



## White Paper

# Reinventing Enterprise Storage Systems for the 3rd Platform Era

Sponsored by: Fujitsu

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## IDC OPINION

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Enterprises are undergoing massive transformation to remain competitive and fuel business innovation in the 3rd Platform era driven by cloud, Big Data analytics, social business, and mobility.

This digital transformation in turn is significantly disrupting the storage market because traditional, monolithic, and scale-up storage technologies are struggling to cost effectively meet organizations' new storage demands characterized by an enormous increase in data, unprecedented performance challenges, and data management complexities.

According to IDC's worldwide enterprise storage systems forecast, the overall volumes of storage capacity shipped to the enterprise storage systems market will exceed 356 exabytes (EBs) in 2018, up from 69EB in 2013. IDC classifies storage systems into three main groups:

- Entry level – <\$25,000 average selling price (ASP)
- Midrange – \$25,000 to \$250,000 ASP
- High end – \$250,000 ASP and above

High-end arrays are optimized for the most business-critical workloads and typically have four or more controllers with mainframe or open systems connectivity.

The increase in the amount of data means a greater need for capacity, bandwidth, and compute resources for IT organizations. In addition, owing to the geographical nature of business, storage investments are driven by the need to organize and distribute files.

But that is not all. In the 3rd Platform era, enterprises' storage needs are also increasingly determined by a wave of new workloads and applications that are mixed, heterogeneous, and dynamic. The performance of these workloads depends on robust data services (serviceability and high performance) as well as a rich set of storage services (tiering, replication, snapshot, deduplication, failover, and failback features for data protection). As a consequence, quality of service (QoS), uninterrupted performance, high availability (HA), business continuity, compliance, and data protection are top priorities for IT organizations.

The new era data challenges, coupled with tight budgets, are also forcing organizations to evaluate storage strategies from a long-term perspective. Organizations are seeking to invest in architectures that help them future-proof their IT investments. IDC believes that the role of storage solutions that can start small but can grow as users' data needs evolve can prove enormously useful. Such scale-as-you-grow storage solutions help organizations avoid both over-provisioning and ending up with a lot of idle infrastructure on one hand, and setting too tight a capacity and performance limit causing them to do a forced migration far ahead of a scheduled upgrade on the other hand. Costly over-provisioning and over-spending are common in legacy environments.

In the client/PC server-based 2nd Platform era, "scale-up" storage technologies worked well as enterprises mostly had a relatively immobile user base with limited and fragmented data sets. But in today's highly virtualized and mixed workload environments, enterprises prefer scale-out architectures that enable them to linearly scale capacity and/or performance independent of each other while keeping management simple and costs low. In scale-out storage architectures, the logical volumes, files, or objects are fragmented and spread across multiple nodes to protect against hardware failures and improve performance.

IDC also believes that scaling in granular increments is as important as scaling big. Granular scalability improves the rate of utilization of the storage tiers. Meanwhile, granular data migration enables better utilization of more expensive tiers and reduces the strain on back-end resources as less data needs to be moved around. Businesses prefer storage solutions that help them scale big but also scale in granular increments to give them the flexibility and scalability of their choice.

Other equally important considerations for large organizations are high availability, business continuity, and data redundancy. Data redundancy technologies, as with backups, are intended to prevent data loss. but the two are quite different. Data redundancy often takes the form of a synchronized copy of the organization's data. It can help to prevent service outages and ensure HA, while backups are more suited for point-in-time recovery capabilities. One of the most common forms of data redundancy is RAID. RAID arrays are designed to provide better performance reliability than when using a single disk.

IDC believes that large enterprises – with their no-compromise requirement around performance, resilience, QoS, HA, and reliability – are continuing to rely on established, enterprise storage systems for their business-critical workloads. Newer storage technologies such as software-defined storage (SDS) and hyper-converged systems are yet to demonstrate a wide number of use cases around highly random online transaction processing workloads. IDC's research shows that a majority of early adopters of hyper-converged systems use it primarily for virtual desktop infrastructure (VDI) purposes, while SDS is yet to become fully ready to take on a bigger datacenter-wide role and run all workloads.

According to IDC's *Worldwide Quarterly Disk Storage Systems Tracker*, total worldwide enterprise storage systems factory revenue grew 6.8% year over year to nearly \$8.8 billion during the first quarter of 2015. Total capacity shipments were up 41.1% year over year to 28.3EB during the quarter.

