PAC-6009

6U Carrier Grade Blade Server for Edge Computing and NFV

Features

- Carrier Grade Blade Server with support for industry standard software frameworks accelerates the roll-out of next-generation NFV solutions
- Up to 9 front slots for hot-swappable Intel® Xeon® Processor E5-2600 or Intel® Xeon® Processor D based CPU blades for cloud networking and computing
- 9 slot mid-plane for dual star connectivity between switch boards and blades. Each fabric and star network supports dual GbE control/management ports per slot and dual 10GbE data fabric ports per compute slot
- 2 x ESP-9002C Switch/Management Modules integrating Broadcom Trident+ BCM56842 data plane switch and Broadcom BCM53346 GbE control plane / management switch
- Hot swappable and redundant AC/DC and DC/DC PSU options
- Front-to-rear push-pull cooling Mode. Four rear pluggable, hot swappable fan modules with fan speed control
- Optional SATA storage devices on the CPU blade and on the switch blade
- Optional network synchronization support
- Shelf management based on Advantech IPMI
- Designed to comply with NEBS Level 3

VCI FCC CE c(UL)us LISTED RoHS COMPLIANT 2002/95/EC

Introduction

The Packetarium XLc carrier grade blade server is designed to accommodate the highest density of hot-swappable compute power available in a 400mm deep 6U carrier-grade chassis. It is a highly scalable platform for deploying Intel® Xeon® Processor E5-2600 and Intel® Xeon® Processor D -based blades designed for the most demanding NFV workloads. The system's 400W per RU power footprint enables deployment in industry standard 19" racks, in addition its shallow depth and straight front to rear airflow make it easy to install and operate in data centers, central offices and telecom rooms at the edge of the network alike. The system has been carefully designed to meet carrier grade requirements in these environments including NEBS level 3 compliance and five 9's availability. These features make Packetarium XLc ideal for applications such as Mobile Edge Computing (MEC), Cloud RAN (C-RAN) and Central Office consolidation among others. The system has been interoperability-tested with software building blocks from key Network Function Virtualization (NFV) ecosystem vendors to provide a fully-functional NFV Infrastructure (NFVI).

The first model in the Packetarium XLc Carrier Grade Blade Server series, the PAC-6009, incorporates a highly versatile and modular design with 9 front slots to host 9 single or dual node Intel® Xeon® processor blades. Generic compute blades run application workloads (VNFs) while dedicated cloud control nodes provide orchestration and virtual infrastructure management functions. The system includes 2 integrated switch blades using low-latency Broadcom StrataXGS® Trident+ switches, each with 280Gbps data plane switching capacity enabling 40Gbps mid-plane connectivity per CPU blade(1). The switch blades also provide ten 10GbE SFP+ ports each for 100Gbps of external I/O connectivity and uplinks. Support for an optional timing module based on IEEE1588v2 is also available to support network synchronization using industry standard mechanisms.

PAC-6009 system management is based on Advantech's widely deployed SMM-5060 shelf & system manager and is integrated on the switch / management modules. Low level shelf management runs on a dedicated ARM processor while a Freescale QorIQ P2040 runs switch management and higher level system management functions.

High availability of Shelf and System management is implemented by running the modules in an active/hot standby scheme. A low latency failover mechanism is provided by a robust, low level failover interface and using crossover Ethernet connections for more extensive state and log synchronization.
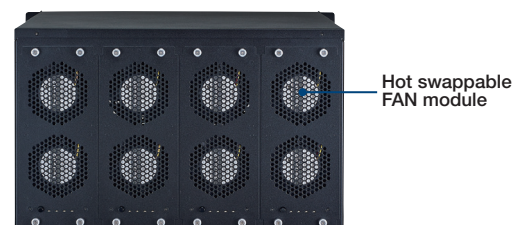
A full suite of management interfaces is provided ranging from a command line interface for debugging purposes, to a Secure Shell (SSH), Simple Network Management Protocol (SNMP) and a Web interface. A System Explorer is available as a secure web server with graphical user interface (GUI) that displays status and control information such as views of the system repository, sensor data and system health. It also provides access to system configuration and supports system maintenance tasks such as upgrade management.

Various payloads can be integrated into the PAC-6009 allowing the system to be configured to address a broad range of telecom and industry applications. For more details on integrating a specific configuration please contact your local sales representative.

Front View

Switch Blade (ESP-9002C)

CPU blade (MIC-8303/MIC-8304)

