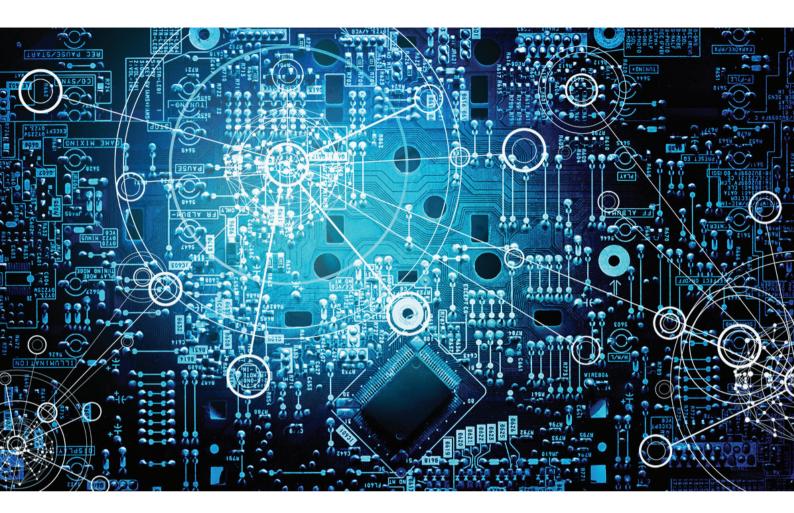# HYBRID INTEGRATION
IN THE ERA OF DIGITAL DISRUPTION

Digital transformation is on virtually every company's priority list today and for good reason. Startups and forward-thinking companies are disrupting long-established markets—changing how business is done and how customers are won—by adopting the latest technologies. These disruptors are introducing new business models against which established companies struggle to compete. Survival requires a new look at hybrid integration.

BRIDGING DIGITAL ISLANDS AT BTPN

To reach more customers and leapfrog ahead of the competition, BTPN of Indonesia underwent a total digital transformation—putting mobile front and center while integrating a host of disparate systems.

"Using the latest version of webMethods Microservices Container and DevOps we quickly improved quality, performance and time to market," said the IT Integration System Lead. The results: BTPN launched two mobile banking platforms, reduced operational costs and opened 85,000 new accounts in just three months.

This white paper explains why any company that aims to survive the era of digital disruption must consider hybrid integration. You'll learn about the major market trends affecting purchasers of integration technologies and how these trends transform into advantages for companies that are able to adapt to market changes and deliver on their digital transformation strategy. Read this paper if you are:

- Defining a corporate digital strategy to counter disruptive competitors or offer new digital products and services
- Deploying new cloud applications in a hybrid IT environment
- Creating a hybrid integration program

This paper gives you the benefit of Software AG's experience in integration. Not only is Software AG positioned as a leader in hybrid integration, we've partnered and consulted with the world's largest companies and government organizations on their integration solutions. This white paper shares the lessons learned from working with thousands of organizations on mission-critical systems. Specifically, you will see how hybrid integration plays a central role in enabling new digital initiatives that address the challenges of digital disruption.

Your checklist for success

Here are three critical actions traditional companies must take to position themselves for success against digital disruptors:

1. **Rethink integration technology**: Change how you think about integration technology with a focus on integration across hybrid environments rather than in silos of on-premises and cloud data sources. Integration is no longer a matter of simply connecting applications and databases. That's why companies need their integration platform to encompass traditional integration requirements as well as newer sophisticated architectures, a wide range of APIs and endpoints, plus new development lifecycles and deployment options. Niche solutions for cloud integration and API management, and even the major cloud platforms, are insufficient to address these challenges.

2. **Empower integration developers**: You must be able to connect to anything quickly, whether or not your company has technical expertise. This is because, along with the technology changes, we are seeing changes in the way integration projects are staffed. Having a centralized team that controls all aspects of a company's integration strategy is becoming increasingly difficult to maintain. Therefore, companies need to empower a broader set of integration developers.

