

Today's Codec Landscape

Audio Rate	Available Codecs
Narrowband (8000 Hz)	G.711 , G.726, G.727, G.728, G.729, G.723.1, AMR, GSM, iLBC
Wideband (16000 Hz)	G.722 , G.722.1 , G.722.2, G.729.1, G.711.1, G.718, Speex
Super-Wideband (32000 Hz)	G.722.1C
Full-Band (48000 Hz)	G.719, AAC-LD, AMR-WB+, MPEG

Royalty-free codecs Highlighted

Applications

- Point to point calls
- Conferencing
- Telepresence
- Mobile VoIP
- In-game voice chat
- Live distributed music performances
- Live Internet music lessons
- TTY / TDD

Goals

- Widely and easily distributable and accessible codec technology
- Small number (1 or 2) of codecs that cover the operating space

Technical Considerations

- suitability for most fixed-point DSP
- medium- to high-quality speech at moderate bit-rate;
- high-quality music encoding at higher bit-rates;
- sampling rate profiles from narrow-band to full audio bandwidth;
- real-time adaptive bit rate;
- source-controlled variable bit-rate (VBR);
- low algorithmic delay;

What is out of scope?

- Very low bitrate
- Non-interactive music (e.g. MP3, AAC)
- Unlimited number of codecs

Why do this here?

- IETF is where you find the people who understand the impact of the IP stack on codec requirements and adaptation.
- Cross-area review
- Whole Internet community can participate
- IETF will have change control and the resulting codecs will be different and better than the initial candidates.

CELT Codec Characteristics

Characteristic	Value
Sampling Rate	32 – 48 kHz
Bit Rate	40 – 128+ kbit/s per channel
Delay	2 – 20 ms
Loss Robustness	Yes
Stereo Support	Yes
IPR Status	No known IPR
Application	Low delay speech and music

SILK Codec Characteristics

Characteristic	Value
Sampling Rate	8 – 24 kHz
Bit Rate	6 – 40 kbit/s
Delay	25 ms
Loss Robustness	Yes
Stereo Support	No
IPR Status	Royalty free
Application	Speech

IPMR Codec Characteristics

Characteristics	Value
Sampling Rate	8 – 32 kHz
Bit Rate	6 – 120 kbit/s (layered)
Delay	35 – 50 ms
Loss Robustness	Yes
Stereo Support	No
IPR Status	TBD
Application	Speech / Audio

BV32 Codec Characteristics

Characteristic	Value
Sampling Rate	16 kHz
Bit Rate	32 kbit/s
Delay	5ms** (buffering delay)
Loss Robustness	yes
Stereo Support	no
IPR Status	Royalty free
Application	Low delay speech

A2DP SBC+PLC

Characteristic	Value
Sampling Rate	16, 32, 44.1, or 48 kHz
Bit Rate	50-350 kbit/s
Delay	1.1 - 16.6 ms
Loss Robustness	Yes
Stereo Support	Yes
IPR Status	One known patent that will expire in 2010
Application	Mobile wireless headsets

This information was provided by Christian Hoene. The data includes characterization of the codec with an appropriate PLC