

SCALITY TECHNICAL PRESENTATION

RING 8

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GLOBAL PRESENCE

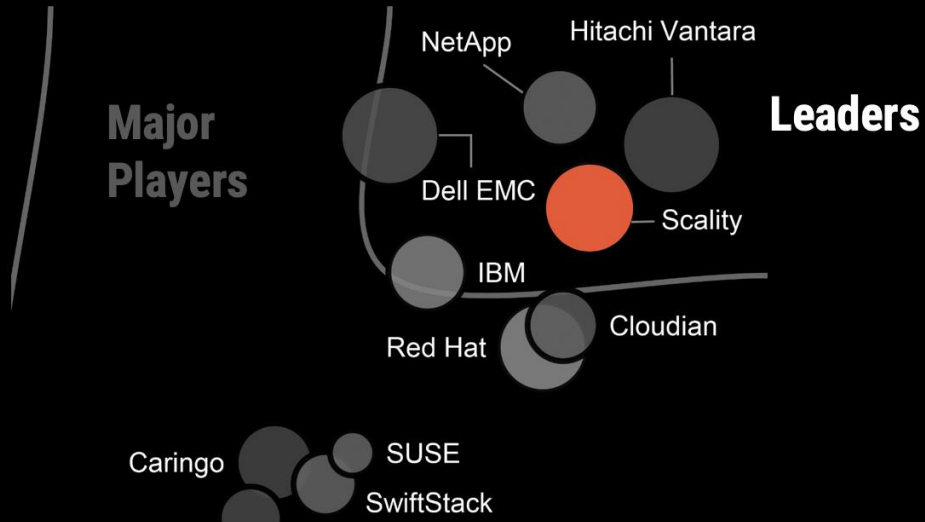
Founded in 2009 · 8 global offices · 20+ nationalities



GLOBAL CLIENT BASE

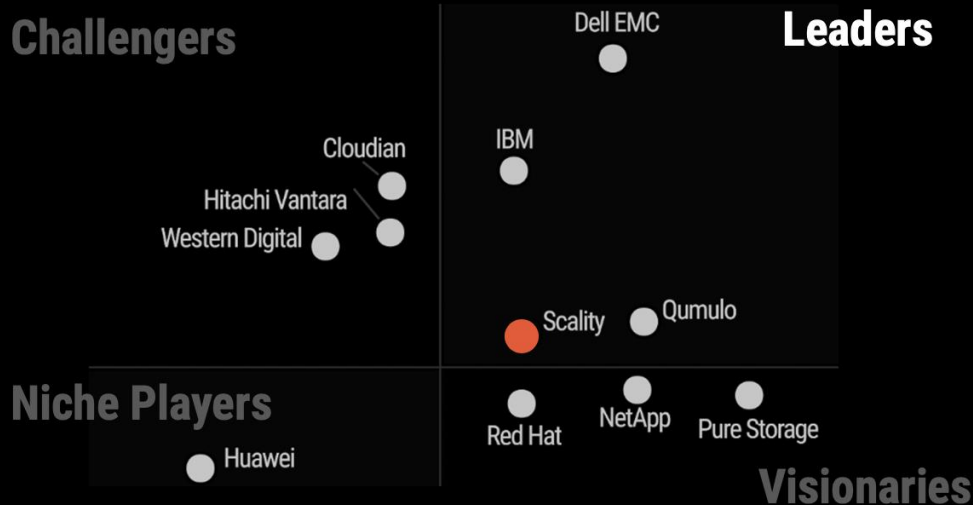
EUROPE	amadeus	MAIRIE DE PARIS			
	SOCIETE GENERALE	orange™	RTL	SFR	
	dailymotion	TF1	EUROSPORT		
	Hospices Civils de Lyon	RENAULT	SNCF	EDF	NATIXIS
	AMERICAS	Bloomberg Media	rackspace		
		Charter COMMUNICATIONS	Penn Medicine Lancaster General Health		
		Bank of America	deluxe		
		HBO	COMCAST		
		JAPAN	KDDI	BIGLOBE	NAGOYA UNIVERSITY
	DMM.com		@nifty		
AUSTRALIA	SMX SEARCH MARKETING EXPO.				
	foxtel				
	T				
	EndemolShine Group	MediaHub			

IDC MARKETSCAPE WORLDWIDE OBJECT-BASED STORAGE 2019



SCALITY NAMED A LEADER Highest Score for Hybrid Cloud Use Case

GARTNER MQ FOR DISTRIBUTED FILE SYSTEMS AND OBJECT STORAGE 2019



GARTNER CRITICAL CAPABILITIES FOR OBJECT STORAGE 2019

Product or Service Scores for Hybrid Cloud Storage

Scality RING	4.20
IBM COS	4.19
NetApp StorageGRID	4.19
SwiftStack Storage	4.19
Cloudian HyperStore	4.17
Dell EMC ECS	4.14





100% SOFTWARE SOLUTION

FOR ANY STANDARD x86 SERVER PLATFORM



RING

PRIVATE CLOUD

object & file storage in a single system · peer to peer architecture · unlimited scalability · unbounded scale-out performance · most adaptive set of robust data protection mechanisms · autonomous self-healing · designed in close collaboration with the biggest (cloud-scale) service providers in the world



MULTI-CLOUD DATA CONTROLLER

TO ACCESS AND MANAGE DATA ACROSS CLOUDS



ZENKO

PUBLIC CLOUDS

a single, unified API across all clouds to simplify application development · the only multi-cloud data management solution independent of the storage system · stores data in standard cloud format to make the data consumable directly by native cloud apps and services · true multi-cloud IT · global search across all managed data independent of cloud location

SCALITY RING TARGET USE CASES

RING is storage software for unstructured data
for applications accessing files/objects with a sequential IO pattern and high parallelism
whatever the file/object size
optimized for throughput

PUBLIC CLOUD
EMAIL



PUBLIC CLOUD
CONSUMER SERVICES



PRIVATE & HYBRID
CLOUD



BACKUP & ARCHIVE



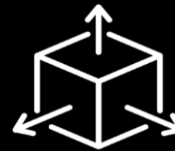
MEDICAL IMAGING
ARCHIVE



MEDIA NEAR-LINE
ARCHIVE



VIDEO/CONTENT
DISTRIBUTION

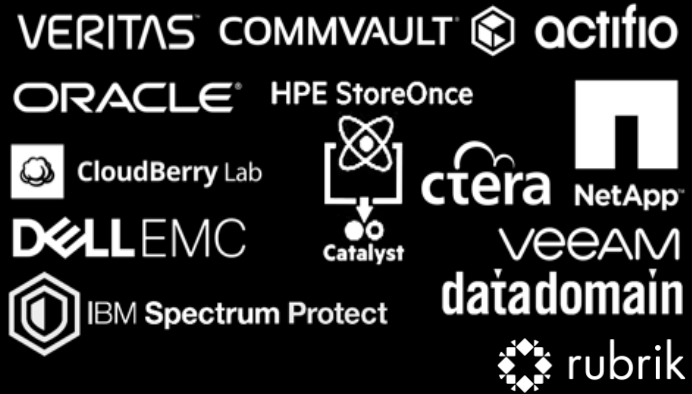


ADDITIONAL USE CASES



SCALITY RING READY TO DEPLOY ISV PARTNERS

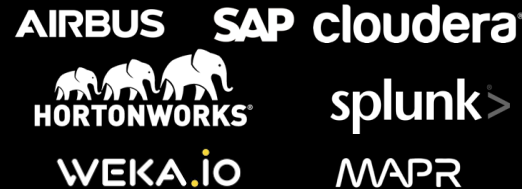
BACKUP



VIDEO



BIG DATA



COLLABORATION



ARCHIVE & MEDICAL



Scality RING / S3 + iRODS

iRODS: Accès au RING

Le plugin S3 de iRODS, en mode “detached”, permet à n’importe quel serveur iRODS d’accéder au RING

