

Mitel TA7102

TECHNICAL SPECIFICATIONS



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INTRODUCTION

The TA7102 is a Security- Ready, VoIP gateway allowing Enterprise Networks to connect SOHOs, Remote Workers and Branch Offices to an IP network, while preserving investment in analog telephones and faxes. The terminal adapter may also be used for connection of analog devices to the call server while located inside the enterprise network.

Key Benefits

- **New Package for VoIP FXS Interfaces**

Secured SIP signaling and media transmission (TLS, SRTP, MiCKEY).

- **Best Total Cost of Ownership**

Ease of deployment & management with autoprovisioning.

Protect analog telephony investments with the VoIP benefits.

- **Best Price Quality Ratio**

High Voice Quality and Reliability:

- Industry-proven T.38 fax.
- Wide support of countries.

- **IPv6 Addressing Support**

Available for units running the Dgw v2.0 firmware.

Most network-related features of the TA7102 unit for receiving and sending packets on the Internet protocol can be used on both IPv4 and IPv6.

2

PRODUCT OVERVIEW



Figure 1: TA7102

The TA7102 connects up to two analog phones and/or faxes, as well as a PC or a home router to a broadband modem or network switch.

The TA7102 offers security features such as SIP over TLS, SRTP, certificates management, and HTTPS designed to bring enhanced security for the network management, SIP signaling and media transmission aspects.

The TA7102 also uses its innovative TAS (Transparent IP Address Sharing) technology and an embedded PPPoE client to allow the PC (or router) connected to the second Ethernet port to have the same public IP address, eliminating the need for private IP addresses or address translations. The TA7102 also supports high compression codecs simultaneously on both analog voice ports, saving valuable bandwidth.

The TA7102 provides a web interface, giving users convenient access to the unit for initial set-up. The devices can also auto-provision by fetching their encrypted configuration from a TFTP or HTTP server making installation secure and transparent to the end-users. To further facilitate deployments, factory loaded configurations are possible.

3 FUNCTIONAL DESCRIPTION

3.1 ENHANCED SECURITY

- HTTPS, for the exchange of Configuration File and web pages
- SRTP with MIKEY and SDES
- Supported Cypher
 - AES – 128 bits
- MIKEY key management protocol (RFC 3830 and 4567)
- SDES key management protocol (RFC 4568)
- X.509 Certificate management
- TLS transport method
- Supported Key Exchange Mechanism:
 - RSA
 - Diffie-Hellman
- Supported Cyphers (minimum):
 - AES (128bits)
 - 3DES (168 bits)
- User Access Levels for units Management Observer, User and Admin user access rights, with the inclusion of flexible policies on the user password configuration.

3.2 FXS PORTS / ANALOG EXTENSION I/F

The TA7102 is equipped with Central Office quality SLICs (Subscriber Line Interface Circuit) supporting all the BORSCHT (Battery feed, Overvoltage protection, Ringing, Signaling, Coding, Hybrid, Testing) functions and thus meeting most worldwide telephony standards. Station line length can reach up to 450 m of internal cabling in the 2-wire “loop start” signaling arrangement.

The FXS ports support On-Hook audio transmission, thus providing many advanced CLASS features such as message waiting indication, Caller-ID FSK transmission and such.

The sinusoidal ringing signal frequency can be modified by software. Typical values range from 20 to 50 Hertz, 20 Hertz being the default frequency (for North America only). Each port provides its own ring generator and is capable of supplying up to 4 RENs (Ringer Equivalence Number).

Default settings for the FXS ports are such that BellCore/North American standards are met. On request, port settings may be modified to comply with other known international standards. Software-configurable port setting for international requirements is available.

3.3

FAX INTERFACE

The TA7102 can handle G3 fax transmissions at speeds up to 14.4 kbps. Automatic fax mode detection is also available on all ports, as well as Real-Time Fax-Over IP with T.38 protocol stack.

