

THE POSSIBILITIES ARE INFINITE

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WHITEPAPER

Dynamic Infrastructures for Dynamic Businesses



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SUMMARY

To be flexible and respond dynamically to changing conditions and needs, businesses need Dynamic Infrastructures. Fujitsu has a comprehensive portfolio that lets our customers stay agile and maintain their competitive edge – products and services designed for building Dynamic Infrastructures, pre-integrated and proven solutions and Managed Services for efficient operations. We are also developing offerings for Infrastructure-as-a-Service to take IT flexibility and efficiency to the next level.

Dr. Joseph Reger, Chief Technology Officer,
Fujitsu Technology Solutions

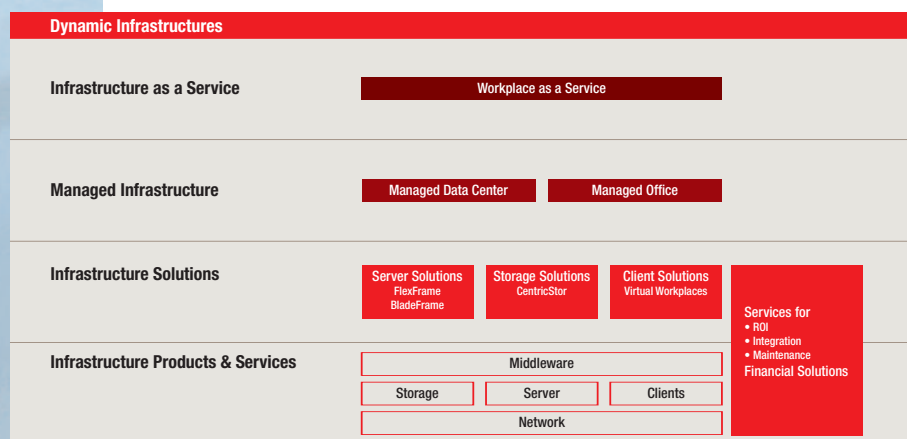
The Fujitsu portfolio – supporting Dynamic Infrastructures

Dynamic business environments call for Dynamic Infrastructures. They help companies respond flexibly to changing needs with agile data centers and efficient client infrastructures. That is why Fujitsu offers a unique combination of products and services, solutions and managed infrastructures that help companies operate flexibly and successfully in their markets. Fujitsu is also developing an even wider portfolio to address today's trend to "as a service" offerings.

The Fujitsu portfolio is designed to fit the strategy and priorities of each individual customer and can be dynamically tailored to meet different needs.

Fujitsu customers are provided with Dynamic Infrastructures through:

- Infrastructure products and services** that are industry-leading and designed for virtualized and automated environments
- Infrastructure solutions** that are pre-tested and include the know-how and experience gained from hundreds of customer installations
- Managed infrastructures** – where individual parts of a business or the whole IT infrastructure can be out-tasked; the customer retains control of the infrastructure while relying on expert support services
- Infrastructure-as-a-Service** – enables customers to share infrastructure solutions with others, using and paying for just what they need





Infrastructure Products and Services

The increasing customer demand for Dynamic Infrastructures guides our development of new products and services. We are integrating new functionalities into our products, particularly those related to automation and virtualization. This also includes a matching array of services aimed at significantly optimizing and simplifying the rollout and maintenance of products.

Fujitsu has decades of experience in providing and managing dynamic and virtual infrastructures for customers. BS2000 mainframes are the perfect example of continuity and long-term investment protection in mission-critical data center environments. This product line has been steadily enhanced and developed for over 30 years. Its ground-breaking virtualization functions, which have been proven in decades of mission-critical use, served as the blueprint for standards-based server virtualization. In addition to this mainframe heritage, the company has an extensive range of products designed to meet even the most demanding infrastructure requirements. This includes a wide range of business clients and a unique choice of servers and storage.

