LEARN HOW TO IMPLEMENT DATA PROTECTION, DIASTER RECOVERY, AND HIGH AVAILABILITY FOR YOUR MICROSOFT AZURE STACK SOLUTION!

Mark Evans, Product Manager
Experience: State-of-the-art technical engagement facility
- Customers immersed in Azure Stack technology with comprehensive programs from discovering, planning, designing, and producing proof-of-concept implementations
- Offerings tuned to your customer’s needs
- Goal of customers being 100% committed to further Azure Stack collaboration

Access: HPE ProLiant for Microsoft Azure Stack
- Azure Stack hardware and software solutions
- Azure Stack subject-matter experts from Microsoft and HPE

Locations: Multiple options
- Best experience: in-person at the ASIC:
  - Microsoft Technology Center in Bellevue, WA, USA
  - HPE Customer Engagement Centers in Geneva and Singapore
- Customer site and remote options available
HPE PARTNERS TO DELIVER SOLUTIONS FOR CUSTOMERS
Broad ecosystem of validated solutions

Partnering with ISVs to deliver customer solutions in 4 key areas:
− Data protection/high availability
− Deployment
− Monitoring/optimization
− Security
# HPE ProLiant for Microsoft Azure Stack Solution

<table>
<thead>
<tr>
<th>Component</th>
<th>Default</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environments</strong></td>
<td>Rack, cables, PDU, factory build</td>
<td>4-16 nodes Hybrid or All-Flash</td>
</tr>
<tr>
<td><strong>Server</strong></td>
<td>HPE ProLiant DL380 Gen10</td>
<td>HPE ProLiant DL380 Gen10</td>
</tr>
<tr>
<td><strong>Processor²</strong></td>
<td>Intel Cascade Lake Processors</td>
<td>10 – 28 cores</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.1 – 3.1 GHz</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>24 DIMM Slots 256 GB minimum</td>
<td>256GB², 384GB, 576GB, 768GB, 768GB (expandable)³, 1152GB, 15TB</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>12 HDD per server, 6-SSD per server</td>
<td>4TB, 6TB, 8TB, or 10TB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>800GB, 1.6TB, or 3.2TB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All flash: 800GB, 1.6 TB, 3.2TB, or 6.4TB (total capacity up to 102TB)</td>
</tr>
<tr>
<td><strong>Network</strong></td>
<td>25 GbE SFP28</td>
<td>FlexFabric 5945 48SFP28</td>
</tr>
<tr>
<td></td>
<td>1 GbE RJ45 (OOB Management)</td>
<td>FlexFabric 5900 AF-48G-4XG-2QSFPP+</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cisco C93180YC / C9348GC (customer acquisition)</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>110V and 220V HPE Power Advisor</td>
<td>HPE Foundation Care for Azure Services running on Azure Stack</td>
</tr>
<tr>
<td><strong>OOB server</strong></td>
<td>HPE ProLiant DL360 Gen10 8SFF CTO Server</td>
<td>HPE Datacenter Care</td>
</tr>
<tr>
<td><strong>Factory Build</strong></td>
<td>Rack, Stack, Cable, Load FW and SW, System Test and Validation, Connect to customer network, install Microsoft Azure Stack, Integrate with Azure AD</td>
<td>HPE Datacenter Care</td>
</tr>
<tr>
<td><strong>Onsite Installation</strong></td>
<td>Rack, Stack, Cable, Load FW and SW, System Test and Validation, Connect to customer network, install Microsoft Azure Stack, Integrate with Azure AD</td>
<td>HPE Datacenter Care</td>
</tr>
</tbody>
</table>

## DL380 Physical Nodes
- **"Hyper-converged"**
- All nodes within an Azure Scale Unit must be homogeneous so hybrid and all-flash nodes can’t be mixed

## Hybrid Nodes vs. All Flash Node

<table>
<thead>
<tr>
<th></th>
<th>Hybrid Nodes</th>
<th>All Flash Node</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max 16</td>
<td>Max 16</td>
<td></td>
</tr>
<tr>
<td>120TB RAW / Node</td>
<td>102TB RAW / Node</td>
<td></td>
</tr>
<tr>
<td>~40TB Usable / Node</td>
<td>~34 TB Usable / Node</td>
<td></td>
</tr>
<tr>
<td>Max Cap 16 nodes</td>
<td>Max Cap 16 nodes</td>
<td></td>
</tr>
<tr>
<td>1.9PB RAW</td>
<td>1.9PB RAW</td>
<td></td>
</tr>
<tr>
<td>640TB Usable</td>
<td>544TB Usable</td>
<td></td>
</tr>
</tbody>
</table>

