



## **iSPAN<sup>®</sup> 3650 AdvancedMC<sup>™</sup>**

### **High Performance ATM-IP Interworking Card**

*Quad OC-3c/STM-1 Gateway Module for xTCA Platforms*

#### **FEATURES**

Interphase Interworking software for Control Plane & User Plane applications supporting ATM-IP Interworking:

- AAL2 & AAL5 over ATM
- UDP/IP over GE
- GTP-U tunneling
- (Future) PPP over SONET

Four OC-3c/STM-1 or one OC-12c/STM-4 interfaces

Designed for ATCA<sup>™</sup> and  $\mu$ TCA platforms

Single width, Mid-size or Full-size PICMG<sup>™</sup> AMC.0 R2.0 compliant

Front Access, with support of SFP transceivers

APS 1+1, 1:1, and 1:N within module or via AMC port 12 for inter-module APS

4 Gigabit Ethernet (AMC.2) and x1 PCI-Express (AMC.1) connectivity

Support of telecom clocks

Wintegra<sup>™</sup> WinPath2<sup>™</sup> on-board Network Processor

BDK & BSP for embedded software development with Wintegra WDDI<sup>®</sup> protocol suite

#### **APPLICATIONS**

*3G RNC (Radio Network Controller)*

*3G RAN Backhaul*

*SGSN / GGSN (Wireless PS Core Network)*

*LTE S-GW / P-GW*

*Femtocell RAN GW / HNB-GW*

*DSLAM*

*ATM Router/Bridge*

*Media Gateway*

#### **Complete ATM-IP Interworking Solution on a Card**

The iSPAN<sup>®</sup> 3650 AdvancedMC addresses a range of applications requiring interworking solutions that bridge ATM and IP networks, and it takes advantage of open standards to offer a smooth interworking solution in a significantly less expensive format.

#### **Single Card Solution Significantly Reduces Operating Costs**

As an AdvancedMC solution, the iSPAN 3650 can be easily integrated into standard systems so the switching/routing function that typically consumes an entire system can be accessible on a single card. The 3650 enables OEMs to add tremendous value to their products with its integrated ATM-IP interworking function on a single AMC, reducing capital and operating expenses associated with reduced space, cooling and power supply costs.

#### **High Performance ATM-IP interworking**

For bridging cell-based and circuit-based networks, the iSPAN 3650 delivers unprecedented performance in IP traffic interworking between ATM AAL2/AAL5 and Ethernet with full line rate speeds. Available with a robust ATM/Ethernet protocol suite for traffic management, QoS, aggregation, encapsulation, bridging, routing, and interworking, the iSPAN 3650 is a versatile platform for custom interworking application development.

#### **User-friendly, Comprehensive Application Software Enables fast time to market**

With the Interphase Interworking application, the iSPAN 3650 becomes an integrated gateway, specifically designed to support OC-3/STM-1 interfaces in ATCA and MicroTCA ( $\mu$ TCA)-based systems.

For both AAL2 and AAL5 data, its ATM-IP interworking functionality enables the transport over IP of voice, data and control traffic to/from other processing units via the Gigabit Ethernet backplane.

With its GTP-U tunneling capability, the iSPAN 3650 gateway AMC is an ideal solution for wireless Network Elements that connect to the 3GPP Iu interface, such as 3G RNCs, SGSNs, Femtocell gateways and LTE Serving gateways.

The software, fully embedded on the card, includes the protocol layers, the management and configuration plane, the line/equipment protection, and the data interworking application. Configuration and control of the application is performed over IP via SNMP, CLI or the Interphase MCCI API.



