

CUDB Glossary of Terms and Acronyms

TERMINOLOGY

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1 Introduction

This glossary defines the terms, definitions, acronyms and abbreviations used in the Customer Product Information (CPI) of the Ericsson Centralized User Database (CUDB).

1.1 Scope

This document defines the terms, definitions, acronyms and abbreviations in alphabetical order. Some acronyms may have more than one definition. In such cases, all definitions are listed.

1.2 Revision Information

Rev. A

This document is based on 0033-HDA 104 03/9 with the following changes:

- Terminology updates throughout the document because of virtualized deployment support.
- Added BFD, CEE, CMX, DHCP, DNS, ECIM, ECMP, HOT, LM, LM-SA, OSPF, PNF, UUID, VM, VNF, and VRRP to the list of acronyms.
- Updated Payload term.
- Removed obsolete information.

Rev. B

Other than editorial changes, this document has been revised as follows:

- Removed obsolete items.

Rev. C

Other than editorial changes, this document has been revised as follows:

- Removed obsolete items.

Rev. D

Other than editorial changes, this document has been revised as follows:

- Updated Collision Detection Counter (CDC).
- Removed obsolete items.



Rev. E

Other than editorial changes, this document has been revised as follows:

- Updated AuC.
- Added IoT, NETCONF and POSIX to the list of acronyms.
- Added Back End (BE) and Cluster Supervisor (CS) to, and removed Circuit Switch (CS) from the list of acronyms.

Rev. F

Other than editorial changes, this document has been revised as follows:

- Removed obsolete items.

Rev. G

Other than editorial changes, this document has been revised as follows:

- Added Virtualized CUDB (vCUDB), Virtualized Infrastructure Manager (VIM), and VNF Lifecycle Manager (VNF-LCM).
- Removed obsolete item.

Rev. H

Other than editorial changes, this document has been revised as follows:

- Added Generic Ericsson Processor version 7, Low Power (GEP7L).



2 Terms

Association

Linking Multi Service Consumers (MSC) to each other. Associations are supported in CUDB with Lightweight Directory Access Protocol (LDAP) entries with the following structure used to contain information on a set of MSCs:

```
assocId=<assocId>,ou=associations,<CUDB base DN>
```

Asymmetrical Partition Situation

A system split where the number of visible sites differs from the number of non-visible sites. There are two types of asymmetrical split situations for a group:

- Majority Situation if the number of visible sites is higher than the number of non-visible sites.
- Minority Situation if the number of non-visible sites is higher than the number of visible sites.

Auto Removed Site

A site is marked as auto removed (AR) by the nodes of the sites part of a majority partition when it is considered non-reachable (that is, not being part of the majority).

This can occur either because all the nodes in the auto removed site have failed, or because the communication links towards it are down.

Binary Large Object

Binary Large Objects (BLOBs) are collections of binary data stored as a single entity.

CUDB Node

The CUDB node is the building unit by which the CUDB system is divided. A CUDB node holds one Processing Layer (PL) Database (PLDB), and one or several Data Store (DS) Units accessed through an LDAP resource layer.

CUDB Site

A CUDB site is a set of CUDB nodes interconnected by a virtual network infrastructure. The nodes of a CUDB site share the same network components used to connect the Internet Protocol (IP) backbone (switches, routers, and so on) that links the CUDB site with other CUDB sites.



| | |
|----------------------------|---|
| CUDB System | The CUDB system is a system consisting of interconnected CUDB nodes. CUDB is a distributed database system exposed as an LDAP directory, and made up of network-connected CUDB nodes spread over the operator network. Logically and lengthwise, the CUDB system is divided to two internal tiers depending on the function: Processing Layer (PL) and Data Store (DS) Layer. |
| Data Distribution | Data distribution means the distribution of subscriber data in different DSGs. CUDB stores all the information of a specific subscriber in just one DSG, but the data of different subscribers can be allocated to different DSGs. |
| Data Reconciliation | Data reconciliation is a system-wide process that fixes potential inconsistencies between the PLDB and the DSGs. Such inconsistencies can occur, for example, after mastership changes in the PLDB or the DSG. During data reconciliation, offending data is deleted from the DSG where it was hosted in CUDB. |
| Data Store Layer | The Data Store Layer holds all subscriber information split in disjoint partitions, that is DSGs. Physically, DSGs are a set of replicated data repositories that can be accessed by the PLDB. DSGs can not be directly accessed by the CUDB clients. |
| Default Zone | The default zone is a configurable, optional zone assigned to subscribers that are provisioned without a zone in the provisioning request. If no specific default zone is configured in the CUDB system, the Implicit Zone will be used as the default zone. |
| Distributed Search | Distributed search is a search query that encompasses several (potentially all) distributed storage units. |