## Max Cap 16 nodes
- 1.9PB RAW
- 640TB Usable

## Max Cap 16 nodes
- 1.9PB RAW
- 544TB Usable

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1. Processors must be identical pairs
2. 256 GB memory option results in 33% less memory bandwidth as compared with other options
3. 768 GB (expandable) memory option uses 12x 64GB DIMMs to enable future expansion to 1.5 TB

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**Flexible Capacity**

- HPE GreenLake Flexible Capacity
ADDRESSING FOUR KEY AREAS WITH ISV PARTNERS

Data Protection/Migration
High Availability
Monitoring and Billing
Security*

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DATA PROTECTION AND MIGRATION
NATIVE AZURE STACK DATA PROTECTION AND HIGH AVAILABILITY FEATURES

<table>
<thead>
<tr>
<th>Native Azure backup</th>
<th>No Azure Stack Native High Availability</th>
<th>Snapshots and replication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does not allow VM-level backups through hypervisor APIs</td>
<td>Does not provide HA for Azure Stack Stamp, Tenant VM, Tenant Data, Application, or Workload</td>
<td>Not available in Azure Stack</td>
</tr>
<tr>
<td>Lacks the enterprise capabilities of on-premises data protection solutions</td>
<td></td>
<td>Are primarily used for disaster recovery in Azure Public</td>
</tr>
<tr>
<td>Backs up data directly to Azure public cloud with no option to keep backed up data on-premises; high risk of missing SLAs (RTO)</td>
<td></td>
<td>Are not integrated with each application to ensure application-consistent recovery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Do not provide a viable long-term retention option</td>
</tr>
</tbody>
</table>

Microsoft
Virtual Server Agent (VSA) provides agentless migration of VMware and Azure VMs to Azure Stack VMs.

Workloads can be migrated from any source supported by Commvault® via client agent.

Commvault automation can ease provisioning of Azure Stack VMs for workload migrations.

https://www.commvault.com/why-commvault
### DISASTER RECOVERY OF AZURE STACK VMS

- Virtual Server Agent (VSA) provides agentless DR of Azure Stack VMs
- Live Sync replication automatically propagates changes to destination after each backup at the source
**VEEAM DATA PROTECTION: ARCHITECTURE**

*Announcing new Veeam RC for Microsoft Azure Stack*
From here you have many choices where to store data. Since data can be moved or copied any time you can always fine-tune. The media format makes sure you swap any device with another without losing payload or meta-data.

### Media Servers
- Physical Tape
- Virtual Tape
- Cloud (Incl. Azure BLOB)
- Archive Container

The number of VMs you can backup in parallel will depend on available network bandwidth and method used (data dedupe, compression or original data). You can add a Media Server any time to solve bandwidth/load issues. Any DP client can be a Media Server!

Start at 2 Media Servers for redundancy and load balancing. Systems should be hosted outside of the Stack to work independent. Physical systems allow FC SAN access to Backup devices.

From here you have many choices where to store data. Since data can be moved or copied any time you can always fine-tune. The media format makes sure you swap any device with another without losing payload or meta-data.
Veritas 360° approach has all routes covered

Whether you’re looking to protect data, lower costs, or enable the transformation of your digital business, you can rely on Veritas to meet your information needs. We offer one of the most comprehensive multi-cloud data management solutions in the industry, 360 Data Management.

https://www.veritas.com/
# High Level Comparison of Azure Stack Data Protection ISV’s

<table>
<thead>
<tr>
<th></th>
<th>Azure Backup Server</th>
<th>Azure Site Recovery</th>
<th>Commvault</th>
<th>Veeam</th>
<th>Veritas</th>
<th>Micro Focus Data Protector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Official Azure Stack Support</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Azure Stack Data Protection Architecture</td>
<td>Uses agent to protect Azure Stack VM</td>
<td>For BC/DR and migration</td>
<td>Uses Azure Stack API with or without Agent-in-Guest</td>
<td>Uses Azure Stack API with Agent-in-Guest</td>
<td>Uses agent to protect Azure Stack VM</td>
<td>Uses agent to protect an Azure Stack VM</td>
</tr>
<tr>
<td>Backup and Restore of full VM using Azure Stack APIs</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Application and File level backup (Agent-in-Guest support)</td>
<td>Only supports SQL, SharePoint, and Windows OS</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Migration of VM</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Disaster Recovery of VM</td>
<td>No</td>
<td>Yes, only supports Azure Stack to Azure</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Azure Stack Blob storage backup and recovery</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
HIGH AVAILABILITY
F5 APPLICATION HIGH AVAILABILITY

