



## Making Multicloud Application Integration More Efficient

As large organizations leverage the cloud for more and more business functionality and cost savings, integrating such capabilities across the enterprise is critical for improving operational efficiency.

### Executive Summary

To meet ever-more-complex business-critical requirements, organizations across industries are adopting multi-core technologies and applications. Given rising expectations for deep, rich and fully integrated functionality, the cloud is increasingly being counted on as the operational fabric with which to hold all this compute power together. In fact, Gartner predicts that by 2017, 50% of global businesses will use cloud computing in one form or another.<sup>1</sup>

But the growth of cloud-powered applications across the enterprise IT landscape can become an integration nightmare. In our experience, many large organizations are running upwards of 200 or more applications on private, public or hybrid clouds, in conjunction with on-premises systems. Currently, there are several multinational organizations that intend to rationalize these applications across their entities and business units to achieve greater process efficiencies and reduce costs.

Operating these systems in silos often leads to IT and business process inefficiencies. To reduce process efficiencies as well as add synergies across business functions, many large organizations are now moving toward a more integrated

IT landscape. A careful and planned roadmap for rationalizing the application portfolio can help enterprises achieve greater business value by improving operational productivity. But as IT complexity grows, it is often difficult to bring all business functions on a single IT platform; in fact, because many companies run best-of-breed solutions that address specific business functions, the integration challenge is magnified across the enterprise.

Additional complexity results from where applications reside – some are hosted on the cloud, while others operate on-premises. In addition, many organizations run add-on solutions to support core application features. Many cloud applications, for example, offer add-ons that are developed to support several features, such as extensions to standard functionalities to meet deep business requirements. These add-ons may be built on the same or different platforms and often use different coding standards.

Integration technologies have evolved over time to enhance information management across systems and minimize the need for duplicate data entry. These technologies support cross-linking of both on-premises and cloud applications to ensure that business-critical processes can be



executed seamlessly across systems and business functions. A growing number of organizations are moving toward the use of cloud integration technologies that offer a single window for controls and monitoring. The architecture of such cloud integration tools includes an administrative console that can be used to monitor the data flow, while establishing appropriate authorization and control.

According to Gartner's research,<sup>2</sup> at least 30% of service-centric companies will move the majority of their applications to the cloud in the next two years. About 70% of the organizations that plan to adopt hybrid ERP (on-premises integration with cloud solutions) may fail to realize the value of a hybrid landscape if the applications that reside in the landscape provide differentiating features. (To learn more, read our latest white paper on [two-tier ERP environments](#).)

According to Gartner, the cloud service in the area of integration is expected to grow by 28% year on year.<sup>3</sup>

This white paper lays out a roadmap for multi-cloud integration, taking into account the ever-increasing complexity of the IT landscape, from automation requirements and the increasing volume, velocity and variety of data types and structures through security, regulatory compliance and governance implications. It also describes the anatomy of how to manage such integrations, in light of key business-technology drivers.

## Multicloud Integration's Key Drivers

Enterprise interest in multicloud integration is being driven by the following requirements:

- **Automation:** Enterprises require more automation to effectively integrate the flow of data across multiple-cloud-based applications. The concept of "departmental cloud" is emerging as various departments/entities within an organization adopt best-of-breed cloud solutions based on specific feature requirements. Each cloud solution typically offers Web services that act as a gateway to communicate with other systems.
- **Record of transactions:** To analyze a complex architecture landscape, the as-is log of the data flow among the systems is reviewed. The record of transactions helps in identifying and analyzing a real-time situation, such as warehouse productivity, inventory checks, etc. Any

transactions that are executed between and among enterprise systems need to be logged to help debug potential issues. The volume of data that is involved in such cases necessitates the use of big data scenarios (which involve huge volumes of data to analyze and predict at a faster rate). Many providers therefore offer solutions that can be used to analyze and act upon real-time scenarios involving large volumes of data, such as service transactions, social sentiments, etc.

- **Customization:** Adding to the complexity of cloud integration are customization needs – some varied, some not so – in today's heterogeneous cloud/on-premises computing landscape. A cloud integration solution should be flexible enough to allow for the creation and integration of custom solutions on top of the standard offering. Such customizations must be considered "upgrade-proof" – meaning that they should not disrupt existing solutions.

