

IDC Partner Spotlight

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Fujitsu and Red Hat's Integrated Solution to Enable Hybrid Cloud and Digital Transformation

IDC Opinion

Digital Transformation (DX) is crucial for survival in an age when customer experiences can make or break brands.

Enterprises are executing on digital business initiatives to enhance customer insights, improve business processes or launch new services – all with an aim to improve customer satisfaction.

DX strategy must be supported with a mature, agnostic, software-defined yet hardware-assisted and agile infrastructure. Such a future-ready architecture will not just make DX initiatives cost-effective and reliable, but also help enterprises limit the risks of proprietary lock-in and give them the flexibility to move data and applications as their business or governance needs demand. In our opinion, integrated systems, particularly with an open source ethos, can help enterprises to build a hybrid cloud and eliminate many complexities through a single support contract and a validated, unified infrastructure. Already, Linux and an accompanying stack of open source infrastructure software is emerging as the future of compute infrastructure, particularly for public cloud (growing at 13.9% CAGR to 2020). Most of the hyperscale datacenters or the largest public cloud infrastructure are built on a foundation of Linux. At the same time, paid Linux is steadily gaining a foothold in commercial accounts.

Linux is becoming the de facto standard for a substantial portion — potentially the majority — of cloud native applications that will be built in the next decade. We believe that integrated, software-defined cloud solutions with mature open source integration will further grow in popularity as a foundation for DX. Solutions for cloud orchestration layers, application frameworks, container management, and automation and workload management are part of a software-defined infrastructure movement.

Technology providers, offering such integrated systems through a rich ecosystem of partnerships and a single point of contact, can become more appealing to enterprises navigating through the IT transformation challenges as they build a future-ready hybrid cloud for digital transformation.

In This Partner Spotlight

This Partner Spotlight discusses the PRIMEFLEX Integrated System offering from Fujitsu and Red Hat, as well as the digital transformation platform demo initiative attached to the Integrated System.

This paper will also describe the digital transformation trends and challenges, and how an integrated system based on robust open technologies from Fujitsu and Red Hat can help enable this transition. A second section will take a close look at Fujitsu Integrated System PRIMEFLEX and the key differentiators of the offering. In the third section, we will present an overview of the Digital Transformation Demo initiative, including why several business lines are needed to participate, what knowledge customers can expect to gain from the demo workshop, and use case scenarios of previous participants. The final two sections will review the paper's conclusions and present guidance for organizations looking to utilize integrated and open source solutions to transition some or their entire infrastructure to the cloud.

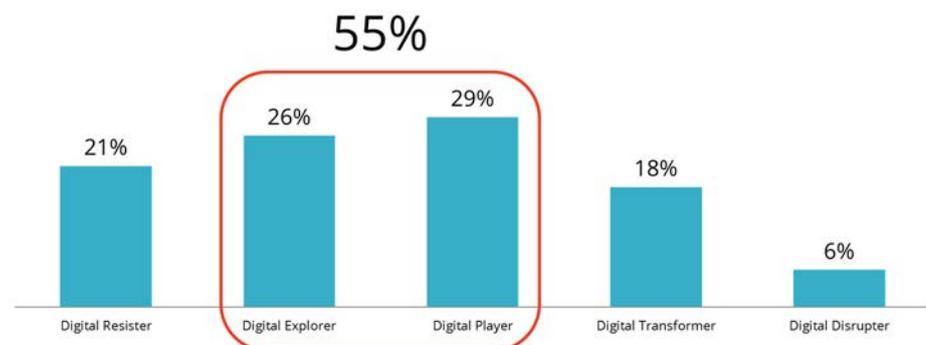
Breaking Through the Digital Transformation Deadlock

Digital transformation is no longer an option, it is a business imperative. While it can be different things to different organizations, IDC defines it as the continuous process by which enterprises adapt to or drive disruptive changes in their customers and markets by leveraging digital competencies to create new business models, products, and services.

DX is multifaceted, and organizations need to progress in many dimensions (technology, business processes, culture, information management, and operational models) to truly transform. Although the majority of organizations have a DX strategy, our research shows that many are not able to progress to the next stage.

