EMC ELASTIC CLOUD STORAGE (ECS)

Software-defined Object Storage

CLOUD-SCALE CAPABILITIES AND ECONOMICS

Traditional SAN and NAS storage platforms, while critical for enterprise applications, were never designed for modern cloud applications and the demands of cloud-scalability. The unabated growth in unstructured content is driving the need for a simpler storage architecture that can efficiently manage billions and trillions of files and accelerate the development of cloud, mobile and big data applications while reducing both storage overhead and cost. In order to fulfill these requirements, IT organizations and service providers have begun to evaluate and utilize low cost, commodity and open-source infrastructures. These commodity components and standard open technologies lower storage costs but the individual components provide lower performance and reliability – *and* – also require the operational expertise to ensure serviceability of the infrastructure.

EMC® Elastic Cloud Storage (ECS™) provides a complete software-defined object storage platform designed for today's cloud-scale storage requirements. ECS provides the simplicity and low cost benefits of the public cloud without the risk, compliance, and data sovereignty concerns. ECS benefits include:

- **Cloud-scale Economics:** 65% TCO savings versus public cloud services
- **Simplicity & Scale:** Single global namespace, unlimited apps, users and files
- **Universal Accessibility:** Support for object, file, and HDFS all on a single platform
- **Faster App Development:** API accessible storage and strong consistency accelerates cloud apps & analytics
- **Turnkey Cloud:** Multi-tenancy, self-service access and metering capabilities

ESSENTIALS

CLOUD-SCALE

- Independently scale performance and capacity
- Handle billions of files across multiple sites
- Efficiently manage large or small files

COMPLETE

- Broad API support eliminates storage silos
- No single point of failure both locally and geographically
- Flexible entry points, with rapid scalability to Exabyte size

SECURE

- Features Data @ Rest or server-side encryption
- Full SEC Rule 17a-4(f) compliance
- Hybrid encoding protection scheme comprised of mirroring, XOR algorithm, and erasure coding

GLOBAL CONTENT REPOSITORY

Unprecedented data growth both in structured and unstructured content are driving the need to store large files *(such as images and videos)* in high cost, silo'd storage systems. Traditional infrastructure often isolates data making it difficult and costly to exchange and manage content. This type of environment does not scale efficiently and economically forcing customers to seek out a solution that delivers the benefits of both public and private clouds. ECS enables any organization to consolidate multiple storage systems and content archives into a single, globally accessible and efficient content repository that can host countless applications.

Anywhere Access to Content

ECS's multi-site, active-active architecture, single global namespace, and universal accessibility *(object, file, and HDFS)* enables anywhere access to content from any application or device. Buckets of data span sites allowing reads and writes to and from any location across the globe. ECS provides strong consistency semantics which simplifies application development and facilitates anywhere access to data. ECS also provides a geo-caching capability which identifies multi-site access patterns and caches data at the location where it's being access most frequently.

DATA LAKE FOUNDATION

Traditional storage infrastructure can make unlocking business intelligence and analytics challenging. Data is often layered across complex systems making accessibility and management difficult and costly. Organizations are forced to pull data from operational systems and then load them to a dedicated cluster for analysis. Accuracy and timeliness are key components to delivering efficient analytics and ECS enables customers to deliver insightful business intelligence on large, distributed content stores without the need for Extract, Load & Transform (ETL) operations. ECS provides a centralized Data Lake Foundation to access and manage any organizations content through multiple Hadoop distributions.

Big Data Analytics

ECS HDFS makes it simple to bring analytics to all the object data stored in ECS. ECS treats HDFS as an access protocol on top of the object storage engine. A drop-in client deployed on the data nodes of an existing Hadoop environment enables analytics queries on the object data in ECS without any ETL process or data massaging. The time it takes to extract value from data analysis can be the difference between gaining and losing market share. With ECS HDFS, you can expand analytics capabilities to geo-distributed content and archives to glean new business insight, identify new business opportunities, and improve time to results.

State-of-the-Art, Patented Technology

ECS's patented technology provides highly dense storage for Hadoop enabling customers to deliver insightful business intelligence on large, distributed content stores. ECS can efficiently store PBs of data in a low cost, state-of-art commodity-based storage system. ECS addresses the challenges associated with traditional HDFS enabling enterprise features like erasure coding and geo-replication with reduced storage overhead.

PLATFORM FOR MODERN APPLICATIONS

Today's modern applications demand a different architecture. Managing both cost and accessibility as storage environments grow and become more complex is one of the biggest challenges organizations face today. Developers are finding it easier to go to public cloud alternatives putting data at risk and increasing management costs. ECS provides a cloud-

scale storage architecture that is specifically designed to support modern applications with unparalleled availability, protection, simplicity and scale.

Multi-protocol, API-accessible Storage

ECS is a massively scalable, software-defined object storage platform that enables any organization to store, access, and manipulate unstructured data as objects. ECS provides support for industry standard APIs such as Amazon S3, OpenStack Swift, EMC Atmos® and EMC Centera® CAS, File (NFS v3), and HDFS. In addition, ECS extends the Amazon S3 API with support for byte range updates and atomic appends giving developer's choice and more functionality than public cloud alternatives.

