

EnterpriseSeries™ HDS9624 Secure Rack Servers

Embedded BuiltSECURE™ security technology



- Embedded BuiltSECURE™ technology for nation-state level attack mitigation
- Optional differentiated security customization
- Dual Intel® Xeon®-E5 processors with 64/128GB DDR4
- Ruggedized rack Extended ATX architecture
- Integrated system management
- Managed supply chain for DMSMS mitigation
- Designed, coded, manufactured, and tested in USA

Mercury's EnterpriseSeries™ HDS9624 servers with embedded BuiltSECURE™ technologies address the need for affordable

BuiltSECURE™ servers with system security engineering that can be forward deployed or sold to allies under foreign military sales (FMS) or direct commercial sales (DCS) programs. Additional to these security features, Mercury's EnterpriseSeries servers are ruggedized and supported by a fully trusted supply chain for both hardware and software.

Mercury EnterpriseSeries servers include high Intel core-count processors and configurable I/O solutions that are ideally suited to next-gen ground radar, mission, advanced simulation, ground/ naval/air command and control and battle management processing applications requiring system integrity. With trusted devices and the best security in the industry, these servers are especially suited to demanding processing applications and are ready to meet export requirements.

High-end processing solution

EnterpriseSeries servers deliver high performance with a dual-socket Xeon E5 v4 (Broadwell) processor complex. Processor options can scale from 8 to 12 cores per device, for a total of 16 to 24 cores of high performance compute capability.

Each processor provides four memory controllers, for a total of 32GB of DDR4 per socket or 64GB of DDR4 per ATX-style motherboard. Memory density can easily be doubled to 128GB of DDR4 via population option at the factory, with future options for 256GB driven by the DDR4 road-map from suppliers. The dual processors are linked via two instances of the high-speed, low-latency QPI interface, which delivers significant bi-directional bandwidth. This interconnected processor architecture is optimized for the intense data movement needed by high performance processing algorithms, such as all-to-all corner-turn operations. From a software perspective, this QPI architecture allows the EnterpriseSeries HDS9624 server to be configured with a single kernel NUMA-aware operating system running across both processor devices.

EnterpriseSeries HDS9624 servers make use of the Wellsburg Platform Controller Hub (PCH) chipset, which provides additional I/O bridging between the Intel processors and external devices.

PCIe architecture

EnterpriseSeries HDS9624 servers offer a highly configurable PCIe line card slot configuration. Four slots are available for standard PCIe line card configuration – two x16 slots, and two x8 slots. All slots support Gen3 PCIe data rates. These PCIe slots significantly expand the configurability of the HDS9624, enabling I/O customization at any point in the development or deployment process. To fit into the 2U 19" rack envelope, the slots are mechanically configured horizontally in the chassis.

Mercury Systems is a leading commercial provider of secure processing subsystems designed and made in the USA. Optimized for customer and mission success, Mercury's solutions power a wide variety of critical defense and intelligence programs.