3. **Scale and adapt fast**: Your company will need the agility to change and scale quickly, thus requiring everything from cloud integration, multi-cloud flexibility, microservices, containers and container orchestration, as well as automated deployment for continuous delivery. You'll also need to prepare for major technology waves, such as the Internet of Things (IoT) with its added requirements of connecting and integrating devices on a huge scale. Each new wave of technological advances brings requirements to incorporate changes quickly. Therefore, a company's integration platform must support the broadest capabilities for connectivity.

A rapidly changing market—what's the best solution?

Over the past few years, Software AG has seen significant changes in how IT departments can and should deliver technology to their organizations. Companies are rapidly adopting new cloud applications (SaaS), infrastructure (IaaS) and development (PaaS) platforms.

As the traditional concept of a data center changes from a dedicated facility to a hybrid environment with some on-premises components, some cloud components and many cloud applications—most of which are no longer directly managed by the company but leased from third-party vendors—the job of tying together these distributed systems has introduced new complexities and challenges.

Many vendors are coming into the market to solve pieces of this hybrid integration problem. However, none of them are able to solve the whole problem. For example, some vendors offer cloud-based integration services called integration Platform-as-a-Service (iPaaS). Others recommend avoiding integration technologies altogether and suggest APIs to eliminate the need for integration tools. In the near future, many companies will build strategic partnerships with one or more cloud platform vendors (such as Amazon Web Services, Google® and Microsoft® Azure®), which will become their primary platforms for building and deploying the services and business logic on which they run their businesses in this new digital era.

As companies deploy more cloud solutions, they are also changing their development and operations methodologies to function more efficiently. For example, companies deploy many more updates than they currently deliver as they take advantage of web-scale architectures, driving the need for DevOps and continuous delivery. They also are shifting integration development to new types of users who are not as knowledgeable about integration technologies and architectures. In this new development practice, integrating applications and data is more complicated, leading to uncertainty about how to choose the right integration technologies and patterns.

Confusion is the result of these market changes, forcing companies to ask questions about the role of APIs, microservices, cloud platform services and continuous delivery during the next three to five years. Will traditional integration solutions be able to manage these new requirements and delivery patterns?

Here's why companies are confused about the role of integration technology and its implications going forward:

- Niche iPaaS vendors provide limited use cloud-based integration solutions that solve very focused problems, though many of these vendors want you to believe they can solve all of your integration needs.
- SaaS vendors often bundle cloud integration capabilities within their products to help integrate with third-party applications, though these are limited solutions that again add additional integration tools that your staff must manage.
- Pure-play API management vendors, who do not provide integration capabilities, tell companies APIs are the solution to their integration problems and specialized integration technology is no longer required. Some of these vendors even suggest it is acceptable to push business logic and orchestration into the gateway staged in the DMZ rather than within the appropriate layer of your digital architecture.
- Cloud platform vendors typically do not offer integration functionality but instead pieces of the puzzle that allow you to manually build integrations on their platform, even though this results in hardwiring integrations that may become brittle and difficult to support as applications and versions change.
- Big consulting organizations often recommend that customers use Open Source Software (OSS) tools in place of commercial integration tools, which reduces the license cost of software but increases consulting costs that go along with more hands on coding and specialized skills.
- Analyst firms often struggle to clearly define the cloud integration market as large numbers of niche iPaaS vendors emerge, leading to shifting and confusing guidance.

A hybrid integration platform in combination with an Enterprise iPaaS work to address many of the challenges companies face as they confront today's increasingly complex integration projects.

"Enterprise integration platform as a service (eiPaaS) is a cloud service that addresses a variety of scenarios, including application and data integration, as well as some combination of process, ecosystems, mobile, AI-enabled systems and IoT integration, and API management capabilities. An eiPaaS supports these requirements via enterprise-class availability; scalability; development, governance and operation tools; and technical support and services. Organizations leverage eiPaaS offerings either as stand-alone or in combination with other technologies to implement their hybrid integration platform (HIP)."

