



# Red Hat Gluster Storage Administration

RH236

# Welcome

# Course Objectives and Structure

# Schedule

DAY ONE	DAY TWO	DAY THREE
Intro to Red Hat Gluster Storage	Extending Volumes	Managing Snapshots
Installing Red Hat Gluster Storage	Configuring IP Failover	Installing Red Hat Storage Console
Configuring Red Hat Gluster Storage	Configuring Georeplication	Managing Tiering
Creating Volumes	Troubleshooting	Monitoring Red Hat Gluster Storage
Configuring Clients		Configuring Network Encryption
Configuring ACLs and Quotas		

# Orientation to Classroom Network

# Internationalization

# Chapter 1: Introduction to Red Hat Gluster Storage

## Goal:

- Overview of Red Hat Gluster Storage.

## Objective:

- Describe Red Hat Gluster Storage features and architecture.

# Red Hat Gluster Storage Features



# Quiz: Red Hat Gluster Storage Features

# Red Hat Gluster Storage Use Cases

# Quiz: Red Hat Gluster Storage Use Cases

# Red Hat Gluster Storage Concepts and Terminology

# Quiz: Red Hat Gluster Storage Concepts & Terminology

# Red Hat Gluster Storage Hardware Requirements

# Quiz: Red Hat Gluster Storage Hardware Requirements

# Summary



# Chapter 2: Installing Red Hat Gluster Storage

## Goal:

- Install Red Hat Gluster Storage.

## Objective:

- Install Red Hat Gluster Storage.

# Installing Red Hat Storage Server On-premise

## Red Hat Gluster Storage 3.1.2

Install Red Hat Gluster Storage 3.1.2

Test this media & install Red Hat Gluster Storage 3.1.2

Troubleshooting >

Press Tab for full configuration options on menu items.

## WELCOME TO RED HAT GLUSTER STORAGE 3.1.2.

What language would you like to use during the installation process?

English	English >
Afrikaans	<i>Afrikaans</i>
አማርኛ	<i>Amharic</i>
العربية	<i>Arabic</i>
অসমীয়া	<i>Assamese</i>
Asturianu	<i>Asturian</i>
Беларуская	<i>Belarusian</i>
Български	<i>Bulgarian</i>
বাংলা	<i>Bengali</i>
Bosanski	<i>Bosnian</i>
Català	<i>Catalan</i>
Čeština	<i>Czech</i>
Cymraeg	<i>Welsh</i>
Dansk	<i>Danish</i>

English (United States)
English (United Kingdom)
English (India)
English (Australia)
English (Canada)
English (Denmark)
English (Ireland)
English (New Zealand)
English (Nigeria)
English (Hong Kong SAR China)
English (Philippines)
English (Singapore)
English (South Africa)
English (Zambia)
English (Zimbabwe)
English (Botswana)

  
[Quit](#)[Continue](#)

## LOCALIZATION



### DATE & TIME

*Americas/New York timezone*



### LANGUAGE SUPPORT

*English (United States)*



### KEYBOARD

*English (US)*

## SECURITY



### SECURITY POLICY

*No profile selected*

## SOFTWARE



### INSTALLATION SOURCE

*Local media*



### SOFTWARE SELECTION

*Default Install*

## SYSTEM



### INSTALLATION DESTINATION

*No disks selected*



### KDUMP

*Kdump is enabled*

[Quit](#)

[Begin Installation](#)

*We won't touch your disks until you click 'Begin Installation'.*



Please complete items marked with this icon before continuing to the next step.

## DATE & TIME

Done

RED HAT GLUSTER STORAGE 3.1.2 INSTALLATION

us

Help!

Region:

Americas

City:

Los Angeles

Network Time

OFF



01:27 PM

☒ 24-hour

☐ AM/PM

03 / 18 / 2016



You need to set up networking first if you want to use NTP

[Done](#)

us

[Help!](#)

## Device Selection

Select the device(s) you'd like to install to. They will be left untouched until you click on the main menu's "Begin Installation" button.

### Local Standard Disks

10 GiB

**Virtio Block Device**

vda / 10 GiB free

20 GiB

**Virtio Block Device**

vdb / 0 B free

*Disks left unselected here will not be touched.*

### Specialized & Network Disks

[Add a disk...](#)*Disks left unselected here will not be touched.*

## Other Storage Options

### Partitioning

☒ Automatically configure partitioning. ☐ I will configure partitioning.

☐ I would like to make additional space available.

### Encryption

☐ Encrypt my data. *You'll set a passphrase next.*

[Full disk summary and boot loader...](#)

1 disk selected; 10 GiB capacity; 10 GiB free

[Done](#)[us](#)[Help!](#)

## Device Selection

## RECLAIM DISK SPACE

You can remove existing file systems you no longer need to free up space for this installation. Removing a file system will permanently delete all of the data it contains.

Disk	Name	File System	Reclaimable Space	Action
▼ 10 GiB Virtio Block Device	vda	Unknown	10 GiB total	Preserve
Free space			10 GiB	

[Preserve](#)[Delete](#)[Shrink](#)[Delete all](#)

1 disk; 10 GiB reclaimable space (in file systems)

Total selected space to reclaim: 0

Installation requires a total of **1564.74 MiB** for system data.

[Cancel](#)[Reclaim space](#)[Full disk summary and boot loader...](#)

1 disk selected; 10 GiB capacity; 10 GiB free



[Done](#)

us

[Help!](#)

## Ethernet (eth0)

Red Hat, Inc Virtio network device



## Ethernet (eth0)

Connected

ON

Hardware Address 52:54:00:00:FA:0A

Speed

IP Address 172.25.250.10

Subnet Mask 255.255.255.0

Default Route 172.25.250.254

DNS 172.25.250.254

[Configure...](#)Host name:



RED HAT  
GLUSTER STORAGE 3

## CONFIGURATION

RED HAT GLUSTER STORAGE 3.1.2 INSTALLATION

us

Help!

