PARTNER SPOTLIGHT

DevOps and Modern Application Development in the Cloud: Red Hat, T-Systems, and Microsoft Offer Managed Hybrid PaaS via Data Trustee Model in Europe

Sponsored by: Red Hat

Archana Venkatraman   Carla Arend
March 2016

IDC OPINION

Digital transformation is no longer an option; it has become a business imperative and a C-level priority.

The secret sauce in digital transformation is software and application innovation to develop and launch new applications, products and services for customers. Companies that are serious about achieving software development competencies have thriving test and development environments and an appetite to invest in 3rd platform technologies, critically cloud computing.

All digital transformation (DX) initiatives require a cloud adoption strategy, which is fundamental to success. Thriving companies are using cloud as the vehicle to deliver on their DX agenda with scale, speed, and quality. And within the cloud mega-trend, the emphasis is shifting from pure infrastructure to platform as a service (PaaS), where new applications are built. IDC estimates that the Western European PaaS market will grow at a CAGR of 33.1% by 2020 as more companies adopt PaaS to rewrite applications for a cloud deployment. IDC sees this as a viable strategy that can drive speed, consistency, and quality as well as unlock new innovative capabilities.

As the pace of innovation accelerates within businesses, they are demanding that cloud platforms should include even more capabilities – the use of containers, better interoperability, integration, and heterogeneity, for example. Containers are the key building blocks of PaaS, essentially opening the door for the opportunity to run multitenant PaaS in a public cloud.

IDC sees modern PaaS offerings as enablers for deploying applications into public or private cloud infrastructures and for bringing agility and cost advantages. This, in turn, paves the way for newer processes such as DevOps, continuous integration, and continuous delivery as well as applications built with a microservices architecture.

While many vendors are providing certain compelling capabilities to help customers on their DevOps or modern application development journey, it is rarely a complete story. This is where a collaboration or partnerships between vendors will be valuable to customers, providing public cloud scalability but *with* regulatory compliance and offering feature-rich, open-source-friendly PaaS for application development. IDC sees the collaboration between Red Hat, T–Systems (App Agile) and Microsoft Azure offering customers a managed, hybrid PaaS via a local public cloud as a unique offering. This collaboration brings together Azure's scalability, Red Hat OpenShift's container-based PaaS capabilities, and AppAgile's (T-Systems' managed PaaS service) managed services and DevOps components in a "trusted local cloud," giving customers the fertile foundation to innovate.

## DIGITAL TRANSFORMATION AND EUROPEAN MARKET DYNAMICS

3rd Platform technologies such as public cloud infrastructure and container-based PaaS can offer the right avenues for modern application development and facilitate DevOps processes.

IDC's survey shows that European organizations have a strong appetite for PaaS to build their next-generation applications and execute on their digital innovation projects.

As seen in Figure 1, Public PaaS is rapidly becoming a key element in the public cloud strategies of organizations across Western Europe. Only 1 in 10 respondents is not currently interested in public PaaS. Around half of end users in Western Europe are already using public PaaS to some extent, with the ratio even higher in enterprises with more than 1,000 employees.

