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Verari SystemsIntroduces 64-Bit Blade Offering — Xeon EM64T Enters the Battle of the Blades

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Management Summary

The foundation for any solid enterprise, no matter what the industry, can be found in what they have done in the past. What kind of products they have brought to market, what kind of value they have added to the existing array of options available to the consumer. Shoppers can always count on certain brands to stretch the limits of current thought, change the paradigm of how others perceive the solution to an everyday dilemma.

If a consumer is looking for a new, upscale car, for example, he might look to General Motors, on the domestic front, or to Mercedes, if he is looking for a European model. It does not take long to determine credibility. If previous models delivered the type of features that you expected, such as pop-up displays and GPS tracking systems, and the maintenance record identified quality workmanship, then you would take the time to investigate new models. Yugos need not apply! The same can be said for computer game machines, such as Sony's *PlayStation*. You know that you are getting an improvement, or added values, over the previous model.

When the Information Technology (IT) market is looking to upgrade or replace an existing product, the data center staff will look at the features that they have, those that they want, and hopefully, those that they need. A recent surge in the diverse requirements for blade-based servers has seen the implementation of blade components based upon all of the following:

- The 32-bit *Xeon* and 64-bit *Itanium 2* microprocessor from Intel;
- The 64-bit UltraSPARC IIi microprocessor from Sun;
- The 32-bit Athlon and 64-bit *Opteron* chip from AMD; and
- The 64-bit *PowerPC* processor from IBM (planned for 2004), as well.

One of the more successful manufacturers of rack systems is Verari Systems. Known for years as RackSaver, they changed their name to Verari Systems and their focus to blade systems in April 2004, changing the paradigm of the entire company. They are the premier provider of powerful, flexible and scalable blade servers and storage products. They are defining a new era in high performance, utility computing. With the introduction of the 64-bit *Xeon EM64T* microprocessor (formerly Nocona) from Intel, they have chosen to lead the parade in developing high performance 64-bit Xeon solutions for blades. To see how Verari's new blade technology can help you, please read on.

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Blade Requirements for the Data Center

One of the most common uses for the implementation of a blade solution is the consolidation of multiple high-performance servers of varying architecture within the data center. What are the basic requirements that must be satisfied for a blade environment to succeed in the data center?

- First is the need for a **standards-based architecture** to enable flexibility and scalability so that the data center can **consolidate** services within the blade rack. Along with this is the necessity to have access to both *Windows* and *Linux* packages for high-performance, open computing. In addition, this scalability needs to be on-demand, so that the data center can expand dynamically without bringing the entire data center to its knees.
- Second is the requirement for a technology which permits a **dense packaging of both controllers and storage** – and a need to overcome the cooling problems caused by the heat generated from the number of components being packaged together.
- Third is the requirement to support as many new blade formats as possible in order to take advantage of as many high-performance solutions as are available. **This would include the latest 32- and 64-bit technologies from AMD, IBM, and Intel,** as well as high speed interconnects, high performance I/O, high performance storage, and scalable file systems.
- All of this would be superfluous if the environment was too expensive to acquire or to maintain. Therefore, **the blade solution must be affordable,** for both acquisition and for operation.
- Next, is the requirement to keep the implementation as simple is possible by **using common off-the-shelf (COTS) components**. This simplification process must also extend to the maintenance of the system with portable upgrades and patches.
- The last essential ingredient would be a **support staff**, in place and capable of supporting your installation.

All of the usual suspects, such as IBM, HP, and Sun, will be more than happy to try to address your needs, some better than others. Outside of the usual suspects, however, you will also find Verari, originally founded as RackSaver in the late '90s, but renamed in 2004, with the change in focus from rack systems to blades. How well can Verari Systems meet the data center needs?

Who is Verari

Verari Systems is a profitable, growing company with a revenue goal of $100M. As the fifth largest provider of x86 server systems in the U.S.[1], Verari, whose root derivation is "truth", is committed to the development and integration of high-performance, platform-independent blade servers. A global company, Verari Systems has thousands of CPU clusters installed throughout the world, but now considers itself a blade company. In order to configure the highest quality storage products within their blade product line, Verari Systems has collaborated with Engenio (formerly LSI Logic Storage Systems) to deliver both Fibre Channel and SATA solutions into the blade market. This is in response to a growing market trend for storage-based blades to provide integrated solutions. Verari Systems has implemented this integration with the aim to accelerate deployment, provisioning, and remote mirroring in order to be able to cluster, seamlessly, thousands of blades systems.

Along with the 2004 change in name from RackSaver, Verari Systems became a predominate supplier of blade servers, selling mostly into the oil and gas, entertainment and electronic design automation markets. In an effort intended to provide an on-demand expansion capability within a single blade system, Verari Systems implemented a program known as *Blades without boundaries* to permit the extended scalability of a single blade architecture. The idea was to enable greater scalability than Verari, or anyone else, had accomplished previously, without negatively affecting the performance,

[1] Based upon a survey as reported in Verari publications.

scalability, density, or manageability of the platform, with performance being the vital element in this high-performance computing (HPC) platform.

With the need to satisfy the insatiable appetite for HPC within the data center, especially one with constricted budgetary resources, Verari Systems chose a blade-based architecture for the data center under the *BladeRack* logo. They placed specific emphasis in their niche markets where their HPC story played especially well.

