White Paper

FUJITSU

Jump start to your hybrid data architecture

Building a new data architecture across a heavily distributed IT landscape is increasingly complex, error prone, time consuming, and expensive. With PRIMEFLEX Integrated Systems, Fujitsu provides you with a new approach to streamline the deployment, life cycle and maintenance of hybrid data architectures.

Content

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Economic disruptions challenging the IT landscape

While the need to be a data-driven organization has always been a priority in the digital world, current economic conditions have led to an unforeseen, global urgency to transform business models in private and public sectors. Supply chains, retail strategies, and customer relationships have had to be re-evaluated overnight in order to sustain business. At the same time, the latest generation of digital start-ups has prospered even in this difficult situation. As a response, a myriad of new digital technologies and services are finding their way into organizations to deliver not only advanced business processes but also an enhanced end-user experience.

It comes as no surprise that data is at the center of these new digital services and that an accurate processing of this data is more important than ever. Therefore, the transformation to becoming a data-driven enterprise has become key to surviving and thriving in the current digital era

This white paper discusses the major considerations for building an effective foundation for a hybrid data architecture that spans across various locations and explains how PRIMEFLEX integrated systems from Fujitsu can help you overcome deployment, life cycle and maintenance challenges.

What is a data-driven business?

A data-driven business is one that exploits data and analytics at every level to achieve both a strategic and real-time operational advantage. In a data-driven business, data is treated as a key corporate asset and is managed and protected accordingly. Advanced tools and technology are employed to make data and analytics an intrinsic and/or embedded part of activities – from strategy and planning in the boardroom, through decision-making on the front line, to powering digital engagement with customers, partners, and suppliers.

Source:
Research Report: The road to becoming a data driven business, Freeform Dynamics Ltd, 2020

Building a hybrid data architecture

For a long time, IT managers tried to bring as much IT as possible into their central data centers – the core of their IT. The clear goal was to reduce local IT instances. This approach changed a lot with the rise of the cloud. As a result, IT is starting to get distributed again between the "core" and the cloud instances of various services providers. Naturally, this creates new challenges whenever companies want to extract information out of their data.

What is needed is a hybrid data architecture enabling an organization to get full and instant access to all data, independent from their physical locations. For companies, who want to start their hybrid data architecture journey, there are numerous options to evaluate, and it requires extensive integration of both hardware and software, as well as cooperation with cloud providers, to thrive. The question is when, how, and where to start? Multiple considerations must be made at every step of the journey to build the foundation for an effective hybrid data architecture.

Making the right workload placement decisions
An important first step is to understand your application landscape and identify the requirements of each of your individual workloads. How complex are they? What is the level of customization required? How critical are they to the business? Which of them have to meet special demands in terms of performance, latency, scalability, availability, data protection, security, privacy, and compliance? And how do you retain full control? To support that decision process, Fujitsu provides assessment services helping you to clarify which applications should be retained on existing platforms, re-hosted to the cloud, re-built, re-purchased or even replaced. Each of these options has its own justification, because workload demands on infrastructure vary greatly.

Turn your on-premises IT infrastructure into a private cloud
As soon as parts of your workloads are running in the cloud, your application mangers will get used to the comfortable operational model. It is no longer required to use time-consuming internal request processes to get hardware purchased and installed by the internal IT team. In the new cloud world, new infrastructure can be easily deployed with just some mouse clicks. Of course, this increases the expectation level for the on-premises infrastructure part. Therefore, internal IT organizations need to adapt and build a private cloud type of architecture allowing users to provision IT systems with the same operational experience than in the public cloud.