FIGURE 1

PaaS Adoption in Western Europe
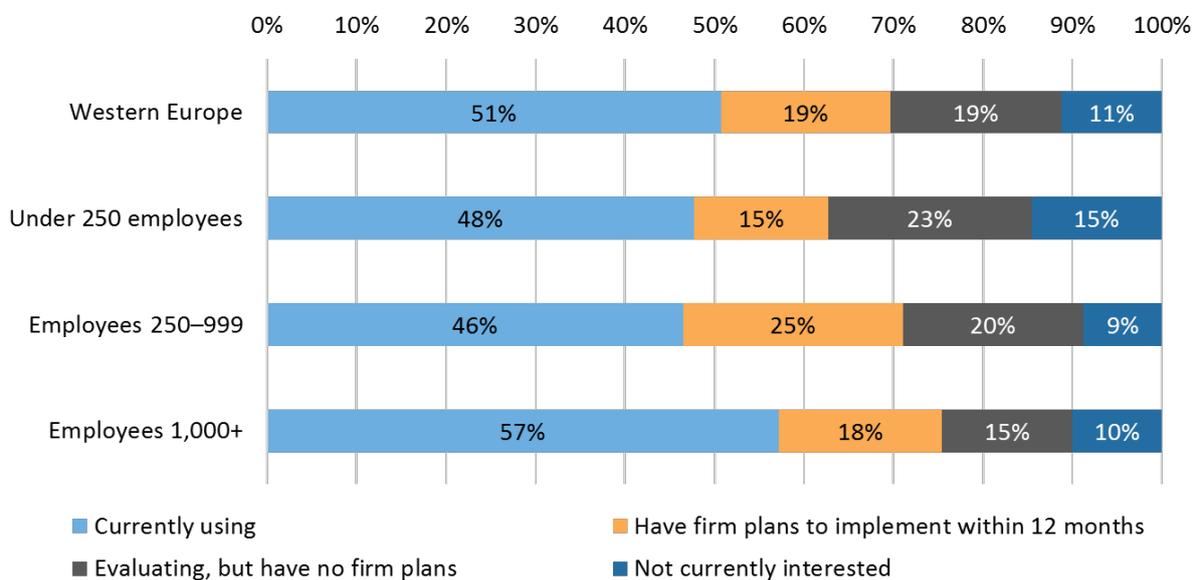
Source: IDC, IDC European CloudView Survey, 2016 (n = 1,324)

Although organizations in the larger midmarket segment lag slightly behind in public PaaS adoption relative to the market average (see Figure 2), IDC expects this segment to catch up in the next 12 months, with firm investments planned.

But there are geo-political implications and skills hurdles that European companies have to tackle before fully embracing public cloud services to host PaaS. These include:

- Tighter data privacy, compliance and data sovereignty requirements that inhibit European companies from fully embracing public cloud services
- A lack of skills and engineering capabilities around emerging technologies such as containers, forcing organizations to fix the skills gap before adopting modern PaaS.

It is in this context that IDC views the partnership between Red Hat OpenShift, T-Systems' AppAgile platform, and Microsoft Azure as unique and transformative. The combination of technologies and business models in this collaboration can help European organizations yield all the benefits of a public cloud and modern PaaS solutions without compromising on regulatory

compliance or data protection. European organizations can use the Azure cloud based out of Germany (local public cloud managed by T-Systems), Red Hat OpenShift PaaS (open source platform featuring containers), and AppAgile Managed Services (bridging skills gaps, end-to-end support, and DevOps services).

How the Red Hat/T-Systems/Microsoft Partnership Meets European Companies' Needs and How it Works

From a technology perspective, the partnership brings a three-part architecture:

- Red Hat OpenShift Platform (DevOps value)
- T-Systems' Managed Services (Delivering OpenShift as a managed service)
- Hosted on Microsoft Azure cloud in Germany (local public cloud to overcome data sovereignty limitations of public cloud)

Let's discuss this in detail:

What Red Hat OpenShift Brings to the Table

OpenShift is a container application platform that leverages a full stack of supported Red Hat technologies for its container-enabled PaaS offerings. It is built and runs on Red Hat Enterprise Linux. OpenShift is an open source code PaaS base, licensed under the Apache License v2, and uses GitHub as its code repository. In the past five years, OpenShift has had multiple major architecture changes and the latest version has been reengineered to use Docker-compliant containers natively.

IDC sees OpenShift as the cornerstone of Red Hat's comprehensive set of container-optimized solutions such as Red Hat JBoss Middleware and application services, Red Hat Mobile, Red Hat Gluster container storage, and Red Hat CloudForms.

Red Hat's primary goal with OpenShift is to accelerate application delivery to support the business and provide the technology foundation needed in a DevOps transformation for IT. It incorporates Docker container support along with the Kubernetes orchestration engine.

At a time when containers were still very nascent (late 2013), Red Hat evaluated many container orchestration engines, including building its own container orchestration service. It then decided to standardize on Kubernetes. IDC views this as a very strategic move because apart from features in Kubernetes such as enhanced networking and simplified orchestration of storage resources, it is essentially an architecture built with an understanding that the needs of developers and operators were different and took both of those requirements into consideration. By embracing Kubernetes, OpenShift can offer a flexible platform that doesn't mandate upgrade cycles and doesn't impose restrictions on container configuration.

