

## TMG7800 VoIP Gateway – 512 to 32,768 channels



The TelcoBridges *Tmedia* TMG7800 is our high density carrier-grade VoIP gateway and is defined by the highest scalability in the entire *Tmedia* family.

Our scalable building blocks approach offers carriers a VoIP gateway from 16 to 1024 T1/E1, or 1 to 48 DS3 or 1 to 16 OC3/STM-1. The TMG7800 also provides high availability and redundancy, which is a requirement for carrier-grade networks.

### Product Characteristics:

- ✓ 3U to 22U VoIP single gateway system
- ✓ 512 to 32,768 VoIP channels
- ✓ 16 to 1024 T1/E1 or 1 to 48 DS3, or 1 to 16 OC3/STM-1
- ✓ Support mix of multiple TDM interface types
- ✓ Non-blocking routing from/to any ports (TDM or VoIP)
- ✓ SIP, SIGTRAN, SS7 ISUP, ISDN PRI, E1 CAS R2, T1 CAS R1, H.248
- ✓ Redundant AC or DC power supplies
- ✓ Optional *Tmedia* 1+1 and N+1 groups
- ✓ Up to 2,700,000 BHCC

### *Tmedia* 1+1 and +1 Protection Characteristics:

- ✓ Enables full facility protection (TDM and IP)
- ✓ No single point of failure
- ✓ Five nine's redundancy

## **Tmedia™** **TMG7800** Data Sheet

TelcoBridges TMG7800 is a highly scalable telecom solution growing from a few hundred channels to tens of thousands channels without expensive entry costs. You can grow your TMG7800 system according to your business' needs:

- Mix any types of TDM interfaces in a single system
- Manage multiple 1+1 or N+1 redundancy groups
- Add new units to grow your live system without impacting actual traffic
- Single system to manage

**TelcoBridges Inc.**  
91 de la Barre, suite 01  
Boucherville, QC  
J4B 2X6, CANADA

**Sales** +1.450.655.8993  
**TB Support** +1.866.438.4703

[info@telcobridges.com](mailto:info@telcobridges.com)  
[www.telcobridges.com](http://www.telcobridges.com)

## TMG7800 System

### TMG7800 solution components

2 TMG7800-CTRL

1 to 16 TMG7800 telecom units (T1/E1, DS3, OC3/STM-1)

2 TMG7800-TMS (optional)

TMG7800-N+1 patch panel(s) (optional)

TMG7800-1+1 patch panel(s) (optional)

### TMG7800-CTRL

Manages all components in the system

Performs call control on all components

Supports active/standby redundancy

### TMG7800 telecom unit

Runs signaling stacks

Provides TDM and VoIP network interfaces

Hardware accelerated media processing and transcoding

Each additional unit adds more capacity to the system

### TMG7800-TMS (optional)

Non-blocking universal media switched fabric across all telecom units

Manage and propagate the system TDM clock

Second TMG7800-TMS enables redundancy

### 1+1 Patch Panel (optional)

TDM facility protection group for two telecom units

Passive protection (no power required)

### N+1 Patch Panel (optional)

TDM facility protection group for up to 15 telecom units

## Capacity and Voice Processing

### PSTN interfaces

16 to 1024 T1/E1 or

1 to 48 DS3 or

1 to 16 OC3/STM-1 with APS

Framing independently configurable per port

2 BITS interfaces on DS3/OC3/STM-1 units

### VoIP interfaces

Up to 32 Ethernet ports 100/1000Base-T (2 per telecom unit)

RJ45 connectors on rear of unit

Up to 256 different IP addresses (16 per telecom unit)

Ethernet port bonding and 802.1q VLAN support

### Vocoding

512 to 32,768 VoIP channels with universal codecs

Universal codecs: G.711, G.723.1, G.726, G.729ab, T.38 V.17, clear mode (RFC 4040)

Other codecs: G.722, G.722.2 (AMR-WB), G.728, G.729eg, iLBC, AMR, EVRC, GSM, FR/EFR, QCELP, T.38 V.34

### Fax/modem/data

T.38 fax relay (V.17 and V.34)

Automatic G.711 fallback

Modem and data passthrough, NSE, VBD support

Clear mode (RFC 4040)

### DTMF relay

RFC 2833/4733, SIP INFO method, in-band

### Echo cancellation

G.168 echo cancellation

128 ms echo tail on all channels simultaneously

### Voice processing

Adaptive and programmable jitter buffer (20 to 200 ms)

Voice activity detection (VAD)

Comfort noise generation (CNG)

### Voice recording and announcement playback

Up to 2048 channels (using optional IVR mezzanine or specially licensed VoIP channels)

## High Availability & Redundancy

IP port redundancy  
Self-recovery software  
Fault tolerant software  
MTP2/SS7 links redundancy

### Tmedia 1+1 solution (optional)

The Tmedia 1+1 solution extends the high-availability and redundancy features of the TMG7800

TMG7800 telecom unit redundancy  
Full capacity protection (TDM and IP)  
Configuration database redundancy  
Seamless software upgrade  
M3UA/MTP3/ISUP redundancy

