Successful AI Strategies Require Object Storage: Five Use Cases

A Frost & Sullivan Executive Brief
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Introduction

Few technologies are transforming businesses like artificial intelligence (AI). Once affordable only to massive research organizations, today artificial intelligence—a broad category of compute functionality that includes sophisticated data analytics, cognitive computing, machine learning and more—AI is now accessible to any business. AI is the engine driving the most disruptive businesses and technologies of our time, including chatbot-based models used by Uber and Airbnb; self-driving cars being tested by Tesla and Google, among other firms; and digital assistants, like Apple's Siri and Amazon's Alexa.

But AI isn't just for flashy or disruptive solutions. Across all industries, organizations are leveraging various forms of AI to streamline business operations, improve customer experience, and identify new revenue streams.

Fueling AI workloads is data—lots of it. This is especially true for machine learning (ML) applications. With ML, the application "learns" from new data it is exposed to, with the software code automatically changing itself to become more precise. The more data, the better the ML functions perform. The more precision achieved by the ML, the better the outcomes or insights that can be obtained by the business.

For businesses looking to leverage ML for business growth, they first need to ensure they have a solid data management and storage strategy—one that can handle escalating volumes of data, in a range of data formats and sources. This requires modernizing traditional storage to support new, urgent demands of ML and other types of AI. The storage solution must be scalable, secure, accessible, flexible, and cost-effective.

Increasing Demand for Intelligence in Business Operations

The intelligence delivered by ML or other types of AI is recognized as an important strategic tool for business success. In a Frost & Sullivan survey of CEOs worldwide,

- 56% of CEOs say "intelligent data analytics" will be the key driver of business growth for their company
- 45% say competitors' use of intelligent data analytics is a top competitive threat
- 62% of IT decision-makers say integrated intelligence is an important decision-factor in their choice of a cloud solution partner

KEY DRIVER OF GROWTH	TOP COMPETITIVE THREAT	IMPORTANT DECISION FACTOR
Intelligent Data Analytics	Competitors' Use of Intelligent Data Analytics	Integrated Intelligence
56%	45%	62%
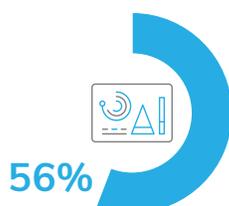
However, managing the vast pools of data required to "train" ML applications, or support sophisticated analytics, can be a hurdle. Seventy percent of IT decision-makers across all industries cite "managing data growth" as a top challenge to achieving digital transformation goals.

Growing Use of Object Storage across Industries

While traditional storage solutions are not sufficiently scalable, resilient, flexible, or cost-effective to support ML or other AI solutions, object storage provides an answer. Across all industries, organizations are increasing their use of scalable object storage solutions to better manage and optimize their data. According to some industry experts, upwards of 80% of all data will be stored in an object storage format by 2020, with total capacity estimated to reach over 330 exabytes.

Despite the growing interest and need, only 20% of US businesses have deployed object storage in the premises data center. Another 11% split object storage across the public cloud and the private data center. This percentage is expected to grow as more businesses adopt AI strategies, especially those that leverage ML.

How Object Storage Supports AI Strategies

Organizations that have implemented successful AI strategies are making object storage the foundation for their storage strategy. Object storage allows them to consolidate more of their data assets in a single data repository, regardless of format or volume or how often the data changes. Object storage can also provide custom and versatile metadata and metadata tagging, along with fast data search capabilities, thus providing the infrastructure required for the cognitive enterprise. A versatile premises-based object storage platform offers the following benefits:

- Simplified data architectures.
- Support for interfaces and applications to directly put data in and extract data from object storage.
- Interfaces and access for analytics tools such as Apache Hadoop and Spark.
- Built in a cloud-native interface, making it easier to utilize modern and more efficient programming interfaces such as the Restful API.
- Common management of critical data attributes such as security and compliance, availability, data integrity and durability; and cost effectiveness, across a variety of data types, sources, and needs.
- Cloud-like benefits, such as scalability and data resiliency, with the security and control of an on-premises solution.
- Management of traditional file storage as objects, by migrating network-attached storage (NAS) data to secure "vaults" within the object storage solution.
- Scalability and data resiliency without requiring replication or "extra" copies of data.
- User-defined metadata (not just filename, user info and timestamp) for ease of access, optimal search functionality, and greater insight.
- Single solution for all data types, creating management simplicity, built-in data resiliency, and cost effectiveness.

