MiniCore

YateHSS/HLR & YateUCN in a box for testing & research

MiniCore is a Software-defined compact core network for LTE/IMS and GSM/GPRS.

It combines our YateHSS/HLR, YateUCN and YateSMSC in a small package.

It can be used a second core network for testing. In a laboratory it can be paired with the LTE LabKit for a full LTE/GSM network.

Features

- Setup/edit mobile network and component preferences via MMI management interface
- Minimal monitoring of each network component, additional YateBTS monitoring possible
- Wireshark capture of communication between components including decrypted IMS traffic
- JSON API integration with any SIM management and CRM systems
- JSON and REST API for sending SMS
- Can use both SIGTRAN/SS7 and Diameter for signaling
- Supports both IPv4 and IPv6
- Works both stand alone and with external components

Components

The MiniCore is a small factor PC computer that has preinstalled the following software components:

- YateUCN (MSC/VLR, GMSC, gsmSCF, MME/SGW/SGSN, PGW/GGSN, IMS CSCF)
- YateHLR/HSS (AuC, HLR, HSS, Subscriber management)
- YateSMSC (SMS store-and-forward, routing, home routed SMS)
- YateSTP (routing of SS7 messages by Point Code or Global Title)
- YateDRA (routing of Diameter messages by host, realm, application)
- YateMMI (Web management interface)

On demand additional components can be installed on the same hardware.
# Communication protocols

**MAP/SS7/SIGTRAN**
- M2PA or M3UA-ASP over SIGTRAN, SCTP (CRC32)
- ITU TCAP, ETSI MAP v3
- ITU or ANSI SCCP and SS7 MTP
- E.164, E.212 (ANSI), E.214 (ITU), TT or PC SCCP addressing
- Can connect to multiple STP/GW
- CAMEL phase 2

**Diameter**
- 3GPP Applications S6a/S6d, Cx/Dx
- SCTP or TCP transport
- Can establish or listen for connections
- Can connect to multiple Routing Agents

**HTTP**
- JSON API server for configuration and subscriber management
- JSON API for monitoring and information retrieval
- REST API client for visited network change notification
- JSON and REST API for sending SMS

**SNMP**
- SNMP v2 or v3 for information retrieval
- Traps sending for alarms

**Telnet**
- Management CLI for each component
- Optional SSL and password protection

**Voice interconnect**
- SIP and RTP
- G711, GSM and AMR codecs

**SIP**
- Supported standards (RFC3261)
- Registrar function
- B2BUA for calls
- RTP (RFC3550) with sideband DTMF (RFC2833)
- SMS and USSD over IP

**SMPP**
- Standard version 3.3
- Supports bidirectional communication

**RADIUS**
- Authorization of voice calls, data sessions and short messages
- Postpaid accounting for voice, data and SMS
- Prepaid support by re-authorization
- Support for 3GPP, Cisco VoIP VSA and Cisco ISG VSA dictionaries

**SMS**
- Format: SMS PDU (MO and MT)
- MAP/SS7 transport (T-PDU format)
- SIP MESSAGE transport (SMS over IP, R-PDU format)

**CDR**
- Flexible file format (default .tsv files) with customizable table headers
- Automatic file rotation
- Optional file transfer: FTP, SFTP
- JSON HTTP push API
- RADIUS with 3GPP and Cisco dictionaries
Communication interfaces

- **C interface** (MAP, HLR ↔ GMSC)
- **D interface** (MAP, HLR ↔ VLR)
- **E interface** (MAP, MSC ↔ MSC)
- **F interface** (MAP, MSC ↔ EIR)
- **J interface** (MAP, HSS ↔ gsmSCF for USSD)
- **Gr interface** (MAP, HLR ↔ GMSC)
- **Gc interface** (GTP or MAP, GGSN ↔ HSS, optional)
- **S6a/S6d** (Diameter, MME/SGSN ↔ HSS)
- **S13** (Diameter ↔ VLR)
- **S1 interface** (S1AP & GTP-U, YateENB ↔ EPC)
- **Gn/Gp interface** (GTPv1, SGSN and GGSN)
- **S5/S8 interface** (GTPv2, SGW and PGW)
- **Gi/SGi interface** (IP, connects to Public Data Network)

Hardware Interfaces

- Dual Gigabyte ethernet
- DVI and HDMI video*
- USB for mouse and keyboard
- 12V Power supply, 100-240V AC, 50-60Hz (included)