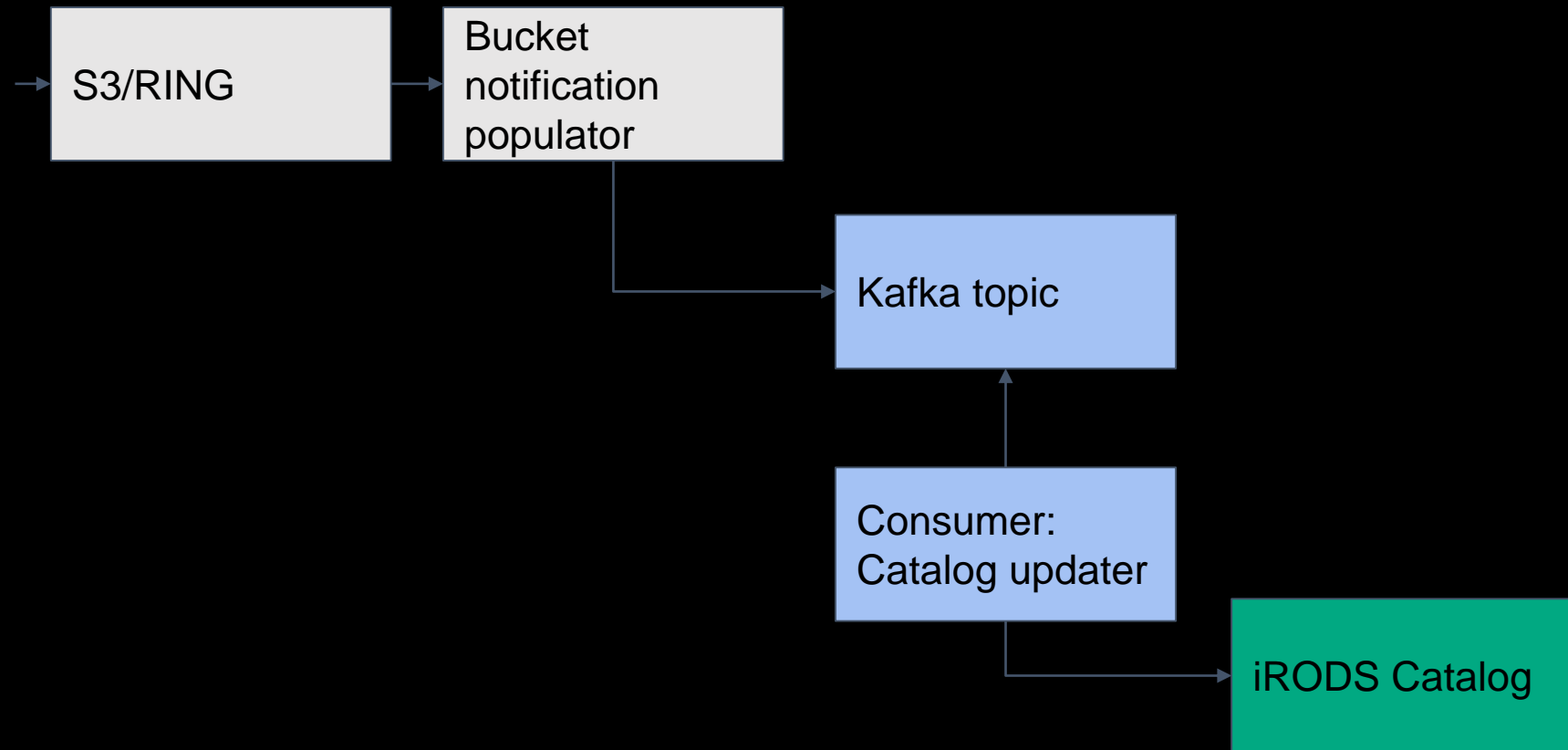
Lecture et Écriture sur le RING depuis un client iRODS: Les buckets S3 stockés sur le RING sont déclarés comme des ressources iRODS, sur lesquelles n’importe quel client iRODS peut déposer ou lire des fichiers.

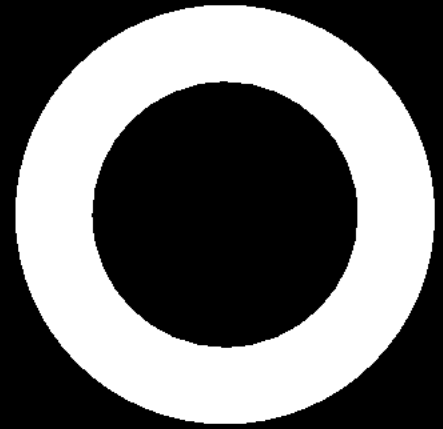
Lecture sur le RING depuis un client S3: Les données déposées via iRODS sont accessibles en lecture aux clients S3. Elles y sont déposées en format “natif”.

Écriture sur le RING depuis un client S3: Les données déposées sur le RING via un client S3 ne sont pas immédiatement visibles dans iRODS car initialement absentes du catalogue. L’enregistrement des données dans le catalogue peut être fait de manière explicite (e.g. via ireg), ou de manière automatique en exploitant la fonctionnalité “bucket notification” du RING: une notification est générée à chaque dépôt ou modification de fichier; cette notification est ensuite consommée par une fonction qui actualise les catalogue iRODS.

Actualisation du catalogue iRODS

proposition d'intégration avec iRODS





RING

SCALITY RING SOFTWARE



NATIVE FILE

SMB

NFS

FUSE

REST



NATIVE OBJECT

S3

BLOB

REST



MANAGEMENT

user interface

API · CLI

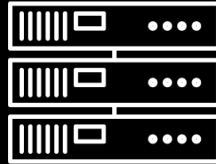
scale-out · any-to-any · shared-nothing
self-healing · high performance · up to 14 9's durability · multi-site

100% software

STANDARD LINUX / STANDARD x86 SERVERS



SCALITY RING HARDWARE COMPONENTS



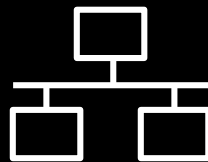
STORAGE SERVERS

3 servers minimum · any x86 industry standard server
SATA disks for data · flash storage for metadata
provides distributed storage and file / object access



MANAGEMENT SERVER

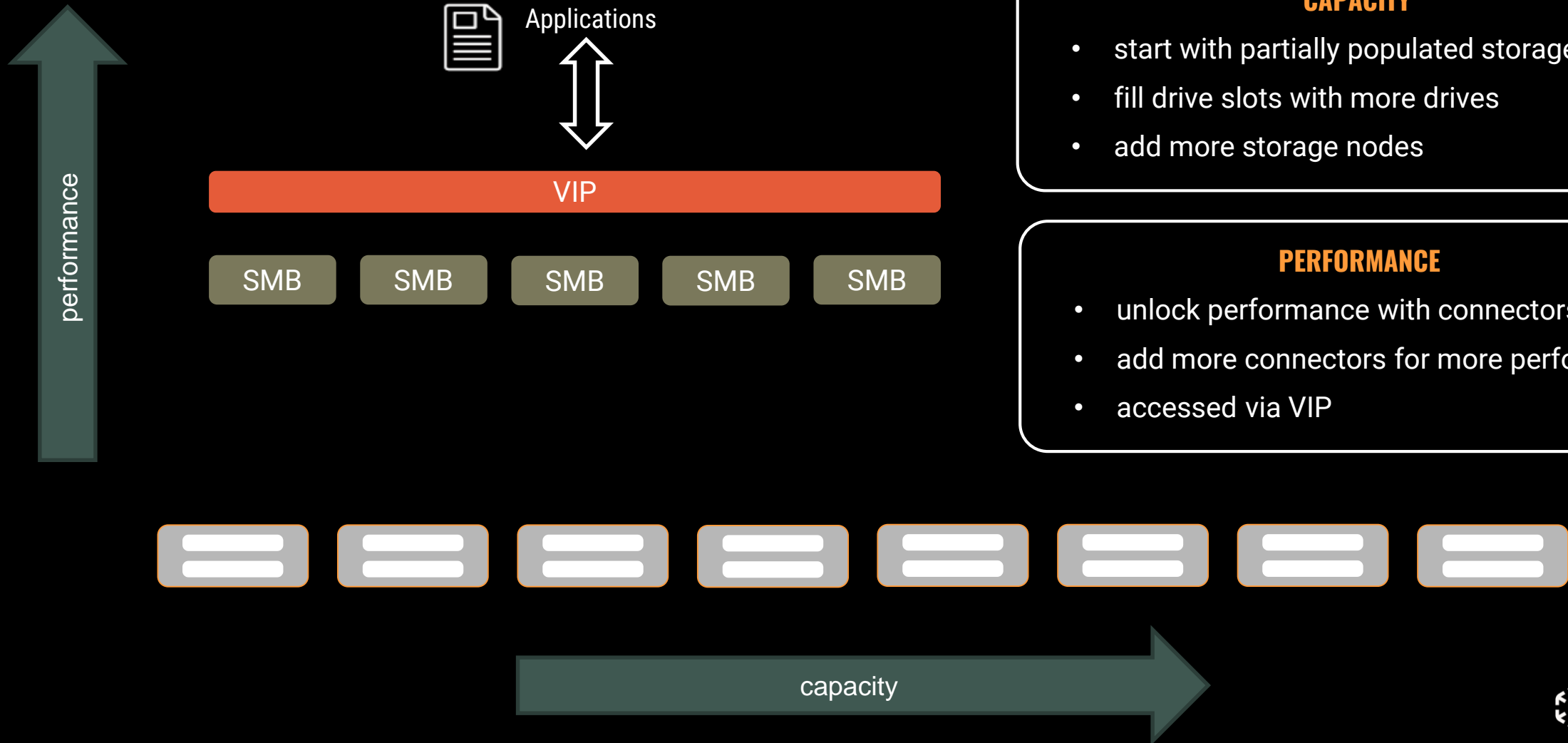
1x 1U server or VM
provides GUI and API for management and
monitoring