With the increasing number of solutions in a typical integration landscape – some built on different development frameworks and code bases (Java, SAP ABAP, etc.) – any proposed solution should act as a single console to customize data flow.

- **Stay on the latest:** The best part of any cloud solution is the ease with which an organization can remain on the latest version of the software. The solution must also be "platform-safe" as the organization using this solution might expect it to run on any platform – be it mobile or desktop.
- **Ease of use:** The solution must be easy to use and user-friendly, while adhering to industry best practices in an integrated multicloud application landscape. It should also provide for easy and effective governance.

## Managing the Integration

The hybrid model, where the best of both cloud and on-premises solutions is utilized, has evolved over the last 10 years.

With growing IT complexity and an ever-increasing array of enterprise applications, the principle of "point-to-point" integration, where applications can communicate with one another, is no longer feasible.

In addition, the data can often reside in different systems in different forms and might need to be cleansed and transformed before it can be loaded

onto the target system. What is required is an advanced tool, one that offers extraction, transformation and loading (ELT) capabilities along with a console wherein interfaces (integration touch points) can be developed. A so-called “cloud console” application can be highly effective when managing complex integrations (see Figure 1).

The cloud console will also provide a console view along with a framework to develop needed customized features. The console view helps in managing/monitoring all cloud solutions as well as other on-premises solutions. In addition, it needs to be extendable to support possible platform additions to the entire architecture to improve the performance of customized features. This could be a management portal or a platform built to control data flow between applications or services delivered by other cloud applications, such as authentication. For instance:

- **Integrated flow** of services is achievable with such portals. Most important of all, such consoles help in expanding the compute infrastructure. It also provides the necessary option to protect the data irrespective of the deployment location.

- **Data flow monitoring** can also be amended to enable monitor process flows. Any business rules that are required could also be applied with the help of this platform.
- **Roles and authentication** can also be applied across all cloud and on-premises applications, eliminating the need to control each individually. This could also be used to control home-grown applications, thus avoiding any risk of data leakage.

### Assessing Data Flow

The cloud console handles the data flow to and from any system. For each system, vendor-recommended Web service calls are typically utilized to enable data flow. The cloud console picks the destination and, based on the configuration, the recipient system receives the data in the prescribed format.

### Security Considerations

Security is a major topic of any cloud application. In a public cloud, cloud service providers serve several organizations through a multi-tenant environment under which the same application and network environment is utilized. Given this setup,