IDC's 2015 *Storage Manager Survey* revealed that the number of organizations increasing spending on primary disk storage systems has increased from 27% in 2014 to 31% in 2015. In contrast, the number of respondents citing increased investment in hybrid flash arrays and all-flash arrays is down compared with 2014. Only 28% of respondents said they are planning to invest in hybrid flash arrays this year compared with 36% last year, and just about 25% cited increased spending on all-flash systems this year as against 36% in 2014.

We believe large enterprises' appetite for enterprise storage arrays will continue as budget pressures force CIOs to not just look at acquisition cost but also evaluate the total cost of ownership and the cost-to-value aspects before making investment decisions.

In our opinion, the increasing influence of line-of-business (LOB) managers or workload owners in IT purchase decisions is further putting performance, low latency, and high throughput ahead of cost, increasing interest in high-end arrays. Almost 42% of storage managers cited meeting SLAs on performance, availability, or recovery as the biggest storage pain point.

The study also revealed the quantifiable value from their investments, with 72% measuring value of storage services with performance improvement metrics and 61% using cost improvement metrics. Our research also found that financial and company stability is the leading factor when picking a storage vendor, followed very closely by innovation and technology, giving a clear indication of what vendors and service providers must focus on for long-term relationships with large organizations.

Meanwhile, IDC's *2015 Software Survey* found that reducing storage-related costs was the fourth priority, with organizations ranking improving storage performance, ensuring data retention and compliance, and expanding storage capacities as the top 3 priorities.

But organizations' expectations from these enterprise arrays have increased too, due to the IT commoditization trend as well as the growing popularity of alternative technologies. Enterprise storage systems that don't just provide high scalability to cope with future demand but also flexibility in sizing of I/O processing speed, caching, internal bandwidth, and capacity will make these arrays a strong contender for today's changing workload requirements.

IDC believes that some enterprise storage suppliers, in a bid to remain relevant in the 3rd Platform era, are focusing their engineering, research, and innovation efforts on building high-end, scale-out storage arrays to help enterprises beat their storage challenges efficiently and cost-effectively.

In our opinion, as the high-end enterprise storage market becomes more niche, solutions that are built with a new approach to meeting data service requirements and cost-effective scalability will hold strong.

## SITUATION OVERVIEW

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The world of IT is changing rapidly as organizations embrace a new computing paradigm. Big Data, cloud computing, mobile, and social technologies – the core pillars of what IDC calls the 3rd Platform – are enabling enterprises to find new ways to drive business value and competitive differentiation as well as create more value for their customers.

The wave of digital transformation continues to grip enterprises worldwide, with many organizations moving from the planning phase to the execution phase. For instance, almost half of respondents in IDC's 2015 software survey have already established an internal innovation group, while 59% said it was a key priority for this year.

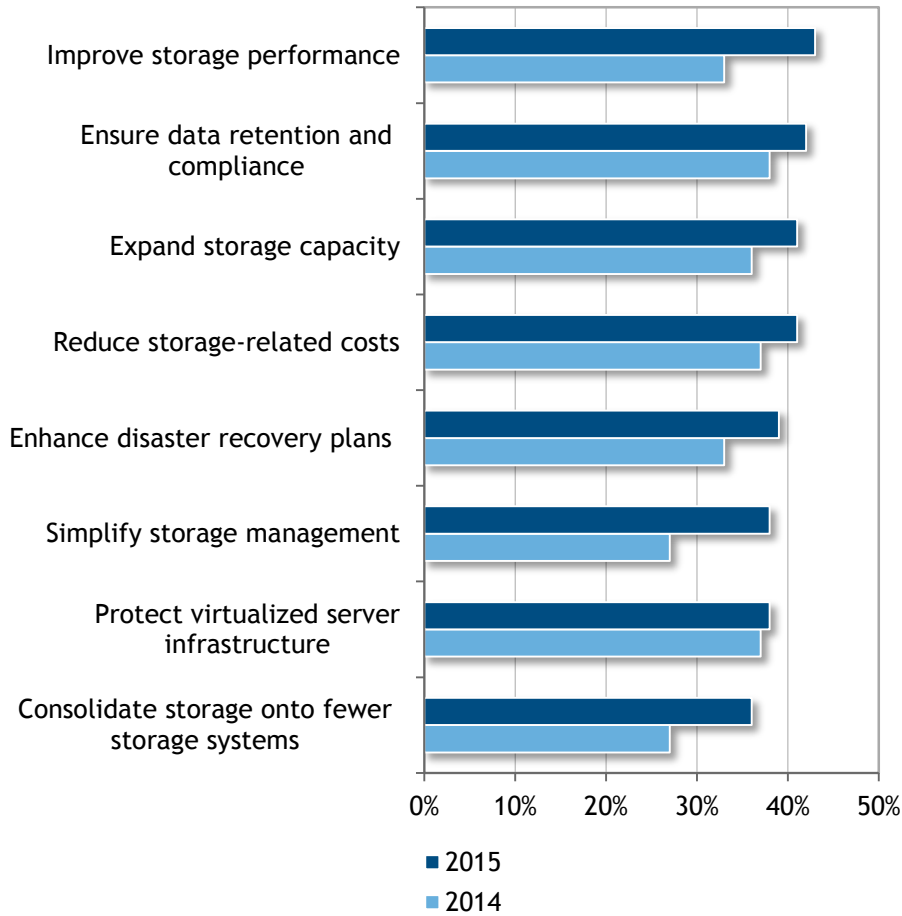
As enterprises progress on their digital transformation journey, they are transforming their datacenter infrastructures, particularly their storage architectures. IDC's 2015 *Storage Manager Survey* analyzed the top priorities and spending expectations of storage managers and found that:

