

Telecom Services in 4G and 5G Networks

Together with dynamic expansion of mobile networks, the services offered to subscribers also evolve. Initially mobile networks were primarily focused on a single service – voice call, that mainly contributed to the operator’s revenue. Later, more services were introduced. It enabled creation of sophisticated offer, attractive for a wider subscriber base. As a consequence, number of subscribers rapidly increased. Enriched service offering created alternative sources of revenue. A very good example is SMS service, especially popular among the younger users. Another milestone in mobile network evolution was the introduction of mobile access to the Internet based on packet data services. Actually, packet services are the main drivers behind the recent mobile networks evolution based on UMTS, HSPA or LTE technologies. On the other hand, opening to the Internet has also negative effects. Nowadays, mobile subscribers have access to multitude of services offered by Internet providers. For these providers, often called “Over The Top”, the main source of revenue are advertisements. In order to attract as many users as possible, they develop very sophisticated services like voice communicators, chat applications etc. Moreover, these applications are offered free-of-charge. As a consequence, mobile subscribers are reluctant to pay for services, that constitute a large percentage of operator’s revenue share. Therefore, revenues of mobile telecom providers have been falling over the last years. In order to counteract this trend, completely new, innovative approach to service creation must be introduced. This is a subject of this course. Currently, mobile operators have the possibility to create almost unlimited service offerings, that meet individual subscriber needs. It is possible thanks to Policy and Charging Control (PCC) functionality. This architecture discussed during the lecture enables a precise control of packet traffic and accurate charging of individual services accessed by the users. The training presents historical background and subsequent evolution of the PCC system. Functionality of PCC components is discussed. New features available in each PCC release are presented. Required modification in the infrastructure and resulting benefits for the operator are investigated. Examples of service offerings available due to implementation of the PCC system are presented. For better understanding of the PCC functions, basic traffic cases are analysed.

Target audience

The course is intended for participants with no experience in PCC architecture. It is dedicated to technical as well as non-technical staff. The content should help the representatives of marketing and VAS departments to understand the multitude of new service offerings and charging models available thanks to the PCC system. It should be also interesting for the engineers working with the core network and charging, but not familiar with this new system.

Training contents

- **Introduction**

(evolution of charging in mobile networks, post-paid charging, pre-paid charging, difference between circuit-switched and packet-switched traffic, evolution of policy and charging control from independent solutions towards combined PCC system),

- **Basic Concepts**

(explanation of basic mechanisms – how to: control access to the services, ensure the desired QoS for services, precisely control charging on a service level, detect specific services applying sophisticated packet filtering criteria),

- **Architecture Evolution**

(functionality of PCC components and interaction among them, new components added in each release of the system),

- **Operator Benefits and Opportunities**

(benefits for the operator resulting from new functionalities introduced in each PCC release, examples how those services may be used to create new marketing offerings:

- tailor-made flat rate plans, personalized for subscriber individual needs,
- platinum, gold, silver, bronze categories with different transmission speed and quotas,
- application-based add-on packages like music, social media, news, based on subscriber preferences,
- sharing of resources among many users – ideal offers for families and small businesses,
- blocking of content – utilised in parental control service,
- sponsored content – advertisements,
- QoS control – prioritisation of premium-rate content, business subscribers ready to pay more for faster internet access,
- time-based differentiation – cheaper rate during off-peak hours, short-time access for travellers,
- pay-as-you-go, multitude of service bundles offering faster speed, extra volume or free services.)

- **Basic Traffic Cases**

(interaction among PCC components in different traffic cases)

- **Nowe services in 5G networks**

- Augmented or virtual reality,
- InternetOfThings,
- Ultra High Definition TV or streaming,
- Cloud Services,
- Medical Care,
- Connected cars.

Prerequisites

Basic telecommunication knowledge and eagerness to become familiar with the newest solution that will become crucial in future network evolution, service implementation and revenue assurance.

Training method

Theoretical lectures.

Duration

1 day

Level

Basic