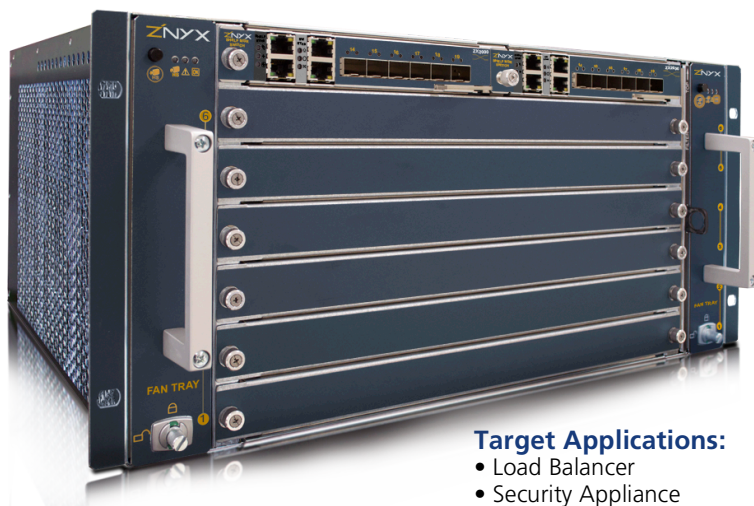


# ZX2000 Series 6 Slot 5U AdvancedTCA® Platform



### Target Applications:

- Load Balancer
- Security Appliance
- Deep Packet Inspection
- Dense Media Processing

## Product Description

The ZX2000 is a distinctively optimized mid-range ATCA 5U platform for general purpose deployments in telecommunications, scientific, enterprise, military or aerospace.

This 6 node 5U chassis offers the industry's highest number of payload slots available in a 5U form factor. The ZX2000 provides a highly integrated platform infrastructure by compressing dual switch/ shelf managers into the small envelope normally used for the shelf managers alone. This industry-first architecture offers a **greener, more energy efficient, and more cost-effective platform for typical ATCA 5U applications**. This denser platform allows customers to decrease space requirements as well as reduce overall CAPEX and OPEX.

## Shelf Manager/Switch

The ZX2010 is the ATCA 3.1 compatible Shelf Manager/Switch with Six (6) of the front ports can accept 1-Gigabit or 10-Gigabit links via pluggable modules (SFP+).

The ZX2010 hosts the Pigeon Point® shelf manager module (ShMM-500R). Logical to Physical Slot Mapping mimics half of a 14U-Slot

The ZX2010 is equipped with 10-Gigabit ports to each payload slot to support processing blades with 10-Gigabit (Option 9) or 1-Gigabit (Option 1) Fabric ports plus a separate 1-Gigabit Base link. Using the OpenArchitect® environment, application blades can participate directly in the processing, forwarding, and inspection of every packet.

Part Number	Description
ZX2000	6 Slot 5U AdvancedTCA® Platform

## Features

- **2 hot-swappable Fan Trays**
  - Push-Pull front pluggable Fan Tray
  - Optimized cooling for ATCA blades
  - Fault tolerant capability
  - Power and Cooling 375W/slot
- **2 hot-swappable Power Entry Modules**
  - Two -48/60VDC rear pluggable PEMs
  - Terminal Power blocks for two Power Branches
  - Fault tolerant capability
- **6 payload slots for applications**
  - Redundant 10G and 1G to each slot
- **2 Integrated Shelf Management/Switch Slots**
  - Custom Shelf Manager Slot provisions for full ATCA Switch features (**Patent Pending**)
  - Fabric ports servicing six payload nodes with dual Option 1 or Option 9 links
  - Base ports servicing six payload nodes

## ZX2010 3.1 Fabric & Base Ethernet

- **200Gbps 10G Fabric & Base Switch**
  - 20-port 10GigE switch (Broadcom BCM56800)
  - 6-ATCA Fabric ports servicing payload nodes with Option 1 or Option 9 links
  - 6-ATCA Base ports servicing six payload nodes
  - 10GigE Update link
  - Cross-Connection to partner Shelf Mgr/Switch
  - Six SFP+ ports for 1 or 10GigE to front panel
  - IPv4 switching at Layer 3, IPv6 capable
  - VLANs with flexible Class of Service (CoS)
- **Network management & configuration**
  - OpenArchitect® Linux Switch Control Software
  - Serial and Ethernet OOB ports
- **ZNYX application extensions**
  - Content Aware Processor (CAP) for packet vectoring with OpenArchitect/PV
  - Flow-Based Classifier & Load Balancer
  - Scalable IPsec Security Gateway