- Enterprise storage purchases are evolving. They are becoming more aligned with application and workload considerations, and LOB managers are increasingly getting involved in storage purchases.
- Organizations' storage hardware spending is becoming more strategic, consistent with the increasing influence of LOB managers in storage purchases. For example, respondents are evaluating integrated systems and hyper-converged infrastructures for their storage requirements alongside solutions such as disk storage systems, all-flash and hybrid flash arrays (AFAs and HFAs respectively), and tape storage systems.
- In terms of software spending, data protection and recovery, storage management, and security are top priorities for enterprise IT in 2015. Storage features such as performance, capacity, and recoverability are of high importance.
- The top 5 applications driving storage spending in 2015 are backup and recovery, archiving, data governance, disaster recovery (DR), and email. Ensuring data retention and compliance, reducing storage costs, improving storage capacity, and enhancing disaster recovery plans are the most pressing storage requirements for 2015.

**FIGURE 1**

**2015 Storage Priorities**

*Q. How much of a priority is each of the following factors to your organization's storage requirements for the next 12 months? High Priority*



Note: n = 556

Source: IDC, 2015

When looking at storage managers' top priorities (Figure 1), they bear witness to the fact that many are in fact transforming their IT and storage infrastructure to provide better digital experiences to their customers. The need for storage performance is much more pronounced than in previous years, and IDC expects this trend to continue as organizations execute on their digital transformation agendas.

IDC believes that enterprise storage arrays can benefit from this trend as they deliver the improved performance that is required. Data retention and compliance is the second-highest priority for respondents globally, driven by the need to respond to an ever-growing number of industry-specific regulations (as in finance, healthcare, or the public sector), and the data compliance priority is much more pronounced in Europe thanks to the additional pressures from a stricter set of data privacy regulations. Expanding storage capacity has been a top priority for many years due to the constant data growth challenge, and IT trends like the Internet of Things, Big Data, and socialytics are only accelerating this problem.