## Anatomy of a Cloud Console

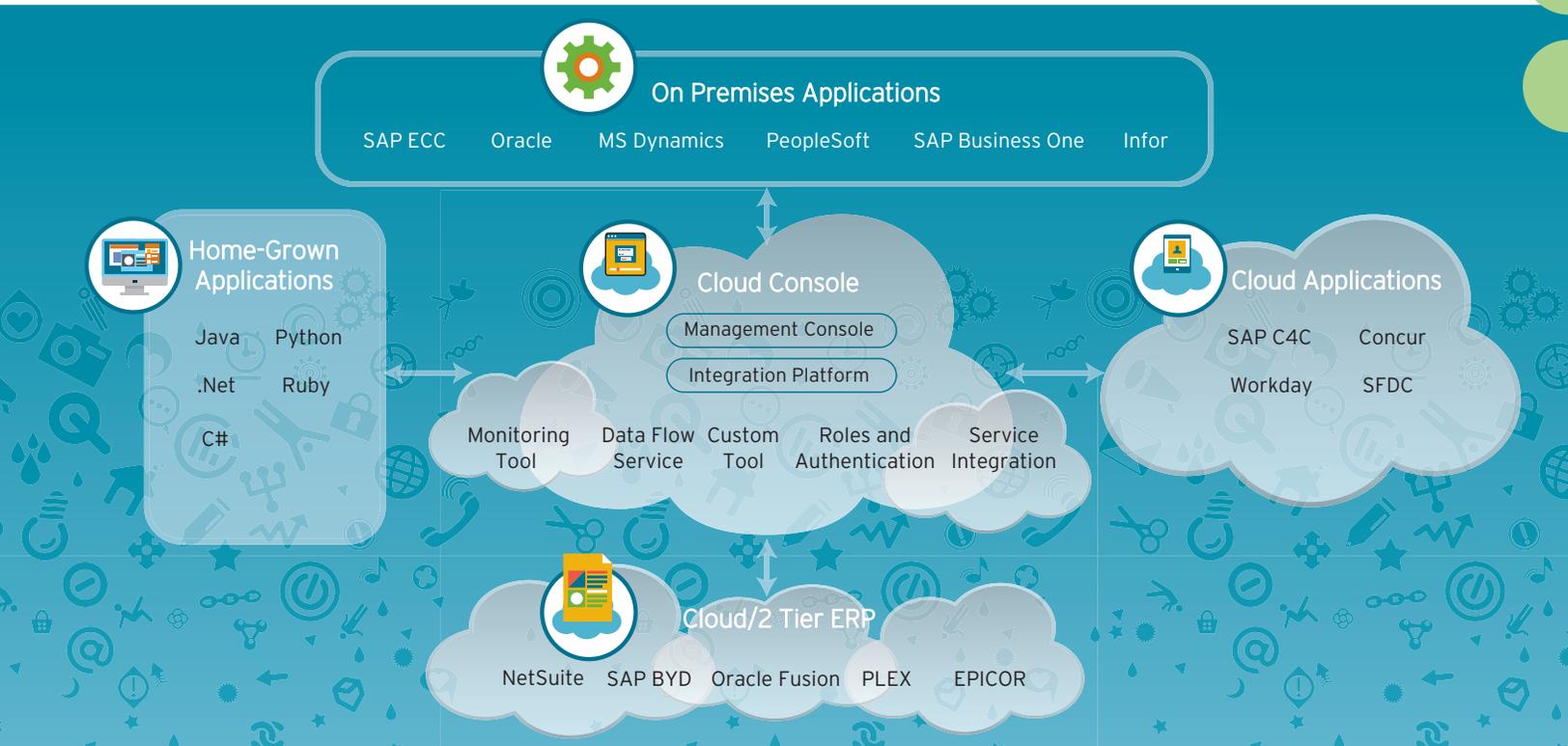


Figure 1

organizations are typically concerned that their data can be accessed without their permission by a user beyond their domains but using the same cloud data center. Even enterprises using private clouds via unique networks are concerned about securing access to their applications, and of course their data. However, amid increased security consciousness, evolved technology and growing competition, cloud service providers have effectively addressed such concerns and bolstered their reputations – and that of the cloud – as a mature and safe computing environment.

Even the most security-conscious organizations are inclined to step gradually into the cloud by first creating virtual development environments. This speeds up the development of custom applications while they can securely provision access within their own firewalls and data centers.

These organizations, which are concerned about the storage of sensitive and business-critical information over public cloud, typically invest in private cloud, thus reducing the risk involved.

The cloud console approach can also provide a central console to manage applications on a private cloud. However, the control of the solutions from the standard solution providers (e.g., SAP, Oracle, etc.) will reside with the solution providers themselves. The cloud console can also monitor the data flow, which can be visited at regular intervals to evaluate security concerns.

## Governance and Regulation Considerations

To effectively manage and safeguard the delivery of any IT service, governance and regulation is the topmost priority. An integration platform, therefore, needs to be capable of accommodating a huge volume of data. An effective governance process around the management of data should be defined before undertaking any system integration initiative. All regulations concerning storage and usage of such data should also be considered. Even the lifespan of data needs to be considered, such that any non-useful data can be decommissioned over a period of time.

The governance and regulation of the data that needs to flow to each of the systems can be controlled with the help of the central console. The cloud console can act as the single window to control the flow and also grant authorizations based on roles and responsibilities.

Each system can be controlled with a single administration user; the administrator can grant/deny access to the business users based on their roles and responsibilities.

As organizations move to more quickly adopt cloud computing and gradually transition from on-premises computing, the two environments must coexist, offering a seamless flow of information between applications and creating a unified and more business-friendly IT landscape. With cloud integration, the journey to the cloud and integration of multicloud/on-premises applications is much easier and should be used to add process efficiencies while reducing costs.

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