



redhat.

Red Hat Storage Day Stockholm

October 2018

Goals of today

Minimum of slides

Maximum discussions

As much demos as possible

Who will perform these demos?

Tero Ahonen



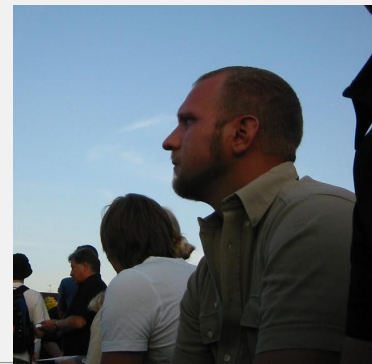
Peter Gustafsson



Johan Robinson



Johan Odell





Who are Red Hat?

Andreas Bergqvist
2018

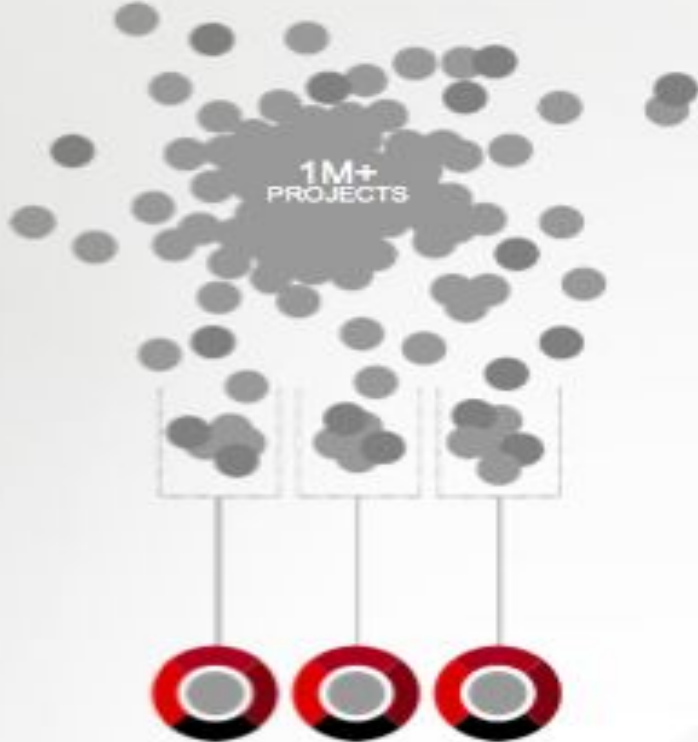
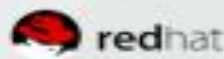
OUR BUSINESS

Red Hat is an *enterprise-class software company*
with an open source development model

COMMUNITY PROJECTS > ENTERPRISE PRODUCTS



RED HAT PRODUCT PROCESS



PARTICIPATE

(upstream projects)

We participate in and create community-powered upstream projects.



INTEGRATE

(community platforms)

We integrate upstream projects, fostering open community platforms.



STABILIZE

(supported products, platforms, and solutions)

We commercialize these platforms together with a rich ecosystem of services and certifications.

We enable software and hardware partners, customers, and academia to participate at every stage of development.

AMD

IBM

FUJITSU

SAP

intel

ca

bmc software

hp

TIBCO

CISCO

HITACHI

The combination of Red Hat Enterprise Virtualization and the Cisco UCS platform allows us to provide financial service providers with a highly available, scalable, and secure SAP environment in the cloud. —MARIO BRUGNERA, head of SAP Competence Center, FI-TS

