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 utilisation
- 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 900e Series utilises 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 normalise, 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.
TOTAL ACCESS 900E SERIES

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 prioritisation 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 (FRF12), 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.

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

Feature Group D
- 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
- 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

Voice Over IP (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

Craft

- DB-9

Memory

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

VoIP

- SIP
- MGCP (FXS Interfaces Only)
Market Leading IP Business Gateways

- 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
  - 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 NAPT (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
- 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
- TCL Scripting
- Telnet, Craft/Console Port, SSH, Ping, Trace route, NTP

**Firmware Upgrade**
- FTP
- X-Modem
- TFTP
- HTTP

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

Physical and Power

<table>
<thead>
<tr>
<th>Chassis</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wallmount</td>
<td>4243908F1</td>
</tr>
<tr>
<td>1U Rackmount</td>
<td>4243908F2</td>
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<tr>
<td>Desktop Metal Enclosure</td>
<td>4243908F2#5</td>
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<tr>
<td>Rackmount</td>
<td>4243908F2#25</td>
</tr>
<tr>
<td>Wallmount</td>
<td>4243908F2#50</td>
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<tr>
<td>Rackmount</td>
<td>4243908F2#100</td>
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<tr>
<td>Rackmount</td>
<td>4243916F1</td>
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<tr>
<td>Wallmount</td>
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<tr>
<td>Rackmount</td>
<td>4243924F1</td>
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<tr>
<td>Rackmount</td>
<td>4243924F2</td>
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<tr>
<td>Rackmount</td>
<td>4243924F3</td>
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Ordering Information

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<thead>
<tr>
<th>Hardware Options</th>
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<tbody>
<tr>
<td>Total Access 908e</td>
<td>4243908F1</td>
</tr>
<tr>
<td>Total Access 908e with Lifeline FXO</td>
<td>4243908F2</td>
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<td>Total Access 908e with SBC, 5 Calls with Lifeline FXO</td>
<td>4243908F2#5</td>
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<tr>
<td>Total Access 908e with SBC, 25 Calls with Lifeline FXO</td>
<td>4243908F2#25</td>
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<tr>
<td>Total Access 908e with SBC, 50 Calls with Lifeline FXO</td>
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<tr>
<td>Total Access 908e with SBC, 100 Calls with Lifeline FXO</td>
<td>4243908F2#100</td>
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<tr>
<td>Total Access 916e</td>
<td>4243916F1</td>
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<tr>
<td>Total Access 916e with Lifeline FXO</td>
<td>4243916F2</td>
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<tr>
<td>Total Access 924e</td>
<td>4243924F1</td>
</tr>
<tr>
<td>Total Access 924e with Lifeline FXO</td>
<td>4243924F2</td>
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<tr>
<td>Total Access 924e, 16 FXS, 9 FXO (1 Lifeline)</td>
<td>4243924F3</td>
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<table>
<thead>
<tr>
<th>Battery Backup Systems</th>
<th>Part No.</th>
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</thead>
<tbody>
<tr>
<td>Total Access 908e, Eight-hour, Wallmount</td>
<td>1200641L1</td>
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<tr>
<td>Total Access 916e/924e, Eight-hour, Wallmount/Rackmount</td>
<td>1175044L1</td>
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<tr>
<td>Total Access 916e/924e, Eight-hour, Wallmount</td>
<td>1175044L2</td>
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<table>
<thead>
<tr>
<th>Software Upgrade Options</th>
<th>Part No.</th>
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</thead>
<tbody>
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<td>IPBG SBC Upgrade, 5 Calls</td>
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<tr>
<td>IPBG SBC Upgrade, 10 Calls</td>
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<td>IPBG SBC Upgrade, 25 Calls</td>
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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

Battery Backup Systems

- Total Access 908e, Eight-hour, Wallmount
- Total Access 916e/924e, Eight-hour, Wallmount/Rackmount
- Total Access 916e/924e, Eight-hour, Wallmount

Software Upgrade Options

- IPBG SBC Upgrade, 5 Calls
- IPBG SBC Upgrade, 10 Calls
- IPBG SBC Upgrade, 25 Calls
- IPBG SBC Upgrade, 50 Calls
- IPBG SBC Upgrade, 100 Calls