

## SURVEY

### Storage User Demand Study, 2011 — Spring Edition: Unlocking the Minds of Storage Users

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#### IDC OPINION

Across millions of enterprises in the world, most rely on some set of applications enabling and supporting business operations. Data produced or consumed by these applications can be critical for running the business or can be just saved for later use or for compliance with regulatory requirements. At the same time, enterprises are creating and storing growing volumes of rich, digital content that must also be organized, protected, and archived. While data generation thresholds may vary, once met, businesses inevitably start deploying systems or services designated to storing and managing these data and enter the world of enterprise storage systems. IDC has been following the enterprise storage systems market for nearly two decades and recently began surveying users worldwide in an effort to analyze end-user behaviors related to storage systems deployments. IDC's new Storage User Demand Study (SUDS) specifically analyzes the various ways end users deploy storage systems they purchased, what applications they support with these systems, and what kind of data they store now and plan to store in the future. As end-user business needs continue to evolve, the enterprise storage systems market also continues to be dynamic with new technologies emerging and new data use cases dictating requirements for the next-generation storage systems and storage delivery models. Surveying end users is a fast and sure way to chart these emerging trends and to capture end-user acceptance of emerging technologies and market offerings. Major results from the first *SUDS Survey*, conducted in late 2010, include the following:

- Many users already leverage third-party storage capacity (outsourced storage).
- There is a large interest in Fibre Channel over Ethernet (FCoE), but there is very minimal commitment.
- Midrange or modular storage systems are the most favored storage systems among all users for all types of data and use cases.
- Over the next 12 months, end users are not likely to change the way they deploy, attach, and use storage systems dramatically.



## IN THIS STUDY

This study provides an analysis of the recent survey of storage end users around the globe on their experience and practices in deploying enterprise storage systems for supporting a variety of enterprise applications and tiers of data from production to backup to archive. The survey is a corner stone of the Storage User Demand Study conducted by IDC every six months.

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### Methodology

Late in 2010, IDC began surveying storage end users on a six-month cycle to gauge deployments, influences, and preferences of actual storage users.

For the "spring edition" of the *SUDS Survey*, there were 998 respondents. Respondents were distributed throughout 15 countries. The survey was conducted in eight languages including English.

Respondents were divided up by regions — 50% of respondents were from the Americas (with 9% from Latin America); roughly one-quarter of the respondents came from Asia/Pacific (excluding Japan) and the balance from EMEA.

There was a very wide distribution of industries from which the respondents came, a total of 19. Respondents also varied in company size, from 50 employees to over 10,000.

Last, respondents were also categorized by the total raw storage capacity. Roughly one-quarter had less than 25TB, a further 24% had between 26TB and 100TB, and almost one-third of the respondents had between 101TB and 1,000TB, with 21% of the respondents reporting that they had over 1,001TB under their management.

IDC used the results of the survey to break out the overall external enterprise storage systems market into various segments specific to the SUDS research. We used IDC's Worldwide Quarterly Disk Storage Systems Tracker for detailed historical data, including factory revenue and storage capacity shipped by for major vendors in a variety of market segments, and *Worldwide Enterprise Storage Systems 2011–2015 Forecast: "Emerging" Once Again Is a Keyword in the Storage Market* (IDC #228255, May 2011) for the base market forecast.

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## SITUATION OVERVIEW

### Survey Findings

While the survey produced multiple millions of data points, IDC found four significant themes from the survey:

- Many users already leverage third-party storage capacity (outsourced storage).

- ☒ There is a large interest in Fibre Channel over Ethernet, but there is very minimal commitment.
- ☒ Midrange or modular storage systems are the most favored storage systems among all users for all types of data and use cases.
- ☒ Over the next 12 months, end users are not likely to change the way they deploy, attach, and use storage systems dramatically.

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## **Analysis**

### ***Many Users Already Leverage Third-Party Storage Capacity***

The *SUDS Survey* showed that 27% of the respondents used some form of outsourced storage. Those that have outsourced capacity stated that roughly 35% of their total storage capacity is outsourced.

In all situations, external storage, specifically, network storage, continues to be the dominant form of storage system.

