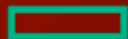


RED HAT FORUM 2018 ZURICH



**PRODUCTION READY INFRASTRUCTURE SOLUTIONS FOR RUNNING
OPENSIFT IN EFFICIENT, SECURE & SUPPORTED MANNER**

KIRIL PETSEV	ARCHITECT SOFTWARE DEFINE INFRA HPE
PETER MATTEI	MASTER TECHNOLOGY CONSULTANT HPE
JENS GERLACH	BUSINESS DEVELOPMENT MGR RED HAT

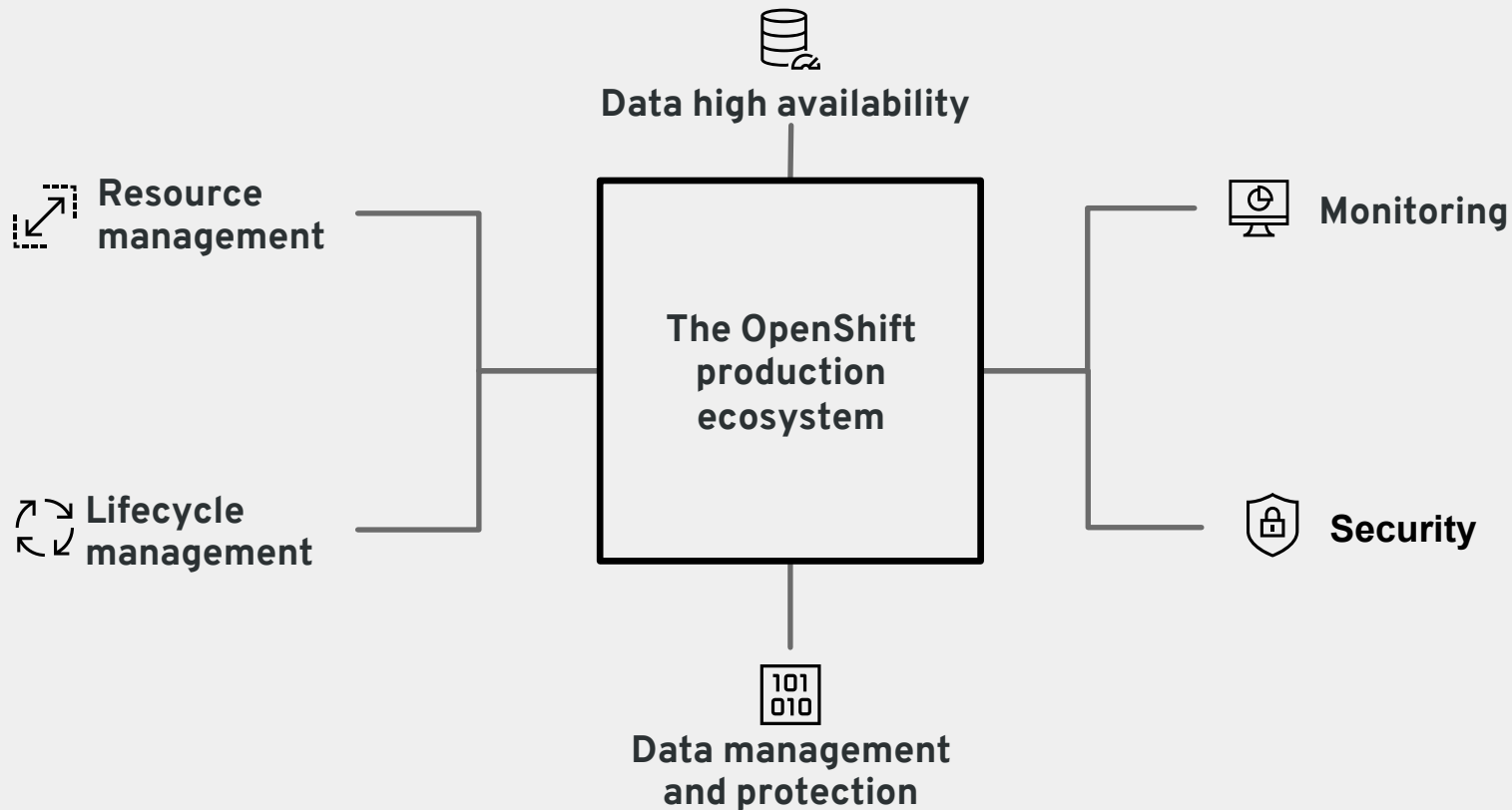


**Hewlett Packard
Enterprise**

Agenda

- Infrastructure considerations for OpenShift
- HPE and Red Hat solution for OpenShift on premise
- Data high availability, management and protection
- Wrap-up
- Q&A

