

EMC – IRODS RESOURCE DRIVERS

PATRICK COMBES: PRINCIPAL SOLUTION ARCHITECT, LIFE SCIENCES



QUICK AGENDA

- Intro to Isilon (~2 hours)
- Isilon resource driver
- Intro to ECS (~1.5 hours)
- ECS Resource driver
- Possibilities (~1 hour)
- Requests (rest of the evening)

EMC ISILON SCALE OUT NAS

ISILON SCALE-OUT NAS



Simplicity and ease of use

Single file system, single volume, global namespace

Massive scalability

Scales to 40 PB in a single file system

World record performance

Over 100 GB/s throughput, 1.6M SPECcsfs ops

Unmatched efficiency

More than 85% storage utilization, and automated storage tiering

Enterprise data protection

Efficient backup and recovery, reliable disaster recovery, and N+1 thru N+4 redundancy

Robust security options

Roles-based administration; Authentication Zones; SEC 17a-4 compliant WORM data security

Operational flexibility

Integrated support for industry-standard protocols including NFS, SMB, HTTP, FTP, and HDFS



THE MOST RELIABLE STORAGE SYSTEM

Built-in high availability clustered architecture

With N+1 protection,
data is 100% available
even if a single drive
or node fails



*Fastest rebuild time, and
with Isilon, the more
nodes in the cluster, the
faster drive rebuild time*



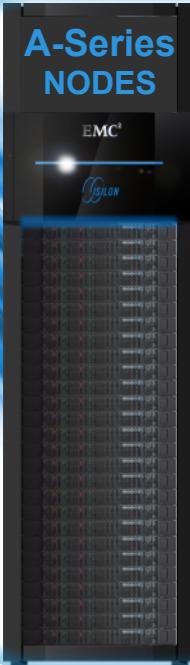
Mix and Match Any NODE at Any Time
Tune Performance to Achieve the Needed Performance and Capacity