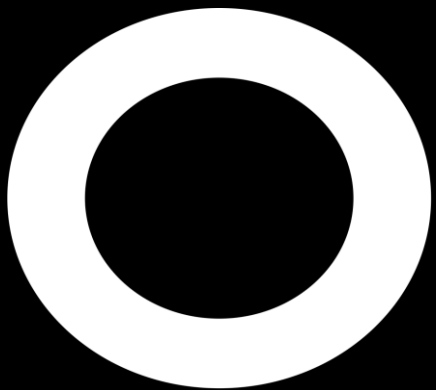
NETWORKING

standard ethernet cabling & switching

SCALING



RING DATA PROTECTION



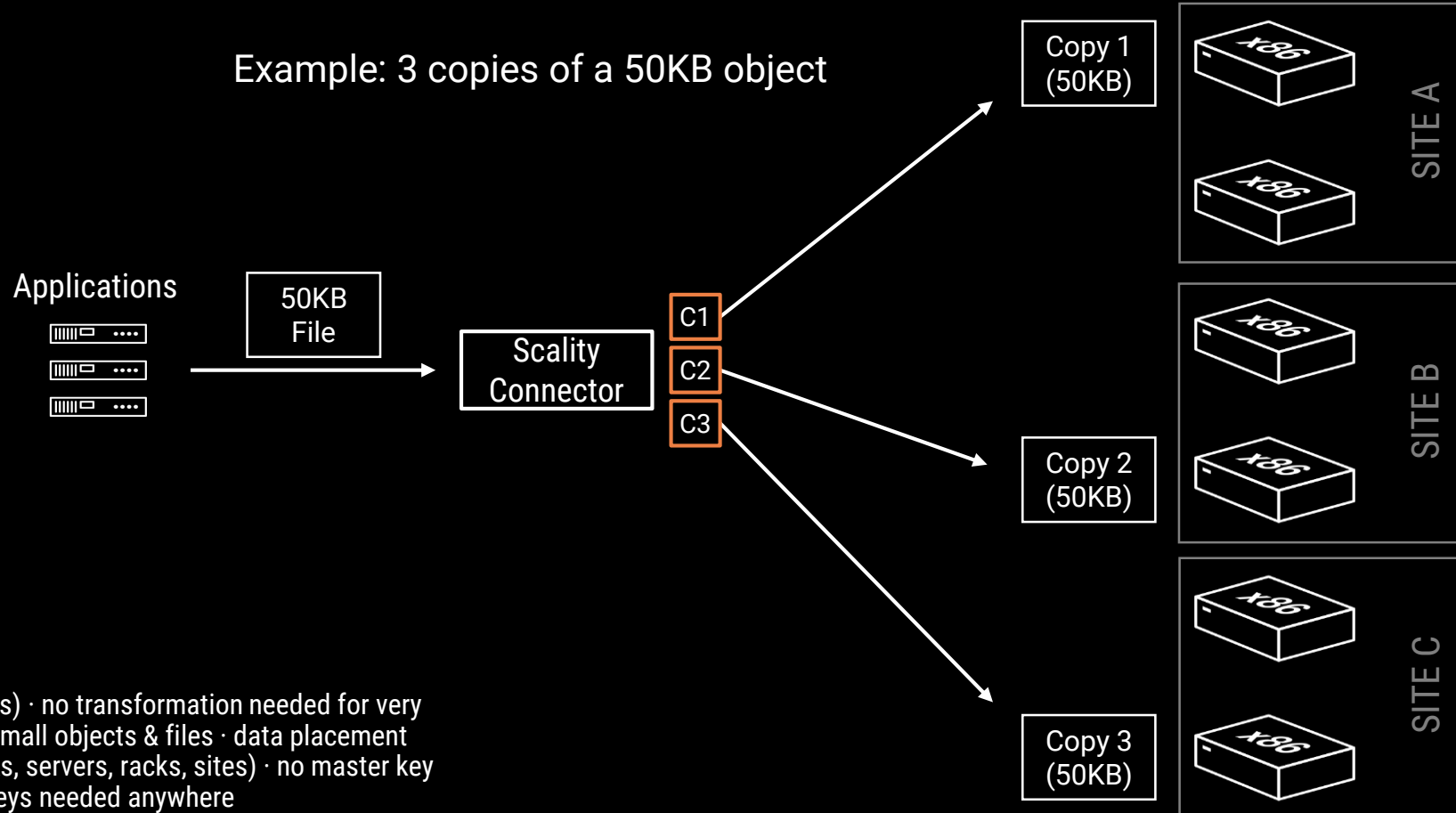
RING DATA PROTECTION

REPLICATION

ERASURE CODING

MULTI-SITE

Example: 3 copies of a 50KB object



0 to 5 replicas (1 to 6 copies) · no transformation needed for very fast access · optimal for small objects & files · data placement across failure domains (disks, servers, racks, sites) · no master key or list of keys needed anywhere

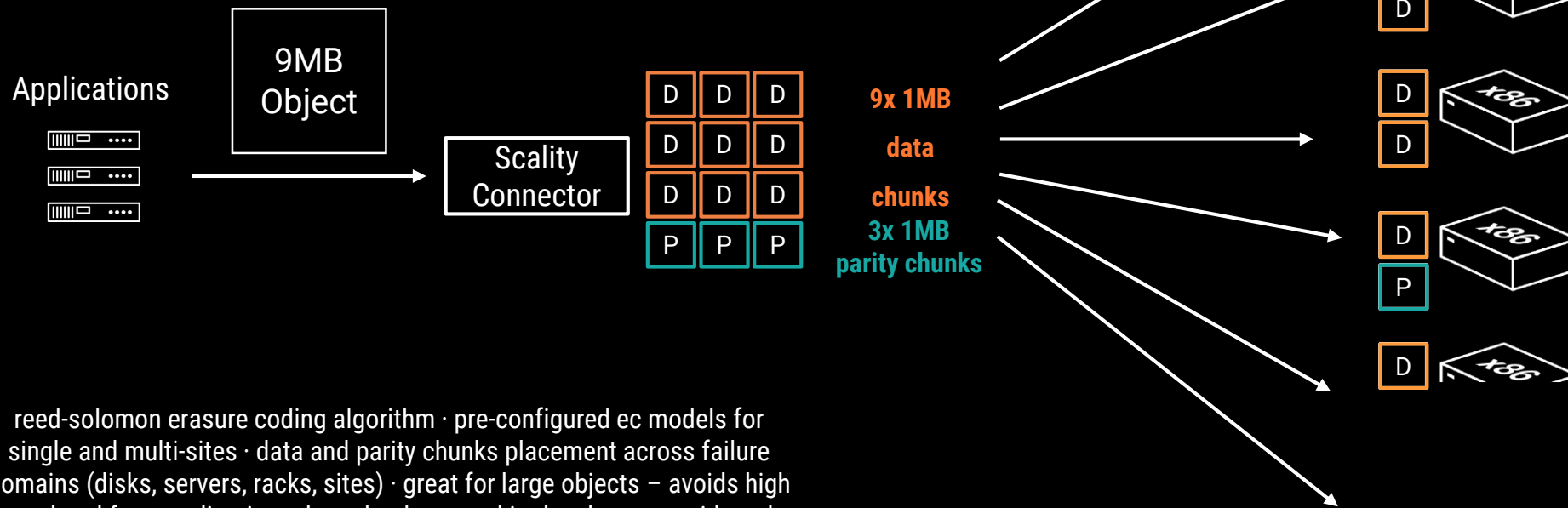
RING DATA PROTECTION

REPLICATION

ERASURE CODING

MULTI-SITE

Example: EC (9,3) on a 9MB object. Single Site.
Provides three-disk failure protection with ~33% overhead.



