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E-UTRAN/LTE Counters & KPIs

Many of the activities involved in the daily operation and future network planning of an E-UTRAN require data on which decisions are based. This data refers to the load carried by the network and the grade of service offered that can be measured by eNBs in the form of diverse types of counters. The training presents **standard** E-UTRAN counters and the resulting KPIs that are comparable across all vendors' implementations. Every counter or KPI is described together with a set of corresponding system-wide LTE traffic cases and configuration parameters/features/problems that may have an impact on its value.

Target audience

The course is intended for experienced network engineers responsible for E-UTRAN network evaluation, planning and optimization.

Training contents

- **Introduction**
  (counters and KPIs standardization for evaluation of the multi-vendors' network, counters and KPIs naming convention),
- **Performance Measurements (PMs) on eNB and cell level:**
  - RRC related measurements
    (connection establishment, re-establishment, mean and maximum number of connections, connection setup time, connection release / UE context release),
  - E-RAB related measurements
    (setup, release, modification, activity, average and maximum number of E-RABs),
  - Intra-LTE handover related measurements
    (attempted/successful intra-eNB/inter-eNB intra-/inter-frequency handovers, handovers with/without DRX, average quality of the serving/neighbouring cell when HO is triggered),
  - Inter-RAT handover related measurements
    (attempted/successful inter-RAT handovers),
  - Radio Bearer (RB) QoS related measurements
    (cell PDCP SDU user/control plane bit-rate, packet delay and drop/loss rate, active UEs, IP latency and throughput),
  - Radio resource utilization related measurements
    (DL/UL PRB usage, RACH usage, cell unavailable time, total number of DL/UL TBs, power utilization measurements, PRB full utilisation),
  - UE-associated logical S1-connection related measurements,
  - Paging related measurements,
  - eNB processor usage,
  - Common LAs of overlapping RAT's coverage related measurements,
  - RF Measurements
    (wideband/sub-band CQI distribution, timing advance distribution).
- **Measurements related to RRC/MAC measurement reports**
  (RSRP, RSRQ, UE power headroom),

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- **Key Performance Indicators (KPIs):**
  (E-RAB accessibility, E-RAB Retainability, Integrity: IP Throughput, IP Latency, Availability: cell availability, Mobility),
- **Other measurements**
  (usage of GSM/UMTS counters for inter-RAT CSFB/SR-VCC/CCO/NACC performance evaluation).

Prerequisites

The participants should have attended "Signalling in E-UTRAN/LTE" course or should have the equivalent knowledge.

Training method

Lecture

Duration

1 day

Level

Advanced