Audio

Audio

Symbian OS phone contains two audio sub-systems, mostly independent, streams of audio data. One is the **telephony voice data** and the other is **multimedia data**.

Telephony audio

The telephony voice data is the heart of a phone call. It has stringent latency restrictions placed upon it to ensure that the user has a high quality call without the effects of transatlantic satellite lag. During a call, Symbian OS will be in a low-power mode, only needing to wake up when the display needs updating. A normal call will end up in the analogue audio circuits. They contain the analogue to digital and digital to analogue converters, which in turn are connected to the microphone and speakers. When using a Bluetooth (BT) headset the PCM data is transported directly into the BT module via its own dedicated interface. Symbian OS needs an additional audio path to allow it to inject system sounds into the ongoing call. These are for such things as message alerts, low battery and a second incoming call.

Multimedia audio

Multimedia audio is a general term for every generated sound in the system that is *not voice data*. The main multimedia sounds are:

- Ring tones, in many formats
- Alerts, for incoming messages
- Alarms, from clock and calendar
- Video telephony
- MP3 playback
- Games
- Recorded voice, dictaphone
- Video capture and playback.

The higher levels are all controlled by the Symbian multimedia framework (MMF) for media players, file formats and plug-ins. The Multimedia Device Framework (MDF) will contain the codecs, and it will transfer PCM data to and from the device driver layer, DevSound. Video telephony (VT) is a special case, in which live audio data does pass through Symbian OS. The audio elements of the call are multiplexed into the 64-kb/s data stream along with the video.

The main complexity in the audio systems is the ever-growing number of audio sources and sinks, and the possible ways in which they can be connected. For example, current phones have multiple headsets, speakers, Bluetooth and FM radios. This is likely to remain an issue until hardware is capable of mixing and routing every audio source in all possible combinations. Today some audio use cases will be incompatible with others, requiring them to interrupt each other.

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