OpenShift in production



Infrastructure consideration for on premise OpenShift Container Platform

Resource Management

- Complex and slow provisioning and even more complex to scale dynamically

Lifecycle Management

- Hard to automate, involving manual dependency checking

Monitoring

- Not consolidated across all layers

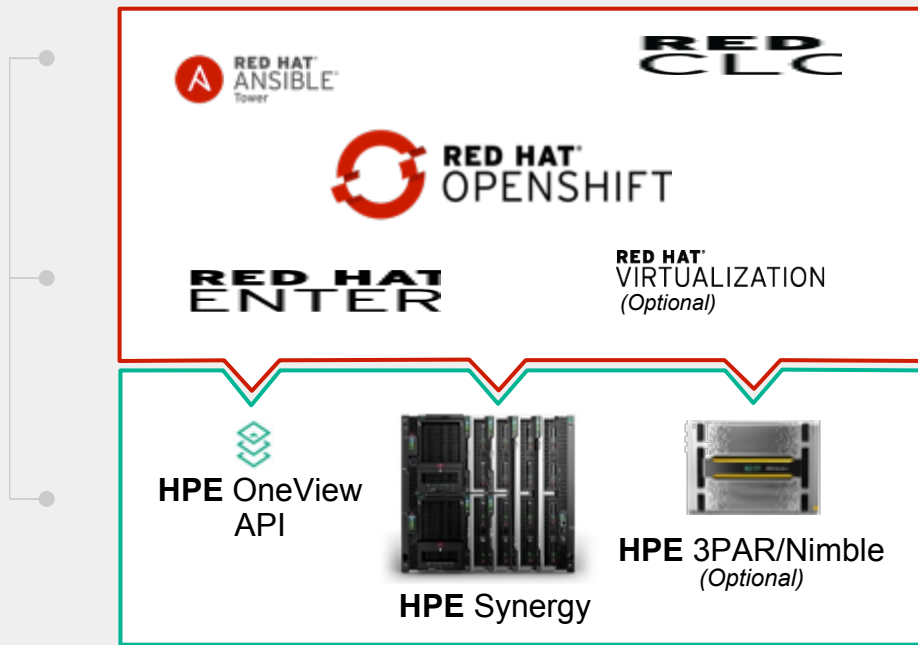
Security

- Not fully secure lifecycle
- Challenges with access segregation and multitenancy

What is the answer from HPE and Red Hat?

EFFICIENT, SECURE & SUPPORTED SOLUTION

- Centralized Management, Monitoring and Automation
- Containers Apps Build and Deploy platform
- Composable Infrastructure



How HPE Composable Platforms help?



Simplify deployment

Accelerate time to value



Reduce update time

Optimize operations



Flex resources on demand

Improve resource utilization and ROI



Add a proven security

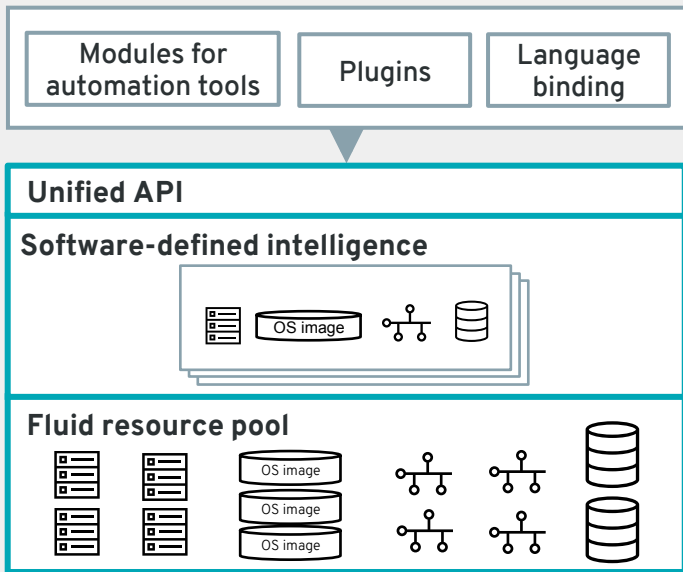
Protect and stay compliant



Add a robust persistent storage and data protection

HPE Composable Infrastructure

Automation & Orchestration



Broad Technology Partners Ecosystem

API abstractions for seamless integration without lock-in.

Full infrastructure programmability and Secure Perimeter Control *

Simplified provisioning and lifecycle management operations

Pool of compute, storage, network and OS Images for flexible resources assignment

* Two-factor authentication, Role & Scope based access control, Session encryption

HPE Synergy - The platform for Composable Infrastructure

Synergy Composer

(Powered by OneView
and Image Streamer)