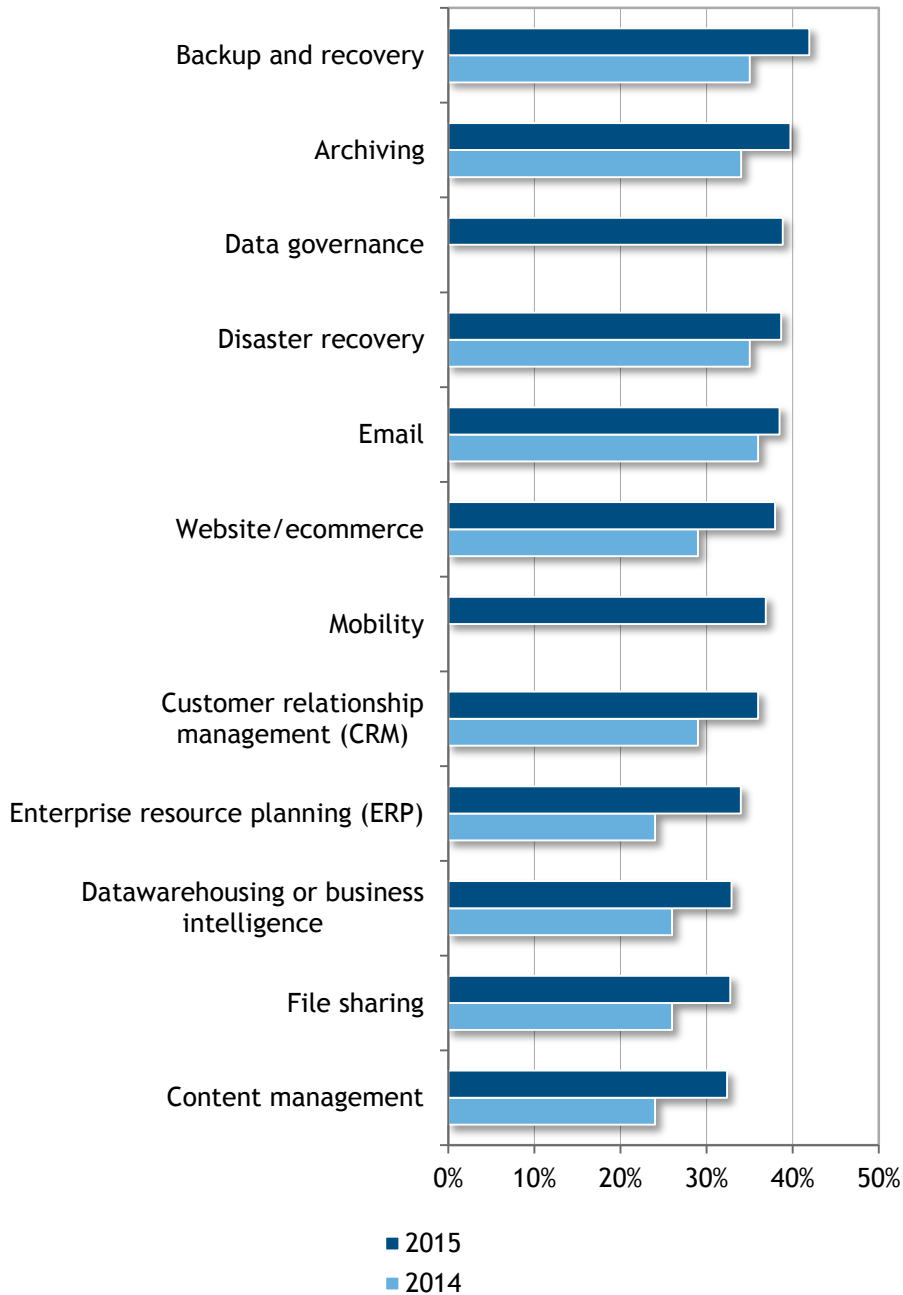
As businesses regain economic confidence, they are demonstrating a willingness to spend on modernizing their datacenter infrastructures and continue to invest in new storage technologies.

The overall storage software market is forecast to grow by 31.9% by 2018. The Americas will grow by 32.9% and Asia/Pacific/Japan (APJ) will grow by 34.6%. EMEA will lag the overall market forecast somewhat at 29.1%. The Americas will remain the dominant region in terms of overall revenue.

**FIGURE 2**

**Applications Driving Storage Investment in 2015**

Q. How likely is your organization to focus on each of the following applications in your future storage spending plans, in the next 12 months? Very likely, completely



Note: n = 556

Source: IDC, 2015

As shown in Figure 2, the top 5 applications driving storage spending in 2015 are backup and recovery, archiving, data governance, disaster recovery, and email. This is consistent with organizations' top 3 areas of storage software spending – data protection and recovery, storage management, and storage security software spending research. IDC believes organizations are setting aside a sizable portion of their IT budgets for DR, security, and data protection purposes.

Another reason data protection remains a high growth market is that organizations are modernizing their backup infrastructures to accommodate image-based technologies, appliance-based delivery models, and support for physical, virtual, and cloud-based environments. For the first time, organizations have also cited mobility (37%) and machine-generated data (26%) as applications driving storage investments, demonstrating that businesses are reacting to the effects of the 3rd Platform components of mobility and IoT.

## Large Enterprises and Their Storage Spending Patterns

IDC's worldwide enterprise storage systems forecast research also showed that the external enterprise storage systems market will grow at a 2.6% five-year compound annual growth rate (CAGR) for 2013-2018 and will reach \$29.9 billion in 2018. Value-wise, despite a low growth rate, the external segment will remain by far the largest segment of the enterprise storage systems market, primarily driven by investment from large enterprises.

For large enterprises from highly regulated sectors such as banking and finance, oil and gas, healthcare, and the public sector, zero downtime and zero data loss, high availability, and stability of storage arrays are critical. However, because of data compliance regulations, these organizations prefer on-premises, next-generation high-end storage arrays over cloud-based storage services for their mission-critical data. They are also hesitant to adopt newer storage technologies such as hyper-converged systems or SDS because:

- The complexities of data migration involved when moving to disruptive storage technologies such as hyper-converged systems or software-defined storage are huge and may result in some downtime.
- These technologies are yet to be adopted by organizations on a wide scale for general-purpose storage or for critical or high transactional/OLTP workloads.
- These technologies are yet to have an ecosystem of full management and administration tool sets built around them – a key criteria for large enterprises' mission-critical data applications.