Distribution Entry

A Distribution Entry (DE) is an LDAP entry stored in the PLDB containing distribution information. Its first-level children entries and below are stored in DSGs. CUDB has two types of built-in DEs:

- Multi-Service Consumers that match the following DN pattern: `mscId=<mscId>, ou=multiSCs, <CUDB Root>`
- Associations that match the following DN pattern: `assocId=<assocId>, ou=associations, <CUDB Root>`.

CUDB also allows the definition of custom DEs.

Double Geographical Redundancy (1+1 Redundancy)

Double geographical redundancy (also known as 1+1 redundancy) is an optional redundancy configuration where each piece of subscriber data is stored in two different database clusters, hosted in different CUDB nodes of the CUDB system.

Consistency among database cluster replicas is achieved through asynchronous replication in a master-slave setup.

DS Data

DS data is the data stored in the Data Store Unit Groups (DSG).

DS Entry

A DS entry is an LDAP entry stored in the DSGs.

DSG Master Replica

The DSG master replica (or simply DS master) is a particular instance of a DSG which is processing all traffic. DSG masters are dynamically assigned in the CUDB system. Internally, CUDB reaches the appropriate master replica during any operation.

DSG Slave Replica

Every instance of a DSG that is not the DSG master replica is a DSG slave replica (or simply DS slave). Slave replicas can process traffic related to massive search operations, subscriber-specific queries, dirty-reads in split situations, and can also perform counter collection. However, slave replicas do not receive regular subscriber traffic. DSG slave replicas are synchronized with the DSG master by replication.

DS Unit

A DS Unit is a clustered database system in which all data in-memory store a replica of the data belonging to a subscriber partition.



Degraded DS Unit

A DS Unit is degraded if one of the two database processes in the DS Unit fails.

DS Unit Group

A DS Unit Group (DSG) is a subscriber partition, the basic distribution unit of subscriber data. It contains the DSG master replica, and optionally one or two DSG slave replica.

Entry

An entry is a piece of data stored in the databases of the CUDB system that comprises an entity.

Fixed Entry

A fixed entry is an LDAP entry provided by CUDB during installation as part of the basic Directory Information Tree (DIT) for CUDB.

For example, the CUDB root entry is a fixed entry of the system: `ou=associations,<CUDB Root Entry>`

Geographical Redundancy

Geographical redundancy is the level of DSG redundancy configured on a CUDB system. It specifies the number of DSG slaves replicas configured for each DSG. In terms of redundancy level, the following two configurations are supported:

- Double geographical redundancy (each DSG has 1 slave replica)
- Triple geographical redundancy (each DSG has 2 slave replicas)

High Availability

The High Availability feature ensures that the CUDB system is prepared to protect and recover data from interruptions or failures automatically, and in a short time.

Identity

Identity is the identifier of a subscriber. Identities in CUDB are supported by special LDAP alias entries located under the `ou=identities,<CUDB base DN>` branch that points to the corresponding subscriber entry.

Identities are optimized for efficient memory occupation and to provide fast access to the subscriber data.

Implicit Zone

An implicit zone is a reserved and non-configurable zone in a CUDB system. Implicit zones are assigned to CUDB nodes that are not assigned to any particular zone when created (or if they were created previously to feature activation).