Five AI and ML Workloads that can Benefit from Object Storage

AI and ML workloads are diverse, offering value to nearly every industry and process. The functionality enables continuous improvement, because the software self-refines as it is exposed to more data. But implementing an AI and ML solution requires a massive data repository to initially train the software; and then, continual exposure to new data, to hone the software. As such, an optimal solution requires data storage that is massively scalable, flexible, and cost-effective: object storage. Consider the following use cases:

Customer Experience

"Intelligent virtual assistants (IVA)" are used by many businesses to enhance customer interactions. Such tools provide natural language (voice or text) interfaces via the internet to help customers engage with your business. Using Machine Learning, businesses can train the IVA to anticipate and respond quickly and accurately to customer needs—even using sentiment analysis to recognize customer frustration or confusion. Training the IVA requires large volumes of customer transaction data, including help desk recordings; account records; contact center records; as well as access sentiment analysis tools that analyze tone or language. For these applications, object storage offers the benefit of:

- A single, scalable repository for massive volumes and multiple types of private and public data.
- Active archive enables ML functionality to continually derive value from older data.

Patient Healthcare

Healthcare providers rely on data to make diagnoses, determine and direct treatment plans, and monitor progress. However, relevant data is generated by disparate sources and comes in different formats—doctor notes, images, graphs—making it hard for practitioners to easily assess all the data

to diagnose a single patient's condition. It's even harder for a doctor to access and garner insights from a collective body of data representing *all* patients. AI and ML can quickly and accurately compare a patient's health data against a database of other patients, to detect abnormalities and recommend treatments. As more data becomes available, ML will support more accurate results. To support the use of ML, object storage offers benefits including:

- A **single, scalable repository** for massive and growing volumes of public and private data.
- **Easily searchable content** across all formats (including imaging, files, notes, audio)
- **Customizable metadata tagging**, allowing objects to be searched by patient, condition, treatment, or other meaningful designator.
- **Private and secure storage of personal data**, supporting regulatory compliance.

E-Commerce

One of the oldest and most popular uses of AI is the customized "recommended products" feature of e-commerce or e-service sites. By incorporating ML into the buying transaction, businesses can move beyond standard product correlations ("people who buy this, also buy this") to more insightful offerings that increase sales-per-customer. For example, ML can support dynamic pricing and promotional offers, customized per buyer, or even deliver customized web pages. Such a use of ML relies on access to large volumes of historical customer data. For this application, object storage offers:

- **Secure storage** of large volumes of private customer data.
- **Scalable repository** for diverse data types created from various systems, including product/ service catalog, internet browsing data, customer transactions, and in-store purchases.
- **Simple management** of storage.

Video Identification

A new and highly promising use of AI and ML functionality is for video identification, particularly for security applications. Given enough training, ML can scan video surveillance tapes for specific people or actions (based on input description), or even for context (e.g., unusual or suspicious movements). While security presents the greatest commercial opportunity for video identification, the functionality is also sought by media & entertainment firms, as a way to search and identify video fragments from their huge libraries. Because of the challenge of accurately identifying dynamic actions in a few seconds of video, ML requires significant and ongoing training, thus demanding access to massive, large-capacity video files. To support video identification applications, object storage offers:

- Cost-effective, scalable storage for massive video files
- Active archive, for cost-effective and secure retention of older or less valuable files
- Fast and easy search, using custom metadata tagging

Inventory Management

For any business that deals with stock (whether manufacturers, retailers and wholesalers, or users such as construction firms and hospitals), inventory management is an ongoing priority. AI and ML embedded in the supply chain can help optimize inventory management, saving costs and minimizing idle inventory. ML functionality can be used to hone the algorithms used to forecast needs, manage inventory space, eliminate redundant stock, and minimize loss—resulting in greater efficiency, lower costs, and more satisfied customers. By utilizing object storage for inventory management, businesses benefit from:

- Single, scalable repository for diverse data—including inventory, supplier management, and delivery information—created from multiple systems and delivered in varying formats.
- Simplified management for data-intense functions.
- Cost-effective data replication to ensure data integrity.

The Last Word

Artificial intelligence (AI) allows computers to do what they do best: sift through massive amounts of data to derive a conclusion. Machine learning (ML) goes one step further: it enables software code to adapt its conclusions—to learn from experience—the more data it is exposed to. But effective learning requires access to vast amounts of data, which requires a scalable, flexible, searchable, cost-effective storage solution. Object storage meets the need, providing any business with a way to store and analyze diverse and massive data sets. As AI and ML become embedded in more business processes and workloads, enterprises will need a flexible object storage solution to fully realize their value.

IBM Cloud
Object
Storage

ABOUT IBM CLOUD OBJECT STORAGE

IBM Cloud Object Storage is a software defined storage platform with over 600 technology patents designed for storing massive amounts of data with efficiency and accessibility to transform the enterprise for multiple use cases. Our any to any to any architecture breaks down barriers for storing large amounts of data with access designed for hybrid and multi-cloud enterprises. We optimize the placement of data securely, with high durability and availability on commodity storage nodes across the enterprise. Data remains available with massive scale that is easy to manage and cost effective to use. Our customers have some the largest object storage systems in the world. With integration to high performance storage, search and tagging capabilities and analytics or machine learning (ML) environments we can eliminate multiple data silos bringing additional efficiencies to the enterprise. Our proven solutions can turn storage challenges into business advantages.

For more information, visit http://ibm.com/marketplace/cloud-object-storage-system.

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