## USER SETTINGS



### ROOT PASSWORD

*Root password is not set*



### USER CREATION

*No user will be created*

Installing linux-firmware (5/755)

**LEARN MORE. CODE MORE. SHARE MORE.**  
**RED HAT ENTERPRISE LINUX DEVELOPER PROGRAM**

ate) + 1 : 0; print  
state < sizeof(sta  
[redhat.com/developers/rhel/](http://redhat.com/developers/rhel/)



Please complete items marked with this icon before continuing to the next step.

## ROOT PASSWORD

RED HAT GLUSTER STORAGE 3.1.2 INSTALLATION

Done

us

Help!

The root account is used for administering the system. Enter a password for the root user.

Root Password:

••••••

 Weak

Confirm:

••••••

 The password you have provided is weak: The password contains the user name in some form. You will have to press Done twice to confirm it.



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GLUSTER STORAGE 3

## CONFIGURATION

## RED HAT GLUSTER STORAGE 3.1.2 INSTALLATION

 **us**

[Help!](#)

## USER SETTINGS



**ROOT PASSWORD**  
*Root password is set*



**USER CREATION**  
*No user will be created*

Complete!

Red Hat Gluster Storage is now successfully installed and ready for you to use!  
Go ahead and reboot to start using it!

[Reboot](#)



Use of this product is subject to the license agreement found at </usr/share/redhat-release/EULA>

# Quiz: Installing Red Hat Storage Server On-premise

# Installing Red Hat Storage Server on a Public Cloud

# Quiz: Installing Red Hat Storage Server on Public Cloud

# Lab: Installing Red Hat Gluster Storage



# Summary

# Chapter 3: Configuring Red Hat Gluster Storage

## Goal:

- Build a Red Hat Gluster Storage Volume.

## Objectives:

- Configure a trusted storage pool.
- Create bricks on top of thinly provisioned logical volumes.
- Create a distributed volume.

# Building a Trusted Storage Pool

# Guided Exercise: Building a Trusted Storage Pool

# Creating Bricks

# Guided Exercise: Creating Bricks

# Building a Volume

# Guided Exercise: Building a Volume



# Lab: Configuring Red Hat Gluster Storage

# Summary

# Chapter 4: Creating Volumes

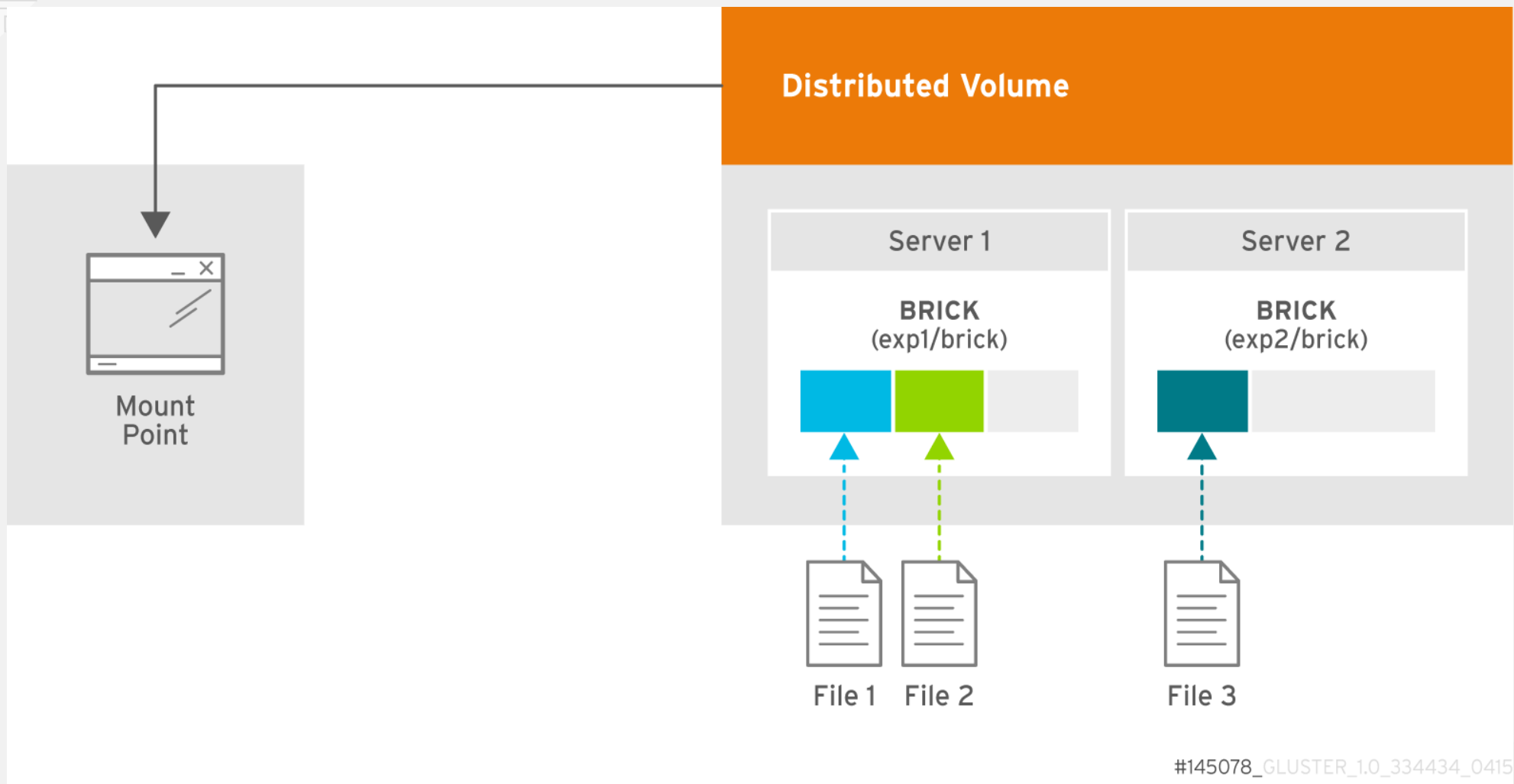
## Goal:

- Create different volume types.

