**Vırtualıron**®

# Data Center Virtualization and Management Solutions

## Enabling the Next Generation Data Center

**Today the data center is the foundation of most companies' IT infrastructure — the engine that dictates how efficiently companies run their business. While significant investments continue to be made in infrastructure and innovation, many data centers are overrun with application deployments, technology updates and system maintenance. As a result, they remain inefficient, inflexible and expensive to operate, and IT has difficulty responding as effectively as it would like to the changing needs of the business.**

Virtual Iron was founded in 2003 specifically to address these challenges. With the industry's only enterprise class, data center virtualization software solution, Virtual Iron enables organizations to achieve optimal levels of business flexibility, operating efficiency and capital expenditure. The company serves large organizations in the financial services, manufacturing, healthcare, government, retail and hosted services industries and brings deep expertise in clustering, parallel processing and storage virtualization.

From its beginning, Virtual Iron designed its software to manage enterprise-class data centers, with hundreds of servers, networks and storage elements. These solutions combine the power of virtualization, automation and dynamic resource allocation technologies with policy-based workload management and offer unmatched scalability and availability without the need to alter business applications. With Virtual Iron, customers are transforming their static, hard-wired data centers into virtualized pools of dynamic computing resources that can be applied when and where they are needed. This enables them to minimize data center complexity, increase agility, maximize resource utilization and reduce total cost of ownership.

## Creating and Managing the Virtual Data Center to Rapidly Respond to Changing Business Demands

Companies find it increasingly difficult to manage their enterprise data centers today. Most have simply become too complex, expensive to build out and difficult to reconfigure as needs change. Hardware cycles continue to shrink, so data center managers face a constant influx of new equipment and applications that need to be rapidly provisioned. At the same time, new business applications are driving a proliferation of servers that are woefully under-utilized. The net result of all this is a very high cost of ownership for a resource that is poorly positioned to meet the needs of the business.

Virtual Iron's data center virtualization and management solutions enable organizations to take control of their data center by dramatically reducing the complexity associated with implementing, updating and managing IT systems. With Virtual Iron, enterprises can:

- **Rapidly provision and redeploy applications.** By separating applications from hardware resources — including memory, CPU, network and storage, Virtual Iron delivers the flexibility and agility to rapidly make hardware and server changes as needed. This increases responsiveness as applications can be moved without regard for the underlying hardware. SAN and network changes occur dynamically and without change to existing configurations. Virtual Iron also enables administrators to rapidly provision new servers, storage systems and networks since the hardware details are abstracted from application dependencies.

■ **Run enterprise-level applications.** The Virtual Iron software is totally transparent to applications and operating systems and is optimized to handle common business applications. Unlike other virtualization technologies, Virtual Iron can handle large, complex workloads such as popular business and scientific applications, including J2EE application servers. All of the server hardware within a single virtual server runs a single instance of the operating system, meaning software and operating system maintenance can be performed once, with no installations or changes necessary on individual physical servers. Virtual servers are separate from the physical hardware creating the flexibility to respond to capacity changes or availability issues without impacting the running application.

■ **Scale servers rapidly, up and down, on-the-fly, as needed.** With Virtual Iron you can scale-up or scale-down any virtual server from the management console with a few clicks. Or you can automate the process with policies defined in the management console to add or subtract resources based on time of day, heavy/light usage periods or other criteria. Either way it happens instantly — no reboot required.