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| Inconsistency | Inconsistency in CUDB means that a DSG has an orphan entry. An orphan entry is an entry that has no matching parent entry in the PLDB. |
| LDAP Directory Information Tree | <p>The LDAP Directory Information Tree (also called directory tree, or DIT) is a hierarchically organized collection of LDAP entries.</p> <p>Information in an LDAP directory is organized into one or several hierarchical structures. The top of the hierarchy contains the base entry, while the rest of the entries are organized beneath the base entry in a tree-like structure. Each node in the hierarchical structure is an entry, defined with a Distinguished Name (DN) and several attributes.</p> |
| LDAP Front End | The LDAP Front End (FE) is an element in a CUDB node that provides LDAP processing. It is in charge of handling all LDAP requests received from application FEs, from the provisioning system, and from other CUDB nodes received through proxy. |
| Majority Situation | <p>In a System Split situation, a CUDB site is in majority split situation if the number of visible sites from the affected CUDB site is greater than the half of the total number of CUDB sites in the CUDB system.</p> <p>Note: Auto removed sites are not counted as part of the total number of CUDB sites.</p> |
| Massive Search | Massive searches are search queries to the CUDB system that return multiple (potentially a multitude of) entries from a single, several, or potentially all database units. |
| Minority Situation | <p>In a System Split situation, a CUDB site is in minority split situation if the number of visible sites from the affected CUDB site is less than the half of the total number of CUDB sites in the CUDB system.</p> <p>Note: Auto removed sites are not counted as part of the total number of CUDB sites.</p> |



Multi Service Consumer

The Multi Service Consumer (MSC) is a network entity that contains a set of services from the network. The MSC is identified by one or several identities for each service. In some cases, these identities are shared to contain more than one service, or linked by a specific relation. MSCs are supported with LDAP Subscriber Entries with the following structure: `mscId=<assocId>,ou=multiSCs,<CUDB base DN>`.

NETCONF

The Network Configuration Protocol (NETCONF) is a network management protocol developed and standardized by the IETF. NETCONF provides mechanisms to install, manipulate, and delete the configuration of network devices.

Notification

Notifications are messages sent from the CUDB system to another system whenever a monitored data element stored in CUDB has changed.

Optimized Search

Optimized search is a search query that spans several (potentially all) distributed storage units.

Payload Blade

In native deployments on BSP 8100, blades that provide storage capacity for PLDB and DSG, as well as LDAP processing in a CUDB node. They boot over the network and depend on the services provided by the System Controllers (SCs).

Every blade in a CUDB system that runs unit SW processes (as opposed to the SCs) is considered a payload blade.

Payload Virtual Machine

In cloud deployments, Virtual Machines (VMs) that provide storage capacity for PLDB and DSG, as well as LDAP processing in a CUDB node. They boot over the network and depend on the services provided by the System Controllers (SCs).

Every VM in a CUDB system that runs unit SW processes (as opposed to the SCs) is considered a payload VM.



Processing Layer

Logically, the Processing Layer (PL) is the northbound CUDB layer, processing client LDAP requests with the ability to locate and retrieve any subscriber information requested over the entire Data Store Layer. The Processing Layer on each CUDB node contains LDAP protocol handling information and a replicated copy of the PLDB storing the relationship of all subscriber identities, and the physical location of application FE profiles across the CUDB Data Store Layer.

Processing Layer Database

The Processing Layer Database (PLDB) is a clustered database replicated in all CUDB nodes containing the indexing information for the data stored in the DSGs. It also stores the complete set of subscriber identities and can be used to store common subscriber or application FE data, as well as any other data.

PLDB Data

PLDB data is the data stored in the PLDB. Such data includes the DEs, administrative data, and the common data of all CUDB nodes.

PLDB Entry

PLDB entries are LDAP entries stored in the PLDB.

Reallocation

Reallocation is the process of moving stored data from one DSG to another DSG to provide administrative management of the location of subscriber or resource data. Reallocation is also known as geographical subscription and resource management.

Redundancy Level

The redundancy level is defined as the number of LDAP FEs that can be taken down without the CUDB node losing its required level of performance.

Replication Channel

Replication channels are the communication lines established between the replication servers in each DSG. Master and slave replicas have their own replication channels.

RESTful

In computing, Representational State Transfer (REST) is the software architectural style of the World Wide Web. To the extent that systems conform to the constraints of REST they can be called RESTful.

Safekeeping

Safekeeping means that data is stored in such a physical or logical way (or both) that minimizes the chance of unexpected events resulting in data corruption or the complete loss of data.



