

Microway® Navion™

AMD Opteron™ Processor-based Clusters and Servers



NEW 64-BIT DUAL CORE TECHNOLOGY FOR HIGH-PERFORMANCE COMPUTING

Microway provides competitively priced, fully integrated Linux clusters, servers, InfiniBand and storage solutions for demanding applications. Users worldwide pushing the limits of technology in life sciences, universities, commercial and government research agencies count on us for HPC expertise.

Microway's Navion platforms are offered with two, four, or eight AMD Opteron Socket F processors using AMD's dual core products. Offered in chassis ranging from 1U to 4U with up to 128 GB of memory, these platforms take full advantage of the Socket F Opteron's integrated DDR2 memory controller and provide maximum memory bandwidth. All Microway designed systems include MCMS™ (Microway Cluster Management Software) and optional NodeWatch™ remote monitoring and management tools.

Opteron processors employ an on-chip cross bar switch that connects its dual cores with a pair of on-chip memory controllers and three HyperTransport™ buses. Two HyperTransport buses provide cache coherent interfaces to adjacent Opterons. The third HyperTransport bus provides non-coherent I/O access to peripheral bridges and buses.

The memory latency achieved by the Opteron is the best in the industry, peaking at 65ns. The inter-processor latency is under 140ns. At this level, the inter-processor latency is roughly 1/100th of that achieved by low latency, high bandwidth solutions like Myrinet and InfiniBand. This makes it possible to use up to eight (8) processors on a single motherboard to run fine grain parallel applications with increased efficiency using MPI or shared memory techniques.

HIGH SPEED INTERCONNECTS

Microway Navion Clusters are designed for high end connectivity solutions including:

- Microway FasTree™ InfiniBand Switches
- Microway TriCom™ InfiniBand HCA with NodeWatch™ BMC and Switchless Serial Console
- Gigabit Ethernet

SOFTWARE INTEGRATION

Clusters are delivered with the user's choice of peripherals and software including:

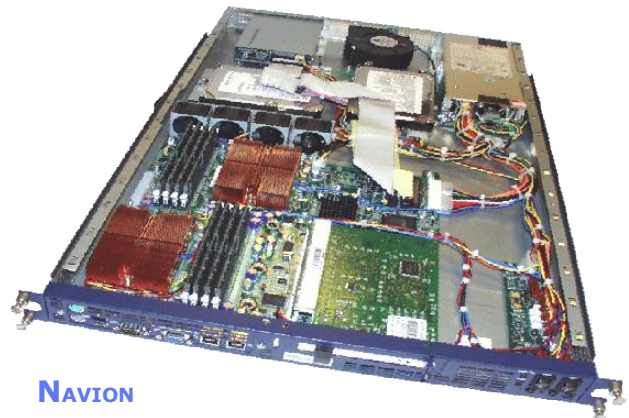
- 64-bit Linux (SUSE, Red Hat, Fedora Core, or Gentoo)
- MCMS™ (Microway Cluster Management Software)
- MMDS™ (Microway MPI Diagnostic Suite)
- InfiniScope™ Real-time InfiniBand Diagnostics
- PathScale, PGI and GNU compilers

NAVION-RPU FPGA DEVELOPMENT SYSTEM

The Navion-RPU system is designed for multi-server co-processing development. It incorporates one dual-core AMD Opteron processor, DRC's RPU (Reprogrammable Processor Unit), Linux OS and PGI MPI and compiler software. DRC's RPU coprocessor module provides direct access to adjacent DDR memory and Opteron processors at HyperTransport™ speed and nanosecond latency. Tight coupling between CPU and memory virtually eliminates bandwidth and latency bottlenecks.

The system contains everything you need to modify your application subroutines to run on DRC hardware. Providing high value through a savings on space, heat generation and power consumption, this platform delivers a competitively priced, scalable solution for scientific applications.

The DRC RPU contains specialized cells that can be used to accelerate numeric tasks which work on arrays stored in the memory address space of an AMD Opteron. With 96 such cells on chip, it can perform both SIMD and pipelined parallel operations at very high speeds. These operations can be integrated with Opteron applications that communicate with the coprocessor using the message passing interface sent over the HTX bus that drives the FPGA using code generated by tools that start with kernels written in C.



NAVION

1U CoolRack™ chassis. In a dual processor configuration, the RPU replaces the second Opteron processor.

NODEWATCH REMOTE MONITORING AND CLUSTER MANAGEMENT TOOLS

NodeWatch™ is a network independent remote monitoring tool which measures, reports and records up to eleven fan speeds, five temperatures, and three power supply voltages per node, in addition to providing physical control over front-panel power and reset inputs. The entire cluster or individual nodes can be switched on and off and rebooted remotely. NodeWatch software delivers critical information remotely via a secure, web-based GUI.