Some of our infrastructure products for data centers are:

- PRIMERGY BX600 Blade Server – with embedded server and I/O virtualization and including system management for virtual machines
- PRIMERGY BladeFrame – the highly successful dynamic server pool in a box with one management system for both physical and virtual resources
- FibreCAT and storage systems from EMC and NetApp – dynamically scalable and centralized storage, key building blocks for Dynamic Infrastructures

Examples for the client infrastructure include:

- ESPRIMO Mobile and LIFEBOOKs – dynamic connectivity via UMTS, WLAN and Bluetooth and designed for maximum connectivity with the back-end infrastructure
- FUTRO Thin Clients – ideal devices for client virtualization to significantly reduce administrative overhead
- ESPRIMO Professional PCs with power management – ensuring minimal energy consumption – and integrated security and manageability features
- DeskView Load – industrialized services that enable fast rollout of new client devices to numerous locations, allowing increased performance and innovation of the client infrastructure

Maintenance & Support Services offer standardized services for hardware and software maintenance and ease project rollouts. Customers can count on 24x7 service thanks to our worldwide network. We put a strong focus on continuous proactive and reactive involvement – with short response times and defined recovery times.

Fujitsu has rung in a new era in IT services with an extended portfolio. This includes an auto-intelligent remote support application suite. With proactive solutions like Auto Immune Systems® (AIS) that monitor, identify and solve problems, the traditional paradigm of reactive support services is a thing of the past. As a result, customers get a significant improvement in the quality of their entire infrastructure, and that leads to increased availability of infrastructures and enhanced productivity and satisfaction throughout the system. With Auto Immune Systems, more than 50% of all incidents can be solved automatically.



Infrastructure Solutions

Being close to our customers has helped us identify the increasing demands made by CFOs, CEOs and users throughout the IT world: higher efficiency, greater agility, and higher quality. As business applications and innovative service offerings have increased competitive pressure, IT has become more vital to business performance than ever before – from the automotive industry to utilities. That is why Service Oriented Architectures (SOAs) and Service Oriented IT Infrastructures (SOIs) have been the buzz words heard in discussions conducted by IT managers and experts. SOA and SOI aim at achieving increased agility in an IT environment by dynamically allocating system resources to applications and thus delivering greater flexibility, quality and efficiency.

Designing and building IT infrastructures that perfectly meet the needs of SOA is the focus of Fujitsu and the key to the development of our infrastructure solutions. The characteristics necessary for SOIs and for ensuring that IT infrastructures dynamically satisfy the resource requirements of applications are:

- Automated allocation of systems based on service levels
- Integrated application and resource management
- Industry-standard products to ensure maximum compatibility and flexibility
- Optimized IT operation through automation

The main challenge is to integrate a mix of hardware, virtualization technologies, middleware and applications in a way that is both efficient and effective. We approach this challenge with a line-up of industrialized and pre-integrated solutions. They ensure the management and operation of virtual and physical IT resources – supported by a set of standardized services from our IT service catalog. Developed once and used by many: That is what industrialization means.

Fujitsu has developed solutions that work in exactly this way:

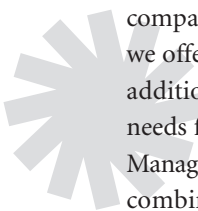
- FlexFrame for SAP and FlexFrame for Oracle – Application optimized solutions: a solution stack tuned for a particular application suite
- PRIMERGY BladeFrame – Application independent; real and virtual servers are shared across applications

CUSTOMER EXAMPLE: STANDARD CHARTERED*

The customer wanted to introduce a new, modular retail banking suite of applications and at the same time optimize SLAs and create a central, shared service. Fujitsu implemented a FlexFrame Infrastructure based on PRIMERGY in a dual-site data center. The customer achieved a 50 % reduction in TCO and 80 % faster service delivery, and the successful consolidation reduced 600 servers to 100.

Individuality meets variability. Dynamic Infrastructures.

Every company answers the question as to how IT can enhance its competitive strength in its own individual way. As a result, there is great variation in the strategies, the needs and the models these companies want to use in working with their IT partners. That is why, with Dynamic Infrastructures, we offer our customers not just our comprehensive technology and service expertise, but an important additional element as well: a partnership that can be shaped as needed. It can grow with individual needs from the provision of leading products and product-related services to end-to-end solutions and Managed Infrastructures and on to Infrastructure-as-a-Service. Our offering is unique: With this flexible combination of products, solutions and services we open up individual paths for our customers to implement their own strategy with the best possible IT infrastructure and management.



