



IDC MarketScape

IDC MarketScape: Worldwide Object-Based Storage 2016 Vendor Assessment

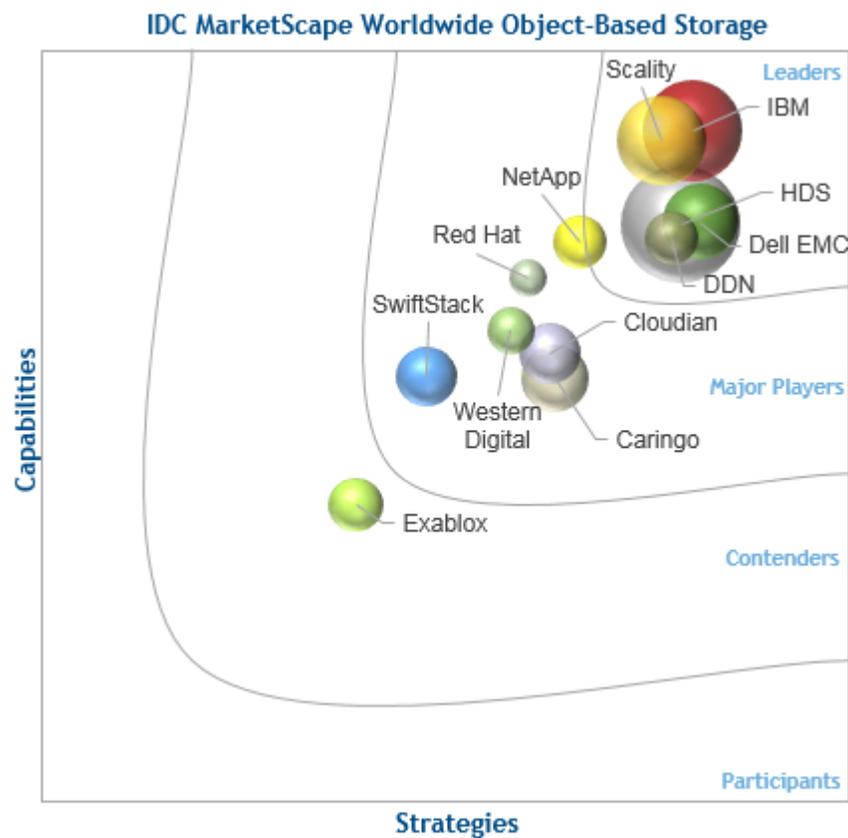
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THIS IDC MARKETSCAPE EXCERPT FEATURES: IBM CLOUD OBJECT STORAGE

IDC MARKETSCAPE FIGURE

FIGURE 1

IDC MarketScape Worldwide Object-Based Storage Vendor Assessment



Source: IDC, 2016

Please see the Appendix for detailed methodology, market definition, and scoring criteria.

## IN THIS EXCERPT

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The content for this excerpt was taken directly from IDC MarketScape: Worldwide Object-Based Storage 2016 Vendor Assessment (Doc # US41918416). All or parts of the following sections are included in this excerpt: IDC Opinion, IDC MarketScape Vendor Inclusion Criteria, Essential Guidance, Vendor Summary Profile, Appendix and Learn More. Also included is Figure 1.

## IDC OPINION

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The storage market has come a long way in terms of understanding object-based storage (OBS) technology and actively adopting it. The OBS landscape now sees a standardization and integration of the Amazon S3 and OpenStack Swift API, an emphasis on computing paradigms such as containers, native support for file interfaces, and a focus on vertical/use case-centric solution offerings. Many OBS solutions offer a scale-out file system that integrates with an independent but underlying OBS platform. These advancements have opened the doors for OBS so as to cater to a wide range of use cases beyond backup and archive. OBS solutions serve newer use cases that include (but are not limited to) mobility, analytics, compliance, and commercial high-performance computing areas such as media rendering/production. Today, OBS platforms are available in a variety of delivery models including appliances, software-only, and cloud services offerings.