finanz informatik
technologie service

THE MODEL WORKS

FY2003 – FY2018



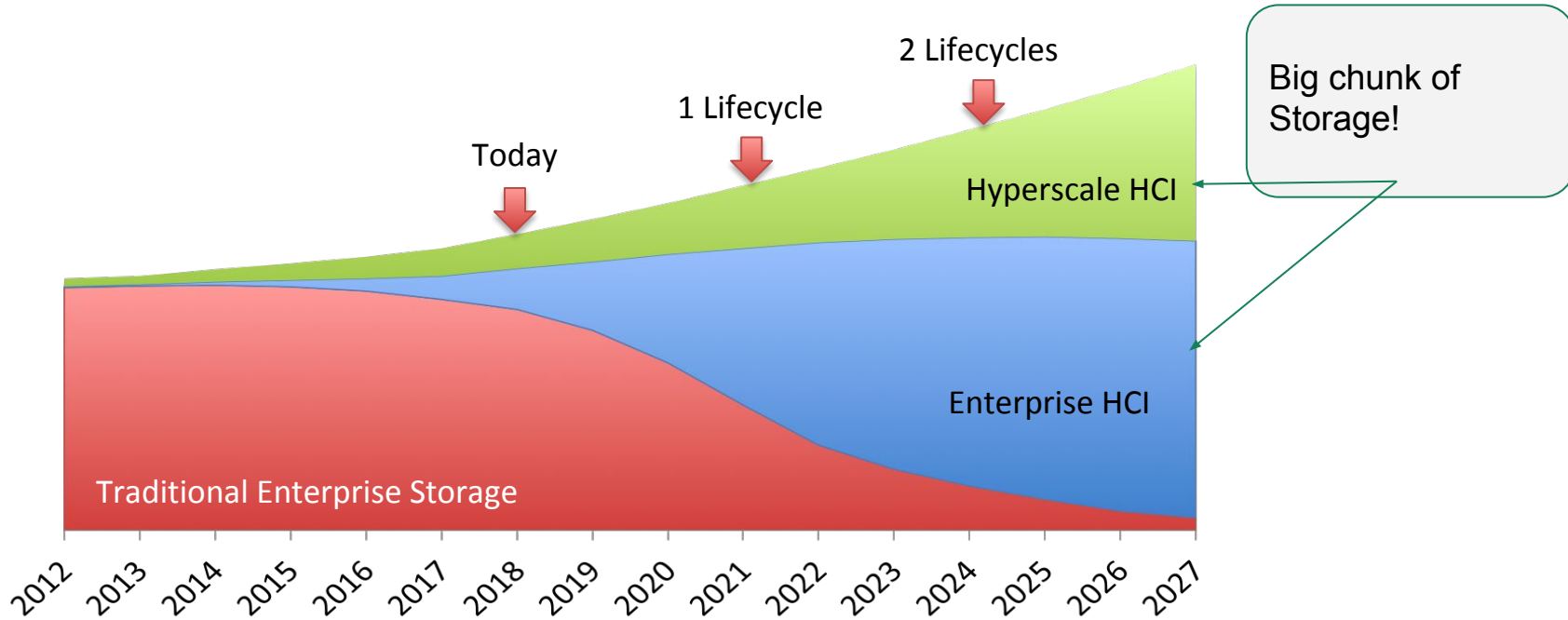
The future is hybrid and multicloud



AGENDA

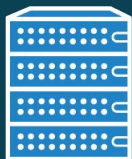
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HYPERCONVERGENCE IS IMMINENT



Source: [Wikibon 2015](#)

FEEDBACK FROM IT DECISION MAKERS



35% satisfied with vendor experience;
34% satisfied with solution flexibility



82% believe investing in storage without considering quality of consulting services and global support is short-sighted



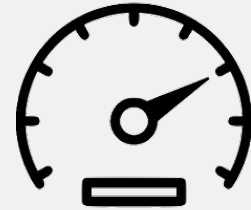
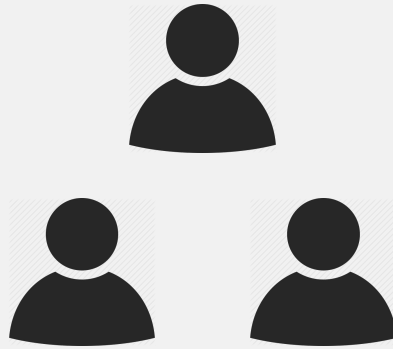
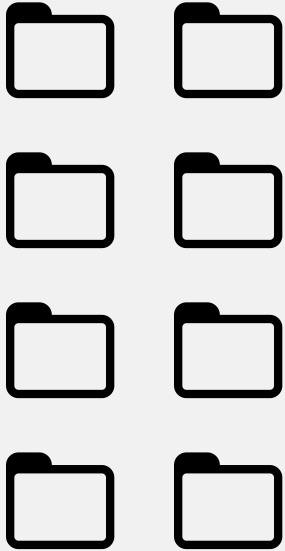
95% believe more agile storage solution could benefit organization



70% admit that their organization's current storage can't cope with emerging workloads



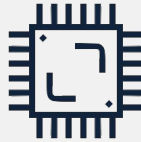
THE PROBLEM: TOO MUCH, TOO FEW, TOO FAST



