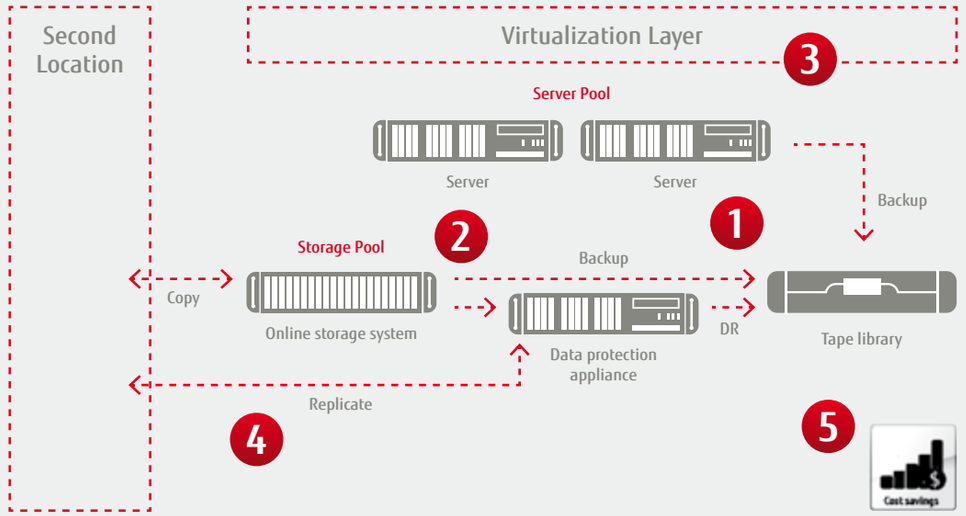
Storage strategy matters

Recommendations for optimizing storage environments in small and medium-sized enterprises

Explore our recommendations
for optimizing storage environments

Please click onto the numbers to explore recommendations.



Show table of content

The impact
of storage

The storage infrastructure is the foundation for effective and flexible business. Small and medium-sized businesses are faced with the challenge of utilizing modern technology that will benefit them and their customers, but at the same time SMBs need to reduce costs and keep them under control. If an enterprise does not have a viable storage strategy, downtimes can have serious business consequences – regardless of whether only one or many servers are included in the IT environment. And in historically developed landscapes costs can explode quickly, and quite often performance and capacity bottlenecks cause problems. The following is a list of typical questions asked today:

- How can optimal availability be ensured for systems, applications and data?
- What must be done to safeguard our own assets as well as information from our customers?
- How can we manage our IT efficiently?
- What steps should be taken when time-consuming backups negatively impact business processes?
- What strategies are effective in driving down costs?

Experience has shown that enterprises which follow a clear storage strategy are more flexible and have a solid basis for implementing secure data management.

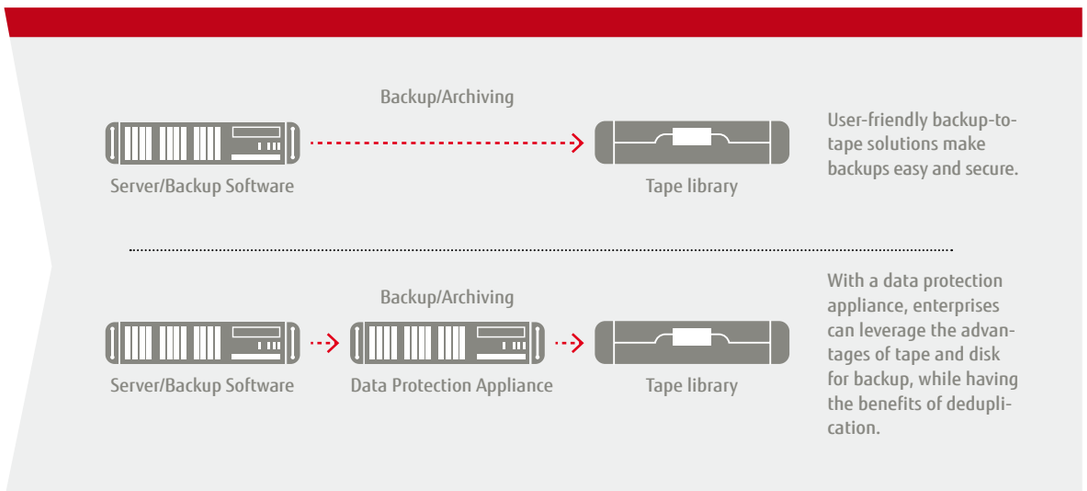
On the following pages we will describe various storage concepts and methods that will enable you to optimize your IT step by step:

- Server environments, regardless of size, should always have at least a basic backup and archiving solution
- Redundancy is important in environments having two or more servers. Implementing an external storage system is recommended.
- In historically developed environments virtualization can reduce complexity and costs.
- Flexible and low-cost disaster recovery concepts are important for business continuity.
- Efficient storage technologies are vital when optimizing the performance and cost-effectiveness of IT.

INDEX |

For all server environments – even very small:
Implement a simple backup and archiving solution

step 1



Quite often IT environments are comprised of only one server. For many businesses this is adequate, because modern systems like the Fujitsu PRIMERGY servers offer more than enough capacity and data throughput. These "minimal" environments usually rely exclusively on the internal storage of the server system. However, despite the fact that today's servers are extremely reliable, running this type of configuration poses serious risks. It is not a question of whether data could be lost – but rather when. One failure in the operating system or – as in 80% of all unexpected system outages – corrupted data is all it takes to cause problems. But data backups at regular intervals can prevent data loss and enable enterprises to protect their business in the aftermath of such failures.

Reliability and security are vital elements in backup technology

The Linear Tape-Open (LTO) standard is a proven technology that makes information retrieval on tape as easy, if not quite as fast as it is on disk. Moreover, LTO has been enhanced with many features over the years – write protection, encryption and partitioning – that have turned tape into a tamper-proof, secure storage medium. And thanks to back- wards compatibility, LTO technology offers very high investment protection.

The LTO desktop drive is ideal for very small environments, where the backup is done directly from the server to the LTO desktop drive. This entry-level backup device can be attached to various open system servers via the SAS interface, which is a very affordable solution. The desktop drive has an overall capacity of up to 6 TB and provides high transfer rates of up to 1 TB per hour. For customers still using older tape technologies, the new LTO technology will offer a significant return on investment by reducing backup time and the number of tapes needed, and it also supports substantial new features like encryption.

