



Virident GreenCloud Servers™ SmartScaling the Internet Data Center

The Virident GreenCloud Server Platform is designed to lead a new wave of server and architectural innovations in Internet and cloud computing data centers.

By combining innovative hardware with co-optimized software stacks, GreenCloud Servers deliver significantly higher performance for data-centric applications such as databases, caching, search, and content delivery. These performance improvements result in overall datacenter power and cost efficiencies, lower TCO, and enable introduction of new services.

GreenCloud Servers are the ideal building block for scale-out architectures, enabling Internet businesses to do more with less.

Virident's new servers are based on industry standard technology but dramatically redefine the balance between compute, memory, network, and I/O. By allowing applications to directly interact with large volumes of data hosted 'in memory,' GreenCloud Servers fundamentally reshape the structure of data-centric applications.



Virident enables the data center to meet the demands of Internet-Scale growth with a server platform that delivers extreme performance, and cost and energy efficiency.

Storage Class Memory : Breaking the I/O Bottleneck

Storage class memory is a new memory tier tightly integrated into the CPU complex, which bridges the performance and persistence gap between main memory and mass storage in traditional server architectures. This tier can be constructed using different memory technologies, including DRAM, Flash, and Phase Change Memory. By combining the characteristics of main memory — low latency, hardware-level direct access from the CPU — with the persistence and capacity of disks, storage class memory eliminates software and device bottlenecks associated with I/O transfers.

GreenCloud Architecture : Enabling 'In-Memory' Data-Centric Applications

The GreenCloud Architecture integrates storage class memory with a co-optimized software stack within an industry-standard x86 server platform for delivering orders of magnitude higher performance and previously unattainable capabilities to data-centric applications. The architecture improves application CPU utilization and eliminates I/O overheads by providing random word-level access to large data sets.

SmartScaling™: A Better Building Block for the Datacenter

GreenCloud Servers provide a better building block for scale-out datacenters. By optimizing server efficiency for data-centric applications, GreenCloud gives the operational flexibility to meet service needs with fewer servers, meet growth requirements in the current data center footprint, and gain user insight through richer analysis to enhance a business model.

Virident Corporate Facts

- Established in 2006 by notable Silicon Valley veterans from Sun, Cisco, SGI, Google and Intel
- Over \$25M in funding from venture firms Artiman Ventures, Accel-India and corporate partners
- Offices in Silicon Valley and Bangalore, India
- Technology and distribution partnerships with AMD, Intel, Numonyx, and Spansion

Executive Management Team

CEO and President
Raj Parekh
Chief Operations Officer
Kumar Ganapathy
Chief Technology Officer
Vijay Karamcheti
Chief Financial Officer
Joseph Powers

Vice President, Engineering
Ken Okin
Vice President, Business Development
Bill Glazier
Vice President, Global Sales and Services
Michael J. Hunt

Virident Solutions

The GreenCloud Server Family: Designed with the Internet in Mind



Virident's GreenCloud Servers leverage the GreenCloud Architecture to deliver extreme performance and scalability to Web 2.0 data-tier applications. Initial products target the open-source MySQL database application and the memcached caching application, and support 'in-memory' datasets up to 512 GB per server. These products support higher per-server loads, facilitate server consolidation, lower TCO (up to 70%), and overall reduce the complexity of the data tier.

Virident GreenCloud Server for MySQL

The Virident GreenCloud Server for MySQL delivers 50-70x performance improvement over disk array-based industry standard servers and 5-7x versus high-performance PCIe SSDs on Web 2.0 workloads. Virident optimized versions of MyISAM and InnoDB storage engines directly access datasets stored in the storage class memory tier to eliminate I/O bottlenecks. GreenCloud servers sustain significantly higher query rates, dramatically lower the cost of scaling to larger datasets, and simplify the replication and sharding processes usually employed for scaling. The extreme performance additionally makes it possible to obtain new insights into data and deliver new services by running complex operations such as multi-table joins, which are beyond the reach of traditional scale-out architectures.

Virident GreenCloud Server for Memcached

The Virident GreenCloud Server for Memcached delivers a new standard of high-performance and cache size scaling for the popular distributed caching application. These servers can deliver 250K object gets per second with low and predictable latencies and support caches with 3 billion objects, increasing performance by up to 4x and the available cache memory by up to 8x versus industry standard servers. These performance and scaling benefits permit larger key spaces to be supported by a single server and decrease cache miss rates thereby reducing load on backend database servers.



"Innovative platforms like GreenCloud allow us to simplify the architecture of our code and the infrastructure in our datacenter. Virident's usage of a persistent 'In-Memory' system delivers a significant performance boost, allowing us to reduce our database footprint saving space, and importantly power."

Artur Bergman

Senior VP, Engineering and Operations, Wikia

"At PBwiki, we're always evaluating how to improve the speed and quality of our service and are vigorous users of MySQL and memcached. So after a vigorous production trial of the Virident box, we were delighted to find that the box could provide hard-drive like densities at RAM-like speeds. It's an impressive piece of equipment."

David Weekly

Founder, Chairman, and Chief Products Officer, PBwiki

"Virident's new platform delivers extreme performance on real world query sets and schemas. In my testing of GreenCloud, I have seen a 50-70x improvement on MySQL database benchmarks relative to industry standard servers, and the ability to do innovative new operations 'in-memory' (such as multi-table joins). The GreenCloud platform represents a very innovative new approach to cloud computing in the data center."

Frank Mashraqi

VP Technology for NetEdge (former Director of Business Operations and Technical Strategy of Fotolog)