reed-solomon erasure coding algorithm · pre-configured ec models for single and multi-sites · data and parity chunks placement across failure domains (disks, servers, racks, sites) · great for large objects – avoids high overhead from replication · data chunks stored in the clear to avoid read performance penalties · automatic replication under 60kb

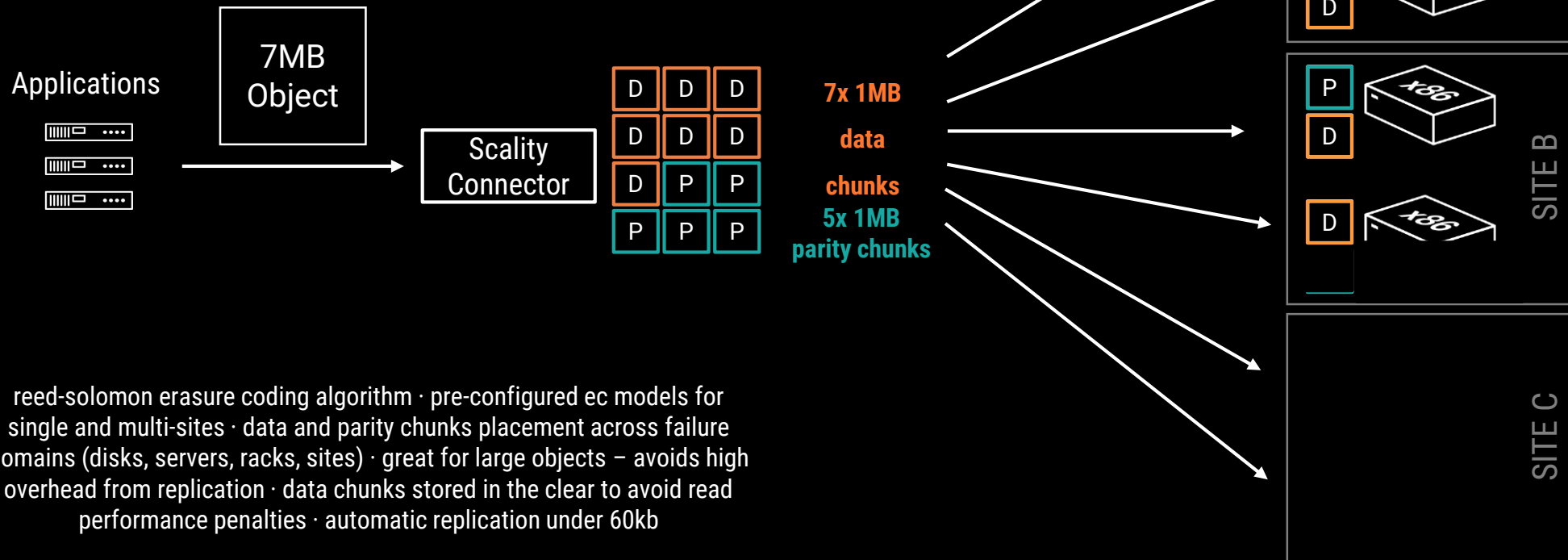
RING DATA PROTECTION

REPLICATION

ERASURE CODING

MULTI-SITE

Example: EC (7,5) on a 7MB object. Three Site.
Provides three-disk failure protection with ~75% overhead.



reed-solomon erasure coding algorithm · pre-configured ec models for single and multi-sites · data and parity chunks placement across failure domains (disks, servers, racks, sites) · great for large objects – avoids high overhead from replication · data chunks stored in the clear to avoid read performance penalties · automatic replication under 60kb

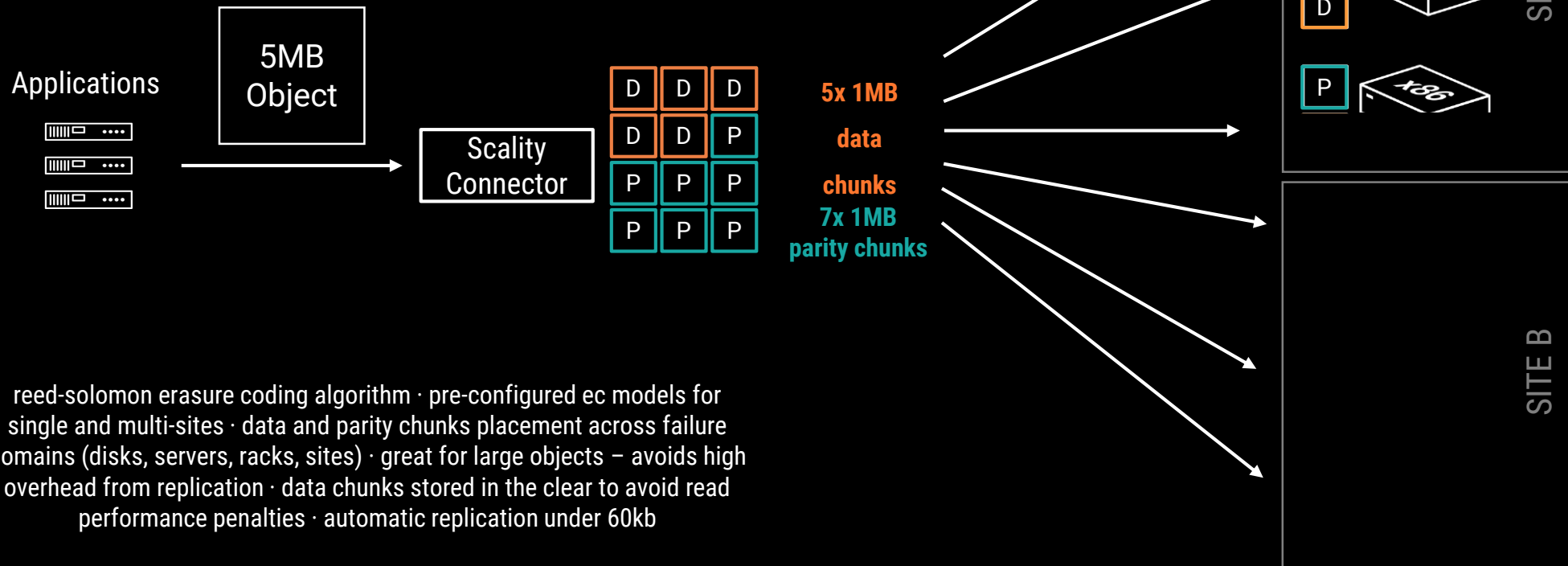
RING DATA PROTECTION

REPLICATION

ERASURE CODING

MULTI-SITE

Example: EC (5,7) on a 5MB object. Two Site.
Provides three-disk failure protection with ~145% overhead.



reed-solomon erasure coding algorithm · pre-configured ec models for single and multi-sites · data and parity chunks placement across failure domains (disks, servers, racks, sites) · great for large objects – avoids high overhead from replication · data chunks stored in the clear to avoid read performance penalties · automatic replication under 60kb

