



Beyond the SAP Bubble: The Ultimate Guide for SAP ERP Integration

SAP ERP is the lifeblood of many business operations today. But if you can't make it part of your digital transformation - i.e., connect it with your other software systems or open it up for mobile access - you only tap into a fraction of its value. This guide explains your options for using APIs to benefit from all mobile apps and other digital systems offered in conjunction with your SAP ERP.

What is SAP ERP?

Enterprise Resource Planning (ERP) from SAP is an integrated approach to managing the fundamental business functionalities of any company, including human resources, sales and distribution, material management, finance, and more. This holistic system enables businesses to be more efficient and productive

than the old-fashioned siloed systems. Historically, SAP's software has been highly proprietary. However, it allows easy data sharing and communication between its internal business modules. SAP ERP is typically implemented as a "walled garden" and doesn't communicate well with other non-SAP systems.



What is the purpose of APIs in general and for SAP?

Application program interfaces (APIs) are the modern digital building blocks that form a bridge between any two systems, allowing communication and data exchange. As companies undergo a process of digital transformation, isolated systems have become a severe

business obstacle. Modern companies striving for digital adoption understand the need to connect their SAP ERP with other software systems to realize its maximum value, and many seek to do this with APIs.



Why should you use APIs with your SAP ERP?

Two primary use cases exist for using an API with your SAP ERP.

1 APIs for B2B system-to-system connections

You need to connect SAP ERP to your third-party business systems to maintain smooth data sharing around your organization and reduce siloing. These could be:

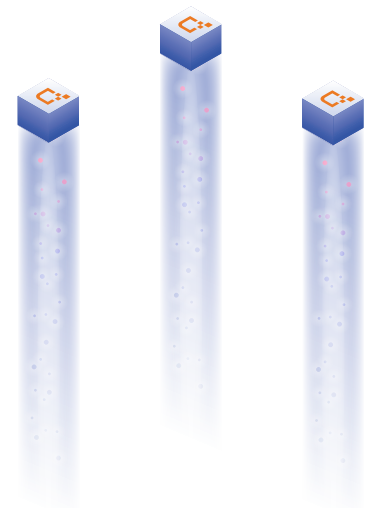
- Cloud-based systems like Salesforce, which need access to customer or prospect data stored in your SAP ERP;
- On-premises programs like payroll software that need data from your SAP ERP to perform essential functions;
- Internal business activities such as tracking customer data;
- Partner activities such as updating inventory data for a distributor.

2 APIs for mobile apps

Proprietary mobile apps can boost productivity and revenue only when they connect to your SAP ERP to access the most up-to-date information. With mobile apps, your company can:

- Provide salespeople out in the field with live inventory data;
- Enable field technicians to access maintenance data to deliver a higher level of customer service;
- Permit users to check their own medical records or purchase history through self-service customer portals;
- Generate insurance price quotes on the fly for users looking to compare prices;
- Enable customers to update their profile details, such as their address, without involving a customer service representative.

In all these instances and others, business systems need constant access to data deep in the heart of your SAP ERP. However, modern developers use REST APIs and struggle to extract the necessary data from SAP ERP systems.





Connecting your SAP ERP to business systems

SAP AG is a customer-oriented corporation, so as you'd expect, they offer several solutions to the challenge of connecting your SAP ERP with other business systems.

Choosing a solution depends on many factors, but mainly on which version of SAP ERP you're using and whether you're using it in the cloud or on-premise.



Connecting business systems with SAP ERP in the cloud

If you look at SAP's resources discussing APIs and integration, there are multiple products to generate and share APIs within the SAP community, such as through the SAP API Business Hub or SAP Cloud Integration platform.

However, appearances can be deceiving. Most of these resources are only relevant for SAP Cloud Platform or on-premises users with SAP's latest version, SAP 4/HANA. However, it's important to note that while SAP reports high figures for S/4HANA adoption, a smaller number of

these customers have actually implemented S/4HANA, with most opting for the on-premises version. As of the latest available data published by TechTarget, SAP's S/4HANA Cloud adoption totaled 3,300 customers, with 2,000 actively running the software. This number is relatively small compared to the tens of thousands of SAP on-premises ERP customers but is expected to grow with initiatives like SAP's Rise program, which is intended to accelerate digital transformation and cloud migration.



Connecting on-premises SAP ERP systems

If you're using an SAP ERP on-premises version older than SAP 4/HANA, there are still plenty of ways to connect your systems to maximize your digital

transformation. We'll discuss each option, together with its pros and cons.



SAP PI/PO

SAP is ending support

SAP has an enterprise application integration (EAI) software, SAP Process Orchestration (SAP PO), to support communication and data exchange between internal and external software and systems. Some clients still have the older version, Process Integration, so the known name in the market is SAP PI/PO.

SAP has announced that support for SAP Process Orchestration (SAP PO) version 7.5 will continue until 2030. This extension is part of SAP's broader maintenance strategy for its Business Suite 7 core applications, which includes SAP PO. Mainstream

maintenance for these core applications is scheduled to continue until the end of 2027, followed by an optional extended maintenance period until the end of 2030.