These large organizations also stress the need for business continuity in their highly virtualized infrastructures, so QoS is critical. As these large organizations are geographically spread out, automated storage tiering (AST) can bring huge data efficiencies and reduce latency.

## FUJITSU ETERNUS DX8700 S3/DX8900 S3 OVERVIEW

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### Fujitsu's Approach to Enterprise Storage

IDC has interviewed a number of large companies about their storage investments to understand the benefits and to learn what makes for a successful storage project. We see a wide range of outcomes, but the most successful projects that deliver significant productivity gains with rapid financial return usually have three elements in common.

These are:

- **Consolidation:** reducing the number of platforms and silos
- **Standardization:** common management processes and tools wherever possible
- **Automation:** reducing the need for manual operations, particularly for low-level admin tasks

By focusing on these three factors, IT managers can drive down excessive complexity, reduce costs, and maximize productivity. They can also be used as a yardstick to assess different vendor solutions. Will this help or hinder my efforts to consolidate, standardize, and automate?

A natural outcome of this thinking would be to select a single versatile storage platform with a high level of scalability, consistent management tools for all devices, and with automatic self-management capability. This is exactly the approach taken by Fujitsu with its ETERNUS DX series. Rather than acquiring other vendors and attempting to integrate the products into the portfolio, Fujitsu leverages its engineering and R&D capability to constantly refine and upgrade its established portfolio based on a long-term development plan.

The ETERNUS DX series spans the low-end, midrange, and high-end storage markets. Each model is architected to meet the needs of its target customers, yet all models share common management tools, GUIs, and processes. This aligns with the user's strong requirement for consolidation, standardization, and automation.

## Fujitsu ETERNUS DX8700 S3/DX8900 S3 Overview

IDC defines the high-end storage market as those systems with an average selling price of \$250,000 and above. This market has been relatively stable in recent years but at the beginning of 2014 there was a dramatic fall in vendor revenues. The decline continued through the rest of the year and it became clear that a fundamental shift had occurred. As the high end declined, we saw corresponding strength in the upper-midrange sector. The traditional buyers of large IBM DS8000, EMC VMAX, and HDS VSP systems appeared to be increasingly turning to upper-midrange systems that offered the required levels of performance, uptime, and flexibility but at a lower price point.

On July 1, 2015, Fujitsu announced the ETERNUS DX8700 S3/DX8900 S3, a high-end open systems block storage platform based on a major upgrade to the legacy ETERNUS DX8700 S2, including a new scale-out Quad Star architecture. However, it uses the same management tools as the low-end and midrange ETERNUS DX systems, thereby increasing IT admin productivity and reducing the need for expensive storage specialists.

Key characteristics of the ETERNUS DX8700 S3/DX8900 S3 include:

- Scale-out architecture, so that a system can start small and expand non-disruptively to meet unknown future demands for capacity and performance
- Quality of service management, so that IO requests can be prioritized automatically based on predefined service levels, and performance across a range of mixed workloads is maintained at planned levels
- Automatic high availability failover, so that synchronously mirrored systems deliver constant availability

Flexible scalability up to 14 petabytes (PB)/4 million (M) peak IOPS is expected to become best in class. The performance is also supported by fast RAID rebuilds, automatic load balancing between nodes, and PCIe flash cache memory.

By using modular storage and server elements with a scale-out star architecture employing up to 24 controllers, Fujitsu aims to far surpass the performance and availability of legacy monolithic high-end systems, yet with the flexibility and simplicity of its upper-midrange systems.

## The New Quad Star Architecture

Scale-out architecture has achieved mainstream acceptance in the midrange storage sector, due to proven functional and financial benefits that include:

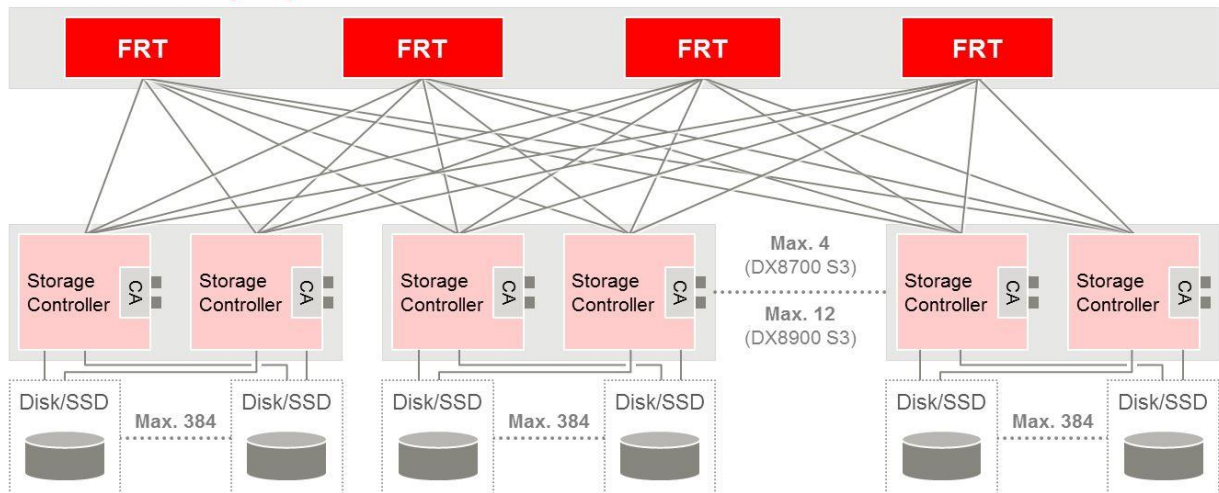
- The ability to "start small" and scale performance and/or capacity by adding pairs of controllers as required
- More consistent performance due to load-balancing between multiple controllers
- Faster RAID rebuilds due to a fast recover function which uses spare spaces in all disks of a RAID instead of a pure spare disk
- High availability as controller failure doesn't affect data availability
- High performance, particularly when high throughputs are required

Early scale-out systems had downsides, including poor response times in highly transactional environments and expensive scaling as a node always includes new controllers. Current generation systems have overcome these issues.

**FIGURE 3**

### Fujitsu Quad Star Architecture Diagram

#### Front-end Router (FRT)



Note: Front-end Router (FRT), Channel Adapter (CA).

Source: Fujitsu, 2015

The ETERNUS DX8700 S3/DX8900 S3 use a Quad Star architecture in which up to 24 controllers are linked via PCIe3 to a maximum of four front-end routers (FRT). The PCIe3 connectivity is faster and more flexible than the backplane approach used in the ETERNUS DX8700 S2, allowing the user to start with a single pair of controllers and expand with additional pairs as required. Active-active cross-access means that loads are automatically balanced between controllers to provide sustained high performance with rapidly changing workload demands.

The ETERNUS DX 8700 S3/DX8900 S3 were designed to be the fastest models in their class, and to offer a substantial uplift from the previous generation. Fujitsu claims 2x bus performance, 8x bandwidth, and 8x IO performance compared with the ETERNUS DX8700 S2. A peak performance of 4M IOPS is expected.



## QoS Management for Consistent Performance

Storage quality of service may be defined as the ability to allocate system bandwidth and storage tiers to optimize performance levels for a range of workload types. Without QoS, a low-priority workload that generates a spike of IO or throughput demand may hog storage resources and disrupt high-priority workloads running on the same platform.

Despite the need to support a broad mix of critical workloads, legacy high-end arrays have offered little in the way of automated QoS management. In many cases, highly paid storage administrators must monitor performance and make manual interventions when required. This is inconsistent with the need to automate basic management tasks, so that time can be released for projects that take the business forward.

Fujitsu appears to be one of the few storage vendors with the technical capability to address this critical challenge. The ETERNUS DX series has offered QoS management since 2012 and, with the ETERNUS DX8700 S3/DX8900 S3, Fujitsu now offers its third generation of QoS management features.

In the previous (second) generation of ETERNUS QoS features, administrators were asked to provide a target response time for key workloads, and the system would automatically adjust its resources to meet the specified time. While this worked well, it meant a certain amount of trial and error for the administrator to converge on the correct settings. Taking user feedback into account, Fujitsu has refined and simplified the QoS management.

The user now simply has to classify the workloads into one of three groups: high, medium, and low priority. The system allocates its resources to provide the optimal level of response, with priority always given to the correct group of workloads. In addition, the QoS algorithm can make a logical decision about the positioning of volumes in the hierarchy of storage tiers.

The administrator can use a scheduler to change the priority levels over time. For example, a database could be preloaded into a higher tier in time for a month-end report, or a backup job could be given a higher priority out of production hours. In conjunction with VMware's vSphere Virtual Volumes (VVOLs) it is now easy to match service-level classes on the VMware side with the respective storage performance behavior.

As an alternative to setting priority levels the administrator can set the target response time in milliseconds for the data volumes which are performance critical, enabling application-specific settings.

