RED HAT®
STORAGE

# RED HAT GLUSTER STORAGE ON CISCO UCS

BRIEF

Easily and rapidly deploy hundreds of terabytes to petabytes of software-defined Red Hat Gluster Storage.

Enable rapid deployment with the Cisco Unified Computing System (Cisco UCS) and help ensure deployment consistency with Cisco UCS Manager service profiles, templates, and policy-based management.

Enjoy enterprise-class reliability, resiliency, and a full storage feature set.

### WORKLOAD-OPTIMIZED SOFTWARE-DEFINED STORAGE CLUSTERS FOR KEY USE CASES

- General-purpose file serving
- Rich media file storage

The Cisco UCS C240 M5L Rack Server provides an ideal platform for Red Hat Gluster Storage.

## INTRODUCTION

The public cloud has revolutionized storage capacity deployment, with innovative software-defined storage yielding cost-effective scalability and the flexibility required by dynamic cloud applications. The cloud model offers the ability to provide workload-optimized storage performance on industry-standard servers, without the constraints of monolithic, proprietary network-attached storage (NAS) appliances. However, many organizations lack the time or resources required to design, test, and build custom software-defined storage solutions.

Working together, Cisco and Red Hat have reduced the guesswork and risk involved with deploying software-defined storage with a tested and validated Cisco Unified Computing System (Cisco UCS) configuration, offering proven and predictable performance for specific workloads. Cisco UCS provides the storage, network, virtualization, and storage access components while Red Hat® Gluster® Storage delivers software-defined scale-out storage—all deployed as a single cohesive system. An Ansible®-based quick-deploy utility configures Red Hat Gluster Storage on Red Hat Enterprise Linux® on the latest generation of Cisco UCS C240 M5L Rack Servers.

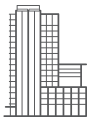
## RED HAT GLUSTER STORAGE ON CISCO UCS

Cisco UCS combines industry-standard, x86-architecture servers with networking and storage access into a single unified system, offering deep integration and policy-based management. The solution includes Red Hat Gluster Storage 3.4 on Cisco UCS C240 M5L Rack Servers. Cisco UCS Manager (UCSM) provides simplified infrastructure management while the Ansible-based quick-deploy utility provides automated installation and initial configuration of Red Hat Gluster Storage.

The validated configuration includes all of the components necessary for deployment:

- 4x Cisco UCS C240 M5L Rack Servers configured as storage servers
- 2x Cisco UCS 6332 Fabric Interconnects
- 2x Cisco Nexus C9332PQ Switches
- Cisco UCS Manager
- Red Hat Enterprise Linux
- Red Hat Gluster Storage

Red Hat Gluster Storage is designed for petabyte scale and beyond. Backed by vibrant open source community innovation, it can be deployed on bare-metal, virtual, container, and cloud environments. All required software is included with Red Hat's subscription-based licensing, with no add-on pricing for advanced features such as replication or snapshots, avoiding proprietary software licensing lock-in. The Ansible-based quick-deploy utility provides a single user interface for Gluster Storage deployment with minimal prerequisites for the user and minimal inputs at deployment. The utility prompts for various system details and then automatically prepares a Red Hat Gluster Storage environment for the desired workload with an appropriate data protection scheme.



## ABOUT RED HAT

Red Hat is the world's leading provider of open source software solutions, using a community-powered approach to provide reliable and high-performing cloud, Linux, middleware, storage, and virtualization technologies. Red Hat also offers award-winning support, training, and consulting services. As a connective hub in a global network of enterprises, partners, and open source communities, Red Hat helps create relevant, innovative technologies that liberate resources for growth and prepare customers for the future of IT.

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Two use cases are supported by the validated configuration, as described below and in Table 1:

- **General-purpose file serving** is ideal for typical file sync and share applications as well as container storage. This configuration employs chained, arbitrated, replicated volumes.
- **Rich media file storage** provides cost-effective and high-throughput storage of larger media files. This configuration uses erasure coding for data protection.

TABLE 1. RED HAT GLUSTER STORAGE ON CISCO UCS

| | GENERAL-PURPOSE FILE SERVING | RICH MEDIA |
|---|---|---|
| Typical file sizes | Small-to-medium (64KB to 50MB) | Large (100MB to multiple gigabytes) |
| Use cases | User directories, general file serving, mixed uses | Photos, rich media, and videos at large scale |
| Workload characteristics | Random access profile (75/25 read/write) | Predominantly sequential (both read and write intensive) |
| Disk config. (boot, data, LVM cache) | 2x SATA SSD 960GB RAID 1<br>12x NL-SAS HDD 10 TB RAID 6 (10+2)<br>1x 1.6TB HHHL AIG HGST SN260 NVMe Extreme Perf High Endurance | 2x SATA SSD 960 GB RAID 1<br>12x NL-SAS HDD 10 TB JBOD<br>1x 1.6TB HHHL AIG HGST SN260 NVMe Extreme Perf High Endurance |
| Data protection | Arbitrated replicated volumes | 4+2 erasure coding (dispersed volumes) |
| Minimum cluster* | Four nodes | |
| Disaster recovery | Multisite geo-replication and snapshots (not configured by default) | |
| Data encryption | In-flight and at-rest encryption (not configured by default) | |
| Server platform | Cisco UCS C240 M5L Rack Server, each with:<br>2x Intel Bronze 3104, 1.7GHz 3104/85W 6C/8.25MB Cache/DDR4 2133MHz,<br>256GB RAM, Cisco UCS VIC 1387, 12 Gbit SAS RAID controller with 2GB cache | |
| Client support | NFS client, SMB,<br>Red Hat Enterprise Linux® Gluster-native client using FUSE | |

* *Clusters can be extended beyond these base configurations using standard Gluster administration tools and techniques.*

## CONCLUSION

Designing an effective enterprise-class software-defined storage cluster requires hardware and software that have been tested and verified to work well together. Cisco UCS combined with Red Hat Gluster Storage dramatically simplifies and speeds the deployment of software-defined infrastructure optimized for specific workloads. The ability of Cisco UCS Manager to unify compute, networking, and storage components into a single cohesive system reduces time to deployment and lowers risk. Red Hat Gluster Storage builds on that solid foundation, offering software-defined scalability vetted and backed by a Cisco Validated Design.

## ABOUT CISCO

Cisco (NASDAQ: CSCO) is the worldwide technology leader that has been making the Internet work since 1984. Our people, products, and partners help society securely connect and seize tomorrow's digital opportunity today. Discover more at thenetwork.cisco.com