SCALITY

Scality RING – Storage that Powers Digital Business

Enterprise-Ready File, Object, S3, & OpenStack Storage
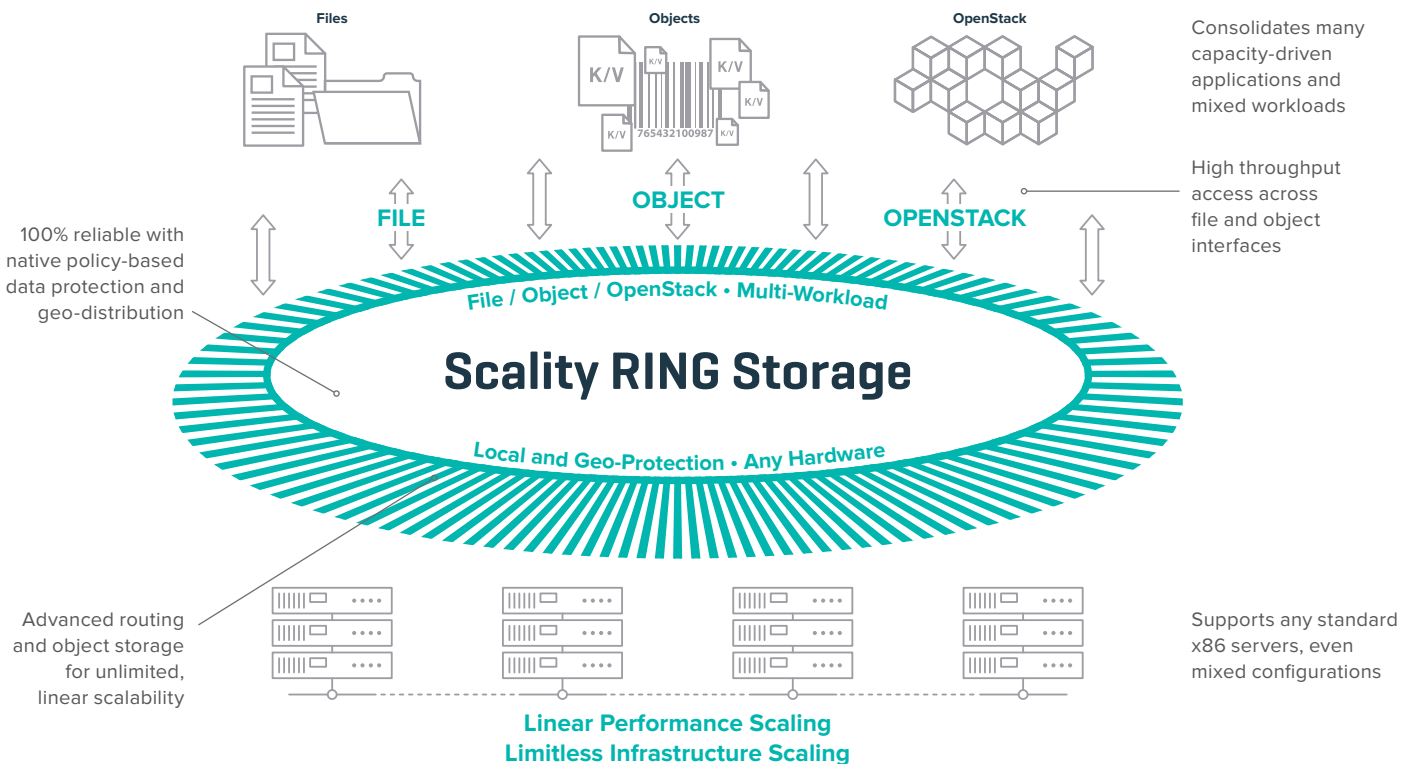
Unlimited Capacity and Performance Scalability

