

### Applications

- ▶ 3G RNC, MSC & SGSN
- ▶ Voice over Packet
- ▶ Video Streaming
- ▶ Broadband Networks
- ▶ ATM to IP Gateways
- ▶ DSLAMs

### Main Features

- ▶ ATM AAL0, AAL1, AAL2 & AAL5
- ▶ 4 x OC-3/STM1
- ▶ 1 x OC-12/STM-4
- ▶ 4 x Gigabit Ethernet
- ▶ POS
- ▶ Automatic Protection Switching
- ▶ PICMG® AMC.0 R2.0, AMC.1 & AMC.2 TypeE2 & 2
- ▶ WinPath2™ Network Processor
- ▶ On-board 32-bit MIPS 24K™
- ▶ On-board Switching
- ▶ 3 x 128 MB DDR2 with ECC
- ▶ 32 MB Flash EPROM
- ▶ SFP Optical Transceivers
- ▶ Linux, Solaris and VxWorks®



XS-AMC2 is an Advanced Mezzanine Card (AMC) which offers high-end ATM and IP services at an attractive price. XS-AMC2 provides termination, switching and interworking capabilities from any port to any port.

XS-AMC2 performance and features are ideally suited for applications such as Wireless networking, Voice over Packet, DSLAM and Media Signaling Gateways.

Using the state of the art Wintegra™'s WinPath2™ Network Processor, XS-AMC2 is the perfect interface to handle both ATM and IP simultaneously.

XS-AMC2 on-board 24K MIPS processor can run advanced protocols (e.g. 3GPP, SS7, ATM, VoIP) while the Network Processor handles all the data path.

XS-AMC2 I/O ports are highly configurable and supports a mix of: OC-3/STM-1, OC-12/STM-4, 1000BASE-T and 1000BASE-X.

Compliant with PICMG Advanced Mezzanine Card AMC.0, AMC.1 and AMC.2, XS-AMC2 can be used on AdvancedTCA™, MicroTCA, CompactTCA, PC, and proprietary platforms.

XS-AMC2 architecture allows to bypass the bottleneck of current systems by handling all the processing on-board and performing segmentation and reassembly locally, which not only allows to offload the CPU on the carrier board but also optimizes bus transfers while doing termination.

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XALYO SYSTEMS

## ATM

- ▶ AAL0, AAL1, AAL2 & AAL5 **1**
- ▶ ATM cell switching
- ▶ AAL2 CID switching
- ▶ Traffic management as per TM 4.1: CBR, VBR, GFR and UBR
- ▶ Per VC queueing
- ▶ Full UNI/NNI VPI/VCI range
- ▶ OAM F4 and F5 as per ITU-T I.610

## AMC

- ▶ PICMG® AMC.0 Rev 2, AMC.1, **3**  
AMC.2 (Type E2 and 2) compliant
- ▶ Single width
- ▶ Mid-size height
- ▶ Intelligent Platform Management Interface (IPMI)
- ▶ 4 x1000BASE-BX links (AMC.2) towards switching fabric (lane 0,1,8 and 9)
- ▶ 622 mbps APS routed to lane 12
- ▶ Hot-Swap

## Network Processor

- ▶ Wintegra™ WinPath2™ @ 300 MHz
- ▶ 128 MBytes Packet DDR2 **4**
- ▶ 128 MBytes Parameter DDR2
- ▶ 128 MBytes Application DDR2
- ▶ 32-bit / 200 MHz DDR2 with ECC
- ▶ MIPS 24K™ CPU @ 600 MHz
- ▶ 6 WinGines
- ▶ Handles more than 18 data path protocols to date
- ▶ For more details see [www.wintegra.com](http://www.wintegra.com)