OpenShift Container Platform is Red Hat's enterprise distribution of Kubernetes optimized for continuous application development and multitenant deployment. OpenShift adds developer and operational-centric tools to enable rapid application development, easy deployment and scaling, and long-term lifecycle maintenance for teams and applications.

Red Hat is also a leading contributor to the Kubernetes project and Cloud Native Computing Foundation. It continues to work with Google, Docker, and other members of the open source community to bring the scale of Google, the ecosystem of Docker, and the reliability of Red Hat to the PaaS platform.

IDC expects that containers will primarily be used for cloud-native applications developed with agile methodologies, tied to initiatives such as microservices, immutable infrastructure, and continuous integration/deployment (DevOps).

We believe that Kubernetes has the potential to be the de facto industry standard for container orchestration because of its accelerated innovation and enterprise focus (Kubernetes has matured to a degree where it enables new workloads and addresses enterprise requirements around security and manageability). So, PaaS offerings built on Kubernetes such as Red Hat OpenShift are likely to gain more traction in Europe because users want to leverage mature containers and container management tools.

Although, from a technology point of view, a competent platform is available, there is a lack of skills and experience to take full advantage of container platforms and new application delivery models, and this is holding many companies back. IDC's 2016 Datacenter Manager Survey revealed that lack of skills was cited as the second highest challenge for using containers (33% of respondents).

This is where T-Systems' AppAgile comes into play in the partnership.

AppAgile Managed Services — Delivering OpenShift as Managed Services on Hybrid Cloud

T-Systems' PaaS offering based on Red Hat OpenShift and RHEL helps customers be more agile in application development. Its goal is to provide PaaS for DevOps and bring an agile approach to companies where they are currently unagile development programs.

The AppAgile managed services focus on three main levels:

- **Application Stack**: Companies can use the service to transform from an old way of programming applications (Monolithic) to a microservices-based architecture. IDC notes that many modern startups build their key applications using microservices so that each component can be updated quickly and easily. The service uses OpenShift's native Docker containers and Kubernetes container management features to facilitate DevOps and make companies agile and responsive.
- **Data Services and Data Management**: When enterprises create applications, it is likely that the new application will produce a lot of data. The AppAgile managed platform offers functionalities to analyze the data and manage that data so customer gets more value for that without adding third-party analytics tools themselves and complicating the PaaS architecture.
- **Hybrid Cloud Service Stack**: IDC sees this as one of the most valuable services that AppAgile brings to customers. It offers them a locally-based Azure cloud infrastructure (managed and operated by T-Systems). This unique offering brings the security and data sovereignty of a private cloud and the availability, scale, and additional functionality of public cloud.

Cloud is fundamental for modern application development as modern applications are dynamic, touching thousands of users simultaneously and requiring rapid response times. Although public cloud services have been available commonly, what Microsoft brings through this unique partnership overcomes a key challenge around public cloud adoption — data regulatory compliance.

Germany-based Microsoft Azure Cloud Operated and Managed by T Systems Engineers

Through the collaboration with established regional providers, Microsoft Azure has developed a "Sovereign cloud model" to help customers overcome the regulatory hurdle to using public cloud.

In this instance, Microsoft Azure is partnering with T Systems in Germany for sovereign cloud and has set up two datacenters - one facility in Frankfurt and one in eastern Germany (Magdeburg) that can be used by European customers and their IT service partners. The key is that these two datacenters are not connected to other Azure DCs to ensure that the customer data pushing through the cloud stays in Germany and is compliant with the data regulations.

The datacenter infrastructure is built on Microsoft standard architecture for Azure and Microsoft's Azure architectural IP is employed in the building of the facility. This ensures that the hyperscale and agility expected from Azure public cloud is available for customers through German Azure facilities. Some of the key attributes of the German Azure Cloud are:

- It has physically and logically separate instances of Microsoft Azure, Office 365, and Dynamics 365.
- It has a dedicated network between German datacenters, independent from the public cloud network.
- The German "Data Trustee" (T-Systems) controls and supervises physical and logical access to customer data under German law.
- Data Trustee employees and administrators adhere to Microsoft's standards around infrastructure provisioning and management to provide Azure experience locally.
- All customer data and required supporting systems reside in German datacenters
- The cloud infrastructure is open to all customers and partners in EU/EFTA.

