Top 10 Use Cases for Integration-Platform as-a-Service (iPaaS)

10 Use Cases in a Nutshell

1. Universal Connectivity – Integrate Anything, Anywhere, Anytime
2. Data Integration
3. Application-to-Application Integration
4. Business-to-Business (B2B) Integration
5. Event stream ingestion and delivery
6. Data delivery for Advanced analytics
7. Data delivery for Cloud data warehousing
8. Multi-cloud data sync – Seamless interoperability with multiple clouds
9. Data delivery for IoT Integration
10. Embedded Integrations

According to Gartner – "By 2021, at least 75% of large and global organizations will implement a multi-cloud-capable hybrid integration platform, up from less than 25% in 2018"

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Solution sheet

Modern organizations are struggling to keep pace with data integration challenges as islands of data explode in size, many in the cloud.

Data integration efforts are increasingly pressured to support more cloud-, IoT- and ecosystem-driven data integration projects in a timely manner. Many organizations' data integration strategies struggle to harness data and events across SaaS, data warehouse platform as a service and other cloud services in hybrid ways to enable flexible deployment models.

Digital business transformations increasingly demand expedient and diversified ways of provisioning data that combine endpoints on-premises and in the cloud. Integration-platform-as-a-service (iPaaS) offers a comprehensive and compelling solution to fulfill the demands of modern data integration needs. iPaaS targets these new data integration requirements with the following features:

Data integration is becoming more difficult

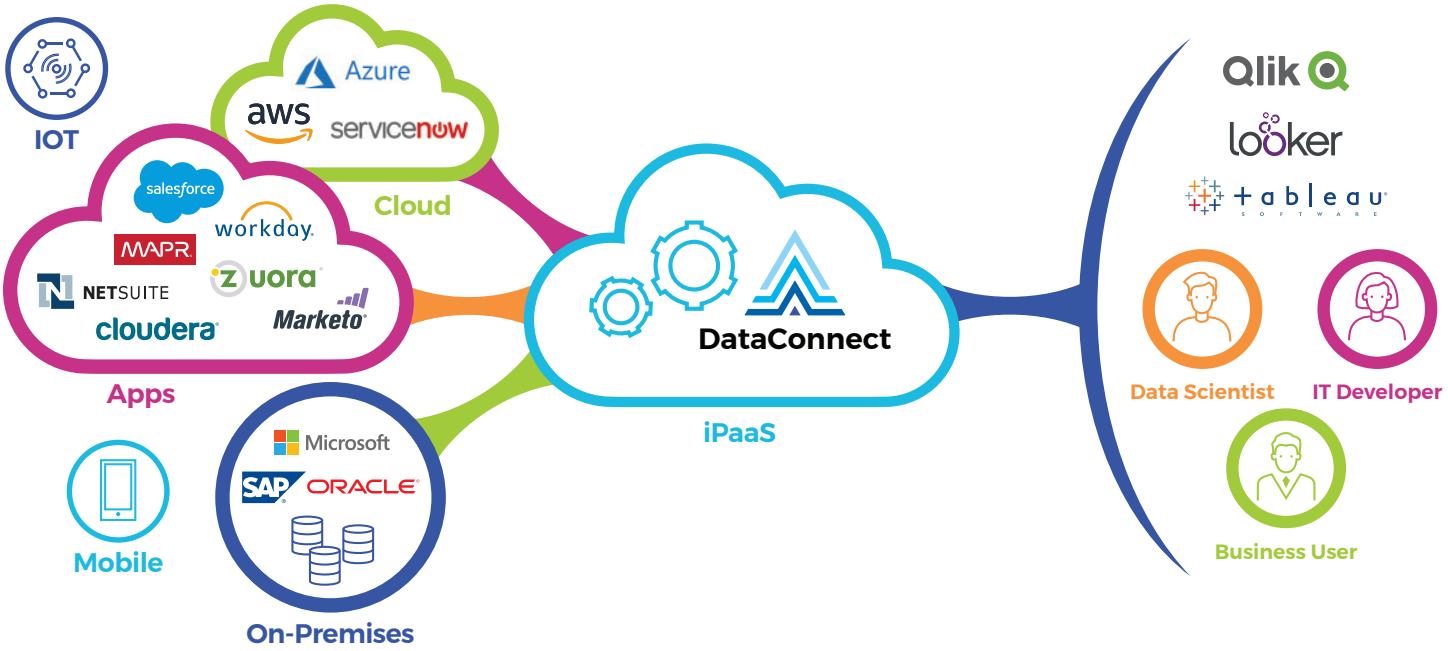
Tools and technologies of the past are no longer sufficient to address the demands of modern business. The increasing complexity of data integrations requires organizations to deploy more flexible, dynamic solutions. Traditional integration designs include a mix of single-purpose tools for extracting, transforming and loading data between on-premises databases and application systems. They work fine in small-scale applications, but aren't scaling to satisfy the needs of today's businesses. Modern data integration systems must support connections to diverse data sources and targets in a wide variety of operating environments both on-premise and in the cloud. features, to achieve superior outcomes.

