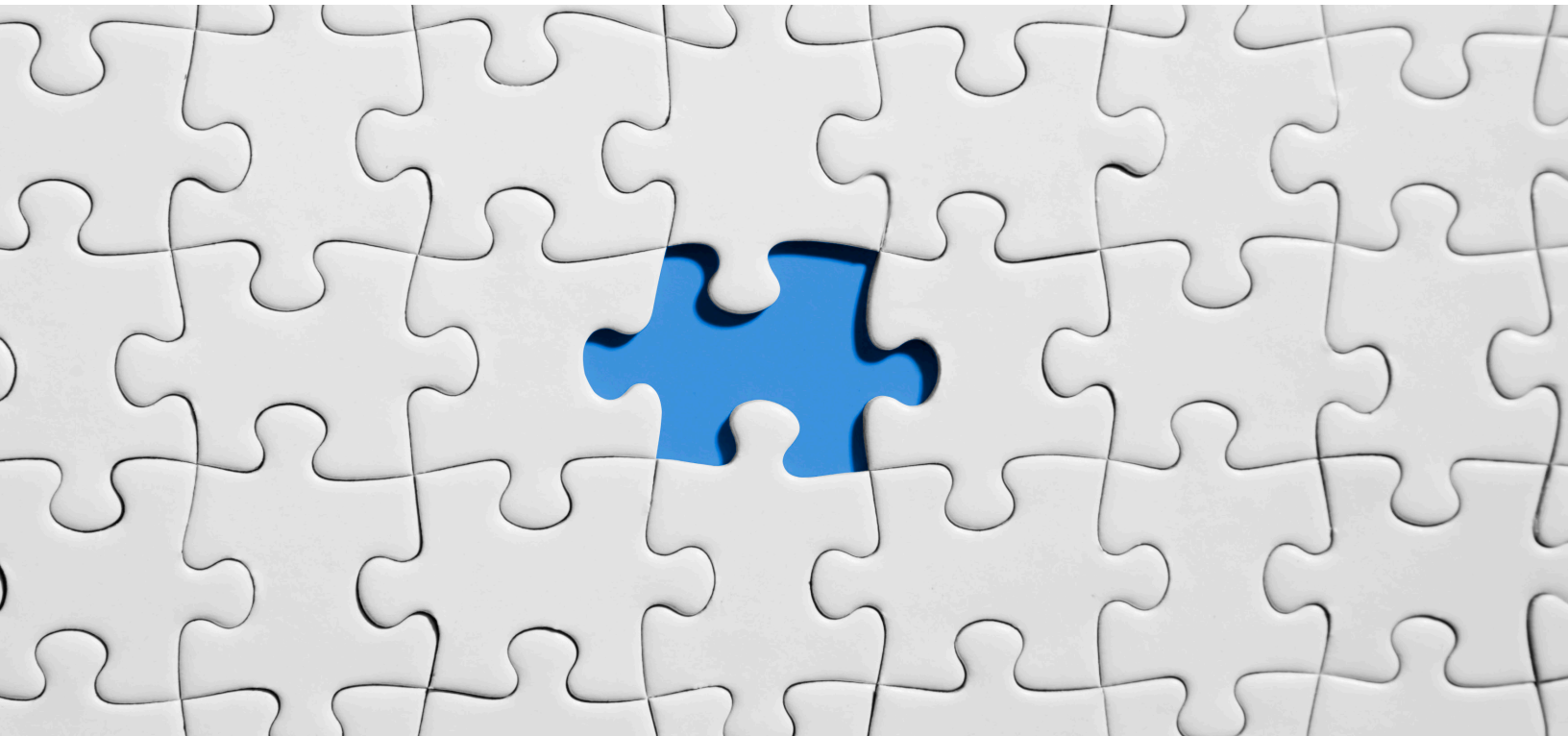


SOLVING FSI CHALLENGES WITH DELL EMC UDS



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Abstract

The effect of the increase in unstructured data can be seen across all industry segments. It has become a challenge for most of the industries such as Oil & Gas, Financial Services and Health Care to manage their unstructured data. To compete and survive in today's fast-moving market these industries need to provide the highest the level of security, stability, availability and performance to their customer while also achieving regulatory compliance. The process to achieve these KPI's consumes large amount data center space and power which is not very cost efficient.

