HPE Storage solutions for MSFT SQL Server

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TME, HPE Storage

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Reserved for Intel Optane introduction
SQL Server for mission-critical workloads

- Telco Billing Mediation
- Banking Core banking Internet banking Foreign exchange
- Healthcare Electronic Healthcare Records
- Manufacturing ERP traditional
- Public Sector Payment processing Student registration
- Online Gaming Transactions

- Availability
- Performance
- Scalability
- TCO
<table>
<thead>
<tr>
<th>Workload</th>
<th>Storage Type</th>
<th>Block size</th>
<th>Compression</th>
<th>Quota Exceeded Behavior</th>
<th>Deduplication</th>
<th>Implementation Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle OLTP</td>
<td>Oracle</td>
<td>8 KB</td>
<td>Enabled</td>
<td>Quota Exceeded Behavior</td>
<td>Deduplication Default</td>
<td>Set to Offline Disabled</td>
</tr>
<tr>
<td>Other Workloads</td>
<td>Other</td>
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<td>Quota Exceeded Behavior</td>
<td>Deduplication Default</td>
<td>Set to Offline Disabled</td>
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<tr>
<td>SharePoint</td>
<td>SharePoint</td>
<td>8 KB</td>
<td>Enabled</td>
<td>Quota Exceeded Behavior</td>
<td>Deduplication Default</td>
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<tr>
<td>SQL Server</td>
<td>SQL Server</td>
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<td>SQL Server 2012</td>
<td>SQL Server</td>
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<td>Enabled</td>
<td>Quota Exceeded Behavior</td>
<td>Deduplication Default</td>
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<tr>
<td>SQL Server Logs</td>
<td>SQL Server</td>
<td>4 KB</td>
<td>Enabled</td>
<td>Quota Exceeded Behavior</td>
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<tr>
<td>Veeam Backup Repository</td>
<td>Veeam Backups</td>
<td>4 KB</td>
<td>Enabled</td>
<td>Quota Exceeded Behavior</td>
<td>Deduplication Default</td>
<td>Set to Non-Writable Enabled</td>
</tr>
<tr>
<td>VMware ESX</td>
<td>Virtual Server</td>
<td>4 KB</td>
<td>Enabled</td>
<td>Quota Exceeded Behavior</td>
<td>Deduplication Default</td>
<td>Set to Offline Disabled</td>
</tr>
<tr>
<td>VMware ESX 5</td>
<td>Virtual Server</td>
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<td>Enabled</td>
<td>Quota Exceeded Behavior</td>
<td>Deduplication Default</td>
<td>Set to Non-Writable Disabled</td>
</tr>
<tr>
<td>VMware VDI</td>
<td>Virtual Desktop</td>
<td>4 KB</td>
<td>Enabled</td>
<td>Quota Exceeded Behavior</td>
<td>Deduplication Default</td>
<td>Set to Non-Writable Enabled</td>
</tr>
<tr>
<td>vSphere Datastore for Exchange</td>
<td>Exchange</td>
<td>4 KB</td>
<td>Enabled</td>
<td>Quota Exceeded Behavior</td>
<td>Deduplication Default</td>
<td>Set to Non-Writable Disabled</td>
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<tr>
<td>vSphere Datastore for SQL Server</td>
<td>SQL Server</td>
<td>4 KB</td>
<td>Enabled</td>
<td>Quota Exceeded Behavior</td>
<td>Deduplication Default</td>
<td>Set to Non-Writable Disabled</td>
</tr>
</tbody>
</table>
Infosight: Nimble Data Reduction – Compression + Deduplication

Data Reduction - AF Arrays

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

ORACLE

SQL SERVER

Data Reduction (Compression + Deduplication) (X)

90th percentile 50th percentile 10th percentile

HPE and Channel Partner Confidential
Reserved for Intel Optane introduction
SQL Server and Memory-Driven Flash setup