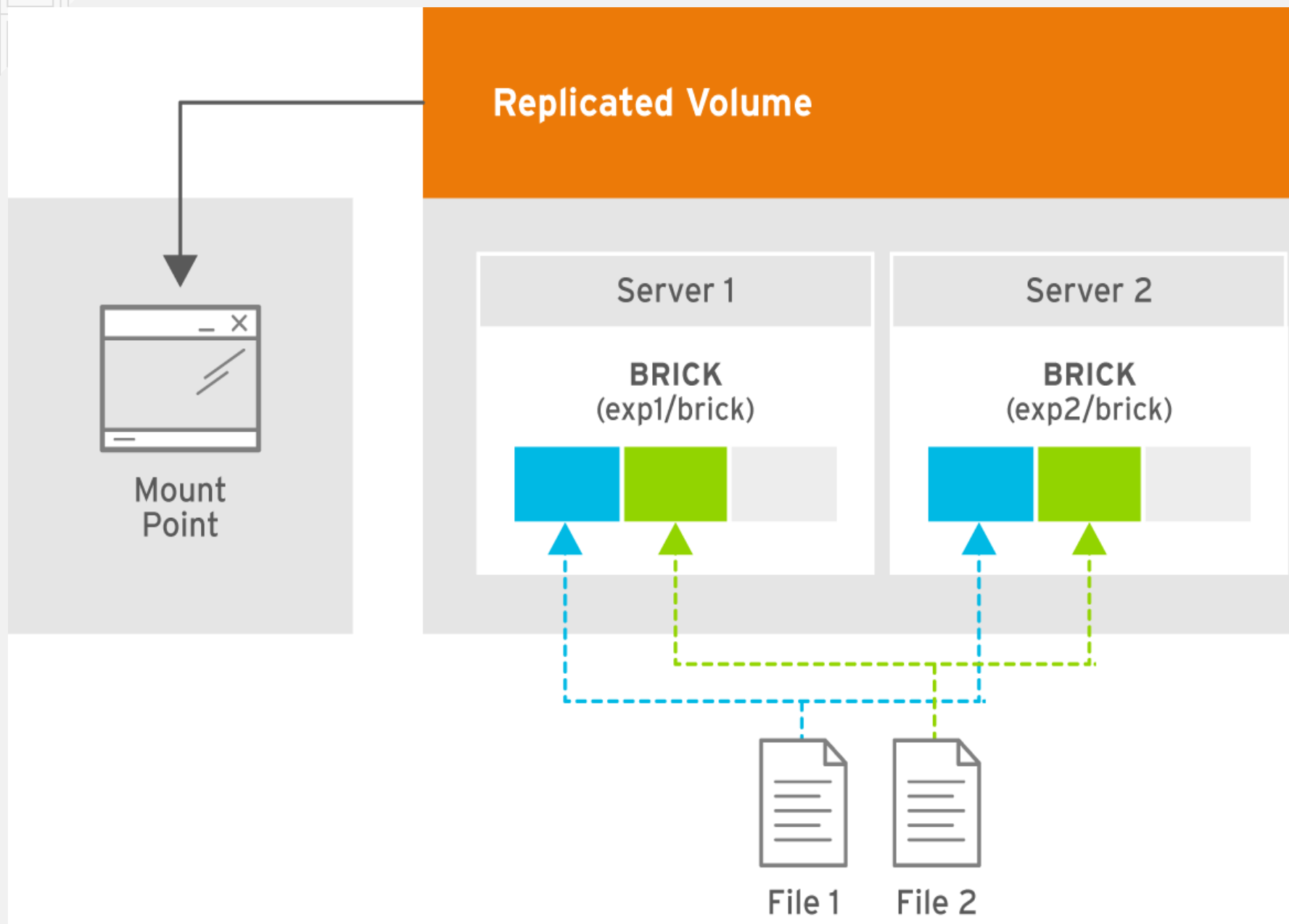
## Objective:

- Describe and configure different volume types.