## iSPAN<sup>®</sup> 3650 Details

### AdvancedMC<sup>®</sup> Connectivity

- PCI-Express x1 link on AMC port 4 (AMC.1 Type 1)
- 4 Gigabit Ethernet links on AMC ports 0, 1, 8, 9 (AMC.2 Type E2 & 2)
- APS Update Channel on AMC port 12
- Telecom clocks on AMC TCLKA & TCLKC (in), and TCLKB & TCLKD (out)
- PCI-Express 100 MHz clock input on AMC FCLKA

### Processor / Memory

- Wintegra<sup>™</sup> WinPath2<sup>™</sup> Access Packet processor, integrating:
  - 6 engines @ 300 MHz for fast-path processing,
  - and one MIPS 24Kc microprocessor core @ 450 or 600 MHz for Control Plane protocol processing
- 2 x 256 MB DDR2 SDRAM for the System/Host and Packet memory
- 64 MB DDR2 SDRAM as Parameter memory
- 16 or 32 MB boot flash and 128 MB NAND flash

### Network Interfaces

Four SFP cages for 4 OC-3c/STM-1 or 1 OC-12c/STM-4 links

- Transwitch<sup>™</sup> PHAST-12P ATM/POS SONET framer

Automatic Protection Switching (APS):

- Intra-AMC, all APS configurations among the 4 OC-3/STM1 ports: two 1+1, two 1:1, or one 1:N (N=2 or 3)
- Inter-AMC, a 622 Mbps serial link via AMC port 12 allows the transfer of 4 OC-3 links or 1 OC-12 link.

### Telecom Clock Management

iSPAN 3650 supports 3 types of clock reference (jitter-filtered with a PLL):

- Free running internal clock (20 ppm oscillator)
- Recovered clock (loop back timing) from one of the OC-3 ports
- System clock from the TCLKA or TCLKC AMC ports

Independently, any of the recovered clocks can be sent to the TCLKB or TCLKD AMC ports.

### Software

The iSPAN 3650 is supplied with a Board Development Kit (BDK), including a boot firmware, Built-In-Self-Tests and several tools.

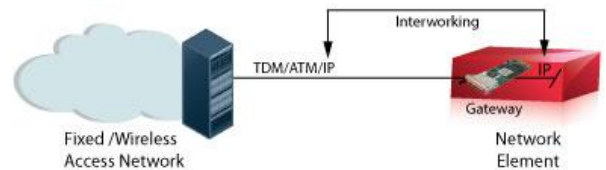
For embedded software development, OS-specific Board Development Packages (BSP) can be supplied, including drivers, utilities and Wintegra's WinPath Device Driver Interface (WDDI).

However, the easiest and fastest software solution is Interphase Interworking Application, which turns the iSPAN 3650 into a real gateway AMC.

### Interphase Interworking Application

Loaded on the iSPAN 3650, this fully integrated software supports the following interworking functionality:

- AAL2-IP (i.e. AAL2 CPS or SSSAR ↔ UDP/IP)
- AAL5-IP (i.e. AAL5 ↔ UDP/IP or IPoA)
- GTP-U Termination (i.e. GTP-U/UDP/IPoA ↔ UDP/IP)
- GTP-U Relay (i.e. GTP-U/UDP/IPoA ↔ GTP-U/UDP/IP)



### Technical Specifications

#### Architecture

Processor	Wintegra WinPath2 WIN867
RAM	256 + 256 + 64 MB DDR2 SDRAM
ROM	16 or 32 MB Boot, 128 MB NAND Flash
AMC Connectivity	x1 PCI-Express, 4 GE, APS, TCLKA-D
SONET / SDH	4x OC-3c/STM-1 or 1x OC-12c / STM-4, Transwitch PHAST-12P framer

#### Mechanical

Form Factor	AdvancedMC Single width, Full/Mid-size
Length	181.5 mm (7.15 in.)
Width	73.5 mm (2.89 in.) (single-width)

#### Operating Environment

Power Consumption	28 W
Temperature	0 to 55° C (32 to 131° F) ambient
Storage Range	-40 to 80° C (-40 to 176° F)
Relative Humidity	5% to 95% non-condensing
Altitude	0 to 15,000 ft.

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### About Interphase Corporation

Interphase Corporation (NASDAQ: INPH) delivers solutions for network connectivity, interworking, and packet processing for key applications for the communications, Mil/Aero, and enterprise markets. Founded in 1974, Interphase provides expert customization services and contract manufacturing, in addition to its COTS portfolio, and plays a leadership role in next generation AdvancedTCA<sup>®</sup> (ATCA), AdvancedMC<sup>™</sup> (AMC), PCI-X, and PCIe standards and solutions. Interphase is headquartered in Plano, Texas, with sales offices across the globe.

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