- SQL Server OLTP
- Financial brokerage account benchmarking tool
- 1 TB DB (not including transaction logs and tempdb)
- Intensity settings set to stress the solution
- Database is tested with and without Memory-Driven Flash enabled
- Data generated by 3PAR SSMC graphs, Microsoft Perfmon, and 3PAR CLI reports
Memory-Driven Flash enabled in SQL Server environment
Perfmon disk read response time

- Perfmon PhysicalDisk(_Total) Avg
  Disk sec/read response time for the SQL Server database disk using Memory-Driven Flash

- From the host perspective, there is a 59% decrease in latency (sec/read) with Memory-Driven Flash compared to when the benefit of NVMe SCM is disabled

- Decreased latency translates to faster database query responses
Memory-Driven Flash enabled in SQL Server environment

3PAR StoreServ Management Console

– Charts show the view from the array
  – Top chart is the Adaptive Flash Cache (Level-2 cache) Performance graph

– Memory-Driven Flash hit percentage increases after MDF is enabled

– Results are for all enabled volumes

– Bottom chart compares volume latency

– SQL Server database reads with Memory-Driven Flash enabled have latencies decreased more than 50% in this testing
HPE Timeless Storage

Today:
- HPE Primera all-flash array (A630, A650, or A670)
- HPE Technology Refresh Service 3-year agreement (paid up-front)
- HPE Proactive Care, Proactive Care Advanced, or Datacenter Care Services 3-year agreement.

Every 3 years:
- Renew your subscription to receive a non-disruptive, inter-generational upgrade to the latest equivalent HPE Primera model at no additional charge, exclusive of storage media.

As needed:
- Take advantage of limited-duration media trade-in offers for capacity consolidation, expansion, and modernization.
TIMELESS STORAGE - PERPETUAL REFRESHES WITHOUT CAVEATS

Year 1

2019
Buy HPE Nimble Storage +
3 Years Timeless Support

Next Generation
Storage Controllers
Guaranteed >25%
Performance Increase

Year 3

2022
Renew 3 Years Timeless Support
(Flat Price)

Next Generation
Storage Controllers
Proactive Media Refresh
Guaranteed >25%
Performance Increase

Year 6 & beyond

2025
Renew 3 Years Timeless Support
(Flat Price)

Guaranteed >25%
Performance Increase

Lowered
Business Risk

Guaranteed
Performance Increases

Cloud Like Agility for
On-Premises Storage
SQL Server 2008 end-of-service
HPE Gen10 servers and Superdome Flex support SQL Server 2017+

– Many organizations still depend on SQL Server 2008 for important functions
  – Including yours?

– SQL Server 2008 and 2008 R2 will no longer be supported starting on **July 9, 2019**
  – No security updates
  – Compliance concerns
  – Higher maintenance costs

– To **take full advantage of new capabilities in SQL Server 2017 and up**, infrastructure refresh is needed
  – Older infrastructure typically unsupported
  – **Modernize it with performance, reliability, maintainability**
HPE Storage for SQL Server: Availability, data service, integration
Run the industry-leading database on industry-leading flash storage

<table>
<thead>
<tr>
<th>Simplify SQL Server management with AI for the data center</th>
<th>Better SQL Server copy data management</th>
<th>Speed SQL Server DevOps with automation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistent performance with predictive flash</td>
<td>- Data protection</td>
<td>System automation</td>
</tr>
<tr>
<td><strong>99.9999%</strong> guaranteed availability from storage</td>
<td>- Business continuity</td>
<td>{ REST }</td>
</tr>
<tr>
<td></td>
<td>- Dev/test</td>
<td>Container platforms</td>
</tr>
<tr>
<td></td>
<td>- Reporting, analytics, audit, security, patches and updates, and more</td>
<td>kubernetes, MESOS, OPENSHIFT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Container types</td>
</tr>
</tbody>
</table>

Hewlett Packard Enterprise