

### IEEE 1588 & SYNC E REFERENCE DESIGN



The ZLE30320 reference design operates as a standalone IEEE 1588-2008 server/grandmaster or client, in addition to fulfilling the requirements of Synchronous Ethernet. The ZLE30320 is based on Microsemi® ZL30310 IEEE 1588 Network Synchronizer and optionally includes Microsemi ZL30142 SyncE SONET/SDH G.8262/ Stratum 3 System Synchronizer.

Operating as a server, the ZLE30320 synchronizes to electrical references and converts the frequency and time information into 1588 packets that are sent to clients. Operating as a client, the ZLE30320 synchronizes to 1588 packets and/or SyncE references and generates high speed clocks as well as PPS and Time of Day information. The 1588 client packet synchronizer uses advanced packet synchronization algorithms of Microsemi to recover frequency and phase (time of day) that is capable of meeting the requirements for GSM, WCDMA, WiMAX, and LTE mobile backhaul applications.



#### Applications

- Mobile backhaul for GSM, WCDMA,
- WiMAX and LTE
- EPON/GEAPON & GPON OLT and ONU/
- ONT
- DSLAM

#### IEEE 1588 & SyncE Reference Design

- IEEE 1588-2008 (v2) server/grandmaster and client
- Synchronous Ethernet G.8262 transmit/generation and receive/synchronize
- Comprehensive G.8261 performance reports for routers, switches, xDSL and other networks available

#### IEEE 1588-2008 Operation

- Server synchronized to electrical references, generating electrical/SyncE/PPS clocks and 1588 packets
- Client synchronized to 1588 packets, generating electrical/SyncE/PPS clocks
- Client synchronized to electrical/SyncE references and 1588 packet PPS/ToD, generating electrical/SyncE/PPS clocks (hybrid mode)

#### IEEE 1588-2008 Modes & Features

- Client synchronization for frequency (clock) or phase (clock & time of day) Client synchronization with end-to-end transparent clock
- Client hybrid mode with SyncE high speed clock and 1588 PPS/ToD
- One-step (sync) or two-step (sync & follow\_up) clocks
- One-way (sync) or two-way (sync & delay\_req, delay\_resp) mode
- Telecom profile with multicast sync and unicast delay\_req & delay\_resp
- Best master clock
- Unicast negotiation
- Acceptable master table & Unicast master table
- Programmable packet rates
- Annex D profile: Ethernet/IPv4/UDP/PTPv2

# ZLE30320

Microsemi ZLE30320 reference design offers manufacturers a complete platform to help speed the design of new equipment, or retrofit of existing equipment, to support more cost-effective delivery of time-sensitive voice, video, data and mobile services over packet networks.

## Clock Engine Specifications

- ITU-T G.812 type II, III and IV
- ITU-T G.813 option 1 & 2
- ITU-T G.8262 EEC option 1 & 2
- Telcordia GR-1244-CORE Stratum 2, 3, 3E, 4, and 4E
- Telcordia GR-253-CORE SMC & Stratum 3

## Clock Engine Specifications

- ITU-T G.823 & G.824 synchronization/network and traffic limits
- ITU-T G.8261 PNT (EEC & PEC) and CES limits
- ANSI T1.101 & T1.403

## Electrical Clock Inputs

- E1 (HDB3/AMI) or T1 (B8ZS/AMI) unbalanced 75 ohm BNC
- 2.048 MHz or 1.544 MHz LVCMOS SMA
- 5 MHz or 10 MHz 1 Vrms sine with 0V bias (e.g. 13 dBm into 50 ohm) SMA
- SyncE 1000-BaseT GE RJ-45
- Nx8 kHz LVCMOS SMA
- PPS LVCMOS SMA
- On-board oscillator (feerun)

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## System Oscillator

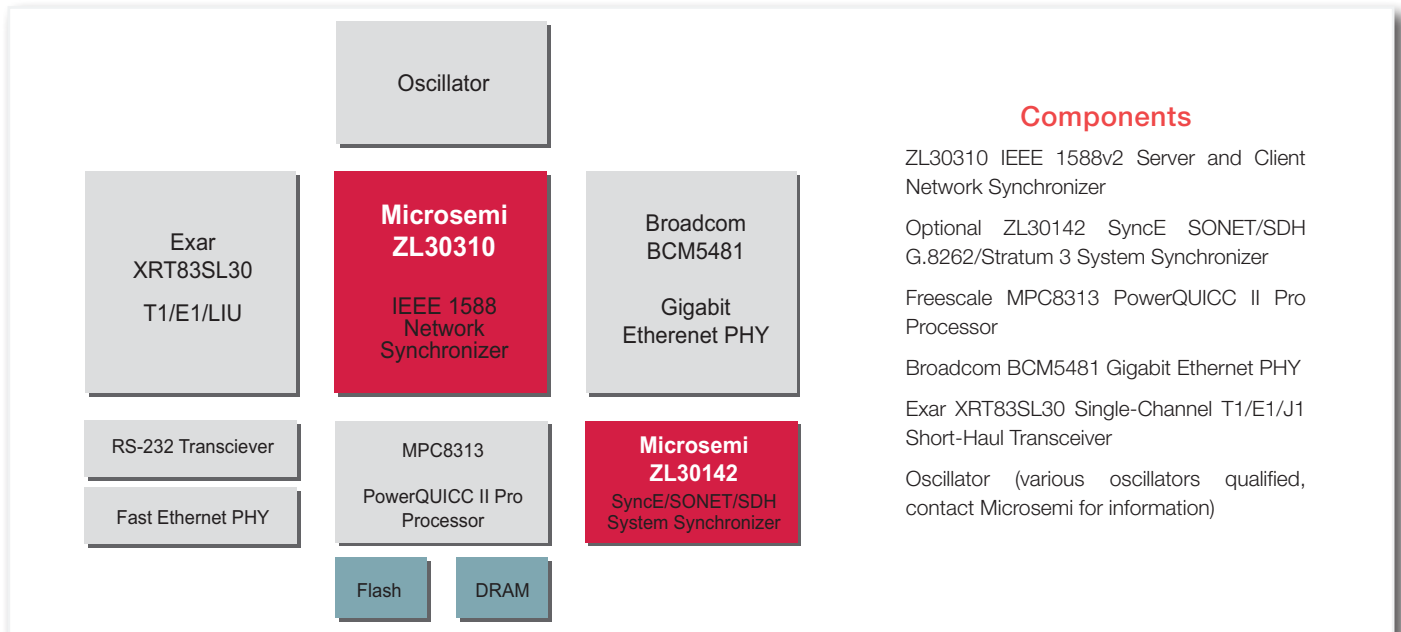
- Selectable system oscillator
- Uncompensated XO +/- 32 ppm (Stratum 4/4E) [server only]
- TCXO (Stratum 3)
- OCXO (Stratum 3E)

## Management

- CLI/Craft Terminal via Serial RS-232 DB9
- Web (Firefox/IE) via 10/100-BaseT FE RJ-45

## Power

- 5V DC via external 120/240V AC wall adapter (adapter provided in kit)



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