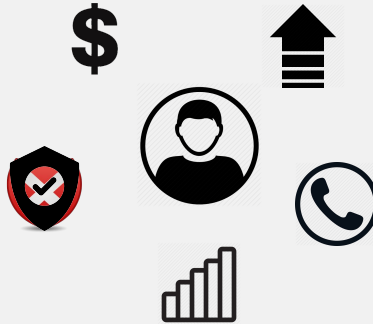
SILOED INFRASTRUCTURE INEFFICIENT



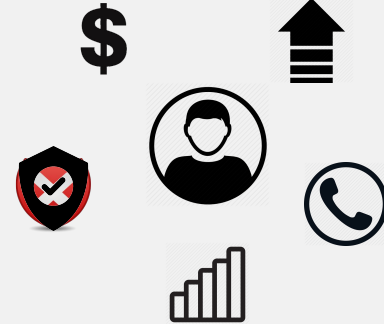
Virtualization



Compute



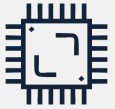
Storage



THE NEED: HYPERCONVERGED INFRASTRUCTURE



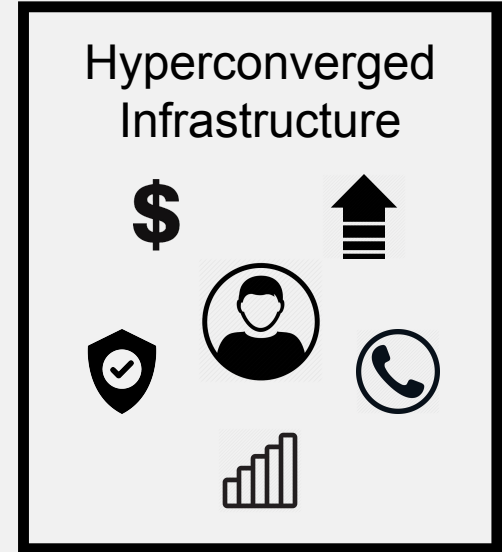
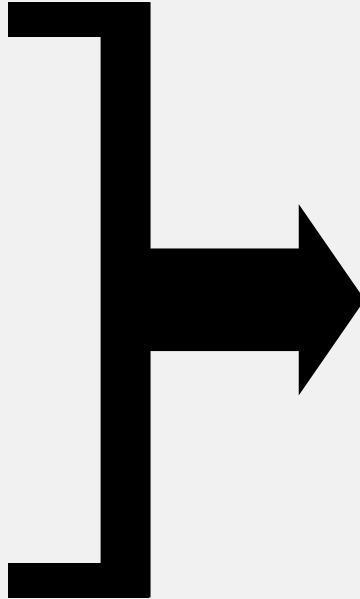
Virtualization



Compute



Storage



BENEFITS OF HCI VS. ROLL YOUR OWN

80%

Time to value savings

*Time to production decreases from
1 year to ~10 Weeks*

57%

OpEx Savings

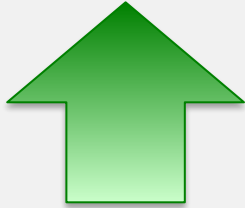
*Each admin can manage 2.33x
the infrastructure*

Source: [Wikibon 2018](#)

TECTONIC SHIFT IN INFRASTRUCTURE



- Declining siloed infrastructure
 - Declined 16.7% in 2017¹
 - Expected to half 2020-2021²



- Growing hyperconverged infrastructure
 - 76% YoY, \$10B to \$28B by 2022^{3,4}

Summary

Red Hats goal is to support your journey to the Hybrid cloud via Open Source products = Freedom of choice, lower costs

HCI is for many a first step by providing lower costs by standardisation, consolidate management and is a fundament for automation.

We want to hold your hand all the way!

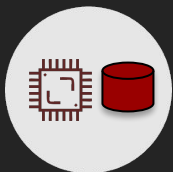
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RED HAT HYPERCONVERGED INFRASTRUCTURE FOR VIRTUALIZATION

RHHI FOR VIRTUALIZATION - *THE BASICS*



Open HCI



Subscription
model



Simplified
management



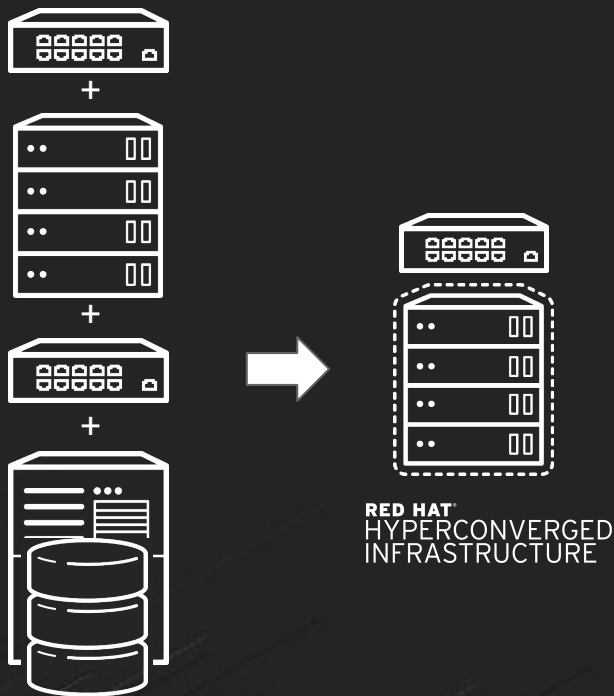
Security &
automation



redhat.

RED HAT[®]
HYPERCONVERGED
INFRASTRUCTURE

INFRASTRUCTURE CONSOLIDATION & OPERATIONAL EFFICIENCY



Traditional Architecture

- Single budget for compute & storage
- One team to managing infrastructure
- Simplified planning & procurement
- Streamlined deployment & management
- Single support stack for compute and storage

ADVANTAGES OF SUBSCRIPTION MODEL

	RHHI	HCI appliance	Proprietary SW HCI
SW portability (across HW or cloud)	✓	✗	✓
No feature degradation at expiration	✓	✓	✗
All-inclusive license/subscription	✓	✗	✗
No HW or SW lock-In	✓	✗	✗

✓ Ability/Common

✗ No Ability/Uncommon

SIGNIFICANT COST SAVINGS

Medium-sized environment

- 9 nodes, production support
- 3 years, 25% discount
- Must support encryption

VMware & vSAN ([Source](#)/[Source](#)/[Source](#))