According to *Worldwide File- and Object-Based Storage Forecast, 2016-2020* (IDC #US41685816, September 2016), object-based storage capacity is expected to grow at a CAGR of 30.7% from 2016 to 2020, reaching 293.7EB in 2020. In terms of revenue, IDC expects the OBS market to reach \$19.8 billion in 2020, much of which is driven by hyperscale environments. In this IDC MarketScape, IDC assesses the present commercial OBS supplier (suppliers that deliver software-defined OBS solutions as software or appliances much like other storage platforms) landscape. Cloud-based storage services based on OBS are not included in this IDC MarketScape. Since the publication of the last IDC MarketScape on OBS, the landscape has changed dramatically – a fragmented OBS market has now somewhat consolidated. As demand for traditional external storage systems continues to decline, several mainstream storage suppliers enhanced their portfolio to include OBS solutions by developing them in-house or via acquisitions. This IDC MarketScape assesses 12 OBS suppliers that are "owners of IP." IDC analyzed the capabilities and business strategies of OBS suppliers that it considers to be representative of the market. Key findings include:

- End users and suppliers are exploring the idea of all-flash array OBS solutions that will cater to not just capacity needs but also performance requirements for environments like Big Data/analytics, rich media, and technical computing. Some of these solutions feature scale-out architectures based on custom flash modules (CFMs) instead of solid state drives (SSDs) with higher densities and lower cost per gigabyte than primary all-flash arrays. Such platforms, having disrupted the primary storage market, are now targeting secondary storage markets.
- An OBS solution that supports traditional (current-generation) and next-generation applications will enable end users to adopt this technology more efficiently. For example, native support for file interfaces allows a user to write and retrieve files to/from the OBS solution.
- End users often appreciate the flexibility of choice not just in delivery models (appliances, software only, or cloud storage) but also in the ability to tier data based on usage to appropriate storage (hard disk drive, cloud, tape, etc.). An OBS solution with strategic ISV and

technology partnerships thus offering a strong solutions portfolio is also a key consideration for any end user.

## IDC MARKETSCOPE VENDOR INCLUSION CRITERIA

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This IDC study assesses the capabilities and business strategies of leading suppliers in the (scale-out) OBS market segment – which is part of the overall file- and OBS market. This evaluation is based on a comprehensive framework and a set of parameters that gauge the success of a supplier in delivering an OBS solution in the market. This study includes analysis of the 12 most notable players in the commercial OBS market, with broader portfolios and global scale. The suppliers enlisted in this study are (in alphabetical order): Caringo, Cloudian Inc., DataDirect Networks (DDN), Dell EMC, Exablox, Hitachi Data Systems (HDS), IBM, NetApp, Red Hat, Scality, SwiftStack, and Western Digital.

To make this list, the suppliers need to have an OBS platform that:

- **Conforms to IDC's taxonomy on OBS platforms.** According to IDC's taxonomy, software-based OBS platforms can run on any commodity x86 platforms and do not have any specific hardware customizations (like custom ASICs or SoCs) mated to the software stack, and they leverage an OBS data organization scheme.
- **Has been developed in-house or owned by way of an acquisition.** In other words, the supplier needs to be the intellectual property (IP) owner of that platform.
- **Is delivered as software, hardware (appliance or gateway), and/or as (private or public) cloud based.** Additional points were granted to software-based platforms that can be installed on any commodity-based hardware.
- **Is sold as licensed software directly to buyers or indirectly via OEM/channel partners and not just as a service.** Additional points were granted if the supplier had partnerships with as-a-service providers to deliver it as a cloud offering.
- **Was generally available (GA) as a current offering at the time IDC undertook this study in early 2016.**

This study is designed to evaluate each supplier for its (scale-out) OBS offering as opposed to the breadth of products and services of the firm. In other words, it should be observed that this study evaluates each participating supplier as an entity within the OBS market. In the case of a supplier with multiple products in the same market segment, IDC has worked with the supplier to select the product that most closely resembles the tactical strengths (capabilities) and strategic direction (strategies) of the supplier, and the one that can be used as the lens through which the supplier's position in the market can be ascertained, provided the product meets the inclusion criteria for the IDC MarketScope. This can impact the size of the bubble, as only the revenue for the evaluated product is included, and not the supplier's overall revenue for that market segment.