UI / API

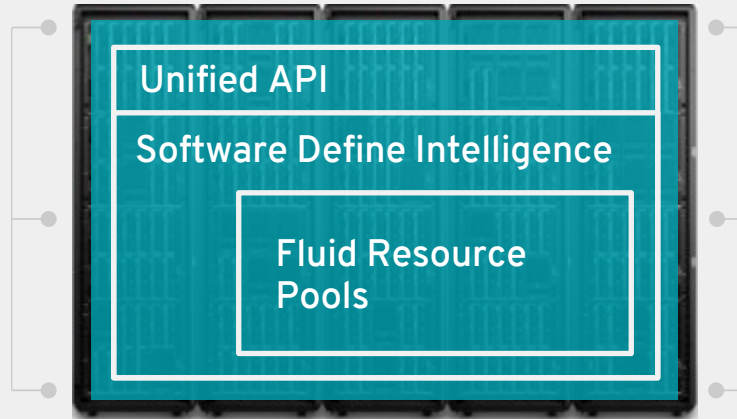
Manage up to
x21 Frames



Composable Compute



Composable Frame



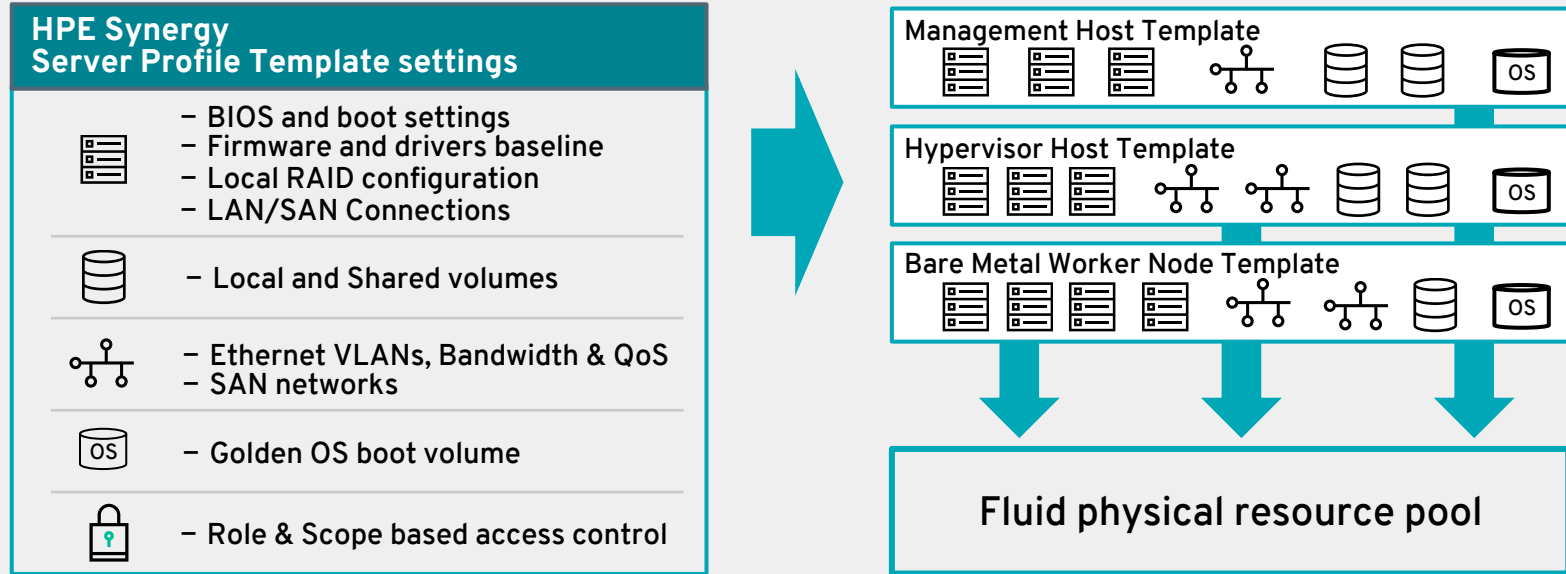
Composable Fabric



Composable Storage



Manage physical infrastructure with Software Defined Intelligence



Intelligent unified templates ensure fast & consistent deployments

Configure compute, storage and networking at one place from UI or API with HPE Synergy Unified Template

Edit ESX_Node_Template_Cluster1 General

General

Name: ESX_Node_Template_Cluster1

Description: ESX_Node_Template_Cluster1

Server Profile

Server profile description: ESX_Node_Template_Cluster1

Server hardware type: SY 480 Gen10.1 **Close**

Enclosure group: CXC-Romage **Close**

Activity: Device bay

OS Deployment

To define OS deployment settings, select an enclosure group configured for OS deployment.

OS deployment plan: Intel-Cisco ESX Server/ESXi Deployment

Deployment Settings

Setting	Value
Domainname	esx.local
Hostname	esxnode
ManagementNIC	mgmt
IP configuration	<input checked="" type="checkbox"/> Auto <input type="checkbox"/> DHCP <input type="checkbox"/> User-specified
IPV4 address	not set
Netmask	255.255.255.0
Gateway	192.168.254.1
DNS-1	192.168.254.12
DNS-2	192.168.254.11
NIC address	pending assignment
Reboot	automatic
Control Reboot	automatic

Firmware

Firmware baseline: HPE Synergy Custom SMP 2018-06-19 2018-07-09 version 2018.070900

☐ Force installation

Installation method:

- ☒ Firmware and OS Drivers using Smart Update Tools
- ☐ Firmware only using Smart Update Tools
- ☐ Firmware only

Activate firmware: ☒ Immediately ☐ At a scheduled date and time ☐ Not scheduled

Connections

☒ Manage connections

ID	Name	Network	Port	Boot	
1	Deployment Network A	192.168.254.12/24	VLAN10	Hpeasimex 51-n	ESX primary
Type: Ethernet					
MAC address: Auto					
Requested bandwidth: 23 Gbps					
Link aggregation group: None					
Initiator name: not set					
Initiator IP address: pending assignment					
Initiator subnet mask: not set					
Initiator gateway: not set					
Target name: pending assignment					
Target LUN: pending assignment					
Target IP address: pending assignment					
Storage IP address: not set					
CHAP name: not set					
2	mgmt	192.168.254.12/24	VLAN10	Hpeasimex 51-n	Not bootable
Type: Ethernet					
MAC address: Auto					
Requested virtual functions: None					
Requested bandwidth: 23 Gbps					
Link aggregation group: None					
3	vswitch	192.168.254.12/24	VLAN10	Hpeasimex 51-n	Not bootable
Type: Ethernet					
MAC address: Auto					
Requested virtual functions: None					
Requested bandwidth: 23 Gbps					
Link aggregation group: None					
4	Production	192.168.254.12/24	VLAN10	Hpeasimex 51-n	Not bootable
Type: Ethernet					
MAC address: Auto					
Requested virtual functions: None					
Requested bandwidth: 23 Gbps					
Link aggregation group: None					

Add connection

Local Storage

Integrated storage controller:

Managed by Controller:

Write cache: Enabled

Initialization will occur on next assignment to server hardware

Name	Type	Back End LUNs	Number of Drives	Size GB	Drive Technology	Boot	Accelerator
LocalVolume	Logical drive	RAID 1	2	n/a	not specified	<input type="checkbox"/>	Managed manually

SAN Storage

☒ Manage SAN Storage

Host OS type: VMware ESXi

Volume Attachments

Add volume

Boot Settings

☒ Manage boot mode

Boot mode: UEFI optimized

Secure boot: Managed manually

PIE boot policy: Auto

☒ Manage boot order

Primary boot device: Hard disk

BIOS Settings

☒ Manage BIOS

Using default values

Edit BIOS settings

Advanced

ESXi initiator name: ☒ Virtual ☐ User-specified

NIC addresses: ☒ Virtual ☐ Physical

Switch addresses: ☒ Virtual ☐ Physical

Serial number(CAID): ☒ Virtual ☐ Physical

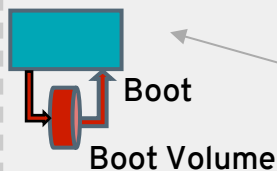
Changed: Firmware baseline to HPE Synergy Custom SMP 2018-06-19 2018-07-09 version 2018.070900

