## **Red Hat**

RED HAT FORUM | SEPTEMBER 10 2019 NEXT GENERATION SOLUTION FOR RED HAT OPENSHIFT CONTAINER PLATFORM Kiril Petsev | Solution Architect | HPE Peter Reichmuth | Senior Storage Consultant | HPE

#### Hewlett Packard Enterprise

### HPE Next Generation Solution for Red Hat Openshift Container Platform

**Kiril Petsev**, Solution Architect HPE **Peter Reichmuth**, Senior Storage Consultant HPE

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## Why Red Hat and HPE together ?

Shifting on-prem workload-mix from static to dynamic



### **Red Hat & HPE joint forces**

The next generation container solution added value



Accelerate container adoption and deployment from POC to production



Cloud-like experience: fast deployment & scale, secure, easy manage



Complete solution that is adaptable to customer operational preferences



## Next Generation Solution for Red Hat OCP

Integrated and can be tailored instantly, on demand, to meet business needs.

#### Powered by Red Hat OpenShift Container Platform on HPE Synergy

- Complete out-of-the-box container solution that deploys fast and brings immediate value
- Ideal for environments where scalability, security, persistent storage and easy management are required
- Focus on Enterprise and Medium Business customers





#### HPE solution approach to containers

#### **Production ready solution**

(HA, security, data protection, disaster recovery)





\* Free for use, available at: https://github.com/HewlettPackard/hpe-solutions-openshift/tree/master/synergy/scalable

### **Solution overview - compute layout**

The deployment automation allows adaptability to specific customer needs

	/irtualization Host Cluster		Pod1 Pod n Pod n	
Data Store	Data Store	Data Store		
Replication/Management	Replication/Management	Replication/Management		
Scheduler	Scheduler	Scheduler	Bare Metal	
API / Authenication	API / Authenication	API / Authenication	Worker Node	
Infræfructure Node VM	IntraStructure Node VM	Intrastructure Node VM	Pod n	
			Pod1	
Metrics/EFK	Metrics/EFK	Metrics/EFK		
Router / Registry	Router / Registry	Router / Registry		Bare Metal Ser
ETCD Node VM	ETCD Node VM	ETCD Node VM	Bare Metal	Component
Etcd Store	Etcd Store	Etcd Store	Worker Node	
HA FIOXY NODE VM	HA FIOXY NOLE VIT	WORKER Nodes VMs	Pod n	Virtual Machin
HA Proxy Node VM	HA Proxy Node VM	Werker Nedes VMs	Pod1	

#### **Programmable physical infrastructure**

Conventional

**Complex Infra Deployment and Lifecycle Management**  Next Level of Automation

**Automate All** 



#### Solution automated deployment & scale out



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## Automated deployment and scale out – overview 2/2

Ansible Automation for Synergy node deployment from Template



#### Simpler Playbook = more reliable behavior & lower operation cost



#### Why did Experian go with HPE Synergy and Red Hat OCP?

Experian is a multinational consumer credit reporting company that collects and aggregates information on over one billion people and businesses



#### Jonathan Deeming (Vice President PaaS CoE at Experian):

#### Composer

- Pervasive automation embedded at the frame-level, including coordination across multiple frames.
- Allows the scripted configuration of the setup of an enclosure, reducing time-to-configure and the risk of manual configuration errors or missing process steps.
- Fabric
  - Network connectivity managed at frame level
- Storage
  - Local storage capabilities
- Compute
  - HPE firmware.



- Led on security
  - TLS by default
  - Embedded SELinux
- Run their own cloud
  - Pen-testing for real!
- Continued investment
  - CoreOS acquisition
  - Upstream contributions e.g. RBAC



#### Partnership

Rolling your own is hard work!





## **HPE Synergy ROCKS!**

Delivers business benefits for customers from execution to superior economics

## More than **3,300** customers

#### Automate everyday operations

Increase productivity and control across the data center

**8**x

Improvement in deploying O/S and application workloads

#### Deploy at cloudlike speed and scale

Optimize application and service delivery

**10x** Reduction in provisioning of infrastructure

## One infrastructure for any application

Eliminate silos, free up resources and simplify IT operations

**15%** Saving on both CAPEX and OPEX

## Develop apps faster and smarter

Accelerate your business with a developer-friendly infrastructure

**94%** Faster delivery of compute resources



# Storage Options for Openshift from HPE



#### HPE Plugin for container persistence storage

Certifications and Community Contributions



#### HPE Persistent Storage platform for Red Hat OpenShift



#### **Common ecosystem controls for persistent storage**



HPE 3PAR parameters	
	flash-cache: "enabled"
£∏]	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"	
Remote Copy and Peer Persistence	

