

ZX7100 Series

ATCA Modular Switching Platform

Gigabit Ethernet Modular Switching Platform for AdvancedTCA® Chassis



PRODUCT DESCRIPTION

For the most demanding, high density ATCA applications the ZX7100 brings new features to the PICMG 3.1 compatible market. With 72 Gigabit Ethernet ports and up to three 10Gigabit Ethernet ports, the ZX7100 can concentrate High Availability traffic for any packet-based application. Critical new features include:

- Multiple 10Gigabit Ethernet Ingress/Egress
- Full Separation between ATCA Base and Data
- PICMG 3.1 Option 1, 2, and 3 support

With 48 Gigabit ports dedicate to the ATCA data fabric, the ZX7100 can accommodate an assortment of PICMG 3.1 Option 3 (4 Gigabit Ethernet links) and Option 2 (2 Gigabit Ethernet link) payload boards in a full 16-slot ATCA chassis. Option 1 boards may also be used. These links are in addition to the Gigabit Ethernet links supplied on the ATCA Base Interface.

FULL BASE AND FABRIC SEPARATION

The ZX7100 is actually two complete switching subsystems in one ATCA blade. Each of the two non-blocking switch fabrics with their separate control processors ensure that no accidental or malicious software malfunction can cross over between the Control and Data planes, implementing true Telco-grade network security.

10GIGABIT ETHERNET EGRESS

The power of the ATCA backplane can be well utilized with up to three 10Gigabit Ethernet egress links on the ZX7100. Two links are provided to the front panel and one is provided to the optional RTM, giving flexibility for different cabling practices.

MODELS

ZX7100	All Gigabit Ethernet	
ZX7120	(1) 10Gigabit Ethernet Front Panel	(1) 10Gigabit Ethernet Rear Panel
ZX7130	(2) 10Gigabit Ethernet Front Panel	(1) 10Gigabit Ethernet Rear Panel

Features

- Up to (3) 10Gigabit Ethernet Egress Ports
- 72 Gigabit Ethernet Ports Total
- Fully separate 3.1 Fabric and Base
- 24-port Base Fabric
 - 14 Base Interface payload
 - 1 Base Interface ISL
 - 2 Base Interface ShMC
 - 4 Front Panel 10/100/1000
 - 3 RTM 10/100/1000
- 48-port PICMG 3.1
 - 6 PICMG 3.1 Option 3 slots
 - 8 PICMG 3.1 Option 2 slots
 - 1 10GigE Ethernet ISL
 - 4 Front Panel 10/100/1000
 - 4 Rear Panel 10/100/1000
- 10Gigabit Ethernet egress (XFP)
 - 2 Front Panel
 - 1 Rear Panel
- Separate Base Control Processor
 - Front and Rear Panel OOB
 - Front and Rear Panel Console
- Separate Fabric Control Processor
 - Front and Rear Panel OOB
 - Front and Rear Panel Console
- OpenArchitect 3 w/ Linux Kernel
- Wire-speed L2/L3 Switching
- Wire-speed L2 - L7 Packet Classification
- Optional Telco Clock MCG
- IEEE 802.1Q 4096 VLANs
- Linux shell management
- SNMP v1, v2, v3 management
- IEEE 802.1p Class-of-Service
- DHCP Server/Client/Relay
- Network Time Protocol (NTP)
- VRRP
- Link Aggregation Control Protocol (static)
- Port Mirroring
- Load Balancing
- COPS
- DiffServ
- IEEE 802.1D Spanning Tree (STP)
- Rapid Spanning Tree (RSTP)
- 256MB SDRAM
- 48MB FlashROM
- USB
- IPMI Controller

ZNYX ZX7100 AdvancedTCA Modular Switching Platform

PICMG 3.1 Gigabit Ethernet Fabric Switch with 10Gigabit Ethernet Egress

TWO ATCA SWITCHES IN ONE ATCA SLOT

The ZX7100 supports all the features required of an ATCA hub subsystem with a total of 72 Gigabit Ethernet ports. The Base subsystem has 24 ports to serve the ATCA Base Interface to implement an isolated Control Plane. The ATCA Fabric is served by a nonblocking Ethernet switch that has 48 Gigabit Ethernet ports and four 10Gigabit Ethernet ports.