This Knowledge Sharing article focuses on organizations in the Financial Service Industry (FSI). We will cover the different workloads in FSI, and the challenges faced in dealing with these workloads. We will also discuss the different operational challenges they face and how Dell EMC Isilon and Dell EMC ECS can help them overcome these challenges. We are also going to brief you about the different segments in Financial services vertical and what are the different challenges they face when it comes to dealing with their Unstructured data and how Dell technologies Unstructured Data Solutions division is Uniquely positioned to address Financial Service's growing Unstructured data challenges in this white paper.

FSI are undergoing a digital transformation in order to make use of latest digital technologies available in market to transform their business to meet the requirement of the new generation customers and to remain competitive in the market. These organizations depend heavily on technology to efficiently store their data and at the same time analyze their data to plan future business strategy. The Dell EMC Unstructured Data solution portfolio consists of products such as Isilon and ECS which helps customers meet the demands of the above scenarios. Dell EMC Isilon and Dell EMC ECS helps Financial service organizations modernize their storage infrastructure to meet the needs of growing demand for speed and capacity well into the future. It also provides the highest level of data security required by consumer expectations and regulatory compliance, providing High Availability to ensure business continuity and data integrity, and meet growing demand.

We will also discuss various unique scenarios such as Data Retention and Compliance which are key attributes the FSI must meet constantly. They are expected to retain certain types of information for a specified duration, unaltered before it can be safely deleted. This requires FSI to store huge amounts of cold data in its archive storage. Dell EMC Isilon and Dell EMC ECS offer efficient and reliable archive storage platforms which comply with a majority of the regulatory standards and at the same time provide customers with high availability and security. Cloud storage is one efficient and inexpensive alternative for archiving and Isilon offers CloudPools to automatically tier cold data to a customer's existing cloud environment or to Dell EMC's very own ECS. Customers can also deploy ECS as a software-only solution and we will also discuss the benefits of deploying a on-premises Dell EMC ECS over the traditional cloud models.

FSI thrive on information, investing in predictive analytics and Machine Learning (ML) to extract meaningful insights, while also ensuring customer information is protected from cybercrimes, as well as complying with ever-evolving regulatory frameworks. This Knowledge Sharing article explores how Isilon All-Flash scale-out NAS delivers the analytics performance and extreme concurrency at scale to consistently feed the most data-hungry analytic algorithms. This simple, flexible solution eliminates I/O bottlenecks to accelerate cycles of learning while meeting regulatory and enterprise policy requirements.

Introduction

Proliferation of data and increasing technological complexities has changed how industries operate and compete. Commonly referred to as big data, this rapid growth and storage of large sets of data created opportunities for collection, processing, and analysis of structured and unstructured data

Big data may be categorized as unstructured or structured data. Unstructured data is data that's unorganized and doesn't make up a pre-determined or a specific model. This includes information gathered from social media sources, commercial transactions, banking/stock records, credit cards, etc., that facilitate financial institutions to gather data on the client's activity and needs.

Unstructured data is growing rapidly. IDC and [Seagate](#) predict that the global data sphere will grow to 163 zettabytes by 2025 and the majority of that will be unstructured.

The effect of the increase in unstructured data is seen in all industry segments. These days it has become a challenge for most industries such as Oil & Gas, Financial Services and Healthcare to manage their unstructured data.

In order to compete and survive in today's fast-moving market, these industries need to provide highest the level of security, stability, availability, and performance to their customer while simultaneously meeting regulatory compliance. In the process to achieve these KPI's they consume large amounts of data center space and power which are not very cost-efficient.

Financial services, particularly, have widely adopted big data analytics to inform better investment choices with consistent returns. Financial institutions are using these technologies to meet the demands and trends of clients and regulators while operating to strengthen their position in the market. Despite their increasing embrace of Big Data, financial services institutions face significant challenges in handling and storing the large volumes. More recently, the gathering of unstructured has raised the issue of privacy. Within financial services specifically, the bulk of criticism falls onto data analysis. The sheer volume of data requires a larger, more sophisticated data analysis technique to obtain accurate results.

FSI is undergoing a digital transformation in order to make use of the latest digital technologies to transform its business to meet the requirements of a new generation of customers while also remaining competitive. These organizations depend heavily on technology to efficiently store their data and at the same time analyze their data to plan their future business strategy.

The rise of FinTech corporations and solutions over the past five years has led to a totally new and remodeled financial services landscape. Ever-changing client expectations, cutthroat competition, increasing regulatory complexity, the pressure to streamline operations and other factors drive the push for reinvention and innovation.