RING DATA PROTECTION

REPLICATION

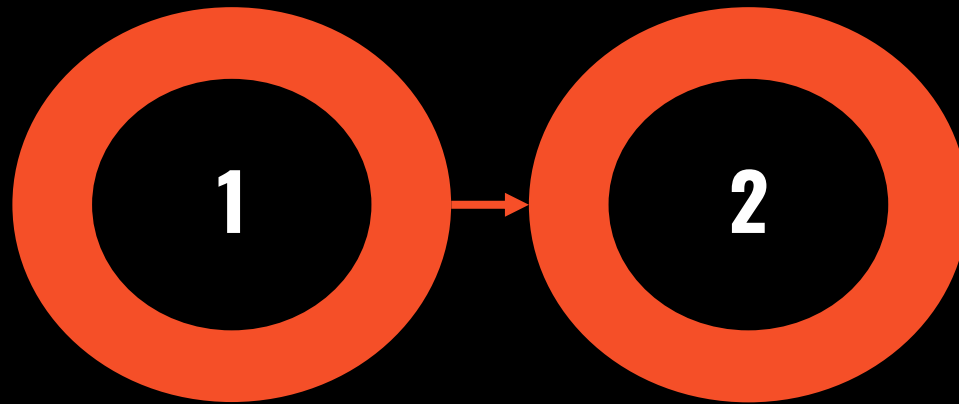
ERASURE CODING

MULTI-SITE

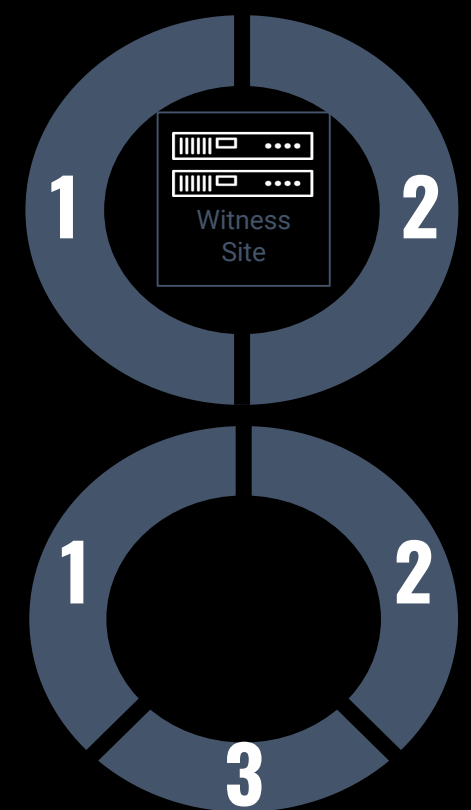
Single Site RING



Mirrored RINGS



Stretched RING



RING MULTI-SITE

MIRRORING

2-SITE WITH WITNESS

3-SITE STRETCHED

asynchronous replication of data from site 1 to site 2 for DR
configurable per volume · delta-only replication
read-only access on DR site

supports the failure of an entire site
RPO = seconds · RTO = same as applications

no latency limitations, intersite links need to accommodate
applications workloads



RING MULTI-SITE

MIRRORING

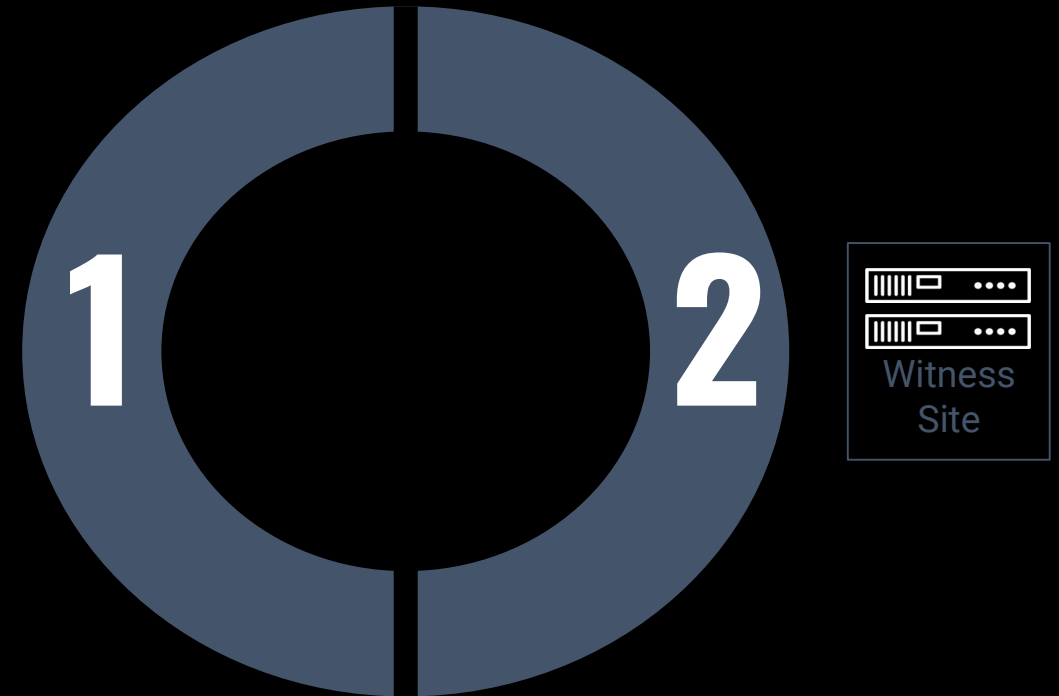
2-SITE WITH WITNESS

3-SITE STRETCHED

synchronous operations across 2 full sites + a quorum/witness site
any volume *belongs* to one site only · any site can *host* volumes
better durability and storage efficiency than 2-site mirroring

supports the failure of an entire site without service downtime
RPO = 0 · RTO = 0

sites in the same metro area (<10ms latency)



RING MULTI-SITE

MIRRORING

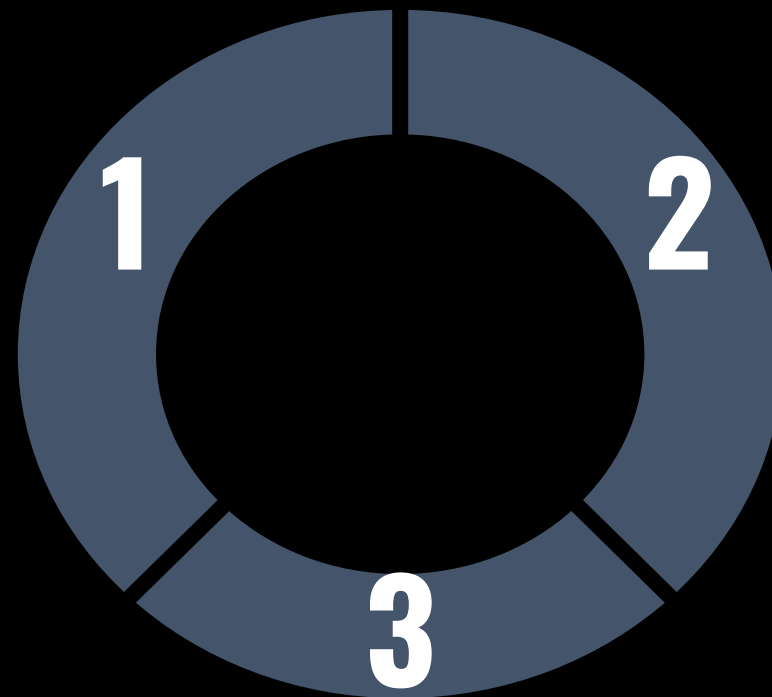
2-SITE WITH WITNESS

3-SITE STRETCHED

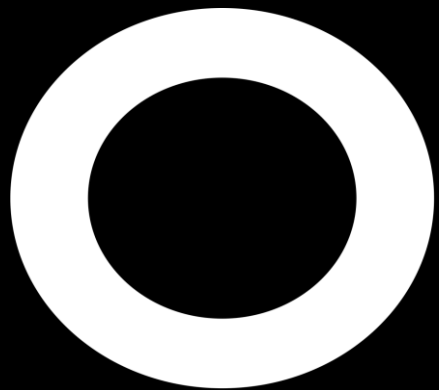
synchronous operations across 3 sites
any single volume *belongs* to one site · any site can *host* volumes
best durability and storage efficiency combination of all multi-geo models

supports the failure of an entire site without service downtime
RPO = 0 · RTO = 0

sites in the same metro area (<10ms latency)