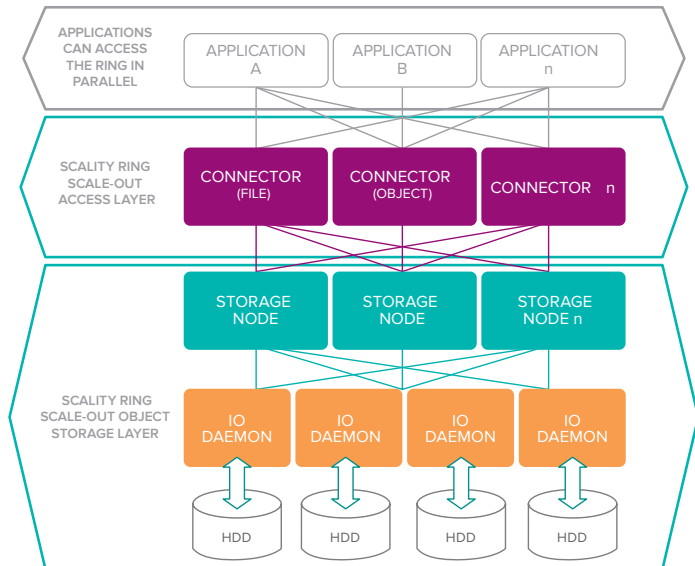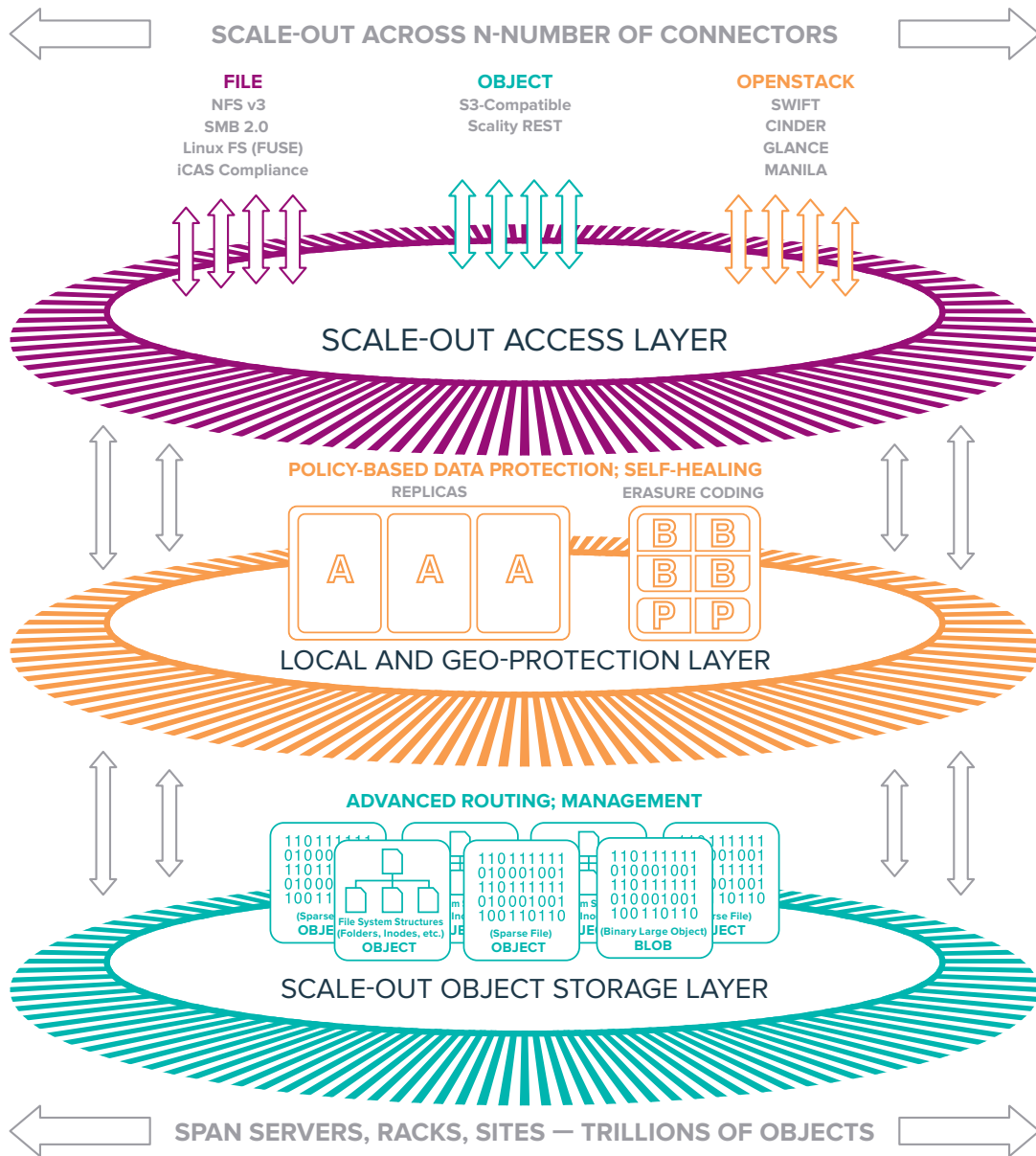**Software That Runs on any Linux-Powered x86 Servers**