— **Massimo Pezzini** | Technology Insight: Enterprise Integration PaaS, 12 December 2017

SCORING SATISFIED CUSTOMERS AT LEADING SPORTING GOODS CHAIN

The goal: to be recognized as the #1 sports and fitness specialty omni-channel retailer.
The solution: webMethods for hybrid integration and API management. Using webMethods, this leading U.S.-based sporting goods chain integrates different e-commerce applications on-premises and in the cloud to deliver a consistent omni-channel customer experience via web, mobile and at the point of sale. Real-time inventory visibility across channels helps boost sales.

The impacts of change

There will be clear winners and losers as organizations seek to adapt to these changes. Companies that successfully navigate them and prepare today to meet their future integration needs will be able to compete more effectively tomorrow. They will also be well positioned to deliver new business models using new digital capabilities to meet the needs of the digital age.

But some companies will struggle. They may stick to their current on-premises focused integration strategy, limiting their ability to adjust quickly to market changes. They may invest in several different vendor services and technologies to cover all the bases and then cobble together these services to integrate their increasingly distributed hybrid systems.

If companies do not adjust their integration strategies, they will struggle to connect to the applications and data sources of the future, and they will not have the agility to react quickly to support new initiatives and opportunities or to deflect threats. This lack of agility will impact whether companies win or lose market share.

Designing your game plan: How to create the right hybrid integration strategy

Software AG believes hybrid integration must be in the future of every company to survive in the era of digital disruption. Best-in-class hybrid integration solutions must provide more capabilities than are commonly found in traditional on-premises integration platforms, iPaaS offerings or cloud platform services.

At a high level, a hybrid integration platform must support integration with everything from cloud application and on-premises application integration to legacy, big data, partner and IoT device integration. And, of course, the platform needs to be flexible enough to integrate tomorrow's technology trends too. In addition to connectivity, a hybrid integration solution must also support API development and management, DevOps and continuous integration patterns—a platform that offers a flexible set of deployment options, whether on-premises or in the cloud using microservices, and equally supporting older legacy systems that still offer value regardless of whether they are designed as monolithic systems.

Here's what you need to consider to deliver future-proof integration for your company:

Complex cloud integration patterns
Integrating cloud applications introduces unique challenges. To address these challenges, iPaaS services evolved out of the need to quickly wire together cloud applications, primarily for the purpose of synchronizing data between the applications. These use cases tend to be very simple. However, as larger enterprises move their systems to the cloud, integrations become more complex, often requiring connectivity with more applications and requiring sophisticated data mapping and transformation steps. Many iPaaS services initially look attractive as add-on integration technologies. But organizations should anticipate limitations in these tools for solving the kinds of problems that enterprises face. Companies will require sophisticated tools for building integrations across diverse cloud applications topologies, with the intention of creating new business logic rather than data synchronization projects.

Cloud-to-on-premises integration

Even though cloud adoption is on the rise, very few organizations are limited to only running in the cloud. On-premises and legacy applications are not going away soon. And since iPaaS services primarily serve the needs of cloud-to-cloud integration, they typically support few on-premises applications. This means the requirements for hybrid cloud-to-on-premises integrations will increase. Companies may believe it makes sense to silo their integration tools, putting a fence around existing on-premises applications and integration technologies while simultaneously choosing a niche iPaaS solution for all new integration projects. However, the problem is that companies will create the need for multiple integration skill sets while also creating redundant efforts. Therefore, when selecting a hybrid integration solution, companies must consider how their technology choices will support hybrid cloud-to-on-premises integration requirements that will continue to exist for years.

Broad connectivity

Connectivity to applications and other data sources is one of the biggest integration challenges because there are so many data sources to connect. For example, consider that an existing large organization might have many kinds of data sources including on-premises ERP systems, legacy and mainframe applications, messaging systems, databases, SaaS applications and big data sources, not to mention partner organizations with which they connect and transmit documents and data. Most integration vendors lack the breadth of connectivity necessary to handle these use cases. Companies must ensure they are choosing technologies wisely to guarantee their existing technology investments can be connected into the IT landscape. And this is not just to prevent new data silos. Without connectivity, companies will be limited in the business logic they need to access to provide new digital services, such as public APIs that offer services based on existing data and functionality.