Digital transformation has become a business imperative across all industries, and financial services are no exception. The driver behind it? The ever-changing financial services landscape. Competition within the sector has ramped up quickly. Once defined by a relatively small number of well-known intuitions, the financial services world currently consists of thousands of new entrants spanning all sizes, revenue ranges, and services. Big is no longer automatically better or safer—and, in many cases, can even be a barrier to innovation.

Financial services corporations recognize this—and know they have a great deal of catching up to do compared to other industries. Whereas most survey participants indicated they need a digital transformation strategy, several have not have acted on it as yet.



Fig.1 Digital Transformation Strategy Adoption for FSI

Some of the top Financial service Digital Transformation trends are

- Improving Customer Experience
- Maximizing Operational Efficiency
- Prioritizing cyber and data privacy needs
- Increasing IoT, AI and Blockchain investments

There is huge demand and need to deliver Platforms that enable companies to build flexible and consolidated data platforms, that allow them to:

- Share data across multiple tools and applications
- Build and manage multi-petabyte data lakes and manage data effectively
- Implement DevOps Process
- Eliminate Shadow IT
- Enable high-performance data analytics, out of the box

Dell EMC's portfolio of unstructured data solutions help customers meet the above scenarios. With Isilon and ECS, Financial service organizations can modernize their storage infrastructure to meet the needs of a growing demand for speed and capacity well into the future. They also provide the highest level of data security required by consumer expectations and regulatory compliance, as well as High Availability to ensure business continuity and data integrity to meet growing demand.

Dell EMC Isilon All-Flash scale-out NAS delivers the analytics performance and extreme concurrency at scale to consistently feed the most data-hungry analytics algorithms. This simple, flexible solution eliminates I/O bottlenecks to accelerate cycles of learning while meeting regulatory and enterprise policy requirements.

In this article, we will touch upon the state of digitization within the financial services business and the varied ways in which within which financial services organizations are approaching it. When we think of the financial services market we typically think of Banks.

The Financial Services Industry (FSI) consists of many types of businesses and Workloads. FSI consists of:

1. Traditional Banking

- a. Retail Banking
- b. Corporate Banking
- c. Credit Cards
- d. Credit Unions

2. Investment Banking

- a. Hedge Funds
- b. Brokerage
- c. Wealth Management

3. Insurance

- a. Property and Casualty
- b. Life and Health
- c. Re-Insurance
- d. Commercial

4. FinTech

- a. Payment Processors
- b. Private Banking
- c. Alternative Lending

Retail Banks are now forced to re-invent the way they operate in order to meet customer demands and their experience. Digital Banking is one such innovation that completely changed how a traditional Bank would operate. Mobile Banking, Net Banking, Chat Bots, Unified Payments, Digital Wallets, Fraud prevention, and protection are a few services most banks are offering to provide ease of use, fast response, personalization and convenient access to the customers. Artificial Intelligence and Machine Learning enabled by data and analytics provide insight into customer behavior and predict the business they can bring to their organizations.

For the Investment Banking sector, digital transformation may imply the use of AI/ML to gain more insights for new trading strategies from a variety of data sources, pre-trade decisions, client portfolio analysis, risk analysis, market predictions, trade surveillance and others. Risk analysis needs more immediate access to data to accelerate identification and reporting of risks related to Liquidity, Market and credit risk. Processing large volumes of Big Data must be quick to fully leverage new technologies such as Spark and AI. It is also important to have both scalable storage and scalable compute power.

Insurance and FinTech companies face a growing set of challenges such as shifting customer behaviors and expectations, low-interest rates, frequency of natural disasters, tight margins, and the emergence of new competitors to name a few. Digital Transformation enables Insurance and FinTech companies to price products based on much deeper understanding of risk.

Digital transformation consolidates, connects and accelerates data both historical and current to enable workflows and collaboration. Customer experiences must be dynamic from using AI capabilities of checking thousands of data points in an instant to providing customers with quick, simple and secure money transfers, bill payments, etc. To achieve this there is a major dependency on fast data access for applications and analytics, regardless of where the data resides.