■ **Quickly create and manage virtual servers on industry standard hardware.** Group up to 16 existing processors into a single virtual server, with scalable performance that increases for every processor you add. Or, for less demanding applications, partition a single physical computer with up to 10 virtual servers using a fraction of a processor for each. Combine or divide memory, storage and network resources just as flexibly. Do it all in seconds via the management console — and without touching physical hardware.
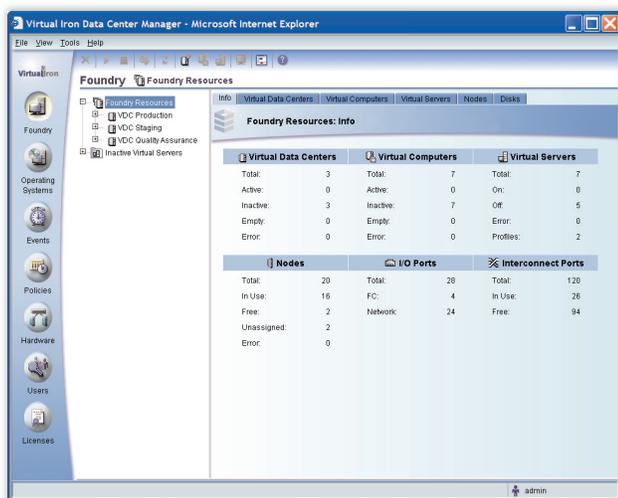
Virtual Iron enables true data center virtualization

## Addressing Enterprise IT's Most Difficult Challenges

Enterprise customers use Virtual Iron software to address a number of IT initiatives including:

### Data Center Consolidation

Virtual Iron streamlines and automates server and storage consolidation. The software consolidates a large number of distributed applications onto a single physical server or onto a cluster/grid of servers if it's necessary to scale up beyond the resources in a single physical server. The result is a "virtual data center" and dynamic infrastructure built out of industry-standard hardware and software. Enterprises benefit from fewer servers and OS images; up to 10X increased resource utilization; reduced risk of capacity shortfalls and service interruptions; and lower hardware and maintenance costs.

### Capacity on Demand

Virtual Iron enables capacity to be reconfigured and allocated on-the-fly by making all resources available to all the applications in the system. The software manages "reserve" pools of capacity that can be shared by many servers and automatically moved on demand. This "sharing of reserves" eliminates over-provisioning of individual servers, avoids overbuying capacity (CPU, memory, I/O) for peak workloads and avoids the risk of running out of capacity. This approach increases utilization across the data center and delivers on SLAs more cost effectively and consistently.

### High Performance Computing

Virtual Iron's platform enables users to create virtual grids with multiple physical nodes that run a single operating system avoiding the need for major application rewrites. Its grid capabilities combine the advantages of SMP, grid computing, and clustering while being transparent to the operating system and applications. The platform can be deployed with commodity hardware and software and take advantage of emerging computing platforms like Blades instead of expensive proprietary systems.

### Virtual Infrastructure Management

Virtual Iron provides a sophisticated management environment for its platform including a GUI management console to centrally manage virtual and physical servers. This user-friendly interface makes it easy to manage and orchestrate a large number of virtual servers and the operating systems and patches associated with each physical server. The console uses comprehensive, policy-based resource and workload management, even allowing reconfiguring of physical servers on-the-fly.

### Development and Test

With the Virtual Iron platform, test and staging configurations are easy to change, can be run in parallel, and do not require a physical machine for each configuration to be tested. IT can partition a single physical server into dozens of isolated development environments and coordinate configurations and footprints between the development, test, staging and production environments. Developers can simulate complex networked applications on a single server. Hardware restrictions are removed by allowing teams to use physical hardware that does not need to be identical across development, QA and production. Virtual Iron's approach to virtualization minimizes hardware requirements, improves time-to-market by reducing the time it takes to provision and configure servers, and shortens projects via automated and streamlined processes for handing off software from development to test.

