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Cavium Corporate and Product Overview

Embedded Multi-core MIPS64®, 64-bit ARM® Processors, and Accelerators for the Enterprise, Data Center, Service Provider and Digital Home

Spring 2014

COMPANY

Cavium, Inc. (NASDAQ: CAVM) is a provider of highly integrated semiconductor products that enable intelligent processing for networking, communication and the digital home. Cavium offers a broad portfolio of integrated, software compatible processors ranging in performance from 1Gbps to 100Gbps that enable secure, intelligent functionality in Enterprise, Data-Center, Broadband/Consumer, Mobile and Service Provider Equipment. Cavium processors are supported by ecosystem partners that provide operating systems, tools and application support, hardware reference designs and other services. Cavium is headquartered in San Jose, CA with design centers in California, Massachusetts, India, China and Taiwan.

PRODUCTS

OCTEON® Multi-core MIPS64 Processors: Provide a scalable family of processors with one to forty-eight cnMIPS® cores on a SoC along with the most advanced networking, security and application hardware acceleration. The cnMIPS® core is Cavium's custom implementation of MIPS64 release 5, optimized for networking, and services with very low power consumption. Application hardware acceleration engines for QoS, packet processing, TCP, compression, encryption, SNOW 3G, KASUMI, RAID, de-duplication and pattern matching enable OCTEON to deliver unmatched scalability, performance and integration from 1Gbps to over 100 Gbps of network performance in a single chip. OCTEON supports flexible standards-based I/O's including 1/10/40 gigabit Ethernet, PCI Express, USB 3.0, Serial RapidIO (SRIO), SATA and Interlaken.

OCTEON Fusion® Small Cell Processors: Industry's most powerful, small cell "Base Station-on-a-chip" family are specifically designed for LTE & 3G multi-mode small cell base stations, including picocell and micro base stations. OCTEON Fusion processors combine OCTEON's widely successful multi-core architecture along with purpose-built Baseband DSP cores, extensive LTE/3G hardware accelerators and digital front end (DFE) features into a single chip, slashing the BOM cost and power envelope of small cell base stations.

Project Thunder Cloud and Data Center Processors: Family of highly integrated, multi-core SoC processors that will incorporate highly optimized, full custom cores built from the ground up based on 64-bit ARMv8 Instruction Set Architecture (ISA) into an innovative system-on-chip (SoC) that will redefine features, performance, power and cost metrics for the next-generation cloud and datacenter markets. Details of this specific product line to be announced in 2014.

NITROX® Security Processors: The NITROX family supports cryptography and compression at up to 40 Gbps and up to 300K RSA Ops/sec. It is ideally suited for enterprise routers and switches, data center networking appliances, integrated security appliances and service provider infrastructure.

NEURON Search™ Processors: Provide high performance and low power L2-L4 network search for enterprise and service provider infrastructure equipment. Includes support for both IPv4 and IPv6 rules and delivers 100 million to over I billion searches/second based on patent pending Search Technology. This family delivers four times the capacity/watt per chip providing significant power savings to customers.

PureVu® Media Processors: These highly integrated media processors with ARM, security, and 2D/3D graphics core, are capable of Super-Low-Latency video encode and decode of up to 1080p60. When used with mature CRISP middleware, which supports multiple protocols such as HLS, DASH, and SS, and multiple DRMs such as HDCP 2.x, PlayReady, and Marlin, and HTML5, PureVu can be used for variety of applications in OTT streaming, wireless display, and IPTV STB market.

LiquidIO® Network & NITROX® Security Adapters: Includes three major product families. The LiquidIO Server and Network, NITROX XL and NITROX XL FIPs HSM adapters. The LiquidIO adapters support several applications such as distributed firewall, SDN, Billing, traffic shaping and several offloads including compression, crypto, DPI, TCP, De-duplication and RAID. NITROX XL adapters deliver 30 Gbps of crypto processing and over 60 Gbps of compression processing, along with over 1 million RSA Ops/sec. The FIPS HSM adapters deliver 5 Gbps of crypto performance, 45K Ops/sec and are certified to the stringent FIPS 140-2 Level 3 standard.