CUSTOMER EXAMPLE: TELIASONERA*

Telia Sonera wanted to create a flexible and scalable SAP infrastructure for procurement, human resources and finance. They chose FlexFrame for SAP and achieved high-availability for the SAP applications for 18,000 users – having started with 2,000 users three years earlier. They quickly brought additional server capacity on line and got significantly more out of the installed capacity they already had.

Centralized storage is a key architectural element in Dynamic Infrastructures, in which the main requirement for a central storage pool is to support file services.

Customers require a high level of scalability to deal with the enormous growth in the number of files. Data protection and data security are two increasingly important challenges in data centers in which the amount of data is constantly growing. Availability has to be 24x7, and data constantly has to be backed up and secured. Disaster recovery requires construction of dual sites, and data centers have to meet international and local legal requirements, which involve longer retention periods for data than ever before. This increases costs due to additional hardware, staff costs, floor space and energy use and is becoming a financial issue.

CentricStor is an ideal infrastructure solution that provides True Tape Virtualization by introducing a virtualization layer between the servers and the tape library. This means that servers can be changed without affecting the tape systems – and vice versa. CentricStor also enables support of a wide variety of tape systems, servers, mainframes and backup software – and is therefore better suited to the multivendor environments most customers have.

The data center is just one part of a company's IT infrastructure; client systems also pose challenges for the IT manager. By their nature, client systems are widely distributed through an organization and include office and mobile users with a variety of client devices. Software updates, configuration changes and ongoing desktop management have to be performed efficiently and cost-effectively. Challenges such as manageability, data security, flexible

CUSTOMER EXAMPLE: BELGACOM*

Belgacom used tape virtualization to consolidate data protection of mainframes, UNIX and industry-standard servers. CentricStor was installed at two locations along with EMC NetWorker and tape drives; the result was quick and reliable data backup and recovery.

access to business applications, conflicts between different applications and energy consumption are major issues in the client environment.

That is why IT managers should consider proven technologies for client virtualization to boost the efficiency of their client infrastructures even higher. Complete client infrastructures can be “virtualized” and hosted in the data center. This brings benefits and improvements in quality of service and increases productivity. Virtual clients simplify central management, increase availability and security, optimize the use of IT resources and allow flexible access. Users can dynamically connect to their virtual desktops from any device, retaining their usual desktop experience and receiving significantly better service even as they cut costs.

Fujitsu has created an integrated dynamic solution for workplaces – **Virtual Workplace** – utilizing the latest technologies for client virtualization combined with pre-integrated solutions. It is fully backed up by an ROI calculation and enabled by integration services and, if you wish, operated by Fujitsu. Virtual Workplace improves flexibility, efficiency and quality.

Business critical infrastructures also require proactive support and complete maintenance services. SolutionContracts from Fujitsu provide this as a bundled, pre-defined service for the hardware and software components of our infrastructure solutions. A technical account manager has the responsibility to act as a single point of contact for the customer. Our solution contracts offer reactive maintenance services and proactive services such as Live Monitoring, System Health Check and Patch Management.



Managed Infrastructure

IT departments are facing complex challenges and need to adapt dynamically to fast-changing demands. A few examples of these are the analysis and implementation of new IT requirements, fulfillment of business demands, alignment with green IT, introduction of transparent cost management and compliance with legal regulations.

The core question is: “Should I deliver the service with my own resources or should I delegate it to an external specialist?”

In considering this question, CIOs should analyze the contribution of the IT department to the business process and evaluate whether provisioning services itself adds value to the core business. The decisive factors are the quality, price and design of the services provided, in accordance with defined standards and service level agreements.

The industrialization of IT services and the increasing cost of IT operations require a carefully developed sourcing strategy that enables customers to benefit from the economies of scale that a specialized infrastructure provider such as Fujitsu can deliver.

Fujitsu offers infrastructure services that mirror customers’ processes by taking over the responsibility for those tasks that are not core parts of the customers’ businesses. This also allows customers to retain control of what they consider to be core processes of strategic value to their business, thus fulfilling important issues such as IT governance and compliance.

This is significantly different from the traditional outsourcing model of taking over the complete IT function and offering a percentage reduction of operating costs. In practice this usually leads to the later problem of paying high fees to incorporate the changes and developments inevitably needed to keep up with the pace of business developments and dynamically changing requirements.