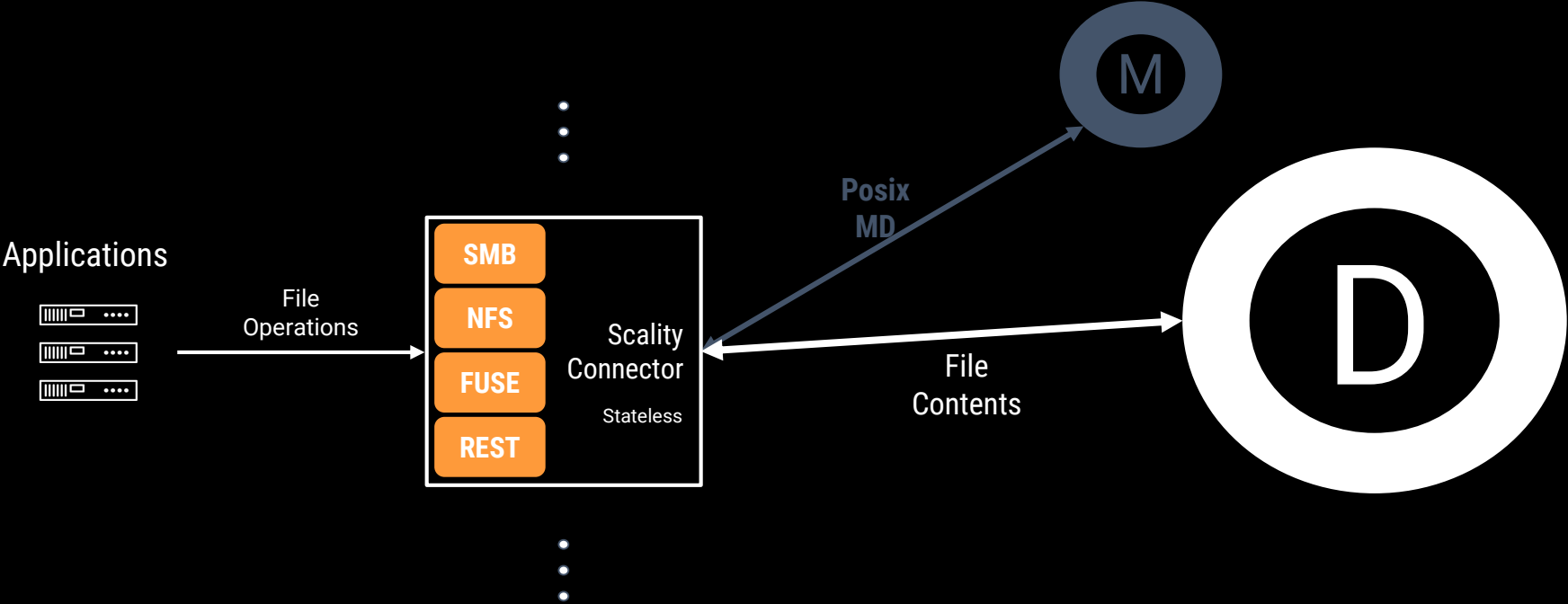


RING Scale out File System Connector

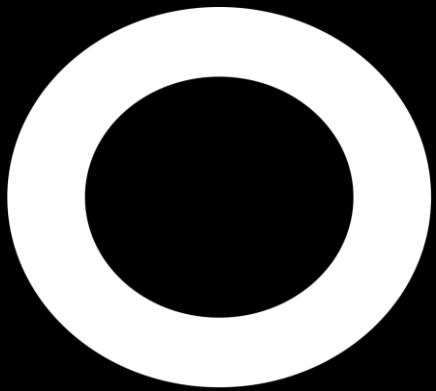


RING SCALE OUT FILE SYSTEM

SMBv3, NFSv4, Linux FUSE, and REST access
unlimited amount of volumes and files
distributed POSIX metadata · stateless connectors
volume quotas · volume protection
read-only access via S3 API

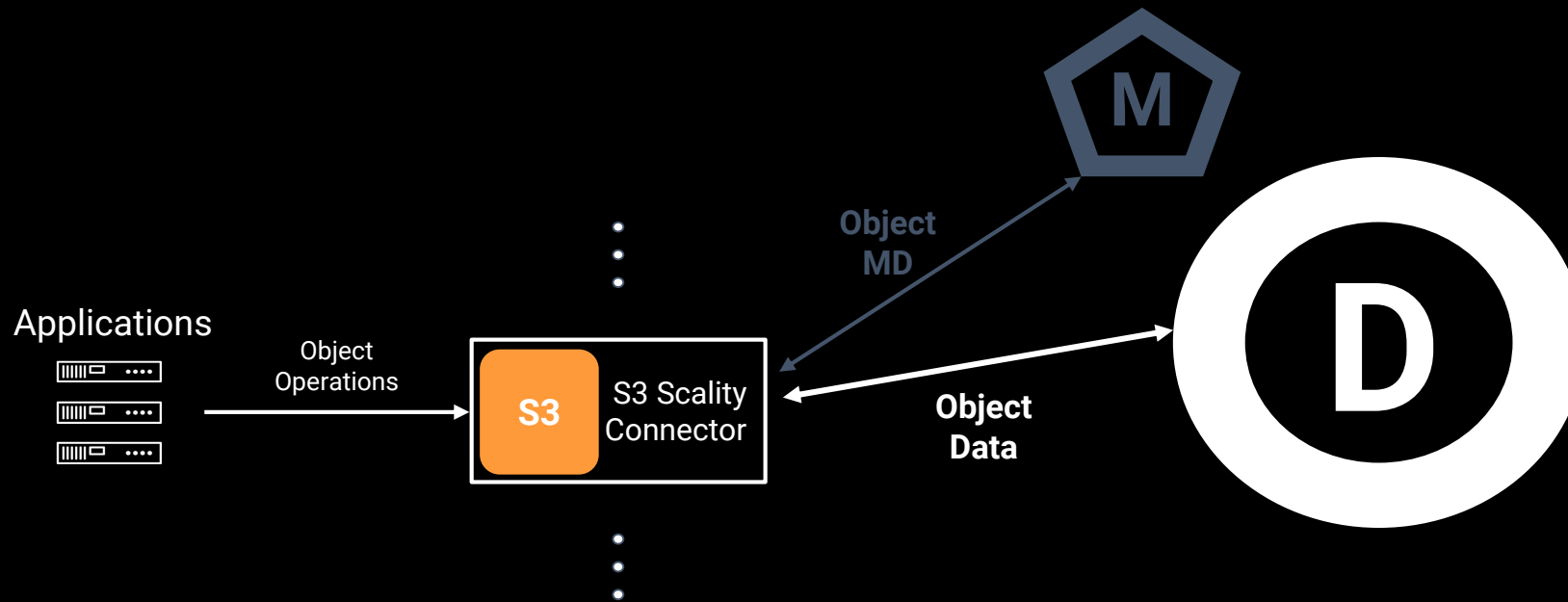


RING S3 CONNECTOR



RING S3 Connector

AWS S3 and IAM API compatible
unlimited amount of buckets and objects
distributed scale-out metadata · stateless connectors
bucket encryption · object versioning · WORM · utilization API
· bucket location control · lifecycle management



