Top 10 Integration Solutions

that an iPaaS Provides

Introduction

With the need to increasingly adopt digital transformation and business process automation, most modern enterprises seek to implement various software solutions and cloud apps. However, the challenge lies in getting these different solutions to seamlessly share data and work in sync within the business IT ecosystem. While software integrations or system integrations help achieve this, the question to ask next is - what is the most effective way to implement these integrations?

Firstly, there are different types of system integration that need to be understood, and a plethora of software vendors for each of them. Many organizations still take the long and expensive route by custom-coding their system integrations. However, with the advent of next-gen middleware solutions, namely the iPaaS (integration Platform as a Service), there's been a major shift in how integrations are being implemented with low-code or no-code solutions.

> **A market study by IDG reveals "89% of companies struggle with data and system Integration; Driving iPaaS Adoption"**

To explore **what makes the iPaaS an integration solution for providing future-proof connectivity to businesses across industries,** this white paper provides a detailed overview of:

1. A brief history of how integration solutions have evolved over the years

2. The different types of middleware solutions

3. How the iPaaS incorporates different types of middleware

4. What are the most commonly integrated systems

5. The top 10 integration solutions that an iPaaS provides

6. A checklist for why businesses choose an iPaaS solution

A brief history of integration solutions leading up to the iPaaS and beyond

System integrations started off as a great way for enterprises to improve business efficiency, streamline operations, and exchange data by connecting applications, software, and data sources. However, with the current rapidly evolving need for digital transformation across industries, system integrations now play a crucial role in digitalizing business processes by connecting SaaS solutions and cloud apps.

While the traditional way to integrate systems has always involved building connections between desired endpoints with custom code, this method is time-consuming, expensive, and difficult to maintain. Due to this, businesses and developers have always sought to employ platforms, tools, and other software solutions to expedite how they integrate systems. And this, in turn, has affected how integrations have evolved over the years.

To understand how and why modern businesses approach system integrations the way that they do, it is important to explore how this process has evolved with the beginning of the ongoing digital era. So, how did system integrations begin in the first place?

The first generation of system integrations - starting with EDI

In the 1970s, EDI (Electronic Data Interchange) was one of the first types of system integrations to emerge, when organizations began to adopt computer systems for data processing. As the name indicates, EDI enables businesses to exchange documents in a way that's paperless and digitized in a standard format. Till date, it's one of the most effective systems for the real-time exchange of B2B information such as invoices, shipping details, and purchase orders.

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The second generation of system integrations - from ERPs to ESBs

In the 1990s, with the implementation of enterprise applications such as Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) systems in the business landscape, the need for system integrations became more complex. Enterprises started to look beyond creating mere point-to-point integrations and sought to connect more applications, systems, and data in order to improve business development.

This lead to the emergence of the ESB (Enterprise Service Bus), an on-premises middleware solution that enables business applications to connect and communicate with each other. While ESB solutions introduced an integration architecture that helped companies standardize how they integrated legacy systems with various applications, system integrations would continue to evolve drastically a decade later with the advent of cloud technologies.

Third generation system integrations - APIs and the iPaaS

With the rise of cloud-based applications and services in the 2000s, industries started to rapidly digitalize and commerce went online. To meet these challenges and digitalize their business processes, enterprises started to integrate various new cloud apps and SaaS solutions that emerged, while also seeking to migrate legacy systems and data sources to the cloud.

It was now possible to integrate software by their APIs (Application Programming Interfaces), which are a set of protocols and standards that enable different software applications to communicate with each other. Developers could now build standardized interfaces to connect and integrate software faster using their APIs, which provided a simpler and more flexible way to exchange data in real-time.

In recent years, the iPaaS (integration Platform as a Service) emerged as a next-gen, cloud-based middleware solution that leveraged APIs to seamlessly integrate multiple software, systems, or data sources, without any custom code. This meant iPaaS platforms emerged as no-code or low-code solutions, which enabled both developers and non-technical business users (CTOs, project managers, junior developers) to create, monitor, and manage integrations from a user-friendly interface.

The next era of integrations - the iPaaS and Composable Commerce

The integration flexibility offered by the iPaaS enables modern businesses to go beyond integrating systems and software, by connecting with other emerging technologies like AI (Artificial Intelligence), ML (Machine Learning), and BI (Business Intelligence). In fact, a new trend of advanced system integrations that modern enterprises are now seeking to level up their digital growth with is "Composable Commerce", and the iPaaS happens to provide the right integration infrastructure to enable it.