## Switch Control Processor

- OpenArchitect® Linux Switch Control Software
- Freescale 8270VV at 450MHz (50MHz PCI bus)
- 256MB SDRAM (100MHz SDRAM bus)
- 128MB Flash ROM for redundant system image
- Recessed front-panel ATCA leds
- RS-232 Console RJ45 to front panel
- 10/100 Ethernet RJ45 OOB to front panel

## Shelf Manager Module

- Pigeon Point ShMM-500 Shelf Manager Module
- Recessed front-panel ATCA LEDs
- RS-232 Console RJ45 to front panel
- 10/100 Ethernet RJ45 OOB to front panel

## Software

### OpenArchitect®

The core software technology of the ZX2000 goes far beyond simple Ethernet switch management. The field proven OpenArchitect® embedded operating system provides Linux-enabled flexibility in management protocols, configuration, packet vectoring, and high-availability features. Only ZNYX OpenArchitect® uses familiar, industry-standard Linux interfaces, enabling simple system configuration and true transparency for network integration.

### High Available Five-Nines Operation

Continuous (“five nines” or better) operation is a hard requirement in most networks, making hardware redundancy a must. Software facilities are equally critical to enable automatic, rapid re-convergence of the network around failed components. OpenArchitect/HA fills this need with the fastest fail-over performance possible in packet-switched networks. Instead of convergence in seconds or minutes as is typical for STP/RSTP failover schemes, OpenArchitect/HA can fail-over in milliseconds, often faster than the dual-SONET standard of 50 milliseconds.

### Packet Processing at 10G-Per-Second

A bonus feature unique to ZNYX Networks OpenArchitect® switches is also found on the ZX2000. Packet Vectoring refers to the ability of the switch to send packets port to port using any information within the packet. This enables load balancing, security monitoring, and many other applications that would otherwise not be possible. Because the silicon handles the real-time decision making, all packet vectoring happens at full line rate without restrictions.

The OA/PV implementation uses the familiar Linux iptables control interface to implement packet vectoring rules. With very little learning curve, network technicians can configure packet vectoring subsystems that eliminate the need for expensive external load balancing or network processing systems.

### Pigeon Point Shelf Management

The Shelf Manager is key to managing low-level hardware components within the system. Electrical and Temperature sensors on the node blades and chassis are continuously monitored and pre-defined actions can be taken if required. The shelf manager is also responsible for ensuring that 3<sup>rd</sup> Party AdvancedTCA blades inserted into the system share compatible signaling characteristics to reduce the opportunity for damage caused by in-field servicing.

The ZX2000 shelf managers are based on the Pigeon Point shelf management software. By using the well-known PPS interface, applications that were developed to run in full-size 14 slot chassis can be scaled down to the ZX2000 6 slot design with ease.

## Features

### Serviceability Features

- **AdvancedTCA® form factor**
  - Complies with ATCA cooling envelope
  - Custom ATCA LED suite
  - Positive-latch ejector handles
- **IPMI Management Module (IPMC)**
  - Thermal & Fuse-Failure sensors for switch
  - Voltage Sensors for each power rail
  - I2C FRU ROM
  - ATCA 3.0 compliant E-Key function

### Networking Features

- **Layer 2 and Layer 3**
  - Wire-speed L2/L3 Switching
  - Wire-speed L2-L7 Packet Classification
  - IEEE 802.1Q VLANs
  - IEEE 802.1P Class-of-Service
  - IEEE 802.3ad Link Aggregation (static)
  - IEEE 802.1D Spanning Tree (STP)
  - IEEE 802.1D-2004 Rapid Spanning Tree (RSTP)
  - Virtual Router Redundancy Protocol (VRRP)
  - MSTP (Multiple Spanning Tree Protocol)
  - LACP (Link Aggregation Control Protocol)
  - Common Open Policy Service (COPS)
  - Differentiated Services (DiffServ)
  - OpenArchitect® Packet Vectoring
  - Port Mirroring in hardware
- **Management**
  - Linux shell interface (bash, et.al.)
  - SNMP management (v1, v2, v3)
  - Secure Shell daemon (SSH v2)
  - DHCP server / client / relay
  - Network Time Protocol (NTP) client
  - Web server (HTTPD) for browser access

