INDUSTRIAL DEFENDER®

Teltone TSP Edge

built to handle your most challenging test apps

- **Development and quality assurance testing of IVR systems, VoIP gateways, switching systems, CTI applications, and IADs**
- **Load and stress testing with bulk call generation**
- **Automated production testing of telecom equipment**
- **System integration and pre-installation testing**
- **Equipment demos and user training**

get the edge with rich feature set

- **Modular T1, E1, PRI, and POTS interfaces**
- **Support for all current signaling protocols**
- **Bulk call generation, call termination, and switch emulation capabilities**
- **Extensive programmability via user-friendly configuration software**
- **Custom configurations storable for multiple test applications**
- **Detailed signaling analysis and event logging for diagnostics**
- **API for controlling Edge units with custom software written in TCL or LabView**
- **Interactive testing supported with optional scripting software module**

"Teltone's TSP is perfect for installers, product developers, VARs, interconnects, etc.... [It] merits an overall grade of 'A-' for its ease of use, near perfect GUI, and its ability to save to file an unlimited number of configurations."

– Communications Solutions

The TSP Edge provides the capabilities of a high-end telecom test system in a scalable, affordable hardware/software package. Offering T1, E1, PRI (North American and Euro protocols) and POTS simulation, it is ideal for applications in research and development, quality assurance, production, demonstration and training environments. With hundreds of units in use by telecom equipment manufacturers and application developers worldwide, the TSP has established itself as the pace-setter in features, usability, and affordability.

EXPANDABLE AND ADAPTABLE

The TSP Edge is configurable to your specific test application, and can be easily adapted for future requirements. Mix-and-match hardware modules offer multiple interface choices:

T1, E1, North American and Euro PRI, POTS-FXS or POTS-FXO. Support is provided for up to two digital T1/E1 spans, and up to 24 analog ports, in a variety of combinations.

You can build test applications of any size by connecting one or more TSP Edge units to a PC running the TSP software. Together, the networked units emulate a single, high-volume test system.

SET UP TESTS YOUR WAY

Configuration Software

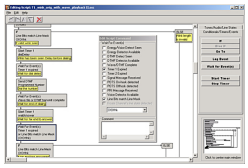
The TSP's Windows®-based configuration software gives you the tools to set up key test parameters like call timing, progress sequences, encoding formats, signaling protocols and audio messages. Multiple test configurations can be conveniently stored for future use.

Software wizards guide users in the setup and evaluation of complex test scenarios. Diagnostic tools such as channel trace and event logs provide tracking and troubleshooting following test completion.

Test Automation Interface

The TSP Edge provides an API to industry-standard test automation languages (TCL and LabView) for controlling one or more Edge units, enabling you to create custom test applications.

Advanced Test Scripting Module

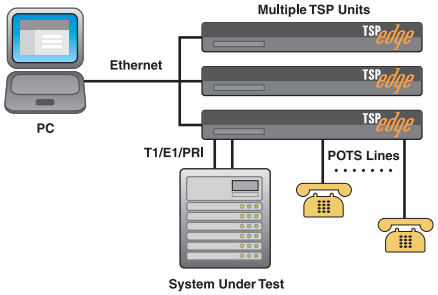


The optional scripting software module allows developers to build custom test events with a user-friendly interface.

The TSP Edge scripting software enables you to set up multilevel, interactive testing of IVRs and other CTI systems. Test scenarios can be written to use the TSP's powerful capabilities in any required sequence. Sample scripts are included to get you up and running quickly.

Scripting features include:

- ScriptBuilder utility for fast and simple test building
- Detection of DTMF digits, voice, silence and broadband audio tones
- Transmit DTMF digits and tones
- Extensive conditional branching capabilities
- Latest script samples downloadable at Teltone website



Connect multiple units to a single PC for large-scale testing.

