IDC TECHNOLOGY SPOTLIGHT

Object-Based Storage: True Accelerator of Digital Transformation

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Enterprises worldwide are contending with an accelerated pace of digitization where reliable and flexible information technology (IT) infrastructure could be the difference between winning and losing customers. The groundbreaking agility, flexibility, and power of cloud computing have businesses exploring ways to adopt cloud functionality and economics. Hybrid cloud deployments are becoming the new norm. As businesses move toward petabyte-scale data storage, object storage solutions are emerging as viable alternatives for balancing scale, complexity, and costs. This paper examines digital transformation (DX) associated storage requirements and looks at how Dell EMC Elastic Cloud Storage (ECS) can help accelerate DX within organizations.

Introduction

Digital transformation — and the market disruption that comes with it — is real. 3rd Platform computing is the underpinning of DX worldwide. The average life span of a company on the S&P 500 index is 18 years in the 3rd Platform era versus 25 years during the 2nd Platform era. To survive, companies need to embrace and accelerate DX. To gain a competitive edge, enterprises need to drive timely insights from volumes of data. Leading digital organizations are employing machine learning–based cognitive/artificial intelligence capabilities to deliver personalized value services, optimize customer experience, explore new opportunities, and reduce the overall cost of doing business.

Data volumes are exploding. There is higher penetration of mobile devices and apps generating large volumes of data. One of the primary driving forces for the growth of DX is the increased need for the Internet of Things (IoT). It is the world of sensor data and machine-generated data. IDC expects 44ZB of data to be generated by 2020.

As data volumes grow, so does the complexity and cost of storing and managing the data. It also complicates data governance and compliance. As new regulations are introduced, enterprises need agile petabyte-scale infrastructure to ensure timely adherence, or they risk being fined. Exponential growth of storage capacity is driving migration of data to the public cloud. However, to balance performance, control, security, and compliance needs, organizations will continue to keep some of the workloads on-premises. Hybrid cloud is becoming the norm. Hybrid cloud infrastructure needs to support true application and data mobility so that the application and the data can be accessed where needed. Storage is also integral to cognitive data strategy because it is an active contributor to the process of analyzing volumes of information.

Overall customer requirements of storage in the DX era are:

- Agility and simplicity in storage management
- Ability to support both 2nd Platform and 3rd Platform applications
- Flexibility to choose deployment options.
- Petabyte scale in capacity without compromise in performance and cost efficiency
- Rich set of storage services, DevOps, enterprise and cloud ready

Traditional storage approaches are challenged to meet the demands of the DX era. They are too costly and complex to deploy and manage data at the petabyte scale. Object-based storage (OBS) offerings built around scale-out architectures using commodity off-the-shelf hardware are an excellent match for DX computing environments that tend to have high-capacity growth and require infrastructure agility to meet performance, availability, reliability, compliance, and timely response to business needs.

Market Trends

IT organizations find that their line-of-business clients are increasingly frustrated with the services they deliver and frequently bypass IT to directly consume services from cloud providers in order to meet their business objectives. Leading IT executives are realizing that they need to fundamentally redesign their application, infrastructure, and operating models to remain competitive in the marketplace of IT services.

IDC estimates that by 2020, the amount of valuable data — that is worth analyzing — will double and around 80% of it will be unstructured. IDC also estimates that by 2020, organizations that are able to analyze and act on the relevant data will be able to generate over $400 billion in productivity benefits over their analytically challenged peers. To tap the potential of the growing volumes of data, organizations must reevaluate their existing data management technologies and strategies that are not fit for the dynamic and complex requirements of data and applications in the DX era. Organizations need to adopt scalable storage technologies, consolidate data silos, and deploy next-generation data management solutions to meaningfully analyze data to gain actionable business insights.

IDC is seeing increased demand for object storage from multiple industries and sectors. According to IDC's *Worldwide File- and Object-Based Storage Forecast, 2016–2020* (#US41685816, September 2016), scale-out OBS solutions are expected to grow at a compound annual growth rate (CAGR) of 8.7% from 2016 to 2020. IDC believes 3rd Platform computing — social, mobile, cloud, and big data applications — is generating unprecedented demand for storage supporting unstructured data. OBS offerings by way of their core design principles are a great fit for use cases such as information digitization, data retention policies, and globally dispersed information sharing — all of which are aimed at controlling the insatiable appetite for data consumption.

OBS solutions are also serving newer use cases such as server and desktop virtualization, machine-generated content repositories, and streaming data, proving that object storage is no longer meant only for unstructured data; as these new use cases dictate, it is also being used for semistructured and structured data. Newer delivery models such as public cloud– or private cloud–based storage increasingly rely on OBS as the platform, with data accessed via newer interfaces such as HTTP/REST or via traditional FBS interfaces such as Network File System (NFS) and Server Message Block (SMB).

Considering Dell EMC Elastic Cloud Storage for the DX Era

Elastic Cloud Storage (ECS), the third-generation object platform from Dell EMC, is a modern software-defined storage platform that is designed to unlock insights from data from both traditional (2nd Platform) and next-generation (3rd Platform) applications in one global platform. Enterprises can deploy this platform on their own terms — as a turnkey storage appliance, as a software-only solution designed to run on industry-standard hardware, through public cloud solutions via Virtustream, or as a Dell EMC hosted ECS as a service called ECS Dedicated Cloud (ECS DC) Service.