While certain suppliers therefore are at an advantage given their size and broader portfolio offerings, IDC recognizes that smaller suppliers with a single product, and whose primary focus in the scale-out object-based storage market may be limited to specific verticals, also play an important role by bringing to market potentially disruptive technologies.

Note that certain suppliers (e.g., Scality, Red Hat) are pure-play software vendors, while the other suppliers sell a mix of hardware and software, mostly as hardware appliances. Pure-play software typically represents 25-50% of the total revenue, so associated server revenue is added to compare the size of the bubbles directly to the appliance vendors.

In addition, some suppliers did not make the list because they did not meet one or more of the selection criteria.

## ESSENTIAL BUYER GUIDANCE

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Digital assets are the new IP and many businesses are actively trying to create new sources of revenue streams through it. For example, media streaming, the Internet of Things (IoT), and web 2.0, are some of the ways businesses are generating revenue in today's digitized world. IT buyers are looking for newer storage technologies that are built not just for unprecedented scale while reducing complexities and costs but also to support traditional (current-generation) and next-generation workloads. In general, these trends are driving the adoption of industry-standard computing platforms, optimized flash memory, all-flash arrays, software-defined storage, and so forth. In essence, end users are looking for a futureproof technology that can sustain data growth, performance, and capacity scaling demands at affordable costs.

According to IDC's 2016 end-user adoption trends of object-based storage, improved provisioning times, reduced capex, and improved flexibility are among the top 3 perceived as well as actual benefits achieved through the use of OBS solutions. Buyers should therefore look for the following key characteristics when evaluating OBS solutions:

- **Automated information life-cycle management (ILM):** Policy-driven ILM capabilities that enable management, repair, and deletion of data will help increase efficiency when managing petabyte- or exabyte-scale data sets.
- **Solutions portfolio:** A strong technology (hardware and software) partnership portfolio lends itself to a given OBS offering being able to support many use cases across verticals. An OBS supplier with several ISV and server-hardware partnerships provides end users with the ease of procuring and deploying solutions in a quick and efficient manner.
- **Platform scalability:** Scalability is not just from a hardware perspective (capacity and performance) but also from throughput, file size, and file volume perspectives. A solution appropriate for a given environment will allow each dimension to scale independently. Recent innovation around the AFA OBS solutions are enabling higher performance and capacity for next-generation workloads.
- **Storage efficiency:** Data reduction technologies such as erasure coding, data deduplication, or replication are a must with very large data sets. Data optimization technologies that include automated data tiering to the appropriate tier (hard disk drive, solid state drive, public cloud storage, tape, etc.) give end users the added benefit of storage efficiency.
- **Data management and reporting:** In addition to data layout and organization that can impact performance, efficiency, and availability and a user-friendly UI that supports in-depth reporting on data, applications resource usage is beneficial to end users.. A solution that supports advanced metadata, indexing, and analytics will be a key component of the infrastructure.
- **Data resiliency:** Resiliency capabilities (like replication and erasure coding) and the granularity with which such capabilities can be applied (i.e., whether policies can be applied at an account, container, or object level) will be important considerations. Data resiliency should also be weighed against the platforms' CAP theorem profile (see the Appendix for more details).

This study, while an independent evaluation from a market research firm, should not be considered as a "final judgment" on suppliers when considering their respective offerings for a particular project. The

specific objectives and requirements of any end-user company will play a significant role in determining the suppliers that can be considered as candidates for an engagement.