A diverse set of workloads exist at almost all companies and organizations in the Financial Services Industry. FSI companies at the core have all the Enterprise IT workloads you would expect such as file shares, home directories, backup, archive, etc. But they also may have many other workloads including Tick Data analysis, Big Data analytics, Credit Card Analytics, Video Surveillance, audio recording as well as other specialized applications. Isilon is designed to handle a wide variety of workloads and the diversity of applications and use cases in the FSI market are one of the reasons Isilon is such a great fit.

Challenges in the FSI sector

- **Siloed Infrastructure**

More frequently, existing infrastructure is siloed by architecture, organizational constraints, rapid growth of unstructured data from a variety of sources and business model changes to ingest new types of data. This can often inhibit effective management and use of rapidly growing unstructured content.

- **Growing volumes of Data**

Data is growing at a rapid pace due to realtime data monitored, volumes of historical data stored, a variety of unstructured data used for analytics and retention policies.

- **Regulatory Risks**

Regulatory compliance is another huge factor in FSI. New regulations are being imposed and failure to comply with government mandates can be financially damaging and can also damage a financial company's reputation. A lot of the data needs to be saved for many years to comply with many of the regulations. However, it isn't enough to just store the data. The data must be preserved in a way that ensures it is immutable, maintains an audit trail, has appropriate access controls and sometimes needs to be encrypted to prevent data theft. This is another reason Isilon is such an obvious choice for FSI.

FSI Operational Priorities

- **Always on**

Many Financial services companies are global and need 24x7x365 access to data for customers and employees. They operate around the globe and service outages are not an option. Isilon storage systems are highly resilient and provide unmatched data protection and availability. Isilon uses the proven Reed-Solomon erasure encoding algorithm rather than RAID to provide a level of data protection that goes far beyond traditional storage systems.

Isilon FlexProtect is the foundation for data resiliency and availability in Isilon storage solutions. Isilon's industry-leading data protection will provide 100 percent accessibility to data with one-, two-, three-, or four-node failures in a pool. And, data protection levels can be established on a file, directory, or file system level so all data can be treated independently—meeting SLAs based on the application or type of data. And due to the distributed yet symmetric nature of the cluster, all nodes participate in accelerating the restoration of the portions of files from a failed drive. As the cluster grows, the rebuild times become faster and more efficient, making the adoption of larger-capacity drives very simple. With Isilon, a drive replacement can be rebuilt quickly—the larger the storage system, the faster. Isilon is Multi-Protocol, supporting NFS, CIFS, HTTP, FTP, HDFS for Hadoop and Data Analytics, and REST for Object and Cloud computing requirements. OneFS is a single file system/single volume architecture, which makes it extremely easy to manage, regardless of the number of nodes in the storage cluster.

- **User Productivity**

As with most commercial entities, employee productivity is a key concern for FSI firms. FSI firms want to set up their computing environments to maximize user productivity.

Home Directories and File Shares make up a large percentage of FSI workloads and File shares can become big time-wasters for administrators of traditional storage. As the file shares and home directories outgrow space consigned to them, the administrator must rebalance capacity across many LUNs and volumes. This calls for frequent manual migrations. The admin may have to stand up whole new filer stacks, which add expense and management complexity – plus, they tend to isolate the data in silos.

Isilon with OneFS is simple to scale and simple to manage an operating system that allows seamless access to files in home directories or file shares without slowing down users or burdening IT. This is one of the many ways Isilon helps increase user productivity.

- **Resource Optimization**

- Virtualization is a key strategy to optimize resources and increase efficiency.
 - Uncompromising user experience
 - Optimized performance – Isilon enables virtual desktop infrastructure (VDI) admins to specify workload type on a per-file or per-directory basis, indicating whether access patterns are random, concurrent, or sequential
- Lower VDI Cost per Desktop
 - Isilon SmartDedupe helps reduce storage requirements by up to 35%
- Simplified Management
 - Isilon makes managing PBs easy with automation, snapshotting, replication, quotas

- **Analytics**

FSI companies are leveraging new data sets, vast data history, and streaming analytics to drive new business outcomes and risk decisions along with process automation. Massive data volumes, low-latency, and complex processing are facts of financial trading. Today, firms need to be able to collect, store and analyze more data than ever before.

Tick Data Analysis requires an analytics application, a framework for Tick data and a powerful storage solution. Data analysis is done on three distinct data sets. The datasets can be classified as

1. Real-time data
2. Near Real-time data
3. Historical data

- **Compliance and Risk Management**

Regulatory compliance is standard for being in business for most FSI companies. Storage must support these critical requirements to even be considered for deployment. The data center needs to support government regulations without hindering business.

