

## Tenor<sup>®</sup>CMS

CARRIER MULTIPATH SWITCH

- Available in 2 or 8 slot chassis
- Up to 32 T1/E1/PRI Spans per chassis (Up to 960 DS0s)
- Up to 960 VoIP channels
- Integrated H.323 Gatekeeper and SIP B2BUA for survivability\*\*
- Intelligent Call Routing
- VoIP and Tandem Circuit Switching
- IVR/Radius AAA Compliant (Multi-lingual IVR)
- SelectNet™ Auto-Switching provides superior voice quality
- Support for external Quintum Call Routing Server\*
- Support for external Quintum Tenor Monitor
- Support for external Remote Management Session Server\*



## A more intelligent way to enter the VoIP market

*The Quintum Tenor Carrier MultiPath Switch offers a two or an eight slot chassis to give service providers, CLECs, ISPs and next generation service providers an easy, cost-effective way to deliver low-cost, high-quality voice services over IP networks. The Tenor supports H.323 or SIP, intelligent call routing, and QoS all in one solution. Tenor CMS provides the functionality required to support applications such as:*

- Wholesale VoIP Termination
- Tandem Switching
- Call Centers
- VoIP Local Access
- Least Cost Routing
- Calling Cards

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

- **Integrated VoIP and Circuit Switching**  
Complete VoIP/circuit switch intelligently switches calls between circuits (DS0's) and IP, between multiple circuits and between IP endpoints.
- **Advanced Call Routing Support**  
Quintum's external 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 and report generation.
- **Network Management Support**  
Quintum's external VoIP Remote Management Session Server helps lower maintenance costs through centralized provisioning, alarm monitoring, CDR collecting and real time call monitoring.

- **Enhanced Interactive Voice Response (IVR)**  
Supports multiple user selectable languages and prompts.

**SelectNet™ intelligence takes the risk out of VoIP**  
With our patented SelectNet™ Technology, the Tenor continuously monitors the IP network on a call by call basis for jitter, latency and packet loss, and transparently switches customer calls to the PSTN when required. This intelligent switching allows you to achieve the Quality of Service targets that your customers demand, at costs that traditional phone companies simply cannot match.

**PacketSaver™ intelligence minimizes network congestion**  
PacketSaver™\* Technology allows the Tenor to reduce bandwidth consumption up to 57%, by combining voice packets from several calls into a single packet to minimize bandwidth overhead.

**More intelligence means better management**  
The Tenor comes with a set of easy to use configuration and management tools, including Tenor Configuration Manager (GUI) and Wizard, and the Tenor Monitor that offers realtime monitoring of alarms, call status and CDRs. Tenors can easily be remotely managed behind NAT firewalls utilizing the Tenor Remote Management Session Server.\*

**Support for SS7/C7**  
Tenor CMS is able to support SS7/C7 using an external signaling gateway\*.

\* Available for an additional cost  
\*\* Not supported in initial release

# Tenor Carrier MultiPath Switch

## 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
- Automated load balancing
- 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 Quintum VoIP Call Routing Server\*
- Caller ID Name and Number

## TECHNICAL SPECIFICATIONS

### Telephony Specifications

- Voice algorithms: G.723.1 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
- Coding: A-law,  $\mu$ -law
- 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: 28,800 calls/hour
- SS7/C7 support using an external SS7 signaling gateway\*
- VoIP to circuit, and circuit to circuit (Tandem/TDM) switching

### 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

### Configuration / Management

- Network Management Server Interface for network-wide administration and monitoring
- Central provisioning and management
- SNMPv2 Agent
- Alarm/Fault detection and reporting
- Command Line Interface

### 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 Supplementary Services
- Message Waiting
- 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
- Carrier Grade Echo Cancellation: ITU Rec. G.165/G.168, up to 128 msec tailsize
- Packet Loss Compensation
- NATAccess™
- Security: IP Filtering
- Support for DNS Addressing

### Card Specifications

- System Controller (CPU) with Fast Ethernet port 10/100 Base-T
- DS-1 8 Port (T1/E1/PRI) Line Interface Card with built-in CSU. Individual spans software configurable between T1 and E1; accepts one or two plug-in DSP resource modules.
- DSP-120 DSP Resource Module supports up to 120 simultaneous VoIP calls

## GENERAL SPECIFICATIONS FOR THE CMS

- Operating temperature: 40° F - 104° F (5° C - 40° C)
- Operating humidity: 20% - 80% non-condensing
- Telco: FCC Part 68, TS-016, TBR4, TS-038, CS03
- EMC: FCC Part 15 Class A, EN55022 Class A, EN55024, EN61000-2-3, EN61000-3-3
- Safety: UL60950, EN60950, AS/NZS60950

### 2 Slot Chassis (1U)

- Dimensions:
  - W 17 1/2" x H 1 3/4" x D 11 7/8"
  - W 44.5cm x H 4.5cm x D 30.2cm
- Maximum weight: 11.5 lbs (5.25kg)
- AC Power: 100-240 Volts AC, 50/60 Hz, 300 watts
- DC Power: -40 - -60 Volts DC, 300 watts



### 8 Slot Chassis: (4U)

- Dimensions:
  - W 17" x H 7" x D 11 7/8"
  - W 44.5cm x H 17.8cm x D 30.2cm
- Maximum weight: 27.6 lbs (12.5 kg)
- AC Power: 100-240 Volts AC, 50/60 Hz, 600 watts
- DC Power: -40 - -60 Volts DC, 600 watts



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

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