This system ensures no possibility of intrusion or interference between the Control and Data planes, a "must have" requirement for telco applications. Each of the Base and ATCA Interface switches has its own control processor, which may be kept on completely separate networks or optionally interconnected.

SERIOUS EGRESS CAPACITY

The full capability of the ATCA backplane may be accessed through the ZX7100 via its three 10Gigabit Ethernet ports*. Two ports are provided to the front and one is provided to the rear to accommodate alternate cabling practices. In addition, both switch subsystems provide four Gigabit Ethernet switch ports to the front panel and an additional four fabric Interfaces and three base Interface Egress ports to the rear. This allows flexibility in connecting both data-plane channels as well as auxillary and associated equipment, saving costs by reducing or eliminating the need for external switch equipment.

PICMG 3.1 FABRIC INTERFACE

With a ZX7100, up to 6 payload cards using PICMG 3.1 Option 3 (four GigE links) may be used. The remaining eight payload slots are supplied with Option 2 (two GigE links). This arrangement is ideal for N+1 redundancy systems that provide an "extra" hot blade to take over full function for any of the active blades. (All slots may be used with Option 2, Option 1, or Base-interface-only payload cards.)

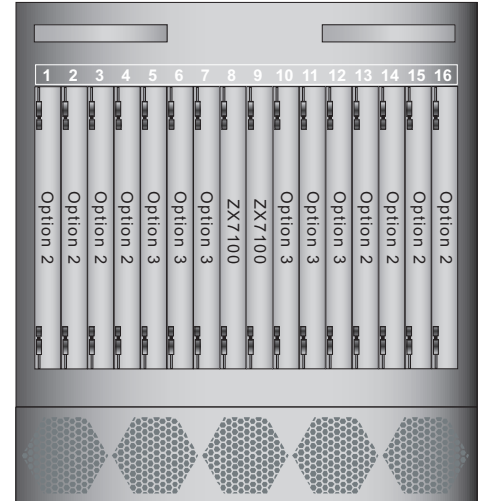
ATCA 3.0 IPMI MANAGEMENT

The ZX7100 includes an IPMI management controller, compliant with the PICMG 3.0 version 1.5 protocol, which interfaces the shelf management system via I2C for remote management of the shelf. All required functions are supported, including the electronic keying feature of ATCA that prevents the accidental mis-match of boards inserted into the system. In addition, the switch fabric provides a link to the Shelf Management controller to allow it full access to the network.

ATCA BACKPLANE CLOCK

If a backplane clock is required (as specified in PICMG 3.0 6.7) the optional RTM of the ZX7100 can support an optional clock module, with or without external sync input.

PICMG 3.1 Configuration Options



* Optional XFP Modules for 10Gigabit Ethernet sold separately

OpenArchitect Switch Management

The Industry-Leading fabric board management suite for AdvancedTCA chassis

OPENARCHITECT®

The core software technology of the ZX7100 goes far beyond simple Ethernet switch management. As a full-featured embedded Linux distribution, OpenArchitect supports user applications running in the industry-standard Linux environment. From the point of view of the technician, an OpenArchitect switch appears as a stand-alone Linux system with all the familiar tools and utilities. Users that know how to configure Linux networking systems can become proficient with an OpenArchitect switch within minutes.

While the OpenArchitect philosophy is to enable the use of open-source software as much as possible, the key to this technology is the proprietary core virtualization structure developed exclusively by ZNYX Networks. More than 7 years of continuous development and deployment have made OpenArchitect 3 the most robust and full-featured embedded Ethernet control software.

PowerPC® EMBEDDED SUBSYSTEM

The ZX7100's embedded processors are the Freescale™ PowerPC®, which combines a high degree of density with low power consumption and significant processing capability.