OK **Cancel**

Built-in interdependency dependency check

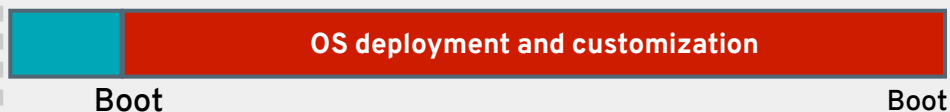
Accelerated provisioning with HPE Synergy

Innovative provisioning with Synergy Composer templates and Image Streamer

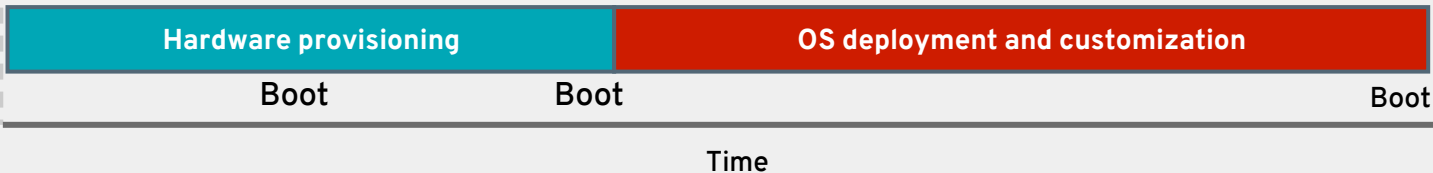


Up to
10X faster

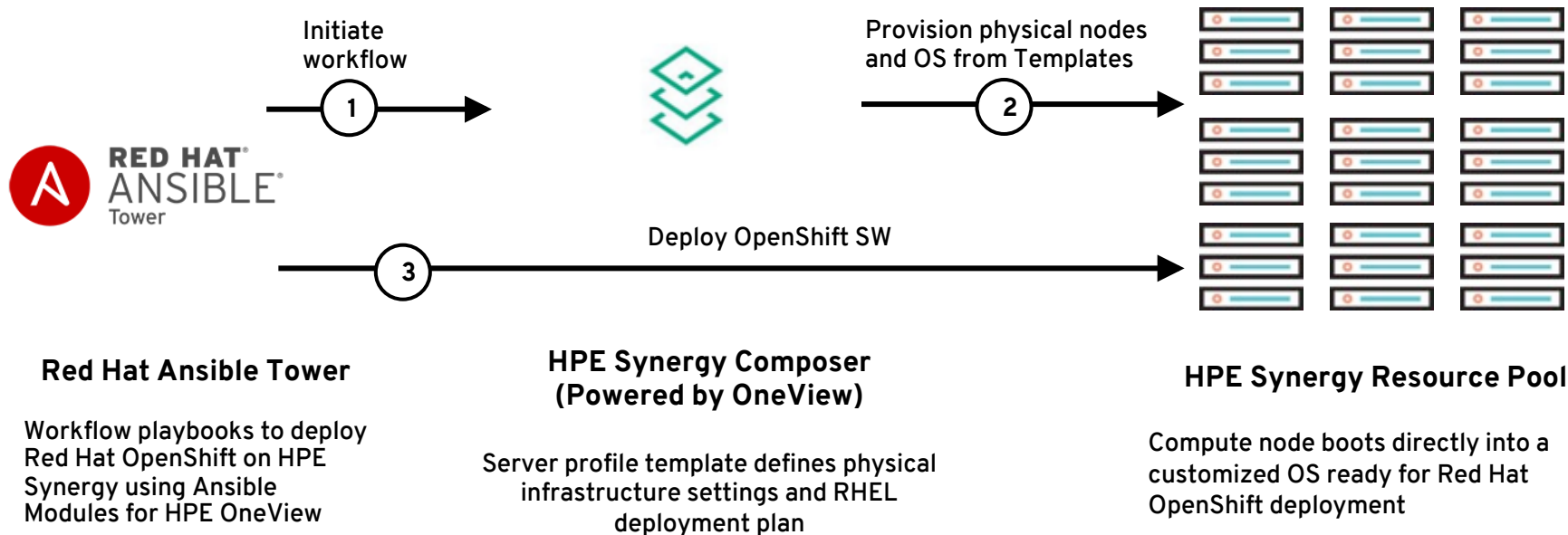
Streamline provisioning with Synergy Composer templates