RING S3 CONNECTOR

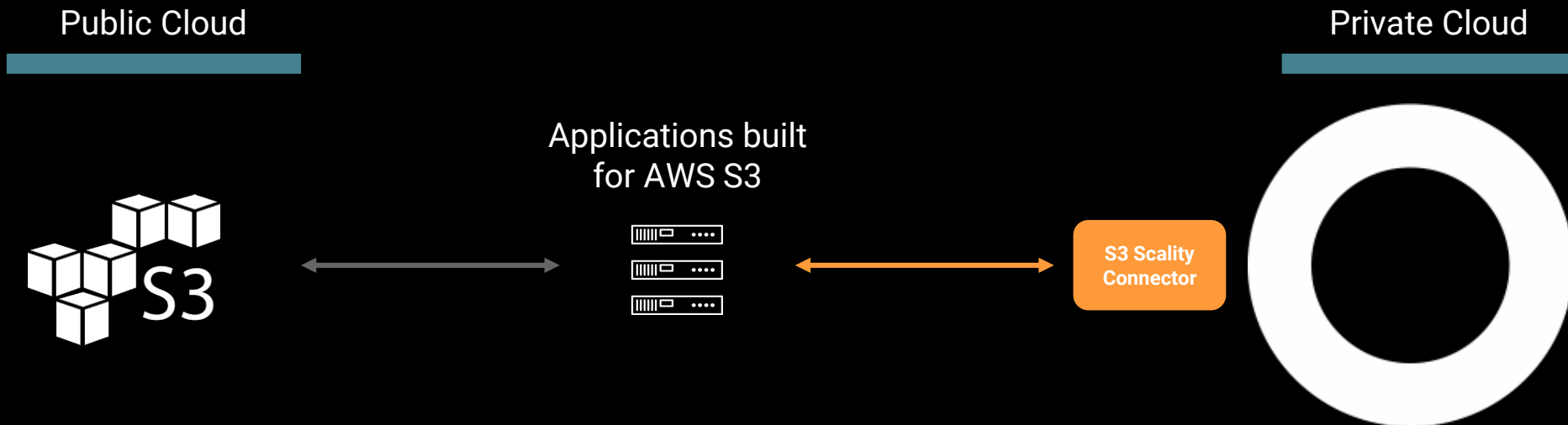
S3/IAM API SUPPORT

UTILIZATION API

BUCKET ENCRYPTION

VERSIONING & WORM

BUCKET LOCATION CONTROL



plug and play S3 endpoint replacement for your existing AWS S3-built applications
comprehensive S3 storage API support

comprehensive AWS identity and access management (IAM) support
(accounts, users, groups, policies, federated users via SAML)

RING S3 CONNECTOR

S3/IAM API SUPPORT

UTILIZATION API

BUCKET ENCRYPTION

VERSIONING & WORM

BUCKET LOCATION CONTROL

bucket and account level metrics
storage capacity and number of objects · bandwidth (bytes transferred) & number of S3 operations per unit of time

accessible via API calls, or through the scality UI · integrated with its own IAM policies for access control



RING S3 CONNECTOR

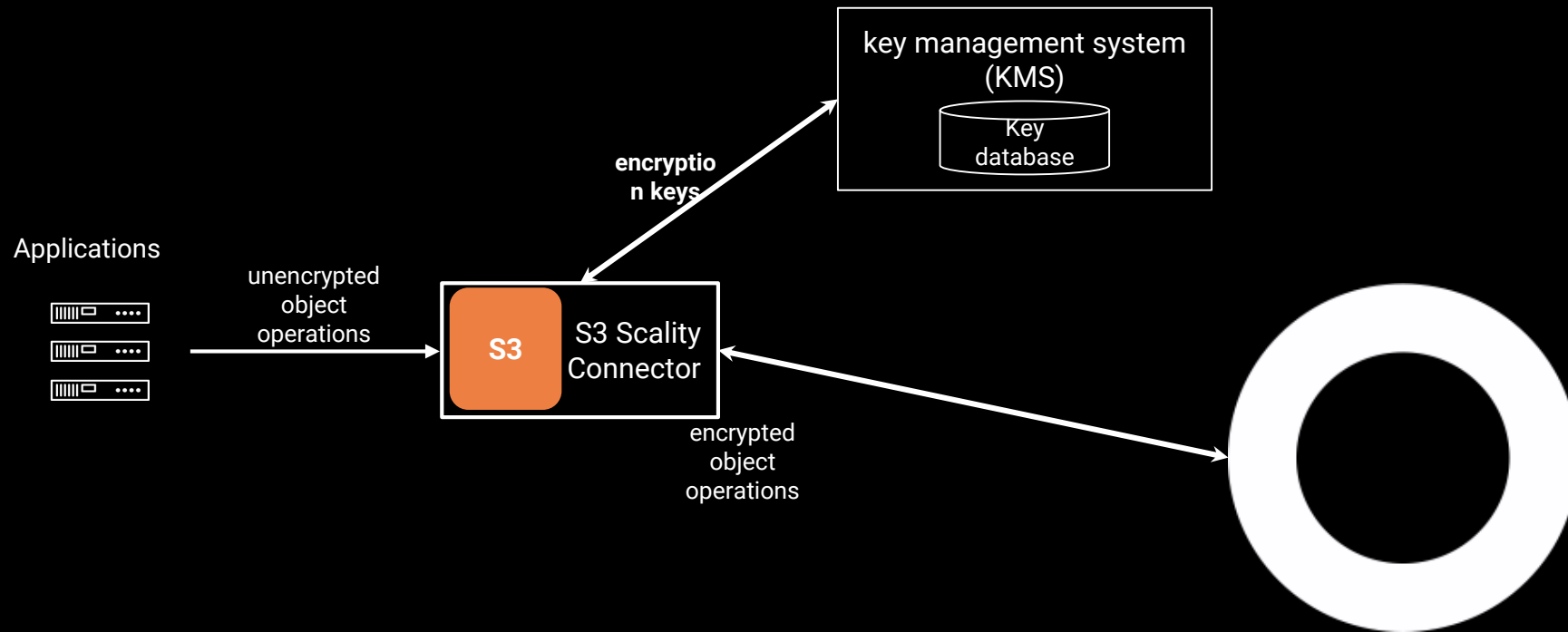
S3/IAM API SUPPORT

UTILIZATION API

BUCKET ENCRYPTION

VERSIONING & WORM

BUCKET LOCATION CONTROL



bucket-level encryption · extension to Amazon S3 specification · all objects in bucket are encrypted, no special calls necessary · special header used at bucket creation

encryption keys either static or through external key management service
KMIP 1.2 compliant

RING S3 CONNECTOR

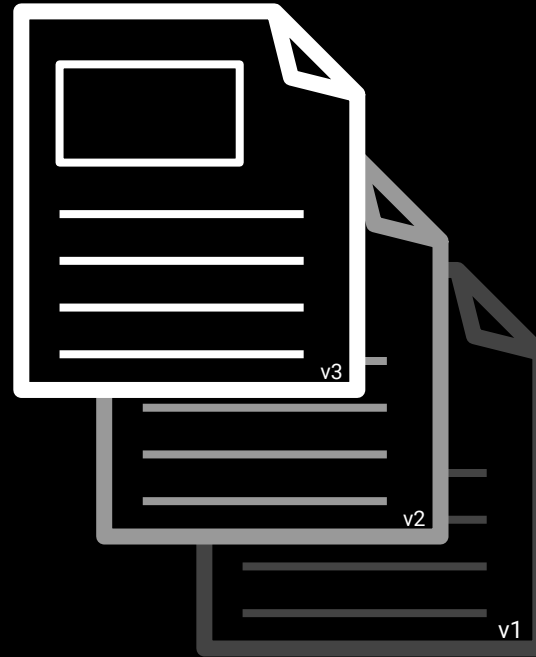
S3/IAM API SUPPORT

UTILIZATION API

BUCKET ENCRYPTION

VERSIONING & WORM

BUCKET LOCATION CONTROL



**PLUS
OBJECT LOCK API
SUPPORT**

bucket-level

updates (PUT) or deletes create a new version

reads (GET) by default get the latest version of an object · reads can reference an older version

can't be disabled, but can be suspended

specific versions can be deleted · lifecycle expiration can automatically delete old versions of objects

WORM can be enabled via policies (no deletes)



Global Health



Data Health

Total Managed Data

55.5 PB

100%

Safely Stored

46.2 PB

83.3%

Rebalancing

7.7 PB


13.9%

In Repair


1.6 PB

2.8%

Lifecycle Health

 Replication

2 Instances


 Expiration

4 Instances


 Transition

1 Instance

Discovery Health

 MD Search

1 Instance

 Out of Band

1 Instance



Global Health



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Data Access 5

S3



eu-west-1.s3.external.sc...