Cache
Acceleration

High IOP
Performance

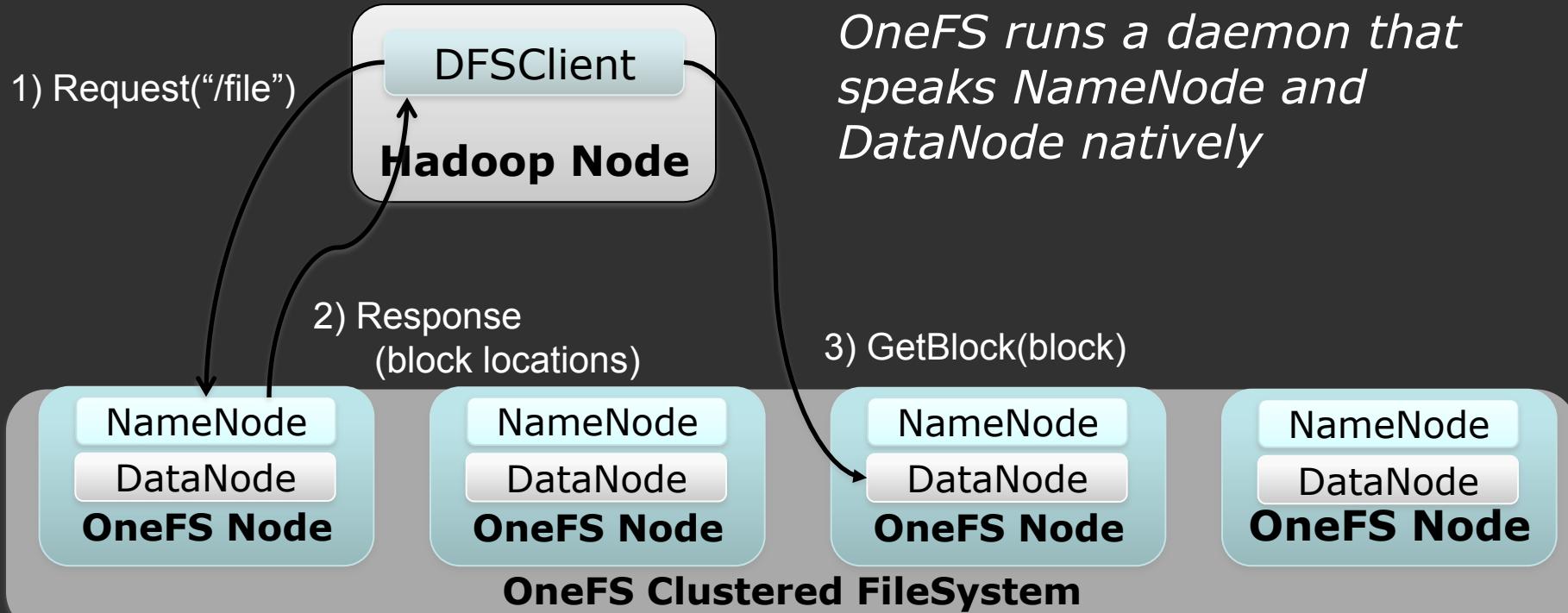
High Concurrent
Throughput

High Capacity
Nearline Archive



OneFS

HDFS IMPLEMENTED LIKE A NAS PROTOCOL



IRODS RESOURCE DRIVER FOR ISILON

- Uses HDFS to communicate with the cluster
 - Parallel reads, massive throughput
 - Setup as primary or archive resource (compound or hierarchical)



EMC ELASTIC CLOUD STORAGE (ECS)

COMPLETE CLOUD STORAGE PLATFORM



- **Lower cost** than public cloud
- Unmatched combination of **storage efficiency** and **data access**
- Anywhere read/write access with strong consistency **simplifies application development**
- No single points of failure **increases availability and performance**
- Universal accessibility **eliminates storage silos and inefficient ETL processes**
- Comprehensive types **satisfy the broadest range of application needs**

ECS SOFTWARE ARCHITECTURE

CLOUD-SCALE STORAGE SERVICES ON COMMODITY



ECS Software



OBJECT
STORAGE



HDFS
STORAGE

Geo-Replicated Data Protection
Active-Active read/write support with strong consistency
No single point of failure
Performance and efficiency for small and large objects



EMC²

GEO-REPLICATED DATA PROTECTION

PROTECTION AGAINST LOCAL AND GLOBAL FAILURES



- Handles local hardware and full data center failures
 - Disk, Node, Rack, Data Center are failure domains
- Local hardware failure recovery requires no WAN traffic
- New Hybrid encoding approach enables low storage overhead

GLOBAL CONTENT REPOSITORY

ON-PREMISE UNSTRUCTURED STORAGE PLATFORM

PROBLEM

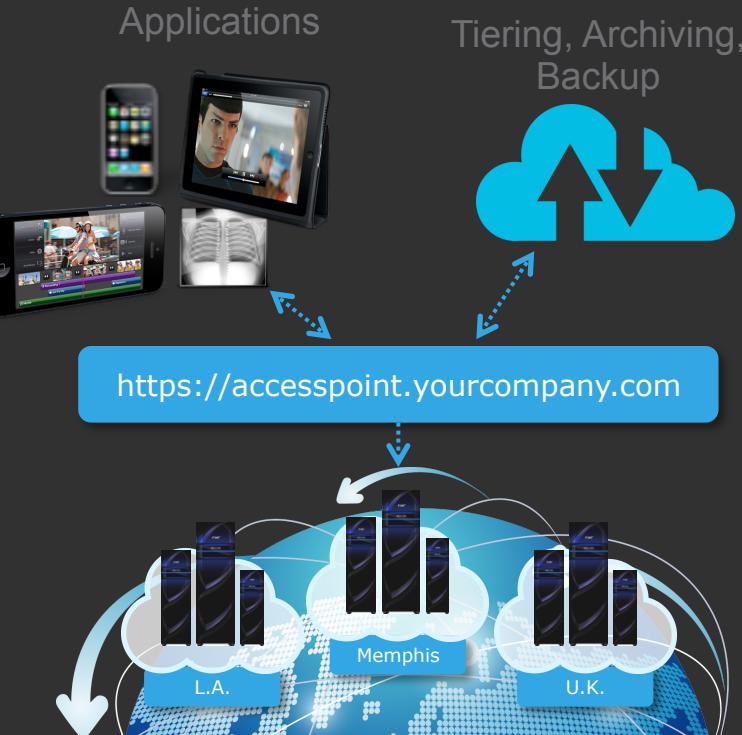
- Can't cost-effectively manage or scale storage to support explosive growth in unstructured content.
- Traditional storage not suited for new Web, mobile and cloud applications.
- Difficult and costly to manage data lifecycle and retention policies across archive silos and sites