API management

With the rise of SaaS applications and cloud services, we have seen rapid adoption of APIs as the standard mechanism for sharing data and services. APIs provide an easy-to-use approach for developers to share services and wire systems together. However, hardwiring systems together using APIs can lead to brittle and hard to maintain integrations. This approach is eerily similar to the situation that existed before integration technologies provided a middle layer between applications to protect companies from creating unmanageable "spaghetti" code. A better approach is for integration specialists to create integration services and then expose those integrations via APIs. This type of API-based integration enables companies to provide services for ad-hoc developers, eliminating bottlenecks with the global integration specialist team. Any integration platform you invest in must include full lifecycle API management with broad support for all security standards.

Continuous delivery

Historically, integration projects have functioned as monolithic systems where business logic is created within the integration tooling and then deployed with little or no change for extended periods of time. However, as more projects affect front-office business transformation processes, monolithic and static deployments no longer make sense. This shift is causing IT to decompose monolithic structures into finely grained services that can be modified and scaled quickly.

Software AG customers shift from deploying updates quarterly or at even longer intervals; some also deploy dozens of updates daily. To support this type of behavior, companies should ensure their integration technology supports continuous delivery. Additionally, companies should ensure their tools can integrate with and support market leading container management technologies, such as Docker® and Kubernetes, as well as DevOps tooling for automated testing and deployment.

ARMED WITH WEBMETHODS & READY TO SERVE

In three months, Software AG delivered an API management platform that enables the British Army to break down information silos and share information quickly, effectively and, most importantly, securely.
With webMethods, the Army can enable a range of services across boundaries, drawing information from many systems to support a wide range of functions, from HR and equipment availability to operational readiness and payment of Army Reserves.

Microservices architectures

Large monolithic systems are coming under scrutiny as companies adapt to cloud architectures and deployment models. Putting too much logic and functionality into a single stack can create maintenance and deployment bottlenecks as business requirements are demanding frequent updates to finely grained services and capabilities. This approach is leading companies to seek ways to scale out their business logic at the service level rather than the server level. And this is true for integration logic as well. Microservices architectures work hand in hand with DevOps and continuous integration, as well as with API management capabilities, since microservices are typically accessed and initiated via APIs. Companies investing in a hybrid integration platform must ensure their solution can handle this flexibility of development and deployment since integration projects will vary in the rate and scale of revisions and deployments.

Enterprise vs. departmental use

One challenge organizations are discovering is that as departmental buyers purchase SaaS applications they also (often unknowingly) acquire cloud integration services embedded in the SaaS application or through the vendor's partner, adding another tool their teams now need to understand and maintain. IT organizations may inherit an assortment of redundant tools for which they must staff skilled employees. Companies must consider how their hybrid integration platform can be offered as a shared service at the enterprise level, empowering departmental users who can access and utilize the integration services to support their projects. This frees up departmental users from having to manage and maintain department-specific integration tools, while also letting them reuse integrations to commonly accessed back-end systems, such as ERP, CRM and databases.

Personas and bi-modal development support

Each organization likely has many different types of users or personas who will be called upon to configure or develop integrations. Some will be integration specialists, some will be technical but not experts in integration, and some will be only moderately technical. Because of these differences in skill levels, and because each integration product a company acquires will require different skills, companies should ensure that their hybrid integration solution supports bi-modal IT development. This model supports both traditional mission-critical, high-control integration patterns as well as rapid, non-mission critical projects where configuration-based and wizard-driven development is critical for success.

Multi-cloud platform support

Many companies who are partnering with major cloud platform vendors are looking at the breadth of capabilities available in the cloud and are asking whether they might be able to replace their integration technology with native cloud platform functionality. Cloud vendors do not typically have true integration capabilities. Instead, they have finely grained services used to manually create integrations. The problem is this solution will not scale. And the risk of relying too heavily on a cloud platform provider is the same type of vendor lock-in that companies have been avoiding for decades. No one wants to be locked into one giant vendor. As you make your integration technology decisions, remember that integration technology is a powerful way to protect your company from vendor lock-in.