## VENDOR SUMMARY PROFILES

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This section briefly explains IDC's key observations resulting in a vendor's position in the IDC MarketScape. While every vendor is evaluated against each of the criteria outlined in the Appendix, the description here provides a summary of each vendor's strengths and challenges.

### IBM Cloud Object Storage

IBM's presence in the OBS space comes via acquisition. IBM acquired Cleversafe, a supplier of OBS solutions headquartered in Chicago, Illinois, in 2015. The company is aimed at building solutions that have inherent features such as new levels of scalability, security of data, storage efficiency, availability, and reliability, with the option to deploy across geographies or within a single datacenter – as private or public cloud. With a proven ability to scale to hundreds of petabytes and beyond, IBM Cloud Object Storage bears the promise of extreme scalability and simplicity, combined with data protection and security. The product also claims to be significantly lower in cost than solutions relying on storing more than one copy of the data to meet reliability requirements using its erasure coding methodology.

IBM Cloud Object Storage slices and disperses unstructured data across multiple nodes or geographical regions using patented Information Dispersal Algorithms. The IBM Cloud Object Storage platform can be deployed as a software solution on existing infrastructure, as a hardware appliance sold by IBM, or as a cloud-based storage service. IBM Cloud Object Storage offers the same architecture, whether on-premise or in the cloud, and is made up of three components: Manager, Accesser, and Slicestor. The Manager enables operations and maintenance for the object repository, whereas Slicestors are the storage nodes. Accessers provide a REST interface to applications and have the intelligence to encrypt and erasure code the data on writes and reverse the process on reads. This erasure code-based encoding protects the data against drive, server, rack, and site failures by transforming it into a number of slices such that the original data can be read from a subset of those slices. This approach is more efficient than data protection schemes that combine RAID and replication. One of IBM Cloud Object Storage's major selling points is the inherent security and reliability of its platform – it includes SecureSlice, a keyless encryption technology. This feature allows objects to be encrypted before being sliced and dispersed onto the Slicestor(s). Data can be accessed only when the required threshold of slices have been retrieved. In addition, no one Slicestor has all of the object's slices, thus adding another security layer. To maintain data integrity at scale and over time, a multilevel integrity checking scheme and background data repair process are built into the product. Features such as these got IBM Cloud Object Storage many customers in the government, health and life sciences, media and entertainment, and financial services spaces where security is key. Users can configure the fault tolerance levels depending upon the number of sites, number of nodes, and size of their configuration. IBM Cloud Object Storage uses both direct and indirect sales channels and increasingly pure self-service digital, focusing on specific regions and verticals to drive business.

IBM Cloud Object Storage can be deployed independently as or in a combination of on-premise, private, public, or hybrid cloud storage. Earlier in the year, IBM announced public cloud storage services based on Cleversafe technology to include a number of offerings:

- **Vault:** A public, shared, cloud storage service for infrequently accessed data with support for Amazon's S3 API
- **Standard:** A public, shared, cloud storage with higher performance than the Vault offering, along with support for the S3 API
- **Dedicated:** A dedicated single-tenant storage service hosted in the IBM Cloud
- **System:** On-premise software

This will enable end users with on-premise appliances to develop a reliable storage hierarchy within their existing IT framework, allowing applications to continue to use on-premise storage for highly constrained data storage needs, while multiple tiers of off-premise storage can be used for less constrained storage needs. In the short run, this can be used as a cost-effective scaling mechanism to deal with unpredictable storage needs. In the long run, this can be a nondisruptive path for enterprises to include cloud resources in their infrastructure mix. IBM Cloud Object Storage supports a broad set of standard interfaces such as Amazon's S3 API and the OpenStack Swift standard, as well as popular file-based access mechanisms such as NFS and SMB (via a cloud-enabled storage platform [i.e., cloud gateway]). These enable easier migration of existing applications, further lowering the barrier for adoption of hybrid and multicloud infrastructure usage among enterprises. Although the Manager, Accessor, and Slicestor are visible for System and Dedicated offerings, with the IBM Cloud Object Storage Standard and Vault services, clients see a simpler, streamlined PAYGo experience.

