5G Charging Operation and Maintenance

CONTENTS

This course provides a practical, end-to-end view of charging in 5G networks — from the standardized architecture down to the records, counters, logs and alarms that engineers work with every day.

It begins with the foundations of 5G charging: the Charging Function and its supporting roles, online, offline and converged charging models, the reference points that connect them, and the session procedures that generate chargeable events in the first place. From there, the course works through Nchf operations over HTTP/2, quota management and triggers, CDR content and encoding, and how CDR files are assembled and transferred toward the billing domain.

Because real networks rarely run one generation at a time, the course also covers Diameter credit control, the legacy Ro, Rf, Gx, Gy and Gz interfaces, and the points where policy control and charging meet. It then widens the lens to observability — performance measurement jobs, counters and KPIs, the alarm information model and fault supervision — before showing how charging, performance, fault, trace and log data can be joined using stable identifiers and a sound time basis. The final chapters address mediation pipelines, analytics, CHF discovery and deployment choices.

TARGET AUDIENCE

This course is intended for technical professionals who work with 5G charging data or the systems that depend on it. It suits charging and billing engineers, OSS/BSS and mediation specialists, core network and operations staff, and integration or data engineers building collection, correlation and reconciliation pipelines. It is equally useful for solution architects, revenue assurance analysts and support engineers who need to trace a charging event from the network function that raised it through to the record that reaches the billing domain. A working familiarity with mobile core networks is assumed, but no prior charging specialization is required.

COURSE OBJECTIVES

By the end of this course, participants will be able to:

- Describe the 5G charging architecture, the CHF and its charging models.
- Explain Nchf operations, quota management, and trigger handling over HTTP/2.
- Interpret CHF charging data records, their encoding, and partial record chaining.
- Follow CDR file transfer across Ga and Bx into the billing domain.
- Map Diameter credit control and legacy interfaces onto 5G charging roles.
- Relate PCC rules, charging keys, and spending limit control to charging output.
- Use performance counters, KPIs, and alarms to assess charging health.
- Correlate charging, performance, fault, trace, and log data using stable keys.
- Describe mediation functions, operating modes, and reconciliation practice.
- Explain CHF discovery and how core or edge placement affects collection.

PREREQUISITES

No specific prior knowledge is required. A general technical background in mobile networks is helpful, and familiarity with 5G core concepts, HTTP/JSON APIs, or basic billing and OSS/BSS data flows may enhance understanding.

5G Charging Architecture Foundations

- Charging Functions and Models
- Interfaces and Charging Domains
- Session Procedures Behind Charging

Nchf Operations and CDR Data Formats

- Charging Data Requests over HTTP/2

- Quota, Notifications and Triggers
- Charging Scenarios and Robustness
- CHF CDR Content and Encoding
- CDR Files and Transfer to Billing

Diameter Charging and Policy Interaction

- Diameter Protocol and Credit-Control
- Legacy Interfaces and Role Mapping
- Policy Control Meets Charging

Performance and Fault Management Data

- Controlling Measurement Collection
- Reporting Performance Measurements
- Charging-Relevant Counters and KPIs
- The Alarm Information Model
- Fault Supervision and Alarm Exposure

Joining Records Across Data Sources

- Identity Keys in 5G Records
- Bridging Charging, PM and FM Data

Trace and Log Data Streams

- Subscriber and Equipment Trace
- Trace Files, Streams and Syslog

Mediation Pipelines and Analytics

- Mediation in the Charging Data Path
- Analytics over Joined Observability Data

CHF Discovery and Deployment Choices

- Choosing the Right Charging Function