

# Tenor® DX VoIP MultiPath Switch



## Tenor® DX Series

- SelectNet™ Auto-Switching provides superior voice quality
- Intelligent Call Routing
- VoIP and Tandem Circuit Switching
- Integrated H.323 gatekeeper and SIP B2BUA for survivability\*\*
- Up to 120 VoIP channels
- Available with 2, 4, 6 or 8 T1/E1/PRI Spans
- IVR/Radius AAA Compliant (Multi-lingual IVR)
- Support for external Quintum Call Routing Server\*
- Support for external Quintum Tenor Monitor
- Available in MultiPath or Gateway Configurations

## A more intelligent way to enter the VoIP market

The Quintum® Tenor® DX MultiPath Switch offers unique flexibility for service providers who want to capitalize on cost-effective, high-quality Voice over IP (VoIP). The Tenor integrates a gateway, a gatekeeper, intelligent call routing, and supports H.323 or SIP, and QoS all in a small solution.

Service providers can benefit from a variety of valuable applications such as IP Local Loop, Wholesale VoIP Termination, Calling Cards, Tandem Switching and Least Cost Routing.

### Carrier class intelligence delivers a complete application solution.

- **Integrated VoIP and Circuit Switching:** Intelligently switches calls between circuits (DS0s) and IP, between multiple circuits, and between IP endpoints.
- **Enhanced Interactive Voice Response (IVR):** Supports multiple user selectable languages and prompts.
- **Advanced Call Routing Support:** Quintum's external Tenor Advanced VoIP Call Routing Server\* provides scalable, centralized network routing control and administration for larger networks. Provides enhanced network-wide routing flexibility including QoS routing, least cost routing, source based routing, and extensive network routing statistics/report generation.
- **Network Management Support:** Quintum's external VoIP Network Manager\* helps lower maintenance costs through centralized provisioning, alarm monitoring, CDR collecting and real time call monitoring.
- **MultiPath Architecture:** Allows easy installation at the customer premise.

### Patented SelectNet™ Technology assures high quality voice.

The Tenor employs its patented SelectNet™ Technology to monitor calls for jitter, packet loss, and latency, and can transparently switch customers' calls to the PSTN whenever conditions demand. This intelligent switching allows you to achieve the Quality of Service targets that customers demand, at costs that traditional phone companies simply cannot match.

### More intelligence means less network congestion.

With its PacketSaver™ Technology, the Tenor reduces bandwidth consumption up to 57%, by combining voice packets from several calls into a single packet to minimize bandwidth requirements.

### NATAccess™ intelligence means greater security.

The Tenor VoIP MultiPath Switch also features a unique technology that allows it to operate behind NAT-enabled firewalls. The innovative NATAccess™ solution overcomes the problem of NAT firewalls not correctly translating internal IP addresses into public addresses when a VoIP call is established with an outside party.

\* Quintum products purchased separately  
\*\* Not supported in initial software release

## CALL MANAGEMENT FEATURES

- Automatic call type detection: Voice/Modem/Fax
- Answer and Disconnect Supervision
- Trunk group support
- Public and private dial plan support
- User programmable dial plan support
- Forced routing
- Pass-through support for calls to Toll-Free, local and special services numbers (ie. emergency services)
- Automatic appending and stripping of digits to dialed numbers
- Call Detail Records
- Least cost routing with external Quintum VoIP Call Routing Server\*
- Type I Caller ID delivery

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## TECHNICAL SPECIFICATIONS

### Telephony Specifications

- Voice algorithms: G.723.a and G.729ab, G.711
- Auto codec negotiation
- Fax support: Industry standard T.38 and Group III at 2.4, 4.8, 7.2, 9.6, 14.4 Kbps
- Modem over IP
- Choice of 2, 4, 6, or 8 T1/E1/PRI Spans
- Standard RJ-45 Connectors
- Coding: A-law,  $\mu$ -law
- Enhanced (Carrier Grade) Echo Cancellation: ITU Rec. G 168, up to 128 msec tailsize
- PRI Signaling Protocols: National ISDN-2, Euro ISDN NET5, Japan INS-NET1500, KDD, 4ESS, 5ESS, DMS100
- T1 CAS (E&M, Loop Start, Feature Group-D, DTMF, MF)
- E1 CAS (R2 MF)
- DASS2
- Tandem/TDM switching
- Maximum Call Rate: 7,200 calls/hour

### IP Network Specifications

- LAN Interface: Fast Ethernet port (10/100 Base-T)
- Standard RJ-45 Interface (IEEE 802.3) for 10 Base-T or 100 Base-T connections
- QoS Support: IP TOS, DiffServ

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### Dimensions: (1U High Chassis)

- W 17 <sup>3</sup>/<sub>8</sub>" x H 1 <sup>3</sup>/<sub>4</sub>" x D 10 <sup>3</sup>/<sub>4</sub>"
- W 44.5cm x H 4.5cm x D 27.6cm
- Maximum weight: 8.25 lbs (3.75kg)
- AC Power: 100-240 Volts AC, 50/60 Hz, 50 watts
- Operating temperature: 40° - 104° F (5° - 40° C)
- Operating humidity: 20% - 80% non-condensing
- Telco: FCC Part 68, TS-016, TBR4, TS-038, CS03
- EMC: FCC Part 15, EN55022 EN55024, EN61000-2-3, EN61000-3-3
- Safety: UL60950, AS/NZS60950, EN60950

### VoIP Network Specifications

- H.323 v.3 Gateway and Integrated Gatekeeper
- SIP User Agent (RFC3261 compliant endpoint)
- SIP Back-to-Back User Agent (B2BUA)\*\*
- SIP RFC2833 In-band DTMF signaling
- SIP Refer Method Support
- IVR/RADIUS server support for AAA with integrated multi-lingual IVR
- Adaptive Voice Activity Detection (VAD) with Comfort Noise Generation (CNG)
- Adaptive Jitter Buffer
- Packet Loss Compensation
- NATAccess™
- Security: IP Filtering
- Up to 120 simultaneous VoIP calls

### Configuration / Management

- Quintum Tenor Configuration Manager (GUI) for configuration of remote individual Tenors.
- Quintum Tenor Monitor (GUI) for alarm monitoring, call monitoring and CDR monitoring
- SNMPv2 Agent
- Command Line Interface



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