Data must be capable of ingesting and transforming from any source, at any speed, and the results must be pushed to one or multiple target systems without delay or latency. These new disparate data sources and applications and increasing business demands are driving technical professionals to deploy rapidly newer data integration solutions. Traditional onpremises products struggle to satisfy these ever-growing demands. iPaaS aims to address the data integration needs of a modern enterprise that is looking to integrate data and applications not only to modernize its IT infrastructure, but also to accelerate the development and delivery of innovative solutions to enable Digital Transformation.

What is iPaaS?

Integration-platform-as-a-service (iPaaS) is a set of cloud-based tools enabling rapid deployment, management and governance to connect software applications and services across different environments.

Organizations that need to integrate on-premises applications and data with cloud applications and data most often use iPaaS. As a cloud-based toolset, iPaaS is scalable to match the increased data volume from multiple environments. An iPaaS should support real-time integration with the goal of minimum disruption.



A typical iPaaS architecture consists of the following:

- **On-Premises:** ERP, CRM and enterprise data warehouse (EDW) can be any on-premises data source or target, but they are usually vendor solutions based on Oracle or Microsoft SQL Server. They, however, can be any combination of commercial, open-source or custom-developed products. Data sources could also be data lakes or other massively parallel processing (MPP), Hadooptype clusters or log files generated from operational databases.
- **Cloud Applications:** Cloud applications consist of cloud-based CRM sources, such as Salesforce, or any custom, cloud-hosted application with exposed APIs.
- **Cloud Data Sources:** A cloud data source could be a real-time data feed from social media, such as Twitter.
- **Cloud Computing Clusters:** Cloud computing clusters include CSPhosted databases, such as AWSor Azure-hosted products.
- **Internet of Things:** IoT includes mobile devices, both as data sources and targets, and any other device-based data source, such as sensors.
- **iPaaS:** iPaaS is generally a Web interface hosted in the iPaaS vendor's cloud. It manages connectors to all on-premises and other cloud-based data sources and targets.

Demand for iPaaS propelled by ease of use and tech-savvy business users

One of the big drivers for cloud integration has been the large adoption rate of SaaS applications among line-of-business (LOB) users. Departments are subscribing to SaaS apps without any centralized plan and find they need an easy, quick and efficient way to share data and information among cloud services and even on-premises systems. Integration needs have become so pervasive that every project an organization undertakes now requires the right integration tool. iPaaS is the perfect solution.

Operating very similarly to SaaS applications, in that IT's involvement is not required, iPaaS is relatively inexpensive to operate without hardware to host, and it's quite intuitive to use. iPaaS is quickly becoming the cloud integration tool of choice for LOB users. It's clear that iPaaS has become the choice of integration tech for new projects within LOBs. As pervasive integration needs expand, iPaaS will be the answer for many of today's emerging use cases. Let's look at some of these to see how well your iPaaS is prepared to address them.