Introduce cloud-like pay-per-use consumption model for private cloud

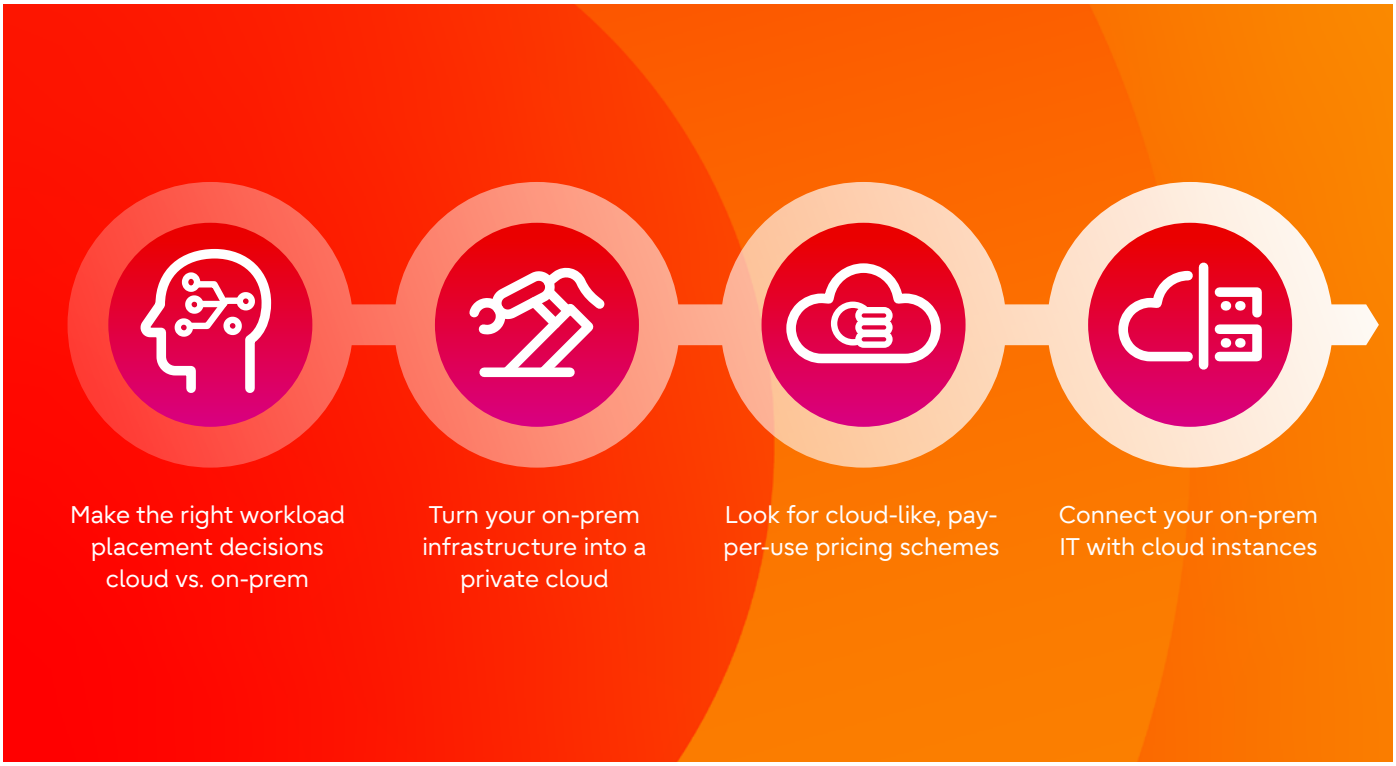
Besides the operational model, companies with cloud experience also value the commercial approach. So, IT organizations need also to think about introducing a cloud-like financing model for on-premises infrastructure, which allows them to only pay for what they use, avoiding large upfront payments. Like in the public cloud, this model enables them to flexibly scale their infrastructure up and down in line with their business needs based on a simple and predictable cost model that gives them financial certainty in an increasingly uncertain world.

Connect your on-premises IT with cloud instances

A hybrid data architecture will never be static in terms of workload placements. Some workloads that have been hosted on-premises for many years may move to the cloud over time, and some may even move back from the cloud into the data center. It goes without saying that on-premises data centers and the public cloud should not be separate worlds. Instead, they should complement each other and be managed as a single, unified infrastructure. This dictates that your on-premises infrastructure needs to be easily utilized in a hybrid scenario across all physical and virtual locations. Only a hybrid-enabled, on-premises infrastructure ensures the consistency needed to manage service delivery, life-cycle operations, and user access for all IT services in your new hybrid data architecture.

Finally, you need to consider the implications of your new hybrid data architecture for data protection and security requirements. The more distributed your IT landscape is, the more vulnerabilities and entry points for potential threats there are. You need to take many different threats into account, such as an IT outage, data loss or corruption, or a catastrophic event, but also cybercrime and ransomware attacks. Effective data protection and cyber security against all these threats is not an autonomous entity. It plays an important role in keeping your business up and running – not only the IT.

With all the above considerations in mind, and the multitude of options available, it becomes obvious that the design, deployment and life cycle management of a hybrid data architecture can be an error-prone, time-consuming, and expensive endeavor that poses multiple risks for your business. It requires a deep understanding of all the operational and financial implications of each option. This begs the question as to whether building your own hybrid data architecture and re-inventing the wheel for every project is the best approach. Or whether it is worth reaching out to a partner who has already implemented such projects many times and can therefore support you on your journey to a hybrid data architecture, end-to-end.



