Workload Optimized® ARMv8 Processors – Storage

ThunderX_ST™ Family of Workload Optimized Storage Processors

Product Brief

OVERVIEW

The ThunderX_ST™ product family is the best in class 64-bit ARMv8 Data Center & Cloud Storage Processors, offering unprecedented level of integration and industry leading SoC performance. The product family comprises of high performance custom ARMv8 cores supporting single and dual socket configuration. The SoC integrates hardware accelerators, scalable Ethernet fabric, feature rich I/O's supporting full level of virtualization along with high memory capacity thereby providing the best in class performance/$ and performance/watt. The ThunderX_ST™ family includes multiple SKUs that enable servers & appliances that are optimized for storage workloads in the cloud. This product family is based on highly efficient full custom processor cores designed by Cavium in 28nm process technology under architectural license from ARM. It is fully compliant with ARMv8 architecture as well as ARM's Server Base System Architecture (SBSA) standard.

FEATURES

Processor Sub-System:

- Scales from 24 to 48 cores with up to 2.5GHz frequency
- 78K-Icache, 32K-D cache per core,16 MB shared L2
- Single and Dual socket support via CCPI™

Memory Interfaces:

- Up to 4 DDR3/4 memory controller
- Upto 1 TB of memory capacity in dual socket config

I/ O Interfaces:

- Multiple 10/40GE ports
- Multiple independent SATAv3 interfaces
- Multiple PCIe – x4 , x8 controllers

Virtualization:

- End-to-End virtualization from I/O to core (virtSOC™)

Accelerators:

- Integrated accelerators for storage & analytics workloads

Fabric:

- Integrated standard low latency Ethernet fabric
- OpenFlow 1.3.1+ compliant

Operating System and Related Software Support:

- Server Base Boot Requirements (SBBR), UEFI, ACPI support
- SBSA compliant
- Ubuntu V14.04 LTS and later
- Red Hat Early Access for ARMv8
- Fedora F20
- OpenSUSEV13

Management:

- External Baseband Management Controller (BMC)
- Supports standard BMC interfaces & functions
- IPMI 2.0 compliant

Reference Platforms:

- StratusX: 1U1S in ATX form factor (Single Socket)
- CirrusX: 2U4N in ½ SSI form factor (Dual Socket)

BENEFITS

Fifth Generation multi-core processor design from Cavium with proven building blocks and architecture.

Optimized for Storage server, big data and distributed database workloads through scalable core count, large number of integrated SATAv3 controllers enabling direct attach of large number of drives without external HBAs, integrated 10/40 GbE networking for high network throughput.

Integrated storage and big data accelerators offload commonly used storage and analytics server functions to hardware enabling high application performance

Integrated fabric for east-west traffic eliminates need for ToR ports in storage clusters

Applications:

- Storage Appliances: Block, Object and Distributed File Storage
- NAS / SAN Storage Appliances
- Big Data and Data Analytics
- Distributed Databases

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