# Creating Different Volume Types



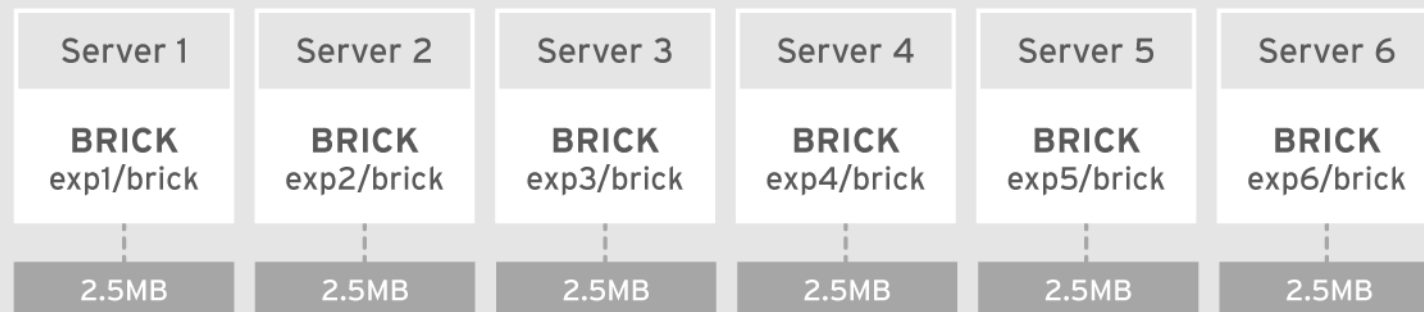
#145078\_GLUSTER\_1.0\_334434\_0415



## Dispersed Volume



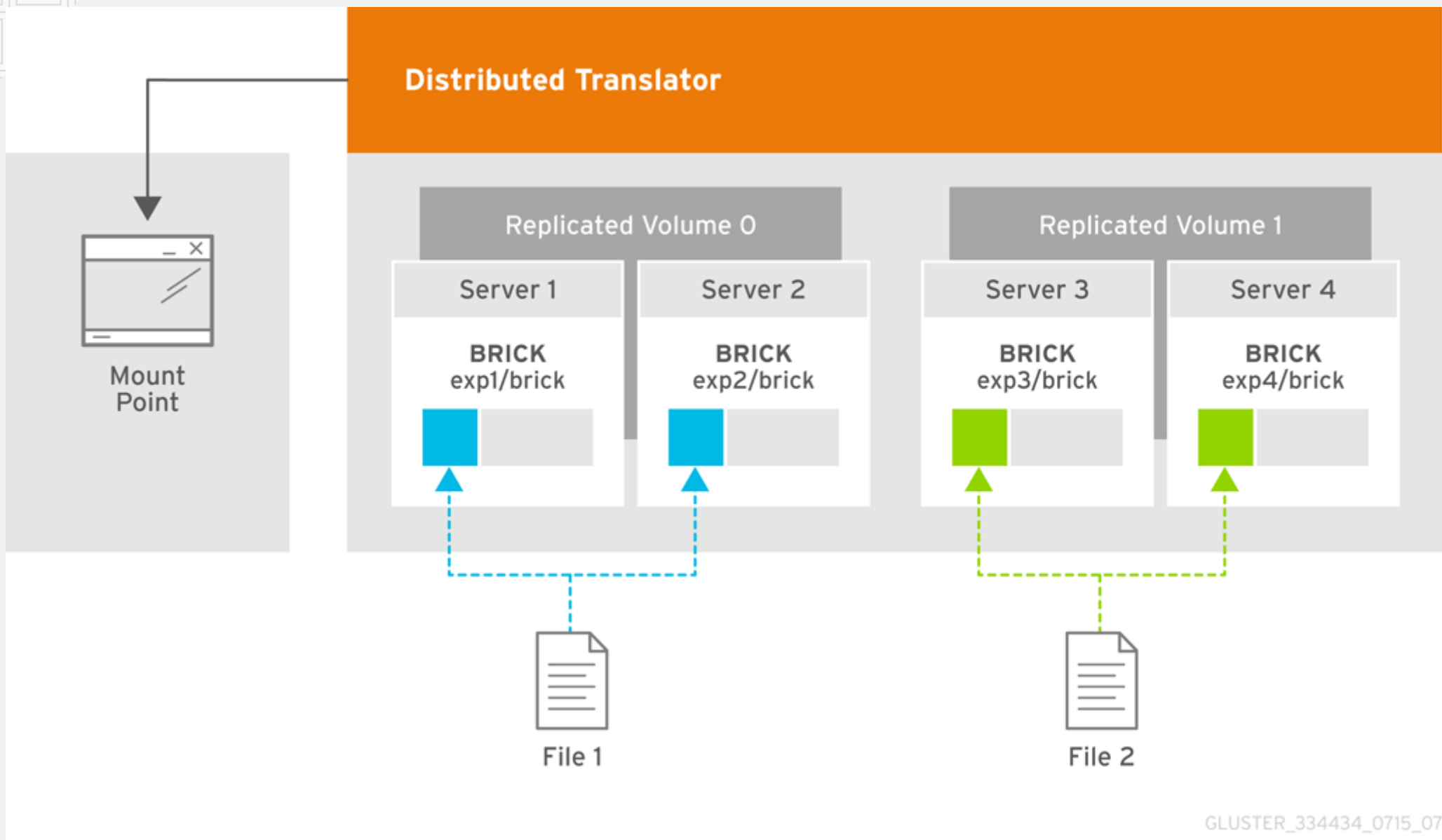
Mount  
Point



File 1

10MB

GLUSTER\_334434\_0615



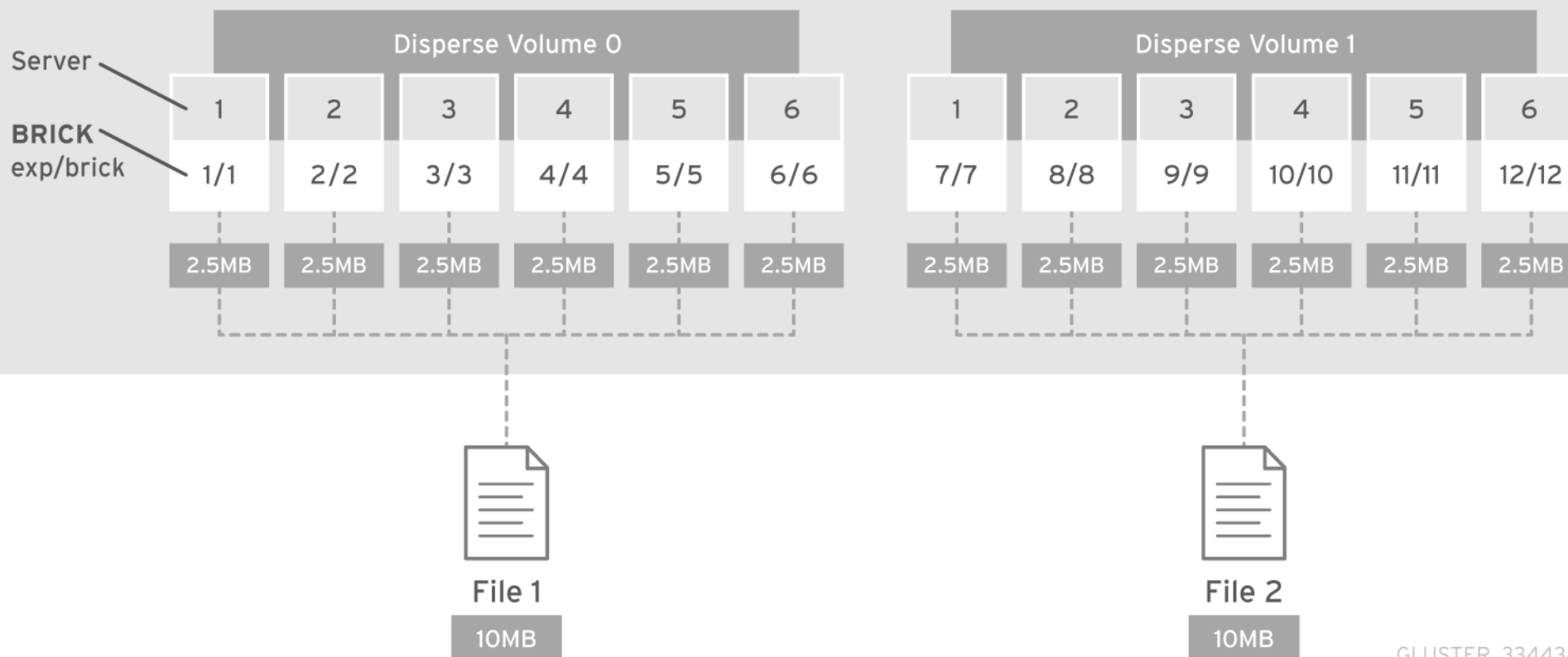
GLUSTER\_334434\_0715\_07





Mount  
Point

## Distributed Translator



# Guided Exercise: Creating Volumes

# Lab: Creating Volumes

# Summary

# Chapter 5: Configuring Clients

## Goal:

- Access data on Red Hat Storage volumes through the use of clients.

## Objective:

- Configure different clients to access Red Hat Gluster Storage volumes.

# Mounting Volumes Using the Native Client

# Guided Exercise: Mounting Volumes Using the Native Client

# Mounting Volumes Using NFS Clients



# Guided Exercise: Mounting Volumes Using NFS Clients

# Mounting Volumes Using CIFS Exports

# Guided Exercise: Mounting Volumes Using CIFS Exports

# Setting Volume Options

# Guided Exercise: Setting Volume Options

# Lab: Configuring Clients

# Summary

# Chapter 6: Configuring ACLs and Quotas

## Goal:

- Implement POSIX ACLs and quotas.

## Objectives:

- Configure POSIX ACLs.
- Configure directory quotas.



# Setting POSIX ACLs

# Guided Exercise: Setting POSIX ACLs

# Setting Quotas

# Guided Exercise: Setting Quotas

# Lab: Configuring ACLs and Quotas

# Summary

# Chapter 7: Extending Volumes

## Goal:

- Grow and shrink storage volumes online.

## Objectives:

- Extend storage volumes.
- Shrink storage volumes.

# Growing Volumes



# Guided Exercise: Growing Volumes

# Shrinking Volumes

# Guided Exercise: Shrinking Volumes

# Lab: Extending Volumes

# Summary

# Chapter 8: Configuring IP Failover

## Goal:

- Configure IP failover.

## Objectives:

- Configure CTDB for automatic IP failover for Samba volumes.
- Configure NFS-Ganesha to export volumes using highly-available NFS.