SOLUTION

EMC ECS Appliance (Object and HDFS)

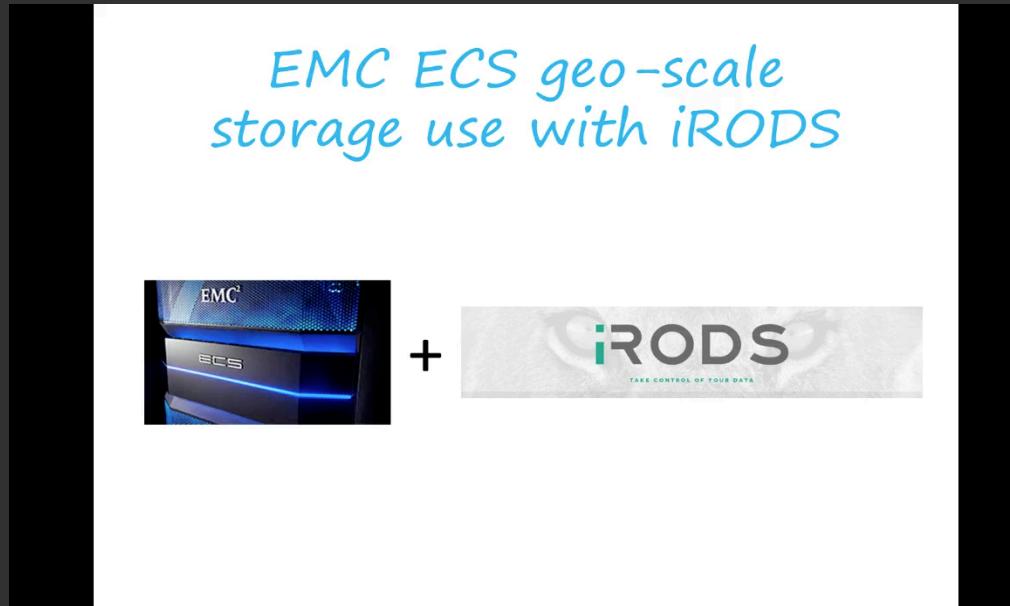
VALUE

- **Reduce complexity and cost**—one globally accessible, geo-efficient archive that serves multiple applications and content types at lower cost than public cloud.
- **Anywhere data access** – All data globally accessible by Web, mobile and cloud apps.
- **Enterprise-grade data protection** – Efficient geo-protection and policy-based retention for basic compliance and governance.