The BladeRack Solution

Hardware Solution

Characterized by the highest density and, therefore, the highest performance levels, the BladeRack cluster comes in two varieties, *UltraDense* and *MegaDense*. The UltraDense platform is capable of supporting 66 nodes with 132 processors. MegaDense can support 88 nodes, or 176 processors, in an 84" cabinet. The BladeRack is an open platform capable of supporting any standard blade. These blades include high-end servers, SAN, NAS based storage, along with InfiniBand. BladeRack can support 66 terabytes of direct storage capacity.

With over one teraflop of processing power and 1.4 TBs of memory capacity, the BladeRack is unparalleled in providing high performance computing in an 84" environment. With a design that includes no backplane, Verari Systems can support both front and back mounting to increase the density with a standard cabinet.

With that much power, Verari Systems had to solve a significant problem with the generation of heat. They had to find a cooling technique that would permit the high levels of reliability that are required in the data center. They did so with their *Vertical Cooling System*, a unique architecture that cools the cabinet from the bottom to the top, rather than from front to back, creating a back-to-back installation, eliminating hot spots.

The data center can hot-swap any blade, thus keeping the BladeRack operational during the replacement or upgrade of any installed blade. Blade servers come in three sizes: 1U, 2U, and 3U. The 1U blades include a uni-Pentium 4, dual-Xeon, and dual-Opteron. The 2U blades support the same processors with a richer configurability. The 4U blade is a quad-Opteron architecture. (See Exhibit 1 for a detailed description of each blade server.) PowerPC blades will be available later in 2004.

In August, Verari Systems announced the availability of a new *Xeon* processor blade based upon the Xeon EM64T, a 64-bit processor with *Hyper-Threading* technology to improve its performance. With a faster front-side bus (800 MHz), extended memory addressing, and DDR2 memory, the EM64T extends the range of Verari's scalability and flexibility further than ever before.

The Xeon announcement complemented the July marriage between Verari Systems and Engenio to deliver high-performance Fibre Channel and SATA storage to the blade environment under Verari's logo.

Exhibit 1 – BladeRack Blade Servers

RS-1164 (1U)

- Available with Pentium 4, Dual Xeon, and dual Opteron.
- Up to 16GB of DDR RAM.
- Space for up to 4 hard drives with optional dual removable bays.
- Support for Windows 2003, SuSE, RedHat Linux, and more.
- Networking options for InfiniBand, Myricom Myrinet, and Dolphin SCI.

RS-21xx (2U)

- Same as RS-1164 except provides storage options for up to 8 drives.

QuatreX-64: -

- Quad-processor Opteron with up to 32GB DDR RAM.
- Storage for up to 4 SCSI drives with optional removable bays.
- Same O/S support as above.
- Same networking support as above.

Software Management Solution

In addition to the hardware, Verari Systems also offers a variety of cluster management tools, including *BladeView*, an in-band monitoring tool, *RackView*, an out-of-band management system, and *Verari Command Center,* a comprehensive cluster management tool.

BladeView is Verari's in-band cluster management solution to provide detailed visual information with an easy to use interface for each blade subsystem. Rack-View, on the other hand, is an out-of-band monitor to provide comprehensive health monitoring for all of BladeRack's vital systems, including fans, intake and exhaust temperature, and blade power settings, turning on the identity lights as appropriate.

Verari Command Center is a comprehensive commercial-grade Linux cluster management tool designed to provide users with an efficient method of installing, managing, and upgrading Linux-based clusters of varying size and complexity, without sacrificing speed, robustness, scalability, or flexibility.

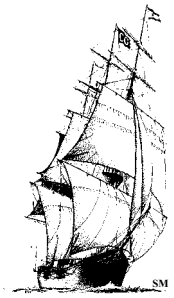
Conclusion

In the 1992 movie, *A Few Good Men*, the character portrayed by Tom Cruise is set on his path to find the truth. In response to a series of penetrating questions, the Jack Nicholson character replies: "You can't handle the truth". In much the same way, Verari Systems has introduced a true blade architecture for its *BladeRack* blade server and is daring the industry to handle the truth that they are delivering.

BladeRack delivers on all of the promises that Verari Systems has made, providing all of the benefits of a blade server without compromising on performance, scalability, density, or manageability. By adhering to open standards, Verari Systems uses common, off-the-shelf components, combined with value-added technology, to provide a platform for the widest assortment of blades possible. The density of BladeRack, in fact, enables the data center to free up valuable floor space for other problems, while the pre-configured BladeRack arrives in the "glass house" ready to move into a production status within only a few hours. With their newest announcement based upon the latest 64-bit architecture from Intel, the Xeon EM64T microprocessor blade, previously known as Nocona, joins a product list that includes Itanium and Opteron, with the PowerPC as the coming attraction. One of these blades can surely handle any of the enterprise's high-performance computing applications.

Verari Systems also delivers an complete set of management software, available to configure and provision a network of 1000's of blades. Verari Systems has reduced the time required for configuration to seconds, reduced the total cost of ownership, and delivered a complete blade solution with unique engineering to solve the most critical heat and packaging problems.

While not as well known as the usual suspects, Verari Systems has put together a solution worthy of your consideration. Before you commit to the name on the box, check out what is inside a BladeRack. You just may have solved a data center problem while adding a few dollars to the bottom line.



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