HPE Storage solutions for MSFT SQL Server

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TME, HPE Storage

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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**
100% Availability Guaranteed

No special contract. No restrictive terms. No downtime.
Hardware platform high-availability design
N*9 → 100%

Disk & Enclosure HA
Controller HA
Host Ports/Paths HA
E2E Data Checksum

Data Redundancy across Disk Enclosures
Controller Active-Active
Transparent Failover
Write cache Persistent

Transparent handling of paths or controller loss

Reads
Writes

OS SCSI Layer
Host HBA
SAN switch
Front-end
Back-end
Drives

T10-DIF end-to-end data protection
Let AI watch over your data center with HPE InfoSight
Prevent cross-stack issues before they impact your Microsoft applications

Source: InfoSight analysis, HPE customer base
HPE InfoSight sees and predicts behind the scene

Customer portal

AI for infrastructure

- Advanced virtualizations
- Dashboards
- Blacklisting
- Machine learning
- Global learning
- Case automation
- Cloud-based analytics
- Pre-emptive recommendations
HPE Peer Persistence across two sites

- All Flash-optimized
- Predictive
- Tier-0
- Full PowerShell script-able

Peer Persistence
- $RPO + RTO = 0$
- High Availability across metro distances
- Automatic Transparent Failover
HPE Peer Persistence 3DC - normal operation

- All Flash-optimized
- Predictive
- Tier-0;
- Full PowerShell script-able

**Peer Persistence**
- RPO + RTO = 0
- High Availability across metro distances
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**Peer Persistence + 3DC**
- Concurrent metro-distance synchronous copy and continental distance asynchronous copy for customer’s most mission-critical data;
- Once A → C link failure detected, B → C link will be activated automatically and resumes replication from where A → C drops (aka delta-resync);
HPE Peer Persistence 3DC – Failover

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Snapshots and replication are not enough to protect you against ransomware

<table>
<thead>
<tr>
<th>Failures and business contingencies</th>
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<td>File loss</td>
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<td>File corruption</td>
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<tr>
<td>Hardware platform failure</td>
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<td>Data center outage and power failure</td>
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<td>Snapshots*</td>
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<td>System replication or primary storage replication</td>
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<td>Tape and cloud archive</td>
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*Only for recent file loss or file corruption*
Traditional Data Protection against Ransomware/Malware

3-2-1 rule

1. Keep one copy off-site
2. Store on two different media types
3. Have three copies of data

Storage Platforms

VM CTN SVR

Snapshot

Application Data

Storage Arrays

On-premises

Public

Private

Backup Device

On-premises
3-2-1 rule
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Application Data

Storage Platforms

VM CTN SVR

HPE Primera\Nimble\3PAR

On-premises

HPE RMC

Backup Device

Public

Private

Express Protect
Direct data movement Between Primary and Secondary storage

On-premises

3 2 1
What is HPE RMC-V/S/O/SH/E?

HPE RMC-V/S/O/SH/E

- Application managed data protection, includes both the RMC VM and a plugin installed in Application Servers.
- Application-consistency during primary array snapshot and Express Protect;
- Backup with nearly zero impact to DB/App servers, comparing to normal SQL Backup will typically impacts DB transactions/sec by 5x (from Evaluator Group testing )
- Tightly integrated with App/DB management API and GUI targeting VM/App/DB administrators self-sufficient management of data copies;

- 23x Faster backup
- 15x Faster restore