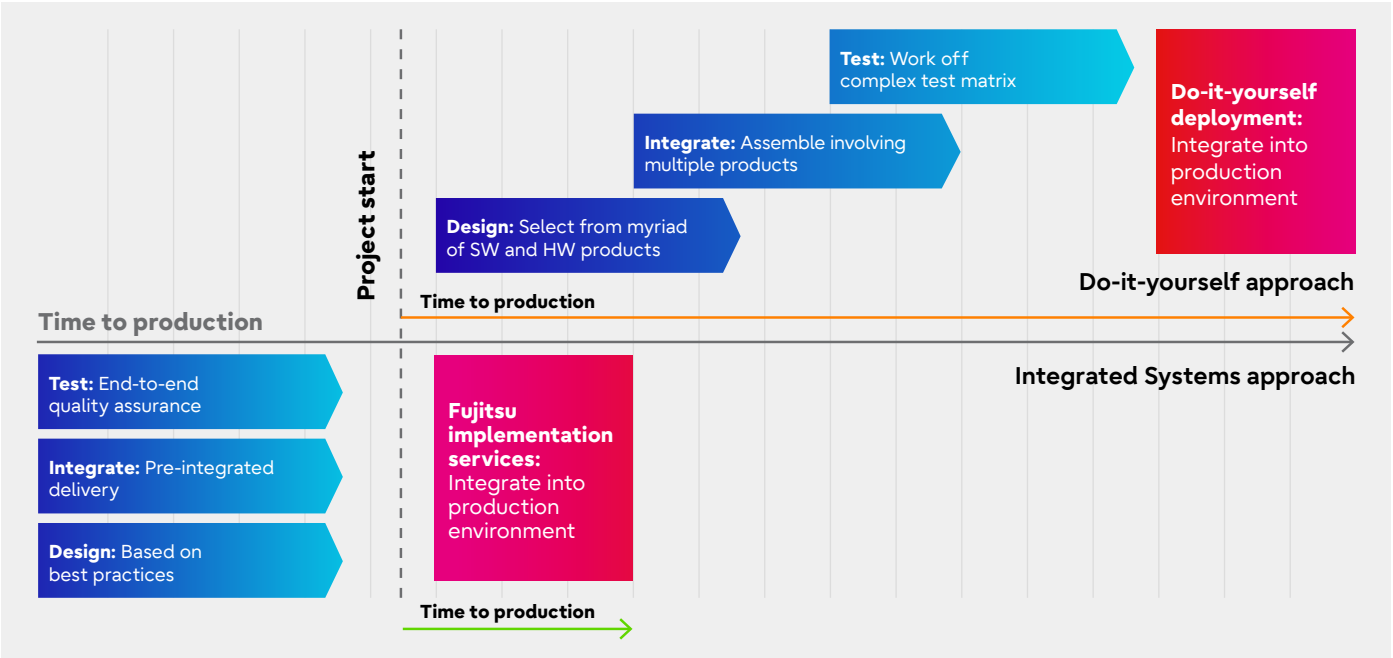
PRIMEFLEX Integrated Systems

This is exactly where PRIMEFLEX integrated systems from Fujitsu come in. With PRIMEFLEX, Fujitsu provides a whole range of pre-defined, pre-integrated, and pre-tested hybrid IT-enabled systems that have been specifically engineered by Fujitsu and its strategic technology partners to streamline the deployment, operation and maintenance of the on-premises infrastructure foundation for a hybrid data architecture.

Thanks to the unique combination of a pre-integrated and certified technology stack, new standardized implementation and infrastructure support service providing technical solution support with a single point of contact, Fujitsu PRIMEFLEX systems offer a significant better life cycle experience in operating hybrid data architectures.

As a result, PRIMEFLEX systems enable huge OPEX savings in every phase of the system lifecycle. In a recent user survey by industry analyst FreeForm Dynamics, over 80% of all respondents said that they have already seen or expect significant cost, efficiency, and security benefits from pre-integrated systems, taking design, testing, deployment, integration, operation, and maintenance into account.*

Faster time to production
The figure below clearly demonstrates the enormous time savings that can be achieved by choosing an integrated system with PRIMEFLEX rather than adopting a do-it-yourself (DIY) approach. With a DIY approach, you must design the infrastructure, integrate the individual components, and test this combination of components before the actual onsite deployment and integration in the production environment starts. With PRIMEFLEX, Fujitsu has already completed all these activities and your project starts with a fast and efficient implementation service delivered by Fujitsu experts. This way, PRIMEFLEX systems provide significantly faster time to production and free your organization from allocating valuable staff resources for time-consuming infrastructure deployment activities.