In IDC's opinion, through the unique local Azure cloud, Microsoft meets European data privacy and compliance requirements and especially meets German Sovereignty Requirements that are even stricter that European regulations.

What further differentiates the collaboration is the Data Trustee Model.

DATA TRUSTEE MODEL — THE KEY DIFFERENTIATOR

In the partnership between Red Hat, T Systems, and Microsoft, T-Systems acts as the Data Trustee for Azure cloud and provides managed hybrid OpenShift PaaS.

German Provider T-Systems as the Data Trustee
- Controls all physical and logical access (except for access by customers or their end users) to customer data: Microsoft Azure engineers and employees have:
    - No standing access to customer data
    - No technical ability to obtain customer data without the German Data Trustee's or customer's approval in accordance with specific access control policies
    - No physical access (without German Data Trustee's escort) to datacenters that store customer data
    - Any Microsoft personnel granted access by German Data Trustee must meet global security controls
- Performs or monitors tasks that require access to the servers that hold customer data
- Grants Microsoft access to customer data for limited purposes, on a per-incident basis
- Monitors and audits any access given for an incident; terminates the access when the issue is resolved

## What Do the Three Providers Together Bring to European Customers

T-Systems' AppAgile uses a cloud self-service portal and an internal solution called T-Systems Azure Marketplace, which allows customers to automate the entire process and bring a solution up and running in automatically. IDC views such automation as fundamental for modern application development and for faster response time.

Full Operational Process Chain With One Contract

T-Systems combines AppAgile's managed PaaS capabilities with Microsoft Azure across all layers. This is particularly valuable for enterprises to access all the services within the vast Microsoft ecosystem or AppAgile managed services through a single portal and have it all covered under a single SLA and a single contract (for services from Microsoft, Red Hat, or T-Systems). In our opinion, this simplicity of SLA will be useful for customers who wish to combine several services from a huge ecosystem into a single report and billing instance. It also helps them have a fully managed hybrid PaaS environment as a one-stop-shop for developers working on new application delivery.

FIGURE 2

AppAgile Azure Hybrid PaaS
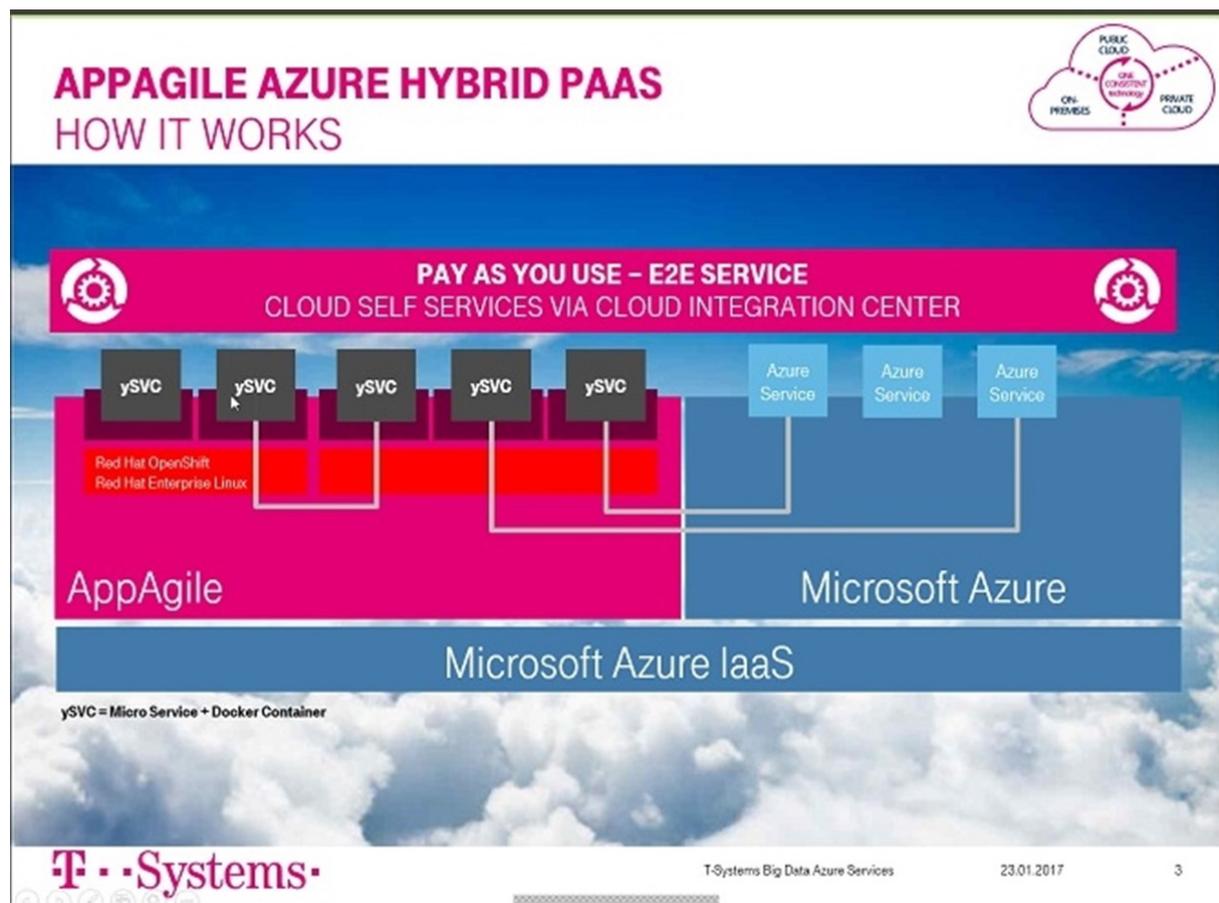
Source: T-Systems, 2017