- PowerPC processors
- 256MB SDRAM (each)
- 48MB Flash ROM (each)
- Two RS-232 Ports
- Two 10/100 Ethernet Mgmt. Ports
- USB Port
- PCI Bus control

LINUX ROUTING PLATFORM

A significant advantage of OpenArchitect is its ability to use any routing protocol stack that runs in the Linux environment. The standard release of OpenArchitect includes the gated daemon, which drives OSPF, RIP, EGP and BGP. Other protocol stacks, open-source or proprietary, may

be easily re-compiled with no source code changes to run on OpenArchitect. Other embedded switch architecture solutions require customization of routing code to a proprietary API. Only OpenArchitect uses Linux open APIs, enabling true transparency and flexibility for network architecture integration.

LAYER 2-7 PACKET CLASSIFICATION

One of the ways in which the ZX7100 with OpenArchitect expands the envelope is its ability to do line-rate packet classification from layer 2 through layer 7. This feature can often eliminate the need for an expensive external security device by providing IP filtering capability, or it can manage traffic by assigning specific packets to different VLANs, Classes of Service, or separated for special processing. As with other features of OpenArchitect, the interface to program the packet classification uses familiar Linux commands.

LOAD BALANCING

The advanced OpenArchitect 3 packet classification feature may be used to implement load balancing, where packets are distributed among ATCA blades based on their content. This feature enables true scalability for ATCA applications, and can be adapted according to any user-set policy. The switch silicon handles the distribution of packets at full line rate, giving the ZX7100 a significant advantage over processor-based load-balancing schemes.

USB

The front panel of the ZX7100 includes a USB socket that enables inexpensive, industry-standard expandability. Any Linux compatible peripheral device may be used for a variety of application enhancements, such as one-step upgrades and inline diagnostics.

REAR TRANSITION MODULE

For applications that use rear-panel I/O, the ZX7100 may be used with an RTM. Up to six in-band Ethernet channels are provided, as well as two out-of-band RS-232 ports and two out-of-band 10/100 Ethernet ports.

TELCO CLOCK

The ATCA Zone-3 connector of the ZX7100 provides full connectivity for the ATCA backplane clock, which permits the implementation of a chassis backplane clock feature. A custom RTM may host a hardware-based clock generator to meet any ATCA-compatible specification that requires telco-grade clock synchronization.

OPENARCHITECT® HA SUITE

OpenArchitect HA Suite features transparent port-to-port, VLAN-to-VLAN and switch-to-switch rapid failover. With the OpenArchitect High Availability (HA) software suite, the chassis can respond and automatically correct any single point of failure.

Gigabit Ethernet Modular Switching Platform for ATCA Chassis

ZNYX Networks

ZNYX specializes in the development of blade-based Modular 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

AdvancedTCA™



ZNYX NETWORKS

ZNYX Networks, Inc.
48421 Milmont Drive
Fremont, CA 94538

Tel: (510) 249-0800
Fax: (510) 656-2460
Web: www.znyx.com

PRODUCT SPECIFICATIONS

PICMG 3.0 Interfaces

- 14 10/100/1000Base-T to payload slots
- 1 10/100/1000Base-T to inter-switch fabric link
- 2 10/100/1000Base-T to Shelf Manager (ShMC)

PICMG 3.1 Interfaces

- 8 Option 2 payload slots (2.0Gb/s)
- 6 Option 3 payload slots (4.0Gb/s)
- 1 Inter-switch fabric link (10.0Gb/s)

Front Panel Interfaces

- 4 10/100/1000Base-T for PICMG 3.0 Base Egress
- 4 10/100/1000Base-T for PICMG 3.1 Fabric Egress
- Up to (2) 10Gigabit Ethernet
- 1 Base Interface Out of Band Ethernet
- 1 Fabric Interface Out of Band Ethernet
- 1 Base Interface Console Port
- 1 Fabric Interface Console Port

Rear Panel Interfaces

- Up to (1) 10Gigabit Ethernet
- 3 Base Interface Egress
- 4 Fabric Interface Egress
- 1 Base Interface Out of Band Ethernet
- 1 Fabric Interface Out of Band Ethernet
- 1 Base Interface Console Port
- 1 Fabric Interface Console Port