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| Scale-out | In distributed database terms, scale-out refers to increasing the overall data storage capacity of a database by adding new infrastructure components. |
| Search Index | Search indexes are indexes used to facilitate massive search queries. |
| Symmetrical Split Situation | <p>Also known as split brain situation. In a System Split situation, a CUDB site is in symmetrical split situation if the number of visible sites and non-visible sites from the affected CUDB site is the same.</p> <p>Note: Auto removed sites are not counted as part of the total number of CUDB sites.</p> |
| System Controller | The System Controllers (SCs) centralize the management functions of the Linux cluster in each CUDB node as well as Operation and Maintenance (OAM) and other auxiliary software processes. Each node contains two SCs for redundancy purposes. The SCs boot from the disk storage system and run services to support the payloads in the CUDB node. |
| System Split Situation | A CUDB system can suffer either network, node, or site failures that can split the system in different subdivisions or partitions, or cause single site failures. All the CUDB nodes are associated with a site. A site is considered visible from other sites as long as other sites can connect and report to the site. Site visibility is always perceived from one of the CUDB nodes of a site which is the site leader. Whenever there is one or a group of sites which is not visible, the leader considers to be in a Split Situation. Once the split situation is detected, the number of sites in the group is compared with the number of sites in the group of non-visible sites and the type of split situation of the visible group is determined depending on this comparison. |
| Triple Geographical Redundancy (1+1+1 Redundancy) | <p>Triple geographical redundancy (also known as 1+1+1 redundancy) is an optional redundancy configuration where three copies of the same data partition are replicated to different CUDB nodes in the CUDB system.</p> <p>One of these copies is considered the master replica and receives all read and write operations. The other two copies are considered slave replicas, and are replicated asynchronously in case the master replica is updated.</p> |

**Visibility**

A CUDB node located in one site has visibility of another site if it can communicate with at least one CUDB node located in this other site.

Zone

The zone is a geographical area in which a set of CUDB nodes are physically located.