APPAGILE AND RED HAT OPENSHIFT PARTNERSHIP

In conversations with IDC, the AppAgile team cited the flexibility of Red Hat OpenShift, its vibrant community, and its integration with Docker containers and Kubernetes container management services. AppAgile also considers that Red Hat's deeper collaboration with Microsoft Azure offers it opportunities around managed hybrid PaaS and helps customers bring their open source or Linux-based application development environment straight into the German public cloud.

AppAgile is already seeing growing interest for its managed PaaS on German cloud from customers that held back from public cloud (because of regulations) and container PaaS (because of a lack of skills). IDC sees the Data Trustee model as a key pull for many European customers looking to execute on their cloud-first strategy in a consistent and compliant way.

Based on customer feedback and market experience, Red Hat is working together with AppAgile to train and certify professionals and hiring engineers exclusively to work on the Trusted Cloud and Managed PaaS offering. We believe that upskilling engineers will help the vendors to overcome skills shortages and offer managed services to a wider breadth of European enterprises. As part of the managed service, AppAgile also offers training and customer on-boarding.

> *"Seeing PaaS as a standard platform for new cloud businesses, it is crucial to have that platform based on open source and open standards to ensure flexibility and extensibility across any private or public cloud. Red Hat provides the technology for PaaS, Microsoft provides the public cloud environment at global scale, and T-Systems AppAgile combines that as a managed service – ready to consume for small to enterprise businesses"*
>
> *Stefan Zosel, Head of Sales & Marketing, AppAgile PaaS & BIG Data at T-Systems*

DEVOPS — THE KEY VALUE PROPOSITION OF APPAGILE PAAS BASED ON RED HAT OPENSHIFT

DevOps is turning out to be a very hot topic for many enterprise customers. DevOps is a process enabled by a set of technologies that unify a highly collaborative team consisting of business leadership, design, development, testing, process and portfolio management, deployment, and operations to be responsible for the creation and delivery of business capabilities. It facilitates continuous delivery and continuous integration.

But for many early adopters, DevOps is becoming an either/or option to ITIL. In conversations with IDC, AppAgile mentions how some customers adopted DevOps and fueled faster innovation from the developer side, but operations with an ITIL approach still saw it as risky from a business continuity point of view because of the lack of SLAs, and found it difficult to respond efficiently to IT demands from developers. Learning from customer experience and feedback, AppAgile developed its enterprise DevOps module as a solution to the ITIL-DevOps clash.

DevOps From a Socket With ITIL Benefits

When AppAgile first launched PaaS, it offered classic ITIL operations. But developers like to push innovation and were getting frustrated because it wasn't agile, fast PaaS to facilitate DevOps. AppAgile, then switched on a project mode for its customers, allowing developers to take charge, and there were no ITIL processes such as monitoring or SLAs. While this helped developers with

faster access to IT resources, there were operational problems such as system downtime for 12 hours, as developers don't work 24x7, whereas operations do.

