilityFromEUTRA with GERAN System Information was sent to UE).</p>

Counter Information	Counter Value/Description
	<p><i>#5: Description:</i> Event B1 (GERAN neighbour becomes higher than threshold_GERAN) and GERAN system information is NOT available. Event configured upon off-loading decision.</p> <p><i>Suffix 3GPP:</i> MeasurementViaEventB1AndThresholdGeranWithoutNACC</p> <p><i>Triggering Event:</i> Upon event B1 (inter RAT GERAN neighbour becomes higher than threshold_GERAN) and cell change order without NACC to GERAN is performed (that is RRC-MobilityFromEUTRA without GERAN System Information was sent to UE).</p>
Subfamily	Cell Change Order
3GPP name	VS.CCOToGeranAttempt
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12771 - Outgoing gap-assisted handover attempt

This counter provides the number of times that an outgoing gap-assisted handover procedure has been attempted from the cell.

Counter Information	Counter Value/Description
Counter Code	12771
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered for the gap-assisted handover when: - In intra-eNodeB handover, a cell hosted by the same eNodeB equipment has been elected by the eNodeB application as being the target of a handover procedure, from this source cell. Screening 0 is pegged. - In inter-eNodeB X2 handover, X2AP HANDOVER REQUEST message is sent to the target eNodeB. Screening 0 is pegged. - In inter-eNodeB S1 handover, S1AP HANDOVER REQUIRED message is sent to the MME. Screening 0 is pegged. - In inter-RAT handover, S1AP HANDOVER REQUIRED message is sent to the MME. Screening 1 is pegged.
Subcounters	IntraLTE or InterRAT handover. <i>#0: Description:</i> IntraLTE handover. <i>Suffix 3GPP:</i> IntraLTE <i>Triggering Event:</i> Please refer to common triggering event. <i>#1: Description:</i> InterRAT handover. <i>Suffix 3GPP:</i> InterRAT <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	HO Gap assisted
3GPP name	VS.OutgoingGapAssistedHOAttempt
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12774 - Total outgoing gap-assisted handover abort

This counter provides the number of times that an outgoing gap-assisted handover procedure has been aborted.

Counter Information	Counter Value/Description
Counter Code	12774
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when there is any abnormality, that makes gap-assisted handover impossible to perform from the cell. The screening 0 is pegged in case of intraLTE handover. and the screening 1 is pegged in case of InterRAT handover.
Subcounters	IntraLTE or InterRAT handover. <i>#0: Description:</i> IntraLTE handover. <i>Suffix 3GPP:</i> IntraLTE <i>Triggering Event:</i> Please refer to common triggering event. <i>#1: Description:</i> InterRAT handover. <i>Suffix 3GPP:</i> InterRAT <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	HO Gap assisted
3GPP name	VS.OutgoingGapAssistedHOAbortSum
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12780 - Outgoing CS fallback PS handover to UTRA FDD attempt

This counter provides the number of times that an outgoing PS handover procedure has been attempted from the cell towards UTRA FDD for the purpose of CS fallback.

Counter Information	Counter Value/Description
Counter Code	12780
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered - either on reception of RrcMeasurementReport message containing a UTRA FDD cell - or during an ongoing PS Handover, on reception of S1AP UE CONTEXT MODIFICATION REQUEST, CS Fallback Indicator = 'CS Fallback Required','Carrier (UTRAN) targeted for CSFB'equal ongoing PS HO target.
Subcounters	Not defined
Subfamily	CS fallback
3GPP name	VS.OutgoingCsFallbackPSHOTOtraFddAttempt
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12783 - Total outgoing CS fallback PS handover to UTRA FDD abort

This counter provides the number of times that an outgoing CS fallback PS handover to UTRA FDD procedure towards the cell has been aborted.

Counter Information	Counter Value/Description
Counter Code	12783
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when there is any event, that leads the eNodeB to abort the handover procedure. The following events leads to abort an handover to UTRA FDD: - S1AP UE Context Release Command received from the MME (with cause other than Successful Handover). - Expiration of maxTimeAllowedForCsfb-MobilityAttempt. - S1AP Reset received from the MME. - S1AP Reset eNodeB initiated. - 'RrcMeasurementReport (Event A2) message received from the UE. - RrcConnectionReestablishmentRequest 'received from the UE.
Subcounters	Not defined
Subfamily	CS fallback
3GPP name	VS.OutgoingCsFallbackPSHOToUtraFddAbortSum
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12784 - CS fallback cell change order to GERAN attempt

This counter provides the number of times a cell change order to GERAN procedure has been attempted from the cell for CS fallback purposes.

Counter Information	Counter Value/Description
Counter Code	12784
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered on reception of RrcMeasurementReport message containing a GERAN cell.
Subcounters	<p>Whether GERAN System Information is available for the target cell or not (NACC: Network Assisted Cell Change).</p> <p><i>#0: Description:</i> GERAN System Information is available for the target cell.</p> <p><i>Suffix 3GPP:</i> WithNACC</p> <p><i>Triggering Event:</i> Reception of RrcMeasurementReport message containing a GERAN cell for which System Information is available.</p> <p><i>#1: Description:</i> GERAN System Information is not available for the target cell.</p> <p><i>Suffix 3GPP:</i> WithoutNACC</p> <p><i>Triggering Event:</i> Reception of RrcMeasurementReport message containing a GERAN cell for which System Information is available.</p>
Subfamily	Cell Change Order
3GPP name	VS.CsFallbackCCOToGeranAttempt
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12785 - CS fallback cell change order to GERAN success

This counter provides the number of times a cell change order to GERAN procedure has been successfully performed from the cell for CS fallback purposes.

Counter Information	Counter Value/Description
Counter Code	12785
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered on reception of an S1AP UE Context Release Command message from the MME or on expiration of TmobilityFromEutraCCO timer, after triggering a Cell Change Order to GERAN for CS fallback purposes.
Subcounters	<p>Whether GERAN System Information is available for the target cell or not (NACC: Network Assisted Cell Change).</p> <p><i>#0: Description:</i> GERAN System Information is available for the target cell.</p> <p><i>Suffix 3GPP:</i> WithNACC</p> <p><i>Triggering Event:</i> Reception of RrcMeasurementReport message containing a GERAN cell for which System Information is available.</p> <p><i>#1: Description:</i> GERAN System Information is not available for the target cell.</p> <p><i>Suffix 3GPP:</i> WithoutNACC</p> <p><i>Triggering Event:</i> Reception of RrcMeasurementReport message containing a GERAN cell for which System Information is available.</p>
Subfamily	Cell Change Order
3GPP name	VS.CsFallbackCCOToGeranSuccess
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12786 - Total CS fallback cell change order to GERAN failure

This counter provides the number of times a cell change order to GERAN procedure from the cell for CS fallback has failed.