Teltone TSP Edge

specifications

Capabilities

Programming Interface	Can be programmed and controlled via RS-232 serial connection to PC, or RJ-45 ethernet connection to PC or LAN
Call Types Supported:	
Call Originate	TSP places calls to device under test
Call Terminate	TSP receives calls from device under test
End to End	Calls placed through the TSP by one device to another. Four call types are available: 1. Dialed (for dynamic routing by assigning a telephone number to each channel) 2. Switch Emulation (simulates call through the central office with any two channel protocols except Clear Channel) 3. Channel Bank (for T1/E1 loop start foreign exchange channel to POTS channel) 4. Clear Channel (for 64 Kbps data)
Phone Numbers	Up to 40 digits on all POTS and T1/E1 channels
Message Playback	8 kHz, 8 bit μ-law or a-law encoded, WAV files assigned to play after call is established for Call Originate and Call Terminate operation or from user scripts. Messages less than 8 seconds in length, with a total combined length of 24 seconds or less, are downloaded into the TSP and stored in non-volatile memory. Any messages longer than 8 seconds, or the combined length exceeds 24 seconds, are streamed to the TSP in real-time over the network connection.
Simulator Activation	Manual or timed
Diagnostics	Monitor and manual control of signaling state on channels
Protocol Analyzation	Monitors the AB bit states for D4 and ABCD bit states for ESF on T1 and E1 channels. The Call Tracing feature gives a step-by-step display of call progress signaling on a POTS, T1, E1 or PRI channel.
Event Log	Time stamped listing of system and channel specific events and call records
Busy Hour Call Attempts	BHCA >48000 (2 T1s, Wink Start) See App Note 109, TSP Call Rate Calculators

T1/E1 Interface

Connector Standard	RJ-48C
Transmit Level	3.00 V (Nominal) for 120 ohms
T1 Parameters	
Framing Formats	D4 or ESF
Line Coding	AMI or B8ZS
Clocking	Internal or External
Line Build-out	0-655 ft or -7.5 dB to -22.5 dB line loss
E1 Parameters	
Signaling Formats	FAS or CAS
Line Coding	AMI or HDB3
Impedance	120 ohms
PRI Parameters	
T1 Switch Type	US National ISDN-2 (NI-2) Lucent 4ESS and 5ESS (TR41459) Nortel DMS-100 and DMS-250
E1 Switch Type	Euro-ISDN
Capabilities	Direct Dialing In (DDI) Delivery of Caller Number (CLIP) and Called Number Delivery of Type of Address and Numbering Plan Subaddressing
Simulation	Terminal Equipment (TE) or Network (NT) end
Signaling Protocols	ITU Q.421, Wink Start (i.e. E & M), Immediate Dial, Delay Dial, Loop Start FXS, Loop Start FXO, Ground Start FXS, Ground Start FXO, Clear Channel (64 Kbps, no signaling)
DTMF Generation	Generates up to 16 DTMF digits in band on the T1/E1 channel when placing a call into the equipment under test

POTS FXS Interface

Connector Standard	RJ-11 (4 channel POTS module) and RJ-14 (8 channel POTS module)
Loop Current	20 mA minimum
Battery Source	On-hook 60 VDC minimum
Ringing Source	42 VAC
Ring Cadence	On cycle: 2 S; Off cycle: 4 S
Ring Frequency	20 Hz
Impedance	600 ohm
Audible Ringback	440 Hz + 480 Hz @ -12 dBm composite
Dial Tone	350 Hz + 440 Hz @ -12 dBm composite
Busy Tone	480 Hz + 620 Hz @ -12 dBm composite

POTS FXO Interface

Connector Standard	RJ-14
Ring Detect	40 Vrms minimum
REN	0.0B
Loop Current Detect	10 mA minimum
Line Impedance	Optimized for a 900 ohm AC line impedance.
DTMF Transmit Level	-10 dBm averaged over 3 seconds
Audio Message Playback Level	Less than -10dBm averaged over 3 secs
Dialing Mode	DTMF only

Configuration

Network Interface Modules	Dual Port T1/E1, 8 Channel POTS FXS, 8 Channel POTS FXO
Software OS Platforms	Windows 95/98/2000/XP, Windows NT

Power

90-250 VAC, 43-63 Hz

Physical Dimensions

Size:	Base	17.5" X 10" X 1.8"
	Modules	2.82" (W) X 3.8" (L)
Weight	4 to 4.5 lbs.	

Environmental

Operating Temperature	0°C to +40°C
Storage Temperature	-20°C to +70°C

Regulatory

Safety	
United States	UL 3111-1
Canada	CSA C22.2 No. 1010-1
European Union	EN61010 European Safety Requirements for Electrical Equipment for Measuring, Control, and Lab Use
EMC	
United States	FCC Part 15 Class A
Canada	CISPR 22/85, Class A
European Union	EN61326 Class A for Laboratory Equipment (Only applies to TSP-8PFXO-01 Module)
Telecom	
United States	FCC Part 68 Certification Number US: AHHMA00BTSP-U8PFXO
Canada	Industry Canada CS-03 Registration Number: 344A-TSP8PFXO

Warranty Info

Teltone warrants this product to be free of defects in workmanship and materials for a period of 1 year.

For the latest product info, complete specs, downloads and more, visit www.teltone.com

Sales Contact
sales@teltone.com
(425) 951-3015 or
(800) 426-3926 x3015

INDUSTRIAL DEFENDER®