Converged Platform for High Performance Databases

Julianna DeLuca, VCE
Pete Hammack, VCE
WHY CUSTOMERS RUN ORACLE ON VBLOCK SYSTEMS TODAY?

- Reduce HW/SW costs
- Consolidate Licenses
- Increase Utilization
- Provision Faster
- Improve Quality of Service and Availability – RAC Alternative

Pre-Engineered, Pre-Validated, Pretested

- Speed Deployment
- Aggregate Workloads
- Optimize & Standardize Infrastructure
- Lower Operational Cost
- Secure Environment
- Promote Innovation

Virtualization

Vblock Systems
VCE CUSTOMER RESULTS

- **5X** FASTER DEPLOYMENT
- **4X** LESS STAFF RESOURCE TIME
- **83X** BETTER AVAILABILITY
- **3X** LOWER COST

**CONVERGED OPERATIONS**

Source: May 2012 report by IDC entitled “Converging the Datacenter Infrastructure: Why, How, So What”
BE THE MOST STRATEGIC PLATFORM PARTNER TO ORGANIZATIONS YESTERDAY, TODAY AND TOMORROW

Yesterday – Legacy applications
Today - Cloud

Tomorrow – Big Data

- 1H 2013 – SAP HANA
- 2H 2013 to 1H 2014 –
  - High Performance Database - Oracle
  - Pivotal
  - Hadoop

THE TIMELINE IS PROVIDED FOR DISCUSSION ONLY. THE CONTENT CANNOT BE USED FOR CUSTOMER PURCHASE DECISIONS. WE RESERVE THE RIGHT TO CHANGE OUR TECHNICAL DIRECTIONS AND TIMELINES AT ANYTIME WITHOUT NOTICE
DATABASE RUN MIXED WORKLOADS WITH VCE

Vblock System For Databases Use Cases (n = 171)
- Yes, currently running on Vblock System: 58%
- No, but considering running on Vblock System: 15%
- No, Vblock System is not a good fit for this use case: 27%

Vblock System For Private Cloud Use Cases (n = 172)
- Yes, currently running on Vblock System: 57%
- No, but considering running on Vblock System: 21%
- No, Vblock System is not a good fit for this use case: 22%

Vblock System For App Dev/Test Use Cases (n = 158)
- Yes, currently running on Vblock System: 55%
- No, but considering running on Vblock System: 17%
- No, Vblock System is not a good fit for this use case: 28%

Vblock System For Microsoft Suite Use Cases (n = 156)
- Yes, currently running on Vblock System: 53%
- No, but considering running on Vblock System: 26%
- No, Vblock System is not a good fit for this use case: 21%

Vblock System For SAP/ERP Use Cases (n = 130)
- Yes, currently running on Vblock System: 50%
- No, but considering running on Vblock System: 24%
- No, Vblock System is not a good fit for this use case: 26%

Vblock System For Business Continuity/Disaster Recovery Use Cases (n = 160)
- Yes, currently running on Vblock System: 48%
- No, but considering running on Vblock System: 32%
- No, Vblock System is not a good fit for this use case: 20%

Vblock System For VDI Use Cases (n = 160)
- Yes, currently running on Vblock System: 38%
- No, but considering running on Vblock System: 41%
- No, Vblock System is not a good fit for this use case: 21%

Vblock System For Big Data/Analytics Use Cases (n = 118)
- Yes, currently running on Vblock System: 35%
- No, but considering running on Vblock System: 41%
- No, Vblock System is not a good fit for this use case: 25%

Vblock System For Remote/Branch Office Use Cases (n = 128)
- Yes, currently running on Vblock System: 33%
- No, but considering running on Vblock System: 34%
- No, Vblock System is not a good fit for this use case: 33%

Source: VCE 2013 Customer Satisfaction & Loyalty Survey
VCE PRODUCT STANDARDIZATION

- Virtualization, server, storage, networking, and security
- Pre-engineered, validated, and physical and logical integration
- Simplified management
- Solutions validation
- Roadmap planning, interoperability testing, change management, and upgrades
- VCE™ Support
REDUCING COMPLEXITY WITH CISCO UCS

- Embed management
- Remove unnecessary:
  - Switches
  - Adapters
  - Management modules
  - 10GbE unified fabric
- Power and cooling
  - 1/3rd less infrastructure
  - Lower power
- Built for virtualisation
  - Processor density
  - VM/host ratio
  - I/O improvement
  - Extended memory

Source: Cisco Customer Presentation 2013
DESIGN PHILOSOPHY: VBLOCK™ SPECIALIZED SYSTEM FOR HIGH PERFORMANCE DATABASES

- Purpose built, super-scalable for millions of IOPS
  - Ultra-performance with high availability
  - Maximizes CPU performance
  - Ultra low latency
  - Low TCO – operations and licensing
  - Integrated data protection options
- Flexible Oracle database implementations
  - OLTP and OLAP
  - Multi-database version support
- Multi-purpose workload capable
  - DB2, SQL
  - Mixed application workloads

Millions of IOPS?