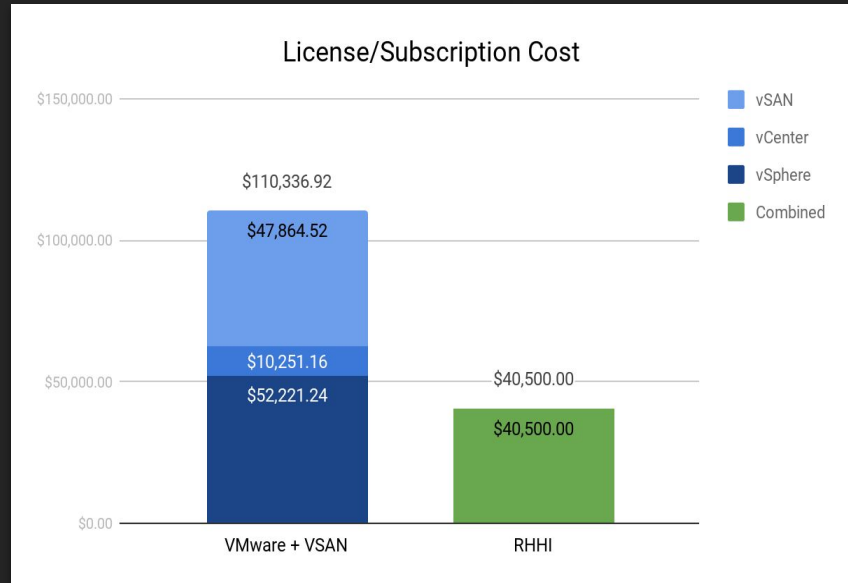
- Cost - \$110,337

RHHI4V - \$40,500

- VMware 172% more expensive

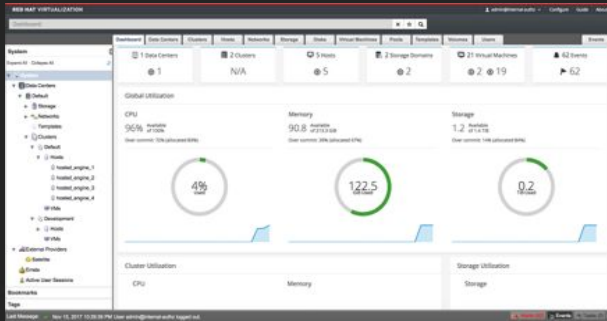
Open HCI = Lower dev costs

→ Customer savings

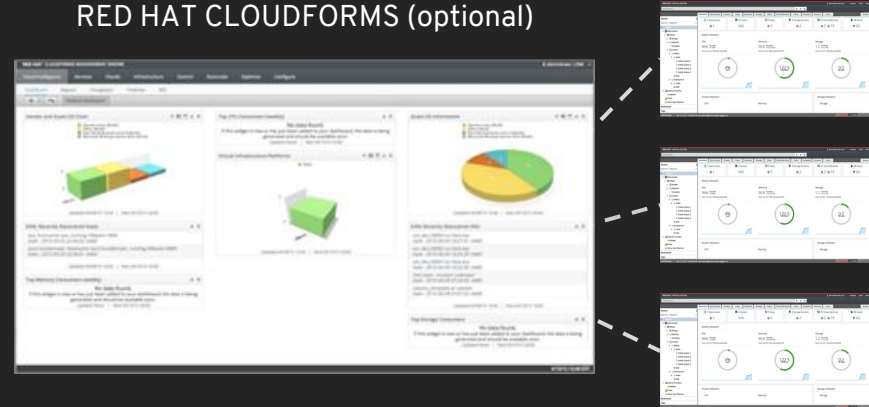


SIMPLIFIED ADMINISTRATION

RED HAT VIRTUALIZATION MANAGER



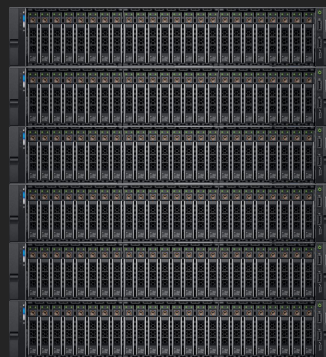
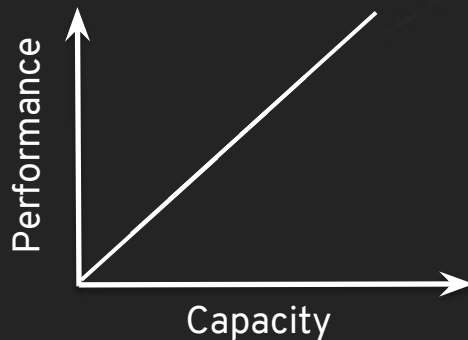
RED HAT CLOUDFORMS (optional)



SIMPLIFIED GROWTH

- Easily add nodes
 - Linear scale-out of compute and storage
- Mix and match nodes
 - Among HW vendors
 - Across media types
- Remove nodes
- Online w/out downtime