100% Reliable to Ensure that Data is 100% Available

Scality RING object storage enables enterprises and cloud service providers to run **petabyte-scale, data-rich services** like web applications, VOD, active archives, compliance archives, and private storage clouds. The RING is software, so you can deploy it on **standard x86 servers of your choice**, taking advantage of server and media innovation over time. Acting as a single, distributed system, the RING can scale linearly across thousands of servers,

multiple sites, and an unlimited number of objects. Data is protected with policy-based replication, erasure coding, and geo-distribution, achieving up to 14 9s of durability and 100% availability. Top-ranked by IDC and Gartner, and powered by native **file, object, S3, and OpenStack** interfaces, the RING provides **high performance across a variety of workloads** at up to **90% lower TCO than legacy storage.**

Files

Objects

OpenStack

Consolidates many capacity-driven applications and mixed workloads

High throughput access across file and object interfaces

FILE

OBJECT

OPENSTACK

100% reliable with native policy-based data protection and geo-distribution

File / Object / OpenStack • Multi-Workload

Scality RING Storage

Local and Geo-Protection • Any Hardware

Advanced routing and object storage for unlimited, linear scalability

Supports any standard x86 servers, even mixed configurations

Linear Performance Scaling
Limitless Infrastructure Scaling

SCALITY RING ARCHITECTURE AND FEATURES

SCALE-OUT ACROSS N-NUMBER OF CONNECTORS

FILE
NFS v3
SMB 2.0
Linux FS (FUSE)
iCAS Compliance

OBJECT
S3-Compatible
Scality REST

OPENSTACK
SWIFT
CINDER
GLANCE
MANILA

SCALE-OUT ACCESS LAYER

POLICY-BASED DATA PROTECTION; SELF-HEALING

REPLICAS

ERASURE CODING

A A A

B B
B B
P P

LOCAL AND GEO-PROTECTION LAYER

ADVANCED ROUTING; MANAGEMENT

110111111
01000
10011
01000
10011
(Sparse
OBJE

File System Structures
(Folders, Inodes, etc.)
OBJECT

110111111
010001001
110111111
010001001
100110110
(Sparse File)
OBJECT

110111111
010001001
110111111
010001001
100110110
(Binary Large Object)
BLOB

110111111
010001001
11111
001001
10110
rse File)
OBJECT

SCALE-OUT OBJECT STORAGE LAYER

SPAN SERVERS, RACKS, SITES — TRILLIONS OF OBJECTS

APPLICATIONS CAN ACCESS THE RING IN PARALLEL

APPLICATION A | APPLICATION B | APPLICATION n

SCALITY RING SCALE-OUT ACCESS LAYER

CONNECTOR (FILE) | CONNECTOR (OBJECT) | CONNECTOR n

STORAGE NODE | STORAGE NODE | STORAGE NODE n

SCALITY RING SCALE-OUT OBJECT STORAGE LAYER

IO DAEMON | IO DAEMON | IO DAEMON | IO DAEMON

HDD | HDD | HDD | HDD

Any-to-Any Performance

The RING offers superior performance over legacy storage and object-based systems. It ensures high throughput and low latency across small and large files through its unique any-to-any performance capabilities. The platform's access and storage layers can scale independently to thousands of nodes, all of which can be accessed directly and concurrently. RING Connectors scale performance nearly linearly.

Performance

- File performance: Up to 700MB/sec very large file reads and 900MB/sec on mixed file writes per RING connector.
- Object performance: Up to 1GB/sec very large object reads per RING Connector.
- Up to 3000 S3 operations per second, per Bucket on S3 Connector.
- Read-ahead cache for sequential IOs: System detects sequential access patterns and repeatedly doubles the amount of data fetched into cache.
- Cache striping optimization for small file random IO: System by default reads only the requested number of bytes into cache (avoids fetching whole stripes — unless sequential access detected).