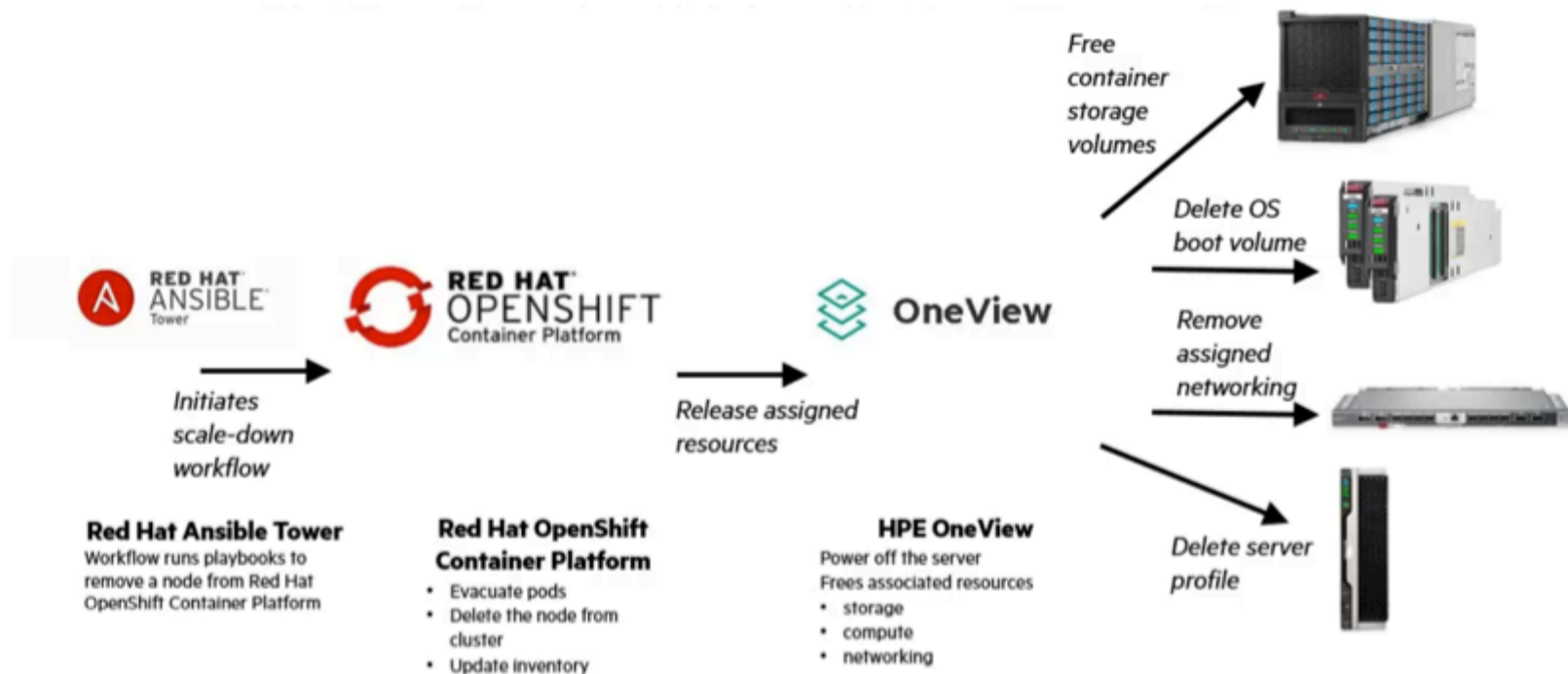
Traditional provisioning process



Fast bare-metal OpenShift deployment and scale



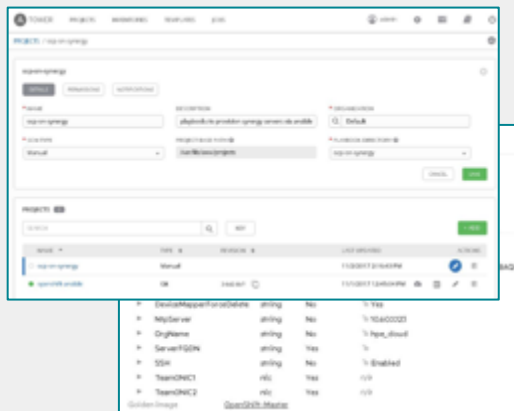
Fast Scale-down bare-metal worker cluster



Fast Start

2

Add in Ansible Tower the **git** repositories “ocp-on-synergy” and “OpenShift-ansible”



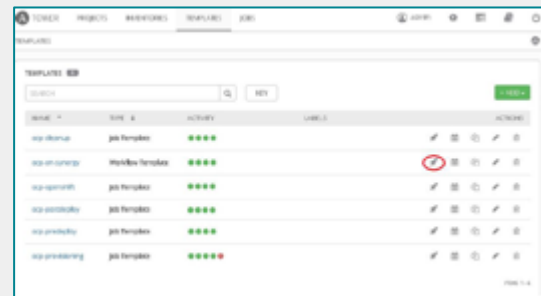
3

Create Ansible **workload** and **job templates** from the playbooks



4

Deploy Red Hat OpenShift Container Platform and scale out/in physical nodes **with one click**



1

Add in Synergy the RHEL OS deployment plans from **git** repository “RC-RHEL-OpenShift”

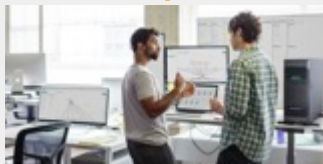
Accelerate OpenShift adoption with HPE

Reference architectures



HPE OpenShift solutions (ecosystem, deployment guide, automation playbooks)

Development



Accelerate developer productivity

Production



Simplify the IT experience

Operations optimized

Fast Time to Value

Mitigate Risk

Maximize Resource Utilization

STORAGE FOR OPENSIFT

Why Do Containers Need Storage?

- Containers are not persistent by default. App data is lost when containers die.

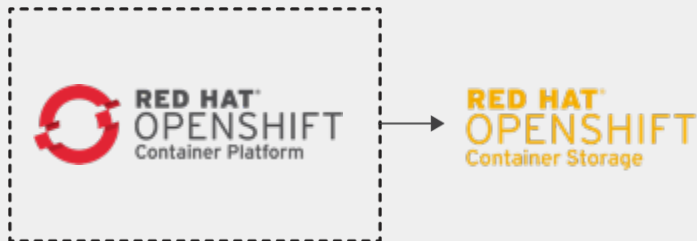
Why is container storage a pain point?

- Complex. Even more complicated when container orchestration is involved and applications need to be scaled out

Why Red Hat OpenShift Container Storage?

- Advanced storage capabilities, deeper integration with OpenShift, better price/performance than traditional storage
- OpenShift Container Storage is open, scalable and has consistent user experience across the hybrid cloud (compliments the OpenShift value proposition).