The new approach is designed to achieve the optimal balance between low administrative overhead and high granularity of control. It is notable that while other vendors have barely considered providing QoS management, Fujitsu is already in its second major upgrade release based on customer feedback from the field. In addition, the features are supported across the ETERNUS DX series so that administrative processes and expertise can be applied to all ETERNUS DX deployments in the company.

The importance of QoS management in delivering stable, predictable, and consistent IT services is difficult to overstate.

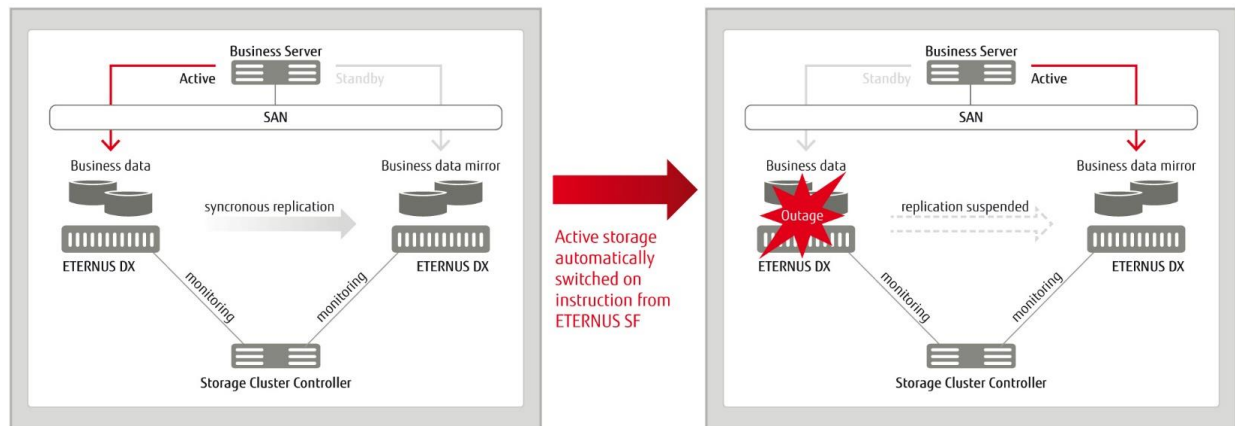
## ETERNUS Storage Cluster for Disaster Recovery

With their scale-out architecture, the ETERNUS DX8700 S3/DX8900 S3 have an inherently resilient design that can withstand multiple controller outages without loss of data availability. To provide site-level protection, the ETERNUS DX8700 S3/DX8900 S3 (as with all ETERNUS DX S3 systems) offer ETERNUS Storage Cluster.

The concept of ETERNUS Storage Cluster is based on the deployment of a secondary storage system and a supervising instance – the Storage Cluster Controller.

**FIGURE 4**

**Fujitsu Storage Cluster Diagram**



Source: Fujitsu, 2015

As long as the primary storage system is running, data is transferred from it to the secondary system via synchronous replication. The Storage Cluster Controller continuously checks the status of the primary storage. If a failure is detected, it runs the failover logic, and the primary storage information (e.g., LUN ID/WWN) is shifted over to the secondary storage in order to transparently identify the volume via the server I/O. Hence, operations continue without disruption and ensure business continuity. A failover can also be triggered manually if required.

Due to the distance restriction on synchronous mirroring, Storage Cluster can be deployed in building, campus, and metro environments. For regional or global business continuity and disaster recovery scenarios, ETERNUS DX S3 systems can be deployed with asynchronous mirroring, but there will be increased recovery point objective (RPO) and recovery time objective (RTO), and automated failover is not supported.

The primary and secondary systems can be any ETERNUS DX S3 models or configuration size, and do not need to be identical systems. Data is replicated along with the automated storage tiering layout and auto QoS settings. There is no change in access path, drive letter, or mount point information after the failover. Volumes continue to be accessed transparently from the application. No workload for volume reallocation or remount is needed or generated.

After the recovery of the failed system, Storage Cluster automatically executes the failback to the initial state, so system operation is always stable and secure. Storage Cluster is supported across the entire ETERNUS DX S3 portfolio, enabling simple and common DR processes across all storage infrastructures. The ETERNUS Storage Cluster is compatible across the whole ETERNUS DX S3 line, enabling failover between different system sizes. For example, a customer can choose to have instant DR only for the most critical data, and can then choose a smaller system as a secondary one in order to reduce DR costs.

**Taking the ETERNUS DX8700 S3/DX8900 S3 to Market**

Most high-end storage systems are highly optimized for performance and resilience. They are designed for environments where downtime costs can be millions of dollars per hour, so procurement and operational costs may be seen as a lower priority than usual.