Composable Commerce is a new API-led architecture that enables businesses to integrate only best-of-breed software components or services, instead of entire software solutions. In other words, it enables organizations to flexibly assemble a selection of API-driven services from multiple vendors and platforms, in order to compose a unique commerce experience. This makes iPaaS solutions, designed with an API-first architecture, a key enabler of composable commerce.

To understand how iPaaS solutions work and what makes it the best next-gen platform for system integrations, it is important to understand and explore various middleware integration systems (which we've briefly touched upon) that came before.

> **It is estimated, organizations with 1,000+ employees use 150+ SaaS applications and those with fewer than 50 employees use an average of 16 SaaS solutions. Less than 30% of these apps are integrated."**

Learn more about:
Why are Businesses Investing in Composable Commerce?

The different types of
middleware solutions for system integration

While we've briefly gone over the history of system integrations in the previous section, it is important to explore the different types of middleware to understand the integration solutions that an iPaaS provides. This is because the iPaaS is designed to incorporate many types of middleware concepts and overcome the limitations of preceding integration platforms.

Over the years, there have been various types of middleware that were developed to help businesses with different aspects of system integration of system integration:

Remote Procedure Call (RPC) Middleware

A type of middleware that enables distributed systems to communicate by getting processes or components to interact over a network. Abstracting the complexities of network communication it remotely invokes procedures and functions to help systems collaborate.

Message-oriented Middleware (MOM)

This is a type of middleware that enables systems and applications to communicate by sending and receiving messages. It facilitates asynchronous messaging and uses message queues or topics to ensure the delivery and consumption of messages.

Web services middleware

An architectural approach that helps form applications by getting web services (or software components) to communicate across different platforms and languages.

API management platforms

These include platforms that help create, manage, and secure Application Programming Interfaces (APIs). An API provides a standardized way for two applications or services to communicate. Thus, API management platforms help streamline how APIs are used to build integrations.

Data Integration platforms

This is a middleware platform that businesses to integrate data from different sources, formats, and systems across an organization. They typically implement Extract, Transform, Load (ETL) processes to unify data from disparate sources into one format and within one central repository.

Business Process Management (BPM)

This is a middleware that provides tools for orchestrating and automating business processes. Providing workflow engines and process automation tools, BPM helps build and monitor workflows while allowing integration with external systems.

However, when it comes to implementing actual system integrations with these middleware concepts, there are three key types of middleware solutions that particularly stand out as modern integration platforms.

Three modern middleware integration solutions

Traditional ESB solutions

ESB, or Enterprise Service Bus, is an integration architecture framework that has helped businesses connect and share data between multiple applications, since before the advent of the cloud. As an on-premises middleware solution, it requires the installation of hardware. It essentially functions as a centralized communication hub that simplifies and standardizes the integration of legacy systems with various applications, services, and databases. Because ESB solutions rely heavily on on-premises footprints, older messaging, and aging document standards, they are commonly seen in enterprise businesses that require dedicated IT teams, trained in managing integrations via the ESB solution.

The iPaaS

An iPaaS solution is either a no-code or low-code, cloud-based platform that helps seamlessly integrate multiple systems, software, cloud apps, or data sources. In other words, it provides businesses with a user-friendly, web interface to create, monitor, and manage software integrations, with automated integration tools and without any custom code. Centralizing and standardizing data from all connected systems on a dedicated cloud space, an iPaaS helps transform data and automate workflows between various software, including legacy systems and the latest cloud apps.

SaaS integration platform

SaaS integration solution, as the name indicates, is a type of middleware that only integrates SaaS (Software as a Service) solutions with other cloud apps or on-premises software using APIs. This type of integration solution may be designed to integrate only specific SaaS applications and businesses may need to upgrade their subscription to integrate more apps or add more users. While SaaS integration platforms are great for businesses looking to rapidly integrate specific apps, they may also force businesses into a vendor lock-in situation, making it difficult to switch business applications or to easily connect with new solutions.

How the iPaaS incorporates various middleware solutions in one platform

As a next-gen solution, the iPaaS provides greater integration flexibility than the aforementioned middleware solutions. However, what's noteworthy is that holistic iPaaS vendors like Alumio also effectively incorporate these aforementioned solutions (or the benefits or features they offer) within the platform's features and architecture. Here's how:

How does the iPaaS compare to ESB solutions?

In comparison to ESBs, the iPaaS is a cloud-based platform that uses comparatively lightweight architecture and doesn't need any on-premises installation. While both ESBs and the iPaaS specialize in integrating legacy systems, the iPaaS can flexibly connect with many more big or small SaaS, cloud apps, and data sources, across both on-premises and cloud environments.

While ESBs implement a complex messaging architecture to connect applications, the iPaaS adopts an API-first approach. This helps the iPaaS to build faster and more flexible integrations, which can be easily modified or undergo data transformation, without loss of data integrity or business continuity.