### Additional Features

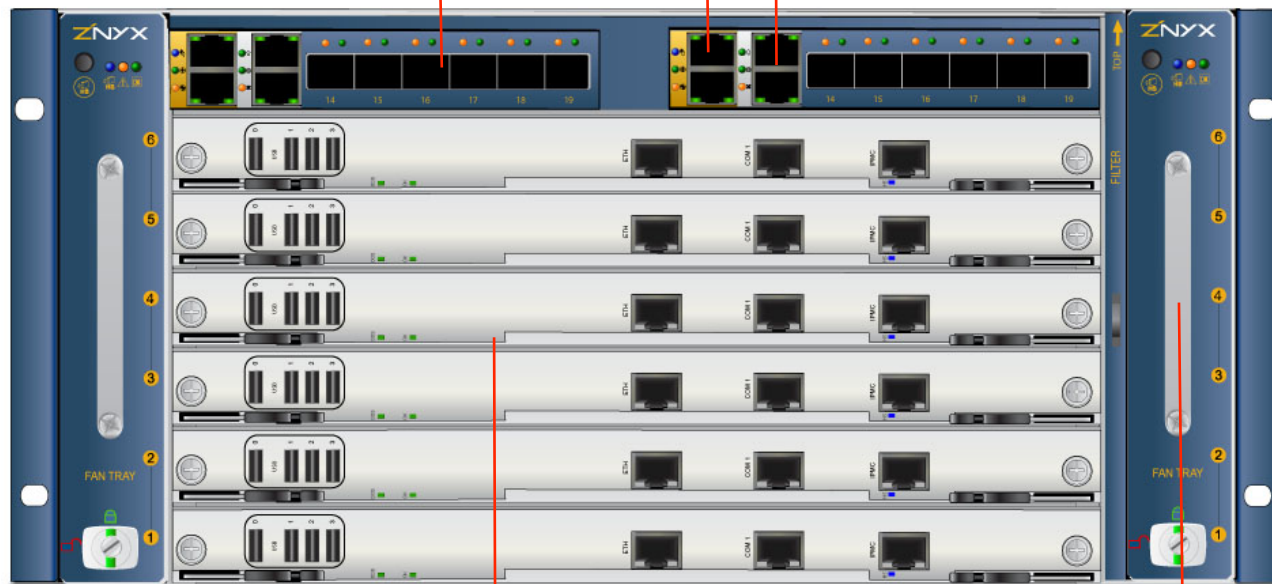
- **Capacitor-backed Real-time Clock**
- **Write protect switch for Flash ROMs**
- **OpenArchitect® LED Status Display**
  - CLK indicates CPU health
  - Active LED
  - EXT Fault indicates external cable/link problem
- **Telco Compliance Engineering Standards**
  - NEBS / ETSI

Front View

ZX2010: Six 10G ports (SFP+) for 60Gbps egress bandwidth

Shelf Manager Console (RS232) and Management LAN (10/100 Ethernet)

Switch Console (RS232) and Management LAN (10/100 Ethernet)



Six payload slots, each with 10G Fabric and 1G Base Connectivity

Dual Fan Trays "Push-Pull" Airflow  
Dual DC power supplies (Rear)

Standards and Specifications

Standard	Revision	Description	Status
ATCA 3.0	2.0	AdvancedTCA® Base Specification	At the time of this document writing, the R2.0 version of ATCA 3.0 has not been ratified. No changes are expected from the draft version. ATCA 3.0 was formerly known as PICMG 3.0.
ATCA 3.1	1.0	AdvancedTCA® for Ethernet	Fully adopted.
IEEE 802.3-2008	9 Dec. 2008	IEEE 802.3 Ethernet Specifications	Fully adopted.
IPMI	2.0	Intelligent Platform Management Interface	Fully adopted.
SFF-8431	Rev. 1.2 21 Dec. 2006	SFP Committee Specification for Enhanced 8.5 and 10 Gigabit Small Form Factor Pluggable Module "SFP+"	Marked "This is not a final draft"

Standard	Agency/Report Format	Description
CFR 47, Part 15, Subpart B 1998 (ANSIC63.4 1992)	FCC	United States
EN300-386-2 VI.1.3 (1997-12)	EN55022 (1998), EN50082-1 (1996)	European Union
VCCI (ANSI C63.4-1992 / CISPR 22-1997)	VCCI	Japan / International
AS/NZS 3548 (1997)	AS/NZS 3548	Australia / New Zealand
ICES-003, Issue 3	ICES 003	Canada
CNS 13438	BSMI	Taiwan
UL 1950 3 <sup>rd</sup> Edition		United States
CAN/CSA 22.2 No 950 - 95		Canadian
IEC 950 (1991) 2 <sup>nd</sup> Edition with Amendments No. 1 (1992), No. 2(1993), No 3 (1995), and No. 4 (1996)		International
EN 60950 (1992) Amendments 1, 2, 3, 4 & 11		European Union

## ZNYX Networks

ZNYX specializes in the development of blade-based Switching Platforms for proprietary and open-standards based systems including PICMG 2.16 and AdvancedTCA®.

