Making Hybrid IT Simple: Tips for Planning & Building Your Cloud Strategy

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What is HPE Complete?

The HPE Complete program resells best-in-class third party branded products

End-to-End Solutions
Minimize risk, complexity and cost of deploying 3rd party products and HPE technologies

Build with Confidence
HPE Complete Assured interoperability testing for solution validation

Multi-Vendor, Single Order
Purchase complete solutions via one HPE purchase order
HPE Complete Assured

Engineering Collaboration
Direct engineer-to-engineer collaboration
Joint test plan collaboration
Issue triage and support

Testing and Support
Zerto tested and supported on a variety of HPE products
- HPE Nimble Storage
- HPE 3PAR StoreServ
- HPE ProLiant Servers
- More to come…

Development
Whitepaper development
Training
HPE integration opportunities
Hybrid cloud replication
Three distinct clouds with unique attributes

**Private Cloud**
- Security and control
- Locality and performance
- Quality of service and speed

**Public Cloud**
- Economies of scale and “Pay-as-you-go” pricing
- XaaS models and APIs

**Hybrid Cloud**
- Best of both clouds
- Flexibility and data mobility
- Future proofing
Hybrid cloud replication

HPE Complete Assured
HPE, Zerto, and Microsoft Azure enhances hybrid cloud replication

Hypervisor-based replication
Zerto Virtual Replication (ZVR)

Private cloud
HPE servers, networking, and storage

Public cloud
Microsoft Azure

Tip: Optimize cost and function for desired experience
## Service tiers

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<thead>
<tr>
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<th>Description</th>
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<tr>
<td>2</td>
<td>On-premises replication tier</td>
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<td>3</td>
<td>Public cloud tier</td>
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<td>4</td>
<td>Combined Solution</td>
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Production tier

**Compute**
- 2x HPE ProLiant DL380 Gen9
- VMware ESX 6.5

**Network**
- HPE SN6000B (16Gb FC)
- HPE SN6010C (16Gb FC)

**Storage**
- HPE Nimble Storage CS500

**Software**
- Zerto Virtual Replication 6.0
- Microsoft SQL Server 2016
- HammerDB

**Tips**
- Use Nimble vCenter Plugin
- Install VMware Tools
- Use Nimble performance profile for SQL Server
Production tier

HPE InfoSight
86% of issues predicted and resolved

HPE Cloud Volumes
Near instantaneous snapshots with no performance penalty

The Strength HPE with Zerto

HPE InfoSight
Analyzes millions of sensors every second to prevent problems

HPE Nimble Storage Snapshots
Supplement Zerto with incremental snapshots that use redirect-on-write functionality to occupy minimal space

HPE Cloud Volumes
Eliminate cloud lock-in with HPE Cloud Volumes
## Service tiers

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On-premises replication tier

**Compute**
- 2x HPE ProLiant DL380 Gen9
- VMware ESX 6.5

**Network**
- HPE SN6000B (16Gb FC)
- HPE SN6010C (16Gb FC)

**Storage**
- HPE 3PAR StoreServ 20000

**Software**
- Zerto Virtual Replication 6.0

**Tip:**
Go to HPE SPOCK to determine support [http://www.hpe.com/storage/spock](http://www.hpe.com/storage/spock)

**Tip:** Use HPE OneView for VMware vCenter

- Zerto Virtual Manager
- VMware vCenter
- VMware ESX
- Virtual Replication Appliance
On-premises replication tier

The Strength HPE with Zerto

HPE 3PAR Thin Deduplication
The HPE 3PAR ASICs and 3PAR Express Indexing greatly reduce space consumption of highly redundant VM images and replicas

HPE Smart SAN for HPE 3PAR
Simplify configuration with embedded and protocol agnostic HPE Smart SAN technology
Fabric zones can be created and managed by the storage array, eliminating the need to configure zones prior to provisioning a LUN
Service tiers

1. Production tier

2. On-premises replication tier

3. Public cloud tier

4. Combined Solution
Public cloud tier

**Tip:** Pay attention to firewall ports that must be open

**Compute**
- Zerto Cloud Appliance (Azure)
- Windows Server 2016 VM (On-prem)

**Network**
- SoftEther VPN Client
- SoftEther VPN Server

**Storage**
- Microsoft Azure BLOB Storage

**Software**
- Zerto Virtual Replication for Azure 6.0
  (Available in Azure Marketplace)
Public cloud tier

The Strength of Zerto in the Cloud

Zerto Virtual Replication for Azure
Self-contained image available in the Azure Marketplace

Cost Optimization
VM replicas are stored in Azure BLOB storage
VM resources are only provisioned if a move or failover occurs

WAN Optimization
Compression, priority throttling, and signature matching can reduce data sent over the WAN
# Service tiers

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Combined Solution

HPE Complete Assured
Zerto Virtual Replication
HPE servers, networking, and storage
Microsoft Azure

Notable features like
Efficient asynchronous replication
Cross hypervisor replication
Offsite backup
File and folder recovery
WAN Optimization
One-click failover, migration, and recovery
Workload and data mobility

Tip:
ZVMs and VRAs require external connectivity

Tip:
Zerto Offsite Backup can be used for long-term protection
Lessons Learned

HPE Ecosystem
- HPE hardware and software
- HPE scripting libraries and SDKs
- HPE management plugins
- HPE documentation and expertise

Zerto Recovery Scripting
- Pre-recovery scripts
- Post-recovery scripts
- Complemented by HPE scripting libraries

Public Cloud Networking
- Networking challenges
  - On-prem firewall
  - Azure security group
  - VPN and Performance
- Zerto WAN optimization is critical
Additional Considerations

**HPE InfoSight VMvision**
Quickly identify and diagnose VM performance issues
Correlate performance across host, network, and storage layers

**HPE Storage Features**
HPE storage features can be used to complement Zerto
- Adaptive Perf (HPE 3PAR AO)
- Data Mobility (HPE 3PAR Peer Persistence)
- Thin Technologies (HPE 3PAR Thin Deduplication)

**HPE StoreOnce Integration**
Planned Zerto Offsite Backup integration with HPE StoreOnce Catalyst
Target early 2019
HPE Complete Links and Collateral

– HPE Complete
  – HPE Complete Website
    HPE.com → Hybrid IT with Cloud → Data Storage → Storage Networking → Complete your purchase
  – HPE Complete Solution Brief
    HPE Complete Website → Read Solution Brief

– QuickSpecs
  – HPE Complete Zerto
    HPE Complete Website → Zerto → QuickSpecs

– Technical Whitepapers
  – Hybrid cloud replication with HPE, Zerto, and Microsoft Azure technical whitepaper
    HPE Complete Website → Zerto → Documents → Hybrid cloud replication with HPE, Zerto, and Microsoft Azure technical whitepaper
  – Building an always-on data center with Zerto and HPE Storage technical whitepaper
    HPE Complete Website → Zerto → Documents → Building an always-on data center with Zerto and HPE Storage technical whitepaper
Use case
Automated failover and failback of Microsoft SQL Server VM in Microsoft Azure
Automated failover and failback of Microsoft SQL Server VM in Microsoft Azure

Overview
Simulate disaster at production tier and failover Microsoft SQL Server to public cloud tier

Steps
1. Remove production tier connectivity
2. Failover to public cloud tier
3. Restore production tier connectivity
4. Reverse protection
5. Move back to production tier
6. Reverse protection
Use case
Automated failover and failback of Microsoft SQL Server VM in Microsoft Azure
Thank You