Furthermore, as indicated before, an ESB needs to be operated by experienced IT personnel that are carefully educated and trained in implementing it. In contrast, the iPaaS provides a cloud-based, web interface that both developers and citizen users (CTOs, project managers, junior developers) can remotely collaborate on to develop, govern, and orchestrate integrations.

How does the iPaaS compare with SaaS solutions?

The iPaaS isn't just limited to integrating a set amount of SaaS and cloud apps. Rather, certain iPaaS solutions also provides platform features that help businesses build their own connectors to integrate any SaaS or system that they seek to integrate. This also means that iPaaS vendors can provide pre-configured connectors to integrate a wider range of systems and software. To add to this, the iPaaS provides advanced data mappers and transformers, which provides the flexibility to constantly customize integrations to suit evolving business needs.

How does the iPaaS adopt or enhance other middleware concepts and solutions?

Apart from enabling system integrations in an API-first way, iPaaS solutions may often incorporate "Message-oriented Middleware" as a core component, to provide reliable messaging and queueing capabilities for integrated applications and services.

Additionally, certain iPaaS vendors may also provide API management and data integration features. For example, the Alumio iPaaS also contains ETL (Extract, Transfer, Load) tools to help with data migration and also enables users to build centralized data lakes. Furthermore, iPaaS solutions may also provide great business process management features to build complex workflows and automate business processes, significantly reducing manual work and data entry.

Many iPaaS solutions are also designed to support the integration of different services and systems through the use of APIs and microservices, which are key components of both SOA and Composable Commerce. This means that while the iPaaS enables businesses to integrate any systems or software, at the same time, it also provides the flexibility to build modular, composable business capabilities that can be easily assembled and reassembled to meet changing business needs.
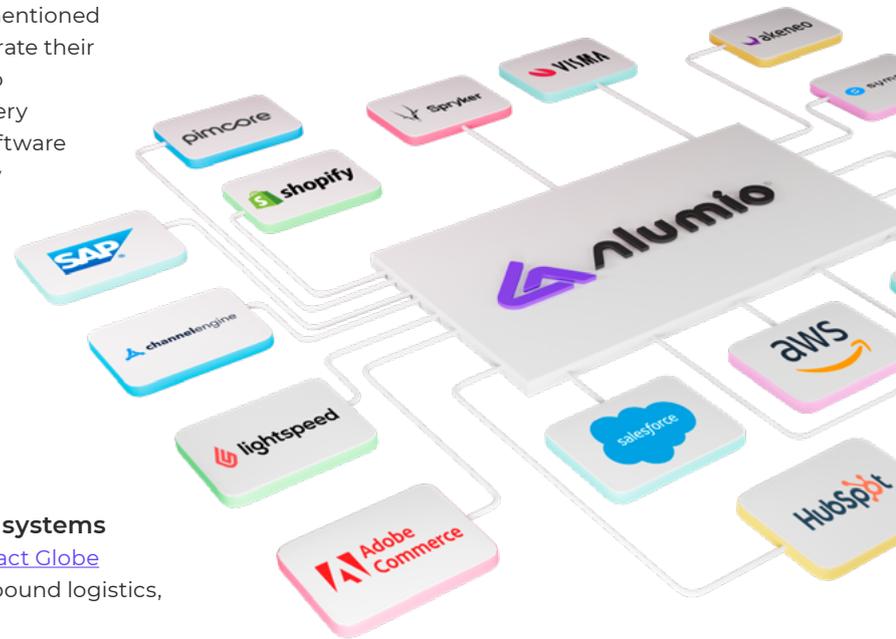
> *The IPaaS Software market size is estimated to increase by USD 3296 Million at a CAGR of 20.6% from 2023 to 2028."*
>
> - HTF Market Intelligence

What are the most common iPaaS integrations for digital transformation?

As the name indicates, digital transformation involves integrating digital technology with all the business processes of a company, from Operations, Logistics, Marketing, Sales, Customer service, Procurement, HR, and all other departments. As mentioned before, iPaaS makes it easy for businesses to integrate their systems with any software solution or cloud app to digitalize and automate the processes of nearly every business division. Here are examples of popular software integrations that an iPaaS helps businesses rapidly digitalize and automate their business processes with:

✅ **E-commerce platforms**
like Adobe Commerce (formerly Magento), Big commerce, and Shopify enable businesses to build web shops to digitally sell and market their products.

✅ **ERP (Enterprise Resource Planning) systems**
like SAP or Microsoft Dynamics 365, or Exact Globe help track and manage inbound and outbound logistics, as well as human resource management.