Quality of T.38 fax transmissions is dependent upon the system configuration, type of call control system used, as well as the model of fax machines used. Should some of these conditions be unsatisfactory, performance of T.38 fax transmissions may vary and be reduced below expectations.

3.4

ANALOG MODEM INTERFACE

The TA7102 can be used with analog modems. When configured correctly, modems with high rate capabilities (for instance, V.90) will automatically fall back within the transmission range supported.

Quality of modem transmissions is dependent upon the system configuration, quality of the analog lines, as well as the number of analog-to-digital and digital-to-analog conversions. Modem performance may therefore be reduced below the optimum values stated above.

3.5

IPV4 VS. IPV6 ADDRESSING SUPPORT

- IPv6 is available for units running the Dgw v2.0 firmware.
- FIPS on the TA7102.
- OCSP (Online Certificate Status Protocol) revocation status verification for TLS links.
- ANAT grouping in the SDP.
- Media stream may now be on a different network than SIP signaling.
- The Callrouting Table is by default configuring routes for the analog ports automatically. By manual configuration the routes can be configured with multiple SIP gateways for both sources and destinations.

Table 1 The following table lists all the network related features of the TA7102 unit with their availability in IPv4 and IPv6

Feature	IPv4	IPv6
Backup/Restore transfer	X	X
Command Line Interface (CLI)	X	X
Configuration file transfer	X	X
Embedded DHCP server	X	X
Firmware transfer	X	X
IP Routing	X	X
IP Sync	X	X

Feature	IPv4	IPv6
Link Layer Discovery Protocol (LLDP)	X	X
QoS settings	X	
Local Firewall (LFW)	X	
Network Address Translation (NAT)	X	
Network Configuration (IP addresses, DNS and SNTP servers)	X	
Network Firewall (NFW)	X	
Online Certificate Status Protocol (OCSP)	X	X
Remote Authentication Dial In User Service (Radius)	X	
SIP signaling and media transport	X	X
Simple Network Management Protocol (SNMP)	X	
TR-69	X	
WEB configuration	X	X

3.6

PPPOE AND TRANSPARENT IP ADDRESS SHARING

The TA7102 is equipped with a second RJ-45 Ethernet port designed to connect a PC. With PPPoE client and transparent IP address sharing, the TA7102 makes the use of an external router unnecessary in most residential applications. IP address sharing allows both Ethernet ports to be used with a single IP address from the service provider in a user-friendly way, without the configuration complexities of an integrated NAT. The TA7102 is simply inserted between the PC and the DSL or cable modem, without a need for users to reconfigure their unit each time a new application is added or altered on their PC. The TA7102 intelligently selects which packets are intended for the telephones and sends them through. It then directs all other packets directly to the PC.

3.7

HOUSING AND POWER

The TA7102 is designed for desktop installation but can be wall-mounted as well.

The unit is powered by an external off-line power supply connected to the AC main with a standard IEC-320 power cord.

4 ADDITIONAL FEATURES

4.1 FULLY CONFIGURABLE “PSTN-LIKE” EXPERIENCE

The TA7102 provides all the familiar tones commonly heard on a standard telephone network. For example, a dial tone is heard as soon as the handset is lifted. Call progress tones such as ringback and busy are also supported.

4.2 REMOTE CONFIGURATION / EASY MANAGEMENT

The TA7102 can be integrated seamlessly within an existing administrative environment. SNMP support allows device-related adjustment parameters to be modified and polled remotely. Implementation of a web interface provides user-friendly access to common parameters. Firmware upgrade (CPU and DSP code) and configuration files are downloaded via a TFTP or HTTP server. Auto-provisioning of terminal adapter is performed with added security through configuration file encryption and HTTP digest authentication.

4.3 INDUSTRY STANDARD PROTOCOLS

The TA7102 has been designed to support all major industry standards used today, as well as those that will eventually be implemented at a later date. Because of this specific design characteristic, the TA7102 can be integrated with existing telephone, fax and LAN/WAN equipment such as bridges, routers and switches.