CAVIUM SERVICES AND SOLUTIONS

Cavium Services and Solutions (CSS) provides a group of highly experienced architects and developers who are dedicated to help customers accelerate development. Furthermore, CSS offers TurboDPI software, a production ready solution integrating protocol analysis, application recognition, URL filtering, IDS/IPS and anti-malware.

TARGET MARKETS

Cavium products are used in a wide variety of networking, video and wireless applications including:

- **Wireless Access Point:** Routers, SSL Proxy and Security Appliances, WAN Optimization Network Monitoring and Enterprise Switches.
- **Data Centers:** Application Delivery Switches, XML Gateways, Server Offload, Server and Cloud Infrastructure.
- **Broadband and Consumer:** Broadband Routers, Triple Play Gateways, Retail and Small Office Wired and WLAN Routers, VoIP Phones, Network Attached Storage Devices and Broadband Multi-media Gateways.
- **Access and Service Provider:** Mobile 3G/4G, Base station to Core Network Equipment, Infrastructure Equipment, Security Gateways, Session Border Controllers and Routers.
- **Network Attached Storage:** FC to IP Routers, Disk Arrays, Switches, TCP, Compression, De-duplication and Security Offload.
- **Miracast:** Wireless display applications for consumer electronic devices.
- **Digital Media Gateway:** Set-top boxes, DVR media player and IP OTT.

Leader in Embedded Multi-core Design Wins for Networking, Wireless, Communications and Storage, LTE, 3G, Small Cell	**#1 in Security Processor Market Share** *Broadest & most flexible set of security algorithms deployed*
Leader in new products for emerging HD Wireless Video, Cloud, Data Center and Storage (NAS)	**Fast growth, Public, Processor Company (NASDAQ: CAVM)**

CAVIUM

Embedded Multi-core
MIPS, ARM, Security,
Wireless and Digital
Media Processors

OCTEON Multi-core MIPS64 Processors Family

Device	Cores	CPU Speed	L2 Cache	Interfaces	Options	Package
CN78XX	24 - 48	Up to 2500 MHz	16MB	XLAUI, DXAUI, XAUI, RXAUI, KR/XFI, SGMII, Interlaken/LA, PCIe	AAP, SCP	TBA
CN77XX	16-24	Up to 2500MHz	8MB	XLAUI, DXAUI, XAUI, RXAUI, KR/XFI, SGMII, Interlaken/LA, PCIe	AAP, SCP	TBA
CN71XX	2-4	800 - 1600 MHz	512KB	RXAUI or QSGMII or SGMII/PCIe/USB/SATA	AAP, CP	640 PBGA
CN70XX	1-2	800 - 1200 MHz	512KB	QSGMII or SGMII/PCIe/USB/SATA	AAP, CP	640 PBGA
CN68XX	16 - 32	800 - 1400 MHz	4MB	XAUI or SGMII/Interlaken/PCIe/USB	AAP, CP	1936 FCBGA
CN67XX	8 - 16	800 - 1500 MHz	4MB	XAUI or SGMII/Interlaken/PCIe/USB	AAP, CP	1936 FCBGA
CN66XX	6 - 10	800 - 1500 MHz	2MB	XAUI or SGMII/PCIe/sRIO/USB	AAP, CP	900 FCBGA
CN63XX	2 - 6	800 - 1800 MHz	2MB	XAUI or SGMII/PCIe/sRIO/USB	AAP, CP	900 FCBGA
CN61XX	2 - 4	600 - 1000 MHz	1MB	XAUI or SGMII/PCIe/USB	AAP, CP	868 HSBGA
CN58XX	4 - 16	600 - 800 MHz	2MB	RGMII/SPI-4.2/PCI-X/USB	EXP, NSP, SCP	1521 FCBGA
CN57XX	8 - 12	600 - 800 MHz	2MB	SGMII/XAUI/PCIe/USB	SP, SSP	1217 FCBGA
CN50XX	1 - 2	300 - 700 MHz	128KB	RGMII/GMII/TDM/PCI-X/USB	SCP, CP	564 HSBGA

