Intel® IXP400 Digital Signal Processing (DSP) Software Version 2.6.2

Software Product Specification

April 2005
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**Revision History**

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<th>Date</th>
<th>Revision</th>
<th>Description</th>
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<td>April 2005</td>
<td>001</td>
<td>Initial release.</td>
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1.0 Product Context

Intel® IXP400 Digital Signal Processing (DSP) Software v2.6.2 provides basic voice-processing functionality for voice-over-IP (VoIP) applications using the Intel® IXP421, IXP423, and IXP425 network processors.

2.0 Product Specifications

Intel® IXP400 Digital Signal Processing Software v2.6.2 offers the following general product features:

• ITU T.38 Fax Relay
  — V.17 at 14400, 12000, 9600, and 7200 bps fax modulation and demodulation
  — V.21 at 300 bps fax modulation and demodulation
  — V.27ter at 4800 and 2400 bps fax modulation and demodulation
  — V.29 at 9600 and 7200 bps fax modulation and demodulation
• 128-ms echo cancellation
• Selectable (either HSS or External PCM Interface) front-end Pulse Code Modulation (PCM) interface
• Maximum eight voice channels when using G.711 for 533 MHz processor
• ITU-T compatible voice coders:
  — G.729ab with VAD and CNG support
  — G.711 µ-law and A-law CODEC with 10-ms frame size
  — G.711 Annex 2. Support for VAD and CNG
  — G.723.1 with 5.3 and 6.3 Kbps rates and VAD and CNG support
  — G.722
  — G.726 with 16, 24, 32 and 40 Kbps rates and FRC3551 and I.366 Annex E packing formats
• Multiple frames per packet. Maximum numbers of frames per packet are:
  — 6 for G.711 and G.722
  — 8 for G.723.1
  — 9 for G.726 40 Kbps
  — 12 for G.726 32 Kbps
  — 16 for G.726 24 Kbps
  — 24 for G.729
• PSTN failover via Low Latency HSS bypass
• Packet loss concealment (PLC) for G.711, G.726, and G.722
• Configurable PCM interface in the wideband or narrowband mode
• Runtime dynamic switching of coder types
• Runtime dynamic changing of the number of frames per packet
• Automatic switching of decoder types according to the received RTP packets
• Automatic Gain Control (AGC) support for encoder, with provision for manual setting with mute compliant to ITU G.169
• Automatic Level Control (ALC) support for decoder, with provision for manual setting with mute compliant to ITU G.169
• Echo cancellation for narrowband and wideband interface compliant to ITU G.168
• DTMF generation and detection
• Dynamic DTMF tone clamping
• RFC-2833 tone-event support for DTMF with variable frame rate
• Modulated-tone generation capability
• Fax-tone detection (CNG, CED, and V.21 Preamble)
• Generation and receipt of FSK modem signals for caller ID
• Call-progress-tone generation for the United States, Japan, and China
• Dynamic/Adaptive jitter buffer algorithm
• Audio mixer for three-way calls and small conferences (up to five parties)
• User-customizable control API
• Audio player for G.711 and G.729 recorded data
• Digital gain control in the TDM front end
• TDM switch (normal mode with echo cancellation or low latency mode)
• User-defined tones for tone generation and detection

Software Development Environments that are compatible with the Intel® IXP400 Digital Signal Processing Software v2.6.2 are:

• Wind River* VxWorks* Developer Tool Kit 2.2.1 (Tornado* 2.2.1 / VxWorks 5.5.1) with GCC compiler + Intel® IXP400 SW v1.3
• Wind River VxWorks Developer Tool Kit 2.2.1 (Tornado 2.2.1 / VxWorks 5.5.1) with GCC compiler + Intel® IXP400 SW v1.4
• MontaVista* Linux* Professional Edition 3.0 with GCC compiler + Intel® IXP400 SW v1.3
• MontaVista Linux Professional Edition 3.0 with GCC compiler + Intel® IXP400 SW v1.4
• MontaVista Linux Professional Edition 3.1 with GCC compiler + Intel® IXP400 SW v1.4

Hardware Development Platforms that are compatible with the Intel® IXP400 Digital Signal Processing Software v2.6.2 are:

• Intel® IXDP425 / IXCDP1100 Development Platform
• ADI* Engineering Coyote* Reference Design