UMTS OPTIMIZATION AND HSPA

"The UMTS Optimization/ HSPA training was very useful for the department, especially that we could use statistics from our own network for examples were very much appreciated."

– Björn Lindberg, Manager Mobile Radio Planning, Tele2 AB

Course Description
As traffic is growing in 3G networks, there is an increasing demand of optimizing the networks. Planning and optimization are continuous processes and therefore it is of great importance for most operators to gain and maintain these skills within the company. Let your staff learn from the experts that have already seen and solved the problems they are facing today.

Content

WCDMA FUNDAMENTALS
• Scrambling and Channelization Codes
• Application bit rate and physical layer bit rate
• Signal over Interference Ratio (SIR)
• Orthogonality

UPLINK AND DOWNLINK COVERAGE AND CAPACITY ESTIMATION
• Link budgets
• Capacity analysis
• Cell breathing

MIXED TRAFFIC AND CHANNEL SWITCHING
• Aspects of mixing real-time services
• Non-real time services
• Radio resource management
• Admission control and load control

• Circuit switched and packet switched traffic
• Common and dedicated channels for packet switched traffic
• Channel switching

POWER CONTROL
• Power setting for common control channels
• Power settings for open loop power control
• Closed loop power control transport channel structure
MOBILITY
- Handover and cell reselection
- HO parameters
- Soft / Softer HO
- Inter-frequency HO
- 3G-2G HO
- 3G-4G HO

CELL RESELECTION PARAMETERS
- 3G-3G cell reselection
- 3G-2G cell reselection
- 3G-4G cell reselection

OPTIMIZATION PROCESS
- Drive tests
- Statistics
- Impact of non-optimal UE performance

CO-EXISTENCE WITH OTHER NETWORKS
- Possible problems WCDMA/LTE
- Possible problems WCDMA/WCDMA
- Possible problems WCDMA/GSM

COVERAGE AND CAPACITY ENHANCING TECHNIQUES
- Repeaters
- TMA

HSPA
- HSPA protocol architecture and impact on existing UTRAN systems
- RLC/MAC protocol implementation in HSPA
- Transmission requirements on UTRAN due to HSPA introduction
- Long term harmonization plans between EDGE and WCDMA/HSPPA
- Terminal availability and market rollout of HSPA

CHANNEL CODING SCHEMES AND MODULATION METHODS IN HSPA
- Shared channel transmission
- higher-order modulation
- link adaptation
- radio-channel-dependent scheduling
- hybrid ARQ with soft combining
- Non-scheduled transmissions
- Scheduling by (primary/secondary) Absolute and Relative Grants
- Timing and channel coding of the E-DPDCCH, E-DPCCH, E-HICH, E-AGCH and E-RGCH physical channels

HSPA PLANNING GUIDELINES
- Impact on existing carrier
- Second carrier
- Capacity upgrade
- Examples of different scenarios

HSPA IMPACT ON RADIO COVERAGE
- Average HSPA cell throughput for single users
- Minimum throughput at the cell edge for a single user
- Average HSPA users throughput
- Minimum TFC set UE reporting: power headroom, 'Happy bit'

RADIO RESOURCE MANAGEMENT
- Power allocation
- Code allocation
- HSPA vs R99 priority handling
- Admission Control
- Load Control
- Congestion Control
- RRC states
- Resource allocation in NodeB/UE

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HSPA MOBILITY

- Handover
- Cell Reselection
- E-DCH cell change (soft and hard handover)

HW AND SW REQUIREMENTS

- NodeB HW- and SW capabilities E-DCH cell change (soft and hard handover)

YOUR NETWORK’S PARAMETERS, STATISTICS AND KPIs

- Parameters and statistics extracted from your network will be analyzed, e.g:
  - Total DL output power under busy hour
  - DL code usage under busy hour
  - UL received power under busy hour
  - RAB attempts for PS och CS during 24 hours from cell with problem
  - Accessibility for PS och CS busy hour from cell with problem
  - Drop for CS och PS, during 24 hours from cell with problem
  - HO statistics
  - IFHO
  - IFRAT HO

Target audience

This course is developed for professional radio planners and optimizers who need to improve their skills. The training also provides an opportunity to discuss complex cell planning and optimization issues with Widermind’s trainers, who themselves have long experience from UMTS / HSPA planning and optimization.

Pre-requisites

The participants should have a good understanding and working experience from WCDMA and GSM Systems.

Course length

3 days

Widermind communicates the knowledge you need to develop and implement new technologies for current and future network operations. Our clients are telecom operators, system integrators, system suppliers and consultancy firms.

Based in Stockholm, Sweden, we develop courses backed by a comprehensive network of associates. Our instructors employ technical and pedagogical skills that have made Widermind training well known and appreciated as one of the best services in the field.

You are warm welcome to contact our representatives at:

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