

## **PacketAMC** - Front-end processing of the Layer 2 protocols for highly available, high performance, carrier-grade transport.



Telecom networks are migrating to IP for reasons of cost and bandwidth. To date, however, IP networks have been best effort delivery. To meet the demands of new applications and services, IP networks must now be robust, reliable, and deterministic and **The Adax PacketAMC (PktAMC)** offers a solution to this problem.

MPLS has been widely deployed, especially in carrier backbone networks, and Ethernet is fast becoming a credible alternative transport for Edge to Core networks. With its scalability, ubiquity and natural support for IP services, Ethernet provides a compelling case as a potential convergence solution for Next Generation Networks. But before Ethernet can be adopted, it must be capable of supplying multiple services with at least the same level of quality as existing carrier services.

In other words Ethernet must achieve a Carrier-Grade quality and Adax meets this challenge.

### **The Adax Solution:**

The challenges of moving IP-networks from a 'best effort' basis to carrier-grade reliability and responsiveness are significant and will be dependent on the performance and reliability of the underlying packet processing.

Adax is bringing its long expertise in signaling reliability and performance to bear on this problem of carrier-grade IP networks and is ideally suited to develop and produce a standards-based AMC card for Edge-Core network nodes.

### **The Adax PacketAMC Advantage:**

Adax has a long history of using on-board processors to perform many thousands of transactions per second, with minimal load on the host, maximizing the performance of the applications and reducing system costs without compromising reliability. This experience of hardware acceleration is used on the **PktAMC** for Intelligent Networking, Control Plane, Security, QoS, and Wireless applications delivering a highly available, high performance carrier-grade transport from the Edge to Core networks.

With a Cavium Octeon Plus 5645 processor and 4GbE interfaces, front-end processing of the Layer 2 protocols can reside on the **PktAMC** providing hardware acceleration of the basic Layer 2 switching. At the same time the advanced Layer 2 Switching and Routing, MPLS-TP, PBB-TE, QoS, High Availability and Management can take place on the **AdaxPacketRunner (APR)**.

At a high level, the **PktAMC** is applicable in the broadest range of ATCA legacy and emerging network elements found in today's networks such as MSCs, MGs, HLRs, x-CSCFs, HSSs, etc. The combination of the **PktAMC** and the **APR** delivers a 'subsystem' for NGN, IMS, VoLGA, UMA & Femtocell applications.

### **The Adax Advantage:**

The **PacketAMC** together with the **AdaxPacketRunner** ATCA carrier blade provides the high performance delivery of control and data plane services from one tightly coupled resource. Contention on the chassis backplane is removed, allowing multiple IP flows to be processed on the **APR**. Processed packets are then available for immediate transport to system application servers or the IP network.

Utilizing the embedded services of the industry-leading Cavium family of multi-core processors the **PktAMC** and **APR** boards combine the best of both worlds. The Adax boards and Cavium Octeon processors provide a high performance solution for signaling and other telecom applications. The Cavium multi-core MIPS64 processors are designed specifically for networking, security, and pattern matching (deep packet inspection) based applications. Dedicated security cores on the Cavium allow for efficient processing of both control and data plane flows and the tightly coupled design of the **PktAMC** and **APR** makes the most of chip-based intelligence by eliminating intermediary transport.

### **Features**

- I/O Subsystem for NGN, IMS, VoLGA, UMA & Femtocell applications
- High Performance hardware acceleration with Cavium Octeon Plus 5645:
  - 10 x MIPS64 R2 Cores at 600Mhz
  - Up to 16.2 Billion MIPS
  - 16 high-speed SERDES, flexibly configured in blocks of 4
- High Performance Application Acceleration including:
  - Packet I/O processing
  - QoS Queuing, scheduling and very low latency for real-time traffic
  - IPsec, SSL, SRTP, WLAN and 3G/UMB/LTE security (including DES, 3DES, AES-GCM, AES up to 256, SHA1, SHA-2 up to SHA- 512, RSA up to 8192, DH, and KASUMI)
- Carrier Ethernet
  - MPLS-TP
  - PBB-TE

## Carrier Ethernet Standards

Carrier Ethernet (CE), including standards such as MPLS-TP and PBB-TE promises to provide a true carrier-grade transport network solution. The MPLS-TP standard is still evolving but is becoming the protocol of choice for many leading telecom equipment manufacturers. MPLS-TP addresses the needs of carrier transport applications with managed and protected point-to-point connections which are provisioned using a network management system rather than signaling protocols leading to a simpler, easier to manage network.

These enhancements address key deficiencies in traditional Ethernet which has hindered its adoption as a transport protocol and will enable an economical connection-oriented packet network, with QoS and reliability, including the sub-50ms restoration that mobile operators need for backhauling voice and broadband services from thousands of scattered base stations.

## Applications

- Cell site backhaul
- Femtocells
- FMC (Fixed Mobile Convergence)
- 4G Wireless MGW, MGC, RNC
- Session Border Controllers
- IP-transport aggregation and concentration
- Carrier Ethernet including MPLS-TP
- QoS
- Routing and Security acceleration
- Signaling and voice protection and enforcement
- Bandwidth Management
- IMS, SIP & Diameter Protocols
- RTP
- WiMAX
- IPTV, Video
- Traditional SS7 & SIGTRAN Signaling including Signaling Gateway
- Voice Processing via I-TDM

**About Adax** Specializing in Foundations for Converging Networks, Adax offers a complete set of I/O controllers, blades & signaling gateways for SS7, ATM & IP packet processing, signaling & interworking. Adax high performance products meet today's challenges of I/O scalability, cost effectiveness and high availability in NGN, IMS & LTE networks.



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## Technical Specifications

### Standards

- AMC.0 R2.0 Advance Mezzanine Card Base Specification
- AMC.1 R2.0 PCI Express and Advance Switching AMC.1 Type 4
- AMC.2 R1.0 AMC Gigabit Ethernet AMC.2 Type 4 E2 or Type 5 E2
- IPMI v1.5
- IEEE 802.3
- Designed to meet Belcore GR-63-CORE

### Configurations:

- Front Panel configurations:
  - 4x SFP GbE
  - 1x SFP+ 10GbE (Option)
- SW configurable FAT pipe region Interface
- 10GbE; Quad GbE; PCIe x4 or x8

### Processor

- Cavium Octeon Plus CN5645, 10 cores at 600 MHz

### Ethernet Controller

- Dual Gigabit Ethernet Controller Intel 82571EB
- PCIe 4-lane interface to Cavium Processor
- 2 1000Base-BX (Serdes) interfaces to AMC connector
- Serial Over LAN via SMB

### Memory

- 1, 2 or 4 Gigabyte DDR2 Memory support with ECC 800MHz data rate (2GB standard)
- 128MB FLASH Memory
- USB Flash Disk up to 4 GB

### Interfaces

- 2x RS232 via micro-interface
- 1x micro USB

### Power

- Payload power < 40W per bay

### Electrical and Safety

Designed to meet or exceed:

- Safety: UL60950 3rd ED
- CSA C22.2 Ho 60950-00
- EN 60950:2000
- IEC60950-1
- EMI/EMC
- FCC 47 CFR Part 15, Class B
- CE Mark to EN55022/EN55024

### Environmental Conditions

- Temperature\*: 0 to 55 °C / 32 to 131°F
- Humidity\*: 5% to 90% @55°C / 131°F non-condensing
- Airflow: Operating @ 12 CFM: 5°C to 45°C, Operating @ 19 CFM: 5°C to 65°C

### Dimensions

- 181.5 x 73.8 x 18.96 mm, mid-size, single-width

\*All specifications are subject to change without notice.

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