Figure 1

IDC's Digital Transformation Maturity Assessment Model: Digital Deadlock in Europe



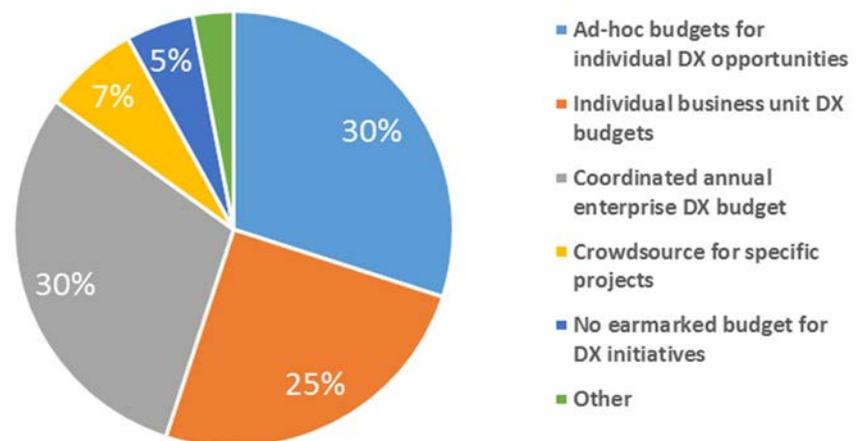
Source: IDC European Digital Transformation Maturity Model Benchmark, 2017; n=403, May 2017

Figure 1 shows IDC's digital transformation maturity assessment model of five stages, which places organizations on a stage depending on their progress across multiple dimensions (technology adoption, operational models, culture and leadership, talent sourcing, and data management). While the number of organizations at stages four (Digital Transformer) and five (Digital Disrupter) has increased marginally compared to 2015, a majority of enterprises we surveyed (55%) are stuck in the second and third stages.

This deadlock is caused by several common themes uncovered in IDC's DX Leader Sentiment Survey 2017. As the highest barrier, 23.9% of DX leaders cited a lack of sufficient internal digital expertise.

The second most common barrier was insufficient understanding of what a DX initiative would mean for their organization and how to start formulating a strategy. Findings from IDC reinforce this, where only 30% of European organizations have a coordinated annual budget devoted to DX initiatives. The majority are comprised of ad-hoc or siloed DX investments, which can be counterproductive when each line of business has different DX approaches and objectives.

Figure 2
Organization's Primary Approach to Funding DX Initiatives



Source: IDC, 2018

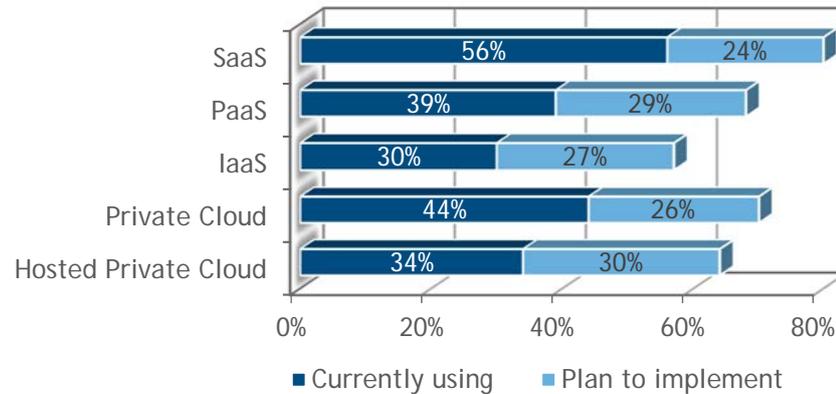
Enhancing customer experience is one of the major drivers for DX. At a time when Big Data analysis and cognitive/AI functionalities are becoming integral to discovering customer insights, having efficient and high-performing cloud infrastructure is no longer just a "nice to have."

A large part of the DX equation are discussions around cloud strategy. As we have stated at the onset of this paper, cloud is fundamental to DX. But it is becoming evident that a single vanilla cloud approach isn't an answer to all IT questions. Organizations are looking for ways to deploy net new workloads on flexible and scalable cloud infrastructures as well as modernizing existing on-premise infrastructures to optimize their existing, predictable applications.

As cloud technology, marketplace, regulations (General Data Protection Regulations [GDPR]) and adoption patterns mature, the cloud landscape is fast moving beyond the big four (AWS, Microsoft Azure, Google Cloud, and IBM) to include many local cloud providers. Effectively, IDC predicts that in 2018, 80% of enterprise IT organizations will commit to bringing together the best capabilities from multiple platforms — traditional IT, private cloud, and public cloud solutions.