Where iPaaS is needed within your IT ecosystem

1. Universal Connectivity – Integrate Anything, Anywhere, Anytime

Mobile integration is a given, but the number and variety of devices are increasing rapidly. To tap the true potential that IoT promises, organizations must be able to pull data from all types of devices regardless of where they are, understand what those devices are reporting and act on the data. No device should be considered too small or too distant – you should be able to integrate anything, anywhere, anytime. This broad connectivity use case is perfect for a good iPaaS, one that not only quickly and easily makes connections between all types of cloud service, on-premises systems and mobile devices, but also enables the connecting of IoT devices to these same systems. Does your iPaaS support the challenges of integrating IoT devices over unreliable or highly latent networks? Will it allow you to move integration logic closer to the edge, improving responsiveness of your IoT solutions and reducing the communications costs?

2. Data Integration

Data integration is one of the most typical integration scenarios. In this case, the data must be transferred from System A to System B, so both systems have up-to-date information available. How does iPaaS improve the way we do integrations? Traditionally, data transfers happened in batch processes; however, today it's crucial to have information available in real-time. iPaaS makes it possible. Additionally, communication is much easier if all stakeholders receive the data in a format their systems can understand. To achieve this, the formats can be transformed during the data transfer. Some information may also require validation, which can be established against your business rules to ensure the data is always 100% clean. In case the solution detects errors, it can be sent back to the sender for enrichment, and once that's done, it can be resent.

3. Application-to-Application Integration

Systems and applications must be able to communicate with each other. Previously, EAI has been used for executing integrations between systems and applications; however, iPaaS has started to replace it. The ultimate goal of application integration is that data from disparate systems and applications would be available in a single platform for all the relevant stakeholders. System and application integration is a primary use case for iPaaS, as it can gather data from any systems – even from behind firewalls – and forward it to the end-user platform.

Typical user: Supply chain partner, third-party services provider

4. Business-to-Business (B2B) Integration

B2B data exchanges for secure data flows within partner networks eliminate the need to write code based on APIs, to increase the speed of onboarding of customers and partners. Replacing EDI gateways, or cloud integration platforms, provide self-service capabilities that enable easier partner access. Monitoring data flows improves management and performance assurance.

Emerging use cases for iPaaS

As organizations learn to master use cases, more are always emerging. A way to remain prepared for future trends is to find an iPaaS platform that gives you ultimate flexibility and is future-proof enough to embrace the new demands that will be placed on the platform. To stay agile, your organization can't be tied to a specific deployment. For instance, your iPaaS offering must be "portable," meaning if you build a service within your iPaaS today, but later want to move it to a private cloud or even to an edge device, then you should be able to do that without having to rework the service. Your iPaaS solution should provide you with the agility to move that project or service easily—even to a function-as-a-service (FaaS) platform to support a serverless computing architecture. You need an IPaaS platform that gives you the flexibility to move all your projects easily to the deployment of your choice to address unpredictable future needs.

5. Event stream ingestion and delivery

Event-driven architecture is the future of application design. According to Gartner, by 2020, event processing will be a top-three priority for the majority of CIOs at large organizations. Being able to correlate a series of events and identify the meaningful ones that require action is how organizations will be able to differentiate themselves. This is accomplished by adding event processing or event thinking to your technical, organizational and cultural strategies. Event-driven architecture optimizes for agility, resiliency, extensibility, lower cost of change, open-ended design and Web scale. Traditionally, iPaaS was used in the request/response scenario, but high-performing Web and mobile apps require real-time exchange of information to enable secure and reliable bi-directional data exchange to mobile and Web apps, IoT devices and backend systems. For these types of on-premises requirements, asynchronous messaging has been used for years. iPaaS platforms are now supporting this style of integration, as well. As the use cases expand and organizations find themselves needing to be constantly listening for events and acting, iPaaS technology is increasingly being used to help act on events.

For most iPaaS users, the event-driven journey will start with asynchronous messaging that will allow them to cover more elaborate integration use cases that involve more than just request/response. Knowing that soon digital business will rely on event-driven architecture, you must start thinking beyond simple request/response approaches to asynchronous messaging and to the even more advanced use cases of correlating events and acting instantly. Does your iPaaS support this concept of event-driven architecture? Will it be able to support your needs today and into the future?

6. Data delivery for Advanced analytics

One of the strongest drivers for change in data management today is the demand for a wider range of approaches to analytics. Businesses need more diverse analytics to support their efforts in profitability, growth, competitiveness and customer acquisition and retention. Most firms already have mature implementations of online analytical processing (OLAP), but they need more discoveryoriented or predictive approaches, such as those enabled by mining, statistics, graph and machine learning.