Hardware

- Broadcom BCM5695 Switch Fabric (2)
- Broadcom BCM5650X Switch Fabric (2)
- Freescale™ PowerPC® Processor (2)
- 256MB SDRAM (each processor)
- 48MB Flash ROM (each processor)
- USB (on base)

Layer 2 Switching Features

- IEEE 802.1Q VLANs
- Double 802.1Q VLAN Tagging
- IEEE 802.1D Spanning Tree Protocol (STP)
- IEEE 802.1w Rapid Spanning Tree
- IEEE 802.1x port-based access control
- IEEE 802.3AD Link Aggregation Control Protocol (static)
- IEEE 802.3x Full Duplex Flow Control
- Jumbo Frames support (up to 9KB, L2, non-host)
- Large On-chip Layer 2 MAC table (16k addresses)
- Port Mirroring
- per port traffic shaping, policies, and broadcast storm control

Layer 3 Routing Features

- Line-Rate Layer 3 IP Forwarding (8K IP Addresses)
- VRRP

AdvancedTCA® Features

- PICMG 3.0 FRUID Support
- PICMG 3.0 compliant IPMI Controller
- Power Plane Sensors
- Temperature Sensor
- PICMG 3.0 compliant HotSwap Power Management Controller
- PICMG 3.0 / 3.1 Extended Mode Support
- PICMG 3.0 Status Indicators

QoS and Priority Queues

- IEEE 802.1p Class of Service / Quality of Service
- up to 8 priority queues
- Type of Service (TOS)
- Architecture for Differentiated Services

Network Services

- FTP Server
- HTTP Server
- TFTP
- DHCP Server/Client/Relay
- NFS Client
- Network Time Protocol (NTP)
- Telnet

Management

- Command Line Interface
- IPMI v1.5 client
- SNMP v1, v2, v3
- Common Open Policy Service (COPS)
- Extensive MIB Support
- RMON Counters
- Field Upgradeable

High Availability Features (OA/HA)

- Power-On Diagnostics
- Switch-to-Switch Failover
- Automatic Reconfiguration after a hotswap
- Redundant run-time OpenArchitect® image in flash
- Full PICMG 2.1 HotSwap Support
- OA/Node for transparent failovers on client

Specifications

- PICMG 3.0 Base Fabric Interface
- PICMG 3.1 Fabric Interface
- IEEE 802.3u Fast Ethernet Specification
- IEEE 802.3z Gigabit Ethernet Specification
- IEEE 802ae 10 Gigabit Ethernet Specification

Status Indicators

- Network Status, per channel
Link, Activity
- PICMG 3.0 Status Indicators
Out of Service, Health, System, Hot Swap
- OpenArchitect Status Indicators
External Fault, Internal Fault, Clock, OK

Manufactured in the U.S.A.

Mechanical: Dimensions: 322.25mm x 280mm

Environmental: Operating Temperature: -5° C to +50° C
Humidity: 90% Non Condensing
MTBF: Pending

Power Requirements: Maximum Power Draw: up to 200 Watts

Telcordia NEBS: GR-1089-CORE, GR-63-CORE

Emissions Certifications (EMI):

Class A emissions levels for FCC, DOC, EN55022,
EN300-386:1997, VCCI, EN61000-3-2, -3

Environmental: UL./CUL-UL 60950, CSA C22.2 No.950
CB Scheme-IEC950, EN60950(CE)

Immunity: EN55024, EN61000-4-2, -4, -6, EN300-386:1997

Specifications Subject to Change

© 2005 ZNYX Networks, Inc. All rights reserved. Information in this document is subject to change without prior notice. ZNYX, ZNYX Networks, and OpenArchitect are trademarks or registered trademarks of ZNYX Networks, Inc. in the United States and/or other countries. All other trademarks or service marks are the property of their respective owners.
Document # 280-1024-003 Date: 06/21/06