Engineered for the DX Era

ECS is pushing the boundaries. It can scale to an exabyte and beyond, alleviating the capacity scale challenges of IT in the DX era. It can scale infinitely for both small files and large files with strong global consistency. It delivers a globally distributed infrastructure under a single namespace with anywhere access to content. Dell EMC claims ECS provides significantly lower (48%) total cost of ownership (TCO) than the public cloud with a storage density of 7.8PB per rack with the new D series appliance.

Flexible

ECS supports multiple protocols such as object (including S3 and OpenStack Swift), file (NFSv3), and HDFS that provide the workload flexibility for customers to pick and choose the best solution. This also eliminate the bottlenecks and configuration complexity of gateways and makes ECS well suited for deployments such as analytics- or media production–like environments where data is ingested using one protocol but accessed via another protocol.

Consumption

With the ECS DC Service — on-demand ECS storage managed by Dell EMC and running on dedicated, single-tenant servers hosted in Virtustream datacenters — organizations can flexibly deploy ECS technology on their own terms. This enables them to achieve:

- **Lower TCO** by realizing up to 25% storage overhead reduction moving from two sites to three sites
- **Hands-off operations** without the overhead or datacenter investments
- **Global access** to bring proximity to users who are remote to the existing sites with reduced WAN traffic
- **Geoprotection** without building and managing datacenters

Enterprise Ready

ECS features an easy-to-manage multitenant architecture for better data protection, external or automatic key management, and advanced retention management, giving customers better control of their data. ECS performs erasure coding in the background and employs box-carting for superior performance. Dell EMC claims that the data distribution schema ensures little to no service degradation unless 50% of the nodes concurrently go bad. ECS employs a tiered protection scheme that provides a balance between protecting data locally and globally while maintaining low dollar-per-gigabyte overhead for data protection. ECS also supports data encryption at rest and in flight and is SEC 17a-4 compliant.

Scalable

ECS is optimized to support ingest of and access to both small files and large files with strong global consistency. It supports active-active read/write architecture. All nodes in the ECS offering are treated as equal and participate equitably in the cluster sharing of all storage and compute resources.

Intelligent

Metadata indices in ECS function like a search engine, which helps gather information on many objects without actually accessing them. Users can search metadata across exabytes of unstructured data without a dedicated database. ECS has a single pane of heads-up display that provides complete system health, including capacity and performance monitoring.

ECS includes enhanced hybrid cloud capabilities for the ECS DC offering as well as support for Dell 14g servers. With critical enterprise capabilities such as protection and IPv6 support, new security features, and capacity forecasting, ECS simplifies enterprise compliance, security, and governance requirements.

Challenges

Dell EMC does face market challenges, however. While OBS solutions are gaining momentum for both 2nd Platform and 3rd Platform applications and newer delivery models, skepticism and challenges still exist:

- Large organizations are skeptical about the performance of OBS solutions at scale.
- Many OBS solutions lack the breadth of storage services needed by enterprises.
- Some OBS solutions have proprietary access mechanisms, leading to fear of platform lock-in.
- Many OBS solutions don't integrate with existing management tools, limiting adoption.

In addition to the external challenges listed previously, Dell EMC ECS has the internal challenge of positioning itself versus other Dell EMC products targeted for the same use cases. The solution also needs to effectively migrate the existing Centera and Atmos deployments.

Conclusion

IDC believes that suppliers with a rich object portfolio to demonstrate how their technologies help businesses meet their new DX era requirements across verticals and use cases will have a competitive edge.

Enterprises have come to expect Amazon S3–style infrastructure features and services, and IDC believes that Dell EMC ECS along with the general availability of ECS DC Service can provide a cloud-like experience with complete control and confidence to realize the digital future.

In IDC's opinion, Dell EMC ECS is a feature-rich OBS solution. It is scalable, flexible, enterprise ready, cost effective, and intelligent, making it a compelling storage offering for the following use cases:

- Storage for modern applications (cloud-native/3rd Platform apps)
- Tiered archive/content repository
- Global big data/Hadoop workloads
- Platform for storing and analyzing IoT data

Overall, Dell EMC ECS is an ideal solution for the DX era that meets the customer requirements outlined in the Introduction section: agility, simplicity, flexibility, scale without compromise in performance and cost efficiency, rich set of storage services, DevOps, enterprise and cloud ready.

Dell EMC's long tenure and leadership position as a storage and a server player give ECS the unique advantage of relative ease for expanded market penetration. Dell EMC's IP, appetite, experience, investment potential, and engineering prowess have helped the company innovate and continue to build differentiated products and services (e.g., ECS and ECS DC) that serve the requirements of the 3rd Platform. Disrupting its own go-to-market strategy to make way for ECS will enable Dell EMC to remain a credible technology provider for enterprises focusing on digital transformation. Dell EMC should actively work toward cohesive product positioning, integration, and a seamless transition strategy for ECS by collaborating with sales, channel partners, marketing, and the ecosystem of ISVs and service providers.

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