As indicated in Figure 3, based on IDC's 2017 End-User Survey on cloud adoption, most enterprises' IT environments have already evolved into a hybrid cloud setup.

Figure 3
Hybrid Cloud is a Reality, Multicloud is On the Horizon



Source: IDC, 2017

These ad hoc hybrid or multicloud initiatives that have existed more by accident — thanks to islands of innovation in companies — than by design, can drastically increase infrastructure complexity. The heterogeneity is stressing IT because of fragmented data management, challenges around interoperability and end-to-end security, and a lack of full visibility.

Technologies Empowering Digital Transformation

IDC observes that the influence of open source has grown tremendously in the last three to four years, to an extent where some of the innovation is widely led by open source communities — containers (Docker), automation/hybrid IT management tools (Chef, Puppet, Ansible, Rudder, CFEngine, Salt), analytics platforms (Hadoop). The newer methodologies, such as DevOps, Open APIs, and microservices architectures, are facilitated by these automation and management tools and infrastructure components (containers).

We estimate that by 2020, digital transformation teams will source 80%+ of their solution components from open source communities.

Open source is becoming the hotbed of innovation because of its importance in modern application development and the flexibility it gives developers who are essentially the architects of digital businesses.

One key open source technology is the infrastructure platform, OpenStack, which allows users to manage core services including storage, compute, and networking through the cloud. Thanks to the community efforts to continuously and quickly harden and mature it, OpenStack is becoming a viable alternative for both public and private cloud infrastructure ambitions. OpenStack brings numerous benefits such as vendor agnosticism, interoperability, cost-efficiency, and freedom from vendor lock-in. But it also has challenges such as the complexity in deploying and managing it and keeping it enterprise-ready without compromises on security and performance features. Vendors, which are committed to giving customers choice and freedom, are working together to make OpenStack enterprise-grade, secure,

and robust, and to offer support services through their ecosystems. In our opinion, this is where OpenStack-based solutions, tested and validated for enterprise readiness and a continuous support plan, can help enterprises to overcome the obstacles of open source cloud and yield its benefits.

Fujitsu and Red Hat Enabling Multicloud and Digital Transformation

The partnership between Fujitsu, Red Hat, and Intel aims to provide organizations with an enterprise-grade hardware design and open source support to facilitate private and hybrid cloud solutions.

FUJITSU Integrated System PRIMEFLEX

Fujitsu, with its history and heritage, has significant experience in providing integrated infrastructure solutions to businesses, with the first Fujitsu Integrated System shipping in 2002. PRIMEFLEX includes compute, storage, and networking resources, as well as software. The hardware is built from tested and validated components from Fujitsu or approved third-party vendors, and the hardware stack allows OpenStack integration to make it a one-stop support package.

In conversations with IDC, enterprises cite the complexities around OpenStack implementation and management as a major hurdle for adoption. As enterprises are torn between the cloud independence and agnosticism that open infrastructures bring and the complexity in deploying and managing them, solutions that can help overcome these pain points and mitigate risks can become valuable.

Fujitsu's PRIMEFLEX for OpenStack offering is an integrated system including a range of validated reference architectures that provide customers with a practical opportunity to adopt OpenStack. PRIMEFLEX for OpenStack includes Fujitsu hardware stack, enterprise-grade OpenStack platforms from Red Hat, and many value-add extensions on top of the core OpenStack platform, depending on the needs of the customer. This can be container application platform OpenShift, or automated installation and orchestration scripts through Ansible to facilitate DevOps initiatives, or use of the CloudForms management platform for multicloud infrastructure management.

The integrated and validated stack brings customers a single point of contact approach for support, and as their infrastructure stack grows to include more components such as container platforms or cloud management tools, it can be extended to keep support and IT management less complex.

PRIMEFLEX systems are delivered either ready-to-run, or as customizable reference architectures supporting various software stacks. As workloads and infrastructure complexity can vary greatly depending on the organization, it is essential that potential solutions be flexible to accommodate situations of different size and performance needs. Infrastructure bottlenecks frequently arise around environment complexity, in particular dealing with the orchestration layer components.