In North America and Western Europe, respondents that indicated their use of third-party storage capacity were very close to the worldwide average at 26% each. Latin America and Asia/Pacific reported an unexpectedly high percentage of storage capacity being outsourced. In Latin America, on average, respondents indicated that 33% of total storage capacity is outsourced. Similarly, in Asia/Pacific, on average, respondents indicated that 28% of total storage capacity is outsourced. Much of this capacity was acquired in the past 12 months. IDC believes that given the cost sensitivities of these regions, outsourced capacity may be more attractive.

CEMA respondents reported that on average only 22% of storage capacity is outsourced. The lack of trust around privacy and security, as well as the higher cost and lower reliability of the Internet, is responsible for the lower use of outsourced capacity.

Emerging markets such as CEMA tend not to have the legacy of existing external storage systems and are more likely to move directly from directly connected or internal storage to outsourced capacity. IDC believes that the cost of bandwidth in CEMA is likely to have had a large impact on the lower use of outsourced capacity. Additionally, the impact of governmental regulations (particularly those of the European Union [EU]) is also very likely to have a negative impact on the adoption of third-party storage capacity in CEMA.

Across all regions, over 40% of the respondents indicated that in the next 12 months, they will be leveraging some form of outsourced storage service provider. Our survey indicates that an average of over 250TB will be acquired.

Only a relatively small number of respondents (18%) replied that they would not leverage any outsourced storage of any kind. Conversely, 17% of the respondents suggested that in the next 12 months, they were considering moving all of their storage to an external storage provider.

Contrary to more popular belief, the relatively high bandwidth cost in Asia/Pacific does not seem to be a major inhibitor to the adoption of outsourced capacity. In Asia/Pacific, only 12% of respondents indicated that they had no outsourced capacity of any kind. In North America and Western Europe, 27% and 26%, respectively indicated that they had no outsourced capacity.

IDC also analyzed the amount of outsourced capacity by different industries (of those respondents that indicated they use some form of outsourced storage). Most industries have 25TB or less.

In the next 12 months, most industries are not overly committed to leveraging outsourced storage. Surprisingly, the construction, retail, and securities and investment services industries were the most bullish on the use of outsourced storage.

### ***There Is a Large Interest in Fibre Channel over Ethernet, But There Is Very Minimal Commitment***

The *SUDS Survey* indicates that 79% of the respondents are considering FCoE use on their storage systems (as opposed to on their SAN-attached servers) in some way in the next 12 months. That is a high percentage of interest. However, in our survey, there were no respondents that were willing to make a commitment to the technology.

(Conversely, 21% indicated that they have no plans to test or deploy FCoE.)

Surprisingly, this changed only by 1% in terms for a 24-month outlook. 80% of the respondents indicated that they were considering FCoE. A small percentage of respondents moved from "looking at FCoE with no plans to deploy" to "considering piloting FCoE deployment in addition to their existing legacy FC SAN."

In terms of why FCoE was of interest to respondents compared with legacy Fibre Channel, "ease of management" was cited as the most appealing aspect of the technology. Lower cost of ownership and the ability to leverage Ethernet infrastructure also received strong indications of interest.

IDC research shows that the five-year CAGR for revenue and capacity growth for FCoE is 130% and 190%, respectively. These are extraordinarily high growth rates. But further analysis shows that by 2015, FCoE will make up only 5% of revenue and 4% of capacity for external storage systems.

Consistent with our research, it will not be until 2013 (24 months from now) that FCoE will be more than 1% of the external storage capacity.

### ***Midrange or Modular Storage Systems Are the Most Favored Storage Systems Among All Users for All Types of Data and Use Cases***

