

SON: Self Organizing Networks [Advances in LTE-RAN Series]

Instructor Led Live Virtual Class | Duration: 0.5 Day | Course Number: TPR1005

Technology
Primers

Mobile Operators need to reduce manual intervention in the installation, maintenance, and performance tuning of network elements to reduce costs, avoid downtimes due to human errors, and shorten deployment cycles. HetNets make this need acute and urgent. 3GPP standards have introduced features (broadly referred to Self-Organizing Networks features) since Release 8 (R8) to automate many tasks. Auto configuration related SON features include Automatic Inventory, Automatic Software Download, Automatic Neighbor Relation (ANR), and automatic PCI assignment. Optimization related SON features include Mobility Robustness Optimization (MRO), RACH Optimization, Mobility Load Balancing (MLB), ICIC, eICIC, Minimization of Drive Testing. Finally, Self-healing techniques like Coverage/Capacity Optimization (CCO) & Energy Savings are useful for multi-layer, multi-RAT, and multi-vendor coordination in future deployments. This course covers SON architecture and key SON features defined in releases R8 to R12.

Intended Audience

This is a basic overview course, primarily intended for those in system integration and test, systems engineering, operations and support, LTE network planners, Design engineers and managers.

Learning Objectives

After completing this course, the student will be able to:

- List the drivers for Self Organizing Networks
- Sketch different options for SON architecture
- Describe three solutions of SON – Self configuration, Self-Optimization and Self-healing
- Describe the need and functioning of key SON features such as
 - Automatic Neighbor Relation (ANR),
 - Automatic PCI Assignment,
 - ICIC and eICIC,
 - Mobility Load Balancing,
 - Mobility Robustness/Handover Optimization (MRO),
 - Coverage/Capacity Optimization (CCO),
 - RACH Optimization,
 - Minimization of Drive Testing (MDT), and
 - Energy Saving Management (ESM)

Suggested Prerequisite

- Working knowledge of LTE architecture and operations
- [LTE_102] LTE Overview (eLearning)
- [LTE_111] LTE Air Interface Signaling Overview (eLearning)

Course Outline

1. Introduction to Self-Organizing Networks (SON)

- 1.1. Motivation for SON
- 1.2. SON architecture
 - 1.2.1 Centralized SON
 - 1.2.2 Distributed SON
 - 1.2.3 Hybrid SON
- 1.3. SON solutions
 - 1.3.1 Self configuration
 - 1.3.2 Self optimization
 - 1.3.3 Self-Healing
- 1.4. Roadmap for SON

2. Self-Configuration

- 2.1. Automatic Neighbor Relation (ANR)
- 2.2. Automatic PCI assignment
- 2.3. Inter cell interference coordination
 - 2.3.1 ICIC
 - 2.3.2 eICIC

3. Self-Optimization

- 3.1. Mobility Load Balancing (MLB)
- 3.2. Mobility Robustness/Handover Optimization (MRO)
- 3.3. RACH optimization
- 3.4. Minimization of Drive Testing (MDT)

4. Self-Healing

- 4.1. Cell Outage Detection and Compensation (CODC)
- 4.2. Energy Saving Management (ESM)
- 4.3. Coverage and Capacity Optimization (CCO)