ACQUIRE



DIGITIZE



PROCESS



STORAGE



EXPLOIT



DISSEMINATE

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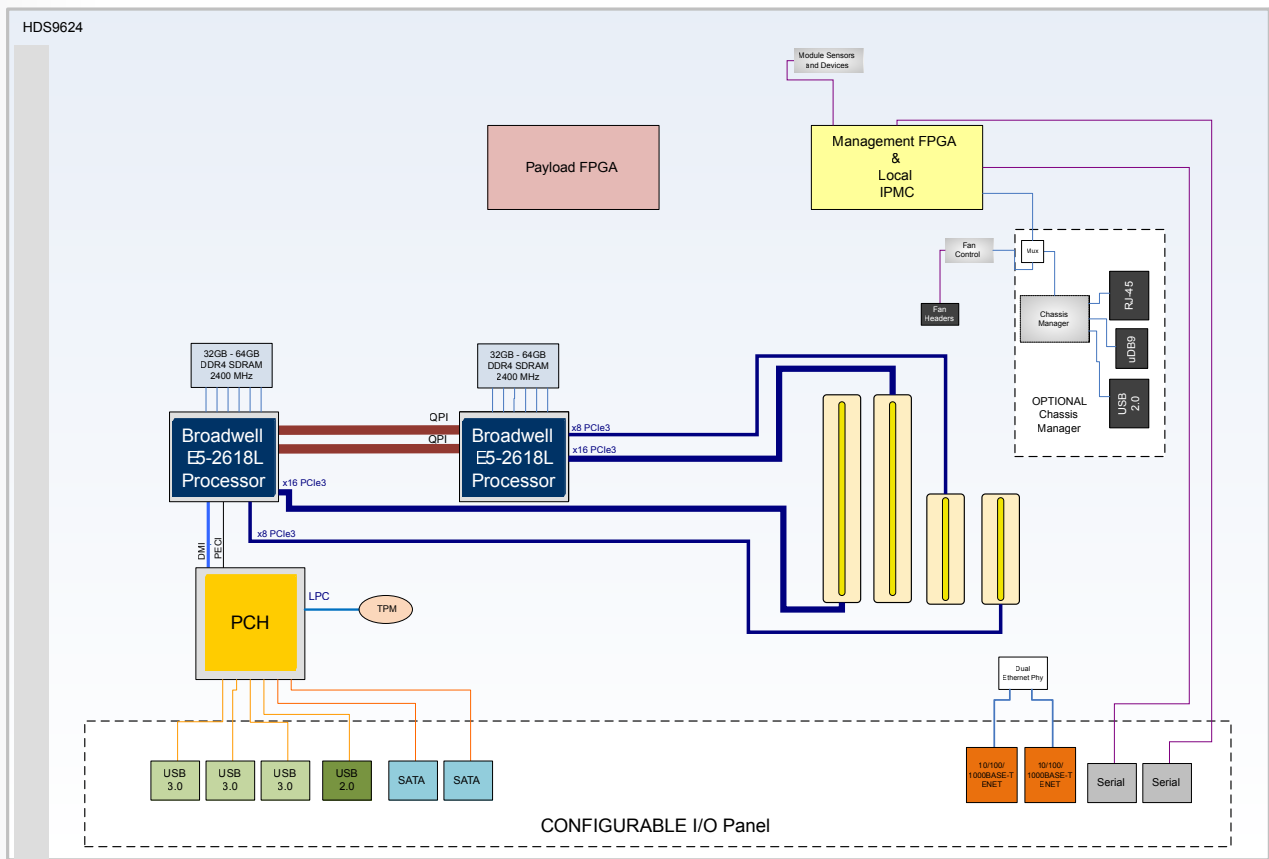


Figure 1: HDS9624 functional block diagram

Configurable system I/O

EnterpriseSeries HDS9624 servers offer a wealth of built-in I/O, enabling customers to optimize their configuration for the application at hand. Three USB 3.0 ports, one USB 2.0 port, two SATA III ports, two 10/100/1000BASE-T Ethernet interfaces, and two RS-232 serial interfaces provide an I/O baseline to the rear-panel as required for customer use.

System security

Mercury's EnterpriseSeries servers with embedded BuiltSECURE technology use the same proven suite of security capabilities used in our 3U and 6U OpenVPX and our ATCA processing solutions. HDS9624 servers securely boot, load, and execute applications on their trusted built-in hardware, firmware, and software architecture. Our security framework supports Mercury, customer, and trusted 3rd party mechanisms and IP, giving our servers system-wide, turn-key or personalized security capabilities.

The extensible nature of our security approach enables EnterpriseSeries servers with embedded BuiltSECURE technology to evolve over time, delivering built-in future proofing. As countermeasures are developed to offset emerging threats, our extensible security framework keeps pace, maintaining robust system security.

Trusted systems

Mercury builds trust into all of its EnterpriseSeries servers by designing, manufacturing, and testing them in trusted DMEA facilities by US personnel. Our secure, domestic facilities minimize the risk of back doors, counterfeits, and trojans. Mercury's board support package, BIOS, and network stack are designed by US personnel and are available for inspection by government agencies. Together, our system security engineering and trusted supply chain are designed to help system integrators meet DoD instruction 5200.44, "Protection of Mission Critical Functions to Achieve Trusted Systems and Networks."