Counter Information	Counter Value/Description
Counter Code	12786
Counter Type	CUMULATE
Triggering (Event)	Any failure making impossible to perform cell change order without NACC to GERAN. The following events indicate a Cell Change Order failure: - RRC Re-establishment in one of the cells of the eNodeB if it occurs after RrcHandoverFromEUTRACommand has been sent to the UE.
Subcounters	<p>Whether GERAN System Information is available for the target cell or not (NACC: Network Assisted Cell Change).</p> <p><i>#0: Description:</i> Total cell change order with NACC to GERAN failure: Number of times a cell change order with NACC to GERAN procedure from the cell has failed.</p> <p><i>Suffix 3GPP:</i> WithNACC</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Total cell change order without NACC to GERAN failure: Number of times a cell change order without NACC to GERAN procedure from the cell has failed.</p> <p><i>Suffix 3GPP:</i> WithoutNACC</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	Cell Change Order
3GPP name	VS.CsFallbackCCOToGeranFailureSum
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12795 - Intra-cell handover failure during E-RAB modify

This counter provides the number of times an intra-cell handover triggered during E-RAB Modify procedure towards the cell has been failed.

Counter Information	Counter Value/Description
Counter Code	12795
Counter Type	CUMULATE
Triggering (Event)	When the RrcConnectionReestablishmentRequest message is received from the UE.
Subcounters	Not defined
Subfamily	HO Intra-Cell
3GPP name	VS.IntraCellHOFailureDuringERABModify
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12796 - Intra-cell handover failure during E-RAB setup

This counter provides the number of times an intra-cell handover triggered during E-RAB Setup procedure towards the cell has been failed.

Counter Information	Counter Value/Description
Counter Code	12796
Counter Type	CUMULATE
Triggering (Event)	When the RrcConnectionReestablishmentRequest message is received from the UE.
Subcounters	Not defined
Subfamily	HO Intra-Cell
3GPP name	VS.IntraCellHOFailureDuringERABSetup
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12797 - Incoming PS handover from UTRAN attempt

This counter provides the number of times that an incoming PS handover from UTRA procedure has been attempted to the cell.

Counter Information	Counter Value/Description
Counter Code	12797
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when S1AP HANDOVER REQUEST message with handover type 'UTRANtoLTE' received from the MME.
Subcounters	Not defined
Subfamily	Incoming PS handover from UTRA
3GPP name	VS.IncomingPSHOFromUtranAttempt
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12798 - Incoming PS handover from UTRAN preparation success

This counter provides the number of times that an incoming PS handover from UTRA preparation procedure has been successfully performed to the cell.

Counter Information	Counter Value/Description
Counter Code	12798
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when the S1 HANDOVER REQUEST ACKNOWLEDGE message is sent to the MME.
Subcounters	Not defined
Subfamily	Incoming PS handover from UTRA
3GPP name	VS.IncomingPSHOFromUtranPreparationSuccess
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12799 - Incoming PS handover from UTRAN success

This counter provides the number of times that an incoming PS handover from UTRA procedure has been successfully performed from the cell.

Counter Information	Counter Value/Description
Counter Code	12799
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when the RRC Connection Reconfiguration Complete (HO complete) message is received from UE.
Subcounters	Not defined
Subfamily	Incoming PS handover from UTRA
3GPP name	VS.IncomingPSHOFromUtranSuccess
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12801 - Total incoming PS handover from UTRAN failure

This counter provides the number of times that an incoming PS handover procedure has been failed to the cell.

Counter Information	Counter Value/Description
Counter Code	12801
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when there is any failure, including protocol errors, that makes handover impossible to perform.
Subcounters	Not defined
Subfamily	Incoming PS handover from UTRA
3GPP name	VS.IncomingPSHOFromUtranFailureSum
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12804 - Incoming PS handover from UTRAN failure

This counter provides the number of times that an incoming PS handover from UTRAN procedure has failed to the cell for some failure causes.

Counter Information	Counter Value/Description
Counter Code	12804
Counter Type	CUMULATE
Triggering (Event)	Please refer to screening triggering events.
Subcounters	<p>Failure cause.</p> <p><i>#0: Description:</i> Mobility cannot be performed by Target eNodeB due to OAM intervention including: Incoming PS handover is not allowed in the target cell. (under ActivationService), the target cell is barred.</p> <p><i>Suffix 3GPP:</i> InterventionOAM</p> <p><i>Triggering Event:</i> Reception of S1AP HANDOVER REQUEST message from the MME and a problem in 'Description' is true.</p> <p><i>#1: Description:</i> CAC failure for all E-RABs.</p> <p><i>Suffix 3GPP:</i> CACFailure</p> <p><i>Triggering Event:</i> S1AP Handover request from the MME cannot be answered because a lack of resources.</p> <p><i>#2: Description:</i> Internal failure.</p> <p><i>Suffix 3GPP:</i> InternalFailure</p> <p><i>Triggering Event:</i> S1 AP Handover request from the MME cannot be answered due to eNodeB internal failure.</p> <p><i>#3: Description:</i> interRATIncomingHo timeout.</p> <p><i>Suffix 3GPP:</i> interRATIncomingHoTimeout</p> <p><i>Triggering Event:</i> Expiration of interRATIncomingHo timer, no RrcConnectionReconfigurationComplete message is received from the UE.</p> <p><i>#4: Description:</i> Security algorithm cannot be selected because none can match UE security capabilities.</p> <p><i>Suffix 3GPP:</i> SecurityAlgoNotCompatible</p> <p><i>Triggering Event:</i> Reception of S1AP HANDOVER REQUEST message from the MME when security algorithms supported by eNodeB are not compatible with security algorithms supported by UE.</p>

Counter Information	Counter Value/Description
	<p><i>#5: Description:</i> RRC connection re-establishment on the target cell.</p> <p><i>Suffix 3GPP:</i> RRCConnectionReestablishmentOnTargetCell</p> <p><i>Triggering Event:</i> Reception of RrcConnectionReestablishmentRequest in the target cell before reception of RRC Connection Reconfiguration Complete.</p> <p><i>#6: Description:</i> Integrity verification is failed on the first UL RRC message received on SRB1 (RRC Connection Reconfiguration Complete) or SRB2.</p> <p><i>Suffix 3GPP:</i> IntegrityFailure</p> <p><i>Triggering Event:</i> Detection of integrity failure on the first received UL RRC message.</p> <p><i>#7: Description:</i> RRC connection re-establishment on another cell of the target eNodeB.</p> <p><i>Suffix 3GPP:</i> RRCConnectionReestablishmentOnOtherCell</p> <p><i>Triggering Event:</i> Reception of RrcConnectionReestablishmentRequest in another cell of the target eNodeB before reception of RRC Connection Reconfiguration Complete.</p> <p><i>#8: Description:</i> The operational state of the cell is unavailable (due to cell outage or due to cell lock or cell is barred).</p> <p><i>Suffix 3GPP:</i> CellNotAvailable</p> <p><i>Triggering Event:</i> Handover procedure failed due to problem in description.</p>
Subfamily	Incoming PS handover from UTRA
3GPP name	VS.IncomingPSHOFromUtranFailure
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12805 - Total incoming PS handover from UTRAN abort

This counter provides the total number of times that an incoming PS handover procedure towards the cell has been aborted.

Counter Information	Counter Value/Description
Counter Code	12805
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when there is any event that interrupts the handover.
Subcounters	Not defined
Subfamily	Incoming PS handover from UTRA
3GPP name	VS.IncomingPSHOFromUtranAbortSum
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12808 - Incoming PS handover from UTRAN abort

This counter provides the number of times that an incoming PS handover procedure towards the cell has been aborted.