IDC has placed IBM Cloud Object Storage in the Leaders category in this IDC MarketScope. This position reflects IBM Cloud Object Storage's deep understanding of what is required to be successful in the OBS market segment.

### *Strengths*

The strength of IBM Cloud Object Storage comes from its extensive experience in the object storage space in its previous form – Cleversafe. Cleversafe in its prominence boasted several marquee petabyte scale (many exceeding 100PB+), which proved that the product worked exactly the way it is predicted to and is extremely scalable, reliable, robust, and affordable and has future-proof storage strategy. The added advantage of IBM Cloud Object Storage is the combination of on-premise delivery offering and the choice of cloud. As part of the IBM and IBM Cloud family, IBM Cloud Object Storage can be easily integrated into other technologies including IBM Bluemix, IBM Cloud Video Services, IBM Watson, and the full expanse of the company's hardware, storage, and other technologies and services. In general, the focus on a few use cases, and proving the technology, has earned IBM Cloud Object Storage the position it has in the marketplace.

### *Challenges*

The challenges for IBM Cloud Object Storage come in two forms. First, IBM claims that its direct competition in the public cloud space is Amazon, a deeply rooted and well-established public cloud storage services provider, and therefore that it will have to face stiff competition during sales cycles. Second, IBM has to leverage its full portfolio of object-based storage offerings instead of focusing mainly on cloud-based storage services such that it does not lose sight of those enterprise customers that prefer to have on-premise OBS.

## APPENDIX

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### Reading an IDC MarketScape Graph

For the purposes of this analysis, IDC divided potential key measures for success into two primary categories: capabilities and strategies.

Positioning on the y-axis reflects the vendor's current capabilities and menu of services and how well aligned the vendor is to customer needs. The capabilities category focuses on the capabilities of the company and product today, here and now. Under this category, IDC analysts will look at how well a vendor is building/delivering capabilities that enable it to execute its chosen strategy in the market.

Positioning on the x-axis, or strategies axis, indicates how well the vendor's future strategy aligns with what customers will require in three to five years. The strategies category focuses on high-level decisions and underlying assumptions about offerings, customer segments, and business and go-to-market plans for the next three to five years.

The size of the individual vendor markers in the IDC MarketScape represents the market share of each individual vendor within the specific market segment being assessed.

### IDC MarketScape Methodology

IDC MarketScape criteria selection, weightings, and vendor scores represent well-researched IDC judgment about the market and specific vendors. IDC analysts tailor the range of standard characteristics by which vendors are measured through structured discussions, surveys, and interviews with market leaders, participants, and end users. Market weightings are based on user interviews, buyer surveys, and the input of a review board of IDC experts in each market. IDC analysts base individual vendor scores, and ultimately vendor positions on the IDC MarketScape, on detailed surveys and interviews with the vendors, publicly available information, and end-user experiences in an effort to provide an accurate and consistent assessment of each vendor's characteristics, behavior, and capability.

### Market Definition

IDC classifies OBS platforms as part of the scale-out file- and OBS (FOBS) market segment. IDC uses the classification scheme to classify newer software-based file- and object-based storage platforms.

Scale-out FOBS refers to FOBS solutions that use a distributed data placement mechanism to span multiple independent server hosts or controllers while presenting a single data access namespace. Such architectures are also called shared nothing (or sharded data) architectures. Such architectures allow for flexible scalability in performance and capacity independent of each other using commodity components. Data sharding and distribution mechanisms (such as local and geographic replication and local and distributed erasure coding) account for one or more concurrent component failures. Scale-out FOBS solutions are made up of two variants: scale-out FBS solutions and scale-out OBS solutions. There are two principal differences between the two types: how data is organized, and how data is accessed.

