The virtualization of processing, memory, and network resources enables higher utilization, superior manageability, and lower cost of ownership for today’s data center owners. Even clustered applications, designed for single-server architectures with local storage, can now be virtualized with the additional benefits of higher resiliency and lower internode communication delays. However, storage performance often becomes a bottleneck, threatening the viability of these virtualized applications and inhibiting the realization of benefits.

**Overcome I/O Bottlenecks in Virtual Environments**

In order to fully utilize processing and memory resources in a virtualized environment, I/O contention must be handled. Shared storage systems allow concurrent access to data, but often suffer significant performance degradation as the number of users or applications increases. The inability of the storage system to handle the I/O demand of all the clients inevitably leads to a loss of virtualization efficiency. Traditional tiering and caching schemes are poorly suited to deal with constantly changing environments, for example, those where clients are moved from server to server using vMotion, clients are started and stopped, and so on. To resolve these issues, GridIron Systems created a new acceleration technology to match the power and flexibility of virtualized environments.

The GridIron TurboCharger is a SAN-based appliance that transparently and securely removes the storage bottleneck in I/O intensive environments. Deployments of TurboChargers can be scaled to deliver any desired level of performance from the existing storage infrastructure at a fraction of the cost of equivalent new deployments of Tier 1 systems.

- **Enable virtualization of Tier 1 applications.** Hardware and administrative savings of virtualization can be lost if I/O bottlenecks force the acquisition of large and expensive storage systems. License savings from virtualization of CPU and memory can be lost if I/O contention results in reduced performance. Gridiron technology solves I/O bottlenecks and enables the virtualization of applications originally designed to leverage fast local disk or expensive Tier 1 storage. By matching storage performance to compute capability, virtual environments can be fully utilized and provide the highest value to customers.

- **Remove storage performance bottlenecks.** Deployment of a Gridiron solution delivers solid-state performance from the existing storage by providing the bandwidth and IOPS that applications need. The scalable architecture allows order-of-magnitude increases in performance, while supporting the highest levels of concurrency. Customers can realize higher value and longer life from the existing storage investment by turbocharging data access with performance levels built to order.

- **No changes to existing servers, software, or storage.** The Gridiron TurboCharger deploys as a SAN-based appliance to accelerate the existing storage infrastructure. Because no new targets or LUNs are required, the existing software and its configuration are not affected and the administrator is not required to migrate data. All existing backup, snapshot, replication, disaster recovery, and other storage management processes continue to operate as before. For absolute security, write-through architecture assures that the existing storage always has the “golden copy.”
GridIron Systems: High Performance Virtualized Environment for Clustered Applications

Solution Architecture

- 128 Physical Cores
- 1.2M IOPs
- 50TB Data Space

Physical Instance
- 4 x 8 Core CPU
- 256 GB DRAM
- 2 x Quad 8 Gb FC

Virtual Instance
- 2 x 4 Core CPU
- 64 GB DRAM
- 2 x 8 Gb FC

Target: 16 Virtual Instances per Physical Instance

Business Benefit

<table>
<thead>
<tr>
<th>CUSTOMER CHALLENGES</th>
<th>KEY FEATURES</th>
<th>BUSINESS IMPACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inability to virtualize Tier 1 databases and applications</td>
<td>• Transparent SAN-based I/O acceleration</td>
<td>• Products cost savings from reduced equipment, power,</td>
</tr>
<tr>
<td>with high I/O requirements</td>
<td>• High availability clustered architecture</td>
<td>and cooling</td>
</tr>
<tr>
<td></td>
<td>• Preserved data integrity by using write-through architecture</td>
<td>• Provides higher reliability, availability, and serviceability</td>
</tr>
<tr>
<td>Overcome storage I/O bottlenecks</td>
<td>• Set-rank analytics</td>
<td>• Removes the need for forklift upgrade of storage and</td>
</tr>
<tr>
<td></td>
<td>• Scalable architecture designed for bandwidth and concurrent access</td>
<td>infrastructure</td>
</tr>
<tr>
<td></td>
<td>• Real-time line-rate operation</td>
<td>• Provides superior storage utilization and efficiency</td>
</tr>
<tr>
<td>Licensing and deployment costs of clustered architectures</td>
<td>• SAN-based architecture</td>
<td>• Produces cost savings from using lower-tier storage</td>
</tr>
<tr>
<td></td>
<td>• Policy-based provisioning based on servers, applications, or LUNs</td>
<td>for capacity</td>
</tr>
</tbody>
</table>

Resources

- For more information, please visit GridIron Systems at:
  [http://www.gridironsystems.com](http://www.gridironsystems.com)