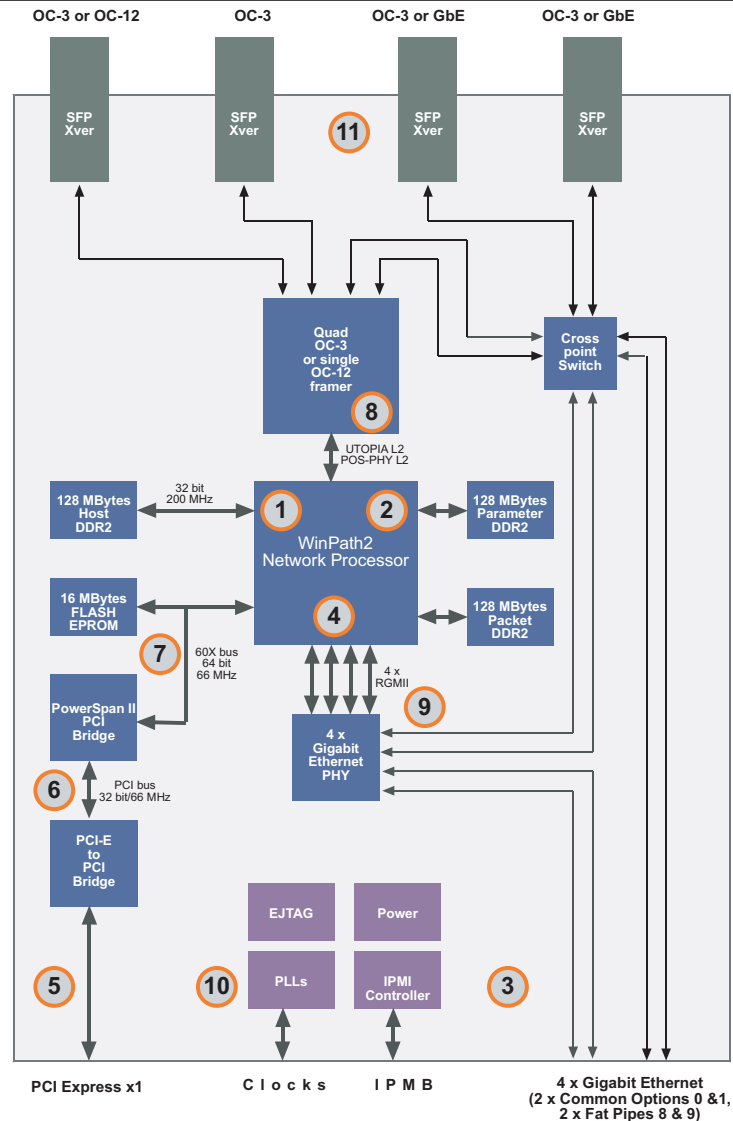
## Interworking

- ▶ IP routing and forwarding over ATM (RFC 1483/2684/1577)
- ▶ IP routing and forwarding over PPP (RFC 1661)
- ▶ Multiple fields classification and DiffServ (RFC 2474/2475)
- ▶ MPLS tagging/detagging
- ▶ L2 interworking between ATM and Ethernet
- ▶ Interworking at 750'000 PPS

## IP

- ▶ PPP support **2**
- ▶ HDLC support up to OC-12 rates
- ▶ Parsing of PPP over HDLC frames (RFC 2615 and RFC 1662)
- ▶ Packet scheduling

## Block Diagram



## System busses

- PCI Express **5**
  - ▶ x1 (lane 4)
  - ▶ Supports reference clock **6**
- PCI bus (Internal)
  - ▶ PCI 2.2 Specification compliant
  - ▶ 32-bit / 66 MHz operation
- Host bus **7**
  - ▶ PPC 60X @ 66 MHz
  - ▶ 64-bit interface with parity
  - ▶ 32 MBytes Flash EPROM

## Physical Layer

- SONET/SDH **8**
  - ▶ Single OC-12 port or
  - ▶ Quad OC-3 ports
  - ▶ APS (Automatic Protection Switching)
  - ▶ ATM (ITU-T I.432)
  - ▶ POS (RFC 1619, RFC 1662)
- Gigabit Ethernet **9**
  - ▶ 2 x 1000 BASE-X or
  - ▶ 2 x 1000 BASE-T

## Telecom Clock

- ▶ Advanced PLL **10**
- ▶ Meets ITU-T G.813 and GR-253-CORE for Jitter/Wander for Stratum 3 and higher
- ▶ Reference clock output to backplane (19.44 MHz)
- ▶ Reference clock input from the backplane (8 KHz, 1.544 MHz, 2.048 MHz or 19.44 MHz)

## I/O Port Configurations

Configuration	A	B	C	D	E	F
OC-3 Front Panel	4	3	2	0	0	0
OC-12 Front Panel	0	0	0	1	1	1
GbE Front Panel	0	1	2	0	1	2
GbE Backplane	4	3	2	4	3	2

Number and Type of I/O Ports fully configurable by software **11**

## Specifications

Form factor .....	AMC	
Dimensions .....	180.6 mm x 73.5 mm Single / Mid-size	
PCIExpress .....	1 lane	
PCI Bus (Internal) .....	32 bit, 33 MHz	
Host bus .....	64-bit, 66 MHz	
UTOPIA bus .....	16-bit, 50 MHz, L2	
Optical connector .....	LC (SFP)	
Telecom reference clock .....	2 KHz and multiple of 8KHz up to 77.66 MHz	
Communication ports .....	Quad OC-3/STM-1 Single OC-12/STM-4 Dual Gigabit Ethernet	
Protocols .....	ATM and IP	
Flash memory .....	16 MBytes, 150 ns	
Host memory .....	128 MBytes, 200 MHz	
Parameter memory .....	128 MBytes, 200 MHz	
Packet memory .....	128 MBytes, 200 MHz	
Operating systems .....	Linux, Solaris, VxWorks®	
Operating temperature .....	0 to 55°C	
Storage temperature .....	-40 to 85°C	
Relative humidity .....	5% to 90% non-condensing	
Altitude .....	0 to 15'000 ft	
Power consumption .....	20 W max (est.) 12 V .....	1.67 A