INDEX |

Automation makes backup-to-tape easy and secure

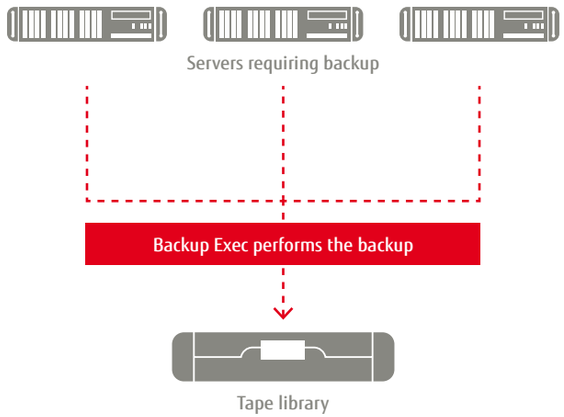
When it comes to ease of use, tape automation can reduce administration tasks, and that saves time and money. ETERNUS LT tape libraries are extremely user-friendly and are the perfect entry-level backup solution when used in conjunction with Symantec Backup Exec software. Enterprises can increase the availability of their data and protect it against loss or corruption with this affordable approach. As soon as Backup Exec is installed, the software automatically manages the entire backup process and stores the data on a reliable ETERNUS storage system. Current Windows environments can be easily and reliably safeguarded from the start, and business enterprises also profit from the cost advantages possible by saving data on tape for long-term archiving.

And the Fujitsu backup bundles with Backup Exec are an especially efficient option. The software guarantees easy management, supports various backup media and enables backups of virtual environments. With software from market leader Symantec, enterprises are well-equipped to handle changing requirements – with just one solution they are able to safeguard even large environments, and they have comprehensive functions for future-proof backup over the long-term.

How to choose the right backup software

Backup software writes data from primary storage to a backup environment and ensures that this data can be restored.

When choosing backup software, things like administration, usage and installation are important aspects to consider. Furthermore, the software should support various backup media, and it should be suited for use in virtual environments. Symantec Backup Exec fulfills both requirements and also provides efficient backup of desktop clients. The advantages for business enterprises are obvious: Only one backup software solution is needed to easily store data throughout an entire environment.



ETERNUS LT

More on the Internet

Breakthroughs in reliability, capacity, performance – and optimized for low power consumption to meet the backup and archiving needs in small and midrange environments with LTO tape libraries. You can start small with an ETERNUS LT20, which combines exceptional storage density and up to 50 TB of compressed capacity in a compact 1U form factor.

INDEX |

Hargassner relies on ETERNUS backup systems.

The Austrian heating systems manufacturer was looking for easy expandability and a secure backup concept. Initially backup was done via tape drives integrated in the servers, which meant the servers had to be checked every day as to whether the backups had run successfully – a time consuming process. Hargassner also used different LTO media which resulted in complicated handling. The solution proposed by Fujitsu was comprised of an ETERNUS LT40 with LTO-5 drives and Symantec Backup Exec software. The results were great:

"Using the ETERNUS LT40 for our backup has also proven to be a real time saver, as this is now all done automatically."

Karl Sattlecker
Head of IT Organization and Process Management
Hargassner GmbH

Read the case study

Recommendation: Implement both backup and archiving

When defining a data management strategy, enterprises should focus some attention on both backup and long-term archiving. This is important in terms of agreed service levels, compliance with legal and corporate guidelines, and in controlling overall costs.

Backup means making copies of data which may be used to restore the original after data loss. It should be used for recovering data after its loss – be it by data deletion or corruption. It should only be used for operational recoveries such as file recovery, system recovery and data center recovery of recent data.

Archiving is a concept that is as old as backup, even if it is often less frequently implemented or fully understood. Archiving can be described as the need to retain aging data for any purpose other than recovery. It is also an approach to storage capacity reduction and is a tool for shrinking the backup window, as complete backups are shorter when data is archived and removed from the backup stream. Lastly, archiving is used as a tool for compliance. For these purposes, it is important to retain the original data and not to create "archive copies" from backup data.

Symantec Backup Exec is ideal for backup and can also be enhanced to handle basic archiving tasks.

The following are helpful tips for backup decision-making:

- Minimize backup retention periods: Your backup time will also shrink if data is archived and removed from the backup stream.
- Remember to archive data that needs to be retained. The problem with long-term historical data preservation can be addressed cost-effectively by considering archiving to newer tape formats like LTO-6 for long-term archives.

Benefit from backup-to-disk or backup-to-appliance

In most enterprises tape is still the most prevalent backup medium. However, some businesses are turning to hard disks as an alternative because they are very fast and efficient when it comes to restoring huge volumes of data. Although they do indeed save time, hard disks are more expensive than tape solutions and consume more energy. This is where deduplication technology can play a decisive role in optimizing disk backups. Deduplication drastically reduces the amount of data that needs to be stored on a hard disk. And this is an advantage when it comes to complete and extensive data backups. What's more, the replication of deduplicated data at a second location is much easier to handle, because the bandwidth required is considerably less.

With ETERNUS CS800 Fujitsu offers a turnkey data protection appliance that is optimized for environments where data is backed-up on disks. It radically reduces the costs of storage capacity and protects data against disasters:

- Easy to use: ETERNUS CS800 is ready to use right out of the box, automated deduplication and replication included.
- Deduplication is the key: Up to 95% less disk capacity is required for data backup – making time for more full backups and fast restores even of older data.
- Data replication for more security: Perfect for distributed backup scenarios, with automated, secure data replication to another location.
- Increased efficiency: Simultaneous disk access ensures that data backup and restoration is possible at the same time.
- Automated disaster protection: The backup and replication process is automated – no administrator intervention is necessary.
- Integration of tapes: Tapes are valuable long-term storage media. ETERNUS CS800 can write data directly to an attached tape library.

More on the Internet

How to enhance storage capacity

Modern servers usually have ample internal storage capacity for small and medium-sized businesses. But what happens when this capacity reaches its limits? Are investments in external storage systems necessary? Are server performance losses and outage risks unavoidable?

Because of its low investment costs and easy handling, storage that is directly attached to a server is an alternative for environments with only one or very few server systems. As a passive extension of storage capacity, ETERNUS JX40 extends the storage capacity of the servers by up to 144 terabytes using an extremely fast 6 Gbit/s SAS connection to meet the ever growing data volume requirements of small and medium-sized businesses.