This is where reference architectures like PRIMEFLEX demonstrate their value — by pre-defining the terms of architecture needed to ensure adequate storage, processing, and networking performance. These lists of reference architectures are

"In the discussions with Red Hat we felt the need to drive customer internal discussion that is both business-oriented and technology inspired. This was the motivation for the development of the DX platform, which enables the Red Hat and Fujitsu partnership to utilize our co-creation toolset to drive customers' digitalization strategy."

Glenn Fitzgerald, Fujitsu Fellow and CTO Product Business, Fujitsu EMEA

backed up by intensive vendor validating for different workload outcomes, thereby guaranteeing performance. When this is combined with high-quality hardware components, it provides organizations with a level of assurance that their infrastructure will always be up to task.

Red Hat's Partnership With Fujitsu

OpenStack serves as the most common infrastructure orchestration layer for container infrastructure, as well as virtualized and bare metal environments. The platform is evolving to become a standard for hybrid and multicloud infrastructure due to its flexibility and cost-effectiveness as an open standard.

Fujitsu began its relationship with Red Hat running Enterprise Linux on its PRIMERGY and PRIMEQUEST platforms, and in 2014 Fujitsu joined the OpenStack Foundation as a corporate sponsor. Since migrating all internal systems to OpenStack in 2015, the partnership has continued to progress, and in 2015 the PRIMEFLEX for Red Hat OpenStack system was announced. The partnership is based on a mutual desire to help customers realize their cloud objectives in a rapid and cost-effective measure, enabling IT Ops to become more agile through OpenStack operation efficiency.

Red Hat offers OpenStack solutions as a complete, enterprise-grade stack to customers adopting the PRIMEFLEX architecture. OpenStack supplements the integrated solution through monitoring, cost management, software-defined networking, and application management/delivery capabilities.

In our opinion, the integrated solution helps overcome the significant challenge and obstacle for OpenStack adoption — the lack of skills. OpenStack infrastructure can require significant internal skills to deploy, manage, and upgrade.

Business Benefits of Deploying PRIMEFLEX for OpenStack

Fujitsu's longstanding relationship with Red Hat is an asset that sets it apart from other integrated solutions. The ability for customers to access a single point of contact and post-sales support can prove invaluable, once the complexities of OpenStack management are taken into consideration. The fact that PRIMEFLEX includes both integrated hardware components and software makes it a compelling solution for enabling cloud infrastructure.

Key benefits for organizations deploying a PRIMEFLEX integrated system with OpenStack can include:

- **Validated reference architectures.** Providing confidence in a proven architecture foundation for OpenStack that is pre-tested and pre-configured to either PoCs or completely tailored options.
- **Faster deployment times.** On-site deployment services remove complexity and speed time to live workload production.
- **Increased efficiency.** Through a preconfigured reference architecture, components are optimally harmonized, including power, cooling, and cabling.

- **Reduced TCO.** Architectures are designed based on an organization's infrastructure needs, lessening the risk of over- or under-utilization of processing and storage power. In the medium- to long-term this can free IT budget for other strategic endeavors.
- **OpenStack Integration.** To provide services such as monitoring, application delivery and migration, as well as cost management capabilities to efficiently measure resource consumption.
- **Significant time savings.** Removing the need to design optimal architectures will free time for other business initiatives, and optimal architectures can enable greater responsiveness to workload requirements.
- **Reliable support mechanisms.** Support for PRIMEFLEX systems is provided at onsite locations at a global level.

Digital Transformation Workshop to Jumpstart Cloud and DX

At the heart of Fujitsu's Red Hat-based Integrated System PRIMEFLEX is a Digital Transformation Demo initiative, which can help customers understand the groundwork of cloud concepts, how cloud can be efficiently used in their organization, and what the solution brings to help them in this infrastructure transformation. This approach is especially valuable for customers that are overwhelmed by cloud trends, solutions, and strategies. The initiative can also help enterprises break away from the inertia of maintaining a status quo with their legacy IT out of the fear of making a "wrong cloud investment." One key aspect of the workshop is that it necessitates — as a prerequisite — the involvement of IT operations, IT developers, IT management, and lines of business. This is to ensure the development of a holistic, sustainable cloud strategy as opposed to siloed approaches that can often arise when different actors have varying goals and ideas for cloud in their organization.

IDC believes that organizations that define their business objective and then adopt cloud as a means to achieve that objective are more impactful with their cloud use than those who rush to the cloud first and then determine the need. A lab-like environment that allows IT teams to explore what PRIMEFLEX use cases are and how they address their business needs, can help customers build confidence in the solution and create a long-term technology partnership between the vendor and customers.

