Pkt2-PCIe and Pkt2-AMC

adax
Legacy to LTE

DPI, IPsec and GTP-U Packet Processing for LTE, 3G and IMS

Overview

The Pkt2-PCIe and Pkt2-AMC boards provide intelligent front-end processing for network security, DPI applications and GTP-U on all wireless applications, delivering a high performance, carrier-grade packet processing and secure transport for enterprise and core networks. Example applications include policy control and enforcement, billing and charging, M2M and traffic management and filtering.

With the Cavium OCTEON II processor, front-end processing of the Layer 2 protocols resides on the Pkt2-PCIe or Pkt2-AMC, providing hardware acceleration of DPI, IPsec and GTP-U meeting the performance challenges of applications in today's LTE, 3G, and IMS networks.

High-Capacity GTP-U Acceleration

Dedicating the Adax Pkt2 cards or cores to GTP-U user plane traffic delivers unrivalled performance critical to today's mobile broadband traffic requirements. Supporting over 250,000 GTP PDP context per application, offloading the GTP-U data traffic to the Adax cards greatly increases traffic capacity by accelerating the data paths and freeing up the host system processor. Removing these bottlenecks in network performance improves Quality of Experience, supporting differential services and associated billing for improved carrier revenues.

Accelerating GTP tunnels also remains a critical requirement in legacy networks for extending the life of 3G RNCs, SGSNs and GGSNs and providing the platform for M2M and IoT applications.

The Adax Advantage

The Cavium multicore MIPS64 processors are designed specifically for networking, security, packet filtering and DPI. Separate cores can be dedicated to these tasks on the Adax boards providing a high performance solution for those demanding telecom applications. The Pkt2-AMC boards can be used with the Adax PacketRunner2 APR2c and APR2i to combine features and performance in a single blade or communications appliance and the PKt2-PCIe cards can perform the same function in a COTS rack mount server.

The APR2c and APR2i blades also include an on-board Marvell switch for 10GbE data plane transfer between the Pkt2-AMCs and efficient external connections. Scalability and Flexibility are what make Adax unique. The Intel processor on the APR2i can host the application or database and the Cavium OCTEON II processors provide front-end processing of Layer 2 protocols with efficient separation and processing of both control and data plane flows.

Features

- High Performance hardware acceleration with Cavium OCTEON II 6645 Processor with 10 cores at 1.1 GHz
- AMC and PCIe board formats
- 8GB DDR3 Memory
- High Performance Application Acceleration including:
  - Packet Processing and Deep Packet Inspection (DPI)
  - QoS Queuing and scheduling with 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
  - IP Tunneling, Switching, Routing & Backhaul
  - GTP-U, IP and GTP-U interworking, GTP-C termination
    - Interworking between IP and GTP-U
    - Termination and Relay per PDP context for MDO (GTP Bypass)
    - Interworking between two separate GTP tunnels (GTP Relay)
    - GTP-U Echo Requests/Responses can be terminated to the host, relayed to another GTP tunnel, processed automatically on the board, or discarded
    - Over 250,000 GTP PDP contexts per application

Applications

- Policy Control/Enforcement (PCRF/PCEF)
- Charging & Billing
- M2M and IoT
- Cyber Security
- HTTP Filtering
- Data Optimisation and Data Offload
- Load Balancing, Backhaul & Aggregation
- QoS and Traffic Management
- Monitoring, Test and Measurement
- Control & User Plane Interworking

Nodes

- LTE-EPC: MME, SGW, PGW, PCRF, HSS
- SMSC, xGSN, MSC, RNC, NodeB/BSC
- SCP, STP, VLR, HLR, HSS, EIR
- Media Gateway & Signaling Gateway
- Small Cell/eNodeB GW
- Security Gateway

Dedicating specific Cavium cores entirely to security, protocols and packet processing, offloading the host processor from this compute intensive work, provides the flexibility to configure options that meet individual customer requirements. Adding and removing cards as required, for example being able to add Pkt2-AMC modules or PCIe cards for extra processing power rather than having to add a complete processor blade or RMS, enables highly-scalable and cost-effective solutions to be built in a small footprint.

Packet2-AMC 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 Bellcore GR-63-CORE

Configurations:

Pkt2-AMC 4 - 4x 1GbE to the network;

Pkt2-AMC10 - 1x 10GbE to the network;
NB: The 4 1GbE or 10GbE to the carrier is sw selected via e-Keying
- SFPs supplied separately

Processor

- Cavium OCTEON II 6645, 10 cores at 1.1 GHz

Ethernet Controllers

- Dual Broadcom Gigabit Ethernet Controller
- PCIe 4-lane interface to Cavium Processor

Memory

- DDR3 Memory support with ECC 1.333GHz data rate
- 8GB standard
- 128MB FLASH Memory
- MicroSD

Interfaces

- 2x RS232 via micro-interface
- 1x micro USB
- Optional Rear Transmission Module (RTM) for 4x 1GbE connection to PktAMC via Adax PacketRunner*

Power

- Payload power < 40W per bay

Dimensions

- 18.15 cm x 7.35 cm mid-size, single module

Packet2-PCIe Technical Specifications

Standards

- PCI Specification Revision 2.3
- PCI Express Electromechanical Specification Revision 1.1
- Designed to meet Bellcore GR-63-CORE

Configurations

Pkt2-PCIe10/10 - 2x 10GbE interfaces
- 4x PCIe lanes

Pkt2-PCIe10/4 - 1x 10GbE interface and 4x 1GbE interfaces

Pkt2-PCIe10/2/2 - 1x 10GbE interface, 2x 1GbE to the front and 2x 1GbE 'over the top'

Pkt2-PCIe10 - 1x 10GbE interface

Pkt2-PCIe4 - 4x 1GbE interfaces

Processor

- Cavium OCTEON II 6645, 10 cores at 1.1 GHz

Ethernet Controllers

- 1x 10 Gigabit Marvell Ethernet phy
- 4x 1 Gigabit Cavium Ethernet Controller

Memory

- DDR3 Memory support with ECC 1.333GHz data rate
- 8GB standard
- 128MB FLASH Memory
- MicroSD

Power

- Payload power < 25W maximum power consumption

Dimensions

- 16.77 cm x 11.11 cm full-height, half-length card

Please Note: If the additional fan option is selected this requires a full-length PCIe slot.

General Technical Specifications

Electrical and Safety

Certified:

- US/16222/UL IEC 60950-1 (2011) Second Edition
- FCC Part 15B, Class A
- VCCI (Voluntary Control Council for Interference)
- EN55022:2006 +A1
- EN55024:1998 +A1:2001, +A2:2003

Designed to Meet:

- EN61000-4-2,3,4,6

Environmental Conditions

- Operating Temperatures -5C to 55C
- Storage Temperatures -40C to 65C
- Relative Humidity 10% to 90% (non-condensing)
- Vibration: Operating: 5-100Hz: 0.25G RMS, Passive: 100-500Hz: 1G RMS

Flammability

All components meet a flammability rating of UL 94-V0

All specifications are subject to change without notice.

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Adax is an industry leader in high performance packet processing, security and network infrastructure for Legacy to LTE networks. Modular, scalable and flexible, the Adax LTE-EPC solutions, SIGTRAN and SS7 Signaling platforms, as well as the DPI, IPsec Security, and GTP acceleration products enable customers to build the solutions they need, creating a smarter network infrastructure for all.

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Legacy to LTE

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