✅ **PIM (Product Information Management) systems**
like Akeneo and Pimcore help centralize, store, enrich, and update product information.

✅ **CRM (Customer Relationship Management) systems**
like Salesforce and Hubspot help track customer data, improve customer support, and automate marketing initiatives at every business touch-point.

✅ **EDI (Electronic Data Interchange)**
helps with the paperless exchange of B2B information for procurement or sales in a standard electronic format, ensuring data accuracy and faster transactions.

✅ **Channel Marketing Software**
like ChannelEngine and Channable help simplify the process of managing and optimizing e-commerce product listings across multiple channels like Amazon, Alibaba, and Bol.com.

There are also WMS (Warehouse Management Software), AI solutions like OpenAI for e-commerce, BI (Business Intelligence), and many more systems that businesses can connect with to accelerate digital growth.

🔗 **Read more about how the Alumio iPaaS helps digitally transform and optimize the "Value Chain" of enterprises: Optimizing the Value Chain with an Integration Platform**

Discover the Alumio iPaaS

Alumio is a cloud-based, low-code iPaaS that enables businesses to connect multiple software solutions, cloud apps, and data sources, across on-premises and cloud environments. It provides a user-friendly, click-and-configure interface that makes it simple for business users to collaborate with developers in building, governing, and orchestrating software connections. However, as a low-code solution, it provides advanced integration tools and developer-friendly flexibility to create custom integrations, transform data effortlessly, and build complex workflows to automate business processes. Centralizing all your integrations and data on one dedicated cloud space, Alumio unlocks data silos, provides 360-degree customer insights, and helps organize a scalable IT ecosystem.

Now that we've explored how integration systems have evolved over the years, the different kinds of middleware solutions, and the various old, new, and emerging software solutions that the iPaaS helps businesses connect with, let's delve into the actual business benefits it provides in doing so.

Here are 10 essential integration solutions that the Alumio iPaaS provides businesses to future-proof how they connect all their software, systems, and data sources for digital growth:

1 Full integration visibility
All data flows of integrated systems are made visible and accessible on a user-friendly interface, preventing black box issues and enabling easy configurations.

2 Get real-time integration
Ensure data is synchronized and processed in real-time, flexibly transform data, and utilize data mapping and routing to reduce duplication and improve accuracy.

3 Automated error detection
A robust monitoring and logging system helps swiftly detect and notify integration errors and API conflicts, saving cost and time on troubleshooting.

4 Business process automation
Reduce manual work and data entry by automating processes like product optimization, hiring, billing & invoicing, inventory management, marketing, customer support, and more.

5 Migrate legacy systems and data
Move and unify data from legacy systems with ETL, migrate custom fields and custom objects, and implement pre-configured connectors to integrate legacy systems with cloud apps.

6 Build a scalable IT ecosystem
Organize all integrations and data from one intuitive dashboard. Add or replace software integrations in an agile way. Unlock data silos and increase platform resources as your integrations grow.

7 Connect all B2B data
Connect the data and systems of all partners, suppliers, and customers using standard custom protocols and formats such as JSON, Edifact, X12, CSV, XML, cXML.

8 Create data insights for BI, ML, and AI
A robust monitoring and logging system helps swiftly detect and notify integration errors and API conflicts, saving cost and time on troubleshooting.

9 Data security and business continuity
Avoid system downtime and ensure business continuity with caching capabilities, data buffering, and reactivation procedures for your integrations and IT ecosystem.

10 Privacy compliance
Centralize all your data and connected systems on one secure, cloud space, get full data control, and comply with key privacy legislations like GDPR, SOC2, CCPA, FERPA, HIPAA, and more.

Why the Alumio iPaaS?

It is important to note that while this entire white paper explores the advantages and relevance of iPaaS solutions in general, most of it is described in context to the Alumio iPaaS. This is because, no two iPaaS vendors are identical even though they may offer certain similar features, which means that most of the platform features and advantages are mainly relevant to the Alumio iPaaS.

You can explore our detailed comparisons about the Alumio iPaaS vs the most popular iPaaS vendors and integration solutions in the market. However, if you're looking to adopt the iPaaS as your integration solution, here are some of the many requirements that the Alumio iPaaS helps businesses fulfill:

Integration challenge checklist for businesses choosing the Alumio iPaaS:

- ✅ When your integrations are mission critical

- ✅ When you have multiple systems to integrate

- ✅ When you need to build custom integrations

- ✅ When you have a mix of complex and simple integrations

- ✅ When your integrations requirements are fluid and change often

- ✅ When you want your business teams to manage and maintain your integrations instead of external IT companies

- ✅ When you require advanced operational visibility into your integration performance, including error handling and auto-recovery

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