Isilon storage solutions help address these needs by providing robust and flexible security options to safeguard your data assets:

- Secure Role Separation enables “roles-based” access control (RBAC) and a clear separation between storage administration and file system access.
- Secure Isolation enables you to establish “Authentication Zones” that serve as secure, isolated storage pools for specific departments within your organization (such as your Legal Department, Accounting Department, etc.).
- Secure WORM Data Protection (write once read many) is achieved by using Isilon SmartLock software, which prevents accidental or malicious alteration or deletion to help you meet applicable regulatory requirements.
- File System Auditing
- Data at Rest Encryption (DARE) with Self-Encrypting Drives (SEDs)

Compliance, eDiscovery and Financial Services requiring SEC17a-4(f) Isilon scale-out NAS solution to support financial institutions that require secure data retention and meet SEC requirements	
Isilon Value Proposition	Smartlock for software-based retention per directory. Compliance mode SmartLock data retention provides an immutable compliance clock to support the enforcement of SEC 17a-4(f) requirement
Software modules	Enterprise and Compliance Mode SmartLock; SmartConnect Advanced; SmartPools; InsightIQ; SnapshotIQ; SmartQuotas; SmartDedupe; SyncIQ
Design and Sizing Considerations	Consolidation, Compliance, Analytics. Review implementation of Isilon in Compliance Mode, features and limitations. Compliance mode for enforcement of SEC retention regulations. High read and write for ticker data: S nodes, tiering to NL for archive
I/O Profile	Kdb+: Highly sequential, read intensive, multithreaded
Protocols	SMB, NFS, HDFS
Network Topology	Flat, multiple networks. 10GbE fast network.
Authentication	AD, LDAP, NIS
SmartCache	Enabled
L3 Cache	Enabled
Data Access Pattern (R,C,S)	Concurrent
Directory Layout	Segregation of compliance data. Kdb+: large database files in single directory
Implementation Considerations	WORM migrations.
DR Considerations	Compliance Mode DR site with SmartLock, No failover or Failback
Best Practices	Workflow specific
Solution Components	Active Directory, LDAP Servers, Windows Clients, Linux clients
Common Software	Tick data: Kx/Kdb+/Q

Fig.2 Isilon Value Proposition to meet FSI regulations

- **Protection and Preservation**

As Ddata is the lifeblood for successful FSI companies, comprehensive backup, and archive strategies are key. The storage needs to provide bulletproof guarantees that the data can't be lost or corrupted as well as provide for rock-solid backup and archive policies. Isilon is a great platform for the long-term preservation of data. Isilon is supported by most Archiving apps including Enterprise Vault, FileNet, SourceOne, InfoArchive. Isilon can be used for archiving any type of data from any type of source making Isilon a foundational component of the entire FSI data lake. DR Site can be set up for protection

Isilon for Financial Services

- **Simple to manage**
 - Single file system, single volume, global namespace
- **Massively scalable**
 - From 16 TB to over 68 PB in a single cluster, or to Cloud-scale
- **Unmatched efficiency**
 - Over 80% storage utilization, automated tiering and SmartDedupe
- **Enterprise data protection**
 - Efficient backup and disaster recovery, and N+1 thru N+4 redundancy
- **Robust security and compliance options**
 - RBAC, WORM, SEDs, auditing, STIG, FIPS, CAC/PIV
- **Operational flexibility**
 - Multi-protocol support as well as Object and OpenStack Swift
- **Deployment flexibility**
 - Edge to Core to Cloud