Scale-Out File, Object, and OpenStack Access

Access all of your data at petabyte scale. The RING is the only storage platform that natively supports file, object, and OpenStack access in one consolidated system. Each access point can be independently configured for high availability.

AWS S3
- Compatible API — AWS IAM, AWS Signature v4 and v2 HMAC authentication schemes, SAML 2.0-compatible Identity Providers for Single Sign-On with Active Directory

File Specifications
- Fully parallel, scale-out with POSIX- style file system
- New cache for shared folder view
- Integrated load balancer for NFS and SMB connectors
- Volume quotas and space reporting
- File undelete (Recycle Bin)
- Volume protection
- Asynchronous metadata and data replication
- NFS v3 (Supports full scale-out, load balancer, quotas)
- SMB 2.0 (based on Samba 3.5 and later)
- Linux FUSE (supports data compatibility with REST)
- iCAS Compliance (NFS, SMB, SOAP-based interfaces with certifications including SEC 17a-4)

Object Specifications
- AWS S3-compatible API (supports Bucket, Object & MPU APIs, AWS IAM, Sig v2, Sig v4, SAML 2.0, and Active Directory)
- Native Scality REST API

OpenStack Specifications
- OpenStack APIs: Swift (supports Swift storage policies and Keystone), Glance (images), Manila (file storage)

Local and Geographical Data Protection and Self-Healing

The RING is designed to maintain 100% data availability and require no downtime during planned and unplanned events including hardware failures, capacity upgrades, and software upgrades. With the RING, IT organizations have fine-grain data protection control on a per object basis, and customizable failure domains to protect against disk, server, rack, and site failures.

Policy-based Data Protection with Native Multi-site capabilities
- Replication up to six copies (object level replicas)
- Erasure coding to reduce overhead for large objects
- Single or Multi-RING Sync and Replication at the object level

Self-Healing
- Distributed self-healing processes to resolve disk and server failures
- Replacement of failed disks as scheduled process
- Data integrity assurance through integral CRC checksums

Scale-Out Storage with Advanced Routing

The RING is designed to scale to exabytes of capacity and trillions of objects as a single system with guaranteed response and continuous availability even at massive scale.

Storage Features
- Scalable peer-to-peer architecture, with full system level redundancy,
- Integrated Scale-Out-File-System (SOFS) with POSIX semantics
- Unique native distributed database – full scale-out support of object key values, file system metadata, and POSIX methods
- Unlimited namespace and virtually unlimited object capacity
- No size limit on objects (including multi-part upload for S3 REST API)
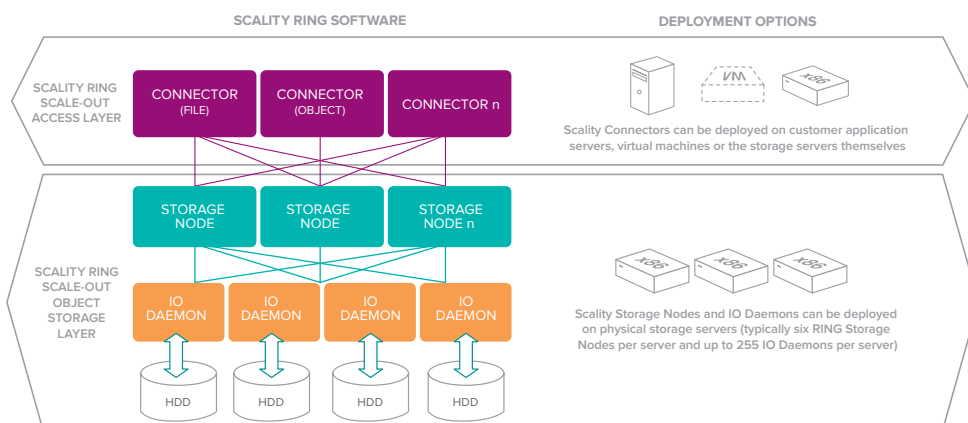
Webscale System Management

With the RING, you can operate and manage extremely large-scale, globally dispersed storage operations simply and cost-effectively, automating many common storage optimizations.