## Standards compliance

AMC .....	AMC.0, AMC.1 and AMC.2
IEEE 1149.1 .....	JTAG
IEEE 802.3 .....	CSMA/CD (Ethernet)
PICMG® 2.15 .....	PTMC: PCI Telecom Mezzanine Card (without POS-PHY interface)
MSA SFP .....	MultiSource Agreement SFP
RFC 1483 .....	Multiprotocol Encapsulation over AAL5
RFC 1577 .....	Classical IP and ARP over ATM
RFC 1619 .....	PPP over SONET/SDH
RFC 1661 .....	The Point-to-Point Protocol (PPP)
RFC 1662 .....	PPP in HDLC-like Framing
RFC 2474 .....	Definition of the Differentiated Services Field in the IPv4 and IPv6 Headers
RFC 2475 .....	An Architecture for Differentiated Services
RFC 2615 .....	PPP over SONET/SDH
RFC 2684 .....	Multiprotocol Encapsulation over AAL5
ITU-T I.432 .....	B-ISDN User-Network Interface
ITU-T I.363.1 .....	B-ISDN ATM Adaptation Layer Type 1
ITU-T I.363.2 .....	B-ISDN ATM Adaptation Layer Type 2
ITU-T I.363.5 .....	B-ISDN ATM Adaptation Layer Type 5
ITU-T I.366.1 .....	Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL type 2
ITU-T I.610 .....	B-ISDN Operation and Maintenance Principles and Functions
ITU-T G.703 .....	Physical/electrical Characteristics of Hierarchical Digital Interfaces
ITU-T G.707 .....	Network Node Interface for the Synchronous Digital Hierarchy (SDH)
ITU-T G.781 .....	Synchronization Layer Functions
ITU-T G.783 .....	Characteristics of Synchronous Digital Hierarchy (SDH) Equipment Functional Blocks
ITU-T G.813 .....	Timing characteristics of SDH equipment slave clocks (SEC)
GR-253-CORE .....	SONET Transport Systems: Common Generic Criteria.
GR-1244 .....	Clocks for the Synchronized Network: Common Generic Criteria
ATM Forum TM4.1 ..	Traffic Management

## Why choose XS-AMC2 ?

### XS-AMC2: A Flexible Solution

XS-AMC2 brings even more flexibility to the concept of AMC with the use of a network processor which is entirely re-configurable to support new standards. The AMC standard adds modularity to the way building blocks are connected together at the system level. Support for ATM, POS, Ethernet and IP provides the user with all the options on a very compact form factor. The use of SFP optical transceivers also gives more flexibility since the transceiver type can be chosen on a per application basis without any hardware modification.

### XS-AMC2: A High Performance Solution

XS-AMC2 architecture improves the overall throughput by segmenting and reassembling packets on the AMC itself. This allows maximizing PCI Express bandwidth and reaching performance levels that are impossible to achieve on conventional designs. As all the resources are dedicated for the ATM and IP traffic in a deterministic way, XS-AMC2 data rates are more reliable, resulting in better quality of service.

### XS-AMC2: A Reliable solution

XS-AMC supports Automatic Protection Switching (APS) for resilient networks and implements ECC or parity on all busses (DDR2, PPC, PCI). The AMC standard enables hot-swap and field-replacable solutions for maximum uptime. The Intelligent Platform Management Interface (IPMI) provides control over vital parameters such as temperature and voltage monitoring.

### XS-AMC2: A Modern Solution

Xalyo Systems' ATM and IP interfaces are based on a leading edge network processor handling all the data path in hardware while the control path is handled by a processor running Linux, Solaris or VxWorks®. An open API is provided on the PCI bus which makes the solution plug and play on virtually any platform, any processor, and any operating system. All the software and drivers are backward compatible with all the XS PMC family for an easy upgrade from PMC to AMC.

## Ordering Information

XS-AMC2	Quad OC-3/STM-1, Single OC-12/STM-4, Dual Gigabit Ethernet ATM and IP AMC 300 MHz, 384 MB SDRAM, 32 MB Flash
XS-TP001	OC-3/STM-1 multi mode SFP transceivers
XS-TP002	OC-3/STM-1 single mode IR SFP transceivers
XS-TP004	OC-12/STM-4 single mode IR SFP transceivers
XS-TP007	Gigabit Ethernet single mode SFP transceivers
XS-TP009	RJ-45 1000BASE-T copper SFP

Other SFP transceiver types are available on request.

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