*Source: User survey on Hybrid IT platforms, FreeForm Dynamics, 2020

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Features and capabilities

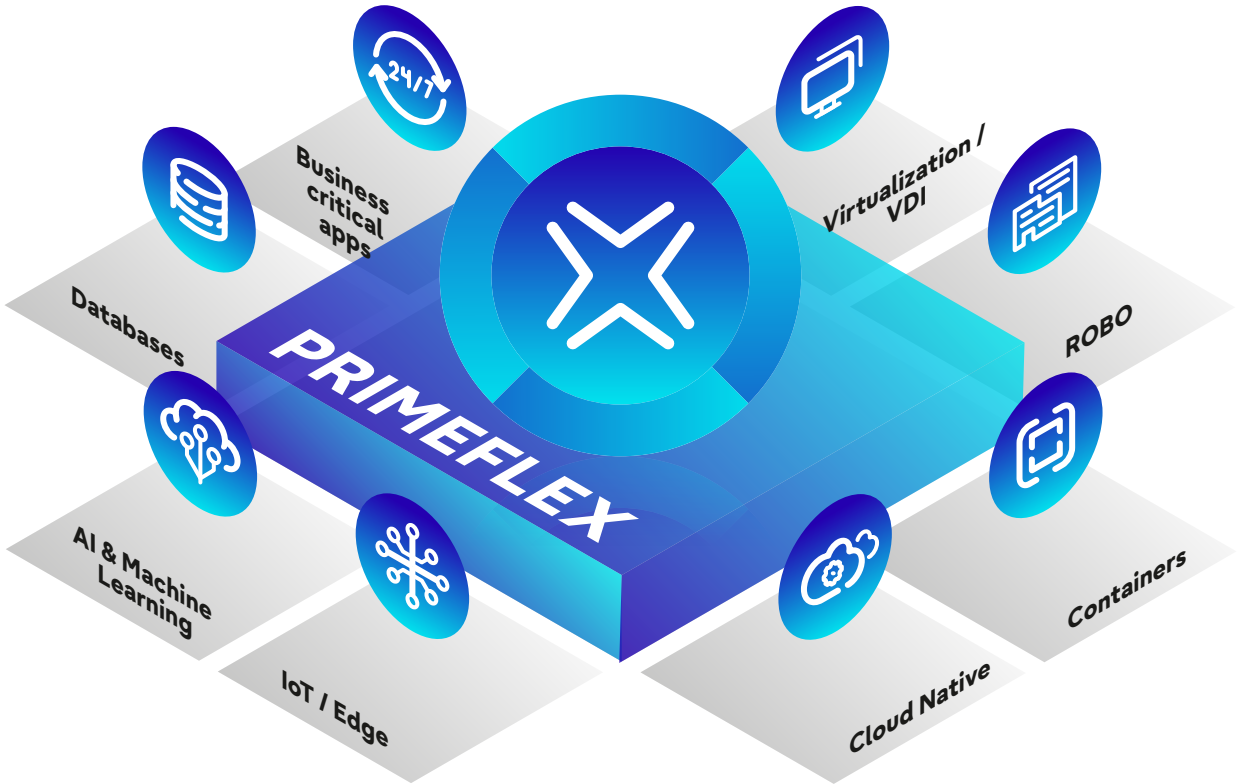
PRIMEFLEX systems are built from best-in-class components, either using our own technologies, such as the Fujitsu PRIMERGY server, Fujitsu ETERNUS storage systems, or those of leading third-party vendors. All systems are harmonized to optimally support your particular use case and to give you the performance and capacity headroom to extend your system's lifecycle and reduce migration costs.

PRIMEFLEX systems allow you to start small and grow as your demands increase, easily aligning your infrastructure to changing capacity and performance requirements. The systems are designed to support vertical and horizontal scalability, enabling you to select the architecture that best supports the specific scalability requirements of your application landscape.

PRIMEFLEX systems offer a broad range of options to fine-tune your data center infrastructure to your particular needs. The portfolio provides flexibility and choice in terms of architecture (converged and hyper-converged), storage (Fujitsu and NetApp), virtualization and cloud management software (VMware, Microsoft, and Nutanix), as well as licensing (OEM, resale, subscription or bring your own).

From a single component to an entire site, PRIMEFLEX systems safeguard your business operations. All components feature extremely low annual failure rates, and you can select from a wide range of high availability, disaster recovery, and data protection options to fulfill the service levels your business requires.

PRIMEFLEX systems are designed to support practically any workload you may have, whether databases (SQL, Oracle, and SAP HANA), business-critical, cloud-native, AI or machine-learning applications. And to run in almost every environment, from general purpose virtualization, via virtual desktop infrastructures, to containers or remote and branch offices.