It's important to note that while SAP is extending support for SAP PO until 2030, the company is focused more on SAP Cloud Integration for future developments. This shift indicates SAP's strategic emphasis on cloud-based solutions over traditional on-premises platforms like SAP Process Orchestration. As part of this transition, SAP is working on an "integration cell," an on-premises runtime of SAP Integration Suite.

SAP customers facing a migration from SAP Process Orchestration (SAP PO) to SAP Cloud Platform Integration (SAP CPI) may encounter several challenges:

Architectural Differences: SAP PO and SAP CPI have different architectural approaches. SAP PO, an on-premises solution, often involves more complex scenarios with extensive customizations. In contrast, SAP CPI, a cloud-native solution, emphasizes standardized, lightweight integration processes. This fundamental difference means that not all integrations in SAP PO can be migrated directly to SAP CPI without rethinking the integration strategy.

Integration Flows Adaptation: The integration flows in SAP PO might need significant rework to fit into the CPI environment. This could involve redesigning some processes to suit the cloud architecture, which might not support some of the features used in SAP PO.

Custom Code and Adapters: SAP PO allows for extensive custom coding and the use of various adapters, which might not have direct equivalents in SAP CPI. This might require developing new integration logic or finding alternative ways to handle specific integrations.

Skill Set and Knowledge Transition: The shift from an on-premises to a cloud-based integration tool requires a different skill set. Teams accustomed to SAP PO will need training and time to adapt to SAP CPI's environment, tools, and best practices.

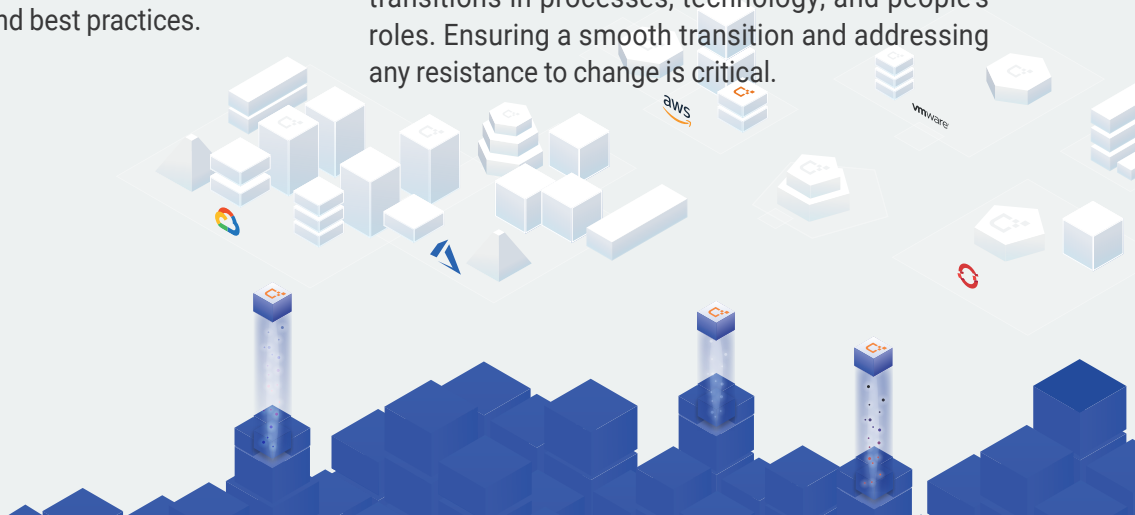
Data Security and Compliance: Migrating to a cloud-based platform raises concerns about data security and compliance, especially for industries with stringent data handling regulations. Ensuring that SAP CPI meets all the necessary compliance requirements is crucial.

Performance and Scalability Considerations: Cloud environment performance benchmarks and scalability options differ from on-premises solutions. Understanding and planning for these differences is crucial to ensure the migrated integrations perform optimally.

Cost Implications: Transitioning to a cloud-based solution may have cost implications, including subscription fees for SAP CPI and potential costs related to re-architecting integration scenarios. It's important to conduct a thorough cost-benefit analysis.

Testing and Validation: Thorough testing is required to ensure that integrations work as expected in the new environment. This might involve setting up parallel run environments to compare SAP PO and SAP CPI outputs.

Change Management: Any significant system change requires effective change management to handle the transitions in processes, technology, and people's roles. Ensuring a smooth transition and addressing any resistance to change is critical.



SAP Gateway

Easy to use, but only when you know how

SAP Gateway, previously known as NetWeaver Gateway, is another more recently introduced SAP integration product designed to help expose SAP data to the internet using the OData REST communication protocol. SAP Gateway can work with Remote Function Call (RFC) and Advanced Business Application Programming (ABAP) programs, and a new solution is available for cloud deployment. SAP Gateway is built into the ERP Central Component (ECC) 6 enhancement pack 7 (EHP7) for faster implementation.