TWO FLAVORS OF CONTAINER STORAGE



OPENSIFT CONTAINER STORAGE INDEPENDENT MODE

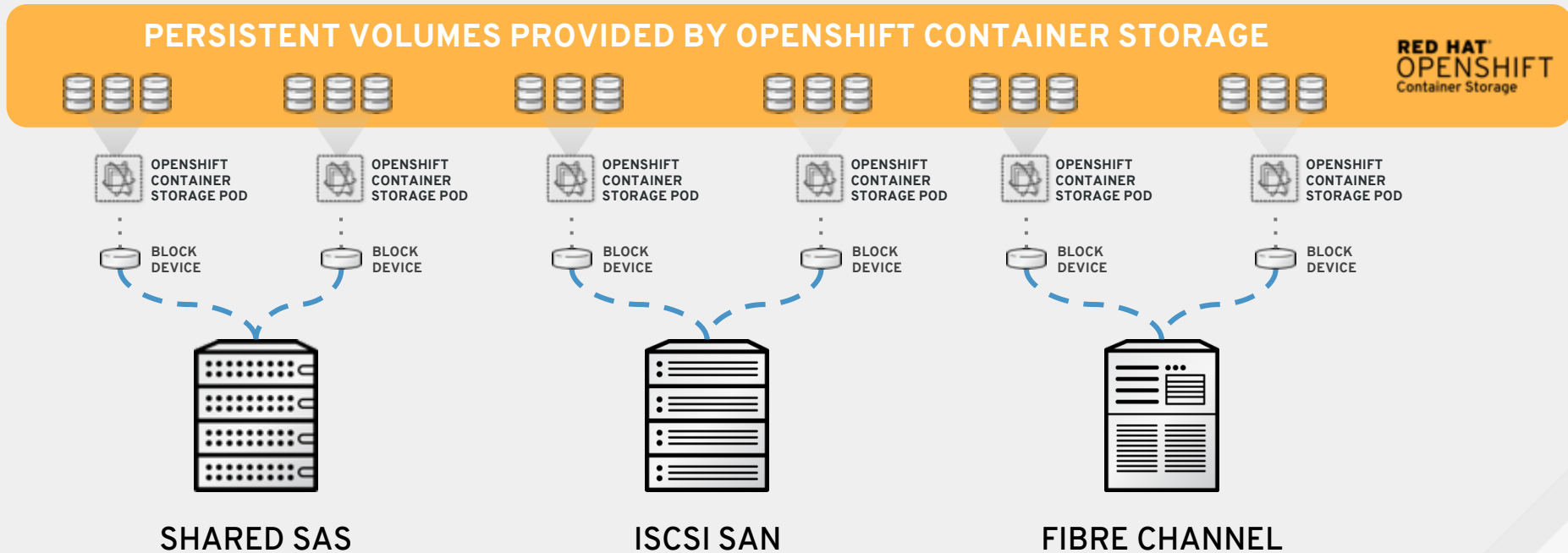
Use existing investment in traditional storage,
managed by storage admin – attach to standalone storage



OPENSIFT CONTAINER STORAGE CONVERGED MODE

Highly scalable, enterprise-grade storage,
fully integrated into OpenShift Container Platform

LEVERAGE EXISTING STORAGE...

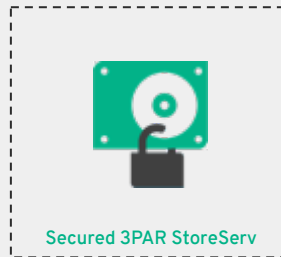


3PAR Leadership – Security



Management

IPv6 and SSH capabilities,
WEB API, LDAP user authentication, Common Access
Card (CAC) Two Factor Authentication (2FA) via LDAP



Data-at-rest Encryption

All data can securely be encrypted using
AES256 Self-Encrypting FIPS drives to
protected against theft and misuse

For more details see the HPE 3PAR Secure Service Architecture whitepaper: <https://h20195.www2.hpe.com/V2/getpdf.aspx/4AA3-7592ENW.pdf>

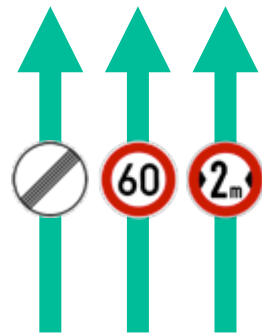
HPE 3PAR Volume Plug-in for OpenShift



```
---
kind: StorageClass
apiVersion: storage.k8s.io/v1
metadata:
  name: my-storage-class
provisioner: hpe.com/hpe
parameters:
  provisioning: "thin"
  dedupe: "true"
  virtualCopyOf: "Volume"
  retentionHours: "24"

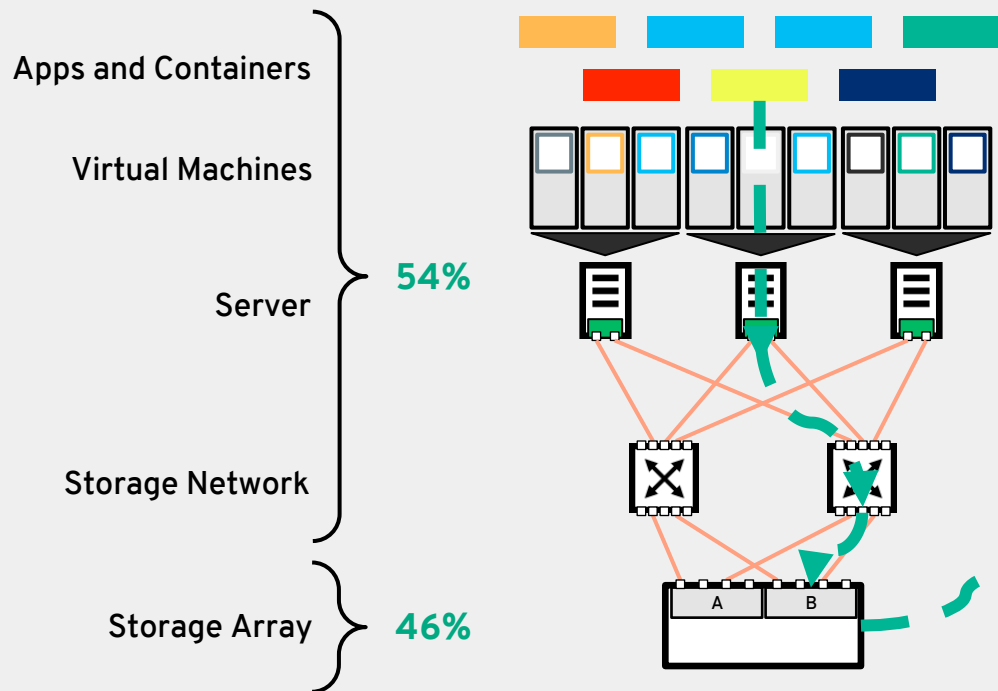
---
kind: PersistentVolumeClaim
apiVersion: v1
metadata:
  name: my-pvc
spec:
  accessModes:
    - ReadWriteOnce
  resources:
    requests:
      storage: 500G
  storageClassName: my-storage-class
```