Scale-out architecture

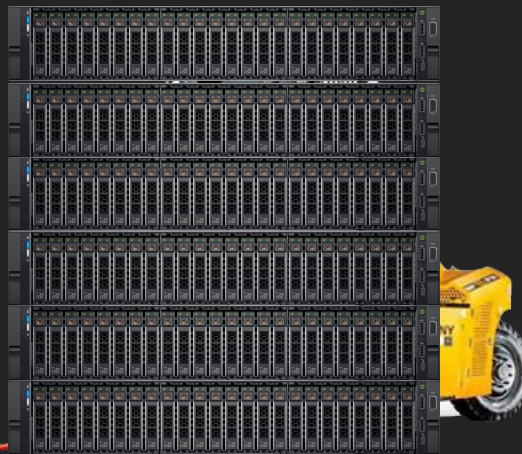


SIMPLIFIED MIGRATIONS

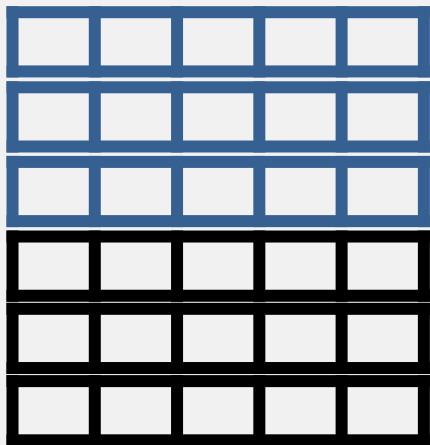
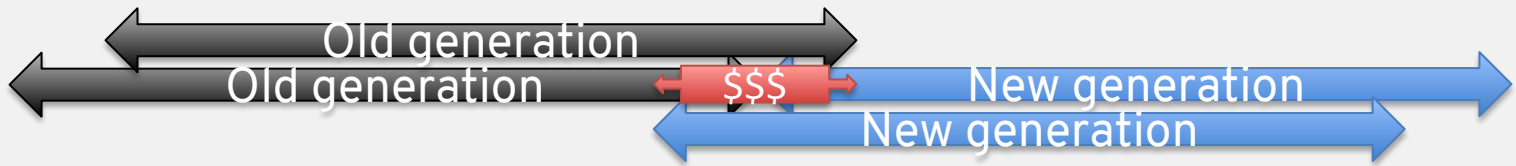


data migrations at 31% of 4-year storage array and support cost

- Buy new arrays early
- Migrate - SW, labor, downtime
- Keep old array for failback



SIMPLIFIED MIGRATIONS



- Per Wikibon, data migrations at 31% of 4-year storage array and support cost¹

For \$300K array, \$216K support -> migration \$163K

Buying new array early (5 months)	\$54k
Migrating data: software, labor, downtime etc.	\$77k
Retaining old array as fail back (3 months)	\$32k

SIMPLIFIED UPGRADES

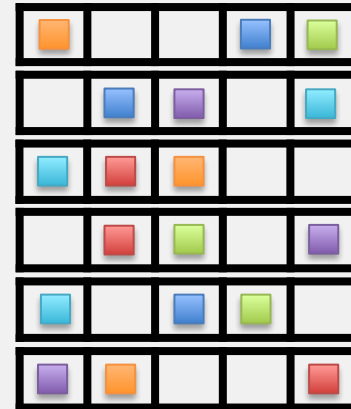
- Upgrades
 - Node by node
 - For entire stack
 - No SPOF during upgrade
 - Non-disruptive



SHARED-NOTHING HIGH AVAILABILITY

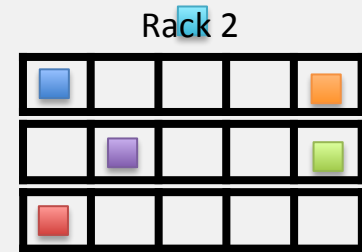
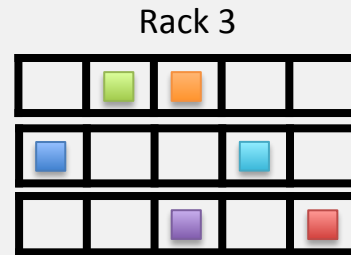
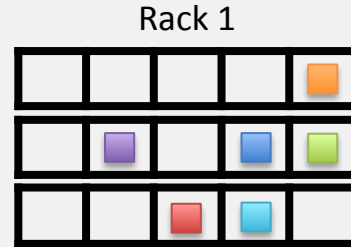
- Resiliency against multiple:
 - Drive failures
 - Network failures
 - Node failures
 - Easier recoveries
- For full stack

Shared-nothing HA



RACK AWARENESS

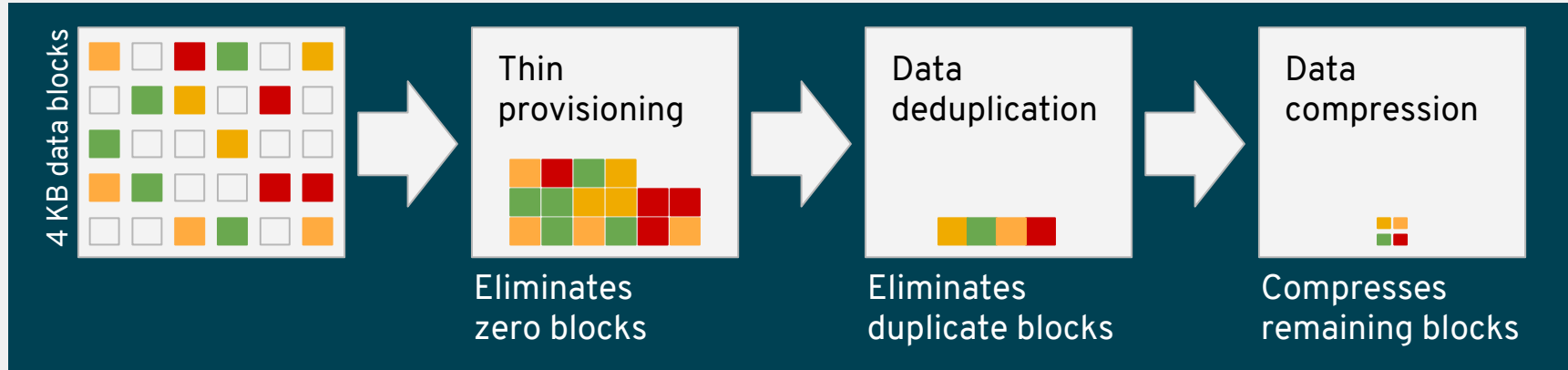
- Highest level of redundancy
- Setup of failure domains
 - Nearby site or rack
 - Easier recoveries
- Remote replication
- Snapshots