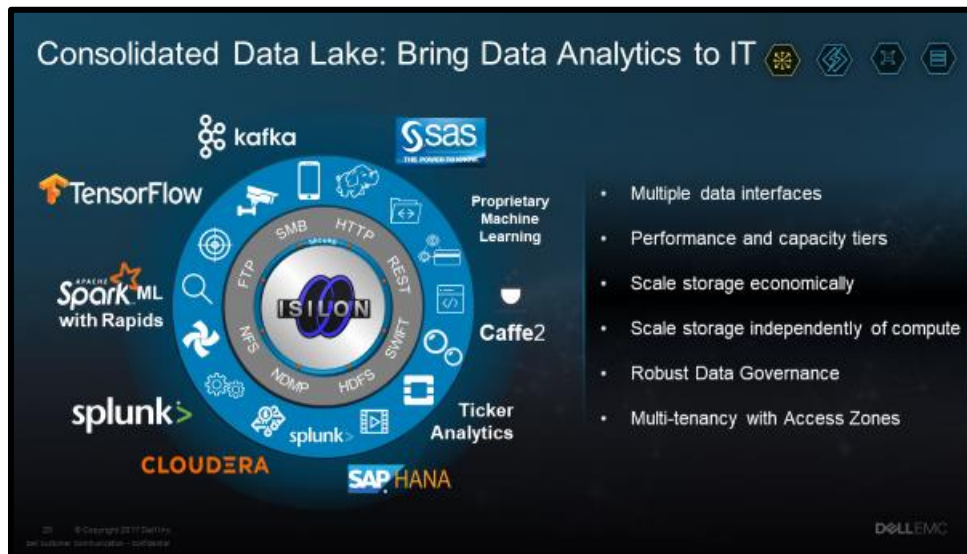


Fig.3 Isilon for Data Analytics

Isilon For FSI Summary

- FSI workloads are diverse and complex
 - Online mobility
 - Analytics
 - Audio and Video recording
 - Home Directories and File Shares
 - Backup and Archive
 - Compliance and eDiscovery
- Unstructured data in FSI is exploding
 - New data sources
 - New applications
 - New data uses
- Isilon is the solution for rapidly growing Data Lakes
 - Consolidate everything into a single repository
 - Simplifies IT architecture while supporting traditional and emerging workloads
 - Efficient and scales as business needs change
 - Apply a consistent application of security and access policies
- Simple – Efficient – Massive Scale-out Storage
 - Unmatched Performance, Availability, and Scalability

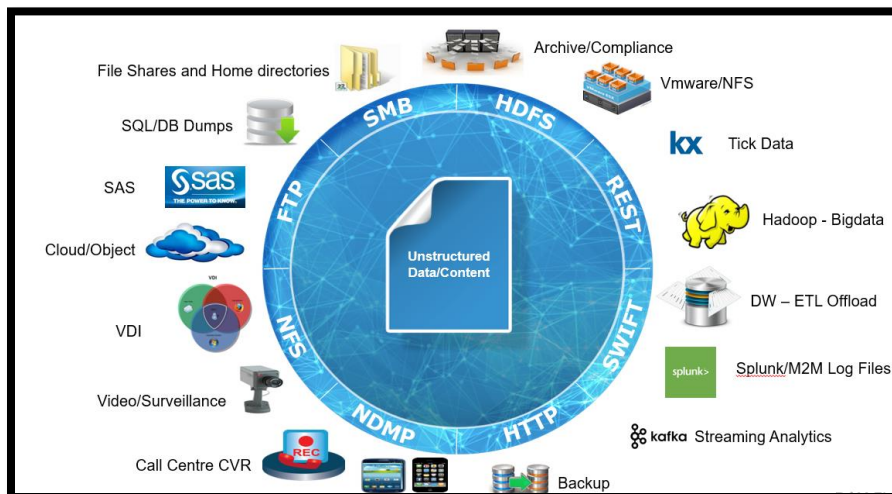


Fig.3 Isilon and ECS Workloads

ECS For Financial Services

- **Modern archive**
 - Universal archive for existing primary storage. Replaces tape. No changes to applications or operations. Archive always online of analytics workflows.
- **Cloud-native**
 - Enable new healthcare business operations. Cloud economics and ease of use on-premise. Lower TCO compared to public cloud providers.
- **Scalability**
 - Deployable in clusters for petabyte and exabyte scalability.
- **Data protection**
 - Provides geo-distributed data protection with no single point of failure. Globally accessible. One namespace. Multi-tenant architecture
- **Accelerate cloud-native applications**
 - Future healthcare IoT applications on private infrastructure.
- **Operational flexibility**
 - Multi-protocol support for legacy and modern applications.