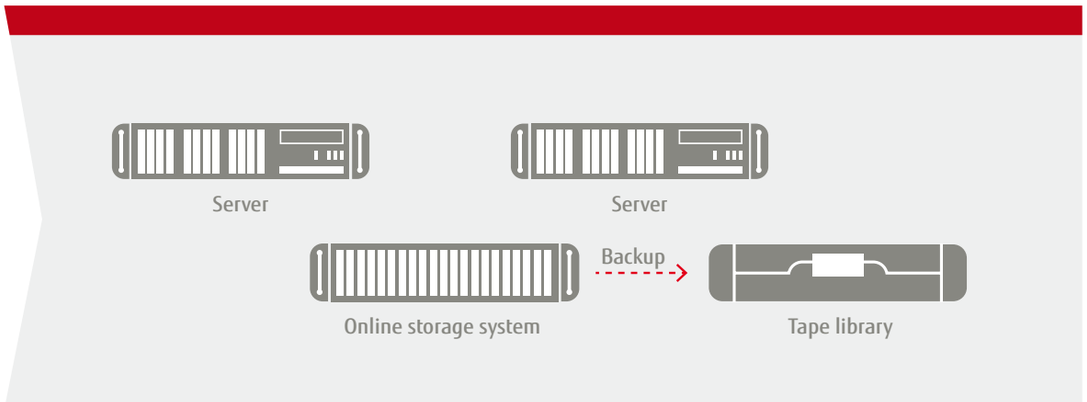
The ETERNUS JX40 supports all storage software solutions. It provides cost-effective entry-level storage with SATA and SAS disk drives and an SAS 2.0 host interconnect. In addition, by utilizing the server's SAS RAID controller, it offers basic data protection through mirroring, striping or by adding parity information to the data in all relevant RAID groups.

More on the Internet

INDEX |

For environments with two or more servers:
Provide for redundancy and implement external storage

step 2



If a server should ever fail, a certain amount of time is needed to repair the defective system or replace it. During this time, all of the business processes that depend on applications running on the affected server are not available. This situation is unacceptable in most enterprises. That's why all important components in PRIMERGY servers are configured redundantly. In addition, a second server can help in such a situation by taking over all of the applications needed to keep processes up and running, thus ensuring business continuity.

It is the storage system that supports flexibility and data security

Every IT environment comprised of more than one server should include an external storage system like ETERNUS DX. In such configurations it is then possible to remove the hard disks from the servers, to reduce the number of storage systems within an enterprise, to implement server virtualization concepts, to respond flexibly to changing business processes or legal requirements, and to realize solutions for 24x7 availability and disaster protection. Systems in the ETERNUS DX online storage family have the ideal architecture, performance and functionality to do all of this – for example, by offering high system availability, ensured data integrity, encryption, outstanding performance, excellent connectivity and scalability.

ETERNUS DX – Business-centric Storage

Combining a leading performance architecture with automated quality of service management, the Fujitsu ETERNUS DX series aligns storage resources with business priorities, thus enabling higher system utilization and delivering increased system consolidation capabilities and a faster ROI. Unified scalable entry-level and midrange systems, a seamless family concept enabling system upgrades and ETERNUS SF, the unified management suite across the product line, reduce operational and migration costs. ETERNUS SF provides enterprise-class functionalities in the entry and midrange class and allows flexible disaster recovery concepts for various model sizes, thus reducing investment costs.

INDEX |

The entry-level systems offer an unbeatable price/performance ratio and are easy to manage, thus reducing administration work and the cost of operation. Thanks to their remarkable scalability with storage capacities of up to 1,008 terabytes, customers will benefit from ample headroom for future growth. Flexible support for various types of network connectivity and disks (SAS, Nearline SAS, SSD and SED) offers wide-ranging choices for optimizing costs and performance. The systems support Thin Provisioning to enable cost-efficient use of storage capacity right from the start. Data-in-place upgrades seamlessly lead up to the next higher ETERNUS DX system, thus ensuring flexibility and investment protection. And last but not least, the ETERNUS SF Express software delivered with the systems reduces administration work by automating management tasks and contributes to data protection (e.g. with snapshot functionality).

ETERNUS DX systems are the perfect storage solution when consolidating data for server virtualization, e-mail, databases and business applications as well as centralized file services. With ETERNUS DX entry systems customers have the choice of using switch-less SAS, affordable iSCSI or high-performance Fibre Channel technologies. They can choose the disk types that fit their deployment scenarios best.

Watch the ETERNUS DX online video

When and what system to choose

Different usage scenarios and company sizes require different storage systems. The ETERNUS DX60 S2 is ideal if you want to start small (with a maximum of 50 users) with a very affordable SAN storage system. It is perfect for Microsoft applications, and it can even cope with small virtualization projects. Do you need more performance, capacity or additional functionalities such as thin provisioning? Are you searching for a scalable entry system with unified SAN and NAS access to improve your ROI? Then the new **ETERNUS DX100 S3** would be the best choice. Are you thinking about expanding your business and setting up a second IT site? Then the **ETERNUS DX200 S3** model is perfect as it offers mature high-availability functionalities like remote replication for copying data from one location to another. It also supports the implementation of effective disaster recovery concepts as well.

Read more about the new ETERNUS DX models

The new ETERNUS DX series

The new ETERNUS DX series offers five times more I/O performance than its predecessors along with unified storage functionality. Thus you can provide more applications to more users, plus run more virtual machines on one system while consistently managing all of the data in your enterprise.

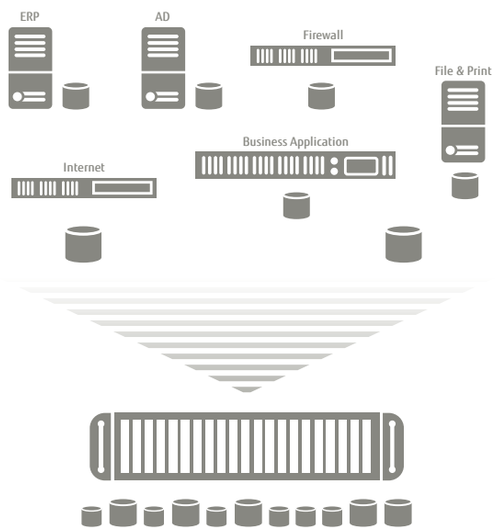
Roll your mouse over the images for more information.