Managed Office enables the efficient management and operation of IT workplaces using innovative services and concepts. The focus is on flawless, secure and cost-efficient operations, with

special attention to end-user satisfaction. The goal is to supply customers with IT workplaces that are available at all times, consistently operate at the required quality levels and do not use more resources than necessary. This includes the planning, implementation and rollout of such infrastructures and the management of the hardware and software concerned. Customers can also choose the billing model that best meets their needs, including “pay-per-seat.”

CUSTOMER EXAMPLE: DEXIA-BHL*

This customer wanted to introduce standardized office software for all its subsidiaries and implement access to centralized business applications in a highly standardized IT infrastructure. Fujitsu provided Managed Office services with multivendor maintenance and incident management. The customer benefits from one contract, one coordinated delivery process and one support process – worldwide.

Managed Data Center encompasses the complete operational responsibility of servers, storage systems and networks for the data center. This includes the analysis, planning, implementation and complete management of the data center infrastructure. Depending on the customer’s needs, a part or all of the operational responsibility can be managed by the experts from Fujitsu. The level of control is chosen by the customer, depending on their internal skills, resources and business needs.

CUSTOMER EXAMPLE: DAIMLER AG*

For Daimler AG, Fujitsu is managing the operation of 5,000 servers and 1,500 databases, including the operational integration of new hardware, databases and applications as needed. This level of Managed Service ensures guaranteed system performance with defined service level agreements. The project aims at significantly optimizing costs by combining on-site and off-shore services.

The strength of our approach comes not only from what we offer but from the people who embody our approach and who work on a daily basis with our customers.

Our people are able to leverage the potential of our industrialized service catalog to meet customer needs from initial analysis to the requirement definition phase. They take into account the necessary governance model and defined responsibilities as well as the implementation of the services and delivery model.

Managed Storage incorporates the management of system hardware and software, storage management, monitoring, operating, training, maintenance, billing and documentation. This service makes it possible to share resources among several internal customers with tailor-made SLAs for their individual requirements. Resources can be invoiced according to usage rather than representing fixed overheads. The savings potential can be up to 30 percent with optimized resource and capacity management strategies.

Managed Services are designed to meet changing business requirements and to increase flexibility where it is needed. The basis of this concept is an industrialized and standardized IT service catalog – modular services from a specialist.

With its **Service Catalog** approach, Fujitsu provides a simple way for customers to choose what services should become Managed Services. In effect, the customers can experiment to determine what they can successfully off-load from their own responsibility and what needs to be retained as part of the core competence of their business.

Cost benefits are realized thanks to a high degree of standardization in the service delivery process. Our service process expertise is the key. Customers gain access to highly standardized processes and profit from effects of scale. They use our service/system management and network operation centers and benefit from the constant improvement of our portfolio.

The results are increased flexibility, transparency and long-term cost reductions due to the elimination of redundant resources and the implementation of industrialized services.

Continuous investment in innovations enables automated service processes and optimized operation of industrialized IT solutions. Today, cost-efficient service delivery is no longer feasible without corresponding automation. Unlike offshoring, which brings cost savings by shifting operations to countries with low labor costs, automation completely eliminates the need for certain structures and is able to reduce the complexity of certain processes.

In effect this concept offers the ability to industrialize the management and operation of the IT infrastructure. Fujitsu acts as a service aggregator for its customers.

Fujitsu uses the **IT Infrastructure Library (ITIL)**, an internationally valid and proven framework for IT service processes, to align its services. As a de facto standard, ITIL is an indispensable collection of best practices in global service business. The latest version, ITIL V3, describes and classifies all IT service management processes and defines the relationship between IT services and business processes based on their economic viability. This means that services in line with ITIL V3 concentrate on added economic value for customers.

Customer Example: SAP Hosting*

»Managed Storage from Fujitsu relieves us of routine work, frees up energy and resources for innovations and also taps significant cost-cutting potential.«

Thomas Besthorn, Managing Director, SAP Hosting





Infrastructure-as-a-Service (IaaS)

As IT industrialization and IT utilities become more widespread, service aggregation will grow in importance. Service aggregation is the ability to group individual infrastructure solutions and industrialized, highly automated services – from infrastructure components, system tools and business process components to the provision of an efficiently operated utility-based IT infrastructure.