WHAT'S NEW IN VERSION 2

STORAGE EFFICIENCIES THROUGH THE OS

COMPRESSION WITH PERMABIT VDO AND INTEGRATED MANAGEMENT



FAILOVER AND FAILBACK D/R BETWEEN SITES



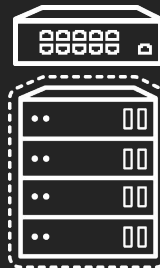
SINGLE NODE CONFIGS

SITE A



RED HAT
HYPERCONVERGED
INFRASTRUCTURE

SITE B



RED HAT
HYPERCONVERGED
INFRASTRUCTURE

VALIDATED HARDWARE CONFIGS

- *Base, Performance, and Capacity* configurations
- Built atop trust Red Hat hardware compatibility list
- Accompanying sizing tool for custom settings
- Minimizes guesswork for many workload profiles
- Further simplifies RHHI4V deployment
- Launched with set of HPE DL configs

RED HAT INFRASTRUCTURE MIGRATION

PROVEN METHODOLOGY TO OPTIMIZE IT USING RHHI FOR VIRTUALIZATION



Planning and platform setup

- Define approach and architecture
- Operationalize alternative platform
- Identify and characterize VMs for migration



Migration tooling and approach

- Develop comprehensive tooling and approach for migrating workloads with key stakeholders to ensure success



Migration execution

- Validate and refine migration approach
- Pilot migration of representative set of workloads
- Set stage to migrate thousands of workloads with strategic approach and proven tools

SUMMARY

RHHI BENEFITS WHEN MODERNIZING

- Software-defined infrastructure with minimum HW footprint
- Standardized infrastructure for scaling out across different small sites
- Modern infrastructure for traditional workload with HA/DR requirements
- Avoids proprietary technology and reduce overall project cost
- Full control over stack vs. specifying 10s of pages with pre-reqs before
- Ideal starting point for “slow infrastructure modernization project”
 - Bare metal to virtualization migration for consolidation
 - Not yet started with containers or microservices
 - Standardization on open source and single technology stack

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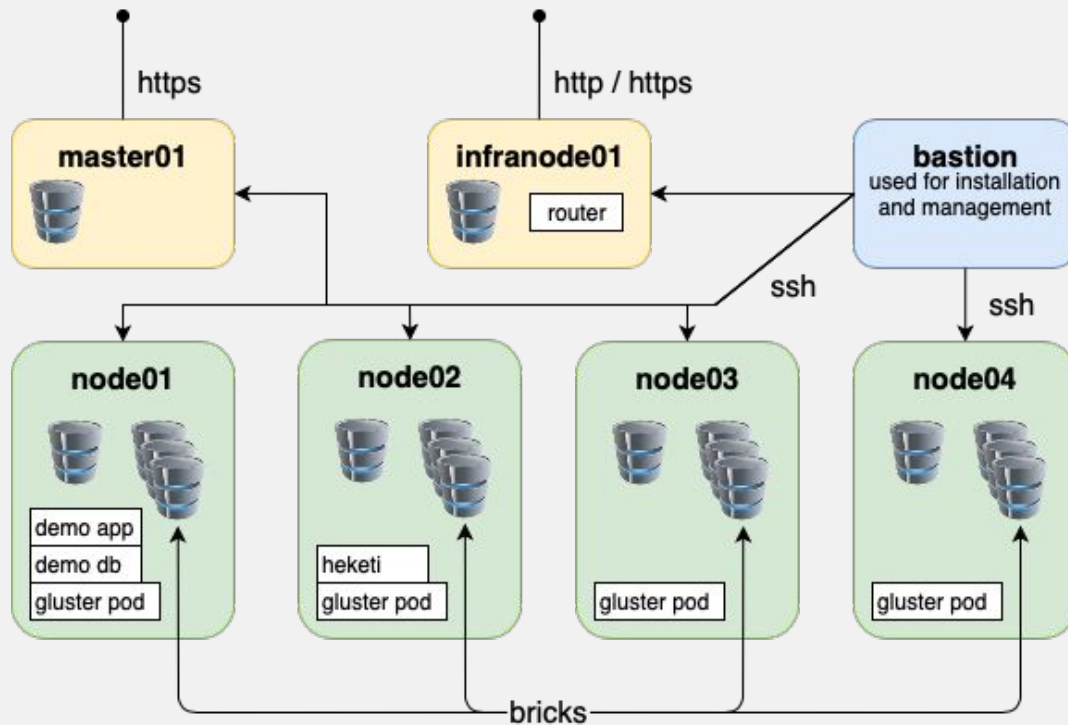


