VeriCall™ VoIP Software Framework

Trinity’s VeriCall software framework coupled with high-performance processors from Freescale, provide telecommunications equipment manufacturers with a flexible, open architecture VoIP solution. This comprehensive hardware and software approach is designed to reduce product development time, cost, and risk.

VeriCall incorporates the intrinsic software elements to develop robust enterprise and carrier-class VoIP equipment for both wireless and wireline applications. VeriCall offers a comprehensive framework, algorithms, stacks, and protocols to support Motorola’s Smart Networks Platform, including the MSC8100 family of DSPs based on StarCore® technology, the PowerQUICC™ family of integrated communications processors, PowerPC® host processors and C-3/C-5 network processors.

VeriCall’s published API and algorithm interface specification allows OEMs to seamlessly integrate custom or third-party algorithms, protocols, and control applications into the system. VeriCall is an embedded software framework employing a tightly integrated system-aware architecture. The framework includes media processing, packet processing, system management and control, telephony signaling, gateway call control, data transport, and the integration of these interdependent functions.

Key Benefits
- Open architecture preserves OEM’s differentiation and intellectual property investment
- Improves time-to-market and saves OEM’s product development resources
- Allows OEMs to leverage applications software across product lines
- Abstracts developer from underlying DSP, allowing for easier code portability

Target Applications
- Media Gateways
- Trunking Gateways
- Softswitch
- Media Servers
- IP-PBXs
- Wireless Transcoders
- Wireless Interworking Gateways
- Mobile Switching Centers
- DSLAM
- CMTS
- Converged Broadband Switches
VeriCall System Interfaces

- **Media Engine** - This DSP resident module performs media stream processing, packet handling and data transport.

- **Administrator** - Control plane interface into the application. The system controller-based Administrator is responsible for controlling the media processing and signaling elements within the system. The host API provides easy interface to SIP, Megaco and MGCP gateway call control protocols.

- **Signaling Engine** - The signaling engine is responsible for providing access to PSTN signaling protocols (CAS, S57, ISDN, V5.2, GR303) and can be implemented on an integrated communications processor or run native on the DSP in highly embedded applications.

- **Conduit** - An inter-module communications interface provides a transport mechanism for the control plane. The Conduit links the Administrator control utility to the Media Engine and Signaling Engine.

### VeriCall Features

#### Media Engine - Voice Coders/Fax

<table>
<thead>
<tr>
<th>Definition</th>
<th>MSC8101/3</th>
<th>MSC8102</th>
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<tbody>
<tr>
<td>G.711 Appendix 1 &amp; 2</td>
<td>Linear PCM 64 Kbps, A Law/mu, Law/AM, ADPCM, CNG, and PLC</td>
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<tr>
<td>G.723.I</td>
<td>Linear PCM 64 Kbps, A Law/mu, Law/AM, ADPCM, CNG, and PLC</td>
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<tr>
<td>G.726</td>
<td>ADPCM 16, 24, 32, 40 Kbps</td>
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<td>G.729.A/B</td>
<td>CS-ACELP 8 Kbps</td>
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<td>GSM-AMR</td>
<td>4.75-12.2 Kbps</td>
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<tr>
<td>T38 Fax Relay</td>
<td>G3 Fax Relay 2.4-14.4 Kbps</td>
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<tr>
<td>SMV (wideband)</td>
<td>0.8-8.55 Kbps</td>
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<tr>
<td>EVRC</td>
<td>0.8-8.55 Kbps</td>
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#### Media Engine - Voice Processing/Quality Enhancement

- **Echo Canceller**
  - Per ITU-T G.168-2000 ECAN 10 ms, 16 ms, 32 ms, 128 ms tail sparse window
- **Voice Activity Detect**
  - Analyzes voice activity to detect silence intervals
- **Packet Loss Concealment**
  - Per ITU-T G.711 Specification Appendix 1
- **Comfort Noise Generation**
  - Per ITU-T G.711 Specification Appendix 2
- **Adaptive jitter Buffer Manager**
  - Fully adaptive or static; De-jitter and packet reordering

#### Media Engine - Telephony Algorithms

- **DTMF Detect and Generate**
  - Per Bellcore GR-506-CORE, TIA 468-B, ITU-T Q.23 and Q.24
- **DTMF Relay**
  - Per RFC 2833
- **Call Progress Tone Handling**
  - Per Bellcore GR-506-CORE, ITU-T Q.35

#### Media Engine - Data Transport

- **RTP/RTCP**
  - Per RFC 1889 and 3550
- **UDP**
  - Per RFC 768
- **IP**
  - Per RFC 791

#### Signaling Engine - Telephony Signaling Protocols

- **Channel Associated Signaling**: E&M, FXS/FXO Loop Start & Ground Start

#### Administrator - System Control Functions

- **C** Host-based API on PowerPC™, MPC82xx, or Pentium® host processors, designed to provide easy control of system
- **SIP User Agent**
- **VxWorks® or Redhat Linux® operating system support**
- **Adheres to standard-based SNMP for remote management**

#### Conduit - Control Plane Transport

- **Conduit** - An inter-module communications interface provides a transport mechanism for the control plane. The Conduit links the Administrator control utility to the Media Engine and Signaling Engine.

### Learn More

For more information on products from Trinity Convergence, visit www.trinityconvergence.com.

For more information on Motorola’s products, visit www.freescale.com.