

Total Access

# 900e Series

## Market Leading IP Business Gateways



VoIP



Ready



VQM

## Benefits

- 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)
- Network Address Translation (NAT) for IP Address Concealment
- Feature-Rich Adtran Operating System (AOS)
- Optional Battery Backup
- Industry-Leading Five-Year Warranty
- Supports Transcoding and DTMF Interworking (30 Calls)
- Full Featured SBC for Robust Network Security and Voice Interoperability

## Overview

The Total Access® 900e 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 900 Series uses SIP or MGCP for VoIP applications, providing interoperability with industry-leading softswitches, 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 customer's 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.

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## QoS, Security, Routing, and VQM

The Total Access 900 Series uses 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. 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.

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

### 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
  - 600Ω +2.16μF

## 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.

- 900Ω
- 900Ω +2.16μF
- FXO 2-Wire Impedances: (Lifeline FXO)
  - 600Ω
  - 600Ω +2.16μF
  - 900Ω
  - 900Ω+2.16μF
- Signaling Methods:
  - Loop Start
- FXO 2-wire impedances (Standard FXOs):
  - 600Ω+2.16μF
  - 600Ω+2.16μF
  - 900Ω
  - 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

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## 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
- Supports 30 Transcoding Calls

## Media Stream

- RTP/UDP/IP (RFC 3550)
- RTP Payload for DTMF Digits (RFC 2833)
- Supports Port-to-Port Hairpin Call
- SDP (RFC 2327)
- Supports 30 DTMF Interworking Calls

## 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
  - Call Waiting
  - Receiver Off Hook
  - Busy
  - Alternate Call Waiting
- 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
- Do Not Disturb
- Call Return
- Three-way Conferencing (3WC)
- Distinctive Ring
- Three-Way Calling
- Speed Dial

## Security

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

## NAT

- Basic NAT (1:1) and NAT (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

## VPN

- IPSec Tunnel Mode: 100 Tunnels
- Encryption: DES, 3DES, and AES
- Authentication Mechanisms: XAUTH, Digital Certifications, Pre-Shared Keys, and Secure ID

## Protocols

- BGP
- OSPF
- RIP (V1 and V2)
- GRE
- IGMP V2
- Frame Relay

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- Multilink Frame Relay
- PPP
- Multilink PPP
- HDLC
- PAP and CHAP
- Multi-VRF

## Routed Protocols

- IP

## DHCP

- Client
- Server
- Relay

## Management and Utilities

- Familiar CLI
- n-Command Support
- SYSLOG Logging
- Telnet, Craft/Console Port, SSH, Ping, Trace Route, NTP
- Web-Based GUI
- SNMP V2 and V3
- TCL Scripting

## Firmware Upgrade

- FTP
- TFTP
- X-Modem
- 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) (4.45 cm x 43 cm x 20 cm)
- Total Access 916e/924e: 1.75 in. x 17 in. x 10 in. (H x W x D) (4.45 cm x 43 cm x 25 cm)

### Weight

- Total Access 908e: 2.5 kg 5.5 lbs. (2.5 kg)
- Total Access 916e/924e: 7 lbs. (3.2 kg)

### 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
  - Gig 1
  - T1 1 - 4
  - Status
  - USB
  - 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)



# 900e SERIES

## Ordering Information

Equipment	Part No.
Total Access 908e	4243908F1
Total Access 908e with Lifeline FXO	4243908F2
Total Access 908e with SBC, 5 Calls with Lifeline FXO	4243908F2#5
Total Access 908e with SBC, 25 Calls with Lifeline FXO	4243908F2#25
Total Access 908e with SBC, 50 Calls with Lifeline FXO	4243908F2#50
Total Access 908e with SBC, 100 Calls with Lifeline FXO	4243908F2#100
Total Access 916e	4243916F1
Total Access 916e with Lifeline FXO	4243916F2
Total Access 924e	4243924F1
Total Access 924e with Lifeline FXO	4243924F2
Total Access 924e, 16 FXS, 9 FXO (1 Lifeline)	4243924F3
<b>Battery Backup Systems</b>	
Total Access 908e, Eight-Hour, Wallmount	1200641L1
Total Access 916e/924e, Eight-Hour, Wallmount/Rackmount	1175044L1
Total Access 916e/924e, Eight-Hour, Wallmount	1175044L2
<b>Software Upgrade Options</b>	
IPBG SBC Upgrade, 5 Calls	1962SBCF5
IPBG SBC Upgrade, 10 Calls	1962SBCF10
IPBG SBC Upgrade, 25 Calls	1962SBCF25
IPBG SBC Upgrade, 50 Calls	1962SBCF50
IPBG SBC Upgrade, 100 Calls	1962SBCF100

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ISO 9001  
ISO 14001  
TL 9000