

## High-Capacity VoIP on a blade™ VoIP Add-On for the TB640 System-Blade™



TelcoBridges' innovative, high-performance *System-Blade™* is in a class of its own, especially when combined with the TB-VoIP Mezzanine™, which offers the flexibility to connect to VoIP networks using standard interfaces and protocols. It enables telecom system integrators to market a high quality, tailor-made VoIP solution at a competitive price.

### VoIP Enabled Applications

- PSTN gateway
- Least cost routing NGN switch
- Transcoding server
- Media gateway
- IP media server

The TB-VoIP Mezzanine™ hosted on a TB640 *System-Blade™*, is controlled using the blade's asynchronous message-based API over dual redundant GigE ports. The TelcoBridges API is host agnostic and natively supports application server redundancy and automatically switches between redundant control paths, providing you with instantaneous system-level redundancy.

Installing the TB-VoIP Mezzanine™ on the TB640 *System-Blade™* adds an impressive amount of VoIP channels on the same blade. With 2,304 VoIP channels per blade, this is the highest density platform available on the market today.

The TB-VoIP Mezzanine™ is specifically designed to complement TelcoBridges' TB640™ product line of E1/T1/J1, DS3 and OC3/STM-1 *System-Blades™*. By adding VoIP channels to the field-proven TB640 *System-Blades™*, system integrators can effectively create a high-capacity carrier-class TDM/VoIP device on a single blade.

### Create a Media Gateway on a Blade™

#### VoIP

- Up to 2,304 VoIP channels
- Full suite of VoIP and wireless codecs
- G.168-128 ms echo cancellation on all channels
- T.38 fax relay/G.711 pass-through
- SIP

#### TDM

- Up to 64 x E1/T1/J1s
- Up to 3 x DS3s
- 1 x OC3/STM-1
- SS7 HA
- ISDN, CAS
- IVR on all channels

Integrated to create a VoIP gateway with SS7 connectivity and IVR features combined, system integrators can bring to market the highest capacity and most fully-featured system to effectively compete against the largest telecom equipment manufacturers. Advanced features such as the TB-N+1 Shelf™ and the TB-Multi-Blade Switch™ can be used to build a perfectly non-blocking, fully redundant 36,864 channel media gateway – more than most big iron systems available today.

TelcoBridges combines an innovative architecture with leading edge technologies to enable system integrators to create next-generation switching systems for wireline and mobile networks. Systems built with these building blocks are dense, scalable, flexible and carrier-class.

## General

- The TB-VoIP Mezzanine™ is a factory installed option for the following **TelcoBridges System-Blades™** :
  - TB640-E1/T1/J1
  - TB640-DS3
  - TB640-OC3/STM-1
- 384, 768, 1152, 1526, 1920, 2304 channel options (G.711/20 ms)
- Full suite of VoIP, GSM, W-CDMA and CDMA2000 codecs available
- Supports any combination of codecs
- Dynamic, on-the-fly codec selections
- IP/UDP/RTP/RTCP
- RJ45F GigE Ethernet interface

## VoIP Codec Options

- G.711 (5, 10, 20, 30 ms packets)
- G.723.1 (30, 60 ms)
- G.726 (5, 10, 20, or 30 ms)
- G.728 (5, 10, 20, 30 ms)
- G.729ab (10, 20, 30 ms)
- G.729eg (10, 20, 30 ms)
- iLBC13 (30, 60 ms)
- iLBC15 (20, 40 ms)
- T.38

## Wireless Codec Options

- AMR (20, 30 ms packets)
- EVRC (20, 30 ms)
- FR (20, 30 ms)
- EFR (20, 30 ms)
- QCELP 8/13 (30, 30 ms)

## Echo cancellation

- ITU-T G.168 – 2002
- 128 ms echo tail supported on all channels simultaneously

## Signal Processing

### Tones

- Tone detection and generation
- DTMF relay over IP (RFC 2833)

### Fax and Modem

- Fax tone detection
- T.38 fax relay, G.711 pass-through

### Voice

- Automatic gain control (AGC)
- Voice activity detection (VAD)
- Comfort noise generation (CNG)
- Adaptive and fixed jitter buffers

## Signaling

- Signaling is supported on the host TB640 *System-Blade™*
- Signaling stacks run on the blade (controlled through the API)

### SIP

- RFC 3261 User agent
- RFC 2833 In-band DTMF
- RFC 2976 Info method
- RFC 3515 Refer method

### SS7 HA (20+ variants, contact us for details)

- MTP2, MTP3, ISUP, SCCP, TCAP
- Over 1,000 ISUP calls per second (~3.6M BHCC)
- Up to 64 links
- Up to 30,000 CICs

### ISDN (14+ variants, contact us for details)

- Q.921 LAPD
- Q.931 ISDN PRI

### CAS

- R1, MFC-R2, wink start, FXS loop/ground start, FXO, Taiwan R1

## Control and Management

- Asynchronous message-based API
- Application server OS: Linux, Intel/SPARC Solaris™, Windows®
- Dual redundant GigE or dual fabric PICMG 2.16 control paths
- Sample source code provided for most functions
- Field upgradeable software and firmware

## Compatibility

- The TB-VoIP Mezzanine™ can coexist with the TB-IVR Mezzanine™ on the same TB640 *System-Blade™*

## Environmental

- Operating: 0 to +50 C, 0 to 95% non-condensing relative humidity
- Storage: -20 to +75 C, 0 to 95% non-condensing relative humidity

## Compliance

- Designed to meet NEBS Level 3

### EMC

- FCC Part 15 (2004), subpart B
- EN55022 (1998)
- EN61000
- ENV50204 (1995)

### Safety

- CE
- UL60950-1:2003, first edition
- CSA C22.2 No.60950-1-03, first edition April 1, 2003

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### ABOUT US

TelcoBridges is clearly defining the future of enabling communications technologies. By supplying the industry's best telecom platform, TelcoBridges is helping system integrators worldwide realize their bright ideas. Since 2002, TelcoBridges' customers create carrier-grade telecom solutions used by the world's largest operators in more than 30 countries.

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