# IP Failover with CTDB

# Guided Exercise: IP Failover with CTDB



# Configuring NFS Ganesha

# Guided Exercise: Configuring NFS Ganesha

# Lab: IP Failover with CTDB

# Summary

# Chapter 9: Configuring Georeplication

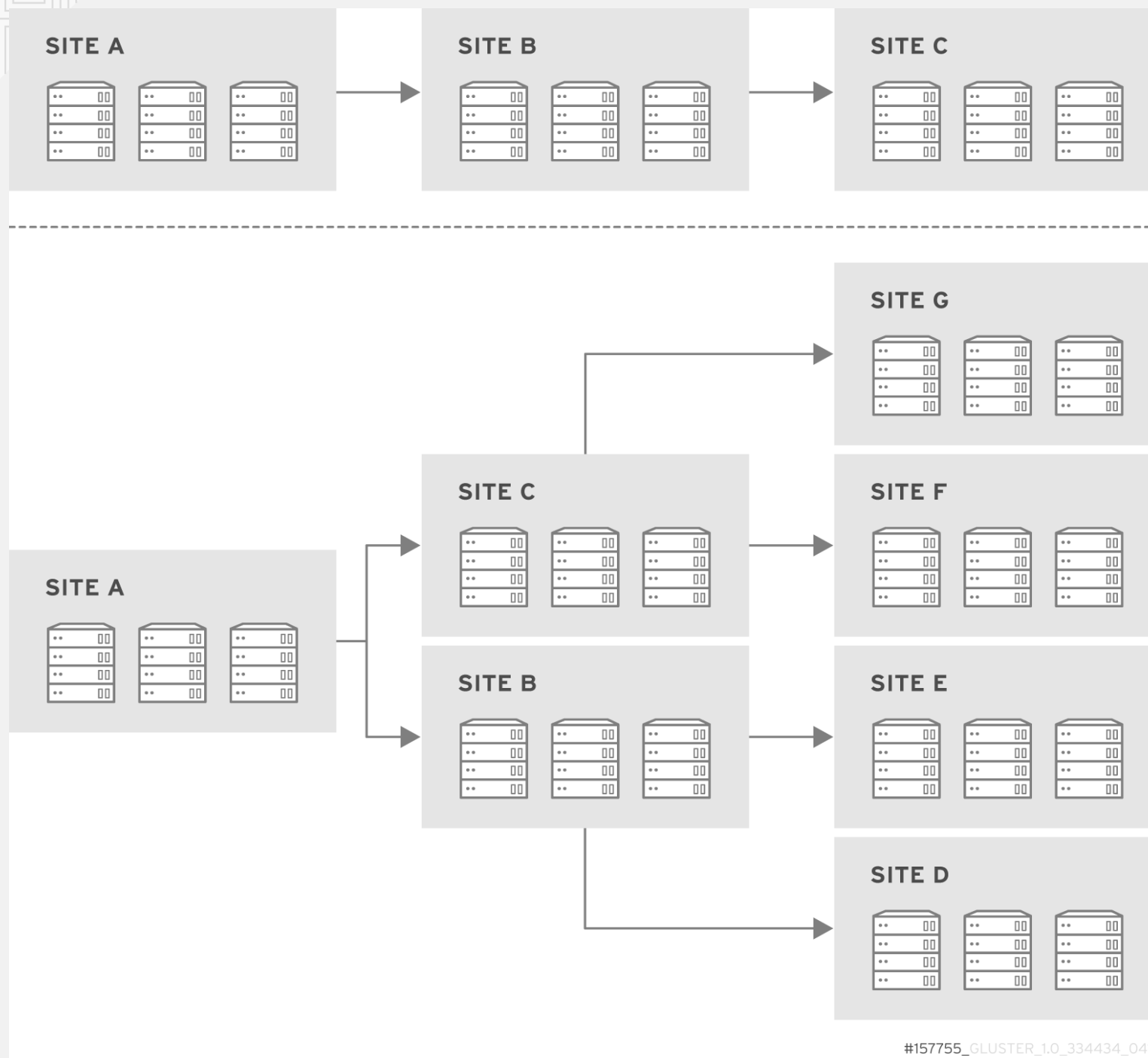
## Goal:

- Configure georeplication for disaster recovery.

## Objectives:

- Configure georeplication
- Manage an existing georeplication pair.

# Configuring Georeplication



#157755\_GLUSTER\_1.0\_334434\_0415

# Guided Exercise: Configuring Geo-replication



# Managing Georeplication

# Guided Exercise: Managing Georeplication

# Lab: Configuring Georeplication

# Summary

# Chapter 10: Troubleshooting

## Goal:

- Perform basic troubleshooting tasks.

## Objectives:

- Manage defective bricks.
- Configure BitRot detection.

# Managing Defective Bricks

# Guided Exercise: Managing Defective Bricks

# Configuring BitRot Detection



# Guided Exercise: Configuring BitRot Detection

# Lab: Troubleshooting

# Summary

# Chapter 11: Managing Snapshots

## Goal:

- Manage volume snapshots.

## Objectives:

- Create and manage Red Hat Gluster Storage volume snapshots.
- Schedule Red Hat Gluster Storage volume snapshots.

# Managing Snapshots

# Guided Exercise: Managing Snapshots

# Scheduling Snapshots

# Guided Exercise: Scheduling Snapshots



# Lab: Managing Snapshots

# Summary

# Chapter 12: Installing Red Hat Storage Console

## Goal:

- Install Red Hat Storage Console.

## Objectives:

- Install and configure Red Hat Gluster Storage Console.
- Configure Red Hat Gluster Storage to be managed by Red Hat Gluster Storage Console.

# Installing Red Hat Gluster Storage Console

RED HAT GLUSTER STORAGE CONSOLE

admin

Configure

Guide

About

Cluster:

Dashboard

Clusters

Hosts

Networks

Volumes

Users

Trends

Log Viewer

Events

System

Expand All Collapse All

System

Clusters

Default

Hosts

Volumes

New Edit Remove Guide Me Red Hat Access: Support

Name	Compatibility Version	Description	Host Count	VM Count
Default	3.5	The default server cluster	0	0

General

Logical Networks

Hosts

Services

Cluster Hooks

Permissions

Red Hat Search

Red Hat Documentation

Name:

Default

Total No. Of Volumes:

0

Description:

The default server cluster

No. Of Volumes Up:

0

Compatibility Version:

3.5

No. Of Volumes Down:

0

Bookmarks

Tags

Last Message: 2016-May-23, 21:25 User admin@internal logged in.

Alerts (0)

Events

Tasks (0)

**RED HAT GLUSTER STORAGE CONSOLE**

admin | Configure | Guide | About

Cluster: [x] [☆] [Q]

Dashboard | Clusters | Hosts | Networks | Volumes | Users | Trends | Log Viewer | Events

**System**

Expand All Collapse All

- System
  - Clusters
    - Default
      - Hosts
      - Volumes

**New Cluster** ?

**General**

Name	gluster-cluster
Description	demo cluster
Comment	
Compatibility Version	3.5
<input checked="" type="checkbox"/> Import existing gluster configuration	
Address	servera.lab.example.com
SSH Fingerprint	60:6a:b3:16:c8:73:71:13:ad:82:32:9f:70:07:02:cc
Password	•••••
Gluster Tuned Profile	rhgs-sequential-io

OK Cancel

**Bookmarks**

**Tags**

Last Message: 2016-May-23, 21:25 User admin@internal logged in.