In-memory data management

Integration technologies are excellent at managing large quantities of data. But one of the challenges they face is that only so much data is accessible at any moment in time. This leads to slower performance and potentially out-of-date information while the integration technology polls applications and databases for the most recent updates. By having all of integration data in memory, companies can produce applications and run queries that produce accurate real-time information, potentially reducing errors and increasing customer and partner satisfaction. Ensure that your integration vendor can work with large volumes of data and provide rapid updates for real-time queries and other transactions.

IoT device integration and management
One of the biggest trends affecting companies and their integration technology choices across almost all market segments is the IoT. With an estimated 50 billion+ devices connected and managed globally by 2020, companies must address a series of challenges for how IoT sensors and other devices are integrated and managed. Companies should ensure that their integration technology allows them to connect devices over any network in minutes and provides device condition monitoring, as well as real-time analytics and dashboards. Additionally, integration technologies must help companies extend their business models by integrating IoT devices directly with business applications and the workflows they impact.

Your solution to tomorrow's integration challenges

Hybrid integration continues to demand new technical and architectural capabilities that are essential for success in the era of digital disruption. To help companies meet these needs, Software AG offers the webMethods Hybrid Integration Platform that provides:

• Application integration

• Cloud integration

• Mainframe and legacy integration

• Big data integration

• B2B partner integration

• API management

• DevOps and continuous delivery

• Microservices deployment and architectures

• IoT device integration and management

• Bi-modal development support

• In-memory data management

The webMethods Hybrid Integration Platform can be deployed on-premises, in public and private cloud environments, or as a managed service. Additionally, you can choose from several cloud-hosted hybrid integration services, including:

webMethods Integration Cloud—an Enterprise Integration Platform-as-a-Service (eiPaaS) that helps you connect cloud-based and on-premises applications and rapidly deploy integrations to the cloud. Integration Cloud provides prebuilt connectors, graphical mapping and orchestration of integration flows, and preconfigured "recipes" that enable faster integrations for popular SaaS apps. You get quicker business implementations, the ability to scale on demand, and secure cloud to on-premises hybrid connectivity.

webMethods API Cloud—an API management Platform-as-a-Service (apiPaaS) that provides the end-to-end API management capabilities, delivered in the cloud as a subscription service. You can safely and securely expose your APIs to your developer communities, as well as manage the entire lifecycle of your APIs. The API developer portal helps you attract and grow your developer ecosystem, and the API gateway protects and secures your APIs from threats and malicious attacks.

Cumulocity IoT—the leading independent device and application management IoT platform since 2010. Cumulocity IoT connects and manages your machines effortlessly so you can focus on your business's value-adding activities. You can connect your things over any network in minutes with a "plug and play" approach, monitor your things with real-time analytics and fully configurable dashboards, and extend your service with easy workflow integration to your business applications.

How Software AG can help

Accelerate your digital transformation by working with Software AG. We're a global, independent software company and committed to providing the best integration technologies to help large organizations solve their increasingly complex integration challenges. Software AG's webMethods is the smart choice for connecting apps, devices, data and IoT devices in the cloud and on-premises. webMethods provides state-of-the-art capabilities, spanning application, cloud and big data integration, API management, B2B integration, managed file transfer and master data management.

As you consider your integration needs for the next three to five years, remember to focus on solving the larger challenges of hybrid integration and not just short-term fixes. The digital world is changing rapidly. Companies that adapt quickly will not only avoid being disrupted by nimble competitors but will truly benefit from these changes. Software AG is a company you can rely on with nearly 50 years of success serving our customers all around the world. Count on us to be there for you when you need us.

Take the next step

Learn more at www.softwareag.com or talk to your local Software AG representative to see how our innovations can meet your hybrid integration needs.

ABOUT SOFTWARE AG

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