As mentioned above, the traditional high-end storage buyer is starting to consider new alternatives. Arguably, the Holy Grail would be a platform that offers performance and resilience better than legacy high-end systems, but with the scalability, flexibility, and ease of management of a top-flight midrange system. That appears to be Fujitsu's objective with the ETERNUS DX8700 S3/DX8900 S3.

Fujitsu will market the ETERNUS DX8700 S3/DX8900 S3 globally through accredited value-added resellers (VARs) and business partners, as well as its own sales force. They will be targeted at large enterprises with massive consolidation projects, as well as large service providers with stringent requirements for automation and high service levels.

## FUTURE OUTLOOK

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IT departments must continue to accelerate the pace of adoption of 3rd Platform technologies – cloud, mobility, social business, and Big Data – to better respond to business demand for newer, "digital" ways of interacting with customers, collecting intelligence from users and assets, and enabling new business and supply processes.

To do this, they must evaluate a new breed of storage technologies that help them achieve their digital objectives. Storage is no longer just a technology infrastructure but a true business enabler, and a new breed of storage solutions such as Fujitsu's ETERNUS DX S3 series can help enterprises become 3rd Platform-ready while reducing operational and management costs.

## OPPORTUNITIES AND CHALLENGES FOR FUJITSU

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### Opportunities

- There is a gradual erosion of dedicated storage administrators, as they are being replaced by virtual server administrators and generalists. Engaging with line-of-business managers who own workloads and applications is crucial to effectively sell storage solutions. LOB managers are decision makers or influencers in 61% of IT spending today.
- Through its support for VMware vSphere Virtual Volumes (VVOLs), Fujitsu simplifies provisioning, replication, and snapshots at the individual virtual machine disk (VMDK) level. This further empowers virtual server administrators, and reduces the need for specialized storage administrators.
- Emphasizing the engineering around robust QoS and demonstrating the business value of data services.
- Building proof of concepts on the advantages, performance efficiency, and cost savings of a scale-out storage infrastructure, especially around performance that is needed to create a real-time online customer experience.
- IDC's 2014 *Enterprise Storage Services Survey* revealed that as many as 62% of respondents said they expected to increase storage-related consulting spending, suggesting huge consulting opportunities for storage vendors.

### Challenges

- Limited brand awareness outside of Japan. IDC believes this is something that can be fixed, however, by the vendor making itself much more visible to the buyers of enterprise storage to gain mindshare, engage in advertising and sales campaigns, and engage the partner community in all regions through tailored partner programs and financial incentives.

## CONCLUSION

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With the ETERNUS DX8900 S3 series and the slightly smaller-scale ETERNUS DX8700 S3, IDC believes Fujitsu has refined and extended its scale-out block-based storage offering. While it addresses the needs of extremely large enterprises that already have multiple PBs of data in their datacenter and projecting a double-digit PB range in the next five years with ETERNUS DX8900 S3, it is also able to address enterprise customers that have data at high TB levels and are only just approaching the PB scale with the ETERNUS DX8700 S3. IDC believes there are many enterprises that are only now transitioning to the PB level of data and there is a significant product gap in the market to address their storage needs in a future-proofed manner. ETERNUS DX8700 S3 is likely to fill that big gap in the market.

Much of the efforts from storage suppliers under pressure to reinvent themselves have been to acquire assets or launch new product lines. Fujitsu seems to be taking this one level up by innovating on its existing flagship storage array to provide users with continuation as well as the feature sets required for their new-age data requirements.

Rather than relying on a hardware-based design, a trend that is quickly falling out of fashion, Fujitsu is approaching high-end arrays from a capability, performance, and serviceability point of view, and is building data service capabilities on top. Such solutions are incredibly flexible and extremely scalable and offer all the bells and whistles of traditional storage to give users a sense of continuity but without the rigidity limitations or lock-in.

The innovation around QoS, AST, and scale-out features shows that Fujitsu is in tune with enterprises' storage requirements. Fujitsu has tremendous IT assets and a culture of accelerated innovation, and its go-to-market strategy and execution of its sales strategy will be key to the success of its new storage array.

IDC believes that Fujitsu's core focus on data protection and high-performance computing while leveraging scale-out solutions will help it to further penetrate its established use cases in its respective core customer base. With the new enterprise storage solutions, Fujitsu is providing a mature, enterprise-class scale-out platform by adding reliability, data services, and storage density for the scale requirements of 3rd Platform IT infrastructures.

Enterprise customers should evaluate ETERNUS DX8900 S3/DX8700 S3 as viable alternatives when upgrading their storage infrastructure with a focus on a five-year-term TCO and data growth calculations.

## 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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