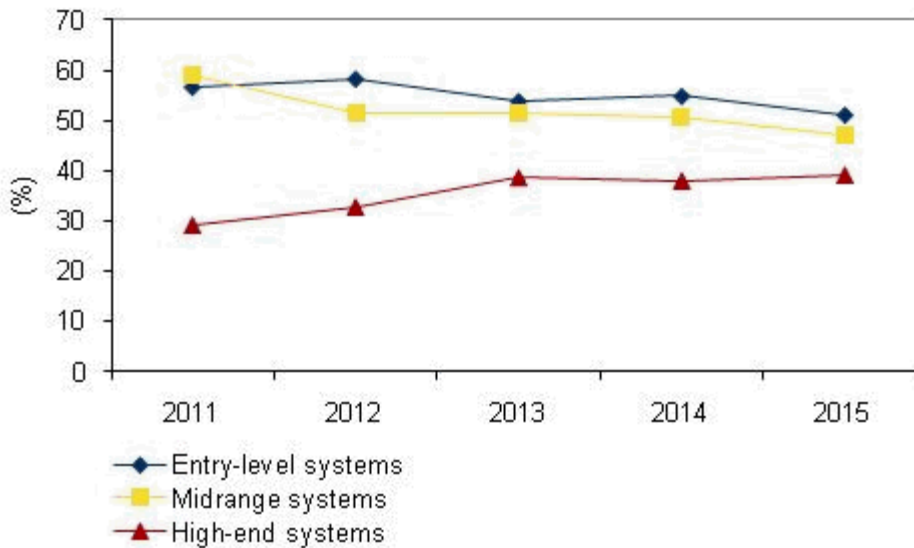
Across all data types, midrange storage continues to be the most favored type of storage deployed. This is consistent with IDC's forecast.

According to the IDC's enterprise storage systems forecast (see *Worldwide Enterprise Storage Systems 2011–2015 Forecast: "Emerging" Once Again Is a*

Keyword in the Storage Market, IDC #228255, May 2011), for the next 12 months, external midrange storage systems capacity is expected to grow the fastest — 59.1% growth between 2010 and 2011. This is followed closely by entry-level systems at 56.8% (see Figure 1). However, in the following years, growth of entry-level systems will exceed that of midrange systems. For forecast and market analysis purposes, IDC defines entry level storage class as systems with an average selling price of less than \$25,000 and midrange as systems sold at an average selling price in a \$25,000–249,999 range.

**FIGURE 1**

Worldwide External Storage Systems Capacity Growth, 2011–2015



Source: IDC, 2011

For mission-critical data, high-end and midrange systems were equally preferred. Cumulatively, these two types of systems were preferred by 52% of respondents for storing their mission-critical data.

Preference toward midrange systems stood out for non-mission-critical data, with 32% of respondents choosing midrange storage systems for storing non-mission-critical data. Another 23% said they will use entry-level systems for this.

For copies of data made for backup and recovery purposes, again midrange was preferred. 28% of respondents said they will use midrange system for data for backup and recovery, while high-end systems were selected by 25% of respondents.

Given the huge increase in the number of laws and regulations that have been introduced over the past several years, it would seem obvious that archival data and

copies of data made for long-term regulatory compliance would make up the largest data types being stored. However, most survey respondents are planning to produce mission-critical and backup and recovery data (74% and 77% of respondents, respectively), while only 50% are planning to produce data archives and 49% store data for regulatory compliance purposes.

## So How Did the Vendors Do?

The Spring 2011 *SUDS Survey* was focused primarily on applications (and not storage workloads). As such, based on our research, we were able to ascertain end-user sentiment regarding their preference toward certain brands based on specific applications.

Table 1 summarizes these sentiments. The rankings in the table are based on estimated storage capacity shipped by each of the top vendors in support of selected enterprise applications.

Across most major applications, EMC, the largest supplier of enterprise storage systems in general, took the top spot, followed in all but two applications by NetApp. NetApp also got the highest rank for content depots and public cloud infrastructure. Not surprising to IDC, Hitachi rated very highly for SAP implementations, while HP took a second spot in Microsoft and IBM rated high for Oracle applications.

**TABLE 1**

### Top 3 Vendors by Applications

Rank	Business Intelligence and Analytics	Home Directories	Microsoft Exchange	Microsoft SharePoint	Oracle Applications	SAP	VDI	Content Depots and Public Cloud Infrastructure
1	EMC	EMC	EMC	EMC	EMC	EMC	EMC	NetApp
2	NetApp	NetApp	HP and NetApp (tied)	HP	IBM, NetApp, and HP (tied)	Hitachi	NetApp	HP
3	HP	HP		NetApp and Dell (tied)		IBM	HP and IBM (tied)	Dell

n = 998

VDI = virtual desktop infrastructures

Note: Data is based on IDC's estimates of 2010 vendors' external enterprise storage system capacity shipped in support of specific applications.

