

# Total Access 900e

## Market Leading Gen 3 IP Business Gateways

### Product Features

- Market leading IP Business Gateways, with 66 percent higher performance than previous generations
- Seamless voice and data integration over VoIP-based network architectures
- Designed for Ethernet and Multi-T1 applications
- Optional eSBC functionality
- Up to 24 analog POTS interfaces
- Optional outbound lifeline via FXO
- Compatible with industry-leading softswitches and call agents
- Dynamic bandwidth allocation affords more efficient utilization
- Integral full-featured business-class IP router
- Stateful inspection firewall for network security
- Quality of Service (QoS) for delay and jitter sensitive traffic like VoIP
- Supports 802.1q Virtual LAN (VLAN) Trunking
- Voice Quality Monitoring (VQM)
- Command Line Interface (CLI) mimics industry *de facto* standard
- Network Address Translation (NAT) for IP address concealment
- Feature-rich ADTRAN Operating System (AOS)
- Rugged metal case
- Optional battery backup
- Industry-leading five-year warranty

The Total Access® 900e (Gen 3) Series of market leading IP Business Gateways for Ethernet and multi-T1 applications from ADTRAN® are designed for carrier Ethernet and SIP/MGCP Voice over IP (VoIP) networks. These products feature all the same robust routing and voice features of the previous generation IPBGs, along with a host of new features and functions that enable cost effective, reliable IP service delivery. These devices use the ADTRAN Operating System (AOS) to simplify management and administration. Multiple models offer flexibility for varied applications from PRI delivery and SIP trunking services to Hosted IP PBX offerings.

The Total Access 900e Series offers up to 24 FXS ports for analog voice delivery, and three Ethernet interfaces (one Gigabit and two Fast) for access to the Total Access 900e's router or WAN/LAN access. The Total Access 900e Series can be coupled with a NetVanta® Power over Ethernet (PoE) switch to provide connectivity to a variety of network devices and personal computers, as well as to power IP phones and Wireless Access Points (WAPs).

#### VoIP Gateway

The Total Access 900e Series utilizes SIP or MGCP for VoIP applications, providing interoperability with industry-leading soft switches, feature servers, and gateways. Acting as a gateway, the Total Access 900e converts IP signaling from the carrier into traditional TDM analog and digital voice services. This functionality allows the Total Access 900e Series to deliver voice services to both IP phones and traditional telephony equipment simultaneously. For customers implementing a hosted PBX or IP Centrex service, the Total Access 900e Series is ideal for providing customers additional analog ports necessary to support their remaining analog phones, fax machines, or modems. The Total Access 900e Series supports many popular calling features such as caller ID, call hold, forward, transfer, and call waiting. Voice Activity Detection (VAD) and silence suppression are supported to ensure reliable VoIP call quality.

#### Enterprise Session Border Control (eSBC)

The Total Access 900e also can provide eSBC functionality delivering a truly converged application platform at the customer premises. This feature is

becoming mandatory in today's service deployment to normalize, secure and troubleshoot the SIP to SIP communication between a carrier network and the customers SIP compliant equipment.

#### Remote Survivability

In addition, the Total Access 900e Series can act as a registrar and Back-to-Back User Agent (B2BUA) or as a SIP-transparent proxy to facilitate remote survivability and NAT traversal. In the event of a service interruption on the wide area network or if the carrier's call agent were to become unavailable, calls may continue locally at the customer premises between IP-based or analog phones. In addition, the embedded FXO port can be used as a survivable interface for outbound calls to the PSTN.

#### QoS, Security, Routing, and VQM

The Total Access 900e Series uses the AOS to provide a stateful inspection firewall; NAT; DHCP server/client; and feature-rich, standards-based, IP routing functionality supporting BGP, OSPF, and RIP routing protocols. Inherent QoS methods ensure appropriate classification and prioritization of VoIP traffic. These methods include Low Latency Weighted Fair Queuing, class based weighted fair queuing, support for Differentiated Services (DiffServ) protocol, Frame Relay Fragmentation (FRF.12), and Frame Relay traffic shaping. Voice Quality Monitoring (VQM) captures Mean Opinion Score (MOS), jitter, delay, and packet loss statistics necessary to troubleshoot VoIP calls over the WAN to help ensure superior call quality.