5 SUPPORTED STANDARDS

5.1 VOCODERS

- G.711 (a-law, μ -law)
- G.726 (40, 32, 24, 16 kbit/s)
- G.729ab

5.2 IP TELEPHONY PROTOCOLS

- SIP
 - RFC 3261
- MGCP
 - RFC 3435
- PacketCable™ network-based call signaling (NCS) protocol, PKT-SP-EC-MGCP-I01-990312

5.3 REAL-TIME TRANSPORT PROTOCOLS

- RTP/RTCP
 - RFC 1889
 - RFC 1890
 - RFC 2833
 - RFC 3389

5.4 NETWORK MANAGEMENT PROTOCOLS

- SNMPv3
- HTTP 1.0
 - RFC 1945
- Basic and digest HTTP authentication
 - RFC 2617
- DHCP
 - RFC 2131
 - RFC 2132
- TFTP
 - RFC 1350
 - RFC 2347
 - RFC 2348

- RFC 2349
- Syslog

5.5

DATA FEATURES

- PPPoE client
 - RFC1332, RFC1661, RFC1334, RFC1994, RFC2516, RFC1471, RFC1472, RFC1473, RFC1877.
Note: some PPPoE RFCs are implemented partially.
- TFTP or HTTP auto-provisioning.
- Transparent IP address sharing (patent pending technology allowing the same IP address to be shared between both Ethernet ports and distinguishing voice traffic from data traffic).
- DHCP server.
- STUN client.

5.6

VOICE SIGNALING

- On Hold Session Description Protocol (SDP).
- Compliant with MMTEL requirements for 3GPP specification 24.615 for Call Waiting requests.
- Select Channel Range for Inbound and Outbound calls.

5.7

QOS

- ToS
- DiffServ
- 802.1p
- 802.1Q
- STUN
 - RFC 3489

6 GENERAL SPECIFICATIONS

6.1 DISPLAY

- Power LED
- Ethernet activity LED
- Activity/In-Use LED indication on FXS ports
- Ready LED

6.2 CONNECTORS

- 2 x RJ-11 connectors, analog phone/fax (FXS) interface.
- 2 x RJ-45 connectors, 10/100 BaseT Ethernet access (autosense: up to 100 Mbps).
- Automatic MDI / MDIX detection, meaning that the RJ-45 connectors adapt to the type of cable connected to them (no need to cross over cable).

6.3 POWER

- External off-line power supply connected to the AC main with a standard IEC-320 power cord.
- Seamless switch over period if the client UPS detects a power loss and activates within 8 ms.
- Country-specific models.

6.4 CASING / MECHANICAL

- Casing: Desktop (Plastic ABS UL94 V0).
- Installation: The TA7102 is designed for the desktop but can be wall-mountable.

6.5 PRODUCT ARCHITECTURE DETAILS

- Supports up to two concurrent communications
- DSP-based DTMF detection, generation and synthesis
- DSP-based echo cancellation (G.168)
- DSP-based fax/data relay
- Embedded operating system with 32-bit real-time multitasking Kernel
- Embedded IPv4 TCP/IP stack with configurable
- QoS implemented by:

- ToS byte at Network layer 3
- 802.1p at Data Link layer 2
- Network parameters assigned via DHCP

6.6

REAL TIME FAX ROUTER TECHNICAL SPECIFICATIONS

Automatic selection between voice and fax	
Protocols	Group 3 Fax Clear channel (G.711), G.726 or T.38 Real Time Fax Over IP protocol Stack
Fax Data Compression	MH
Fax Transmission Protocols	Up to 14.4 kbps

6.7

ANALOG LINE INTERFACE (FXS)

- Two RJ-11 connectors.
- Direct connection to a fax machine or telephone (internal installation and internal cabling).
- DC feeding of the access line protected for over voltage.
- Loop current detection and hook flash detection capable.
- Generation of Selective Ring.

