



# MELPe Vocoder - Software Suite for Windows, Linux, Unix, Mac OS, iOS, Android, GHS, ARM, etc.

Real-Time Implementation of the MELPe U.S. and NATO standard vocoder (MIL-STD-3005, NATO STANAG 4591)



Compandent's MELPe suite is a multi-channel multi-thread real-time implementation of the 600/1200/2400 bps MELPe vocoder, U.S. and NATO standard vocoder (MIL-STD-3005, STANAG 4591), running on any platform and operating such as Windows, Linux, Unix, and Mac OS, iOS, Android, ARM, GHS, etc.. The suite is versatile, easy and convenient to operate and integrate. Compandent MELPe suite provides complete state-of-the-art low-rate voice communications.

## Background

MELPe- Enhance Mixed-Excitation Linear Predictive (MELP) vocoder, known as military standard MIL-STD-3005 and NATO STANAG 4591, is a triple-rate low rate coder that operates at rates of 600, 1200 and 2400 bps. At 2400 bps, its quality surpasses that of the old MELP vocoder. The Compandent's MELPe vocoder suite includes also compressed bit-stream transcoding between the two rates, and optional Noise Pre-Processor (NPP).

## Operation

Compandent Inc. has participated in the research, development and implementation of the Enhanced Mixed-Excitation Linear Predictive (MELPe) vocoder sponsored by NSA. Compandent provides support as well as software and hardware related to the MELPe vocoder. Compandent is the only company that both participated in the MELPe R&D, and also provides related products, services, and support.

Compandent has been supporting and improving the MELPe real-time implementation. Compandent has ported MELPe to various platforms and operating systems such as Windows, Linux, Unix, and Mac OS, iOS, Android, ARM. For example Table 1 lists the real-time consumption of Compandent's MELPe package running on 3.4 GHz P4 processor under Windows OS.

## Available features:

The MELPe software suite includes the following features:

- Multi-channel and multi-thread,
- POSIX compliant,

- C-callable functions
- Optional components available (customer can select desired combination):
  - MELPe at 2400 bps - high rate encoder and/or decoder
  - MELPe at 1200 bps - low rate encoder and/or decoder
  - MELPe at 600 bps - very low rate encoder and/or decoder
  - compressed bit-stream transcoding between the rates
  - noise pre-processor - for reducing background noise
  - postfilter - for quality enhancement of the reproduced speech
- Example of main C program that initializes and runs the MELPe vocoder functions
- "Packetized-Network-Ready" - to maintain high quality even in severe FER conditions
- Comprehensive and detailed documentation that allows for smooth and easy integration
- Compandent support and service

MELPe Components \ Rate	1200 bps	2400 bps
NPP + Encoder	4%	4%
Decoder + PF	2%	2%

**Table 1** The real-time consumption of Compandent's MELPe package running on 3.4 GHz P4 processor

**Please note:** Compandent owns **intellectual property** (IP) in the official (standard) MELPe implementation, and any of its derivatives. Any party intending to develop commercial products based on MELPe should contact Compandent as well as other IP holders regarding licensing.

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