Scale-out FBS solutions use distributed file systems with hierarchical structures to organize and store data. These structures are akin to mechanisms used by monolithic file systems, which in most cases follows a root directory (folder) and inverted tree structure. In contrast, scale-out OBS solutions use flat structures to organize data. Such structures are higher-level structures in which data is often organized

using an "account, container, object" approach wherein "objects" are analogous to "files" in FBS solutions. Accounts, containers, and objects are referenced by a metadata repository that stores and manages attributes of data stored in that structure. The level at which OBS solutions operate varies from platform to platform. Many OBS solutions operate on a per-object level (i.e., allow each object to be treated independently as far as policy management is concerned) whereas others operate at a container or account level (i.e., only allow policies to be applied at a container or account level). Several OBS solutions also leverage NoSQL databases as metadata repositories and persistent data stores (instead of storing chunks in the file systems).

Because of the need to manage objects with a comprehensive set of attributes, most OBS solutions use a different set of data interfaces than their FBS counterparts that mostly leverage NFS, SMB (CIFS), or FTP protocols. It is common for many OBS solutions to support HTTP/REST, CDMI, Amazon S3, and other object-specific interfaces.

## LEARN MORE

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### Related Research

- *HGST's Active Archive System Targets Cloud-Scale Deployments* (IDC #US41880416, November 2016)
- *Storage User Demand Study, Edition 1: End-User Perspective on Object-Based Storage - Go Open Source* (IDC #US41916116, November 2016)
- *Software-Defined Storage Appearing in Production Deployments Across Organizations of All Types and Sizes* (IDC #US41655116, September 2016)
- *Worldwide File- and Object-Based Storage Forecast, 2016-2020* (IDC #US41685816, September 2016)
- *Worldwide Enterprise Storage Systems Market Shares, 2015: Changing Tides and Adoption of Server-Based Storage* (IDC #US41226016, May 2016)
- *Hitachi Content Platform: End-to-End Portfolio for the 3rd Platform* (IDC #US41157115, April 2016)
- *Cleversafe Object Storage-Based Cloud Storage Services Enable "Exascale" IBM Cloud Hybrid Storage Architectures* (IDC #lcUS41067816, March 2016)
- *IDC's Worldwide File- and Object-Based Storage Taxonomy, 2015* (IDC #US41048516, March 2016)
- *VMware Enriches vCloud Air Services with Object Storage* (IDC #US40359215, December 2015)

### Synopsis

This IDC study represents a vendor assessment model called the IDC MarketScape. This study is a quantitative and qualitative assessment of the characteristics that assess a vendor's current and future success in the said market or market segment and provide a measure of the vendor's ascendancy to become a leader or maintain leadership. IDC MarketScape assessments are particularly helpful in emerging markets that are often fragmented, have several players, and lack clear leaders.

The (scale-out) OBS market subsegment, which is part of the file and OBS market, is an example of an emerging market. In this IDC MarketScape, IDC attempts to assess the capabilities and strategies of key vendors of OBS solutions. IDC expects that market forces such as fierce competition and buyer

demand will accelerate the metamorphosis of this market into a mature market with only a few dominant vendors. Open source-based stacks will create an additional dimension of complexity and challenges. In all likelihood, the only survivors in this market may be vendors with robust partner ecosystems and/or vendors with commercial variants of open source platforms.

"A new digitized world demands an infrastructure that is extremely scalable and flexible in terms of delivery models and also payment options, with strong vendor strategic and research vision from the vendor side along with unprecedented economies of scale," said Amita Potnis, research manager in IDC's Storage team. "OBS platforms hold the promise and the potential to support end users along this path of digitization. In this competitive market, vendors offering OBS platforms with the most compelling value proposition via a long-term strategy, research and development plan, and flexible delivery models will survive."

## About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

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