Source: IDC's Worldwide Quarterly Disk Storage Systems Tracker, March 2011, and *SUDS Survey* analysis, 2011

What was surprising was that the number of respondents that indicated that they had EMC or NetApp installed in their environments was lower than the number of those that indicated they had Dell, HP, or IBM storage. This phenomenon only refers to a number of respondents, not the amount of storage capacity and storage system units deployed by end users. We interpret this as the successful storage-to-server attach rate related to the full-line system companies. At the same time, not all storage from Dell, HP, or IBM is network storage — there is a significant amount of direct-attached systems deployed to expand storage capacity of application or general purpose servers from these vendors (unlike pure storage EMC and NetApp, which only ship network storage).

The results also suggest that when it comes to "best of breed," many (if not most) users around the world still continue to invest in storage-centric vendors to satisfy their most critical applications.

## **FUTURE OUTLOOK**

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### **Status Quo ... For Now**

#### ***Over the Next 12 Months, End Users Are Not Likely to Change the Way They Deploy, Attach, and Use Storage Systems Dramatically***

Over the next 12 months, the survey showed that storage users are unlikely to change the way they deploy, attach, and use storage systems in any dramatic way.

The survey data suggests that roughly one-third of respondents will not be retiring any storage capacity in the next 12 months. At the same time, less than 10% of the respondents will not be deploying any new storage capacity in the next 12 months.

Just under two-thirds of the respondents will be deploying up to 50TB of new storage capacity in the next 12 months.

#### **Brand Preferences**

When asked about the respondents' likeliness to purchase a particular storage brand, there were no surprises.

Most users with more than 10TB of capacities deployed would repurchase the same brand of storage as they have currently. There were two exceptions: HP and IBM. Users with more than 10TB of HP or IBM storage were not as loyal and presented strong preferences for other brands as well.

#### **Staffing**

The survey showed that nearly half the respondents were not likely to have any change to their staffing levels in the next 12 months. 43% indicated that they were likely to increase staffing, while 9% indicated that their companies would see a decrease in the number of full-time employees managing storage.

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## Application Analysis

Overall, the change from 2009 to 2010 in terms of capacity is within an expected range. One of the most significant changes came from the amount of storage consumed by content depots and public cloud service providers. The amount of capacity consumed by these segments more than doubled from less than 1,000PB in 2009 to more than 2,000PB in 2010.

Equally expected, of the hypervisor analysis performed on the responses from this survey, VMware was the most implemented hypervisor by a strong factor when measured based on region and company size.

Also, as expected, the strongest use of VMware is in North America and Western Europe, with Latin America showing the smallest penetration in terms of VMware.

One surprising fact that came out of the survey is that there was a higher-than-expected use of multiple hypervisors. Irrespective of whether the main hypervisor was Hyper-V, Xen, or any other hypervisor, there was also a strong use of VMware in those environments.

Of users that indicated that VMware is the main hypervisor platform, there was a high use of Hyper-V in those environments.

## ESSENTIAL GUIDANCE

While technologies on the enterprise storage systems market continue to evolve, enterprise applications and data use cases remain the ultimate driver of changing demands to storage infrastructures. In this environment, storage vendors need to keep their hands on the pulse of end users' deployments of various applications and practices around usage of the data. This will help to identify future investments in technologies and in marketing campaigns. For the end-user community, the application and data use cases picture is a more hands-on view than a general technological market overview as it helps end users to look at best practices utilized in similar application and data environments.

Often, storage system suppliers will need to take a lead role of formalizing new requirements and opportunities (as it was, for example, with storage clouds or big data). The latter is very important for vendors themselves, their channel partners, and end-user community as it leads to more formal discussions, product positioning, and assessment of offerings.

## LEARN MORE

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### Related Research

- ☒ *Worldwide Enterprise Storage Systems 2011–2015 Forecast: "Emerging" Once Again Is a Keyword in the Storage Market* (IDC #228255, May 2011)

## Appendix

### ***How Are SUDS and Server/Storage Workloads Related to Each Other?***

The short answer to this question is that they are not. That said, the research is conducted in such a way that the results support both SUDS and server/storage workloads.

Some basic differences are shown in Table 2.