ZNYX's OpenArchitect® Switch Management Software and HA Suite provide a highly integrated solution based on a hardened Linux environment. Developers and Integrators can leverage the Linux environment to customize and re-use application code across multiple switching/routing platforms. ZNYX products service the following markets:

- Mobile
- Communications
- Telephony
- Military
- Homeland Security
- Aerospace
- Medical
- Automation
- Storage
- Enterprise

## Product Specifications

### PICMG 3.0 Interfaces

- (1) 10/100/1000Base-T to each payload slot
- (1) 10 GigE to Update Channel
- (2) 10/100Base-T to Shelf Manager (ECN.001)

### PICMG 3.1 Interfaces

- (1) Option1 or Option 9 to each payload slot
- (6) 1G/10G to front panel (SFP+)

### ZX2010 Base / Fabric CPU

- Broadcom BCM56502 Switch Fabric
- Freescale 8270VV at 450MHz (50MHz PCI bus)
- 256MB ECC SDRAM (100MHz SDRAM bus)
- 128MB Flash ROM

### Front Panel Interfaces

- (6) 1G/10G Egress (SFP+)
- (1) 10/100Base-T Switch OOB (RJ45)
- (1) RS-232 Switch Console (RJ45)
- (1) 10/100Base-T Shelf Manager OOB (RJ45)
- (1) RS-232 Shelf Manager Console (RJ45)

### Layer 2 / 3 Switch/Routing Features

- IEEE 802.1Q VLANs with double tagging
- IEEE 802.1D Spanning Tree Protocol (STP)
- IEEE 802.1D-2004 Rapid Spanning Tree (RSTP)
- IEEE 802.3ad Link Aggregation (static)
- IEEE 802.3x Full Duplex Flow Control
- Jumbo Frames Support (9kB, L2, non-host)
- On-Chip MAC table (16k addresses)
- Port Mirroring in hardware
- Per-port traffic shaping, policies, broadcast control
- Line-Rate Layer 3 Forwarding (8k IP addresses)

### Management Features

- Command Line Interface (CLI)
- IPMI v1.5 client SNMP v1, v2, v3 with extensive MIB support
- RMON counters

### Status Indicators

- PICMG 3.0 status indicators (Out-of-Service, Health, System, HotSwap)
- OpenArchitect® status indicators (Ext Fault, Clock)
- Front Panel Egress Port Link/Activity

### AdvancedTCA® Features

- PICMG 3.0 compliant HotSwap Power Management Controller
- PICMG 3.0/3.1 Extended Mode Support
- PICMG 3.0 Status Indicators
- PICMG 3.0 FRUID support
- PICMG 3.0 compliant IPMI controller (IPMC)
- Compliant with PICMG 3.0 ECN.001 for shelf manager cross-connect
- Power plane sensors
- Temperature sensor

### Network Services

- FTP / TFTP servers for remote file transfer
- HTTP server for web-based access
- DHCP server / client / relay
- NFS client for remote filesystems
- NTP client for network-based time service
- SSH / Telnet server for remote session access

### QoS and Priority Queues

- IEEE 802.1p Class of Service (CoS) with 8 priority queues per VLAN
- Supports IETF DiffServ DSCP marking
- Supports IETF Type-of-Service (TOS)
- Supports IETF Common Open Policy Services (COPS) architecture

### High Availability Features

- Power-On Diagnostics
- Switch-to-Switch Failover (policy-based)
- VLAN-to-VLAN Failover (policy-based)
- Port-to-Port Failover (policy-based)
- Automatic Reconfiguration after HotSwap
- Redundant OpenArchitect® runtime image in flash Full PICMG 2.1 / 3.0 HotSwap support
- Bonding driver for transparent failovers on client Scriptable, policy-based link failure correction



### Specifications Subject to Change

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Document # 280-0999-001

Date: 10/25/11