More workload mix?

Millisecond latency?
**WHAT IS UNIQUE ABOUT SPECIALIZED SYSTEMS FOR HIGH PERFORMANCE DATABASES?**

1. **Choose VMAX and/or VNX based on technical fit, skillset, and governance relations, the world’s most trusted storage platform**

2. **Server flash for high IOPS and low latency, tuned with storage flash**

3. **Minimize loss and latency overhead, and maximize bandwidth**

4. **Mix virtual or bare metal workloads across the development, QA and production lifecycles**

5. **Exploit Vblock advantage – availability, life time assurance, ease of scaling, etc**

<table>
<thead>
<tr>
<th><strong>Server Flash - XtremSF/XtremSW for scale, application coherence and RAC</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Database Server</strong></td>
</tr>
<tr>
<td>Cisco C240 M3 – 2, 4 or 8 server options</td>
</tr>
<tr>
<td><strong>Optional Application Server</strong></td>
</tr>
<tr>
<td>Cisco C220 M3 – 2, 4 or 8 server options</td>
</tr>
<tr>
<td><strong>Network</strong></td>
</tr>
<tr>
<td>Nexus 5K, MDS, advanced networking configurations</td>
</tr>
<tr>
<td><strong>Next-Gen VNX 8000/7600/5800</strong></td>
</tr>
<tr>
<td>Optimized EFD, FAST VP</td>
</tr>
<tr>
<td>High performance and high capacity options available</td>
</tr>
<tr>
<td><strong>VMAX 40K</strong></td>
</tr>
<tr>
<td>Optimized EFD, FAST VP</td>
</tr>
<tr>
<td>High performance and high capacity options available</td>
</tr>
</tbody>
</table>

Aggregate mission critical applications and BI/DW with high performance databases
# Specialized System for High Performance Databases: Hardware Summary

<table>
<thead>
<tr>
<th></th>
<th>VMAX – 8 node</th>
<th>VMAX – 4 node</th>
<th>VNX- 8 node</th>
<th>VNX – 4 node</th>
<th>VNX – 2 node</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database servers (C240 – ES-2690, 2.9GHz)</td>
<td>8</td>
<td>4</td>
<td>8</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Database server cores</td>
<td>128</td>
<td>64</td>
<td>128</td>
<td>64</td>
<td>32</td>
</tr>
<tr>
<td>Database server RAM</td>
<td>6144 GB</td>
<td>3072 GB</td>
<td>6144 GB</td>
<td>3072 GB</td>
<td>1536 GB</td>
</tr>
<tr>
<td>XtremSF 700GB SLC</td>
<td>16</td>
<td>8</td>
<td>16</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Application servers (C220)</td>
<td></td>
<td></td>
<td></td>
<td>Optional 2, 4 and 8 nodes</td>
<td></td>
</tr>
<tr>
<td>Networking</td>
<td></td>
<td></td>
<td></td>
<td>Cisco MDS 9148 / 9513 FC SAN switches</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cisco Nexus 5548UP Ethernet switches</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cisco 6248 fabric interconnects</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cisco 2232PP fabric extenders</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cisco Nexus 3048 switches</td>
<td></td>
</tr>
<tr>
<td>Storage type</td>
<td>VMAX 40K</td>
<td></td>
<td>VNX 8000</td>
<td>VNX 7600</td>
<td>VNX5800</td>
</tr>
<tr>
<td>Raw Storage Capacity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Performance</td>
<td>141TB</td>
<td>71TB</td>
<td>105TB</td>
<td>61TB</td>
<td>29TB</td>
</tr>
<tr>
<td>High Capacity</td>
<td>589TB</td>
<td>295TB</td>
<td>541TB</td>
<td>233TB</td>
<td>114TB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
XTREMSF ADVANTAGES

**Performance**
Dramatic improvements in application latency and throughput—up to 1.13 million IOPS

**Flexibility**
Broad range of eMLC and SLC capacities for use as local storage or with XtremSW Cache – 2x700GB SLC chosen

**Efficiency**
Best TCO—lowest overhead, highest performance, lowest power consumption, best density
XTREMSW CACHE: PERFORMANCE WITH PROTECTION

Server Flash Software Coupled With XtremSF

- **Performance**: Dramatic improvements in latency and throughput
- **Intelligence**: Extends EMC FAST architecture into the server
- **Protection**: Backed by intelligent, resilient, highly available storage

- Support for Oracle RAC is with XtremSW 2.0.1
CONCLUSIONS AND NEXT STEPS

Conclusion
• The Vblock System is an ideal foundation on which to build your Oracle data management and application practices to achieve faster time to value today and in the future
• Transform your operations and drive business value
• Help you open up a world of strategic opportunities with EMC, Cisco and VCE

Next Steps
• Learn more at http://www.vce.com/
• Contact us for more questions – julianna.delua@vce.com or peter.hammack@vce.com
• Contact your EMC or VCE representatives