	Parameters
	flash-cache: "true"
	qos-name: "vvset_iops" qos-name: "vvset_throughput" qos-name: "vvset_latency"
	provisioning: "thin" crovisioning: "full"
	dedupe: "true" compression: "true"
	virtualCopyOf: "Volume" expirationHours: "8" retentionHours: "8"
	cloneOf: "Volume_Clone"
	Coming in the fall release: Remote Copy and Peer Persistence



Values:
Min and max IOPS
Min and max MB/s
Latency goal ms

HPE InfoSight – what's the point?

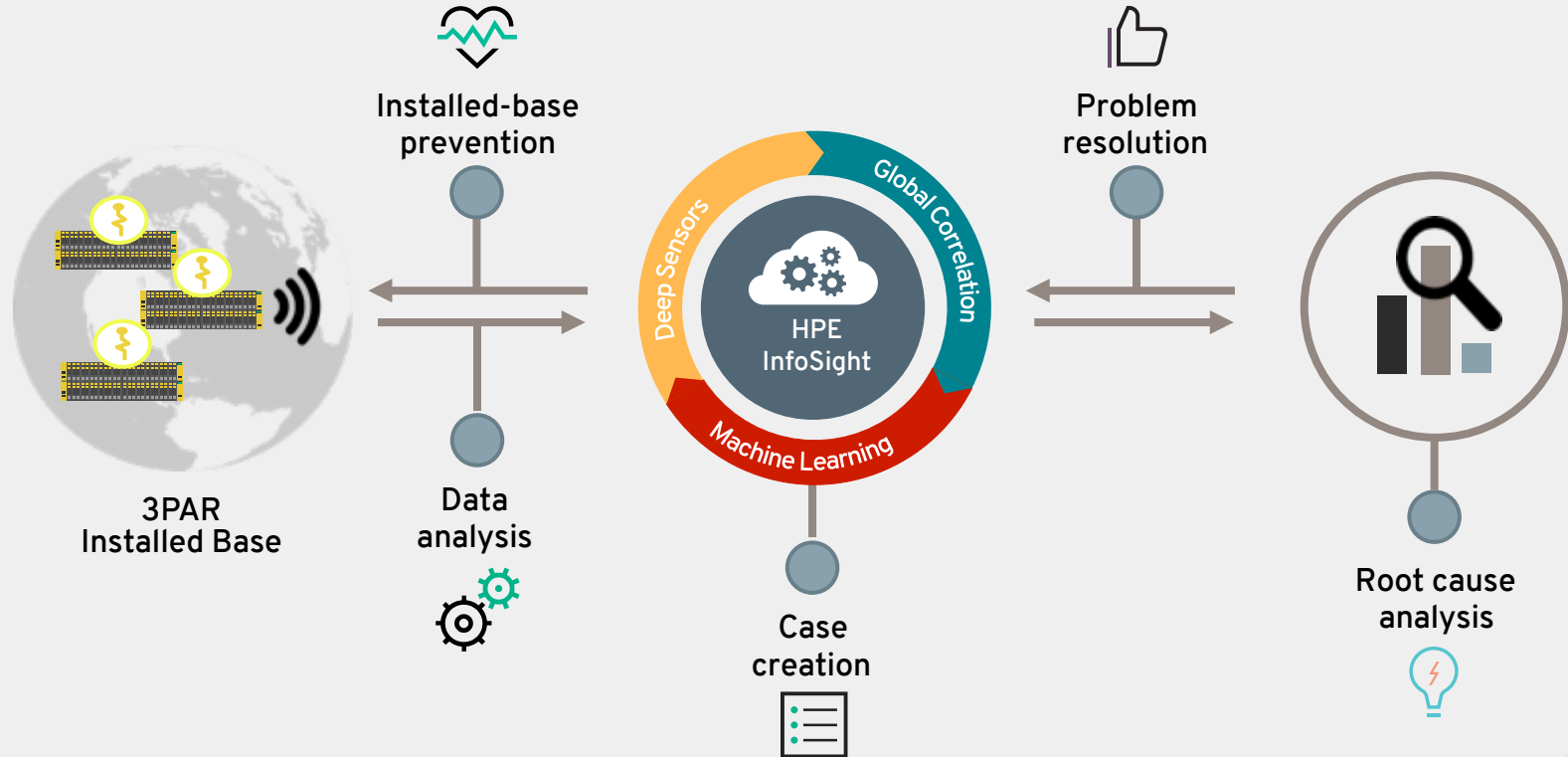


HPE InfoSight Big Data Collecting infrastructure metadata

- Global visibility and learning
- 86% of issues solved automatically
- Eliminates most Levels 1 + 2 calls
- Level 3 response in ~1 min
- Average time to resolution 43 min
- 73% less trouble tickets
- 79% lower OPEX