Optional secure-storage

EnterpriseSeries servers optionally may include Mercury's secure solid state drives with next generation TRRUST-Stor® of embedded security. These long-life SLC NAND flash drives may be RAID configured and are designed for reliability, performance and security. Additionally, these drives may be protected with ASURRE-Stor™ which has the highest level of security for reliable, secure mission critical applications. ASURRE-Stor adds FIPS-140-2 certification, RS-485 based DS-101 support, and other security features.

Open software and optional secure hypervisor

Mercury EnterpriseSeries servers are offered with either Linux® or Windows Server operating systems and optionally can be pre-integrated with the secure Crucible® Defense Hypervisor that delivers technology protection, cyber-hardening, and system integrity.

DMSMS mitigation

Mercury EnterpriseSeries servers utilize components with extended supply life, including Intel embedded processors for critical component Diminishing Manufacturing Sources and Material Shortages (DMSMS) mitigation. Mercury's carefully managed supply chain results in EnterpriseSeries servers that have 10+ years of supply longevity with optional obsolescence management programs available for extended sales, repairs, and support.

An open system middleware framework, with decades of uninterrupted Mercury support protects our customers' application investment. By creating an environment that enables applications to be ported to refreshed open systems hardware, we preserve our customer's most valuable asset; their software.

Rugged

Mercury EnterpriseSeries servers have their roots in OpenVPX system designs for inherent ruggedness greater than standard commercial servers. For example, the design removes all socketed components, soldering server processors and memory directly to the motherboard. Optionally, by leveraging ANSI/VITA 48.7 Air Flow-By™ mechanical, cooling and other packaging techniques, Mercury EnterpriseSeries servers can be enhanced to meet even more stringent environmental requirements.

Open Systems Architecture

EnterpriseSeries servers are Open System Architecture (OSA) compliant and especially versatile for customizing - making them an extremely low-risk adoption proposition for new and current data-center applications requiring robust system integrity. The EnterpriseSeries servers may be seamlessly "dropped-in" to existing infrastructures as secure and trusted processing replacements with full UPI/SMP processing capabilities of a commercial server.

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System features

Built-in security

Embedded BuiltSECURE technology
Proven 4th generation built-in security framework
System-wide, private, differentiated and personalized – Or turn-key
Optional secure Crucible Defense Hypervisor
Trusted supply chain – Designed/made/supported in USA

Processors

Base configuration utilizes dual Broadwell microarchitecture Intel E5-2618L v4
10 cores per processor (total of 20 cores)
2.20 GHz base frequency (non-Turbo mode)
75W TDP per processor
Other processor configurations available to balance power/performance
Dual QPI interfaces between processors to produce a cache-coherent memory pool with a single SMP instance of Linux running across both processors

Software

Red Hat Enterprise Linux v7 (or later) running on the Intel processor complex
Local Baseboard Management:
Implemented via Microsemi Smart Fusion 2 FPGA
Optional chassis manager for rack-wide management

Memory

32GB of DDR4 memory per processor (64 GB total – expandable to 128GB total)

Expansion

Standard PCIe expansion card support
Two x16 slot, full length/height via riser
Two x8 slot, full length/height via riser
Support for up to two x16 double wide PCIe cards (each eliminates a x8 slot)

Storage

Up to four 2.5" SSDs

Peripherals

Rear I/O panel (standard configuration; front I/O option also available)
Built-in Ethernet, serial, USB and SATA interfaces (as required)

Power supply

Single 110/220VAC PSU
Optional additional redundant PSUs with power failover
Other PSU input configurations available (DC, 400Hz AC)

Power consumption

Typical: 200W

BIOS

Mercury coded, supported and owned

Mechanical

Extended ATX-style form-factor
19" rackmount (RETMA)
2U height, 18" depth
Internal fans for cooling



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