Trunk Type	Loop Start: capable of Wink and Immediate signalization
Ring Source	50 VRMS max @ 20 up to 50 Hz (selectable) sine signal
Nominal Impedance	BellCore compliant 600/900 ohms default setting. Impedance Software Configurable.
Ring Drive Capacity	Up to 4 ringer equivalents (4 RENs) per extension
Loop Current Range	15 to 32 mA factory set. Default 20 mA regulated
Ring Trip Detetion Time	2 ring cycles max
ON-Hook Voltage	-48 VDC

Trunk Type	Loop Start: capable of Wink and Immediate signalization
Freq. Response	200 Hz to 3400 Hz \pm 2 dB (Tx/Rx)
Return Loss	500-3200 Hz: 30 dB

6.8

MISCELLANEOUS AUDIO SPECIFICATIONS

- Software input and output level adjustable within the range -30 dB to +20 dB.
- Software-adjustable dynamic and static jitter buffer protection.
- Programmable by country: Call progress tone generation including dial tone, busy tone, ringback and error tones.
- DSP-based echo control device.
- Silence detection/suppression level software adjustable.

6.9

DTMF TONE DETECTION

16 Digit DTMF Decoding	0 to 9, *,#, A, B, C, D
Permitted Amplitude Tilt	High frequency can be +2 dB to -8 dB relative to low frequency
Dynamic Range	-35 dBm to +3 dBm per tone
Frequency Accept	\pm 1.5% of nominal frequencies
Minimum Tone Duration	40 ms, can be increased with software configuration
Interdigit Timing	Detects like digits with a 40 ms inter-digit delay

6.10

DTMF TONE GENERATION

Per Frequency Nominal	-6 dBm to -4 dBm
Frequency Deviation	Within 1.5% of nominal values

6.11 MTBF VALUE (PRELIMINARY EVALUATION)

The estimated Mean Time Before Failure (MTBF) value of the TA7102 is 750,000 hours at 25 degrees Celsius ambient temperature (excluding the power adaptor). It has been defined using RelCalc v5.0, Bellcore method (LimitedStress - Method I, Case 3).

6.12 POWER CONSUMPTION

Voltage/Freq.	Current(mA)	Power(W)	VA
12 Vdc (All ports off hook)	450	5.4	5.4
12 Vdc (All ports off ringing into 4REN)	475	5.7	5.7

6.13 OPERATING ENVIROMENT

Operating Temperature	0° C to 45° C
Humidity	Up to 85%, non condensing
Storage	-40° C to +85° C

6.14 DIMENSIONS AND WEIGHT

Height	31 mm
Width	127 mm
Depht	99 mm
Weight	170 g

7 STANDARD COMPLIANCE

7.1 AGENCY APPROVALS

- UL
- CE Marking
- FCC
- Anatel

7.2 SAFETY STANDARDS

- UL60950-1 1st Edition (2006)
- CAN/CSA-C22.2 No. 60950-1-03 1st Edition (2006)
- IEC 60950 1st Edition (2001), with all national deviations
- Anatel Resolution 442

7.3 EMISSIONS

- FCC Part 15 (1998) Class B
- EN55022 (2006) with amendments A1 (2007) class B
- EN61000-3-2 (1995) Harmonic Current Emissions
- EN61000-3-3 (1995) Voltage Fluctuations and Flicker
- Anatel Resolution 512:2008

7.4 IMMUNITY

- EN55024 (1998) with amendments A1 (2001) and A2 (2003) including the following:
- EN61000-4-2 (1995), ESD
- EN61000-4-3 (1996), Radiated RF
- EN61000-4-4 (1995), Burst Transients
- EN61000-4-5 (1995), Surge
- EN61000-4-6 (1996), Conducted RF
- EN61000-4-11 (1995), Voltage Dips and Interruptions