OCTEON Fusion Small Cell Processor Family

Device	Cores	CPU Speed	L2 Cache	Interfaces	Package
CNF71XX	4	450-1400 MHz	1 MB	SGMII/PCIe 2.0/USB/JESD 207p	772 HFCBGA

Project Thunder 64bit ARM v8 Cloud and Data Center Processor Family

Device	Cores	CPU Speed	L2 Cache	Interfaces	Package
CNT8XXX	TBA	To Be Announced	To Be Announced	Multiple Interfaces for Data Centers	TBA

NITROX Security Processors Family

Device	Performance	RSA 1024-bit EXP	RSA 2048-bit EXP	Interfaces	Local DDR Required	Package
CNN35XX	5 – 40 Gbps	35 – 300K	6 – 52K	PCIe Gen 2.0 x4, x8, x16	No	676 FCBGA
CN16XX	0.5 – 2.5 Gbps	4 – 17K	0.7 – 3K	PCIe Gen 1.0 x4	No	233 BGA
CN15XX	0.5 – 2.5 Gbps	4 – 17K	0.7 – 3K	PCI-X 64-bit/133 MHz	No	256 BGA

NEURON Search Processor Family

Device	Performance	Capacity	Interfaces	External Memory	Package
CNSP1XXX	100 Million to over 1 Billion Searches/Sec	40Mb to 160Mb Equivalent	Interlaken/LA	None	324 FCBGA

PureVu 2D/3D Media Processors Family

Device	Cores	CPU Speed	Streams Processed	Interfaces	Options	Package
CNW6611L	1	600 MHz	1080p30	HDMI, SDIO, USB	DTCP, HDCP 2.x, Graphics	324, 429 PBGA

CAVIUM NETWORKING, SECURITY & STORAGE ADAPTERS

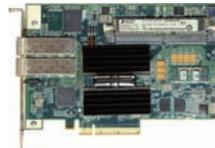## LiquidIO Network Adapters

Device	Ethernet I/O	PCIe	DPI	Dimension	Compression/ Decompression	TCP	Security Services
CN68XX-NIC	4x10Gbe	PCIe Gen 2.0	20 - 40 Gbps	4.2" x 10.8"	20 - 40 Gbps	20 - 40 Gbps	20 - 40 Gbps
CN66XX-NIC	2x10Gbe	PCIe Gen 2.0	5 – 10 Gbps	4.2" x 6.6"	5 - 15 Gbps	5 - 15 Gbps	5 - 15 Gbps
CN57XX-NIC	2x10Gbe	PCIe Gen 2.0	5 Gbps	4.2" x 6.6"	5 – 10 Gbps	5 – 20 Gbps	5 – 20 Gbps

Intelligent Network
Adapter NIC 4x10E

Intelligent Network
Adapter NIC 2x10E

LiquidIO Server Adapters

Adapter	System Interface	NIC Interface	Memory	Power	Dimensions
210Sv	PCIe Gen2.0 x4	2 x 10 Gbe	2GB	25W	2.7" x 6.6"
110Sv	PCIe Gen2.0 x4	1 x 10 Gbe	1GB	15W	2.7" x 6.6"

NITROX XL Security Adapters

Device	Interface	Dimensions	Performance			
			RSA 1024-bit EXP	RSA 2048-bit EXP	IPSec Mbps	SSL Mbps
CNN35XX-NHB4	PCIe Gen 3.0 x8	2.1" x 12.1"	800K	140K	60,000	60,000
CNN35XX-NHB	PCIe Gen 2.0 x8	2.1" x 6.6"	35 – 200K	6 – 35K	30,000	30,000
CN16XX-NHB4	PCIe x8	2.1" x 6.6"	65K	12K	6,000	6,000
CN1620-NHB	PCIe x4	2.1" x 6.6"	4K – 17K	1K – 3K	500 – 2,500	500 – 2,500
CN16XX-NFBE	PCIe Gen 2.0 x4	2.1" x 6.6"	8K – 45K	2K – 9K	5,000	5,000

NITROX XL NFBE
Adapter FIPS 140-2

NITROX III XL NHB4
Adapter PCIe NITROX III NHB4

NITROX III XL NHB
Adapter PCIe NITROX III NHB

Cavium PACE: Partnership to Accelerate Customer End-solutions

Cavium provides a rich ecosystem for its OCTEON, NITROX, and PureVu family of processors. Below is a selected list of PACE Partners.

