CENTILLIUM COMMUNICATIONS

# Entropia II EG CT-GWT5096

VoIP SoC

## Overview

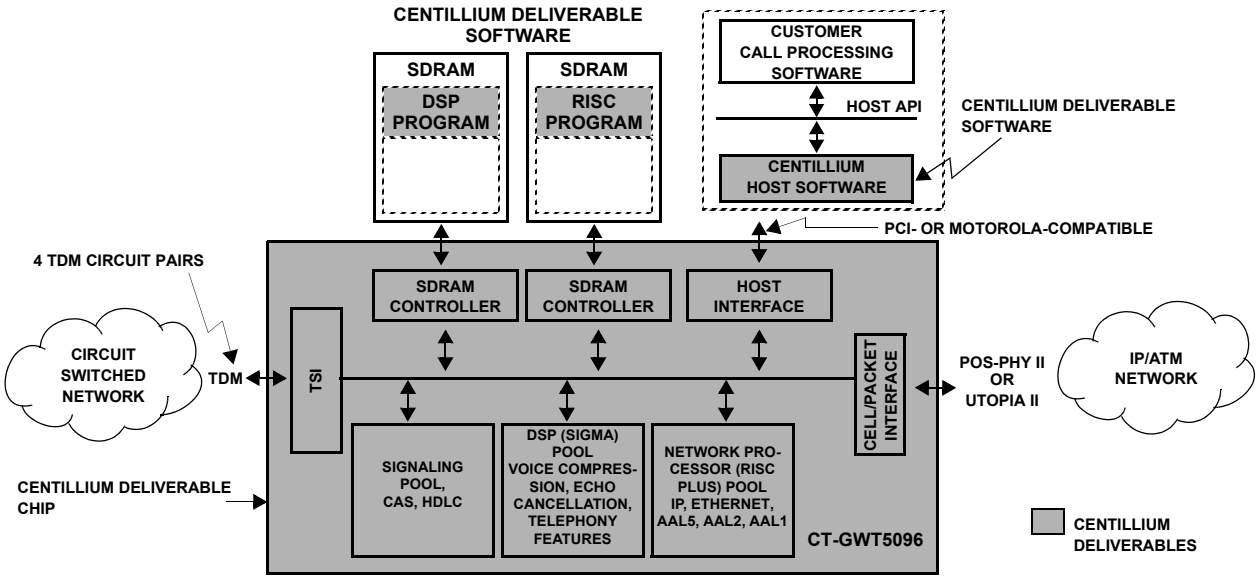
The Entropia II EG (enterprise gateway) is an advanced Voice-over-IP (VoIP), System-on-Chip (SoC) processor for voice and media gateways, Class 4 and 5 switches, digital loop carriers (DLC), voice enabled IP routers, and IP private branch exchange (PBX) systems.

The Entropia II EG leverages on the embedded hardware accelerators to achieve superior performance. The highly integrated single-chip design enables multiple services while it reduces board component count, reduces power consumption and accelerates time to market. Field proven algorithms provide low latency processing and improved voice call quality.

## Features

- Embedded DSP and network packet processors
- Bridges TDM and VoIP wireline converged voice calls
- Multiple wireline codecs with low capacity such as 96 G.711 (PCM)/ADPCM VoIP or VoATM carrier-class voice channels with 128-ms echo cancellation and telephony features
- Highest integration of digital signal processors (DSP) and networking processors:
  - Voice, telephony, and networking bearer functions
  - Signaling (HDLC, CAS, CCS)
  - Control processing and transport
- Highly scalable architecture for gateway designs
- Standards-compliant interfaces:
  - TDM: T1, E1, MVIP, HMVIP
  - Packet: Utopia-II, POS-PHY II
  - Host: Motorola processor
- Standards-compliant software:
  - ITU, IETF, and ATM-Forum
- Voice compression codecs and features:
  - G.711, G.726, G.729x, G.723.1
- Echo cancellation:
  - Programmable 128-ms Tail Length
  - G.168-2002, G.165 third-party certified
  - Fast convergence time
  - World class, field proven
- Fax and modem relays:
  - Fax and Modem tone detection and revert
  - T.38 Fax Relay over IP
- Jitter buffer
  - Up to 240-ms adaptive jitter buffers, programmable per channel
- Telephony and Class features:
  - Comprehensive tone generation and detection: DTMF, MF R1/R2, COT, call-progress tones with national variations
  - Announcements with dynamic loading, recording, and playback, unlimited length with server option
  - Multi-way conferencing, Caller ID

## System Block Diagram



  - Packet Loss Concealment
  - Voice Activity Detection (VAD)
  - Silence Suppression (SID)
  - Comfort Noise Generation (CNG)
- High Performance
  - Optimized for Low Delay end-to-end voice calls
- Wireline voice network packet processing and inter-networking:
  - Standards-compliant RTP/UDP/IP and Ethernet
  - Encapsulation for VLAN
  - Packet-to-Packet interworking
- Signaling, control processing and transport:
  - Programmable CAS, CCS event filtering
  - Embedded HDLC controller
  - IETF RFC 2833 DTMF Tone Relay, CAS, and embedded RTCP transport
  - Signaling and Control transport, including ARP/SNMP and OAM
  - AAL2 Type 3 Messages, over-subscription, SSTED/SSAR and Frame Mode Data
  - AAL1 NxDS0 (CES) with CAS
- Inter-networking and cross-connect flexibility:
  - TDM-DSP-NP-PKT: TDM/Packet (PKT) Bridge
  - TDM-DSP-TDM: TDM echo cancellation and telephony
  - TDM-NP-PKT: low-delay clear channel data
  - TDM-HDLC-Host: V5 TDM signaling
- Designed for advanced end-system models and ease of system software integration:
  - Redundancy support: 1:1 or 1:N
  - Packet-to-packet interworking with or without transcoding, TDM and packet digit collection
  - Dynamic updates of call features, parameters
- Advanced API
  - Comprehensive, programmable high-level application programming interface (API)
  - Portable ANSI ‘C’ API, modular and RTOS independent
  - Abstracted OS and hardware layers
  - High-level compact API provisioning
  - Unmatched ease of integration and flexibility on a per-channel basis
  - Advanced statistics, diagnostics and signal monitoring

**Note:** This product brief describes the capabilities of the Entropia II EG CT-GWT5096 device. Some of these features are still under development. Please contact Centillium Communications for product availability.

## Product Components Information

| Deliverable | Format | Functions | Comments |
|---|---|---|---|
| CT-GWT5096 device | 388-pin PBGA (27 x 27 mm) | Hardware functions | 1.5V core; 3.3V I/O |
| Embedded DSP firmware | DSP executable code | Voice compression, echo cancellation, and telephony functions | Loaded upon power up. |
| Embedded RISC software | RISC executable code | Networking functions | Loaded upon power up. |
| Host API software | ‘C’ source code | Host API, device drivers, switch fabric management, and device resource management | Code is to be integrated with customer software running on customer host processor. |

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