INDEX |

Eliminating IT silos minimizes costs and risks

IT environments usually evolve in a situational manner, i.e., a solution is implemented for every business requirement as it comes up – perhaps file and print services, followed by a server to run the central business application, then another server for other important applications, and so on. This results in data being scattered across the hard disks of various servers. The potential for failures increases, along with the risks of possible system outages that will negatively impact business. What's more, environments that have evolved historically are expensive to operate. The table below outlines how a central storage system like ETERNUS DX can optimize your IT environment:

Data distributed across several severs	Central storage system
Inefficient use of existing resources	Optimal utilization of hard disk capacity
Performance and capacity bottlenecks in individual systems	High performance for all enterprise data
Inadequate data availability and security	High data availability and security through system availability, data integrity and data encryption
Difficult and time-consuming backup	Easy data backup
System adjustments seldom possible	Simple scalability and expandable functionality
Complex and expensive administration	Lower administration costs
High energy costs	Lower energy costs



Support business with high availability

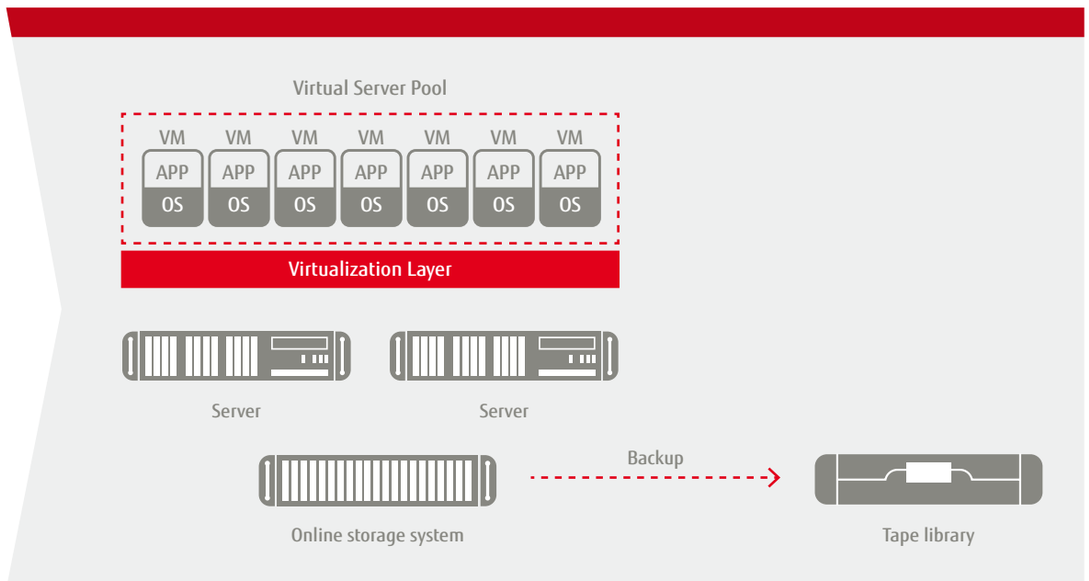
As consolidating means having all the eggs in one basket, an intelligent and proven high-availability concept is the prerequisite for eliminating IT silos and consolidating data in one central storage system. And for small and medium-sized enterprises it is important that they have affordable and convenient high-availability solutions in order to mitigate business risks and reliably safeguard their data. The ETERNUS DX storage family fully supports uninterrupted operations:

- Measures such as redundant configuration of key components, protection against data loss during power outages, and the replacement of components or installation of enhancements and firmware upgrades during running operations all contribute to comprehensive protection on the physical level.
- Functions like automatic data verification or various RAID levels ensure data integrity if hard disk drives should fail.
- Data encryption and snapshot technology protect business data against logical and human errors while also preventing unauthorized access or data theft.
- In addition to overall high-availability at infrastructure level, Fujitsu offers end-to-end solutions that integrate platforms for every application scenario.

Even the entry-level ETERNUS DX models offer the functionalities normally expected of much larger systems. In addition, functions such as data replication and remote copy support the realization of solutions distributed across two or more sites to provide effective disaster recovery.

For historically developed environments:
Reduce complexity and costs with a virtualized infrastructure

step 3



For a long time the accepted IT paradigm was that every application and every IT service needed to have its own solution. But that changed drastically with the advent of dynamic IT: Today it is important for enterprises to have IT that supports the development of their business quickly, with security and at low cost. Employees must be able to connect flexibly with colleagues, customers and partners by way of efficient networks. The constantly growing data volumes in today's businesses also need to be analyzed in ways that are simple and fast. What's more, the availability of IT systems determines the reliability of an enterprise in its role as a business partner. Static IT environments that have grown historically cannot fulfill these kinds of requirements. Quite the contrary is true: Data management in such historically grown environments is extremely difficult or even impossible – especially if data is distributed across numerous hard disks. Here are typical signs that call for rethinking your IT strategy:

- Long search and response times reduce user productivity.
- Administrators are always busy taking care of routine tasks.
- Steps taken to prevent interruptions in daily business operations (such as redundancy and disaster recovery concepts) are difficult to implement and costly.
- Backup and archiving are extremely complicated and expensive.

INDEX |

PRIMERGY – the right server for every requirement

To keep the complexity of your IT environment at a minimum, you need to have server systems that optimally support the performance and availability requirements of the applications, and which offer investment protection through easy scalability.

- **PRIMERGY TX** systems are quiet, energy-saving servers that deliver reliable performance at an affordable price. These servers are ideal for small and medium-sized enterprises as well as branch offices. The systems are easy to manage using PRIMERGY ServerView Suite, which reduces the complexity of IT administration and lowers costs.
- **PRIMERGY RX** is the versatile rack server for the dynamic data center. Thanks to flexible scalability, these servers deliver top performance and up to 20% more energy efficiency than comparable products. Customized configurations, plus a wide range of services and solutions, round off this data center server package.
- **PRIMERGY BX** blade servers are designed for high-availability scenarios and extremely flexible data center operations. If you want to reduce costs, these servers are ideal for medium-sized and large data centers or even branch office environments where they deliver maximum performance and adaptability.

