HPE Synergy
composable infrastructure ecosystem & HPE OneView

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HPE Synergy ecosystem Abstract: HPE Synergy Composable Infrastructure ecosystem & HPE OneView
Discover the value of composable infrastructure from execution to economics in today’s hybrid world. Find out how HPE Synergy is future-proofing their data centers for today’s workloads and tomorrow’s disruptors. Does your ability to get infrastructure deployed quickly slow down your delivery of new apps and services? HPE OneView with its Unified API with single line of code accelerates your DevOps environments by automating provisioning and management of physical infrastructure with Red Hat Ansible.
IT must now support hybrid delivery models

Two infrastructure models are not sustainable

Traditional apps
- Ops driven
- Cost focused

Cloud apps
- Apps driven
- Agility focused

How can I support both?

The Idea Economy
A new class of infrastructure makes hybrid IT simple

Virtualization and Automation
- Simplified IT Ops for on-premises IT

HPE OneView

HPE Hyper Converged
HPE CloudSystem

Private Cloud
- VM Vending
- Simplified internal IaaS

Simple Hyperconverged Infrastructure

Shared Converged Infrastructure

Optimized Traditional Infrastructure

Fluid Composable Infrastructure

Hybrid IT Next Gen
- Multi-cloud as a service platform
- Simple federated experience
- Fluid pools of Clouds, Services, and Infrastructure

HPE Synergy
HPE “NewStack”

Operations optimized

Application optimized
Different compute for different needs

General Purpose or Mission Critical:

- Virtualized
- Containerized
- Bare Metal

Different workloads and IT tiers...all within a single infrastructure
HPE Synergy Image Streamer
Manage physical servers like virtual machines (VMs)

– Deploy and Update infrastructure rapidly
– Enable true stateless operation
  – Integrate your compute profiles with your golden images (OE and I/O driver) and your personalities (OS and application) for rapid implementation onto available hardware.
– Deploy bare-metal compute modules to boot directly into a running OS
– Updates to your golden images can be quickly re-created into bootable images for multiple compute modules.
– Ensure image quality and consistency by using your tested operating environments and personalities.
– Customize your images and environment using the provided tools
– Unified API (or GUI) access is available to applications and developers

<table>
<thead>
<tr>
<th>Reduce complexity</th>
<th>Accelerate changes</th>
<th>Simplify deployment</th>
<th>Efficient scaling</th>
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</thead>
<tbody>
<tr>
<td>Your Infrastructure as Code</td>
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Operating Systems supported – **UPDATED 4/24/17**

HPE Synergy Operating Systems and Hypervisors

**Microsoft Windows Server**
- Microsoft Windows Server 2012 R2 Datacenter and 2012 R2 Standard

**Linux**
- Red Hat Enterprise Linux 6.9, 7.3 (with Errata), and 7.4 GA (64-bit) (includes KVM & RHEVH)
- SUSE Linux Enterprise Server 11 SP4, 12 SP2 and 12 SP3 (64-bit) (includes XEN & KVM)

**Hypervisors**
- Microsoft Hyper-V Server 2012 and 2012 R2
- Microsoft Hyper-V 2016
- VMware vSphere 6.0 U3 and 6.5
- VMware vSphere 2016 (6.5) U1

**Enabled Operating Systems (Not Supported or Certified by HPE)**
- CentOS 6.9 and 7.4
- On SY480 with GPU Only:
  - Windows 10 Pro & Enterprise Client OS
  - RHEL Desktop/Workstation 7.3 and 8.0
  - SLES Desktop 12 SP2

**Content Subject to change** – please check the OS Support Matrix for the latest [www.hp.com/go/ossupport](http://www.hp.com/go/ossupport)

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1 Linux is now 64-bit only.
HPE Composable Infrastructure Ecosystem

Bob Fraser, Synergy composable ecosystem product manager
Composable Infrastructure
Architectural design principles

Unified API
- Single line of code to abstract every element of infrastructure for full infrastructure programmability
- Bare-metal interface for Infrastructure as a Service