Many organizations are choosing to extend their portfolio of advanced analytics by using cloud-based systems. This begins with cloud data integration to gather large volumes of data from diverse sources as required for the crosssource correlations on which most advanced analytics tools operate. Though a mix of cloud and on-premises sources may be involved, cloud storage is increasingly the point where large analytics data sets are aggregated or persisted in a data lake. In turn, working with cloud storage requires support for many interfaces and cloud providers, as provided by modern platforms for cloud data integration.

7. Data delivery for Cloud data warehousing

The modern data warehouse is, by definition, a compilation of numerous data collections, each focused on dimensional models, data domains of interest, time series, marts, operational data stores, etc. As users make decisions about how to modernize their warehouse, they migrate some data collections from legacy on-premises databases to cloud-based data platforms. Some data warehouses today, therefore, use a mix of platforms. An increasing number of users choose to migrate the whole warehouse to the cloud.

Whether wholly or partially on a cloud platform, the modern data warehouse requires cloud data integration to migrate warehouse data to the cloud initially as well as to feed the warehouse from hybrid sources during daily production. For use cases in analytics and data warehousing, cloud data integration must also support interfaces to cloud-based data warehouses and other databases, the popular ones being Actian Avalanche, AWS EMR and Redshift, Azure HDInsight and SQL Data Warehouse, Google Dataproc and BigQuery and Snowflake.

8. Multi-cloud data sync – Seamless interoperability with multiple clouds

To succeed with the extreme complexity of today's hybrid data environments, you need deep support for new technologies (such as Spark) as well as open-source tools, big-data sources and cloud storage. For the greatest speed and scale (plus richest functionality), cloud data integration must also support interfaces to popular SaaS apps. Some of the most popular SaaS apps today automate sales and marketing business processes—plus other customerfacing functions, such as customer service, billing and shipping. Achieving complete customer views in a multicloud environment – and synchronizing customer data across related customer-oriented applications (whether on premises or in the cloud) – demands sophisticated and high-performing cloud data integration. This use case – hybrid and complex in the extreme – is usually not a starting point for the average user organization, but it should be kept in mind as a future goal for cloud data integration programs as they mature.

9. Data delivery for IoT Integration

Integration means making sure independently designed applications and data work well together. IoT integration means making the mix of new IoT devices, IoT data, IoT platforms and IoT applications – combined with IT assets (business applications, legacy data, mobile and SaaS) – work well together in the context of implementing end-toend IoT business solutions. Thus, their approach is to offer a general-purpose integration middleware solution (e.g., ESB; iPaaS; or an extraction, transformation and loading [ETL] tool). This solution addresses IoT integration through the lens of IoT device connectivity and data ingestion, or IoT project integration, with existing backend applications and data, or both. The specialists offer BOB data translation, quality and normalization across a wide range of integration use cases (internal, B2B, cloud services, mobile and IoT). They also typically offer:

- A comprehensive portfolio of adapters for different applications (and, increasingly, different devices)
- Support for proprietary and common IoT publish and subscribe protocols (for example, MQTT)
- Distributed event streaming
- Some form of process or workflow orchestration to support process integration

10. Embedded Integrations

Cloud integration platforms are often available for OEM and embedded in other applications, particularly SaaS, to provide integration-as-a-service. Beyond embedding the entire platform, specific embeddable integrations are changing and expanding the many ways that integration processes can be utilized. For example, purpose-built applications are increasing due to improved embeddable integrations built using cloud integration platforms. Some vendors develop specific integration products for partners and managed services providers to embed in services for their customers.

Typical user: Application support specialist; line-of-business developer; managed services provider.

Conclusion

As cloud adoption has increased, iPaaS has become an integral tool. iPaaS and other cloud apps have allowed organizations to take advantage of emerging use cases to create greater agility and achieve one of the major pillars of digital transformation. Today, there are legacy iPaaS providers which are older, existing integration companies that have modified their tools to work with cloud services. Modern solutions are those born within the cloud age.

For more information on Actian's iPaaS offering, check: www.actian.com/dataconnect.

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