



xSIGHT User Mobile Broadband (LTE)

(VVS0008)

Course Outline

xSIGHT User Mobile Broadband (LTE)

This three-day course provides network engineers responsible for the end to end assurance of the LTE Mobile Broadband network with theoretical training of the xSIGHT products combined with student activities which allow the attendee to explore the xSIGHT products at their own pace. The course has an emphasis on students gaining experience of the xSIGHT product whilst providing an end to end understanding of a typical LTE deployment in order to enhance their learning experience. Using a “day in the life” approach the course is broken down into ten sections. This approach covers the principles behind the xSIGHT portfolio and also provides detail of the typical activity an LTE handset undertakes as it interacts with the network; procedures such as Initial Attach, Bearer Establishment, Mobility, Interworking and CSFB are all considered.

Section 1: xSIGHT Product Familiarization

Duration: 1.5 hours

- Overview of the xSIGHT Portfolio
- Outline of xSIGHT network integration
- Navigation of the xSIGHT portal

Section 2: Network Orientation

Duration: 1 hour

- Orientation with the key elements of the E-UTRAN
- Orientation with the key elements of the EPC
- Integration of PCC with the EPC
- Impact of an IMS on the operation of the end to end LTE network, particularly with respect to VoLTE deployments

Section 3: Initial Procedures

Duration: 3.5 hours

- Instructor led demonstration of Network Attach and Default EPS Bearer Establishment using PE Mobility and CEA
- Concepts of Session and Mobility Management
- Synopsis of the identities encountered in the network and picked up by the xSIGHT products
- Synopsis of the events leading up to the initial attach process; PLMN Selection, Cell Selection, RRC Connection Setup
- Complete breakdown of the LTE Initial Attach Procedure
- Focus on a mobile initiated network detach procedure
- Using xSIGHT PE Mobility to discover common failure scenarios and associated cause codes, identify underperforming network elements involved in the network attach and KPI Analysis centric to Network Attach

Section 4: LTE Security

Duration: 1 hour

- Demonstration of PE Mobility capabilities and xSIGHT Session Trace capabilities with respect to LTE security
- Examining the key aspects of EPS AKA, tracking the procedure in more detail relative to the Initial Attach
- Highlighting how IPSec is deployed in LTE, its operation and the key interfaces which are protected
- Monitoring KPIs associated with authentication failures using xSIGHT PE Mobility
- Using xSIGHT PE Mobility to identify underperforming network elements associated with EPS AKA

Section 5: Network Utilization

Duration: 2.5 hours

- How the network is actually utilized once the subscriber has attached, focusing on the Service Request and Paging procedures
- Instructor led demonstration of PE Mobility capabilities, CEA and xSIGHT Session Trace capabilities with respect to Network Utilization
- Understanding the point to point connectivity in the EPS that formulates an EPS bearer
- The key elements of a Service Request procedure
- Fundamental principles behind Paging in LTE
- Examining the transition from Connected to Idle through the S1 Release procedure
- Using xSIGHT PE Mobility to determine common failure scenarios eg network resource limitation
- KPI Analysis centric to Service Request and Paging
- Using xSIGHT PE Mobility to identify underperforming network elements involved in the Service Request and Paging procedures

Section 6: Managing EPS Bearers

Duration: 2.5 hours

- The use of Dedicated Bearers in the LTE network, end to end signaling flow and distribution of TFTs
- Instructor led demonstration of PE Mobility capabilities and xSIGHT Session Trace capabilities with respect to Managing EPS Bearers
- Determining the options available for QoS
- Understanding why Dedicated bearers need to be established
- Modifying and Releasing EPS Bearers

Section 7: Mobility in LTE

Duration: 2.5 hours

- Mobility related aspects of LTE, including the Tracking Area Update procedure, as well as X2 and S1 handovers
- Demonstration of PE Mobility capabilities, CEA and xSIGHT Session Trace capabilities with respect to LTE Mobility related procedures
- Discussion of idle mode mobility in LTE, including cell reselection
- Use of TAU procedure and scenarios in which it is required
- X2 Handover procedure, showing the key stages and outlining the role of the EPC as part of the procedure
- How S1 Handover differs to the X2 Handover, identifying key stages and signalling messages
- Using xSIGHT PE Mobility to determine the volume of handover failures and digging deeper into the failure causes
- Using PE Mobility for KPI Analysis centric to mobility related failures
- Using xSIGHT PE Mobility Explorer to identify underperforming network elements involved in failed handover procedures

Section 8: Interworking with the PS Domain

Duration: 1.5 hours

- xSIGHT and Interworking with the PS Domain
- Explore how GPRS procedures such as the Network Attach and PDP Context Activation procedure impact the EPC
- Explanation of various procedures associated with interaction with the PS Domain
- Showing how PS Data continuity can be maintained as part of an Inter RAT handover procedure
- Using PE Mobility to monitor the volume of inter RAT handover failures, including common causes
- KPI Analysis using PE Mobility centric to Inter RAT mobility

Section 9: Interworking with the CS Domain

Duration: 2 hours

- xSIGHT and Interworking with the CS Domain
- Highlighting the additional steps involved in an LTE attach necessary for CSFB
- The key stages associated with a Mobile Originated CSFB procedure
- The key stages associated with a Mobile Terminated CSFB procedure
- Showing how SMS is supported in LTE using NAS signalling transport
- Using xSIGHT to determine the volume of CSFB failure cases and digging deeper into the failure causes
- Using PE Mobility for KPI Analysis centric to CSFB
- Using xSIGHT PE Mobility to identify underperforming network elements involved in failed CSFB procedures

Section 10: xSIGHT Session Trace

Duration: 0.5 hours

- Instructor led demonstration of how a Session Trace search is configured and executed
- Showing the key stages associated with configuring a search in xSIGHT Session Trace
- Key techniques used in Session Trace in order to customize the displaying of results