AppAgile's DevOps Module introduces a human interface into the process. This AppAgile DevOps engineer is a dedicated resource, acting as a bridge between customers' Development and Ops teams. This helps customers instantly bridge the DevOps ITIL gap as the dedicated engineer facilitates communication and expectation settings and extends ITIL processes into the development team in a way that it understands. This leaves users with no broken processes and helps Operations to be prepared for requests from the development team.

IDC believes this offering of bridging the gap between DevOps and ITIL will bring tremendous value to customers who want to break away from the rigid "either/or" approach.

FIGURE 3

The Solution: Enterprise DevOps
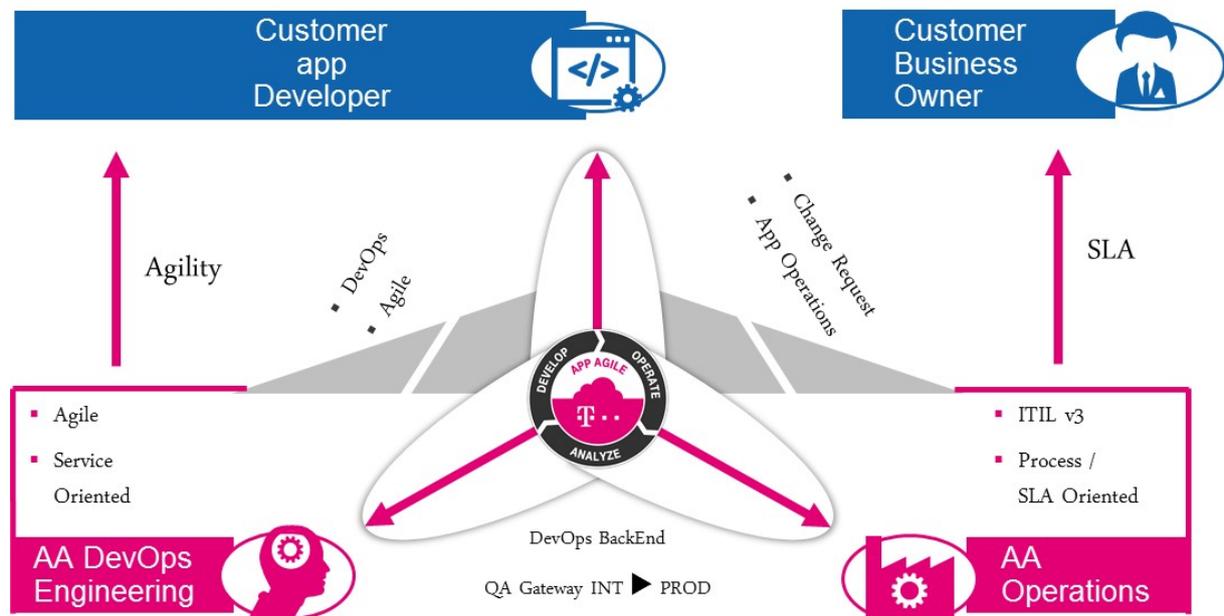
Source: T-Systems, 2017

While Azure Cloud and OpenShift PaaS enables application development, AppAgile's DevOps module facilitates delivery in an agile, frictionless manner, adding value to the collaboration. AppAgile offers a full suite of managed services and overcomes the DevOps adoption challenges for customers by combining ITIL process (such as problem management, change management for SLA-grade production environment) and DevOps services for agility and fast innovation.

Red Hat OpenShift ROI — Another Value Proposition for Customers

In conversations with IDC, early users of Red Hat OpenShift reported that OpenShift helps them deliver timely and compelling applications and features across their complex and heterogeneous IT environments and supports key IT initiatives such as containerization, microservices, and cloud migration strategies. As a result, the OpenShift platform is yielding significant value to these Red

Hat customers, which IDC projects will be worth an average of $1.29 million per 100 application development team members per year over five years, by:

- Enabling developers to deliver more timely, robust, and functional applications and features
- Improving business results and operational efficiency by meeting customer and user demand
- Requiring less staff time for ongoing management of applications
- Reducing the proportion of application development costs associated with infrastructure and development platforms

There are other benefits of the collaboration too.

