

New RAN

O-RAN, vRAN, Cloud RAN, RAN in the 5G Campus

Mobile communications is a growth market of central importance for many industries worldwide. Within mobile communications, the focus is on the establishment and expansion of 5G networks, because 5G offers very high bit rates on the one hand, and very short runtimes and such high reliability on the other, as is required in the automation of industrial processes.

The key component of mobile communications is the Radio Access Network (RAN). O-RAN concepts are planned to ensure very high bit rates and at the same time a large area coverage. Thus, numerous manufacturers and providers have organized together in the O-RAN Alliance to develop open and thus cost-effective methods for building and operating the infrastructures. This course covers important concepts of modern O-RAN.

Course Contents

- Open RAN Framework from the perspective of the O-RAN Alliance and others
- RAN Intelligent Controller (RIC): non-real time RIC and near-real time RIC
- RAN structure: RU, DU, CU, Core and vDU, vCU, vCore
- Fronthaul, midhaul and backhaul structure for high bit rates and low latency
- RAN in 5G campus networks
- Difference between virtual RANs and cloud RANs
- Virtualization - which components: vDU, vCU, vCore
- Virtual Machines vs Container - where do the differences lie?
- Automation: insight into Ansible, Docker and Kubernetes
- xApps and rApps - who cares?
- Radio base station split (IEEE 802.1CM) and protocol split
- Classes and profiles (IEEE 802.1CM)
- Interfaces: CRPI vs eCPRI - small letter, big impact
- Hollow core fiber for ultra low latency
- Interference due to slot and cell interference
- Coordinated Multi Point (CoMP) in campus networks
- Beamforming
- Network slicing in the RAN
- Time Error Budget (G.8271.1): in the RAN only 400 ns!
- Strategies for time sync. of base stations (gNodeB)
- Advantages and disadvantages of Global Navigation Satellite Systems (GNSS)
- Precision Time Protocol (PTP) in mobile radio: GM, BC (T-BC), TC, TSC
- RAN with Full Timing Support (FTS), G.8275.1
- Disadvantages with Partial Timing Support (PTS) and Assisted Timing Support (APTS)
- Time-Sensitive Networking (TSN) and RAN
- 5G and TSN for automation in industry, manufacturing, logistics and atomic motives
- TSN: time distribution, queueing and forwarding
- TSN: new paths for seamless redundancy

Target Group

5G RAN is of great importance for network operators, 5G campus operators as well as users of process automation. The course is aimed at people who evaluate, design, build or operate 5G and gives them a deeper insight into the technologies used in a modern O-RAN.

Prerequisites

Building on good prior knowledge in the area of 5G, such as provided by the course 5G Mobile Communications - Architecture & Radio for Public & Private Networks, the aforementioned topics are covered in depth.

This Course in the Web



You can find the up-to-date information and options for ordering under the following link:

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