The workshop is targeted at organizations considering a move to hybrid or multicloud solutions but are unsure about the best infrastructure approach to take and whether cloud solutions are really the right fit for their needs. Focus is provided from the perspectives of a cloud consumer, cloud admin, developer, and approver to enable a holistic view of the potential private hybrid cloud structure. It is key that all these stakeholders are represented in the workshop to ensure that the outcome is properly reflected in the cloud strategy guidance and DX activities overall. Guidance around management platforms, such as Red Hat OpenShift, Red Hat CloudForms, and Ansible, is given to demonstrate the relative ease of use due to the automation of many functions.

"In our conversations with customers we found that whilst all of them recognize the need to digitally transform their companies, most of them struggle to decide which technologies can help them best to achieve their business goals. Fujitsu and Red Hat have teamed up to support clients on their digital transformation journey and created the DX platform demo and workshop to showcase how business needs can be addressed by an open and agile platform."

*Dirk Kissinger, Director
Global Alliances EMEA, Red
Hat*

Fujitsu's Digital Transformation Workshop Structure

Due to the variability of cloud needs for each organization, this half-day workshop is structured based on participants' existing infrastructure, workload needs, and cloud transition goals. After an initial briefing with the organization, Fujitsu and Red Hat experts are present throughout the workshop to provide insight into how cloud infrastructure works, and how it could apply to their needs through a PRIMEFLEX integrated system based on OpenStack. The workshop is aimed at all levels of cloud familiarity. One of the goals is to bring different internal stakeholders together in one room to discover what everyone's needs are, and to initiate discussions around where any misunderstandings lie — a business lead may have different understandings of the value of open source developer tools than the IT team.

To address this, Fujitsu maintains a dedicated development team ready to give customers guidance in transforming their cloud infrastructure. These teams of experts provide guidance on the implications of cloud adoption from an enterprise architecture perspective, with an overview of potential designs of platforms based on existing infrastructure setup.

From a technical perspective, the workshop includes standard operating environments for demonstrations to provide insight into a "day in the life" of hybrid cloud for different agents. At a console level, Fujitsu experts acting as administrators and agents at the line of business can provide demonstrations to each participant from a hands-on perspective.

Involvement after the workshop can include the development of PoCs with the participants, based on the discussions and demonstrations held over the half-day. In cases where the customer realizes the need to better define their service catalogue, Fujitsu can help with strategic IT consultants to discuss a cloud-based redesign of the enterprise catalogue.

DX Workshop Use Cases

A core component of the DX Workshop is running through use cases covering both the business and technology sides. The use cases are drawn from a selection of scenarios ranging by vertical, to offer more applicable solutions to each participating organization.

Use cases can run the full gamut from service orders to runtime in order to provide a holistic view of the management ease through PRIMEFLEX Integrated Systems. Demonstrations run through environment creation by cloud admins, to provisioning and reporting through the cloud, and to the creation of a production version of PaaS. Cases can be narrowed down to individual standard operating demo environments, so the various stakeholders can see the actions necessary (or not necessary due to automation) at their desk.

As part of a collection of real-world use cases, one scenario is for governmental organizations looking to introduce cloud technology to improve agility and smart functionality. Guidance around how to utilize containers is also provided, paying respect to management of the underlying infrastructure, given different security requirements around container data separation.

IDC believes that this approach of bringing together different personas and stakeholders from IT and business units can be truly insightful as it instantly breaks the silos and brings different perspectives and expectations. This can help in level-setting expectations and avoiding frustrations from different stakeholders as cloud or DX projects get underway.

Challenges and Recommendations

IDC believes that the joint Fujitsu and Red Hat offering represents a strong value proposition to customers interested in making their hybrid cloud more managed, controlled, and orchestrated; i.e., have a hybrid cloud by design and not by default. At a time when many European organizations are considering having a programmed cloud strategy, solutions developed by technology providers by combining and synergizing their technical strengths with a vision to give customers the benefit of open source architectures without compromising on enterprise-grade features or security or resilience can have a significant competitive advantage. Partnerships such as Fujitsu and Red Hat are well positioned to take advantage of this trend.