### High Availability

Virtual Iron takes high availability clustering a step further by allowing multiple virtual computers to fail over to a single virtual computer (N+1 clustering), reducing the required hardware. It enables users to perform routine and non-routine maintenance without stopping applications through hot-swapping of processors, memory, and I/O. Virtual Iron delivers high availability in a more efficient manner enabling users to increase business-critical application uptime and build a variety of high availability scenarios with far less hardware.
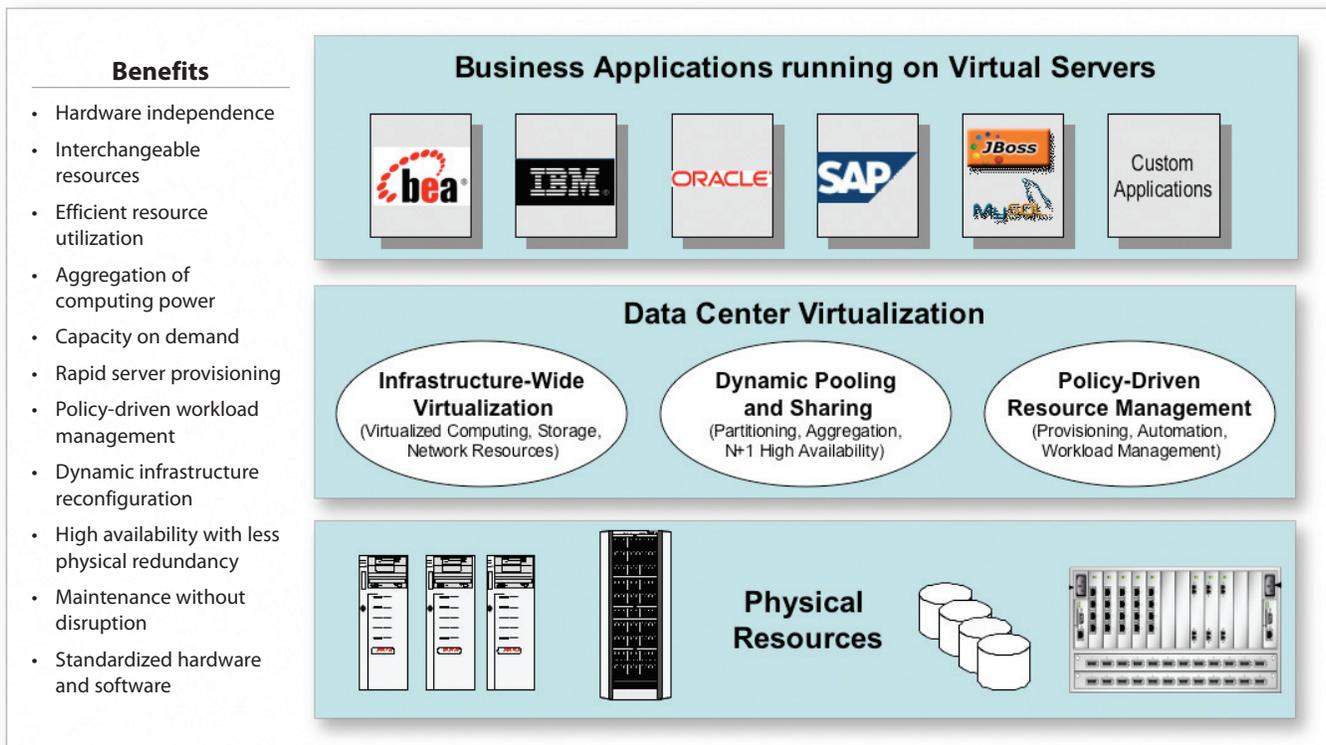
### J2EE Application Deployment and Management

Virtual Iron reduces the time and cost of deploying, operating and managing J2EE applications and enables a more flexible and agile J2EE environment. With Virtual Iron, data center managers can combine all J2EE resources into a sharable, infrastructure-wide pool that can be shared by multiple J2EE applications. The application servers run efficiently on virtual servers and each application server can run an independent, fully-functional operating system instance. Hardware resources can be shared and dynamically allocated to the application servers that are not meeting performance requirements. In addition, resources can be automatically provisioned based on user-defined policies increasing application availability, improving response times and reducing manual intervention.