**TABLE 2**

Server/Storage Workloads and SUDS Comparison

	Server/Storage Workloads	SUDS
Geographic reach of survey	United States	Worldwide (15 countries, 8 languages)
Number of respondents	800	1,000
Type of survey respondent	Server administrators	Storage administrators
Top-down/bottoms-up approach	Top down	Bottoms up
Technology focus	Servers/compute	Storage/data

Source: IDC, 2011

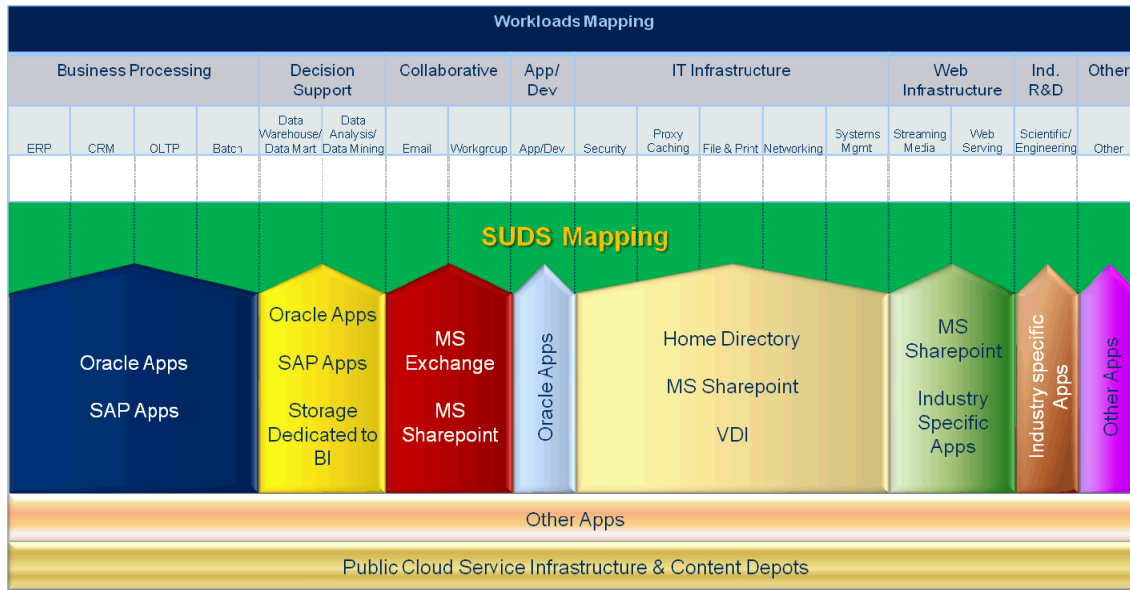
The Server and Storage Workloads Studies include a survey of server administrators asking them about the way their organizations' servers are used in terms of 17 workloads. The enterprise server team then takes the most current enterprise storage systems forecast and tracker data and models the revenue and capacity of storage based on the server/compute survey. The server/storage workloads focus on how and where compute capacity is deployed.

Conversely, SUDS leverages a survey of storage administrators, asking these administrators about the way their organizations' storage is deployed and used. The enterprise storage systems team analyzes the survey results to provide a deep-dive look at storage systems deployments (from *SUDS Survey*) versus storage systems shipments (as found in the enterprise storage systems forecast). SUDS also looks at the deployment of storage for a select number of enterprise applications. IDC research suggests that these enterprise applications make up for roughly 70% or more of the applications deployed by enterprises and therefore is an acceptable proxy for how enterprises leverage deployed storage systems.

Figure 2 illustrates how SUDS applications map against server/storage workload categories.

**FIGURE 2**

SUDs to Workloads Mapping



Source: IDC, 2011

**Definitions**

**Verticals**

Table 3 shows the categorization of verticals.

**TABLE 3**

Vertical Categorization

Vertical	Examples
Finance	Banking, insurance, financial services, and credit institutions
Communications and media	Publishing, broadcasting, and telecommunications
Construction	Heavy construction and special trade contractors