If PRIMEFLEX and the Digital Transformation Workshop are to achieve long-term success, the joint team will need to tackle several challenges:

- **Expanding visibility of the workshop.** Integrated solutions are becoming more common offers from large vendors. By focusing on the differentiation of the PRIMEFLEX Integrated System — primarily being the longstanding partnership with Red Hat — Fujitsu can better separate its program from alternatives.
- **Generating enterprise use cases to attract workshop participants.** The high-grade hardware and flexible software component is already there — what needs to be emphasized is a collection of strong enterprise use cases that would demonstrate the ease, quick implementation time, and medium-term benefits of adopting a PRIMEFLEX system based on OpenStack.
- **Open source complexity concerns.** Open source retains an aura of advanced expertise in much of the enterprise market. Focusing on the simplicity and cost-effectiveness of OpenStack with PRIMEFLEX by emphasizing both OpenStack's automation features and the customized guidance offered in the DX Workshop is critical.

Fujitsu and Red Hat will work together to provide the best solutions for customers and collaborate with Red Hat & community developers to influence core technology development based on customer feedback. Red Hat must also acknowledge that long-established solution providers such as Fujitsu have the installed base and expertise to make significant contribution to product enhancements and take their recommendations on board.

Lastly, Fujitsu must also keep a close watch on the PaaS market and hybrid cloud market dynamics and keep evolving its solutions and services. It should also note that many solutions providers in Europe are reinventing themselves and developing

similar hybrid cloud and open platform strategies or hybrid cloud offerings to stay relevant. The competition in the area is likely to intensify. As this happens, Fujitsu can leverage its mature services, strong engineering capabilities and its workshop business model to differentiate from the rest.

As organizations continue to evaluate their existing infrastructure and potential cloud transitions, they need to consider technology solutions that are future-ready. In our opinion, the cloud and application development platforms that enterprises choose today will determine their success tomorrow. When investing, companies need to evaluate whether the solution provides them with the freedom and flexibility they will need now and in the future as business dynamics change. They need to ensure the solution does not compromise on enterprise-readiness, and to assess whether the solution can meet their DX needs. Lastly, they need to assess whether the solution provider has a long-term vision and shares customers' ideologies around interoperability, support, and openness.

IDC believes that Fujitsu's integrated solution based on Red Hat and Intel architectures checks many boxes of next-gen IT infrastructure. The freedom and flexibility provided by open source can enable internal IT teams to better adopt DX initiatives in a more cost- and time-effective manner.

For organizations looking to implement hybrid or multicloud, container, or other open source solutions, IDC has the following recommendations:

- Develop and foster a culture of innovation on both the business and IT sides by pursuing the introduction of digitally disruptive technologies.
- Facilitate internal clarification on what DX means for different stakeholder groups. If there are significant differences, seeking external expertise in cementing an enterprisewide DX strategy may be advisable.
- Conduct mapping of existing on-premise and cloud infrastructure to determine where applications and workloads lie, and where bottlenecks might exist among hardware or software infrastructure components.
- Assess in-house skills and talent and work with the technology provider to ensure all loopholes are closed to maximize the IT transformation.
- Invest in technologies that are committed to long-term strategies such as open standards, simplicity in support and management, enterprise-readiness and flexibility.
- Take time to conduct a thorough PoC and work with technology providers to have a near-real IT environment to see the full picture before implementing the solution.

Conclusions

Cloud, hybrid cloud, and multicloud are here to stay. They add complexity to IT infrastructures from orchestration, automation, integration, and management perspectives. All organizations have a different view when it comes to the right cloud solution, and many will not be sure how best to structure a cloud transition.

In addition, this can vary within organizations — IT operations may have different needs and objectives than lines of business.

Through rigorously tested reference architectures and the hands-on workshop process, Fujitsu and Red Hat are well positioned to help customers along this journey, whether from an entry-level cloud standpoint or an analysis and revamp of existing cloud infrastructure.

IDC expects that an increasing number of enterprises will turn to service providers to advise on the planning, implementation, and transition phases of Hybrid Cloud adoption. With this transition will come a desire for greater understanding of DX-enhancing technologies such as containers and open source. Providers that can offer both infrastructure and advisory solutions will find greater appeal among customers.

Fujitsu's strategy of having a staged approach and truly demonstrating to potential customers that cloud can mean multiple things through the workshop, can save enterprises significant time and resources in making the right technology investments. At a time when customers are flooded with a myriad of hybrid cloud solutions, a validation of what different products from the portfolio can bring to the company can be immensely valuable.

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