### Multi-Tenant Hosting

Virtual Iron supports an environment where customers can share computing infrastructure, making data center resources available to all the applications and tenants in the system, thereby eliminating overbuying capacity (CPU, memory, I/O) for peak workloads. This enables hosting organization to meet SLAs more consistently and cost effectively.

## VIRTUAL IRON'S DATA CENTER VIRTUALIZATION



**Benefits**
- Hardware independence
- Interchangeable resources
- Efficient resource utilization
- Aggregation of computing power
- Capacity on demand
- Rapid server provisioning
- Policy-driven workload management
- Dynamic infrastructure reconfiguration
- High availability with less physical redundancy
- Maintenance without disruption
- Standardized hardware and software

**Business Applications running on Virtual Servers**

bea · IBM · ORACLE · SAP · JBoss MySQL · Custom Applications

**Data Center Virtualization**

**Infrastructure-Wide Virtualization**
(Virtualized Computing, Storage, Network Resources)

**Dynamic Pooling and Sharing**
(Partitioning, Aggregation, N+1 High Availability)

**Policy-Driven Resource Management**
(Provisioning, Automation, Workload Management)

**Physical Resources**

## The Virtual Iron Difference

Virtual Iron is the only company that offers enterprise-class virtualization at the data center level. While first generation technologies are limited to working at the single-machine level or with small clusters of machines, Virtual Iron manages the aggregation and sharing of many machines and devices including server, storage and network resources. This automates many time-intensive, manual tasks such as provisioning new servers, moving capacity to handle increased workloads, and responding to availability issues. As a result, companies can achieve the highest levels of data center manageability, agility and resource utilization and dramatically reduce capital and operating expenditures.

Three distinct capabilities set Virtual Iron apart from other offerings in the market:

- **Infrastructure-Wide Virtualization** — Virtual Iron optimizes the utilization of all data center hardware resources to deliver capacity on demand, real-time configurability and high availability with less redundancy. And it does this on industry-standard hardware and operating systems.

- **Dynamic Pooling and Sharing of Computing Resources** — First-generation technologies are limited to working at the single machine level. Virtual Iron's data center virtualization also manages the aggregation and sharing of many machines and devices. This enables Virtual Iron to handle peak workloads without over-scaling and to accommodate changing application demands without service disruption.

- **Policy-Driven Resource Management of All Virtual Resources** — Virtual Iron's unique policy-driven automation simplifies the management of computing resources and enables rapid provisioning and deployment without increased administrative overhead.

Unlike point solutions from IT automation companies that are limited to provisioning physical servers, Virtual Iron automates and dynamically provisions virtual servers that can simultaneously include partitions of single servers as well as aggregations of multiple servers. In addition, Virtual Iron provisions virtual network and storage resources to enable policy-based dynamic reconfiguration without impacting running applications.

Unlike point solutions from virtualization vendors that are limited to partitioning a single server, Virtual Iron also enables the creation of virtual servers that can dynamically scale across physical servers up to 16 CPUs. Virtual Iron can dynamically add and remove processors to handle peak workloads without pausing or stopping the application. And all Virtual Iron actions can be driven by policy.

Unlike point solutions from management vendors that can only manage physical systems and scale cluster-aware applications, Virtual Iron allows existing, unmodified applications to run transparently on virtual servers that scale across physical servers with a single operating system instance to manage. In addition, Virtual Iron policies can detect and respond to hardware failures and utilization bottlenecks, including servers, network and storage.

**Virtual Iron transforms the static, hard-wired data center into a dynamic pool of shared computing resources. This enables organizations to reduce the complexity, inefficiency and waste in their data centers. Learn how Virtual Iron software can help you create an infrastructure that can rapidly respond to changing business needs by giving you flexible, easy-to-manage access to all the computing power in your enterprise. Call Virtual Iron Software today at 978-849-1200, or visit us on the Web at www.virtualiron.com.**

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