Counter Information	Counter Value/Description
Counter Code	12808
Counter Type	CUMULATE
Triggering (Event)	Please refer to screening triggering events.
Subcounters	Event. <i>#0: Description:</i> Reception of S1AP UE Context Release Command during incoming PS handover from UTRA procedure. <i>Suffix 3GPP:</i> S1APUEContextReleaseCommand <i>Triggering Event:</i> S1AP UE Context Release Command received from the MME (with cause other than Successful Handover).
Subfamily	Incoming PS handover from UTRA
3GPP name	VS.IncomingPSHOFromUtranAbort
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12842 - Total intra-eNodeB handover abort screened

This counter provides the number of times an intra-eNodeB handover procedure towards the cell has been aborted.

Counter Information	Counter Value/Description
Counter Code	12842
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when there is any event that interrupts the handover.
Subcounters	Frequency of serving cell and target cell. <i>#0: Description:</i> Frequency of serving cell and target cell are different, but both are FDD frequency, or TDD frequency. <i>Suffix 3GPP:</i> InterFreqSameFrameStructure <i>Triggering Event:</i> Refer to the common triggering event.
Subfamily	HO Inter-Cell Intra-eNodeB
3GPP name	VS.IntraENodeBHOAbortScreenedSum
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12859 - Enhanced redirection to GERAN

This counter provides the number of times that the procedure for an inter-RAT enhanced redirection to GERAN is required.

Counter Information	Counter Value/Description
Counter Code	12859
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when an event has been received for an inter-RAT enhanced redirection to GERAN.
Subcounters	<p>Family of event that may trigger inter-RAT enhanced redirection to GERAN.</p> <p><i>#0: Description:</i> Event B2 (LTE Serving becomes lower than threshold1_RSRP and inter RAT GERAN neighbour becomes higher than threshold2_GERAN).</p> <p><i>Suffix 3GPP:</i> MeasurementViaEventB2AndThreshold1RSRPThreshold2GERAN</p> <p><i>Triggering Event:</i> Upon receipt of event B2 (LTE Serving becomes lower than threshold1_RSRP and inter RAT GERAN neighbour becomes higher than threshold2_GERAN) and no CS fallback procedure is on-going.</p> <p><i>#1: Description:</i> Event B2 (LTE Serving becomes lower than threshold1_RSRQ and inter RAT GERAN neighbour becomes higher than threshold2_GERAN).</p> <p><i>Suffix 3GPP:</i> MeasurementViaEventB2AndThreshold1RSRQThreshold2GERAN</p> <p><i>Triggering Event:</i> Upon receipt of event B2 (LTE Serving becomes lower than threshold1_RSRQ and inter RAT GERAN neighbour becomes higher than threshold2_GERAN) and no CS fallback procedure is on-going.</p>

Counter Information	Counter Value/Description
	<p>#2: Description: Both regular and emergency CS Fallback triggered.</p> <p>Suffix 3GPP: CsFallbackTriggered</p> <p>Triggering Event: This screening is triggered when the eNode B makes the decision to perform the enhanced redirection to GERAN. The eNodeB receives an S1AP Initial Context Setup Request or S1AP UE Context Modification Request containing the CsFallbackIndicator IE. Choice of GERAN as the target technology for CS fallback is driven by UE capabilities and operator preferences. The eNodeB may trigger the enhanced redirection to GERAN: - immediately upon reception of the Initial Context Setup Request or UE Context Modification Request - or as a fallback procedure, in different failure scenarios.</p> <p>#3: Description: Emergency CS fallback Triggered.</p> <p>Suffix 3GPP: EmergencyCsFallbackTriggered</p> <p>Triggering Event: This screening is triggered when the eNode B makes the decision to perform the enhanced redirection to GERAN for emergency call. The eNodeB receives an S1AP Initial Context Setup Request or S1AP UE Context Modification Request containing the CsFallbackIndicator IE. Choice of GERAN as the target technology for emergency CS fallback is driven by UE capabilities and operator preferences. The eNodeB may trigger the enhanced redirection to GERAN: - immediately upon reception of the Initial Context Setup Request or UE Context Modification Request - or as a fallback procedure, in different failure scenarios.</p> <p>#4: Description: Off-load triggered upon eNodeB congestion detection. The redirection may be either measurement based using B1 (or B2 as fallback) or in blind mode.</p> <p>Suffix 3GPP: OffLoadTriggered</p> <p>Triggering Event: This screening is triggered when the eNode B makes the decision to perform the redirection to GERAN for off-load reason to solve eNodeB congestion.</p>
Subfamily	Redirection
3GPP name	VS.EnhancedRedirectionToGeran
Object Class	EutranCell
Range	0 to 2 ³² -1
Unit	EVENT

12877 - Total outgoing emergency CS fallback PS handover to UTRA TDD abort

This counter provides the number of times that an outgoing emergency CS fallback PS handover to UTRA TDD procedure towards the cell has been aborted.

Counter Information	Counter Value/Description
Counter Code	12877
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when there is any event, that leads the eNodeB to abort the handover procedure. The following events leads to abort an handover to UTRA TDD: - S1AP UE Context Release Command received from the MME (with cause other than Successful Handover). - Expiration of maxTimeAllowedForCsfb-MobilityAttempt. - S1AP Reset received from the MME. - S1AP Reset eNodeB initiated. -RrcMeasurementReport (Event A2) message received from the UE.
Subcounters	Not defined
Subfamily	CS fallback
3GPP name	VS.OutgoingEmergencyCsFallbackPSHOToUtraTddAbortSum
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12878 - Outgoing emergency CS fallback PS handover to UTRA TDD attempt

This counter provides the number of times that an outgoing PS handover procedure has been attempted from the cell towards UTRA TDD for the purpose of emergency CS fallback.

Counter Information	Counter Value/Description
Counter Code	12878
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered - either on reception of RrcMeasurementReport message containing a UTRA TDD cell - or during an ongoing PS Handover, on reception of S1AP UE CONTEXT MODIFICATION REQUEST, CS Fallback Indicator = 'CS Fallback Required','Carrier (UTRAN) targeted for CSFB'equal ongoing PS HO target.
Subcounters	Not defined
Subfamily	CS fallback
3GPP name	VS.OutgoingEmergencyCsFallbackPSHOToUtraTddAttempt
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12890 - Outgoing inter-eNodeB S1 handover abort per handover reason

This counter provides the number of times that an outgoing inter-eNodeB S1 handover procedure towards the cell has been aborted.

Counter Information	Counter Value/Description
Counter Code	12890
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when there is any event that interrupts the handover.
Subcounters	Handover reason. <i>#0: Description:</i> S1 Handover was triggered for radio reason <i>Suffix 3GPP:</i> Radio <i>Triggering Event:</i> Refer to the common triggering event. <i>#1: Description:</i> S1 Handover was triggered for off-loading reason upon eNodeB reactive load control decision. <i>Suffix 3GPP:</i> OffLoading <i>Triggering Event:</i> Refer to the common triggering event.
Subfamily	HO Inter-Cell Inter-eNodeB via S1
3GPP name	VS.OutgoingInterENodeBS1HOAbortPerHOReason
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12891 - Off-loading success

This counter provides the number of times an off-loading mobility of a call is successful, i.e UE leaves the congested cell or the congested band or the congested eNodeB upon: completion of an inter-frequency or inter-RAT mobility procedure triggered for off-loading reason CSFB completion intra-frequency mobility triggered for radio reason UE context release.