Tmedia 1+1 solution consists of:

- 1 active unit and 1 standby unit
- Up to 8 units 1+1 Patch Panel(s)

1+1 Patch Panels are passive (no power required)

### Tmedia N+1 solution (optional)

The Tmedia N+1 solution extends the high-availability and redundancy features of the TMG7800

TMG7800 telecom unit redundancy  
Full capacity protection (TDM and IP)  
Configuration database redundancy  
Seamless software upgrade  
M3UA/MTP3/ISUP redundancy

Tmedia N+1 solution consists of:

- Up to 15 active unit(s) and 1 standby unit
- Supports multiple N+1 groups

## Signaling

Simultaneously supports any combination or all of the following signaling protocols:

### SIP

Supported RFCs: 2327, 2833, 2976, 3204, 3261, 3262, 3263, 3264, 3311, 3323, 3325, 3326, 3372, 3389, 3398, 3515, 3551, 3555, 3578, 3581, 3665, 3666, 3764, 3891, 4028, 4694, 4733, 5806

SIP-I/SIP-T

Extensive SIP header manipulation

### SS7

Up to 512 MTP2 links (56, 64, n x 56/64 kbps) or 32 x HSL

Multiple redundant MTP2 links

Up to 64 originating point codes and 256 linksets

Up to 256 destination point codes

ISUP variants: ITU 92, ITU 97, ANSI 88, ANSI 92, ANSI 95, Q.767, Telcordia 97, ETSI v3, China, Singapore, UK, SPIROU, Japan NTT, Russia

### SIGTRAN

M2PA, M2UA, M3UA (IPSP, ASP, SG), IUA

SCTP (raw IP and UDP)

SS7 termination and/or relay supported

Up to 512 M2UA / M2PA links

Up to 64 M3UA peer server processes

### ISDN PRI

Q.931 ISDN PRI (user and network side)

ISDN variants: NI-2, 4ESS, 5ESS, DMS-100,

DMS-250, Euro ISDN ETSI NET5 (France,

Germany, UK, China, Hong Kong, Korea), Euro

Numeris (VN6), NTT (Japan), Australia

ISDN NFAS with D-channel backup

### CAS

MF R1 (including E&M, loop start, ground start)

MF R2 (including standard ITU, Brazil, Mexico, Venezuela)

Customizable script files to implement any CAS variant

## **Tctrl (Call Control)**

### Toolpack framework call control

Call routing based on: trunk group, calling/called numbers (with digit manipulation) and/or various other protocol information/headers.  
Customizable routing including priority-based, load-balancing, black listing, call limiting, route retries, etc.  
Customizable call cause code mapping  
Programmable call routing: Access and manipulation of call parameters (SIP, SS7 and ISDN), including Nature of Address (NOA)  
RADIUS authentication and authorization (supports multiple RADIUS servers)  
NPA-NXX routing (over 5 million records)  
SIP-based local number portability and CNAM lookup

### H.248 (MEGACO) call control

ITU-T H.248 versions 1 and 2  
UDP, SCTP, IPSec transport  
DTMF and fax detection  
Call progress, DTMF and COT tone generation  
Call quality and inactivity alerts  
H.248 control port redundancy (supports virtual IP)

### Session management and billing

SIP peer availability polling  
RTP inactivity monitoring, RTCP  
CDR generation (RADIUS and/or csv files)  
Integrated lawful intercept (ETSI ES 201 671 v.2.1.1)

## **OAMP+T**

### Operations & Administration

Provisioning, management and status GUI  
CLI and configuration file machine-to-machine interface (RESTful)  
Configuration change audit logging  
Access, user and privilege management  
SNMP V2, V3 GET, TRAPs (alarms)  
Extensive SNMP call statistics MIBs

### Management

Up to 4 Ethernet ports 100/1000Base-T (2 per TMG-CTRL unit)  
Up to 2 VGA for local monitor (1 per TMG-CTRL unit)  
Up to 8 USB ports (4 per TMG-CTRL unit)  
Up to 2 DB9 RS232 serial port (2 per TMG-CTRL unit)  
GUI-based and CLI system upgrade  
GUI-based configuration copy, backup and restore  
Storage for multiple software versions  
Storage for multiple configuration files  
Extensive system status display

### Provisioning

Non-service affecting configuration changes  
Offline configuration validation  
Multiple configuration files archive  
Northbound API (RESTful) for automated provisioning

### Network Analytics (TB Analytics)

Live call trace with protocol information and ladder diagrams  
Live test call with media playback and recording  
TB Sigtrace – Protocol signaling capture into pcap files  
Media call recording (scriptable for calling and called numbers)

### Maintenance

Replaceable fan filters on telecom units

## **Regulatory Compliance**

### Safety

CAN.CSA C22.2  
EN 60950-1:2005  
EN 60950-1:2006

### EMC

FCC Part 15:2013, Subpart B,  
CE Mark (EN55022:2010, Class A, EN61000, ETSI EN 300 386)