<table>
<thead>
<tr>
<th>Border Device</th>
<th>Border Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenant Workload</td>
<td>Tenant Workload</td>
</tr>
<tr>
<td>TOR 1</td>
<td>TOR 2</td>
</tr>
<tr>
<td>BMC</td>
<td>BMC</td>
</tr>
<tr>
<td>Software Load Balancer 10.11.25.40</td>
<td>Software Load Balancer 10.12.25.38</td>
</tr>
<tr>
<td>Web 1</td>
<td>Web 2</td>
</tr>
<tr>
<td>Web 3</td>
<td>Web 4</td>
</tr>
<tr>
<td>Instance Public IP 10.1.0.4:3387</td>
<td>Instance Public IP 10.1.0.4:3390</td>
</tr>
<tr>
<td>Instance Public IP 10.1.0.5:3388</td>
<td>Instance Public IP 10.1.0.5:3391</td>
</tr>
<tr>
<td>Hypervisor</td>
<td>Hypervisor</td>
</tr>
<tr>
<td>LTM</td>
<td>LTM</td>
</tr>
<tr>
<td>Internal Self IP 10.1.220.104</td>
<td>Internal Self IP 10.1.220.111</td>
</tr>
<tr>
<td>Virtual Server 10.11.25.40</td>
<td>Virtual Server 10.12.25.40</td>
</tr>
<tr>
<td>Pool Members 10.11.25.40</td>
<td>Pool Members 10.12.25.40</td>
</tr>
<tr>
<td>Load Balancing Method Least Connection</td>
<td>Load Balancing Method Least Connection</td>
</tr>
<tr>
<td>Health Monitor http:</td>
<td>Health Monitor http:</td>
</tr>
</tbody>
</table>

Microsoft
Microsoft Azure Stack

ZeroDown® BCaaS Software

Deploy a simple, Business Continuity as a Service solution for Azure Stack.

ZeroDown® BCaaS can also be purchased per application per month and consumed on a pay as you need basis through the Microsoft Azure Stack Marketplace.

Note: Obtaining ZeroDown Software for Azure Stack first requires that you have an Azure Stack Stamp with a Cloud Service Provider or hosting service. BYOL, or “bring your own license,” is the process used to purchase and deploy the software.

http://www.zerodownsoftware.com/
MONITORING AND BILLING
HPE Adaptive Management Services

EXPERTISE TO RUN YOUR CLOUD AND MORE

Monitor
- Automated alerts and triage

Operate
- Incident Management
- Problem Resolution

Administer
- Patching
- Security updates
- Performance & capacity management

Advise & Optimize
- Application best practices
- Infrastructure optimization
- Advisory Services
- Continuous improvement

Secure remote access

On-Premises or Cloud

Remote Delivery

Workload
- Application
- Middleware
- Virtualization
- Operating System
- Infrastructure

Microsoft
SIMPLIFYING IT WITH HPE GREENLAKE AND MICROSOFT AZURE STACK

Consume Azure-consistent services from your data center

HPE ProLiant for Azure Stack
Highly configurable Azure Stack solution

Consumption-based billing
Pay-per-use consumption of complete solution

Common developer experience
Portability between Azure and Azure Stack

Integrated system management
Simplified operations with HPE OneView

Single vendor support
Centralized support & billing of Azure/Azure Stack

Optionally Operated for you
Free your teams for more valuable contribution

HPE expertise
Design, implement, train for faster time to value

Consumption-based billing, remote monitoring, and active capacity management

1 minimum commitment may apply
HPE DEMONSTRATION PORTAL

https://hpedemoportal.ext.hpe.com/

- Recorded Demo
- Download Demo Guides
- Access Live Demo Now
- Book Live Demo
NEXT STEPS

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Visit online or in person
Visit the HPE and Microsoft Azure Stack Innovation Center
https://www.hpe-microsoftazurestack.com/

Try It Out
Single Node PoC
THANK YOU

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