Take advantage of server virtualization

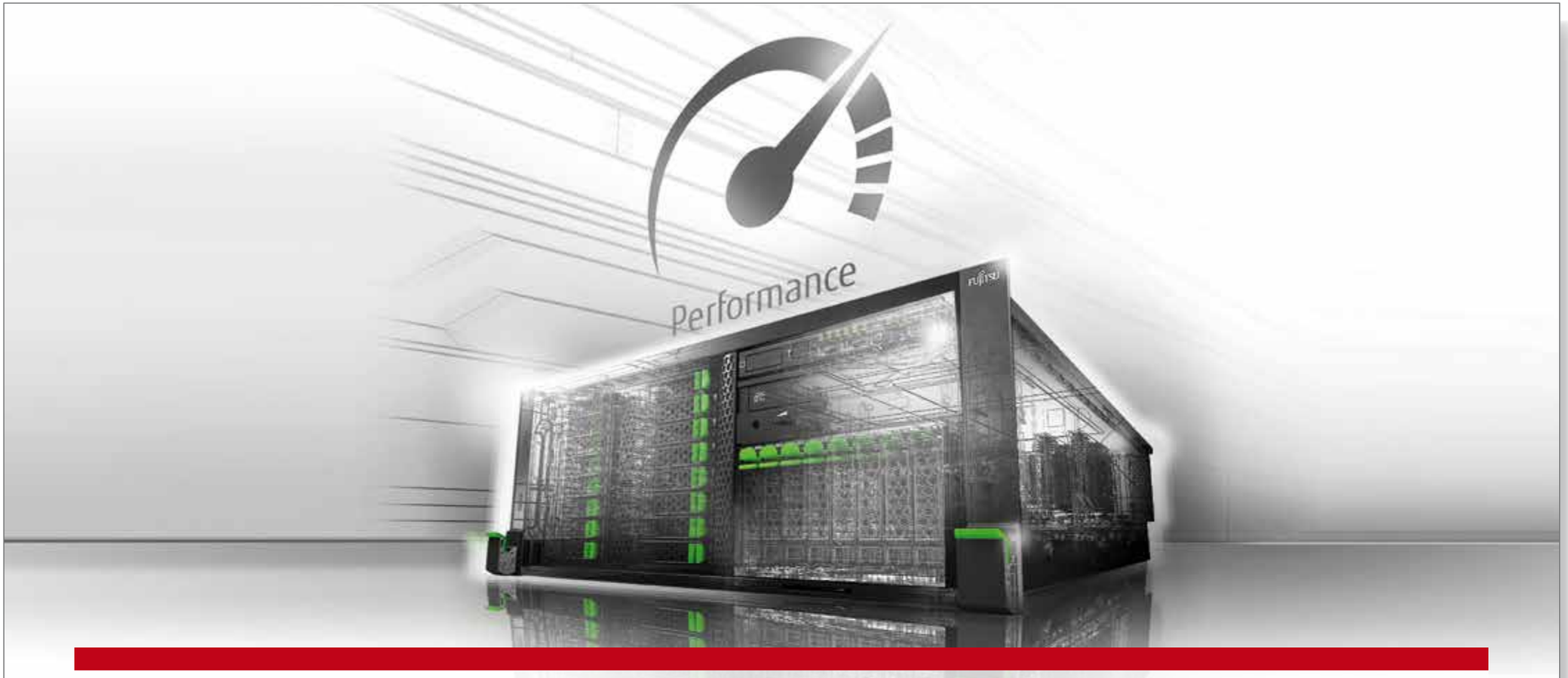
Enterprises are enthusiastic about server virtualization because the benefits can be seen immediately. That is why server virtualization is growing in importance, regardless of the state of the prevailing economic environment. Fujitsu offers flexible, affordable and complete virtualization solutions designed to meet the needs of medium-sized businesses. All the advantages of server virtualization – such as improved management, greater availability and operational efficiency – are instantly available with reliable all-in solutions. By tailoring the solution to the application's requirements, the initial investment can be reduced, while deployment and provisioning can be performed much faster.

The benefits of server virtualization

Situation without virtualization	Situation after consolidation using virtual machines (VMs)
Application and data reside on a physical server	VMs are files stored on a central storage system
Physical server utilization only 10% to 15%	Average consolidation rates of 10:1
Many unused resources	Flexible use of shared resources
High investment, administration, maintenance and energy costs	Lower costs through consolidation and higher energy efficiency
Provisioning of new services requires days or weeks	New services available within minutes
High-availability only possible at high cost, if at all	Improved business continuity through integrated high availability

Fujitsu PRIMERGY Servers

Are you striving to achieve maximum productivity, cost efficiency and agility in your storage and server environment? Fujitsu PRIMERGY servers offer enterprises of any size all of these advantages in an affordable and adjustable package that can be implemented quickly and easily. What's more, our innovative, energy-saving technology helps you reduce operating costs while minimizing your ecological footprint at the same time.



Fujitsu PRIMERGY Servers: Complete server solutions that ensure business success

The joint deployment of ETERNUS storage and Fujitsu PRIMERGY servers is an effective approach to reduce costs and operational complexity even more. Fujitsu offers the broadest x86 industry-standard server portfolio available with its PRIMERGY micro, tower, rack, blade and cloud servers, along with the mission-critical PRIMEQUEST family.

Solid and reliable performance is guaranteed thanks to the proven quality of these servers in real-world scenarios. The PRIMERGY product family represents a unique combination of Japanese innovations and German quality standards. The close cooperation between development and manufacturing centers, coupled with stringent quality assurance, results in extremely low failure rates that are comparable with those of high-end UNIX servers.

Thanks to an independently verified price-performance ratio that is unrivalled in today's market, users benefit from considerable savings throughout the entire life cycle. PRIMERGY servers are constantly setting world records and industry standards in numerous recognized benchmarks for virtualization, database processing, energy efficiency, Java web performance and SAP ERP, to mention only a few. Operational costs are further reduced with holistic and user-friendly server management, along with externally verified energy efficiency.

To contribute to the creation of a sustainable environment for future generations, Fujitsu has made environmental protection a top management priority. With clear environmental goals set for all business areas, the company conducts all business activities in a well-planned and sustainable manner. So it's not surprising that the PRIMERGY servers have been the benchmark leader in terms of energy efficiency for more than three years.

Consider the impact on the storage system

Although most business enterprises recognize the value of a virtualized server infrastructure, they often overlook the fact that storage plays a key role in these environments. Server virtualization makes special demands in terms of storage: Virtual servers are nothing other than files residing in storage systems, and these server images are stored just like data. Therefore, the storage system is of vital importance when it comes to the reliable operation of virtual servers.

Decision-makers should take the following points into consideration:

- Performance counts: There must be enough leeway for handling the steady growth of server virtualization. Generally speaking, more efficient storage systems lead to higher VM density and are thus more cost-effective.
- High availability is becoming more important, but there are also new aspects to consider: The availability of the storage system directly impacts the availability of the server environment. Since virtual server images are nothing other than data, the snapshot and replication functions of storage systems can be used to establish new high-availability and disaster recovery concepts that are less complex and more efficient.
- Integrated server and storage management: Server virtualization invariably means that the borderline between server and storage management becomes blurred. Thus precise integration of storage management in the management concept for server virtualization is decisive. Furthermore, physical servers and storage systems require standardized management.

ETERNUS DX systems satisfy all the key requirements for virtualized server environments. They have a performance architecture to avoid bottlenecks, provide the needed high reliability (if the storage is down, the virtual servers are down as well) and they support integration of storage and management in the virtual server management.

ETERNUS DX also offers tight integration with server virtualization offerings such as VMware. It enables storage systems and servers to work together with on-site failovers during disasters, and allows servers to offload tasks to the storage system.

One prime example is the usage of ETERNUS DX storage for the virtualized server environment at the German Lifeguard Association e.V. (DLRG). Read more about this solution on the next page.