Counter Information	Counter Value/Description
Counter Code	12891
Counter Type	CUMULATE
Triggering (Event)	Receipt of one of the following message Completion of redirection mobility or UE context release: S1AP UE CONTEXT RELEASE COMMAND message with cause normal release. Completion of outgoing eNodeB mobility over S1: S1AP UE CONTEXT RELEASE COMMAND message with cause Successful handover is received from the MME. Expiration of Tmobility-FromEutraCCO timer Completion of outgoing eNodeB mobility over X2: X2AP UE CONTEXT RELEASE message is received from the target eNodeB. Mobility timers expiry. Please also refer to screening triggering events.
Subcounters	Event. <i>#0: Description:</i> Off-loading was triggered by reactive load control. <i>Suffix 3GPP:</i> ReactiveLoadControl <i>Triggering Event:</i> Off-loading was triggered by reactive load control.
Subfamily	Common Mobility Management Framework
3GPP name	VS.OffLoadingSuccess
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12892 - Off-loading failure

This counter provides the number of times an off-loading mobility of a call failed, i.e UE doesn't leave the congested cell or the congested band or the congested eNodeB. The reasons may be: off-load not started due to MIM, UE capabilities reasons, off-load timer timeout, handover preparation failure (S1, X2), handover preparation with partial failure, Interrupting procedure does not move the UE or doesn't respect the congestion level.

Counter Information	Counter Value/Description
Counter Code	12892
Counter Type	CUMULATE
Triggering (Event)	Off-loading mobility is either not launched, failed or is interrupted by another procedure which doesn't solve the congestion situation. Please refer to screening triggering events.
Subcounters	Event. <i>#0: Description:</i> Off-loading was triggered by reactive load control. <i>Suffix 3GPP:</i> ReactiveLoadControl <i>Triggering Event:</i> Off-loading was triggered by reactive load control.
Subfamily	Common Mobility Management Framework
3GPP name	VS.OffLoadingFailure
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12893 - Outgoing inter-eNodeB X2 handover abort per handover reason

This counter provides the number of times an outgoing inter-eNodeB X2 handover procedure towards the cell has been aborted.

Counter Information	Counter Value/Description
Counter Code	12893
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when there is any event that interrupts the handover.
Subcounters	Handover reason. <i>#0: Description:</i> X2 Handover was triggered for radio reason <i>Suffix 3GPP:</i> Radio <i>Triggering Event:</i> Refer to the common triggering event. <i>#1: Description:</i> X2 Handover was triggered for off-loading reason upon eNodeB reactive load control decision. <i>Suffix 3GPP:</i> OffLoadingForReactiveLoadControl <i>Triggering Event:</i> Refer to the common triggering event.
Subfamily	HO Inter-Cell Inter-eNodeB via X2
3GPP name	VS.OutgoingInterENodeBX2HOAbortPerHOREason
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12895 - Outgoing CS fallback PS handover to UTRA TDD attempt

This counter provides the number of times that an outgoing regular or emergency PS handover procedure has been attempted from the cell towards UTRA TDD for the purpose of CS fallback.

Counter Information	Counter Value/Description
Counter Code	12895
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered - either on reception of RrcMeasurementReport message containing a UTRA TDD cell - or during an ongoing PS Handover, on reception of S1AP UE CONTEXT MODIFICATION REQUEST, CS Fallback Indicator = 'CS Fallback Required','Carrier (UTRAN) targeted for CSFB'equal ongoing PS HO target.
Subcounters	Not defined
Subfamily	CS fallback
3GPP name	VS.OutgoingCsFallbackPSHOTOtraTddAttempt
Object Class	CellPLMN
Range	0 to $2^{32}-1$
Unit	EVENT

12898 - Total outgoing CS fallback PS handover to UTRA TDD abort

This counter provides the number of times that an outgoing regular or emergency CS fallback PS handover to UTRA TDD procedure towards the cell has been aborted.

Counter Information	Counter Value/Description
Counter Code	12898
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when there is any event, that leads the eNodeB to abort the handover procedure. The following events leads to abort an handover to UTRA TDD: - S1AP UE Context Release Command received from the MME (with cause other than Successful Handover). - Expiration of maxTimeAllowedForCsfb-MobilityAttempt. - S1AP Reset received from the MME. - S1AP Reset eNodeB initiated. -'RrcMeasurementReport (Event A2) message received from the UE.
Subcounters	Not defined
Subfamily	CS fallback
3GPP name	VS.OutgoingCsFallbackPSHOToUtraTddAbortSum
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12 PDCCP SDU

Overview

Purpose

The following counters are generated to get information on PDCCP SDU:

Contents

14202 - Uplink cell PDCCP SDU volume	12-2
14203 - Downlink cell PDCCP SDU bit-rate	12-3
14204 - Uplink cell PDCCP SDU bit-rate	12-4
14205 - Downlink cell control plane PDCCP SDU volume	12-5
14206 - Uplink cell control plane PDCCP SDU volume	12-6

14202 - Uplink cell PDCP SDU volume

This measurement represents successful transmissions of user plane traffic. Control signalling and retransmissions are excluded from this measure. The measurement is performed at the PDCP SDU level. PDCP SDUs that were not received over the air interface in the cell (but were forwarded from another eNodeB during handover) are excluded from the count. Separate screenings are defined per QCI group.

Counter Information	Counter Value/Description
Counter Code	14202
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered on reception of user plane PDCP SDUs from the air interface.
Subcounters	Type of service. <i>#0: Description:</i> Voice over IP E-RAB. <i>Suffix 3GPP:</i> VoIP <i>Triggering Event:</i> Please refer to common triggering event. <i>#1: Description:</i> Other Guaranteed Bit Rate E-RAB. <i>Suffix 3GPP:</i> OtherGBR <i>Triggering Event:</i> Please refer to common triggering event. <i>#2: Description:</i> Non-GBR E-RAB. <i>Suffix 3GPP:</i> NonGBR <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	User Plane
3GPP name	VS.DRBPdcpSduKbytesUL
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	kBytes

14203 - Downlink cell PDCP SDU bit-rate

This counter provides the average, minimum and maximum ingress bit-rate of user plane traffic to the eNodeB via S1 excluding PDCP SDUs forwarded over S1 and received from another eNodeB. This measurement is obtained by sampling at pre-defined intervals the DL cell PDCP SDU bit-rate summed across all QCIs.

Counter Information	Counter Value/Description
Counter Code	14203
Counter Type	LOAD
Triggering (Event)	This counter is triggered each sampling period. The sampling period is one minute.
Subcounters	Not defined
Subfamily	User Plane
3GPP name	VS.DRBPdcpSduBitRateDL
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	kbits/s

14204 - Uplink cell PDCP SDU bit-rate

This counter provides the average, minimum and maximum successful transmission bit-rate of user plane traffic, control signalling and retransmissions are excluded from this measure. PDCP SDUs that were not received over the air interface in the cell (but were forwarded from another eNodeB during handover) are excluded from the count. The measurement is obtained by sampling at pre-defined intervals the UL cell PDCP SDU bit-rate summed across all QCIs.