Alerts (0) Events Tasks (0)

RED HAT GLUSTER STORAGE CONSOLE

admin

Configure

Guide

About

Cluster:

Dashboard

Clusters

Hosts

Networks

Volumes

Users

Trends

Log Viewer

Events

System

New

Edit

Remove

Guide Me

Red Hat Access: Support

Expand All

Collapse All

System

Clusters

Default

Hosts

Volumes

Name

Compatibility Version

Description

Host Count

VM Count

Use a common password

Root Password

Apply

Name	Hostname/IP	Password	SSH Fingerprint
servera.lab.example.com	servera.lab.example.com		60:6a:b3:16:c8:73:71:13:ad:82:32:9f:70:07:02:cc
serverb.lab.example.com	serverb.lab.example.com		60:6a:b3:16:c8:73:71:13:ad:82:32:9f:70:07:02:cc

Automatically configure firewall for the hosts of this cluster

OK

Cancel

Bookmarks

Tags

Last Message: 2016-May-23, 21:25

User admin@internal logged in.

Alerts (0)

Events

Tasks (0)

RED HAT GLUSTER STORAGE CONSOLE

admin | Configure | Guide | About

Cluster: [x] [star] [Q]

Dashboard | Clusters | Hosts | Networks | Volumes | Users | Trends | Log Viewer | Events

System

New | Edit | Remove | Guide Me | Red Hat Access: Support

Expand All | Collapse All

System

- Clusters
  - Default
    - Hosts
    - Volumes

OK | Cancel

ch | Red Hat Documentation

Last Message: 2016-May-23, 21:25 | User admin@internal logged in. | Alerts (0) | Events | Tasks (0)

Add Hosts

☒ Use a common password | Root Password [password] | Apply

Name	Hostname/IP	Password	SSH Fingerprint
servera.lab.example.com	servera.lab.example.com	[password]	60:6a:b3:16:c8:73:71:13:ad:82:32:9f:70:07:02:cc
serverb.lab.example.com	serverb.lab.example.com	[password]	60:6a:b3:16:c8:73:71:13:ad:82:32:9f:70:07:02:cc

Automatically configure firewall for the hosts of this cluster ☒



Dashboard
Hosts
Trends
Log Viewer

New Edit Remove Activate Maintenance Assign Tags Refresh Capabilities Red Hat Access: Support
1-2

Name	Hostname/IP	Cluster	Status	Memory	CPU	Network
servera.lab.example.c...	servera.lab.example.c...	gluster-cluster	Up	77%	3%	0%
serverb.lab.example.c...	serverb.lab.example.c...	gluster-cluster	Up	74%	1%	0%

General
Network Interfaces
Bricks
Storage Devices
Permissions
Red Hat Search
Red Hat Documentation
Events

Volume	Brick Directory
No items to display	

# Quiz: Installing Red Hat Storage Console

# Lab: Installing Red Hat Gluster Console

# Summary

# Chapter 13: Managing Tiering

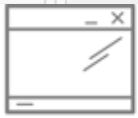
## Goal:

- Manage tiering configuration on a volume.

## Objectives:

- Describe tiering architecture and terminology.
- Configure tiering on a volume.
- Extend and shrink tiered volumes.

# Tiering Concepts and Terminology



Mount Point

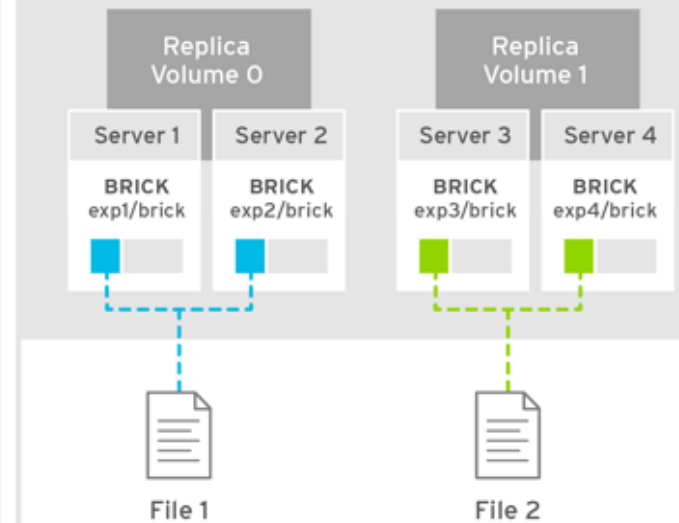
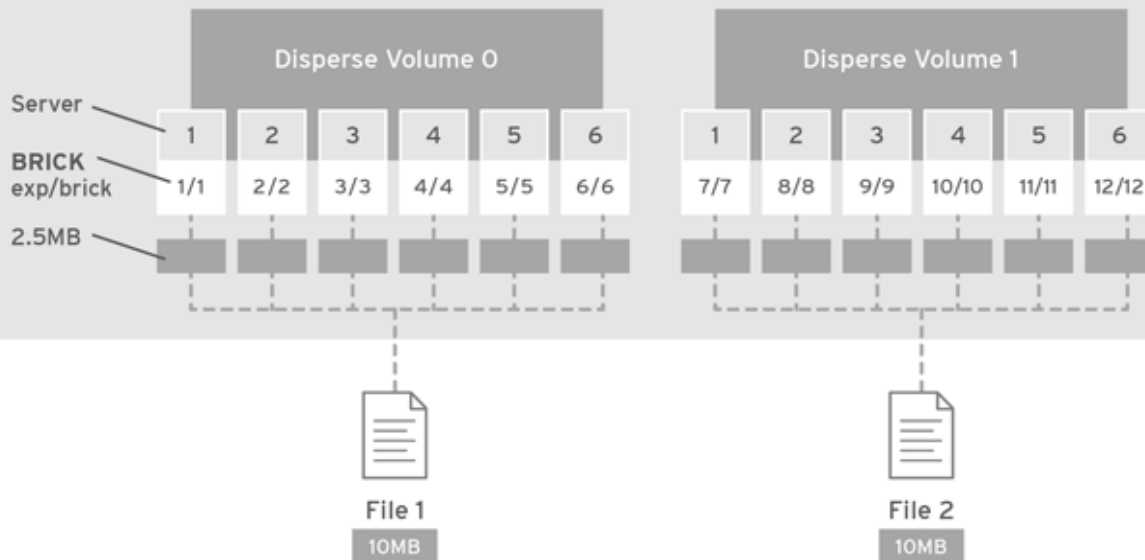
## Tiered Volume

