

## R-827 TetraNode High End

### General Description

The TetraNode High End platform is based on the Advanced Telecom Computing Architecture (AdvancedTCA®) compliant platforms for top-of-the-range, highest-reliability systems solutions.

AdvancedTCA® is a carrier grade computer hardware standard published by the PCI Industrial Computers Manufacturers Group (PICMG) who also authored the Compact-PCI® standard.

TetraNode High End is intended for customers with requirements for very high availability and/or very high performance (traffic loads) on the main switch i.e. switches. It is also suitable to aggregate up to 12 TetraNode eXchanges for customers who prefer a big-switch approach. Typical users of TetraNode High End include major airports, national network operators and anyone for whom high-availability is a must.

### Technical Overview

AdvancedTCA® standardizes a whole range of issues for computer systems. Most importantly these include:

**Thermal management.** Each slot in the rack is designed to be able to dissipate up to 200W power. The high efficiency cooling also improves reliability of components by keeping temperatures low.

**Configuration management.** Card compatibility is checked at insertion. If necessary the configuration is then copied to the new card. The card is then allowed to start up.

**Hot-plug.** Any card can be removed or inserted without any user-precautions for power on/off.

**Redundancy.** The rack is designed to provide integrated redundancy capable of achieving five-9's (99.999%) availability. All components are duplicated.

**Interconnect.** Mesh and star interconnect are possible. TetraNode High End provides capacity for two Ethernet Blades, each of which is able to provide non-blocking Giga-bit communications to each of the 12 compute slots. TetraNode High End uses proven 3rd generation hardware. Additionally, Rohill supplies these systems with a carrier-grade hardened distribution of Linux optimized for real-time performance. This means that the devices drivers are tolerant to hardware faults and do not suffer dead-locks.

### Basic configuration

TetraNode High End is available in two different chassis containing either capacity for 6 or 14 slots. These slots can be used to fit Switch blades and Server blades. Each blade logically represents one TetraNode eXchange (TNX). Server Blades can be used to aggregate multiple TetraNodes or fall-back nodes into one single chassis.



The AdvancedTCA chassis furthermore includes two dedicated slots for Chassis Management Modules. The power supply is connected through dual or triple -48 V<sub>DC</sub> input filtered Power Entry Modules. Hot-swappable air filters and fan-trays are provided for cooling.

### Summary

The architecture of AdvancedTCA® is inherently dual/ multiple-redundant in every aspect from the power supplies to the shelf management. TetraNode High End uses the same soft-switch IP technology as the other TetraNode variants. It offers the highest capacity and best performance currently available. Hence, TetraNode High End is the optimal solution for users requiring the highest availability or capacity to answer their operational needs. The TNX-H is standard built in a Compact 32U high 19-inch rack enclosure.

## Key Features

- Five-9s (99.999%) overall availability of hardware
- Software functionality identical to other platforms
- Each TNX can handle 128 TETRA carriers across 48 sites
- Up to 12 TetraNode eXchanges per chassis
- Carrier grade, hardened real-time Linux
- All components operate with hot-swap capability
- Option for dual-redundant Giga-bit IP fabric switching
- Dual-redundant chassis management with comprehensive SNMP trap lists
- Dual/triple-redundant -48V<sub>DC</sub> power supplies
- Dual/triple-redundant Fan cartridges

## Systems Extension and additional features

Beside the TNX-H sub system and power supply systems the 32U enclosure can also house the following servers/applications :

- R-809 Authentication and Key management Server
- R-816 Voice logging Server
- R-817 Dispatcher server
- R-818 Coverageguard Server
- R-819 CoveragePlot Server
- R-820 TEP rack functions
  - S-895
  - S-896
  - S-838
  - S-833
  - S-835
  - S-839
- R-880 SIP telephone Interface
- R-1800 I/O interface
- R-1810 Site power controller
- R-1820 Light Stack

Licenses for :

- L-1100 Conference Bridge
- L-222 Radio User Assignment
- L-962 TetraNode Packet Data Gateway



### Mechanical of the TNX sub system

- Dimensions (H x W x D) 532.6 x 482.6 x 524.04 mm
- Weight Complete 32kg

### Environment

- Operating temperature 5 °C to 45 °C
- Humidity 5 % to 85 %, non-condensing

### Cooling capacity

- Front boards 200 W per board
- RTM 15 W per board

### Power supply, Chassis

- Input voltage -40.5 V<sub>DC</sub> to -72 V<sub>DC</sub>
- Input power 30 A per power feed

### Power supply, Chassis Management Module (CMM)

- Input voltage -34 V<sub>DC</sub> to -72 V<sub>DC</sub>
- Input power 17 W typical, 28 W maximum

### Power supply, Server Blade

- Input voltage -43 V<sub>DC</sub> to -72 V<sub>DC</sub>
- Input power 163 W typical, (including HDD) 201 W maximum

### System Compliance

Compliant with the following specifications:

- AdvancedTCA<sup>®</sup> Specification PICMG<sup>®</sup> 3.0
- NEBS specifications designed to be compliant to NEBS Level-3 and ETSI
- IPMI Specifications in accordance with IPMI v1.5

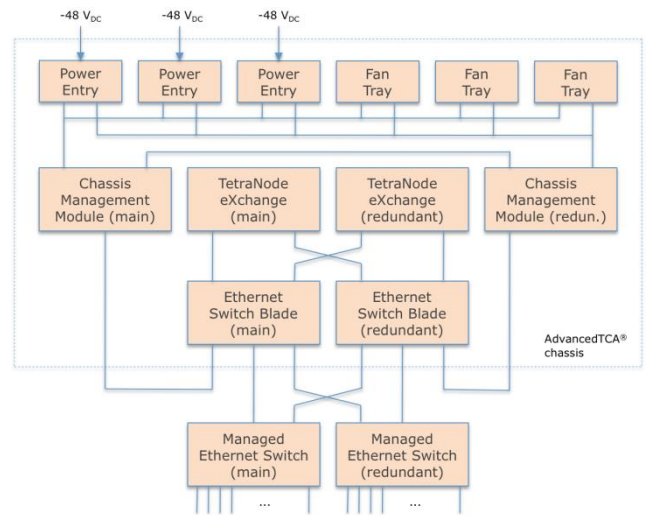
### Ordering specifications

#### Deliverable system

- R-827 TetraNode High End ( TNX- H)
  - S-806 ATCA High End processor board
  - S-801 ATCA Rack
  - S1010 TNX License / release
  - S-130 High End IP Switch Fabric

#### Features / Add-on

- R-827-R Redundant Processor board in same enclosure as Main TNX-H
  - S-806 ATCA High End processor board
  - S1010 TNX License / release
- R-827-GR Geo-Redundant TNX-H in Physically separated enclosure from Main TNX-H
  - S-806 ATCA High End processor board
  - S-801ATCA Rack
  - S1010 TNX License / release
  - S-130 High End IP Switch Fabric



Example block diagram of full redundant TetraNode system

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# TetraNode Mission Critical Communications