RED HAT OPENSIFT WITH PERSISTENT STORAGE AS A SERVICE

Use case walk thru

1. For Devs
 - a. Developer needs storage to develop, test and run theirs
 - b. ...and usually no one has a clue how much storage you need.....more data coming in that was planned
 - c. Snapshot your data and use it in testing etc.
2. For Ops
 - a. All storage backends are the same and different kind of storage has different use cases
 - b. Storage is not “until death do us part”, you must be able to change storage backend
 - c. Failure, Failure, Failure....you must be able to tolerate failures

Demo env



**Not all container based
applications are created
equal.**

**Sometimes you just don't
know what you need or your
new app is just too popular**

**Even Gluster is really
resilient you might want to
save your data for later use.**

**It would be really nice if you
could change storage
backend without users
knowing anything about it?**

Developers are hard to please. Some need resilience, some speed, some red storage or maybe ecologically produced.



Sometimes things just fail.

#4ops

<http://bit.ly/2NMI5L7>

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AUTOMATE
~~REPEAT~~ IT

MANAGEMENT & AUTOMATION PORTFOLIO

RED HAT® SATELLITE

- Content Delivery
- Provisioning
- Configuration Management
- Remote Execution
- Patching
- Entitlement

RED HAT® INSIGHTS

- Predictive IT Analytics
- Risk Assessment
- Automated Remediation

RED HAT® ANSIBLE® Tower

- Orchestration
- Configuration Management
- Remote Execution
- Application Deployment
- Provisioning
- Continuous Deliver
- Security and Compliance

RED HAT® CLOUDFORMS®

- Self service catalogue
- Approval process
- Quota
- Compliance
- Chargeback
- Reporting
- Optimize



MODULE

```
- name: "[Play 3] Install and configure gluster"
hosts: gluster_hosts
become: yes
vars:
  repos:
    - rhel-7-server-rpms
    - rh-gluster-3-for-rhel-7-server-rpms
    - rh-gluster-3-nfs-for-rhel-7-server-rpms
    - rhel-ha-for-rhel-7-server-rpms

- name: Enable all needed repositories
  rhsm_repository:
    name: "{{ item }}"
    state: enabled
    with_items: "{{ repos }}"

- name: Install Red Hat Gluster Storage
  package:
    name: redhat-storage-server
    state: present

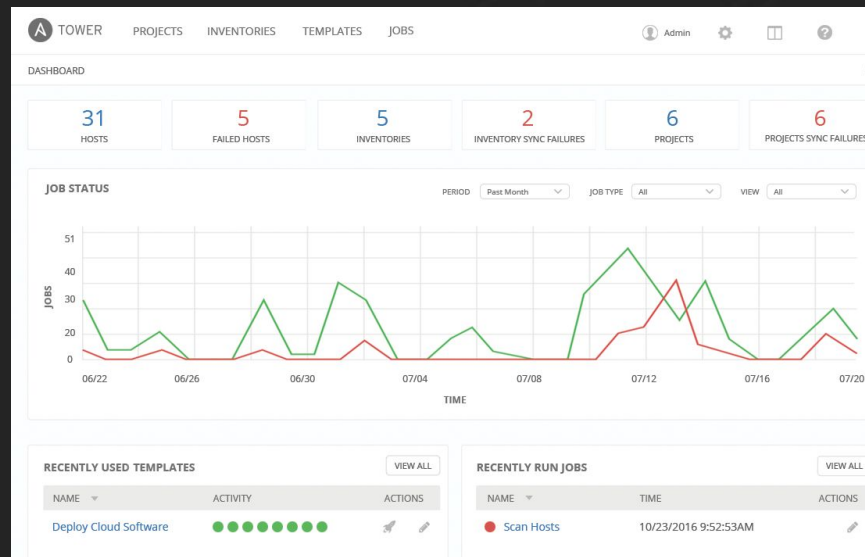
- name: Start service glusterd, if not started
  service:
    name: glusterd
    state: started
    enabled: yes
```

← ANSIBLE PLAYBOOK

WHAT IS ANSIBLE AUTOMATION ?

Ansible is an open source community project sponsored by Red Hat. It's a **simple automation language** that can perfectly describe IT application environments in **Ansible Playbooks**.

Ansible Tower is an **enterprise framework** for controlling, securing and managing your Ansible automation with a **UI and RESTful API**.



v1 - Set config file to use on boot

1. Write multiple configuration files
 - For each environment/region
2. Inspect metadata on boot and use the matching config file



v1 - Set config file to use on boot

1. Write multiple configuration files
 - For each environment/region
2. Inspect metadata on boot and use the matching config file

31,000+
Stars on GitHub

1900+
Ansible modules

500,000+
Downloads a month

WHY ANSIBLE ?



