

MOBILE BROADBAND PERFORMANCE IN HSPA NETWORKS

Course Description

Data connectivity over HSPA networks is characterized by high throughput and short response times. These capabilities contribute to higher end-user satisfaction, especially for interactive services like websurfing and downloads. From the end-user service viewpoint (TCP/IP and above), the mobile network infrastructure is yet another access network. However, there are a number of issues in the mobile network that will affect the end-user service behaviour. Although these issues are not visible, nor controlled by a typical internet based service, they require attention by the mobile operator.

Optimizing the mobile network for high broadband prestanda will require a broad understanding of mobile and Internet features. The configurations related to PDP context, APN, IP, NAT, TCP window size etc, together with mobile network related features like handover and cell change, radio level retransmission, end user data scheduling mechanisms, RAB drop issues, congestion and ownswitching, etc. will impact the end-user service behaviour. This course covers the important issues that influence end-user service behaviour and points out possible alternatives for optimization.

Content

Training objectives

After course completion, the participants will be able to explain:

The basic principles and mechanisms for mobile data connectivity

DHCP, lease time, address allocation and invocation, public and private IP addresses
PDP context activation procedures and GTP mobility and tunneling capabilities
Inactivity and expiration timers, PDP context modification and deactivation procedures
TCP capabilities, configuration options impacting on the behaviour of data connections
The role of operator NAT and Firewall on end user service behaviour
Application (VPN, HTTP etc) dependant capabilities
The role of UE, RNC, SGSN, GSGN on all aspects above.

The HSDPA/HSUPA principles and mechanisms for PS data services

Procedure for RRC and RAB establishment (R99 and HSPA)
Mobility features handover, cell selection/reselection and cell change for Data RABs
Retransmission mechanisms on RLC and physical layer (ARQ, HARQ)
Resource management with Admission and Congestion control, channel switching
Scheduling and priority handling between service classes and between data users
Applicable KPIs revealing the data connection qualities.

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The dependencies between PS data service quality and end-user service behaviour

RRC and RAB accessibility impact on the end-user service

RAB retainability (related to mobility, RAB drop etc) impact on the end user service

PS service integrity (down switching, BLER, re transmissions etc) impact on end-user service behaviour.

List possible changes in order to improve the network performance related to the mobile broadband service.

Target audience

The target audience for this course is Radio Network and Core Network Engineers.

Pre-requisites

Candidate participants must have working knowledge from network operations, planning or design of WCDMA and HSPA systems.

Course length

2 days

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