Integration with the cloud

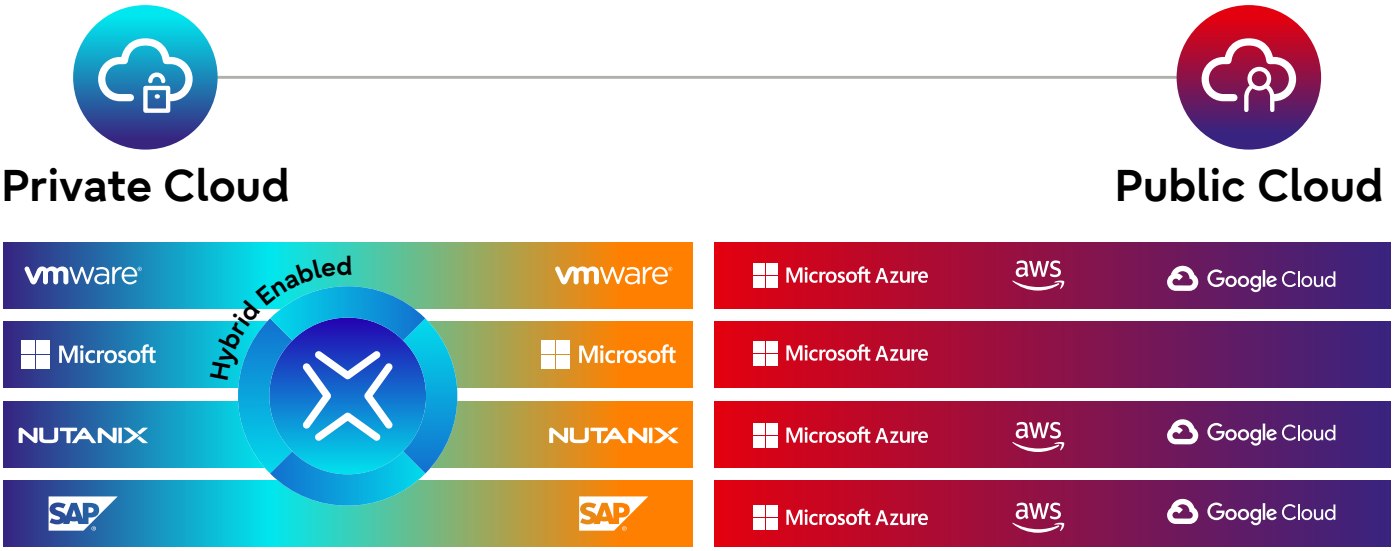
Fujitsu offers you a choice of different platforms to integrate your on-premises data architecture deployment with cloud systems.

VMware
Powered by VMware Cloud Foundation, VMware Cloud on Amazon Web Services (AWS), Microsoft Azure or Google Cloud integrates VMware's compute, storage, and network virtualization products (VMware vSphere, VMware vSAN, and VMware NSX) along with VMware vCenter Server management, optimized to run on dedicated, elastic, bare-metal AWS, Azure or Google Cloud infrastructures. The key enabling feature to connect the VMware Cloud with your on-premises data center instance is VMware Hybrid Cloud Extension, an application mobility platform designed to simplify application migration, workload rebalancing, and business continuity across data centers and clouds.

Microsoft
With Microsoft, connecting your data center with the cloud is based on Azure capabilities. The new subscription-based Azure Stack HCI operating system for on-premises HCI deployments released in 2020 has built-in cloud-native capabilities enabling you to create a hybrid cloud environment. Making it simple to connect your virtualized workloads to cloud-based services for backup, monitoring, identity access management, security, and more. In addition, you will automatically have the latest feature and security updates applied to your on-premises HCI deployment. If you are running the Windows Server operating system, your route to Azure cloud services is through Windows Admin Center, along with the agents needed to set up the respective Azure Hybrid Services, such as Azure Backup, Azure Site Recovery, Azure File Sync, and Azure Monitor.

Nutanix
Similar to VMware, Nutanix supports hybrid cloud environments based on AWS, Azure and Google Cloud. The Nutanix hybrid cloud offering is based on Nutanix Clusters, which runs the core Nutanix HCI stack (including Nutanix AOS, AHV, and Prism), along with all Nutanix products and services, on bare-metal cloud instances – allowing you to easily migrate or extend applications from a private to a public cloud infrastructure.