Backup of virtualized environments

Only about 30% of those enterprises that run virtualized IT environments regularly backup their virtual files, even though backup is vital to mitigate risks. The ideal scenario is to run backups on separate and potentially dedicated hardware, so that the server backup process does not impact the live applications. Both VMware and Citrix provide the tools you need to create and maintain a successful backup strategy. The following options can be applied to backups:

- Treat VMs as if they are physical machines
- Treat VMs as files
- Use an internal VLAN for client/server backup
- Snapshots1 and VM Copy
- Built-in backup tools
- VM cloning

Any method you choose has its drawbacks, and not every method will work for every VM. You will probably have to use more than one backup method to satisfy backup requirements for your systems.

Trouble-free IT for five-star hotel "Stanglwirt"

Fujitsu set up comprehensive IT support for all hotel functions and implemented a reliable IT environment with central ETERNUS DX data storage.

The results were:

- 24x7 IT operation
- Highly satisfied hotel guests
- The luxury hotel has established itself as a technical trendsetter in its industry

"I aim to make my guests' stay as memorable as possible. I can't afford to have an IT breakdown. That's why I rely on top technology from Fujitsu."

Richard Alois Hauser
Director
Stanglwirt

Read the case study

DLRG reduces risks and costs while increasing efficiency

DLRG, the world's largest voluntary lifeguard organization, wanted to reduce risks and costs while increasing efficiency. DLRG also wanted to have a reliable IT environment with central data storage and server virtualization.

Our proposed solution was server virtualization with VMware running on PRIMERGY servers, with two ETERNUS DX disk storage systems providing high performance and storage-based mirroring, to give DLRG extensive reserves for future growth.

"Thanks to virtualization and Fujitsu's stable storage systems, our IT runs securely and smoothly – and the performance is exceptional. We felt that we were in good hands during the consulting process."

Frank Rabe
Acting National Chief Executive
DLRG

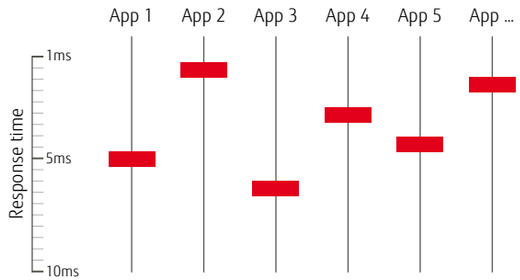
Read the case study

Coping with enormous data growth

The extremely rapid growth of data volumes poses more and more challenges for data managers and administrators: New applications, data analyses and increasing amounts of unstructured information mean that many IT systems have reached their capacity limits. In addition, the I/O requirements in today's applications are becoming more demanding. Business intelligence solutions, virtualization projects and expanding databases also call for higher levels of performance.

The new ETERNUS DX series resolves these capacity and performance issues: Excellent scalability, extending into the petabyte range even in the entry-level models, offers business enterprises more freedom and flexibility. The new performance architecture delivers an enormous power boost with I/O performance that is five times higher, bandwidth that is three times larger and bus performance that has been doubled. Automated Quality-of-Service Management makes it quite easy for storage administrators to define the response times for critical applications as needed. And thanks to unified storage, all enterprise data can be managed according to a holistic concept. Such innovative functions deliver immediate benefits to business enterprises: For example, better results from storage consolidation are possible, along with improved storage system utilization of up to 90 percent instead of today's typical average of only 50 percent – with simpler storage operations and a much faster overall ROI.

Thanks to the performance-optimized architecture and the lean operating system with nearly real-time performance, ETERNUS DX is the ideal platform for all application environments. The systems even support huge databases and OLTP applications with high performance requirements in terms of storage system response times. Customers have come to appreciate these storage systems in daily data center scenarios – ETERNUS DX makes a great impression with its fast and stable response times, enabling it to convincingly outperform comparable systems. This is proven by the numerous performance records and benchmarks set by ETERNUS DX.



Easy prioritization without complex tuning:
With the ETERNUS DX series, storage administrators only need to define the response time they want – the system does the rest.

Simplify management

It is also essential to use management software having intuitive features so that you benefit from operations that run efficiently over the long-term. This is especially true when it comes to virtualization.

Server virtualization blurs the boundaries between server and storage management. Tighter integration is key, meaning that storage management needs to be integrated in the server virtualization management. ETERNUS SF management software offers tight integration with server virtualization offerings such as VMware. It enables storage systems and servers to work together with on-site failovers during disasters, and it enables servers to offload tasks – like provisioning, cloning or the replication of virtual machines – to the storage system. In addition, it reduces the total cost of ownership, simplifies monitoring and management, and helps to achieve business continuity. ETERNUS SF Express comes free of charge with the ETERNUS DX entry systems to simplify setup and administration, and for optimizing storage resources in complex IT environments.

But that is not enough. Customers want to manage their whole IT environment from one single interface. If the IT environment is virtualized, VMware vCenter is one of the most preferred management tools. Ensure automated operations management for the new dynamic virtual infrastructures with VMware vCenter Operations, so you can accelerate IT service delivery, improve operational efficiency, ensure compliance and mitigate risk. The support of standard interfaces and APIs – such as VAAI and VASA in VMware environments or ODX support for Microsoft Windows 2012 deployments – for virtualized IT infrastructures are an integral part of ETERNUS DX disk storage systems.

Watch the ETERNUS SF screen demo

internezzo ag benefits from Fujitsu vShape.

The Swiss online communications agency internezzo ag hosts websites and operates webshops for a wide range of companies and organizations. It therefore needed a stable, high-performance IT environment which can be easily scaled.

"Our success in business depends enormously on a flexible IT environment that is protected against faults. Since we started using Fujitsu vShape, our clients have benefited from a stable, high-performance service that can also cover load peaks. And at internezzo ag, we can continue to concentrate on our core business – the development of online solutions."

Marcel Burkhalter
Head of IT Technology at internezzo ag

Read the case study

Virtualization solutions from a single source

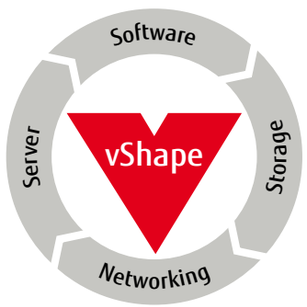
Virtualization with vShape provides compelling solutions for addressing the complex challenges of virtualization – such as performance, availability, security, flexibility and efficiency. With the vShape solution Fujitsu relieves the headaches of configuration and delivers a tested and perfectly synchronized combination of reliable components.

By tailoring the solution to the application's requirements, the initial investment can be reduced, while deployment and provisioning can be performed much faster. The vShape infrastructure solutions consist of reliable Fujitsu ETERNUS DX storage systems, Brocade switches with leading virtualization technology, along with PRIMERGY RX servers.

Virtualization with VMware is perfect for organizations wanting the benefits of server virtualization from the market leader.