Cold - Tier

Promotion

Hot - Tier

Demotion



GLUSTER\_381488\_0216

# Quiz: Tiering Concepts and Terminology



# Managing Tiering

# Guided Exercise: Managing Tiering

# Extending Tiered Volumes

# Guided Exercise: Extending Tiered Volumes

# Lab: Managing Tiering

# Summary

# Chapter 14: Monitoring Red Hat Gluster Storage

## Goal:

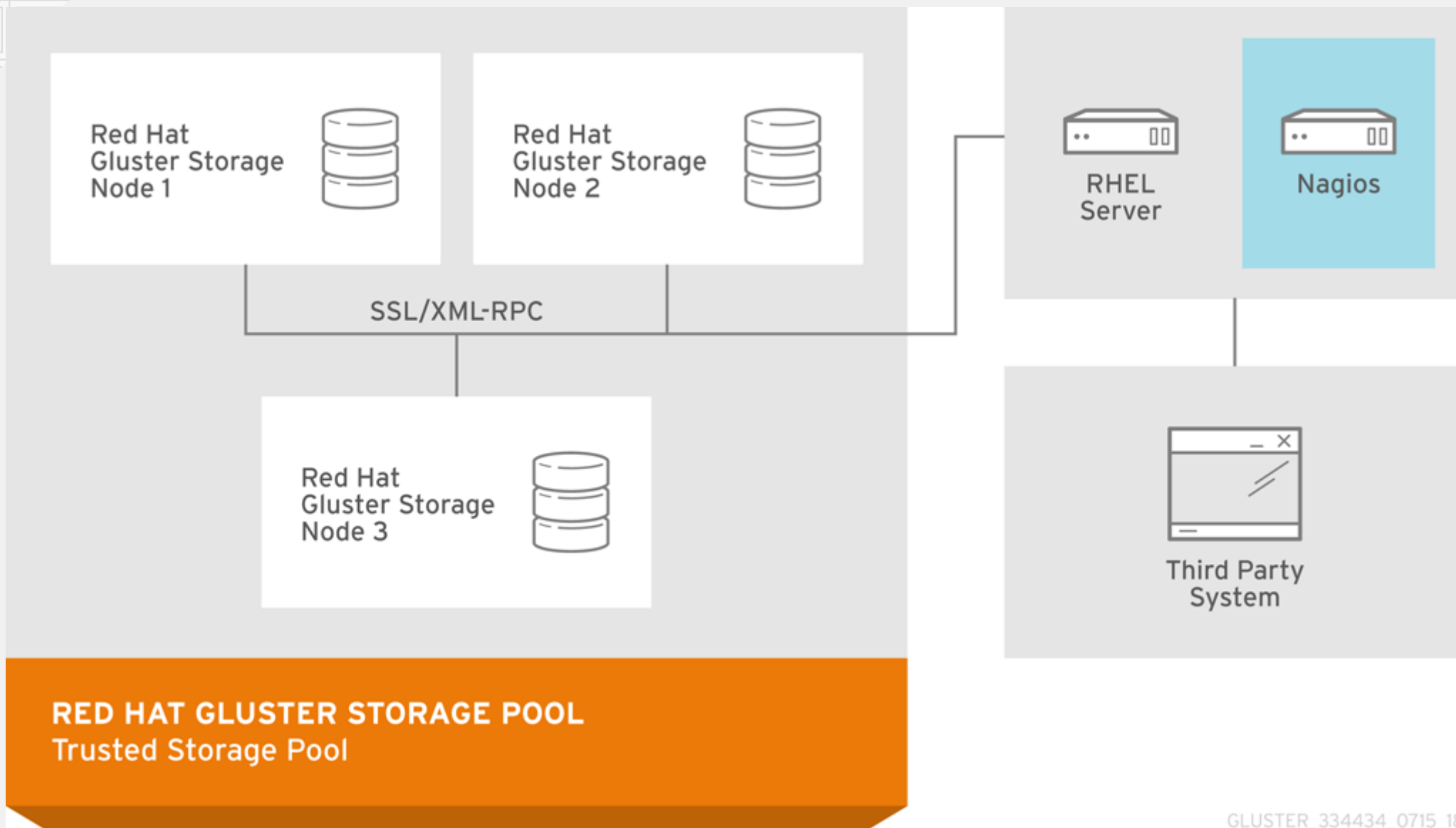
- Overview of monitoring tools for Red Hat Gluster Storage.

## Objectives:

- Monitor RHGS nodes and trusted storage pool.
- Profile the volumes and trusted storage pool workloads.

# Monitoring Red Hat Gluster Storage with Nagios





GLUSTER\_334434\_0715\_18

# Guided Exercise: Monitoring Red Hat Gluster Storage with Nagios

# Monitoring Red Hat Gluster Storage Workload

# Guided Exercise: Monitoring Red Hat Gluster Storage Workload

# Lab: Monitoring Red Hat Gluster Storage

# Summary

# Chapter 15 - Configuring Network Encryption

# Chapter 15: Configuring Network Encryption

## Goal:

- Configure network encryption for Red Hat Gluster Storage.

## Objectives:

- Enable management encryption.
- Enable I/O encryption for a volume.
- Configure encryption for a new node.
- Authorize a new client.



# Enabling Management and I/O Encryption

# Guided Exercise:Enabling I/O encryption for a volume

# Adding a Server to the Storage Pool Using Encryption

# Guided Exercise: Adding a New Node

# Authorizing a New Client

# Guided Exercise: Authorizing a New Client

# Lab: Configure Network Encryption

# Summary





THANK YOU!