#### **3PAR Priority Optimization (QoS) with Docker Volumes**

Protect your production container applications

Assure tenant/application level QoS by assigning priorities, targets and caps to VV sets and/or Virtual Domains

- Max limit IOPS or bandwidth per object
- Min goal Min floor for IOPS or bandwidth
- Latency goal Service level target for an object
- Priority level throttle order for object





#### DR – OpenShift on stretch cluster MAN/Campus network

- OpenShift Master, Infra, and Nodes spans across data center to provide high availability
- Requires
  - < 10ms latency between etcds</p>
  - < 10ms latency for storage replication</li>
- HPE peer persistent facilitates automatic and app transparent failover on persistent volume





#### File Support for "Read Write Many" (RWX) access mode

- Supports RWX access mode in Kubernetes
- Default share size of 1TiB (if no size specified)
- Permission setting on File share for selective access
  - UID/GID based mapping
  - ACL or Linux style permission setting on share
- Support for Create, List and Delete file shares from Docker CLI
- Available in 3PAR Volume Plug-in for Docker v3.2 and above
- Supports only 3PAR arrays











#### **OpenShift data protection**

Content type	Why protection is needed		
App data	App data from stateful containers are critical to your business		
Container registry	Storage for your dev, qa, and production container images. Critical for the business to protect these images for the continuous delivery		
Container logs, Prometheus time series data	Needed for troubleshooting, performance analysis, capacity planning		
Etcd	Stores system configuration, state, and its metadata. Mandatory for recreating OCP cluster during corruption or disaster.		
Files on Master host	Master node is responsible for maintaining the desired state of a cluster. It has API, controllers, services, config files, certs, keys, e		





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### **HPE Primera**





#### Primera—The new measure for mission-critical storage

Combines the best technologies of HPE



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#### Features of the Primera 600 series arrays

**New Primera ASIC** All-inclusive software Powerful Skylake CPU Extreme ease of use Enterprise-class resiliency Deep InfoSight integration RAID 6 only NVMe ready 100% Availability Guarantee Thin Provisioning or DECO only 32 Gb Fibre Channel/25 Gb IP support Auto CPG and tuning Online node conversion On-node management Customer self install/update On-node service processor

#### **HPE Primera Timeless Storage**

HPE Technology Refresh Service

- Timeless Storage is an optional service that builds on flexible support services from HPE Pointnext (HPE Proactive Care Service, HPE Proactive Care Advanced Service, or HPE Datacenter Care Service)
- Every three years you get system upgrades to the latest available technologies
  - Includes all necessary supporting hardware and software, installed with zero disruption
- The HPE Technology Refresh Service not only lowers your total cost of ownership for storage but brings predictability to storage costs and alleviates perennial concerns of technology obsolescence
- You get a simple, nondisruptive upgrade path to scale resources
  - Do away with traditional storage purchasing cycles to keep your storage modern and do it without traditional forklift upgrades

For details read the Timeless Storage Brochure: https://assets.ext.hpe.com/is/content/hpedam/documents/a00074000-4999/a00074518/a00074518enw.pdf



#### Delivering container data management that is ....



Developer-friendly

- Dynamically provision volumes using K8s StorageClass
- Selectively Override storage attributes of StorageClass
- Attach snapshots or clones to Cl pipeline. Auto cleanup when done



#### Operations-optimized

- One-time or scheduled snapshots
- Replicate sync or async for HA/DR
- Per volume QoS (for guaranteed SLA)
- User and group id based volume access controls (RBAC)
- File (RWM) and Block (RWO) support FC or iSCSI



#### Cloud-inspired

- Ansible assisted installation < 5 minutes
- Secure multi-tenancy using Virtual domains

## Wrap-up



#### Why HPE for OpenShift solution?

**Comprehensive solution** Hardware, software, services, and support

**Service-led approach** Top down vs bottom up architecture approach

Simplified procurement Solution ordering experience

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Attractive purchase and consumption models Flex capacity, Greenlake managed services

**Strategic partnerships** Tier 1 and preferred partners with major ISVs with joint GTM



## Key success factors for OpenShift adoption in production

- Plan whether to do it yourself or partner
- Implement Best Practices
- Have a complete Solution in place



## Accelerate this path with **HPE + Red Hat**

Resources: https://www.hpe.com/us/en/alliance/red-hat.html#Solutions



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# **Questions?**

*"It is not the answer that enlightens, but the question"* Eugene Ionesco



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# Thank you

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RED HAT FORUM | SEPTEMBER 10 2019 AUTONOMOUS DRIVING - FOLLOWING THE DATA Matthias Lein | Data Science Architect | DXC