Virtualization with Hyper-V is based on Microsoft Windows Server 2012 and is ideal for organizations having experience in the administration of Microsoft products. And, of course, vShape can also be enhanced with efficient backup and disaster recovery concepts as well as software solutions like the fluidOps eCloudManager.

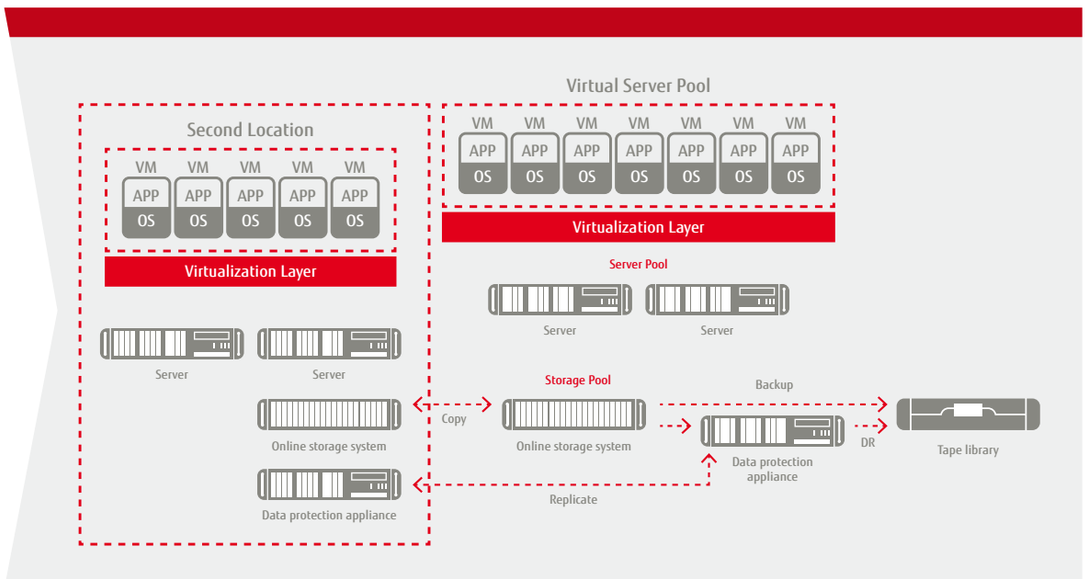
More on the Internet



| INDEX |

For business continuity:
Improve data protection

step 4



Due to the value of mission-critical data and IT systems in today's enterprises, it is essential that businesses are prepared to handle any eventual disasters. In recent years several catastrophes – due to human error or natural causes – have shown that concepts focused on only one site often provide inadequate protection. And even when the potential dangers are obvious, many small and medium-sized enterprises are reluctant to establish alternative data center sites because this requires considerable investments, not to mention that such sites are more difficult to manage.

Flexibility is the key when realizing disaster recovery concepts

The consistent flexibility and security in the design of all the systems in the ETERNUS DX product family provide enterprises with very cost-effective ways of implementing data backup and disaster recovery concepts for productive environments. For example, since data can be copied between the various systems in this product family, it is possible to back up data from several small systems on one large system. With ETERNUS DX data copies can be written to various system models that are located at different geographical locations. This means that system resources can be used globally for backups and disaster recovery. Data replication can be automated, and options such as snapshots, clones and mirroring can be precisely tuned as needed. In the worst-case scenario, enterprises benefit from data recovery lasting only a few minutes thanks to remote replication that does not depend on a server. And since ETERNUS DX is also certified for VMware Site Recovery Manager, virtual environments are automatically restored to prevent any human errors from occurring during this complex process.

Optimization of data backup at a telematics service provider

Thanks to the highly developed deduplication technology of ETERNUS CS800, a Belgian telematics service provider was able to reduce data backup volume by 95%. The customer has also cut the hard disk capacity required by the same amount. When compared with the storage systems formerly used, this translates into much lower investments in hard disks and energy savings of 60%. Furthermore, the data can reside much longer on the hard disk and increases in data volume can be kept under control without additional investments.

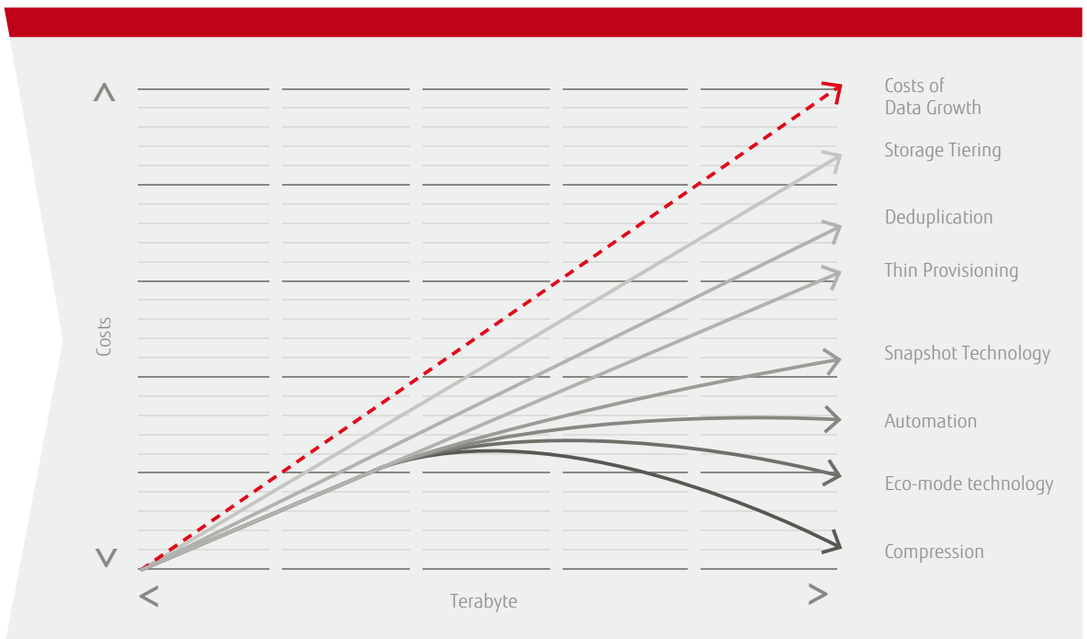
The advantages are evident in the entire data backup process: The amount of data that needs to be replicated is much smaller, which saves time, network bandwidth and money. And the quantity of data that is written to tape is also much smaller, which means that the customer can still keep using the tape libraries he already has. What's more, the systems formerly required for disk-based backup can now be used to optimize the performance of the productive environment. The investment in the ETERNUS CS800 Data Protection Appliance has thus paid off for the Belgian telematics service provider.