Software-Defined Intelligence
- Template-driven workload composition
- Frictionless operations

Fluid Resource Pools
- Single infrastructure of disaggregated pools
- Physical, virtual, and containers
- Auto-integrating of resource capacity
Benefits of HPE Composable Infrastructure
Your infrastructure as code

REDUCE
over-provisioning and CapEx

DEPLOY
at cloud-like speed

SIMPLIFY
with frictionless updates

DEVELOP
more apps, faster
Automating physical infrastructure is complex and time consuming

**Different tools and APIs for every tasks**

<table>
<thead>
<tr>
<th>API 1</th>
<th>API 2</th>
<th>API 3</th>
<th>API 4</th>
<th>API 5</th>
<th>API 6</th>
<th>API 7</th>
<th>API 8</th>
<th>API 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Update Firmware</td>
<td>Update drivers</td>
<td>Set BIOS settings</td>
<td>Set unique identifiers (WWN, SN, UUID, MAC)</td>
<td>Configure smart array</td>
<td>Install OS</td>
<td>Configure network connectivity</td>
<td>Configure SAN zoning</td>
<td>Configure 3PAR array</td>
</tr>
</tbody>
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1000+ lines of automation code

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1 Based on data from a large retail customer using 3rd party servers who asked HPE to create equivalent configuration management scripts for HPE ProLiant servers.
Only HPE delivers a Composable Infrastructure API
Transforms physical infrastructure into a single line of code

New-HPOVProfile -name myCloud -template SynergyCloud

Unified API.
DevOps Friendly.
Makes bare metal as simple as the public cloud.

Reduce time to stand up infrastructure from hours to minutes

* Clutch Cost to Build a Mobile App: A Survey + HPE internal tests.
Composable ecosystem helps deliver apps and services faster and easier

Software Defined Intelligence
Unified API
Fluid Resource Pools

DevOps engine
IT Ops engine

Cloud engine

Facilities engine

Developer toolkits

Powered by HPE OneView

www.hpe.com/info/composableprogram
Bringing infrastructure as code to physical infrastructure

Automating infrastructure deployment with HPE OneView

**Consumer:** Orders resources from the menu

- Automation tool
- SDK/language binding

**Provider:** Menu of infrastructure as code

- Unified API
  - HPE OneView template

**Resource pool**

1. Define infrastructure template in HPE OneView
2. Deploy infrastructure with automation tool
3. Provision application with automation tool
4. Done!
Spend less time on plumbing, more time on service delivery

- Orchestration and Automation layers are where commonality is defined
- Multi-Vendor stack requires thousands of lines of code to develop and maintain
- HPE stack can accomplish the same thing with a single line of code
- Less code = more reliable product
Automation example: Ansible
Provision and update bare metal infrastructure with Ansible and HPE Synergy Composer

**Ansible playbook**  
*(Consumer)*

Automatically provision entire stack from bare metal through application in minutes

**HPE Composable API**  
*(Provider)*

Provision and update bare metal with one line of code – in the same way as virtual and cloud resources

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Delivering on the Composable Infrastructure vision
Ansible playbooks automate application stack install

Playbook

# Configure and deploy the web servers.
- hosts: webservers
  remote_user: root
  roles:
  - base-apache
  - web

# Configure and deploy the load balancer.
- hosts: lbservers
  remote_user: root
  roles:
  - haproxy

Inventory

Sample playbook. Assumess servers ready to land the application stack with hardware configured and OS installed
Ansible modules for HPE OneView add infrastructure provisioning into your Ansible playbooks

# Deploy physical servers with an OS
- hosts: all-servers
gather_facts: no
roles:  
  - hpe-oneview-server

# Configure and deploy the web servers
- hosts: webservers
  remote_user: root
  roles:  
    - base-apache  
    - web

# Configure and deploy the load balancer.
- hosts: lbservers
  remote_user: root
  roles:  
    - haproxy
Demo: HPE OneView and Ansible
Ecosystem Resources Now Available
www.hpe.com/Info/composableprogram

Contact HPE
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Technical support: ComposableAPIsupport@hpe.com
Thank you