#### Management

The Total Access 900e Series can be remotely managed by ADTRAN's n-Command® MSP platform. ADTRAN n-Command MSP offers the ability to discover devices, make mass configuration changes or firmware upgrades, backup/restore configuration, and generate inventory reports for asset management. ADTRAN's n-Command MSP also offers VoIP VQM and reporting, SIP ladder diagram, as well as an industry leading, easy-to-use, Graphical User Interface (GUI). Total Access 900e products are housed in a rugged metal enclosure; available in wallmount, rackmount, and desktop mountings; and offer a battery backup system for up to eight hours of uninterrupted service upon a customer-site power outage. Total Access 900e products are backed by an industry-leading warranty.



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## Product Specifications

### Physical Interfaces

#### T1

- Quad T1/FT1
- RJ-48C

#### Ethernet

- **Three Ethernet Interfaces (WAN/LAN Support):**
  - One Gigabit
  - Two Fast
- Full Duplex
- RJ-45
- Supports 802.1q VLAN Trunking

#### USB 2.0

- One Interface

### Digital Voice

- PRI
- T1 CAS Support
- **Signaling Methods**
  - E&M Wink
  - E&M Immediate
- Feature Group D
- RJ-48C

### Analog Voice

- 8, 16, and 24 FXS POTS via 50-pin Amphenol
- 68.5 Vrms with 20VDC Offset Maximum Ring Voltage
- Sinusoidal Ringer Waveform
- 48 V, Nominal On-hook Battery Voltage
- 30 mA, Nominal Loop Current
- **FXS 2-wire Impedances**
  - 600Ω
  - 900Ω
  - 600Ω +2.16μF
  - 900Ω +2.16μF
- **FXO 2-wire Impedances (Lifeline FXO)**
  - 600Ω
  - 900Ω
  - 600Ω +2.16μF
  - 900Ω +2.16μF
- **Signaling Methods**
  - Loop Start
- **FXO 2-wire impedances (Standard FXOs)**
  - 600Ω
  - 900Ω
  - 600Ω +2.16μF
  - 900Ω +2.16μF

- Integral FXO (900e Series)

#### ■ Signaling Methods

- Loop Start
- Ground Start

#### ■ FXO 2-wire Impedances

- 600Ω +2.16μF
- 900Ω +2.16μF
- Rs 220 ohms, Rp 820 ohms, Cp 115nF
- Rs 270 ohms, Rp 750 ohms, Cp 150nF
- Rs 270 ohms, Rp 750 ohms, Cp 150nF, Zin 600r
- Rs 320 ohms, Rp 1,050 ohms, Cp 230nF
- Rs 350 ohms, Rp 1,000 ohms, Cp 210nF, Zin 600r
- Rs 370 ohms, Rp 620 ohms, Cp 310nF
- Rs 800 ohms, Rp 100 ohms, Cp 50nF

#### ■ Signaling Methods

- Loop Start
- Ground Start
- DPT

### Craft

- DB-9

### Memory

- **RAM:** 512 MB RAM
- **Flash:** 128 MB Flash

### VoIP

- SIP
- MGCP (FXS Interfaces Only)

### Packet-based Voice Resources

- **CODECs**
  - G.711-64k PCM
  - G.729a-8k CS-ACELP
- G.168 Echo Cancellation
- Up to 64ms Echo-tail length
- Supports up to 60 Channels DSP
- Supports 30 T.38 Sessions

### Media Stream

- RTP/UDP/IP (RFC 3550)
- RTP Payload for DTMF Digits (RFC 2833)
- Supports Port-to-port Hairpin Call
- SDP (RFC 2327)

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## NAT Traversal and Remote Survivability

- B2BUA
- SIP Registrar for IP Phones
- SIP proxy with Survivability
- Transparent/Stateful/Outbound

## Tone Services

- Local DTMF Detection
- Local Tone Generation
  - Dialtone
  - Busy
  - Call Waiting
  - Alternate Call Waiting
  - Receiver Off Hook
- Ringing
  - Distinctive Ring

## Calling Feature Support

(Varies with feature server/gateway)

- Caller ID
  - Name and Number (MDMF, SDMF)
  - Call Waiting Caller ID
- Voice Mail
  - Stutter dialtone
  - Visual Message Waiting Indicator (VMWI)
- Call Hold
- Call Forward
  - Busy Line
  - No Answer
- Call Transfer
  - Blind, Attended
- Call Waiting
- Distinctive Ring
- Do Not Disturb
- Three-way Calling
- Call Return
- Speed Dial
- 3-way Conferencing (3WC)

## Security

### Firewall

- Stateful Inspection Firewall
- Denial of Service (DOS) Protection
- Access Control Lists
- Application Level Gateways
- Packet Filtering

## NAT

- Basic NAT (1:1) and NATPT (Many:1)