Counter Information	Counter Value/Description
Counter Code	14204
Counter Type	LOAD
Triggering (Event)	This counter is triggered each sampling period.
Subcounters	Not defined
Subfamily	User Plane
3GPP name	DRB.PdcpSduBitrateUl
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	kbits/s

14205 - Downlink cell control plane PDCP SDU volume

This measurement is obtained by accumulating the number of received control plane PDCP SDU bits by the eNodeB, including the control plane PDCP SDU bits received from S1 and RRC SAP during the measurement period.

Counter Information	Counter Value/Description
Counter Code	14205
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered on reception of control plane PDCP SDUs from S1.
Subcounters	Not defined
Subfamily	Control Plane
3GPP name	VS.SRBPdcpSduKbytesDL
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	kBytes

14206 - Uplink cell control plane PDCP SDU volume

This measurement represents successful transmissions of control plane traffic. This measurement is obtained by accumulating the number of transmitted uplink control plane PDCP SDU bits by the eNodeB during the measurement period.

Counter Information	Counter Value/Description
Counter Code	14206
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered on reception of control plane PDCP SDUs from the air interface.
Subcounters	Not defined
Subfamily	Control Plane
3GPP name	VS.SRBPdcpSduKbytesUL
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	kBytes

13 Radio scheduler

Overview

Purpose

The following counters are generated to get information on Radio scheduler:

Contents

13001 - UE scheduled in downlink per TTI	13-2
13002 - UE scheduled in uplink per TTI	13-3
13003 - Uplink grants per TTI	13-4
13007 - Downlink MIMO eligibility decisions	13-6
13008 - Contention based Random Access Preamble received	13-7
13010 - Contention based Random Access Response sent	13-8
13012 - Contention resolution sent	13-9
13017 - Transmission mode 8 users distribution	13-10
13019 - RRH area changes	13-11

13001 - UE scheduled in downlink per TTI

This counter provides the average, maximum and minimum number of UEs scheduled on downlink per TTI in the cell. The average value is obtained by dividing the cumulative value of the UEs by the number of events.

Counter Information	Counter Value/Description
Counter Code	13001
Counter Type	VALUE
Triggering (Event)	Use Numbered List tag and list the trigger information. 1.Trigger: Beginning/End of the observation period. Actions: If (nbUeDITtiEvt NE 0) then Peg counter according to nbUeDITtiMax, nbUeDITtiMin, nbUeDITtiCum and nbUeDITtiEvt nbUeDITtiMax = 0, nbUeDITtiMin = 'Maximum number of UE schedulable per TTI', nbUeDITtiCum = 0, nbUeDITtiEvt = 0. 2.Trigger: Every TTI. Actions: If at least one UE has been scheduled in downlink during this TTI then nbUeDITtiEvt++, nbUeDITtiCum += 'number of UE scheduled on this TTI'. if ('number of UE scheduled on this TTI' GT nbUeDITtiMax) then nbUeDITtiMax = 'number of UE scheduled on this TTI'. if ('number of UE scheduled on this TTI' LT nbUeDITtiMin) then nbUeDITtiMin = 'number of UE scheduled on this TTI'.
Subcounters	Not defined
Subfamily	UE scheduled per TTI
3GPP name	VS.NbUeScheduledPerDLTTI
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

13002 - UE scheduled in uplink per TTI

This counter provides the average, maximum and minimum number of UEs scheduled (for fresh or retransmitted PDU) on uplink per TTI in the cell. The average value is obtained by dividing the cumulative value of the UEs by the number of events. Note that RACH msg3 messages does not peg this counter.

Counter Information	Counter Value/Description
Counter Code	13002
Counter Type	VALUE
Triggering (Event)	Use Numbered List tag and list the trigger information. 1.Trigger: Beginning/End of the observation period. Actions: If (nbUeUITtiEvt NE 0) then Peg counter according to nbUeUITtiMax, nbUeUITtiMin, nbUeUITtiCum and nbUeUITtiEvt nbUeUITtiMax = 0, nbUeUITtiMin = 16, nbUeUITtiCum = 0, nbUeUITtiEvt = 0. 2.Trigger: Every TTI. Actions: If at least one UE has been scheduled in uplink during this TTI then nbUeUITtiEvt++, nbUeUITtiCum += 'number of UE scheduled on this TTI'. if ('number of UE scheduled on this TTI' GT nbUeUITtiMax) then nbUeUITtiMax = 'number of UE scheduled on this TTI'. if ('number of UE scheduled on this TTI' LT nbUeUITtiMin) then nbUeUITtiMin = 'number of UE scheduled on this TTI'.
Subcounters	Not defined
Subfamily	UE scheduled per TTI
3GPP name	VS.NbUeScheduledPerULTTI
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

13003 - Uplink grants per TTI

This counter provides a distribution of the number of Uplink grants (paired or not) sent per TTI.

Counter Information	Counter Value/Description
Counter Code	13003
Counter Type	CUMULATE
Triggering (Event)	The counter is updated on every TTI based on the number of Uplink grants sent on this TTI. The sub-counter that corresponds to the number of grants (paired or not) sent is incremented by 1. Note that grants for msg3 and for OCNS are not taken into account.
Subcounters	<p>Number of grants range values.</p> <p><i>#0: Description:</i> Number of TTIs for which no grant were sent. <i>Suffix 3GPP:</i> 0Grant <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Number of TTIs for which only 1 grant has been sent. <i>Suffix 3GPP:</i> 1Grant <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> Number of TTIs for which 2 grants have been sent. <i>Suffix 3GPP:</i> 2Grants <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> Number of TTIs for which 3 grants have been sent. <i>Suffix 3GPP:</i> 3Grants <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> Number of TTIs for which 4 grants have been sent. <i>Suffix 3GPP:</i> 4Grants <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#5: Description:</i> Number of TTIs for which 5 grants have been sent. <i>Suffix 3GPP:</i> 5Grants <i>Triggering Event:</i> Please refer to common triggering event.</p>

Counter Information	Counter Value/Description
	<i>#6: Description:</i> Number of TTIs for which 6 or more grants have been sent. <i>Suffix 3GPP:</i> 6orMoreGrants <i>Triggering Event:</i> Please refer to common triggering event.
Subfamily	Grants per TTI
3GPP name	VS.ULGrant
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

13007 - Downlink MIMO eligibility decisions

This counter provides a view of the decisions taken by the downlink scheduler on whether UE are eligible or not to MIMO on the cell. Decisions are taken based on downlink rank and downlink CQI measurements periodically reported by the UE.

Counter Information	Counter Value/Description
Counter Code	13007
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered every time the downlink scheduler takes a decision that a UE is eligible (or not) to MIMO.
Subcounters	<p>Eligible / not eligible.</p> <p><i>#0: Description:</i> Number of times the scheduler has taken the decision that a UE was eligible to MIMO.</p> <p><i>Suffix 3GPP:</i> Eligible</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Number of times the scheduler has taken the decision that a UE was not eligible to MIMO.</p> <p><i>Suffix 3GPP:</i> NotEligible</p> <p><i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	MIMO
3GPP name	VS.DLMimoEligibilityDecision
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

13008 - Contention based Random Access Preamble received

This counter provides the number of 'Random Access Preamble' messages (msg1) that have been received on a cell in the context of contention based RACH procedure.

