HEAD acoustics
Ebertstraße 30 a
52134 Herzogenrath, Germany
Tel.: +49 2407 577-0
Fax: +49 2407 577-99
Email: telecom@head-acoustics.de
Web: www.head-acoustics.com

DATA SHEET

*core*IP (Code 7770) *core*IP extensions (Code 777x)

_lab_CORE VoIP gateway software extension, _lab_CORE VoIP software/ hardware extensions

Overview

With the software extension *core*IP, *lab*CORE becomes a reference gateway for voice quality measurements of IP-based communication devices such as VoIP or VoLTE telephones. The extension contains an integrated VoIP SIP-client and RTP.

*core*IP supports numerous protocols, codecs and impairment options which can be added as further software/hardware extensions.

VoIP measurement scenario with HMS II.3, HHP IV and *lab*CORE

Description

With the software extension *core*IP, *lab*CORE becomes a reference gateway for voice quality measurements of IP-based communication devices.

Supported protocols

- SIP (Session Initiation Protocol, RFC 3261) via UDP, TCP, TLS
- RTP (Real-time Transport Protocol, RFC 3550), also usable without SIP
- Media Encryption by SRTP and ZRTP
- Firewall Policies NAT, STUN or ICE
- IPv4 and IPv6

Supported codecs

- G.711 (A-law, μ-law)
- G.722 (64 kbit/s (Mode 1))
- G.726, AAL2-G.726 (16, 24, 32, 40 kbit/s)
- G.729 Annex A and Annex B
- L16 (16 bit linear PCM @ 8, 16, 32, 44.1, 48 kHz)
- GSM 06.10 Full Rate
- Speex @ 8, 16, 32 kHz
- SILK @ 8, 12, 16, 24 kHz

Advanced features

- Codec payload type can be modified
- Format-specific parameters (fmtp) can be modified
- Static jitter buffer
  - Initial jitter buffer size can be defined
  - Current jitter buffer size can be reset to initial size
- Adjustable packet length depending on codec
- IP traffic can be monitored

Extensions

With a variety of optional software and hardware extensions, *core*IP can be upgraded with additional codecs and advanced features:

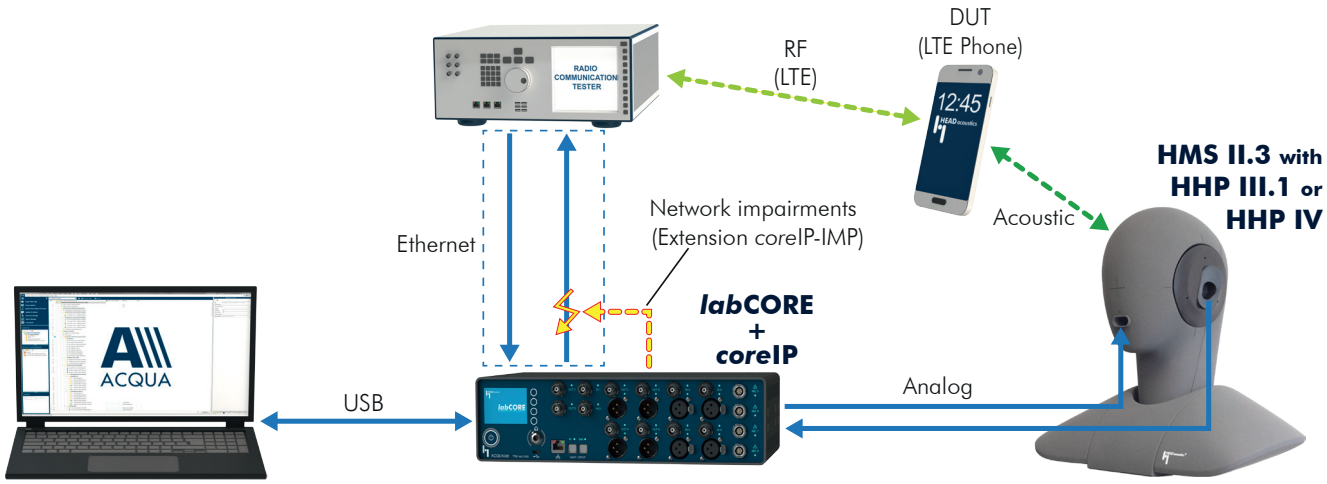
- ***core*IP-IMP (Code 7771)**: VoIP software extension for simulating network impairments. *core*IP-IMP allows to delay or discard specific RTP packets to simulate impairments like jitter, delay and packet loss. The measurement conditions are reproducible, even with active Discontinued Transmission (DTX)/Silence Compression.
- ***core*IP-AMR (Code 7772)**: VoIP hardware extension providing the additional codecs AMR-NB, AMR-WB (G.722.2) and GSM Enhanced Full Rate.
- ***core*IP-EVS (Code 7773)**: VoIP software extension providing the audio codec EVS in all specified bandwidths from narrowband to fullband with all bit rates and modes (incl. AMR-WB interoperable mode). *core*IP-EVS features static jitter buffer for accurate delay conditions instead of EVS' adaptive jitter buffer.
- ***core*IP-OPUS (Code 7774)**: VoIP software extension providing the audio codec Opus in mono and stereo audio.

Key Features

- Software upgrade transforms *lab*CORE into full-featured VoIP/VoLTE reference gateway
- Supports all internationally relevant protocols and codecs
- Can be upgraded with numerous software/hardware extensions for more in-depth testing
- Ensures exact synchronization between audio signal and IP packets for repeatable measurement conditions
- Specific support for radio testers Anritsu MD8475A and Rohde & Schwarz CMW 500 (not delivered by HEAD acoustics)

Applications

- Performing voice quality measurements of IP-based communication devices



Configuration example: VoLTE telephony with network impairments generated by *lab*CORE with coreIP and extension coreIP-IMP. LTE communication requires coreIP-EVS and/or coreIP-AMR (depending on desired codec).

General Requirements

Hardware

- ***lab*CORE (Code 7700)**, Modular multi-channel hardware platform

Software

- **ACQUA (Code 6810)**, ACQUA Standard: Basic analysis software, full-license version

Delivery

- ***core*IP (Code 7770)**, *lab*CORE software extension
  - **Initial equipping:** coreIP software license key is stored on *lab*CORE during production
  - **Retrofitting:** HEAD acoustics supplies the customer with the software license key

Extensions

Software

- ***core*IP-IMP (Code 7771)**, coreIP impairment software extension
- ***core*IP-EVS (Code 7773)**, coreIP EVS codec software extension
- ***core*IP-OPUS (Code 7774)**, coreIP OPUS codec software extension

Hardware

- ***core*IP-AMR (Code 7772)**, labCORE AMR codec hardware extension