For more information on Cavium's 100+ PACE Partners, please visit: http://www.cavium.com/Ecosystem_Partners.php

CAVIUM NETWORKING, BROADBAND, MEDIA & LTE EVALUATION/REFERENCE BOARDS

OCTEON III Evaluation/Reference Boards

Device	OCTEON III Processor Family	On-board SERDES I/O	Miscellaneous I/O	DDR3 DRAM
CN7000-SFF-EVB	CN70XX/CN71XX	x4 PCIe RC/EP 2 x mini-PCIe 4 x SATA 3.0 8 x SGMII (RJ-45) RXAUI (RJ-45) SLIC T1/E1	UART 2x USB 3.0 RJ-45 (MGMT) SD JTAG/EJTAG	2GB
CN7000-REF-ROUT-BOARD	CN70XX/CN71XX	2 x mini-PCIe 2 x SGMII (RJ-45) SLIC DECT	USB 3.0 RJ-45 (MGMT) JTAG/EJTAG	1GB
CN7000-REF-AP-BOARD	CN70XX/CN71XX	2 x mini-PCIe 6 x SGMII (RJ-45)	2 x USB 3.0 RJ-45 (MGMT) JTAG/EJTAG	1GB
CN7000-REF-NAS-BOARD	CN70XX/CN71XX	2 x mini-PCIe 2 x SGMII (RJ-45) eSATA 4 x SATA 3.0	2 x USB 3.0 RJ-45 (MGMT) JTAG/EJTAG	1GB

OCTEON Evaluation/Reference Boards

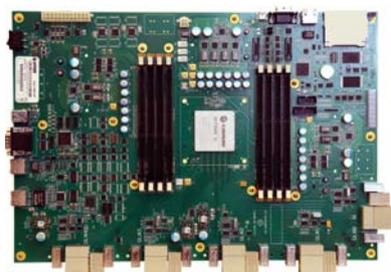| Device	OCTEON II Processor Family	SERDES I/O Module Options	Miscellaneous I/O	DDR3 DIMM Slots
CN6XXX-EVB-Base Kit	CN60XX/CN61XX/CN62XX/ CN63XX/CN66XX/CN67XX/CN68XX	PCIe Root Complex, 4xSGMII (RJ-45), XAUI (SFP+), SMA Cable	UART USB 2.0 RJ-45 (MGMT) CF	2-8

OCTEON Fusion Indoor LTE Small Cell Design Kit

Device	OCTEON Fusion Processor Family	Module Options	Power I/O	DDR3 DRAM
CNF71XX-HDK-RF03	CNF71XX	Any LTE Band RF Module, WiFi Module	DC or PoE+	2GB

PureVu Evaluation/Reference Boards

Device	Audio & Video Inputs	Audio & Video Outputs	Board I/F	Video Compression	Video Resolutions	Dimensions
CNW6611L-TMS128-G	N/A	1x HDMI	USB for power only	Multi-format decode	Up to 1080p30 decode 1080p60 display	25mm x 80mm
CNW6611L-TMS256-G	N/A	1x HDMI	USB for power only	Multi-format decode	Up to 1080p30 decode 1080p60 display	25mm x 80mm
CNW6611L-EVB-TGM	N/A	1x HDMI	USB for power only	Multi-format decode	Up to 1080p30 decode 1080p60 display	50mm x 83mm

OCTEON II

OCTEON Fusion Indoor LTE Small Cell

PureVu® Tiga-mini

This is not a complete list of evaluation or reference boards. Contact sales for a complete list.

CAVIUM

www.cavium.com

Powering Next Generation Data Center, Networking, Communications and Digital Home

Cavium products have been designed-in by the world's leading networking, wireless, storage, video and security vendors. Below is a list of selected customers.

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