Virtualization offers a high degree of flexibility and scalability if implemented correctly. Its full potential, however, is rarely realized because virtualization is still primarily managed and understood as a technology-related, not a strategy-related decision. The challenge for many IT departments lies in enabling utility-based computing inside their company to leverage economies of scale with automated services on virtual infrastructures.

Our “Infrastructure-as-a-Service” offerings will be strictly solution oriented and designed to reduce investment risks for IT infrastructures (technology selection and fixed capital).

These offerings bring benefits in operations and planning by enabling more calculable and scalable operating costs. They do that by introducing a virtual infrastructure with a high degree of standardization and automation combined with utility-based pricing.

Flexible platforms and service levels that dynamically meet business requirements guarantee optimal use of the infrastructure, even in times of decreasing and increasing demands. Our Infrastructure-as-a-Service offerings will link industrialized technologies and IT infrastructure solutions with perfectly aligned service and custom-tailored pricing models.

Fujitsu customers benefit from tailor-made solutions – storage on demand, for example – that are not only technical solutions, but also solutions that optimize processes.

Business view:

- Pay as you grow option for shared business risks
- Supports IT managers in achieving a business perspective
- Better time to market and greater flexibility

Operational view:

- Faster service delivery
- Higher economies of scale
- Predictable budget and standardized operations
- Latest technology put in productive operation very quickly





Managed Infrastructure and Infrastructure-as-a-Service pricing models

Fujitsu arranges a utility computing model with the customer on a pay-per-use basis. This allows the customer to upsize or downsize the use of the infrastructure, which is provided on-premises or off-premises and shared with other customers.

This pricing model enables customers to actively manage, control and plan the costs of their IT operations through increased levels of flexibility and transparency, using a continuous capacity review process. The customer can internally manage and control the capacity, volume and price of each business process. Each business unit pays only for what it uses. Pricing is based on physical and virtual units, consumption (e.g. GB/per month) or transaction metrics (e.g. SAP transactions performed).

Fujitsu will leverage its knowledge and experience in the provision of IT infrastructures for its customers in adding “as a Service” offerings to its portfolio. The focus will remain at the infrastructure level – where the company has its main expertise – to offer “Infrastructure-as-a-Service” (IaaS).

The focus will thus be a combination of:

- the physical layer of basic hardware (servers, storage, clients, networking)
- the operating system and low-level system software (virtualization, basic resource management, automation, orchestration), and
- the lowest level of the middleware layer (systems management, optimization layers, etc.)

Our offering includes the necessary infrastructure-oriented middleware, but does not address the business application-related middleware typically offered by Platform as a Service (PaaS), Software as a Service (SaaS) or Business Process as a Service (BPaaS) providers. We leave the business process- and business application-oriented part of the solution stack to our partners, who are much better positioned to create value here.

What does our offering look like in concrete terms? Take a look at our first offering: Workplace-as-a-Service.

Workplace-as-a-Service (WaaS)

An individual client-operated virtualization environment can create improved service for users, but cost savings can be hard to achieve due to the required additional investments in the back end. A lot of new technologies must be evaluated and integrated, causing long project times and the potential for high risks. “Workplace-as-a-Service” is based on a central and shared infrastructure that can overcome these hurdles.

In addition to cost and resource benefits, Workplace-as-a-Service offers other clear advantages. Desktop users can access their PCs anytime and anywhere. This means major benefits for the organization and end-users. Professionally managed, this offering gets rid of a lot of the headaches that are now taken for granted when dealing with PC technology. Users benefit from the fact that their PCs are always available in the data center, and administrators benefit from the opportunity to use the most effective methods for client PC management.



Dynamic Infrastructures

Dynamic Infrastructures for Dynamic Businesses

Why should companies choose Fujitsu?

IT is more integral to business operations today than ever before. Companies hone their competitive edge by creating customer offerings built on a foundation of IT and the growing capabilities made possible by IT. However, they do not necessarily want to have to deal with the complexity those offerings might bring with them. They also want to be able to use their current IT resources in a more flexible and adaptable way.

That is why our Dynamic Infrastructures offering is the right solution for them: The key lies in its flexibility. By leveraging our expertise and experience with our products and services and building and managing combinations of all these offerings, we can help our customers decide which IT infrastructure and delivery model is best to support their business.

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