

Diameter in 3GPP Networks – 2 days

CONTENTS

The course describes the Diameter protocol and particularly the use of Diameter in 3GPP Networks. The first day focuses on the Diameter Base Protocol as standardized by IETF. It accounts for Diameter terminology, commands and AVPs, the use of Diameter agents, peers, security, transport, routing etc. Day 2 focuses on how Diameter is used in 3GPP architectures such as LTE/EPS and IMS. Message-level traffic cases (signalling flows) are used throughout the course to illustrate the use of the Diameter protocol.

PREREQUISITES

General knowledge about the architecture, terminology and modes of operation of 3GPP Networks is recommended as well as basic knowledge of the Internet Protocol (IP).

Diameter Introduction

- What is Diameter used for?
- Diameter Base Protocol, RFC 6733
- Diameter Clients, Servers and Agents
- Realms
- Diameter Commands and Message Formats
- Attribute Value Pairs (AVPs)
- Diameter Application examples (NASREQ, Credit Control)

Peers and Transport

- User Sessions vs Peer Connections
- Transport layer: TLS/TCP and DTLS/SCTP
- Diameter Peers
- Static and Dynamic discovery of Peers
- Managing a Peer Connection
- Security considerations

Diameter Agents

- Why Agents?
- Relay Agent
- Redirect Agent
- Proxy Agent
- Translation Agent

Routing and Forwarding

- Routing and Forwarding of Diameter Commands
- Routing Tables and Peer Tables

Diameter in 3GPP Networks

- 3GPP Diameter interface overview
- Diameter Routing Agent (DRA) and Edge Agent (DEA)
- Selected Use Cases
- Real-life considerations
- Hosts and Realms in the 3GPP environment

EPC Interfaces

- Diameter for Location Management and Subscriber Data Handling
- S6a and S6d (and S7a & S7c)
- S13 and S13'

IMS Interfaces

- Diameter for Registration, Invitation, Location Management, Subscriber Data Handling, Online and Offline Charging
- Cx, Dx
- Sh, Dh
- Ro, Rf

Policy and Charging Control Interfaces

- Diameter for Policy and Charging Control (PCC)
- Gx and Rx, Sd
- Gy, Gz and Sy
- S9