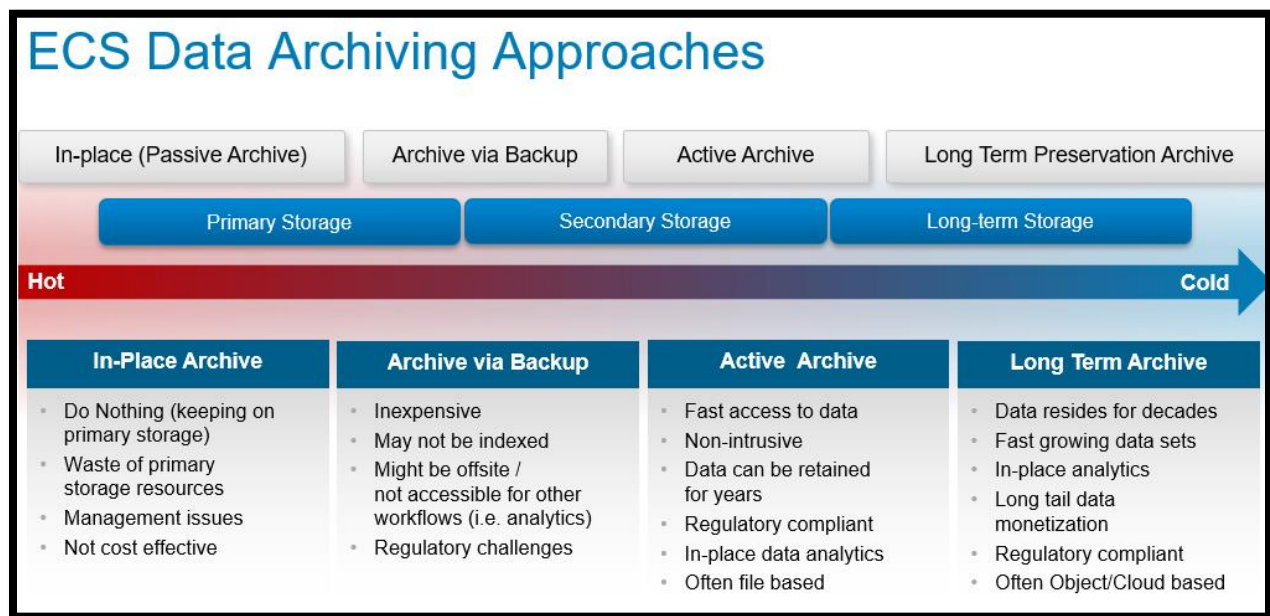


Fig.4 ECS for FSI Archiving

Conclusion

Dell EMC unstructured data systems, Isilon and ECS, are an ideal choice to modernize your existing storage infrastructure and embrace digital transformation. They form a complementary file and object portfolio which seamlessly integrate file, and cloud experience that's globally distributed and transparent to applications.

- Isilon scales easily and efficiently to accommodate rapid data growth. It enables FSI organizations to eliminate infrastructure silos and support Next-Gen applications, cut costs and optimize storage resources including the cloud. All while enabling performance that delivers results at the speed of business.
- ECS enables cloud-scale (Start small and scale into Exabyte), cloud economics (Automated and serviceable software-defined architecture) and cloud-native (Low-touch modernization for legacy object platforms)

Together, Isilon and ECS help you to address the challenges of IT transformation with a modern storage infrastructure that unlocks the value of your data capital, while providing best in class enterprise-grade features and security.

Use Cases

1. IndusInd Bank

- IndusInd Bank Limited is a Mumbai-based Indian new generation bank, established in 1994. Since establishing operations, IndusInd Bank has immensely and dynamically grown, today supporting over 1,000 branches and over 1,800 ATMs in India, with three offices in London, Dubai, and Abu Dhabi. The bank offers commercial, transactional and electronic banking products and services.
- Reference: <https://inside.dell.com/docs/DOC-391192>

2. Bankwest Australia

- Bankwest is a full-service bank based in Perth, Western Australia. In 2008, it was acquired by the Commonwealth Bank of Australia (CBA) and is now operating as a division of the parent company. In Western Australia, Bankwest is a market leader with about one quarter of all bank advances and deposits. The company has an extensive network of branches, cost-effective direct and third-party distribution channels, agencies, and electronic banking facilities, as well as 24-hour telephone and internet banking services.
- Reference: <https://inside.dell.com/docs/DOC-403375>

3. Kasikorn Bank Thailand

- This Isilon and ECS win enables Kasikorn Bank to address the many challenges it is facing due to the explosion of unstructured data and the pressing need to unlock and accelerate business insights from its financial data capital. Using Isilon and ECS, Kasikorn Bank can simplify its infrastructure, manage 3TB per week of new data generated from its business applications and retain the data for longer periods of time.
- Reference: <https://inside.dell.com/docs/DOC-418694>

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