HPE InfoSight - See Once, Prevent for All

Learning from the 3PAR installed base



HPE 3PAR delivers a cloud-ready foundation for Hybrid IT



#1
Mid Range SAN



Exabyte
Flash capacity shipped



8200

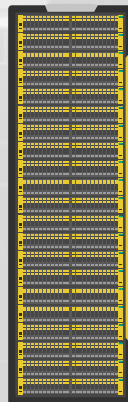
75K+
Systems deployed



1M+
Servers connected



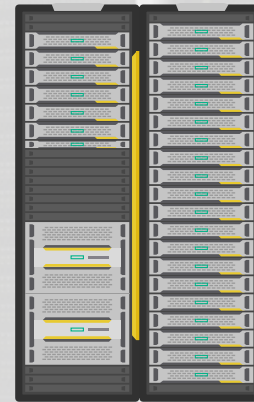
8400



8440/8450



9450

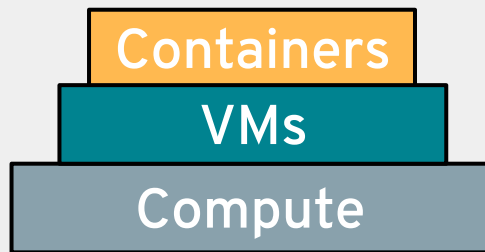


20800/20840/20850

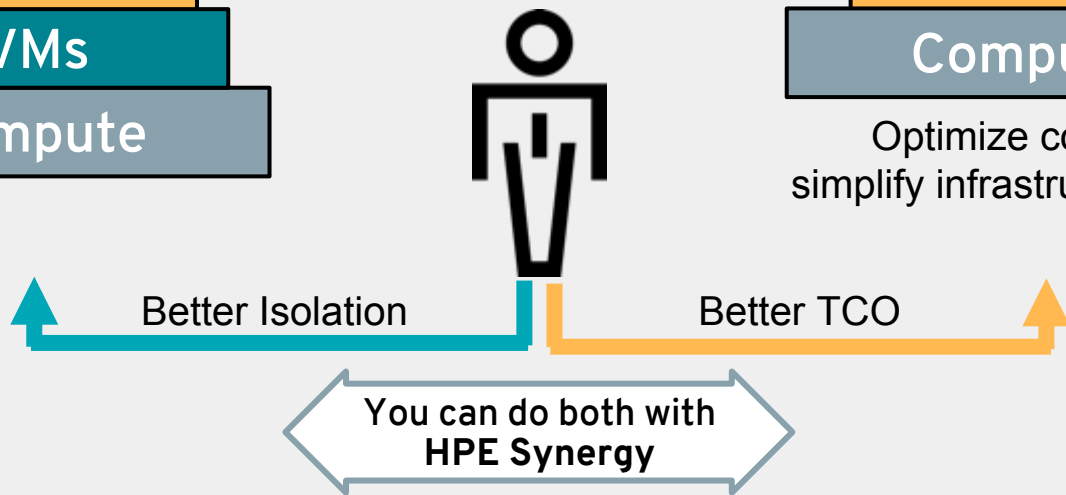
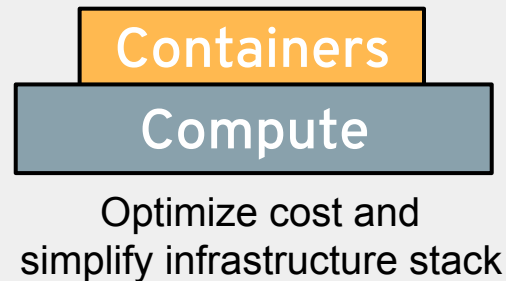
Guaranteed 99.9999% Availability

Two worker node flavors

Traditional Approach



Optimized Approach



HPE Composable Systems: the ideal Solution for on premise OpenShift Platform deployment



Deploy infra at cloud-like speed
Improve application time to value



Flex resources out/in and up/down
Efficient resource allocation by business demands



Centralize life cycle management
Reduce updates from hours to minutes



Advanced container data management
Data protection and storage efficiency for containers



HPE Synergy and
3PAR/Nimble



Flexible HPE offerings - 3 configurations

For small and midsize Businesses (SMB)



All nodes on virtual machines (VM)

- 3 HPE Synergy physical nodes
- Red Hat OpenShift
- Red Hat Hyperconverged Infrastructure (RHHI)

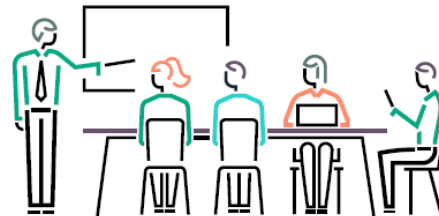
For mid-range



VM or bare-metal workers with persistent storage

- 6+ HPE Synergy physical nodes
- Red Hat OpenShift
- Red Hat Virtualization or RHVI
- HPE 3PAR or Nimble storage

For enterprise



All services, masters, workers on bare metal

- 8+ HPE Synergy physical nodes
- Red Hat OpenShift
- Red Hat Enterprise Linux
- HPE 3PAR or Nimble Storage

Move to production - Key success factors

- **Plan** whether to do it yourself or partner
- Implement **best practices**
- Have a complete OpenShift **ecosystem** in place



Accelerate this path with

HPE + Red Hat

Resources and key contacts

Reference configuration

Reference configuration for Red Hat OpenShift Container Platform on HPE Synergy Composable Infrastructure

- hpe.com/V2/GetDocument.aspx?docname=a00038916enw

GitHub repositories

Ansible Playbooks

- github.com/RHsyseng/ocp-on-synergy

Image streamer artifacts

- github.com/HewlettPackard/image-streamer-reference-architectures/tree/master/RC-RHEL-OpenShift

Contacts

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