SAP
For SAP landscapes, we support hybrid cloud environments based on AWS, Azure and Google Cloud. The management of the hybrid SAP landscape is delivered by the PMS Cloud Management Stack from LNW-Soft, which enables you to provision new SAP systems in the cloud, move copies of existing SAP systems into the cloud, relocate SAP systems between on-premises and cloud instances, and create a disaster recovery datacenter in the cloud.



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Portfolio overview

The PRIMEFLEX portfolio supports a large number of usage scenarios across virtualization, cloud, and SAP environments. *

PRIMEFLEX for VMware vSphere
Offering multiple configurations varying in size, PRIMEFLEX for VMware vSphere is a converged system based on a classical architecture with external storage. The integrated system features VMware vSphere including native Kubernetes so that you can run your existing enterprise applications alongside containerized applications in a unified manner, while maintaining application portability. You can choose between hybrid storage (Fujitsu ETERNUS DX) and all-flash storage (Fujitsu ETERNUS AF), as well as between iSCSI and Fiber Channel connectivity. It also includes network switches, cabling, and rack infrastructure, with Fujitsu's Infrastructure Manager (ISM) ensuring converged lifecycle management of all the components involved.

PRIMEFLEX for VMware vSAN
PRIMEFLEX for VMware vSAN is a hyper-converged system based on the VMware HCI software stack, including VMware vSphere and vSAN. The system provides you with a broad choice of certified vSAN ReadyNodes™ giving you the highest degree of flexibility in choosing a VMware HCI environment. PRIMEFLEX for VMware vSAN supports any HCI use case, including general-purpose virtualization, VDI (Virtual Desktop Infrastructure), big data and analytics, remote and branch office, and edge, and has been certified for mission-critical workloads like SAP HANA. For companies who want to extend their VMware HCI deployment to a completely software-defined data center including networking virtualization, Fujitsu offers VMware Cloud Foundation on PRIMEFLEX for VMware vSAN, a solution that provides a complete set of software-defined services for computing, storage, networking, security, and cloud management to run your enterprise apps—traditional or containerized—in private or public environments.

PRIMEFLEX for Microsoft Storage Spaces Direct
PRIMEFLEX for Microsoft Storage Spaces Direct is a hyper-converged system based on software-defined storage technology (Storage Spaces Direct) integrated in Microsoft's Windows Server Datacenter. Various certified configurations for a broad range of use cases are in place, covering mixed workloads as well as those requiring extreme I/O performance. With the Azure Hybrid Services available through Windows Admin Center, your IT organization can connect to Azure cloud services, including Azure File Sync, Azure Site Recovery and Backup, Cloud Witness, Azure Monitor and centralized Azure Update Management.

- **for VMware vSphere**
- **for VMware vSAN**
- **for Microsoft Azure Stack HCI**
- **for Microsoft Storage Spaces Direct**
- **for Nutanix Enterprise Cloud**
- **for SAP HANA**
- **for SAP Landscapes**

PRIMEFLEX for Microsoft Azure Stack HCI
PRIMEFLEX for Microsoft Azure Stack HCI is another hyper-converged system, based on Azure Stack HCI – the new purpose-built operating system from Microsoft that offers an easy route to hybrid cloud, in-built Azure connectivity, subscription-based licensing, and advanced features for disaster recovery through stretched clusters, as well as Kubernetes capabilities. Various certified and validated Azure Stack HCI nodes with different form factors are available to cover a broad range of use cases, such as general-purpose virtualization, Kubernetes, SQL server, VDI or ROBO (Remote Office and Branch Office) environments.

PRIMEFLEX for Nutanix Enterprise Cloud
Supporting any number of nodes, PRIMEFLEX for Nutanix Enterprise Cloud is a hyper-converged infrastructure system based on software-defined storage technology from Nutanix. The multi-hypervisor system (Nutanix AHV and VMware vSphere) supports various configurations covering a broad range of use cases; among them are special ones for VDI (Virtual Desktop Infrastructure), ROBO (Remote Offices and Branch Offices) and pure usage as storage. Cloud management can be added as an option and PRIMEFLEX for Nutanix Enterprise Cloud is also certified for SAP HANA.

*The availability of the individual offerings may differ by region.

