

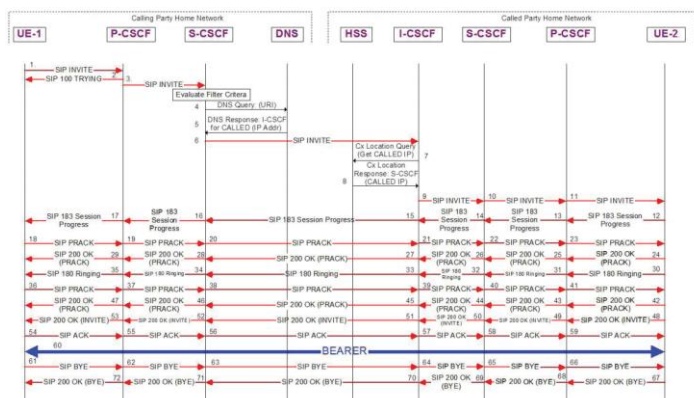
VoLTE QUALITY MONITORING

Key to customer satisfaction and customer loyalty

Voice over LTE as an important step to better voice quality for customers provides important features for operators like reduced frequency spectrum needs and the potential reduction of OTT voice. Ensuring good VoLTE functionality is mandatory.

Control Plane Challenges

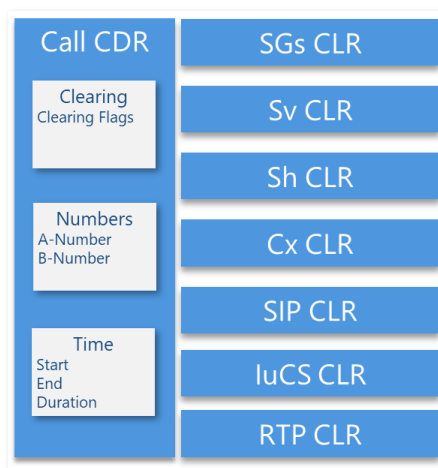
VoLTE calls are one of the most complex things in mobile communication. More than 60 messages are involved signaling data is exchanged over a minimum of 8 interfaces and the mobility with SRVCC handover and interoperability with legacy networks adds an additional complexity level.



To investigate VoLTE issues the correlation of all related messages is key. This correlation has to be done not only on demand, it is mandatory to run fully automatized 24/7 mode to create proper KPI analysis and fast troubleshooting.

Realtime End to End correlation 24/7

The NexusNETVIEW with its class leading correlation engine performing precorrelation on probe level and E2E correlation on the central level allows to see every message belonging to VoLTE calls regardless on which type of interfaces they were was exchanged. The different call leg records from NexusNETVIEW probes or CLR from 3rd party probes are all put together to one complete xDR comprising all relevant data and linking to all involved messages.



End to End KPI Surveillance and Alerting

Since NexusNETVIEW provides a 24/7 realtime correlation it is also possible to generate end to end KPIs covering all included call legs in realtime and use thresholds on these for surveillance and alerting. Based on the final system configuration and used types of probes the following sets of KPIs are made available

- › Service KPIs
- › Registration KPIs
- › Call / Session KPIs

- › SRVCC KPIs
- › Diameter KPIs
- › RTP Packet KPIs
- › Voice Quality KPIs (MOS, R-factor,...)
- › Call Quality Classification

VoIP/VoLTE Quality Assurance

Voice quality is the “killer criteria” on VoIP and VoLTE networks. NexusNETVIEW provides visibility on voice quality performances by monitoring 100% of the calls, investigating the RTP streams and delivering Mean Opinion Scores (MOS) for all calls. Together with the voice service performance monitoring delivering call and session KPIs, NexusNETVIEW provides an Overall quality analysis for Voice over LTE calls.



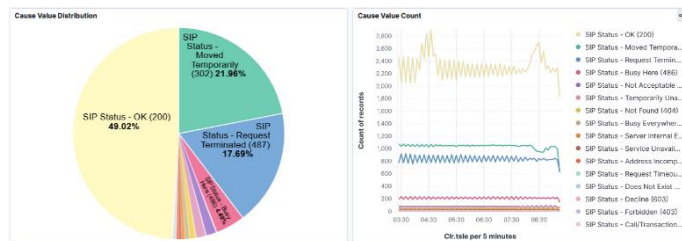
Flexible KPIs and Dashboards

All the different KPIs and dashboards that are available for the different applications and services have one important thing in common: they can be flexibly adapted to customer needs and they provide the possibility to drill down to message details and related call flows with only two clicks.

NEXUS SOLUTIONS

Nexus Telecom’s analytical software solutions detect telecommunication service issues and network malfunctions in 2G/3G/4G and 5G networks and helps resolve them proactively in minutes.

- › Roaming & Interconnect Assurance
- › VoIP/VoLTE Voice Quality Monitoring
- › Network & Service Monitoring
- › OTT surveillance
- › VoLTE Service Assurance
- › Network & Subscriber Intelligence,
- › Customer Experience Management



First click on a KPI shows all the xDRs that contributed to that KPI, second shows the message details. Filter settings applied for the dashboards are automatically used for the drill down. These features provide all the functionality needed to detect issues fast and resolve them quickly

Symptom	Possible Issue	Interfaces to monitor
No call possible	LTE Attach Issue IMS Registration Issue Bearer Establishment Issue Configuration Issue CSFB Issue	Cx, Mw, SGs, S1-MME, S6a Cx, Mw, SGs, S1-MME, S6a Cx, Mw, SGs, S1-MME, S6a Cx, Mw, SGs, S1-MME, S6a Cx, Mw, SGs, S1-MME, S6a, lucs
Call Drop	Radio Coverage Issue Handover Issue SRVCC Issues	S1-MME, X2 S1-MME, X2 S11, S5, S8, Sv
No data connection	User Unknown in HLR Data Roaming inactive Data not allowed	S1-MME, S6a, S11 S1-MME, S6a, S11 S1-MME, S6a, S11
Call Quality Complaints	Speech Channel Establ. Issues Packet Jitter/Packet Loss Issues	Mw, Cx, Sh Mw, Mb

Nexus VoLTE Solution

For voice quality analysis and voice service performance includes following benefits:

- › Increase operational efficiency: Multiple sites in one monitoring system
- › Exports correlated CDRs for billing, revenue assurance, intelligent routing and many other utilities
- › Maintain customers by monitoring any quality deviation in real time
- › Offer VIP packages by ensuring superior level of quality

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