## QoS

- Low Latency and WFQ
- Hierarchical QoS
- DiffServ packet marking and recognition
- Frame Relay Fragmentation
- Traffic Monitoring (NetFlow 9)

## VQM

- Packet Capture (PCAP)
- MOS prediction
- Jitter, Delay and Packet Loss
- Past and Active Calls

## Protocols

- BGP
- Multilink Frame Relay
- OSPF
- PPP
- RIP (v1 and v2)
- Multilink PPP
- GRE
- HDLC
- IGMP V2
- PAP and CHAP
- Frame Relay
- Multi-VRF

## Routed Protocols

- IP

## DHCP

- Client
- Relay
- Server

## Management and Utilities

- Familiar CLI
- Web-based GUI
- n-Command Support
- SNMP v2 and v3
- SYSLOG Logging
- Telnet, Craft/Console Port, SSH, Ping, Trace route, NTP
- TCL Scripting



ADTRAN, Inc.  
Attn: Enterprise Networks  
901 Explorer Boulevard  
Huntsville, AL 35806  
P.O. Box 140000  
Huntsville, AL 35814-4000

256 963-8000  
256 963-8699 fax

**General Information**  
800 9ADTRAN  
info@adtran.com  
www.adtran.com

**Pre-Sales Technical Support**  
888 423-8726  
application.engineer@adtran.com  
www.adtran.com/presales

**Post-Sales Technical Support**  
888 423-8726  
support@adtran.com  
www.adtran.com/support

**Where to Buy**  
888 423-8726  
channel.sales@adtran.com  
www.adtran.com/where2buy

**ProServices**  
888 874-2237  
proservices@adtran.com  
www.adtran.com/proservices

**Global Inquiries**  
256 963-8000  
256 963-6300 fax  
international@adtran.com

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# Total Access 900e

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### Product Specifications

#### Firmware Upgrade

- FTP
- X-Modem
- TFTP
- HTTP

#### Environment

- **Operating Temperature:** 32° to 122 °F (0° to 50 °C)
- **Storage Temperature:** -40° to 158 °F (-40° to 70 °C)
- **Relative Humidity:** Up to 95%, Non-condensing
- **Maximum Altitude:** 10,000 Feet

#### Physical and Power

##### Chassis

- Wallmount
- 1U Rackmount
- Desktop Metal Enclosure

##### Dimensions

- **Total Access 908e:**  
1.75 in. x 17 in. x 8 in. (H x W x D)
- **Total Access 916e/924e:**  
1.75 in. x 17 in. x 10 in. (H x W x D)

##### Weight

- **Total Access 908e:** 5.5 lbs.
- **Total Access 916e/924e:** 7 lbs.



#### Power

- **Total Access 908e:** 120 VAC, 60 Hz, 75W
- **Total Access 916e and 924e:** 120 VAC, 60 Hz, 110W
- **Battery Backup:** Optional eight-hour system
- **LEDs Total Access 900e**

- Voice
- Status
- Gig 1
- USB
- T1 1 - 4
- Ethernet 1 - 2

#### Agency Approvals

- FCC Part 15, Class A
- FCC Part 68
- Industry Canada CS03
- ETL and Canadian ETL (C-ETL)

#### Battery Backup Options

- Rackmount or Wallmount

#### Warranty

- Five Years (North America)

### Ordering Information

Equipment	Part No.
<b>Total Access 908e</b> Gen 3	<b>4243908F1</b>
<b>Total Access 908e</b> Gen 3 with Lifeline FXO	<b>4243908F2</b>
<b>Total Access 908e</b> Gen 3 with Session Border Control with Lifeline FXO	<b>4243908F2SBC</b>
<b>Total Access 916e</b> Gen 3	<b>4243916F1</b>
<b>Total Access 916e</b> Gen 3 with Lifeline FXO	<b>4243916F2</b>
<b>Total Access 924e</b> Gen 3	<b>4243924F1</b>
<b>Total Access 924e</b> Gen 3 with Lifeline FXO	<b>4243924F2</b>
<b>Total Access 924e</b> Gen 3, 16 FXS, 9 FXO (1 Lifeline)	<b>4243924F3</b>
<b>Total Access 900e</b> Gen 3, SBC Feature Pack Upgrade	<b>1950900G3</b>
<b>Battery Backup Systems</b>	
<b>Total Access 908e</b> Gen 3, Eight-hour, Wallmount	<b>1200641L1</b>
<b>Total Access 916e/924e</b> Gen 3, Eight-hour, Wallmount/Rackmount	<b>1175044L1</b>
<b>Total Access 916e/924e</b> Gen 3, Eight-hour, Wallmount	<b>1175044L2</b>