Comprehensive Management Interfaces
- Browser-based administrative interface with full topology view, monitoring, reporting, and graphing
- RING status with Zone, Server and Node details
- Full management and control with rich and scriptable CLI
- Support for monitoring and alerting via SNMP, MIB and traps

Simple Operations and Management
- System capacity and performance expansion
- Automated disk failure detection and handling framework
- Automatic rebuild of failed drive data on remaining drives
- Automated storage rebalancing

Licensing
Licensing is based on usable capacity (unique data, not replicas). It includes a range of file, object, and OpenStack connectors. Options include multi-geo configuration and email connectors.

Software Warranty
Worldwide, 24-hour support is available. Customers receive complete installation services and options like proactive health checks and migration assistance.

Agile Deployment

With the RING, you're free to deploy in ways that best suit your infrastructure. RING connectors and storage servers are independently scalable. You can run the connectors co-located with customer application servers, on virtual machines, or on the storage servers. Deploy a RING environment on a single site or stretched over multiple sites. You can also choose to replicate locally, across sites, or both. We also offer a centralized installer with silent (unattended) installer mode.

SCALITY RING SOFTWARE | DEPLOYMENT OPTIONS

SCALITY RING SCALE-OUT ACCESS LAYER

CONNECTOR (FILE) | CONNECTOR (OBJECT) | CONNECTOR n

Scality Connectors can be deployed on customer application servers, virtual machines or the storage servers themselves

STORAGE NODE | STORAGE NODE | STORAGE NODE n

SCALITY RING SCALE-OUT OBJECT STORAGE LAYER

IO DAEMON | IO DAEMON | IO DAEMON | IO DAEMON

Scality Storage Nodes and IO Daemons can be deployed on physical storage servers (typically six RING Storage Nodes per server and up to 255 IO Daemons per server)

HDD | HDD | HDD | HDD

SCALITY RING BENEFITS AND CUSTOMER EXAMPLES

FEATURE	Any application: The only storage platform with native file and object storage	Any hardware: Unlimited scaling with total hardware freedom	Any cloud: S3 or OpenStack, public or private	Continuous availability	Intuitive GUI & Feature-Rich CLI
BENEFIT	Consolidates legacy and digital applications, reducing overall storage TCO	Scale to exabytes for 90% lower TCO than legacy storage with no data migration or downtime.	Launch public or private cloud services with a proven storage foundation, with both AWS S3 and OpenStack compatible interfaces for maximum flexibility	Improve customer satisfaction with higher service levels, a lower your risk of data loss.	Enables simple operations & management
CUSTOMER PROOF	Deluxe OnDemand streams at over 100Gb/s with the RING's file interfaces	Dailymotion has gained superior CAPEX and OPEX	SFR has a dozen applications for public and private cloud running on the same Scality RING infrastructure.	Telenet has not seen one minute of downtime since they deployed their RING in 2010	Comcast manages massive RING infrastructures with fewer storage managers

SCALITY RING USE CASES

The RING enables both data-rich custom and packaged applications aggregating multiple applications into a single storage environment. This eliminates silos, drives increased utilization, and creates cloud-like economies of scale. The RING supports use cases across many industries, including Service Providers, Media & Entertainment, Public Sector, Financial Services, and R&D intensive industries like Manufacturing and Research.

ACTIVE ARCHIVE
The RING enables organizations to build exabyte-scale active archives that have all the performance benefits of online storage at a cost point that is comparable to tape.

The RING also supports standards-based compliance archiving with 95 ISV validations and certifications like SEC 17a-4.

CONTENT DISTRIBUTION
The RING enables organizations to build scalable distribution infrastructures that meet all the performance requirements for high definition media streaming at a fraction of the cost of storage at CDN providers as well as enabling non-linear models such as nDVR/nPVR and VoD.

WEB & CLOUD SERVICES
The RING enables organizations to build webscale storage infrastructures that meet all the performance, availability, and durability requirements for scale-out web applications at a much lower cost than public cloud offerings. It also features a wide range of interfaces and protocols for easy application integration.

PRIVATE STORAGE CLOUD
The RING provides a ubiquitous storage platform with file, object, & OpenStack storage capabilities with a substantially lower TCO through software and hardware unbundling, a wide range of standard x86 server options, and high durability with low overhead.

SCALITY

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