**TABLE 3**

## Vertical Categorization

Vertical	Examples
Consumer services	Services focused primarily on the consumer such as hotels, entertainment services, and social services (e.g., Starwood Hotels and Resorts Worldwide Inc., Global Hyatt Corp., H&R Block Inc., AMC Entertainment Inc., American Museum of Natural History)
Discrete manufacturing	Automotive, apparel, furniture, equipment/machinery, publishing, electronics, leather
Government	Local, state, federal
Healthcare providers	Hospitals, outpatient services, physician office, medical testing
Insurance	Healthcare insurance payers, life insurance, property and casualty, brokers and other insurance
Private education	Private institutions dedicated to academic and/or technical/vocational instruction
Process manufacturing	Food, paper, petroleum/chemicals/pharmaceutical, stone/clay/glass, primary metals
Professional services	Business, legal, engineering, management, IT, real estate, or Internet-related services
Public education	Educational services and library/archives
Resources	Fuel extraction, agriculture, mining, and other extractive industries
Retail	Including eating and drinking establishments
Securities and investment services	The variety of institutions that facilitate and execute capital transfers
Transportation and transportation services	Trucking and warehousing, rail, water and other support activities such as air control, towing
Service providers/telecommunications/cable	Services providing point-to-point contact by telephone or telegraph; entities engaged in creating cultural content, associating themselves with it, and/or disseminating it through various means including broadcasting, publishing, and visual projection
Utilities	Organizations created to generate and/or disseminate broad social necessities such as electric, gas, combination (electric and gas), and water
Wholesale	Enterprises primarily involved in the sale of goods to enterprises or organizations, whether for resale (e.g., by retail companies or storage and peripherals wholesale organizations), for value-add by manufacturing entities, or for internal consumption

Source: IDC, 2011

### **Enterprise Storage System**

For the purposes of the *SUDS Survey*, an *enterprise storage system* is defined as a system of three or more hard disk drives (HDDs) or solid state drives (SSDs) dedicated to storing data. The system might be located within a server cabinet or enclosure (internal storage) or might be a standalone system either on a network (Ethernet or Fibre Channel) or connected directly to servers. Storage on desktops, laptops, and workstations, as well as external standalone drives or storage devices with one or two disk drives, are not included in this definition.

### **Third-Party Storage Capacity**

For the purposes of *SUDS Survey*, *third-party storage capacity* is defined as storage capacity that is consumed from a service or cloud provider.

### **Application Definitions**

#### **Oracle Applications**

For the "application" entitled *Oracle Applications*, respondents were advised to include Oracle Applications such as ERP and CRM.

#### **Cloud Service Infrastructure**

In *SUDS Survey*, one of the "applications" about which we surveyed is called *Cloud Service Infrastructure*. Respondents were instructed that "if your organization provides storage services to other organizations, please, include the storage capacity dedicated to providing these services into Cloud Service Infrastructure."

#### **Industry Specific**

For the "application" entitled *Industry Specific*, respondents were advised that examples of this type of "application" included PACS and CAD.

#### **Storage Class**

In terms of future plans, the *SUDS Survey* provided examples of storage class. These examples are provided in Table 4.

**TABLE 4****Examples of Storage by Storage Class**

Storage Class	Examples
Traditional entry-level systems	HP MSA, Dell PowerVault MD, EMC Iomega, etc.
Traditional midrange systems	EMC CLARiiON, HP EVA, Dell EqualLogic, etc.
Traditional high-end systems	EMC Symmetrix, IBM DS8000, HDS USP, etc.
Scale-out systems	IBM XIV and SONAS, EMC Atmos, Oracle Exadata, etc.
Third-party storage services	Cloud

Source: IDC, 2011

**Synopsis**

This IDC study provides an analysis of the recent survey of storage end users around the globe on their experience and practices in deploying enterprise storage systems for supporting a variety of enterprise applications and tiers of data from production to backup to archive. While technologies on the enterprise storage systems market continue to evolve, enterprise applications and data use cases remain the ultimate driver of changing demands to storage infrastructures.

"It is essential for storage system suppliers and end users to look more closely at storage deployments serving various enterprise applications and data use cases," says Natalya Yezhkova, research director, Storage Systems. "Vendors can get a better sense on how their storage systems are deployed and what requirements they can foresee from end users for these deployments. End users can use this market view to look for best practices related to storage deployments in application and data environments similar to their environments."

"In the data-dependent society in which we now live, understanding how users leverage storage systems to store, protect, and distribute data becomes one of the most critical objective of information organizations," says Benjamin S. Woo, program vice president, Worldwide Storage Systems research at IDC. "The optimal usage of storage system solutions can result in the creation of additional organizational value and competitive advantage."

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