Glossary

3GPP

Third Generation Partnership Project

3PP

Third Party Product

AAA

Authentication, Authorization and Accounting

ACL

Access Control List

ADL

Active DS List

ALB

Abstract Load Balancer

AMC

Automatic Mastership Change

AMF

Availability Management Framework

aPBF

Advanced Policy-Based Forwarding

API

Application Programming Interface

AR

Auto Removed

ARP

Address Resolution Protocol

ASCII

American Standard Code for Information Interchange

AuC

Authentication Center

BC

Blackboard Coordination

BE

Back End

BFD

Bidirectional Forwarding Detection

BIOS

Basic Input/Output System

BLOB

Binary Large Object

BSP

Blade Server Platform

CA

Certification Authority

CAS

Customer Administration System

CBA

Component Based Architecture

CDC

Collision Detection Counter

CEE

Cloud Execution Environment

CLI

Command Line Interface

CLM

Cluster Management

CM

Configuration Management

CMW

Core Middleware

CMX

Component Main Switch

CMXB

Component Main Switch Board



CMXB3

Component Main Switch Board, version 3

CPI

Customer Product Information

CS

Cluster Supervisor

CSN

Change Sequence Number

CUDB

Ericsson Centralized User Database

DAC

Data Availability Coordination

DB

Database

DE

Distribution Entry

DHCP

Dynamic Host Configuration Protocol

DIT

Directory Information Tree

DL

Data Layer

DLA

Data Layered Architecture

DM

Data Model

DN

Distinguished Name

DNS

Domain Name System

DS

Data Store

DSCP

Differentiated Services Code Point

DSG

DS Unit Group

ECIM

Ericsson Common Information Model

ECMP

Equal-Cost Multipath

EGEM2

Enhanced Generic Ericsson Magazine version 2

EIR

Equipment Identity Register

ENUM

E.164 Number Mapping

EPC

Evolved Packet Core

ESA

Ericsson SNMP Agent

ETSI

European Telecommunication Standard Institute

eVIP

Evolved Virtual IP

FC

Fault Code

FE

Front End

FM

Fault Management

FQDN

Fully Qualified Domain Name

FTP

File Transport Protocol

GbE

Gigabit Ethernet

GEP

Generic Ericsson Processor board

GEP3

Generic Ericsson Processor version 3

**GEP5**

Generic Ericsson Processor version 5

GEP7L

Generic Ericsson Processor version 7, Low Power

GPRS

General Packet Radio Service

GUI

Graphical User Interface

HA

High Availability

HLR

Home Location Register

HLR-FE

HLR Front End

HOT

Heat Orchestration Template

HSS

Home Subscriber Server

HTTP

Hypertext Transfer Protocol

HTTPS

Hypertext Transfer Protocol Secure

HW

Hardware

IANA

Internet Assigned Numbers Authority

ICMP

Internet Control Message Protocol

IETF

Internet Engineering Task Force

IMS

IP Multimedia Subsystem

IMSI

International Mobile Subscriber Identity

IoT

Internet of Things

IP

Internet Protocol

IPMI

Intelligent Platform Management Interface

IPSec

IP Security

ISDN

Integrated Services Digital Network

ISP

In-Service Performance

ITU

International Telecommunication Union

JMX

Java Management Extension

KPI

Key Performance Indicator

L3

Layer 3

LAG

Link Aggregation

LAN

Local Area Network

LAND

Local Area Network Denial

LDAP

Lightweight Directory Access Protocol

LDAP FE

LDAP Front End

LDAPS

LDAP over SSL

LDE

Linux® Distribution Extension (This component can also appear in the documentation as LOTC and LDEwS.)

**LDEwS**

Linux® Distribution Extension with SLES
(This component can also appear in the documentation as LOTC and LDE.)

LDIF

LDAP Data Interchangeable Format

LOTC

Linux Open Telecom Cluster (This component can also appear in the documentation as LDE and LDEwS.)

LM

License Manager

M2M

Machine-to-Machine

MAC

Media Access Control

MNP

Mobile Number Portability

MSC

Multi Service Consumer

MSISDN

Mobile Station ISDN Number

MW

Middleware

NBI

North Bound Interface

NDB

Network Database

NE

Network Element

NETCONF

Network Configuration Protocol

NFS

Network File System

NIR

Network Impact Report

NMS

Network Management System

NTP

Network Time Protocol

OAM

Operation and Maintenance

OID

Object Identifier

OPI

Operating Instruction

OS

Operating System

OSPF

Open Shortest Path First

OU

Organizational Unit

PBIST

Programmable Built-In Self-Test

PCRF

Policy and Charging Rules Function

PDU

Power Distribution Unit

PG

Provisioning Gateway

PL

Processing Layer

PLDB

Processing Layer Database

PM

Performance Management

POSIX

Portable Operating System Interface

PS

Packet Switch

PXE

Preboot eXecution Environment

**QoS**

Quality Of Service

RAID

Redundant Arrays of Inexpensive Disks

RDBMS

Relational Data Base Management System

RDN

Relative Distinguished Name

RFC

Request For Comments

RMI

Remote Method Interface

RPI

Replication Progress Information

RPM

Red Hat Package Manager

SA

Service Availability

SAF

Service Availability Forum

SAPC

Service-Aware Policy Controller

SASL

Simple Authentication and Security Layer

SC

System Controller

SCP

Secure Copy Protocol

SCXB3

System Control Switch Board version 3

SDL

System DS List

SDP

Software Delivery Package

SFTP

Secure File Transfer Protocol

SG

Security Gateway

SGSN

Serving GPRS Support Node

SLF

Subscription Locator Function

SLF4J

Simple Logging Facade for Java

SM

System Monitor

SNMP

Simple Network Management Protocol

SOAP

Simple Object Access Protocol

SPoA

Single Point of Access

SQL

Structured Query Language

SSH

Secure Shell

SSL

Secure Socket Layer

SU

Service Unit

SW

Software

TAM

Take-All-Masters

TC

Transaction Coordinator

TFTP

Trivial File Transfer Protocol

TLS

Transport Layer Security

TPS

Transactions Per Second



UDC

User Data Consolidation

UDP

User Datagram Protocol

UPG

User Profile Gateway

URI

Uniform Resource Identifier

UUID

Universally Unique Identifier

vCUDB

Virtualized CUDB

VIM

Virtualized Infrastructure Manager

VIP

Virtual IP Address

VLAN

Virtual Local Area Network

VM

Virtual Machine

VNF

Virtualized Network Function

VNF-LCM

VNF Lifecycle Manager

VPN

Virtual Private Network

VRRP

Virtual Router Redundancy Protocol

VS

Virtual Server

WRR

Weighted Round Robin

XML

eXtensible Markup Language