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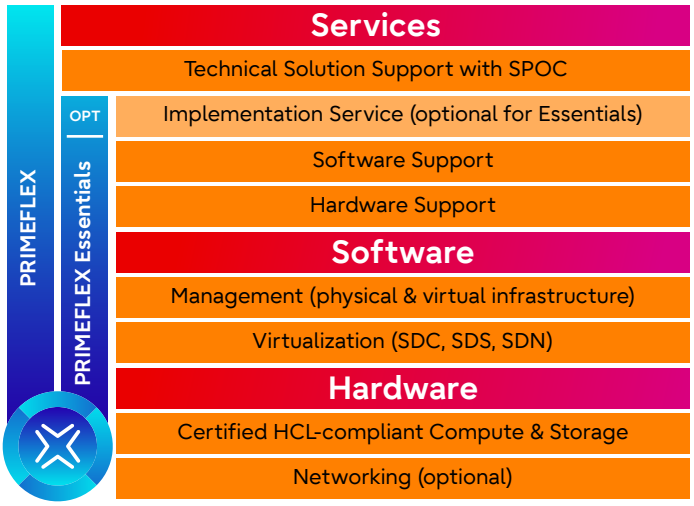
PRIMEFLEX for SAP HANA®
PRIMEFLEX for SAP HANA enables simplified, fast and secure implementation and operation of SAP HANA. The pre-defined and pre-tested integrated system is based on SAP-certified components and supplemented by our broad services portfolio. It covers scale-up and scale-out concepts backed by certified appliances or in line with the SAP HANA Tailored Data Center Integration (TDI) approach supporting the latest technologies, such as persistent memory, right up to customized disaster-tolerant set-ups. Additional services support all project phases from decision making and financing, installation and configuration services, to ongoing operations. PRIMEFLEX for SAP HANA helps you to fully exploit the potential of SAP HANA and to accelerate and innovate your business processes.

PRIMEFLEX for SAP Landscapes
PRIMEFLEX for SAP Landscapes optimizes entire SAP landscapes to enable flexibility and scalability for your future business growth. Powered by Fujitsu FlexFrame® Orchestrator management software, PRIMEFLEX for SAP Landscapes facilitates the management of complex SAP environments, including SAP HANA, minimizing your administration efforts and costs, and allowing you to focus on delivering value to the business. Centralized SAP software components can be dynamically deployed across physical and virtual resources depending on demand and applied for all IT provisioning models – on premise, as a managed or hosting service, or deployed in the cloud. The result is a three-fold faster provisioning of innovations, for an empowered, agile business.

Delivery options

To ensure a smooth deployment and easy maintenance, the default delivery option for PRIMEFLEX systems includes a mandatory on-site implementation service and an infrastructure support service that provides technical solution support with a single point of contact for support. Companies who have sufficient resources in their IT department to deploy and maintain the IT infrastructure on their own, can choose the PRIMEFLEX Essentials option. This option includes the same core elements, the certified hardware and software stack including the respective single component support. While Technical Solution Support is not available for PRIMEFLEX Essentials, customers can still opt for an implementation service.



Data protection solutions

A backup solution within the same system does not protect your data against disaster, system failure, data corruption, or deletion. Therefore, it is mandatory to store business-critical data separately. Fujitsu offers a broad data protection portfolio to protect your business against outages and cyberattacks. This includes such advanced storage management capabilities as deduplication, replication, archiving, and a cross-media mix. We provide a solution for every business, whether small, medium-size, or enterprise-scale.

Modern Data Management and Protection
Fujitsu offers a comprehensive data protection portfolio with a wide range of products (appliances, tape storage, backup software) and various service levels depending on your needs. Quickly protecting and consolidating your business-critical data across edge, core, or cloud. Our portfolio provides comprehensive functionality for multi-cloud platforms, physical, and virtual environments, including backup, archiving, deduplication, disaster recovery, replication, snapshot, and tape support.

Automated Backup and Recovery
Our solutions automate backup, disaster recovery, and testing across multiple platforms (clouds, physical or VMs) with reduced cost, effort, and risk. Advanced automation of repetitive or highly complex tasks streamlines operations and minimizes human error and data loss. Granular recovery gives you the flexibility to restore your environment from full databases, VMs, or a single file. Data protection software from our partners Commvault, Veritas, and Veeam leverages deep integration for all modern hypervisors, such as VMware, Hyper-V, Nutanix Acropolis Hypervisor (AHV) and many cloud storage options across public and private clouds. Making the recovery of mission-critical applications fast and easy to manage.

Rich Data Lifecycle Management
Our policy-based data protection offers you a rich lifecycle management and ensures that all your business-critical data remains protected. You can define storage policies and retention periods to archive or remove outdated data. For example, you can include or exclude VMs for data protection, shut them down, relocate them to secondary storage or automatically archive stale VMs. Different kinds of data must be protected with different SLAs, determining how many copies have to be kept for how long, and whether the strongest protective measures are always necessary. This is why you can also optimize the recovery speed and retention period of the backup data, combining multiple storage media (disk, dedupe disk, flash, tape, or in the cloud) according to your requirements.