Simple Multi-Tenancy

ECS delivers a flat software architecture ideal for multi-tenant environments. Configuring, provisioning, namespace creation and managing a multitenant platform have never been easier. Key metrics and reporting are provided for capacity, object count, objects created, objects deleted and inbound/outbound bandwidth. A quota feature enables administrators to set soft quotas and quota locking for buckets and tenants. In addition, administrators can view activities pertaining to the creation, update, and deletion of buckets and changes to ownership. These activities are all visible via the ECS GUI and through REST API. A metering API is also included for object services to provide granular data for various tenants.

'INTERNET OF THINGS' CLOUD STORAGE

The 'Internet of Things' allows objects to be sensed and controlled remotely across existing network infrastructure. This creates opportunities for more direct integration between the physical world and computer-based systems resulting in improved efficiency, accuracy and economic benefit. ECS is capable of ingesting massive unstructured workloads comprised of both small and large objects that are created by the intelligent devices of today. The geo-capabilities of ECS both distribute and protect data to provide an ideal platform for IOT' content management.

End-to-End Visibility

ECS provides an end-to-end view of system performance with displays for capacity utilization, storage engine metrics, erasure coding and recovery status, per node and replication group statistics. Capacity utilization metrics provide a clear view of what's available, what's being utilized and what's being underutilized to fully optimize storage performance. Statistical information is captured to show the caching activity and the impact it has on the performance of the system. In depth metrics are also provided breaking down the comparison between user and system data.

IOT Platform

Geo-replication and global data protection optimizes storage efficiency while maintaining fast, reliable global access to data. This built-in feature provides full protection in the event of a total site failure. Applications seamlessly maintain functionality and the system continues to deliver full read and write access from any location globally. ECS provides the ability to search metadata across billions of objects without a dedicated database. You can now search user-defined meta-data via SQL construct especially suited for IoT, mobile app and geo-distributed datasets.

COLD ARCHIVE

Moving cold data off Tier1 storage for archive and long term retention purposes is an important competency for every organization today. Public cloud storage services can offer flexible VM deployments, easy to manage platforms, and a low upfront cost to start. However, concerns around security, compliance, vendor-lock, and unpredictable costs can quickly become a major concern. ECS provides all the benefits of public cloud in an on-prem, cloud-scale object archiving solution for inactive workloads.

Multi-site, Active-Active Architecture & Access

ECS features a truly geo-efficient architecture that stores, distributes and protects data both locally and geographically. This eliminates any single point of failure and provides a seamless failover from site to site with no impact to the business. ECS automatically maximizes throughput, maintains high availability and data durability, and increases capacity and the reliability of applications. In terms of geographic limitations – *there are none* – providing users with a single global namespace with anywhere access to content.

Cloud-scale Economics

ECS provides an easy to manage, globally accessible archive delivered at a lower cost than public cloud storage providers. Policy-based management allows you to seamlessly move content off Tier 1 storage to ECS to better optimize performance. Geo-distribution and geo-caching provide high availability on the system and lower storage overhead as you scale. ECS also provides instant access to your archived content so you don't have to wait days or weeks for data retrieval.

## CLOUD-SCALE OBJECT STORAGE

Cloud-scale means being able to massively scale a compute or storage environment in response to new demands. Cloud-scale is a necessity to support mobile, cloud, Big Data and social applications and the massive amounts of data they create and consume. Cloud-scale is achieved by using standardized, off-the-shelf components that, individually, don't provide performance and reliability. However, at scale, pooling these components with intelligent software provides the necessary reliability and performance your organization needs.

ECS is the intelligent software in the cloud-scale equation. ECS software is architected using cloud principles making it unique in the industry as a platform that delivers cloud-scale storage services, support for modern applications with global access requirements and offers operational efficiency at scale.

ECS Appliance is available in multiple form factors that can be deployed and expanded incrementally, so each customer can choose the right size for their immediate needs and projected growth *(starting at 320 Terabytes and scaling to 3.8 Petabytes all in a single rack).* In addition, ECS is available as a software-only solution that can be deployed on qualified, 3rd party customer provided racking. Customers can now optimize their solution based on their application and access needs giving them the flexibility and control they want.

TAKE THE NEXT STEP

Interested in seeing how EMC ECS can benefit your organization? Download the trial version of ECS for free for non-production use with no time or capacity limits here: www.emc.com/getecs. If you're interested in requesting a quote, please contact your EMC sales representative or authorized reseller. Also, see our solutions in the EMC Store at https://store.emc.com/ecsappliance.
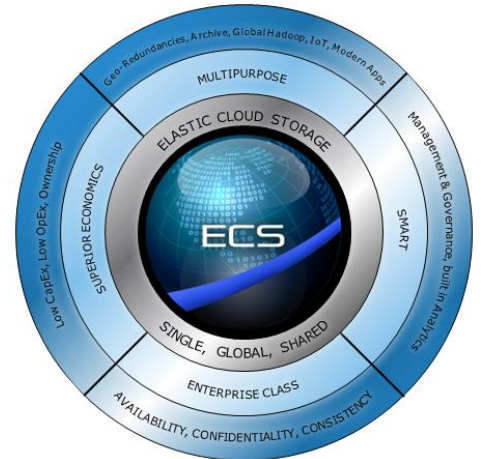
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