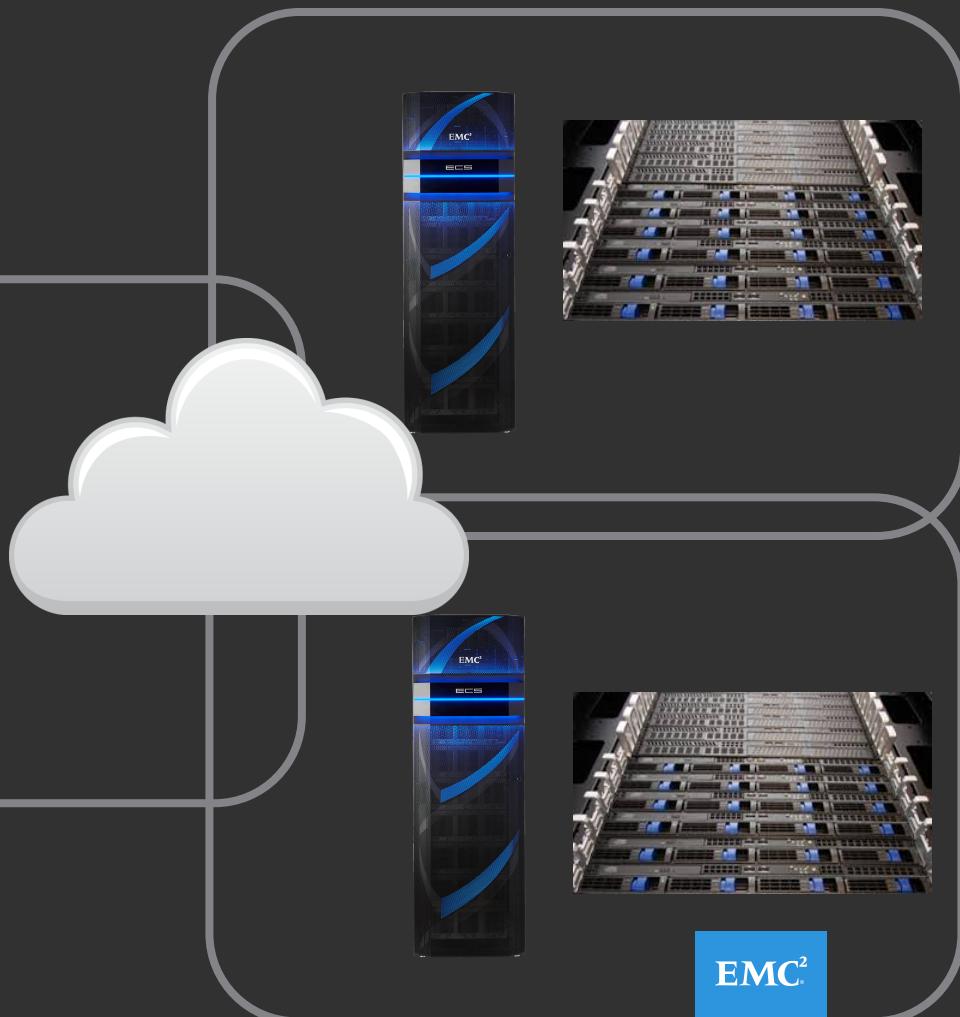
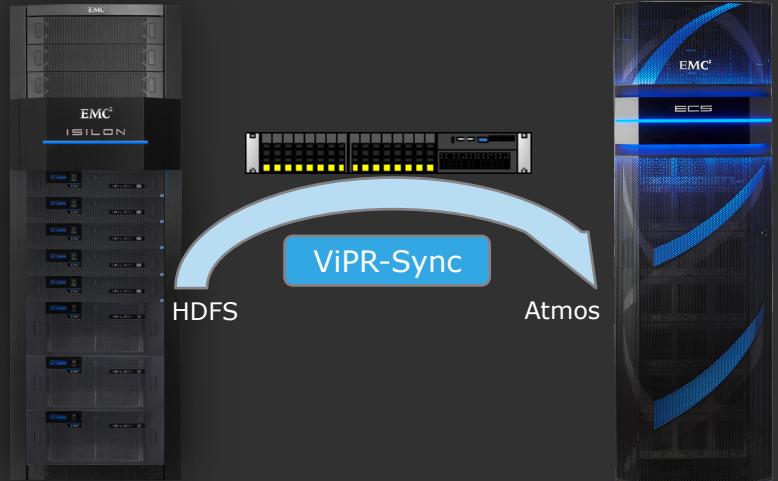


iRODS RESOURCE DRIVER FOR ECS

- Uses the Atmos protocol
 - Parallel reads and writes
 - Auto-balancing across the ECS nodes



WITH EACH DRIVER...



EMC²

REQUESTS

- Connection based/pooled streams for I/O plugins (in 4.1?)
- Parallel/batch job execution in iRODS
- Bulk operations (copy, move, etc.) of objects & metadata

EMC²
®