Counter Information	Counter Value/Description
Counter Code	13008
Counter Type	CUMULATE
Triggering (Event)	This counter is incremented each time the eNodeB receives a 'Random Access Preamble' messages (msg1) from a UE and the preamble received belongs to 'contention based' pool.
Subcounters	Not defined
Subfamily	RACH
3GPP name	VS.ContentionBasedRandomAccessPreamble
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

13010 - Contention based Random Access Response sent

This counter provides the number of 'Random Access Response' messages (msg2) that have been sent from a cell in the context of contention based RACH procedure.

Counter Information	Counter Value/Description
Counter Code	13010
Counter Type	CUMULATE
Triggering (Event)	This counter is incremented each time the eNodeB sends a 'Random Access Response' messages (msg2) to a UE and the preamble that is answered belongs to 'contention based' pool.
Subcounters	Not defined
Subfamily	RACH
3GPP name	VS.ContentionBasedRandomAccessResponse
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

13012 - Contention resolution sent

This counter provides the number of 'Contention Resolution' messages (msg4) that have been sent from on a cell.

Counter Information	Counter Value/Description
Counter Code	13012
Counter Type	CUMULATE
Triggering (Event)	This counter is incremented each time the eNodeB sends a 'Contention Resolution' message to a UE.
Subcounters	Not defined
Subfamily	RACH
3GPP name	VS.ContentionResolution
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

13017 - Transmission mode 8 users distribution

This counter provides the distribution of the users in transmission mode 8 depending on the scheduled mode.

Counter Information	Counter Value/Description
Counter Code	13017
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered each TTI.
Subcounters	<p>Scheduled mode.</p> <p><i>#0: Description:</i> Mode= Single user dual layer BF <i>Suffix 3GPP:</i> SingleUserDualLayerBF <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Mode= Single user single layer BF <i>Suffix 3GPP:</i> SingleUserSingleLayerBF <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> Mode= Tx diversity <i>Suffix 3GPP:</i> TxDiv <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> Mode= Multiple user single layer BF <i>Suffix 3GPP:</i> MultipleUserDualLayerBF <i>Triggering Event:</i> Please refer to common triggering event.</p>
Subfamily	Transmission mode
3GPP name	VS.TransmissionMode8UsersDistribution
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

13019 - RRH area changes

This counter provides the number of area changes in one logic cell.

Counter Information	Counter Value/Description
Counter Code	13019
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered each time the RRH area information of one UE has been changed.
Subcounters	Not defined
Subfamily	RRH Area Change
3GPP name	VS.RRHAreaChanges
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

14 RRC connection

Overview

Purpose

The following counters are generated to get information on RRC connection:

Contents

12311 - RRC connection request	14-2
12314 - RRC connection release due to inability to preempt	14-3

12311 - RRC connection request

This counter provides the number for RRC connection requests received from UE in the cell.

Counter Information	Counter Value/Description
Counter Code	12311
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when the RrcConnectionRequest message is received.
Subcounters	<p>EstablishmentCause value in the message.</p> <p><i>#0: Description:</i> EstablishmentCause = 'emergency'. <i>Suffix 3GPP:</i> EmergencyCallAttempts <i>Triggering Event:</i> Refer to the common triggering event.</p> <p><i>#1: Description:</i> EstablishmentCause = 'highPriorityAccess'. <i>Suffix 3GPP:</i> HighPriorityAccessAttempts <i>Triggering Event:</i> Refer to the common triggering event.</p> <p><i>#2: Description:</i> EstablishmentCause = 'mt-Access'. <i>Suffix 3GPP:</i> PageResponsesReceived <i>Triggering Event:</i> Refer to the common triggering event.</p> <p><i>#3: Description:</i> EstablishmentCause = 'mo-Signalling'. <i>Suffix 3GPP:</i> MobileOriginatedSignalling <i>Triggering Event:</i> Refer to the common triggering event.</p> <p><i>#4: Description:</i> EstablishmentCause = 'mo-Data'. <i>Suffix 3GPP:</i> MobileOriginatedUserBearer <i>Triggering Event:</i> Refer to the common triggering event.</p> <p><i>#5: Description:</i> EstablishmentCause = spare values in the 3GPP. <i>Suffix 3GPP:</i> Other <i>Triggering Event:</i> Refer to the common triggering event.</p>
Subfamily	RRC Setup
3GPP name	RRC.ConnEstabAtt
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12314 - RRC connection release due to inability to preempt

This counter provides the number of times an RRC connection with cause 'Emergency' is released right after RRCConnectionSetupComplete is received."If the system is at the limit on the number of users per eNB when the emergency connection is requested and the IMS Emergency Calling feature is activated and reactive load control is activated, but the eNB is unable to find another user that can be preempted then the emergency connection is released after RRCConnectionSetupComplete and this counter is pegged.

Counter Information	Counter Value/Description
Counter Code	12314
Counter Type	CUMULATE
Triggering (Event)	Sending of RRCConnectionRelease right after RRCConnection-SetupComplete.
Subcounters	Not defined
Subfamily	Congestion Release
3GPP name	VS.RrcConnectionReleaseDueToInabilityToPreempt
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

15 S1 Traffic and throughput

Overview

Purpose

The following counters are generated to get information on S1 Traffic and throughput:

Contents

13109 - S1 downlink throughput	15-2
13110 - S1 downlink packets	15-3
13111 - S1 uplink throughput	15-4
13112 - S1 uplink packets	15-5

13109 - S1 downlink throughput

This counter provides the throughput received on the S1 interfaces of the eNodeB equipment (including Ethernet headers).

Counter Information	Counter Value/Description
Counter Code	13109
Counter Type	LOAD
Triggering (Event)	This counter is triggered each sampling period. The sampling period is 10s.
Subcounters	Not defined
Subfamily	S1 Throughput
3GPP name	VS.S1DLThroughput
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	kbits/s

13110 - S1 downlink packets

This counter provides the total number of packets received on the S1 interfaces of the eNodeB equipment.

Counter Information	Counter Value/Description
Counter Code	13110
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when packets are received on the S1 interfaces of the eNodeB equipment.
Subcounters	Not defined
Subfamily	S1 Packet
3GPP name	VS.S1DLPackets
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Packet

13111 - S1 uplink throughput

This counter provides the throughput sent on the S1 interfaces of the eNodeB equipment (including Ethernet headers).

Counter Information	Counter Value/Description
Counter Code	13111
Counter Type	LOAD
Triggering (Event)	This counter is triggered when packets are sent on the S1 interfaces of the eNodeB equipment.
Subcounters	Not defined
Subfamily	S1 Throughput
3GPP name	VS.S1ULThroughput
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	kbits/s

13112 - S1 uplink packets

This counter provides the total number of packets sent on the S1 interfaces of the eNodeB equipment.