Efficient Disaster Recovery
Our data protection portfolio enables flexible local, central, and remote backup and disaster recovery concepts – allowing you to backup to disk, tape or cloud, or copy data to another remote appliance with the integrated replication feature. All these capabilities guarantee uninterrupted operations, minimize planned and unplanned downtime, and ensure business continuity should disaster strike.

Compliance Regulations
For compliance issues your administrator can define customized policies to prevent unauthorized access, defining who can access and share specific files and folders. Analytics and reporting features provide data insights to ensure that your sensitive business data remains safe while fulfilling compliance regulations (including GDPR), and built-in data encryption minimizes the risk of information being stolen or lost.

Service options

PRIMEFLEX is supplemented by flexible services options throughout all lifecycle phases. These cover consulting, design, onsite deployment, integration of the new infrastructure into your existing environment and migration services, lifecycle management, and maintenance. And for those lacking the resources to operate their own data center infrastructure, Fujitsu can provide Managed Data Center as well as Hosting Services.

Fujitsu Financing Solutions
In addition to the above-mentioned services, Fujitsu offers a complete range of financing solutions, such as IT leasing, trade-in, buy back or even cloud-like financing models. With Fujitsu uSCALE, the pay-per-use consumption model is no longer a domain of the cloud. Fujitsu is now helping organizations to achieve pay-per-use agility across their entire IT landscape, including their on-premises data center. Fujitsu uSCALE pay-per-use is an IT platform consumption service that supports business transformation and IT agility with scalable resources that are measurable, cost transparent, and tailored to your needs. It offers cloud-like delivery for your on-premises infrastructure and is deployed at mutually agreed uSCALE service locations, e.g., customer data center or co-location facility. You pay only for what you use, with simple and predictable monthly costs aligned with the scope of the service – such as per Gb of storage or each instance of VM.*

Fujitsu Implementation Services
To enable a fast time to production of a PRIMEFLEX solution, Fujitsu offers a range of standardized ImplementationPacks with a single order code and price tag covering the creation of a low-level design, the installation including all hardware and software components, the option to deploy workloads provided by the customer, and the handover of all documentation upon successful completion of the project. The new PRIMEFLEX Implementation Desk along with the easy-to-use web-based PRIMEFLEX Deployment Portal makes infrastructure deployment faster, more reliable and secure. Experience from many successful project implementations clearly shows that a well-executed and documented implementation is an important pre-requisite for delivering high-quality infrastructure support services and ultimately for improved customer satisfaction.**

Fujitsu Infrastructure Support
By choosing Fujitsu Infrastructure Support, Fujitsu or one of its certified partners will be your single point of contact for all support matters related to PRIMEFLEX. The Fujitsu SolutionPacks and SolutionContracts for integrated systems provide you with end-to-end, 24/7 infrastructure support covering the complete hardware and software stack including third-party components. Both service options relieve you of headaches caused by unpredicted problems during operation, while ensuring operational efficiency. A unique solution identifier for all PRIMEFLEX systems allows our support teams to make solution-level decisions when working with these often-complex systems. For example, this enables us to route support calls to specialized, solution-aware support engineers, resulting in smoother support interactions with shorter resolution times. Beside reactive services based on optimized processes, Fujitsu also offers optional proactive services. These comprise a regular system health check to detect critical system conditions at an early stage such that preventive maintenance measures can be initiated. Just as there are various service level options available, which differ in service scope, response and recovery time, you can also define the frequency of proactive services.**

* Availability depends on configuration size and local terms and conditions. Please contact your local sales representative.
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Summary

With PRIMEFLEX Integrated Systems from Fujitsu, you can make the transformation to a hybrid data architecture with confidence. By choosing Fujitsu, you will benefit from our globally available experience in deploying large-scale data center infrastructures and the longest track record in delivering integrated systems – our first shipment was back in 2002.

We help you:

- Understand which modern solutions and techniques are available, and how they allow you to think and/or act differently
- Gain insights into the latest developments regarding best practices, technology options, and service delivery
- Devise an effective data architecture and then select the right mix of infrastructure and cloud services to implement it.

Fujitsu is one of the few companies in the world who has everything already in place to support you on your journey to a data-driven enterprise – end-to-end. The hardware, software, services and strong partnerships with major technology and cloud service providers. This puts us in a unique position to provide you with unbiased advice to co-create an ideal solution that perfectly suits your organization's needs.

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Published by
Fujitsu Technology Solutions GmbH
Mies-van-der-Rohe-Strasse 8
D-80807 Munich

www.fujitsu.com
2022-02-21 WW EN