S3



eu-west-1.s3.internal.sc...

BLOB



blob.scality.com

NFS



nfs-1.scality.com

SMB



smb-1.scality.com



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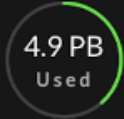
Backend 6

RINGXcore - Flash



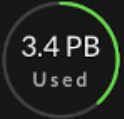
500 TB
Used

RINGXcore



4.9 PB
Used

RING Core



3.4 PB
Used

AWS - Europe



3.2 PB
Used

Orange NAOS



2.4 PB
Used

Tape DMF



41.1 PB
Used



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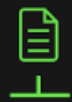
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NFS



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SMB



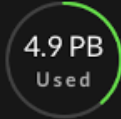
smb-1.scality.com

Backend 6

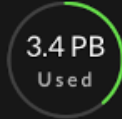
RINGXcore - Flash



RINGXcore



RING Core



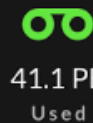
AWS - Europe



Orange NAOS



Tape DMF



Hardware

Failure Domain 2

External Cloud 2

Cold Storage 1

Datacenter 1 - Room 1

Server 3

Disk 162

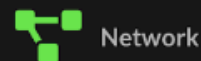


Network

Datacenter 1 - Room 2

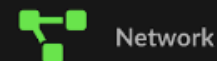
Server 3

Disk 162



Network

AWS - Europe



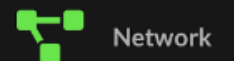
Network

Orange NAOS



Network

DC 2 - DMF Gateway



Network

Global Health



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Replication
2 Instances

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Data Access 5

S3



eu-west-1.s3.external.sc...

S3



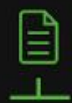
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SMB



smb-1.scality.com

Backend 6

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500 TB
Used

RINGXcore

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RING Core

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Used

Public Cloud 1

3.2 PB
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Public Cloud 2

2.4 PB
Used

Hardware

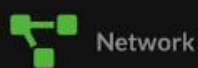
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External Cloud 2

Cold Storage 1

Datacenter 1 - Room 1

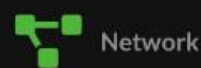
Server 3
Disk 162



Network

Datacenter 1 - Room 2

Server 3
Disk 162



Network

AWS - Europe



Network

RINGXcore 1

Scality - Distributed Storage

[Manage Backend](#)

Global Health



Storage

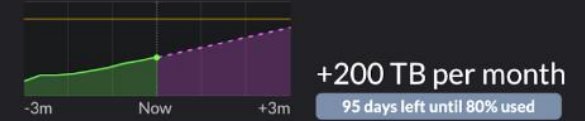
Net Storage
4.90 / 15.3 PB

Protected Data
2.88 / 9 PB

Protection
Extra-protected

Objects
29 660 M

Forecast



Operations Per Seconds



Get ~580 Put ~750 Delete ~255

Latency



Get ~12ms Put ~16ms Delete ~26ms

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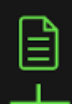
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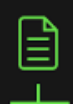
blob.scality.com

NFS



nfs-1.scality.com

SMB



smb-1.scality.com

Backend 6

RINGXcore 1

4.9 PB
Used

Storage At Risk

1 Failure Domain down

4.9 PB At Risk

RINGXcore - Flash

500 TB
Used

RING Core

3.4 PB
Used

Public Cloud 1

3.2 PB
Used

Public Cloud 2

2.4 PB
Used

Tape DMF

41.1 PB
Used

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External Cloud 2

Cold Storage 1

Datacenter 1 - Room 2

Server 3
Disk 162



Network

1 Server down

Critical error

Immediate action required

Datacenter 1 - Room 1

Server 3
Disk 162



Network

AWS - Europe



Network

AWS - US West



Network



**ZENKO IS A HYBRID and
MULTI-CLOUD DATA
CONTROLLER FOR
MANAGEMENT OF ACTIVE
WORKFLOWS ON
UNSTRUCTURED DATA**



MULTI-CLOUD DATA CONTROLLER

TO ACCESS AND MANAGE DATA ACROSS CLOUDS



ZENKO

PUBLIC CLOUDS

a single, unified API across all clouds to simplify application development · the only multi-cloud data management solution independent of the storage system · stores data in standard cloud format to make the data consumable directly by native cloud apps and services · true multi-cloud IT · global search across all managed data independent of cloud location

ZENKO CAPABILITIES

Application Interfaces

Amazon S3 API

Storage Locations

Scality RING, AWS S3, Azure Blob Storage, Google Cloud Storage, Digital Ocean, Wasabi, Third Party NFS (Read)

Data Mobility Features

1-1 replication, 1-to-Many replication, Lifecycle expiration, Lifecycle transition

Metadata

System and user-defined metadata; Retrieve objects on metadata attribute values; Global search via Zenko Orbit and API

Management with Zenko Orbit



Hosted management portal for easy, point-and-click management

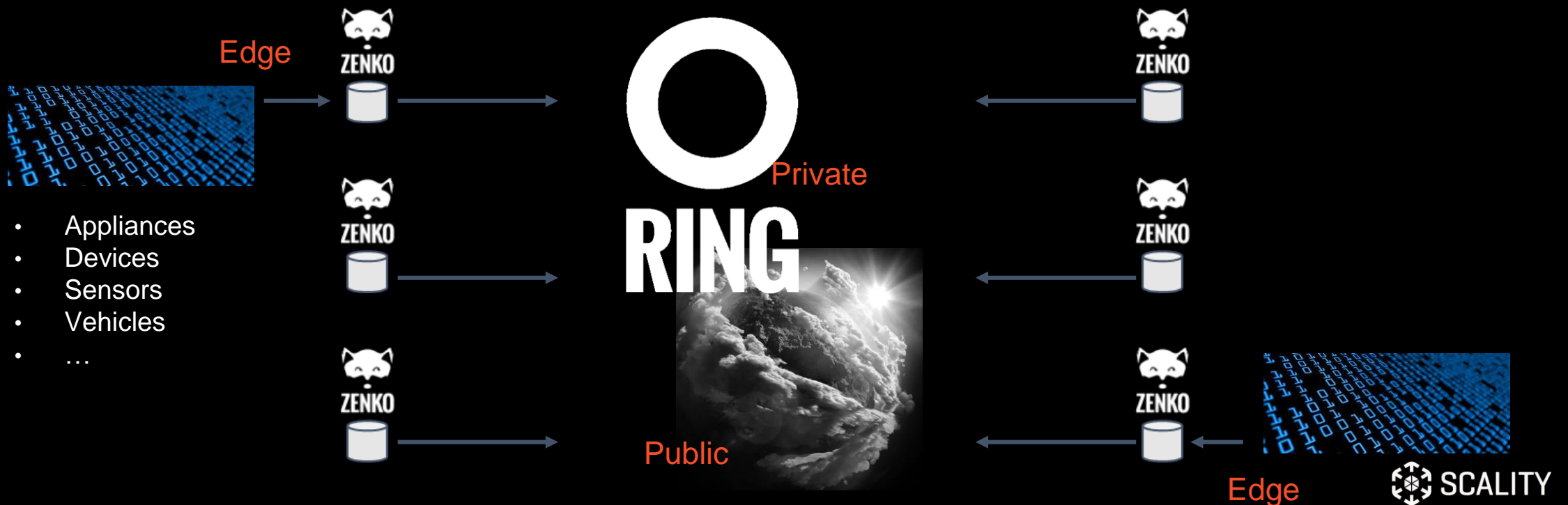
CLOUD DR/HA

- Store data in primary and secondary locations
- Monitor availability of primary location; failover to secondary location as needed
- Enables RING:Cloud and Cloud:Cloud DR/HA for Data



EDGE/IoT to CLOUD

- Capture edge data in Zenko local cache from devices, sensors, vehicles, appliances, ...
- Analyze at edge or replicate to central location on private cloud (RING) or public cloud
- Enable artificial intelligence, machine learning and automation at the edge and at the core



ONE PURPOSE
GIVING FREEDOM & CONTROL
TO PEOPLE WHO CREATE VALUE
WITH DATA



Thank you