Counter Information	Counter Value/Description
Counter Code	13112
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered each sampling period. The sampling period is 10s.
Subcounters	Not defined
Subfamily	S1 Packet
3GPP name	VS.S1ULPackets
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Packet

16 Sctp

Overview

Purpose

The following counters are generated to get information on Sctp:

Contents

13601 - Sctp association establishment	16-2
13602 - Sctp association failure	16-3
13603 - S1 Sctp in octets	16-4
13604 - S1 Sctp in packets	16-5
13605 - S1 Sctp out octets	16-6
13606 - S1 Sctp out packets	16-7
13607 - X2 Sctp in octets	16-8
13608 - X2 Sctp in packets	16-9
13609 - X2 Sctp out octets	16-10
13610 - X2 Sctp out packets	16-11

13601 - SCTP association establishment

This counter provides the number of times that a SCTP association establishment with the eNodeB is successful.

Counter Information	Counter Value/Description
Counter Code	13601
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered by the successful establishment of a SCTP association with the eNodeB, initiated by the eNodeB or initiated by a peer eNodeB, consecutive or not to a SCTP association failure.
Subcounters	Not defined
Subfamily	SCTP association
3GPP name	VS.SctpAssociationEstablishment
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	EVENT

13602 - SCTP association failure

This counter provides the number of times that eNodeB loses the connectivity on a SCTP association.

Counter Information	Counter Value/Description
Counter Code	13602
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered by the loss of a SCTP association.
Subcounters	Not defined
Subfamily	SCTP association
3GPP name	VS.SctpAssociationFailure
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	EVENT

13603 - S1 SCTP in octets

This counter provides the total number of KBytes received on the S1 interface from an MME (Length of the SCTP SDU).

Counter Information	Counter Value/Description
Counter Code	13603
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when packets are received on a eNodeB S1-MME interface.
Subcounters	Not defined
Subfamily	S1 SCTP Traffic
3GPP name	VS.S1SctpInOctets
Object Class	S1Cinterface
Range	0 to $2^{32}-1$
Unit	KiBytes

13604 - S1 SCTP in packets

This counter provides the total number of packets received on the S1 interface from an MME.

Counter Information	Counter Value/Description
Counter Code	13604
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when packets are received on a eNodeB S1-MME interface.
Subcounters	Not defined
Subfamily	S1 SCTP Traffic
3GPP name	VS.S1SctpInPackets
Object Class	S1Cinterface
Range	0 to $2^{32}-1$
Unit	Packet

13605 - S1 SCTP out octets

This counter provides the total number of KBytes sent on the S1 interface from an MME (Length of the SCTP SDU).

Counter Information	Counter Value/Description
Counter Code	13605
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when packets are sent on a eNodeB S1-MME interface.
Subcounters	Not defined
Subfamily	S1 SCTP Traffic
3GPP name	VS.S1SctpOutOctets
Object Class	S1Cinterface
Range	0 to $2^{32}-1$
Unit	KiBytes

13606 - S1 SCTP out packets

This counter provides the total number of packets sent on the S1 interface from an MME.

Counter Information	Counter Value/Description
Counter Code	13606
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when packets are sent on a eNodeB S1-MME interface.
Subcounters	Not defined
Subfamily	S1 SCTP Traffic
3GPP name	VS.S1SctpOutPackets
Object Class	S1Cinterface
Range	0 to $2^{32}-1$
Unit	Packet

13607 - X2 SCTP in octets

This counter provides the total number of KBytes received on the X2 interface from a remote eNodeB (Length of the SCTP SDU).

Counter Information	Counter Value/Description
Counter Code	13607
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when packets are received on a eNodeB X2-C interface.
Subcounters	Not defined
Subfamily	X2 SCTP Traffic
3GPP name	VS.X2SctpInOctets
Object Class	X2Interface
Range	0 to $2^{32}-1$
Unit	KiBytes

13608 - X2 SCTP in packets

This counter provides the total number of packets received on the X2 interface from a remote eNodeB.

Counter Information	Counter Value/Description
Counter Code	13608
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when packets are received on a eNodeB X2-C interface.
Subcounters	Not defined
Subfamily	X2 SCTP Traffic
3GPP name	VS.X2SctpInPackets
Object Class	X2Interface
Range	0 to $2^{32}-1$
Unit	Packet

13609 - X2 SCTP out octets

This counter provides the total number of KBytes sent on the X2 interface towards remote eNodeB (Length of the SCTP SDU).

Counter Information	Counter Value/Description
Counter Code	13609
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when packets are sent on a eNodeB X2-C interface.
Subcounters	Not defined
Subfamily	X2 SCTP Traffic
3GPP name	VS.X2SctpOutOctets
Object Class	X2Interface
Range	0 to $2^{32}-1$
Unit	KiBytes

13610 - X2 SCTP out packets

This counter provides the total number of packets sent on the X2 interface towards remote eNodeB.

Counter Information	Counter Value/Description
Counter Code	13610
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when packets are sent on a eNodeB X2-C interface.
Subcounters	Not defined
Subfamily	X2 SCTP Traffic
3GPP name	VS.X2SctpOutPackets
Object Class	X2Interface
Range	0 to $2^{32}-1$
Unit	Packet

17 UE context management

Overview

Purpose

The following counters are generated to get information on UE context management:

Contents

12508 - Local UE context release	17-2
12509 - Total local UE context release	17-3
12510 - UE context modification attempt	17-4
12511 - UE context modification success	17-5
12512 - UE context modification failure	17-6

12508 - Local UE context release

This counter provides the number of local UE contexts releases for some causes.

Counter Information	Counter Value/Description
Counter Code	12508
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when UE context is locally released.
Subcounters	<p>Local UE Context release cause.</p> <p><i>#0: Description:</i> Release of UE context on S1 RESET procedure MME initiated. <i>Suffix 3GPP:</i> S1APResetMME <i>Triggering Event:</i> Reception of S1 RESET message from MME.</p> <p><i>#1: Description:</i> All MMEs accesses are disabled. <i>Suffix 3GPP:</i> S1FaultExternalFailure <i>Triggering Event:</i> Local release of the UE Context is called for the problem in 'Description'.</p> <p><i>#2: Description:</i> Release of UE context on S1 RESET procedure eUTRAN initiated (Modem failure). <i>Suffix 3GPP:</i> S1APResetENodeB <i>Triggering Event:</i> Sending of S1 RESET message to MME.</p> <p><i>#3: Description:</i> S1AP UE CONTEXT RELEASE REQUEST has been sent (with cause different from User Inactivity) and expiration of the timer supervising reception of S1AP UE CONTEXT RELEASE COMMAND message. <i>Suffix 3GPP:</i> NoContextReleaseCommand <i>Triggering Event:</i> Expiration of the timer supervising reception of S1AP UE CONTEXT RELEASE COMMAND message.</p>
Subfamily	Context Release
3GPP name	VS.LocalUEContextRelease
Object Class	EutranCell
Range	0 to 2 ³² -1
Unit	EVENT

12509 - Total local UE context release

This counter provides the number of local UE contexts releases.

Counter Information	Counter Value/Description
Counter Code	12509
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when UE context is locally released.
Subcounters	Not defined
Subfamily	Context Release
3GPP name	VS.LocalUEContextReleaseSum
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

12510 - UE context modification attempt

This counter provides the number of UE context modification attempt.

Counter Information	Counter Value/Description
Counter Code	12510
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when eNodeB receives UE context modification request from the MME.
Subcounters	Not defined
Subfamily	UE context modification
3GPP name	VS.UContextModificationAttempt
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12511 - UE context modification success

This counter provides the number of UE context modification success.