T-Systems AppAgile is a global player with local staff and understands the data privacy requirements of European organizations and the nuances of the European business landscape. This helps it to serve customers better and provide onboarding and managed services.

It has taken sustained commitment (2 years) from both Red Hat and AppAgile to set up the platform and the teams and support to get this to the market and develop a unique DevOps and RoI value proposition.

"There are many providers offering public cloud and platform as a service. What customers want to have is a multi-year journey into the new digitization, modern application development world and they need a big technology partner. This synergy between Red Hat, Microsoft, and T-Systems AppAgile is a win-win for both customers and the three vendors."

Stefan Zosel, Head of Sales & Marketing, AppAgile PaaS & BIG Data at T-Systems

CHALLENGES, USER RECOMMENDATIONS, AND CONCLUSIONS

Challenges

Cloud application platforms and developer services solutions provide integrated services (i.e., made up of multiple discrete software functions) organized around the tasks of application development and lifecycle management, application deployment, code testing, quality, data analytics, and management, and integration.

But most European enterprises are still in the early phases of evaluation and deployment of newer processes such as DevOps. They are also at the early stages of evaluating and implementing technologies such as containers, which are key for agile application development. Together, Red Hat, AppAgile and Microsoft will have to spread awareness of the long-term benefits of a microservices architecture and DevOps to enterprises.

Secondly, as the infrastructure as a service market commoditizes, many cloud vendors including AWS, Google, and HPE are strengthening their cloud application platform offerings to serve large enterprises. But IDC believes that the "data trustee model" in offer from the collaboration of Microsoft, T-Systems, and Red Hat give AppAgile's managed services an edge. It will now need to convince large enterprises to look at the long-term benefits and cost-efficiency and invest in the full suite of managed services.

User Recommendations:

First, as companies embark on moving workloads to the cloud, leveraging a PaaS solution will provide substantial benefits for the selected workloads.

- Assess what current technology is in place. Application development language and programming framework support varies by vendor and it should be a factor in the choice of PaaS vendors. Users should evaluate application platforms that are open source to avoid lock-in and accommodate a variety of languages.
- Assess the current skills portfolio in the company to support the technology choices. A company needs to decide how its talent management strategy should be developed to support the technology choice. Deciding how and if the organization will buy, build, and/or rent needed skills to support the PaaS choices is critical for its success. Users should assess what vendor and managed service providers can offer in terms of onboarding and skills support.
- A cloud adoption strategy is fundamental in this process, but companies also need to consider how they can adopt highly scalable and agile public cloud services without breaching data protection regulations.

Conclusions

The implication of DX is that all companies are having to rethink their software development competency and are beginning to imitate digital disruptors (Spotify, Tesla, Uber) in software development practices. Concepts like agile (e.g., frequent iterations on design, development, and deployment) and lean (e.g., the pursuit of the minimum viable products with minimum resourcing) are practiced at a holistic product and service development level by ambitious companies.

Cloud-native technologies like containers and microservices are further optimizing infrastructure, giving developers the ability to deliver new applications quickly.

But for many organizations, there are hurdles along the way (such as stricter data regulations or skills gap). IDC believes the synergies between Red Hat OpenShift, T-Systems AppAgile, and Microsoft Azure in Germany offer a unique proposition to European companies to overcome DevOps and cloud adoption hurdles. IDC believes that the partnership will certainly unleash the latent appetite for application PaaS in Europe. It will also give the three technology providers a competitive advantage to capture the lucrative market.

About This Publication

This publication was produced by IDC Custom Solutions. The opinions, analysis, and research results presented here are drawn from more detailed research and analysis independently conducted and published by IDC, unless specific vendor sponsorship is noted. IDC Custom Solutions makes IDC content available in a wide range of formats for distribution by various companies. A license to distribute IDC content does not imply endorsement of or opinion about the licensee.

IDC U.K.

IDC UK
5th Floor, Ealing Cross,
85 Uxbridge Road
London
W5 5TH, United Kingdom
44.208.987.7100
Twitter: @IDC
idc-insights-community.com
www.idc.com

Copyright and Restrictions