

Boston Viridis

Data sheet



VIRIDIS



A server that only uses 5 watts of power!

The Viridis uses the ARM® based Calxeda EnergyCore™ SoCs (Server on Chip) to create a rack mountable 2U server cluster comprising 192 processing cores leading the way towards energy efficient hyperscale computing.

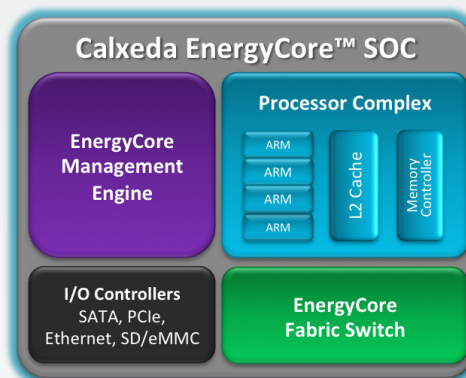
The Viridis is a self contained, highly extensible, 48 node ultra-low power ARM® cluster with integral high-speed interconnect and storage within a standard single 2U rack mount enclosure.

Each 2U chassis contains a total of 12 Calxeda EnergyCards connected to a common mainboard sharing power and fabric connectivity. The Calxeda EnergyCard is a single PCB module containing 4 Calxeda EnergyCore™ SoCs; each with 4GB DDR-3 Registered ECC Memory, 4 x SATA connectors and management interfaces.

Internally each SoC has dual 10GbE links available to the host for provisioning by the application. Ethernet switching is handled internally by 80Gb bandwidth on the EnergyCore™ fabric switch, thereby negating the need for additional switches that consume unnecessary power and add unwanted latency.

Astonishingly, utilising all 48 Calxeda EnergyCore™ SoCs, the whole package including fabric and management consumes less than 300W - this is achieved by each SoC device consuming just 0.5 to 5 watts of power (depending on load).

With specific applications, the overall combined performance of one 2U Viridis appliance can outperform a whole rack of standard x86 servers, yet at the same time consume 1/10th the power and occupy 1/10th the space making it an excellent investment for datacentres and enterprises alike.



Key Features

- Ten times the performance at the same power in the same space
- Cut energy and space by 90%
- Easily scalable to thousands of nodes
- 48 SoC devices delivered across 12 Calxeda EnergyCard modules
- Each EnergyCore™ SoC contains an ARM® quad-core processing unit, providing a total of 192 cores per 2U enclosure
- Industry leading low power consumption (<300W)
- Up to 24 SATA HDDs or SSD devices
- Up to 192GB of RAM per 2U enclosure

SoC Features

- A server cluster that fits in the palm of your hand
- ARM A9 Cortex Quad-core CPU up to 1.4GHz
- EnergyCore™ Management Engine
- 80Gb EnergyCore™ Fabric Switch
- 4GB DDR3 DRAM (via miniDIMM connector)
- 2 x 10GbE and 4 x SATA disk connections
- Unified Fabric Interconnect & I/O Controllers

ARM®

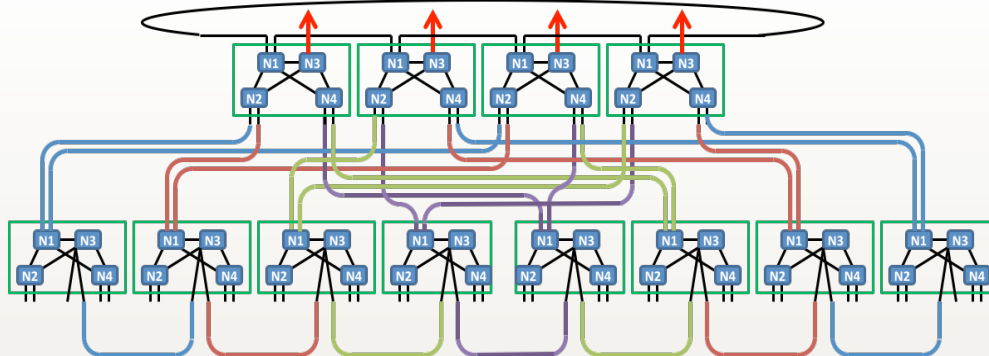
CALXEDA™
Power Your Tomorrow

BIOS IT



System Board Interconnect Fabric

Scalability is one of the key areas for the Viridis and new interconnects will only serve to enhance the current capabilities. Each Calxeda node connects to every other Calxeda node through an on-SoC 10GbE link via an integrated, though expandable, 10GbE fabric. The fabric design is depicted below and shows both primary and secondary paths between Nodes; red arrows depict primary paths to external network ports.



EnergyCore™ Management Engine

The future of autonomic power optimization and system management operations

As an integrated hardware/software solution, each EnergyCore™ SoC contains a separate, dedicated processor that performs real-time operations to maximize performance while minimizing energy consumption. For both single-node and cluster-wide management, the embedded Management Engine is responsible for:

1. Automated Power Management of the SoC with the ability to instantly turn on and off over 12 power domains to yield maximum performance per watt
2. Cluster-Aware Fabric Management for power and routing optimization within a server cluster reduces service downtime by ensuring availability through redundancy
3. Remote Systems Management interfaces that work with existing system management tools results in seamless operational integration when deployed

Reduce energy waste, increase service availability, simplify systems management

As the always-on “brain” within the EnergyCore™ architecture, the intelligence provided through the integrated Management Engine provides the following benefits:

1. Lowers energy consumption and maximizes performance per watt by providing fully integrated Policybased Power Management with fine-grained system-level power control. Various policies exist to maximize performance and throughput, minimize energy-consumption, or automatically find the right balance
2. Increases service uptime and prevents downtime due to network failures by automatically adjusting EnergyCore™ Fabric Switch routes around failed nodes or congested links
3. Simplifies systems management by natively integrating with standard tools via industry standards-based management (such as IPMI 2.0 and DCMI)
4. Enhances security with a built-in design for protected boot via TrustZone® technology to prevent rootkit level attacks
5. Enables system-level integration and differentiation with an extensible framework for adding chassis controller functionality and other custom extensions

BIOS IT Services

Design

Allows you, the customer, to brief us on your specific branding needs. We can colour code, brand, and produce be-spoke designed solutions. Re-branding can cover all aspects including external hardware, packaging, documentation including translation to other languages, and customer specific BIOS configurations.

Configuration

Means we can offer you the exact configuration of a server or workstation solution needed by your clients confident that all aspects of the design have been qualified by BIOS IT for compatibility, cooling and expandability.

Build and Test

Procedures are followed where you have specific test and QA needs. BIOS IT's in-house validation, build, test and QA procedures are second to none, however, we can augment these to reflect your specific needs.

Asset Management

Facilities allow us to tag and catalogue hardware as required with data recorded into a SAP database which can be interrogated by you as and when required using a secure on-line service.

Delivery and Installation

Options are available using professionally trained personnel. The services include timed deliveries through to out-of business hours installations should these be required.

Worldwide Support and Maintenance

Options are available on a fully tailored basis, these include, RTB or On-Site options, with response times of 4 hours, 24x7 and 365 days a year.

Upgrade, Replacement and Disposal

Solutions are available for all hardware sold. In partnership with WeeeCare® plc and as part of the WEEE Directive, we can offer earth friendly disposal options for your clients as and when these needs arise.

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