Dual-Core Navion™ Clusters for High Performance Computing Applications



DUAL NAVION™ 1U FEATURES

- Two Dual-Core Opteron™ Socket F processors up to 3.0 GHz
- Memory: up to 32GB DDR2 667 ECC Registered Memory DIMMs (8 or 16 slots)
- One x16 PCI-E or one HTX slot (front access)
- Hard Drives: 1-2 internal SATA-II or SAS drives
- Dual embedded Gigabit Ethernet
- Storage Options: (1) 3.5" floppy drive on back; or (1) Slim-line CD/DVD-ROM on back; or (1) Slimline CD/DVD-ROM and (1) 1.44 Slim floppy on back
- I/O features: Front access SVGA video, USB 1.1/2.0, serial, keyboard and mouse connectors
- Single 400W power-supply, rear accessible to line cord
- Front LED panel with activity and status
- Tool-less top chassis cover

DUAL NAVION™ 2U FEATURES

- Two Dual-Core Opteron™ Socket F processors
- Memory: up to 32GB DDR2 667 ECC Registered Memory DIMMs (8 or 16 slots)
- One x16 PCI-E slot with two 64-bit/100MHz PCI-X slots or one HTX slot
- Hard Drives: 6 or 12 Removable or Fixed Drive Bays for SATA-II or SAS Hard Drives
- Four channel SATA-II/SAS Hard Drive controller
- Dual embedded Gigabit Ethernet
- I/O features: Internal CD/DVD-ROM and floppy drive, embedded SVGA video, USB 1.1/2.0, serial, keyboard and mouse connectors
- 600W Redundant or Fixed power-supply, rear accessible to line cord
- Front LED panel with activity and status

All clusters are thoroughly burned in with both standalone tests as well as MPI/NAS tests in the exact configuration specified by the customer at time of order. We build our own 1U and 4U chassis. Design criteria include ready access to peripherals and excellent cooling with redundant fans and Nomex wind tunnels driven by negative pressure. This results in very high air flow rates over the processors and memory, dramatically increasing their life expectancy.

OFFERING HPC SOLUTIONS SINCE 1982

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QUAD NAVION™ 4U FEATURES

- Four Dual-Core Opteron™ Socket F processors
- Memory: Up to 64 GB DDR2 667 ECC Registered Memory DIMMs (16 slots)
- PCI-E: Four x16 PCI-E slots (Two with x4 signal)
- PCI: One 32-bit/33MHz slot
- Hard Drives: 8 or 18 hot-swap SATA-II or SAS drives
- PCI-E SATA-II/SAS RAID controller
- Dual embedded Gigabit Ethernet
- I/O features: Internal Slimline DVD, Slim floppy, serial, keyboard, mouse, and USB 1.1/2.0 connectors
- 950W hot-swap power supplies (N+1 redundancy)
- Dedicated fan for power supply and PCI area
- Front LED panel with activity and status
- Easily upgradeable to 8-Way Navion!

8-WAY NAVION™ 4U FEATURES

- Eight Dual-Core Opteron™ Socket F processors
- Memory: Up to 128 GB DDR2 667 ECC Registered Memory DIMMs (32 slots)
- PCI-E: Four x16 PCI-E slots (Two with x4 signal)
- PCI: One 32-bit/33MHz slot
- Hard Drives: 8 or 18 hot-swap SATA-II or SAS drives
- PCI-E SATA-II/SAS RAID controller
- Dual embedded Gigabit Ethernet
- I/O features: Internal Slimline DVD, Slim floppy, serial, keyboard, mouse, and USB 1.1/2.0 connectors
- 1350W hot-swap power supplies (N+1 redundancy)
- Dedicated fan for power supply and PCI area
- Front LED panel with activity and status

FAS TREE™ -24/-36/-48 TECHNICAL SPECIFICATIONS

- 24 Port Switch: 24 Front Access DDR Ports
- 36 Port Switch: 24 Front Access DDR Ports
12 Rear Access DDR Ports
- 48 Port Switch: 24 Front Access DDR Ports
24 Rear Access DDR Ports
- Three-Hop Fabric up to 1008 Ports
- Mellanox InfiniScale III 4X Silicon
- 4X Copper InfiniBand Latch connectors
- Compatible with Equalized InfiniBand Cables
- Dual Universal 100/230 Volt input 100W
12V@8.25A external power supplies
- Built-in NodeWatch™ remote management
- I²C diagnostic/firmware port
- Stainless Steel 1U Rackmount Chassis

Please visit www.microway.com/testimonials.htm.
Discover what our satisfied customers say about our technical expertise.



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GS-35F-0431N

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