SIMPLE

Human readable automation
No special coding skills needed
Tasks executed in order
Usable by every team
Get productive quickly



POWERFUL

App deployment
Configuration management
Workflow orchestration
Network automation
Orchestrate the app lifecycle



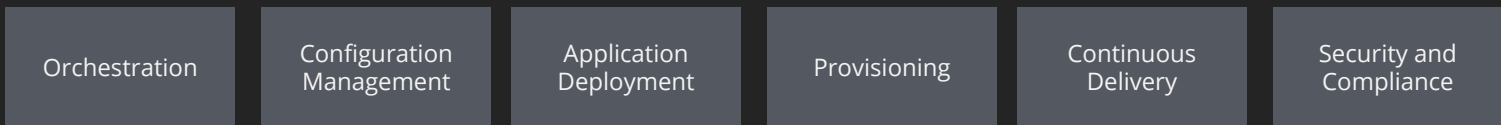
AGENTLESS

Agentless architecture
Uses OpenSSH & WinRM
No agents to exploit or update
Get started immediately
More efficient & more secure

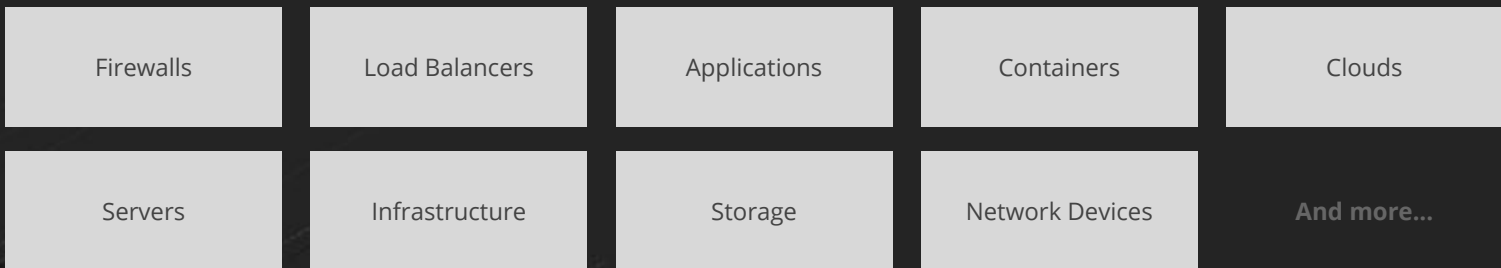
WHAT CAN I DO WITH ANSIBLE ?

Automate the deployment and management of your entire IT footprint.

Do this...



On these...



WHAT CAN I DO WITH ANSIBLE, EXAMPLE 1

FULLY AUTOMATED RHHI INSTALLATION:

1. Get IP addresses from IPAM
2. Add record to DNS
3. Configure FW
4. Provisioning the hypervisors using Satellite 6
5. Setup gluster
6. Setup self hosted RHV Manager
7. complete RHV setup (data centers, clusters, hosts, networks...)
8. install and configure a CloudForms VM appliance on your RHV!

WHAT CAN I DO WITH ANSIBLE, EXAMPLE 2

ROLLING UPGRADE OF RHV CLUSTER:

1. Live migrate all vms
2. Put hypervisor into maintenance mode
3. Install latest updates
4. Activate hypervisor
5. Repeat steps 1 -4 on all hypervisors in the cluster (one at a time)

WHAT CAN I DO WITH ANSIBLE, EXAMPLE 3

DEMO TIME

DEMO

Day 1 - Deployment & Service owners

- Self service catalogue
- Approval process
- Compliance
- Chargeback

Day 2 operations

- RBAC
- Automation service catalogue
- Collaboration
- Secure credential delegation
- Central logging

RED HAT
CLOUDFORMS[®]



RED HAT
ANSIBLE[®]
Tower



Peter intro slide

What is Cloudforms?

AGENDA

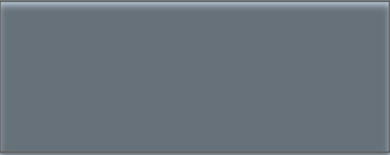
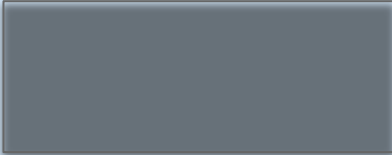
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Peter intro slide

What is Ansible?

RED HAT HYPERCONVERGED INFRASTRUCTURE PORTFOLIO

	 3 nodes minimum <i>for Virtualization</i>	 6 nodes minimum <i>for Cloud</i>
Technology	<ul style="list-style-type: none"> Red Hat Virtualization Red Hat Gluster Storage 	<ul style="list-style-type: none"> Red Hat OpenStack Platform Red Hat Ceph Storage
Target Use Cases	DevTest Lines of business & departmental Remote Facilities / ROBO IoT Edge Small datacenter deployments	NFVi Mobile edge Private Cloud
Workloads	Mode 1 applications	Mode 2 applications, VNFs

SOCIAL MEDIA OPTIONS

BLOG	redhatstorage.redhat.com
TWITTER	www.twitter.com/redhatstorage
FACEBOOK	www.facebook.com/RedHatStorage
YOUTUBE	www.youtube.com/user/redhatstorage
SLIDESHARE	www.slideshare.net/Red_Hat_Storage
WEB	www.redhat.com/storage



WHERE TO GO TO ENGAGE

- Red Hat Subscriptions: <https://access.redhat.com/subscription-value>
 - *Evaluation, Pre-production, and Production* contracts available through Red Hat sales
- Red Hat Consulting: <http://www.redhat.com/en/services/consulting/storage>
- Red Hat Storage training: <https://www.redhat.com/en/services/training>
- Red Hat Gluster Storage test-drive: <http://red.ht/glustertestdrive>

THANK YOU