Counter Information	Counter Value/Description
Counter Code	12511
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when eNodeB sends UE context modification response to the MME.
Subcounters	Not defined
Subfamily	UE context modification
3GPP name	VS.UContextModificationSuccess
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

12512 - UE context modification failure

This counter provides the number of UE context modification failure.

Counter Information	Counter Value/Description
Counter Code	12512
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when eNodeB sends UE context modification failure to the MME.
Subcounters	<p>Failure cause.</p> <p><i>#0: Description:</i> Radio Network Layer Cause: Failure in the Radio Interface Procedure. <i>Suffix 3GPP:</i> FailureInTheRadioInterfaceProcedure <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#1: Description:</i> Radio Network Layer Cause: Encryption and/or integrity protection algorithms not supported. <i>Suffix 3GPP:</i> EncryptionAndOrIntegrityProtectionAlgorithmsNotSupported <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#2: Description:</i> Radio Network Layer Cause: X2 Handover triggered. <i>Suffix 3GPP:</i> X2HandoverTriggered <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#3: Description:</i> Radio Network Layer Cause: S1 intra system Handover triggered. <i>Suffix 3GPP:</i> S1IntraSystemHandoverTriggered <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#4: Description:</i> Radio Network Layer Cause: S1 inter system Handover triggered. <i>Suffix 3GPP:</i> S1InterSystemHandoverTriggered <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#5: Description:</i> Protocol Cause: Abstract Syntax Error (Reject). <i>Suffix 3GPP:</i> AbstractSyntaxError <i>Triggering Event:</i> Please refer to common triggering event.</p> <p><i>#6: Description:</i> Miscellaneous Cause: Unspecified. <i>Suffix 3GPP:</i> Unspecified <i>Triggering Event:</i> Please refer to common triggering event.</p>

Counter Information	Counter Value/Description
Subfamily	UE context modification
3GPP name	VS.UEContextModificationFailure
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT
Notes	Counter specific TDD.

18 UE radio parameter management

Overview

Purpose

The following counters are generated to get information on UE radio parameter management:

Contents

14401 - Transmission mode switch request	18-2
14402 - Transmission mode switch success	18-3

14401 - Transmission mode switch request

This counter provides the number of transmission mode switch request.

Counter Information	Counter Value/Description
Counter Code	14401
Counter Type	CUMULATE
Triggering (Event)	The counter is updated every time when callp received the transmission mode switching request from L2.
Subcounters	Not defined
Subfamily	Transmission mode
3GPP name	VS.TransmissionModeSwitchRequest
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

14402 - Transmission mode switch success

This counter provides the number of transmission mode switch success.

Counter Information	Counter Value/Description
Counter Code	14402
Counter Type	CUMULATE
Triggering (Event)	The counter is updated every time when callp switch the transmission mode successfully.
Subcounters	Not defined
Subfamily	Transmission mode
3GPP name	VS.TransmissionModeSwitchSuccess
Object Class	EutranCell
Range	0 to $2^{32}-1$
Unit	EVENT

19 X2 Traffic and throughput

Overview

Purpose

The following counters are generated to get information on X2 Traffic and throughput:

Contents

12909 - X2 received throughput	19-2
12910 - X2 received packets	19-3
12911 - X2 sent throughput	19-4
12912 - X2 sent packets	19-5

12909 - X2 received throughput

This counter provides the throughput received on the X2 interfaces of the eNodeB equipment (including Ethernet headers).

Counter Information	Counter Value/Description
Counter Code	12909
Counter Type	LOAD
Triggering (Event)	This counter is triggered each sampling period. The sampling period is 10s.
Subcounters	Not defined
Subfamily	X2 Throughput
3GPP name	VS.X2ReceivedThroughput
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	kbits/s

12910 - X2 received packets

This counter provides the total number of packets received on the X2 interfaces of the eNodeB equipment.

Counter Information	Counter Value/Description
Counter Code	12910
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered when packets are received on the X2 interfaces of the eNodeB equipment.
Subcounters	Not defined
Subfamily	X2 Packet
3GPP name	VS.X2ReceivedPackets
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Packet

12911 - X2 sent throughput

This counter provides the throughput sent on the X2 interfaces of the eNodeB equipment (including Ethernet headers).

Counter Information	Counter Value/Description
Counter Code	12911
Counter Type	LOAD
Triggering (Event)	This counter is triggered when packets are sent on the X2 interfaces of the eNodeB equipment.
Subcounters	Not defined
Subfamily	X2 Throughput
3GPP name	VS.X2SentThroughput
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	kbits/s

12912 - X2 sent packets

This counter provides the total number of packets sent on the X2 interfaces of the eNodeB equipment.

Counter Information	Counter Value/Description
Counter Code	12912
Counter Type	CUMULATE
Triggering (Event)	This counter is triggered each sampling period. The sampling period is 10s.
Subcounters	Not defined
Subfamily	X2 Packet
3GPP name	VS.X2SentPackets
Object Class	ENBEquipment
Range	0 to $2^{32}-1$
Unit	Packet

Appendix A: Abbreviations

Overview

Purpose

This appendix lists abbreviations used in this document and the expanded form of those abbreviations.

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Initialisms

0-9

3G Third Generation

3GPP Third Generation Partnership Project

3GPP2 Third Generation Partnership Project 2

9453 XMS Alcatel-Lucent 9453 eXtended Management System (XMS)

S1AP S1 Application Part

A

Avg Averaged Value

B

BLER Block Error Rate

C

CC Cumulative Counters

CUM Cumulated Value

CQI Channel Quality Indicator

D

DER Discrete Event Registration

DFD Data Flow Diagram

E

eNodeB (eNB) evolved NodeB

E-RAB EPS Radio Access Bearer

eUTRAN Evolved UMTS Terrestrial Radio Access Network

F

FDD Frequency Division Duplex

G

GBR Guaranteed Bit Rate

GERAN GSM Edge Radio Access Network

A-2

H

HRPD High Rate Packet Data

L

LTE Long Term Evolution

LTE RAN (eUTRAN, E-UTRAN) Long Term Evolution radio access network

M

Max Maximum

Min minimum

MME Mobile Management Entity

N

NE Network Element

NbEv Number of Events

O

OAM Operation Administration and Maintenance

OLCS Online Customer Support

P

PDCCP Packet Data Convergence Protocol

PDU Protocol Data Unit

PM Performance Monitoring

PRB Physical Resource Block

PS Packet Switched

R

RACH Random Access Channel

RRC Radio Resource Control

RLC Radio Link Control

RRH Remote Radio Head

S

SCTP Stream Control Transmission Protocol

SDU Service Data Unit

SINR Signal to Interference-plus-Noise Ratio

SRB Signalling Radio Bearer

SRS Signalling Route Set

T

TDD Time Division Duplex

TRDU TRansceiver Duplexer Unit

TTI Transmission Time Interval

TX Transmitter

U

UE User equipment

UTRA Universal Terrestrial Radio Access

V

VLAN Virtual Local Area Network

X

XDR XML Data Reduced

XMS eXtended Management System

Acronyms

C

CAC Connection Admission Control

M

MAC Medium Access Control

MIM Management Information Model

N

NAS Network Access Server

R

RAN Radio Access Network

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