AC/DC or DC/DC PSU

Rear View

Hot swappable FAN module

Specifications

Processor & Switch	CPU[2]	9 CPU blades, Single Intel® Xeon® processor E5-2600, Dual or Single Intel® Xeon® D SoC per blade
	Switch	Up to 280Gbps data plane switching capacity, Up to 40Gbps mid-plane connectivity per CPU blade, Up to 100Gbps external I/O connectivity.
CPU Blade and Interface	CPU Blade[2]	Flexible processor blade with up to 9 CPU blades which equip with single or dual Intel® Xeon® D SoC. Dual 8- or 16-core Intel® Xeon® Processor D (MIC-8303), Single 8- or 16-core Intel® Xeon® Processor D with additional on-board SSD storage (MIC-8304).
	Serial Console	Up to 2x RS-232 (with miniUSB port for ShMC) per CPU blade
	USB	Up to 2x USB 3.0 port connect to Intel® Xeon® D per CPU blade (2x MIC-8303C; 1x MIC-8304C)
Storage	SATA	Up to 2x 2.5" SSD per switch blade (ESP-9002C) Up to 2x M.2 SATAIII SSD per CPU blade (MIC-8303) Up to 2x on-board 2.5" SSD per CPU blade (MIC-8304)
Cooling	Technology	Four Rear pluggable, hot swappable fan modules with PICMG compliant fan speed control
Power	AC Input	Up to four redundant power supply units with separate AC inlets. AC 220V, 50–60Hz, maximum output 1800W per PSU, with 2+2 and N+1 power redundancy options AC 110V, 50–60Hz, maximum output 1000W per PSU, with N+1 power redundancy
	DC Input	Up to four redundant power supply units with separate DC inlets. DC -40V~-60V, maximum output 1800W per PSU, with 2+2 and N+1 power redundancy options
	PSU cooling	Self-cooled
	Output DC Voltage	+12V
	Output Current Rating	Maximum 148A @ +12V per PSU (under 220V AC source; -48V DC source) Maximum 2A @ +12VSB per PSU
	Power Consumption	2400W (with configuration: 9x Dual Intel® Xeon® Processor D CPU blades with 8x 2133MHz 16GB DDR4 memory and 2x M.2 SATAIII SSD each blade, 2x Switch blades)
Shelf management	BMC	ARM 9 based controller (400MHz)
	IPMI	IPMI 2.0 based on Advantech IPMI Core
	Interfaces	RMCP, SSH, SNMP, CLI, and serial interfaces
	Sensors	FRU presence, fan health, PSU health, temperatures, input voltages
Accessibility	Front	CPU blades, Switch blades, 2.5" SSDs, AC or DC PSU's
	Rear	Fan modules
Physical Characteristics	Dimensions (H x W x D)	483 x 266 x 400 mm
	Weight	48kg
Environment		Operating	Non-operating
	Temperature	-5 ~ 40° C (23 ~ 131° F)	- 40 ~ 70° C (-40 ~ 158° F)
	Humidity	50% @ 25°C to 95% @ 40°C (non condensing)	95% @ 60° C (non-condensing)
	Altitude	Up to 13000ft @ 45°C	
	Acoustic	83dB @ 23 ~ 27°C	
Compliance	PICMG	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size
	Safety & EMC	CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024/EN300386), RCM, VCCI
	NEBS	Designed to comply with NEBS Level 3

Ordering Information

Part Number	Description	
PAC-6009S3A-0AAE	6U, 4x 1800W AC PSUs, 2+2 power redundancy, 4x fan modules	
	7x Dual 16-core Intel® Xeon® Processor D-1500 series CPUs with	8x 2133MHz 16GB DDR4 REG/ECC memory 2x 128GB M.2 SATAIII SSD
	2x Single 8-core Intel® Xeon® Processor D-1500 series CPUs with	4x 2133MHz 16GB DDR4 RDG/ECC memory 1x 64GB M.2 SATAIII SSD 2x Optional 2.5" SSD storage
	2x Switch blades with	2x Optional 2.5" SSD storage
PAC-6009S4A-0AAE	6U, 4x 1800W DC PSUs, 2+2 power redundancy, 4x fan modules	
	7x Dual 16-core Intel® Xeon® Processor D-1500 series CPUs with	8x 2133MHz 16GB DDR4 REG/ECC memory 2x 128GB M.2 SATAIII SSD
	2x Single 8-core Intel® Xeon® Processor D-1500 series CPUs with	4x 2133MHz 16GB DDR4 RDG/ECC memory 1x 64GB M.2 SATAIII SSD 2x Optional 2.5" SSD storage
	2x Switch blades with	2x Optional 2.5" SSD storage

Related Products

Part Number	Description
ESP-9002C	Advantech Switch and Management Blade for PAC-6009 ▪ Timing Module supports SyncE and IEEE-1588v2, one-step clocking ▪ 2 slots of SSD 2.5" SATAIII
MIC-8303	Advantech CPU Blade with dual 8- or 16-core Intel® Xeon® Processor D-1500 series CPUs ▪ Dual 8- or 16-core Intel® Xeon® Processor D-1500 series CPUs ▪ 8 slots of DDR4 RDIMM ▪ 2 slots of SSD M.2 2242
MIC-8304	Advantech CPU Blade with single 8- or 16-core Intel® Xeon® Processor D-1500 series CPUs with additional on-board SSD storage ▪ Single 8- or 16-core Intel® Xeon® Processor D-1500 series CPUs ▪ 4 slots of DDR4 RDIMM ▪ 1 slot of SSD M.2 2242 ▪ 2 slots of SSD 2.5" SATAIII

NOTES
[1] Mid-plane connectivity to Dual SOC CPU blade is 40Gbps, while single CPU blade is 20Gbps.
[2] Please contact your local Advantech sales representative for more information of CPU blades and PMMs.

For more details on the Packetarium XLc series, download the full product brief here