## Environmental

Operating temperature:

0 to +70 °C, 95% rel. hum. non-condensing

Storage temperature:

-10 to +85 °C, 95% rel. hum. non-condensing

Designed to meet NEBS Level 3

RoHS compliant

## TMG7800-CTRL specification

IBM 5458 System x3250 Express Model

Xeon E3-1231 v3 3.4GHz 1600MHz 4C processor

8MB cache, 16 GB memory

40 GB RAID 1 SSD

## Electrical characteristics

### TMG7800 System

90 to 260 VAC, 47 to 63 Hz, -40 to -60 VDC

Redundant power supplies (for each component)

From 616 to 3210W power consumption (depending on configuration)

### TMG7800-CTRL

90 to 260 VAC, 47 to 63 Hz

Hot-swap redundant power supplies

Maximum 460W power consumption

### TMG7800 telecom unit

90 to 260 VAC, 47 to 63 Hz, -40 to -60 VDC

Hot-swap redundant power supply

Maximum 131W power consumption

### TMG7800-TMS

90 to 260 VAC, 47 to 63 Hz, -40 to -60 VDC

Hot-swap redundant power supply

Maximum 72W power consumption

### TMG7800-STM1-N+1 patch panel

90 to 260 VAC, 47 to 63 Hz, -40 to -60 VDC

Redundant power supply

Maximum 20W power consumption



Tmedia TMG7800-CTRL, front view



Tmedia TMG7800-CTRL, rear view



## Dimensions & Weight

### TMG7800 Overall System

3U to 22U depending on configuration  
 19" rack mount  
 Height: 5.25" (133.4mm) to 38.5" (979mm)  
 Width: 17.4" (442mm)  
 Depth: 22" (559mm)  
 Weight: 60.2lbs (27.3kg) to 332.4lbs (151.4kg)

### TMG7800-CTRL

1U, 19" rack mount  
 1.75" (44.5mm) H x 16.9" (429mm) W x 22" (559mm) D  
 23lbs (10.4kg)

### TMG7800 telecom units

1U, 19" rack mount  
 1.75" (44.5mm) H x 16.9" (429mm) W x 16" (406mm) D  
 14.25lbs (6.5kg)

### TMG7800-TMS

1U, 19" rack mount  
 1.75" (44.5mm) H x 16.9" (429mm) W x 16" (406mm) D  
 17lbs (7.71kg)

### TMG7800-N+1 patch panel

1U, 19" rack mount  
 1.75" (44.5mm) H x 16.9" (429mm) W x 16" (406mm) D  
 12.2lbs (5.6kg)

### TMG7800-1+1 patch panel

1U, 19" rack mount  
 1.75"(44.5 mm)H x 16.9"(429 mm)W x 5.25"(133 mm)D  
 3.4 lbs (1.6 kg)



Tmedia TMG7800 telecom unit, front view



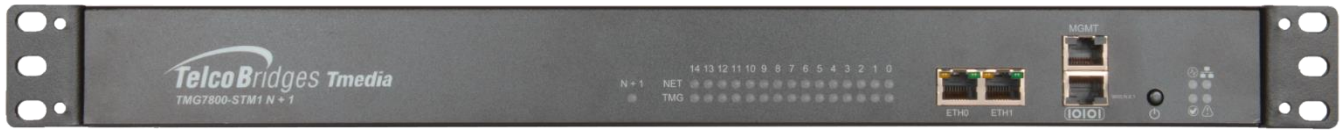
Tmedia TMG7800-T1E1 telecom unit, rear view



Tmedia TMG7800-DS3 telecom unit, rear view



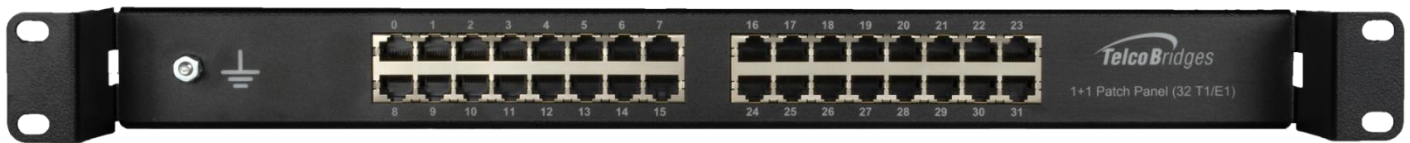
Tmedia TMG7800-STM1 telecom unit, rear view



Tmedia TMG7800-STM1-N+1 unit, front view



Tmedia TMG7800-STM1-N+1 unit, rear view



Tmedia TMG7800-TE 1+1, Patch Panel (front view)



Tmedia TMG7800-DS3 1+1, Patch Panel (front view)



Tmedia TMG7800-STM1 1+1, Patch Panel (front view)

© 2016 TelcoBridges Inc. All rights reserved.  
 The TelcoBridges logo is a registered trademark of TelcoBridges Inc.  
 This document and any products or functionality it describes are  
 subject to change without notice.  
 Please contact TelcoBridges for additional information and updates.