Disaster recovery is possible without large bandwidth

A very efficent option to provide disaster recovery for back-up/offline data is to replicate data from the ETERNUS CS800 in one location to another ETERNUS CS800 system at a second location. The integrated replication function automatically copies data to remote sites to ensure maximum disaster protection. The combination of data deduplication and replication reduces the amount of data which has to be transferred over long distances by a factor of up to 20, enabling integration of local backups in central systems to cut network costs. What's more, the ETERNUS CS800 Data Protection Appliance can also write the backup data directly to a tape library (e.g. ETERNUS LT), without requiring an additional backup server. Using a backup software like Symantec Backup Exec, restore of data can be excecuted directly from tape, if the ETERNUS CS800 fails.

For better profitability:
Use storage efficiency technologies

step 5



Storage silos for every application, multiple backups of the same data, and volumes of data that are growing daily all contribute to rising storage costs and make it difficult for enterprises to gain maximum benefit from valuable business data.

Bringing performance, function and costs into balance
ETERNUS systems from Fujitsu offer various technologies that can optimize the performance, function and costs of data management. Optimal results are possible by intelligently combining several technologies.

Thin Provisioning is the solution to one of the most common causes of inefficient storage: allocated storage space that is not utilized. This technology ensures that just the right amount of space is allocated to store the data that is actually available. Thanks to Thin Provisioning, customers can lower their investment costs and operate more efficiently.

Storage tiering is another method of increasing efficiency. In this approach, the storage medium offering the best price-performance ratio is utilized for specific data categories. For example, these categories can be defined according to performance requirements, frequency of use or the degree of data security required. Taking care of storage tiering manually would be an extremely complex task. That is why ETERNUS DX offers automated storage tiering. This enables enterprises to easily optimize the cost of storage.

Snapshots are also a simple option for making copies of files and entire systems in just a few seconds. And this can be done while applications are running. This makes snapshot technology an efficient tool for data backup and recovery.

Deduplication is an extremely efficient data reduction technology that is able to identify identical data patterns across a global data repository and stores them only once. This technology unfolds its strengths especially in backup environments which carry a huge potential of redundancy. It is used by the ETERNUS CS800 Data Protection Appliance to reduce backup capacities by up to 95% and thus cuts costs enormously. In order to maximise data reduction **compression** is used as a subsequent technique after deduplication to store the remaining and unique data patterns in the most efficient way. The ETERNUS CS800 Data Protection Appliance makes use of both techniques and reduces a data repository to the absolute minimum.

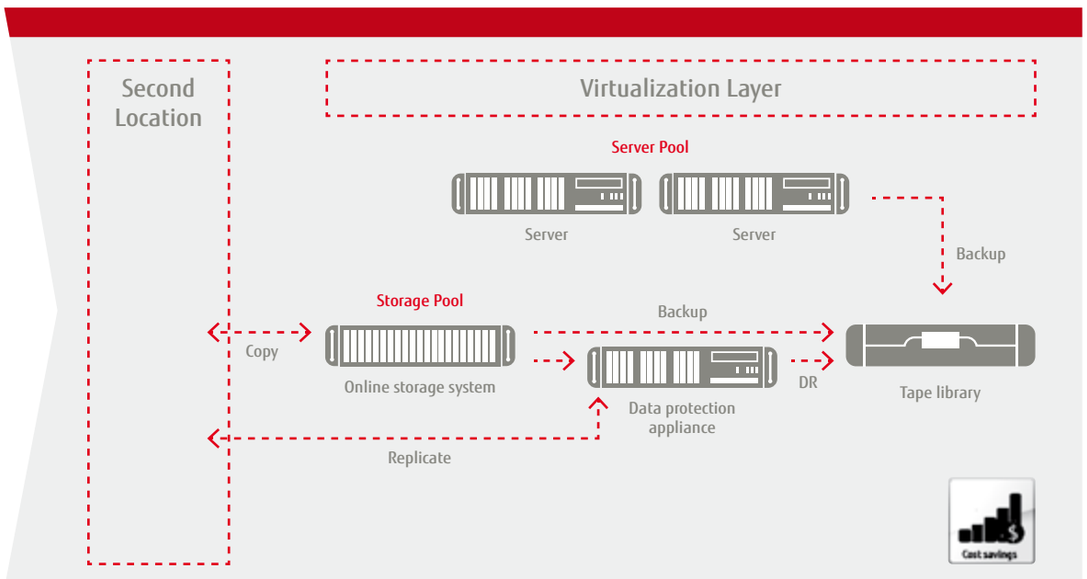
Automating storage and backup management tasks means that fewer human resources can accomplish much more. In addition to lighter workloads, enterprises also benefit from a consistently high level of service quality. With ETERNUS systems, along with the seamless integration of products from partners such as Citrix, Microsoft, Symantec or VMware, Fujitsu offers proven solutions for reducing complexity and costs, while ensuring high performance and efficient utilization of resources.

Energy-saving functions are more important than ever in light of today's rapidly increasing energy costs. That is why Fujitsu equips ETERNUS systems with leading energy-saving technologies, for example, extremely efficient network components, optimized cooling systems and Eco-mode technology, which stops the hard disk from rotating when it isn't needed. Depending on the specific situation, a business enterprise can cut energy costs by 50% – while achieving much higher performance.

ETERNUS DX reduces storage costs dramatically

- Three times more capacity with Nearline SAS disks
- 50% savings in energy, cooling and floor space with 2.5 inch disks
- 30% and more energy savings with the Eco-mode feature
- Capacity utilization can be doubled thanks to Thin Provisioning
- Ideal performance at low cost with automated storage tiering

Conclusion:
A clearly defined strategy matters



Flexible data management and efficient data protection pays off over the long-term for businesses in the SMB segment. However, this requires having a clearly defined IT and storage strategy so that all processes and technologies can be consistently optimized. Based on our experience gained from thousands of successful projects, we recommend the following:

- Eliminate the application silos in your IT environment
- Rely on effective and efficient redundancy
- Take a holistic view of data management and data protection
- Utilize the most efficient storage technologies from the start
- Plan for the long-term and make sure to protect your investments
- Implement solutions gradually
- Expect the unexpected

Did you know?

- Fujitsu is the world's third-largest IT service provider and No.1 in Japan.
- Fujitsu is among the world's top five server vendors.
- Fujitsu builds on 40 years of experience in storage development.
- Fujitsu customers include nearly half of the Fortune Global 500.
- Fujitsu Group holds about 102,000 patents worldwide.

Fujitsu is the leading Japanese information and communication technology (ICT) company offering a full range of technology products, solutions and services. Over 170,000 Fujitsu people support customers in more than 100 countries. We use our experience and the power of ICT to shape the future of society with our customers.

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