It's worth noting that almost any task you perform using SAP Gateway can also be accomplished without SAP Gateway, using a SAP code library like SAPUI5 or Java Connector (JCo). However, these workflows demand a lot of low-level coding, which takes a long time and is only sometimes part of the skill set of the average front-end developer.

Advantages of SAP Gateway

SAP Gateway has built-in support for Fiori

Fiori is SAP's proprietary mobile app platform built into SAP Gateway. Because of the way it is coded, only SAP

Gateway can bridge the gap between Fiori apps and your SAP data. Companies aligned with the SAP technology stack make SAP Gateway their default solution for any integration with a Fiori mobile client.

Disadvantages

SAP Gateway requires experienced ABAP SAP Gateway programmers

Like SAP PI/PO, SAP Gateway demands a great deal of specialist resources. Unlike front-end programs, Gateway uses ABAP. Most UI developers aren't familiar with ABAP, so any organization that wants to implement Gateway will require an experienced ABAP programmer. Moreover, the ABAP knowledge needed for Gateway differs from regular ABAP development, so you'll likely need an ABAP Gateway developer and a classic ABAP developer. For most ABAP developers, the learning curve is relatively straightforward to become a Gateway developer (especially if you compare it with learning SAP PI/PO, which is much more challenging).

SAP Gateway requires a new server and time

From the point of view of Business Application Software Integrated Solution (BASIS) resources, installing SAP Gateway means installing a new server, with all the time, money, and hassle that goes along with it. In general, this is an attractive prospect for only some companies. They'd prefer to write a RFC and use it with a JCo rather than have to install new hardware and manage a new set of updates. The process takes even more time and money for companies that use an older SAP system because it needs to be configured manually. While, in general, development on Gateway takes slightly less time than SAP PI/PO since you can usually use ABAP developers that you have in-house (approximately three weeks to PI/PO's six weeks), it's still a time-consuming process that you wouldn't enter into lightly.



Third-party integration tools

Middleware could hold you back

Besides the tools available directly from SAP, it is possible to use various third-party solutions to bridge the API gap and implement digital transformation for your SAP on-premises solution. Traditional middleware is one of these methods. There are so many third-party integration tools and middleware options that we can't possibly mention each one. The most popular solutions include Oracle Service Bus, SoftwareAG WebMethods, IBM App Connect, Tivoli, and Mulesoft.

These middleware options carry much the same advantages and disadvantages as SAP PI/PO, with similar complexity issues and non-transferability to cloud environments. However, they also have an added drawback. These third-party middleware solutions aren't native to SAP, so your expert in Tivoli or Mulesoft, for example, probably will not have the expertise in SAP that they need to set up the integration quickly and effectively.

OpenLegacy Hub: Fast and Future Proof

The OpenLegacy Hub offers a new category of integration tools to build and deploy a working API that connects with your SAP in just a few clicks. The APIs you generate with OpenLegacy Hub can be deployed immediately in the cloud or downloaded and deployed on-premises. You can also use OpenLegacy Hub to generate APIs for customized BAPIs or ZBAPIs.

The main advantage of using OpenLegacy Hub is that it cuts through the time-consuming and challenging process of configuring, coding, and mapping required by other middleware and SAP PI/PO solutions, reducing long weeks of integration time to merely days.

Working directly between the SAP fields and the REST API center speeds up communication between your SAP ERP and legacy applications. By removing the middle integration layers, the platform also eliminates the risk of mistakes in coding and configuring that lie in wait between the layers and reduces the chances of miscommunication between human teams that need to interact to apply middleware and SAP PI/PO solutions.

What's more, there's no need to tap into any BASIS resources, wait for Gateway installation, or need an SAP upgrade to be suitable for Gateway. You can carry out the entire process yourself. Finally, when you transfer your business to the cloud in the future, all your APIs will still function correctly. OpenLegacy Hub future-proofs your SAP ERP integrations.

Jason Bloomberg, President of the analyst firm Intellyx, said it best when he wrote that pre-cloud technologies generally don't work well with cloud-based assets. To address this problem, APIs can bypass the middleware altogether, connecting directly to the legacy system.

Bypassing older middleware yields faster performance than on-premises middleware because applications connect directly to the legacy system. Furthermore, there is no need for changes to the legacy system itself.



Real-life examples of OpenLegacy Hub in action

Our open standards approach enables you to address unique data access challenges, all while maintaining our clients existing SAP investment. OpenLegacy has helped clients:



"Simplifies the integration process enables so Happay focuses on what it does best: supporting customers' travel and expense reporting.

Speedy integration—and demonstrating how quickly customers can get up and running—not only helps them close more deals, it also brings in revenue faster.

25%

days to complete integration process



"Piramal leveraged their existing SAP technology and their own small team of staff to generate Angular HTML5 applications to unlock their information quickly and easily.

100

people couldn't do what we did in 5 days



"The world's leading metal manufacturer synchronizes data between Oracle systems in multiple factories using a digital layer that connects to a SAP QM Module as the single source of record for quality management alerts.

zero

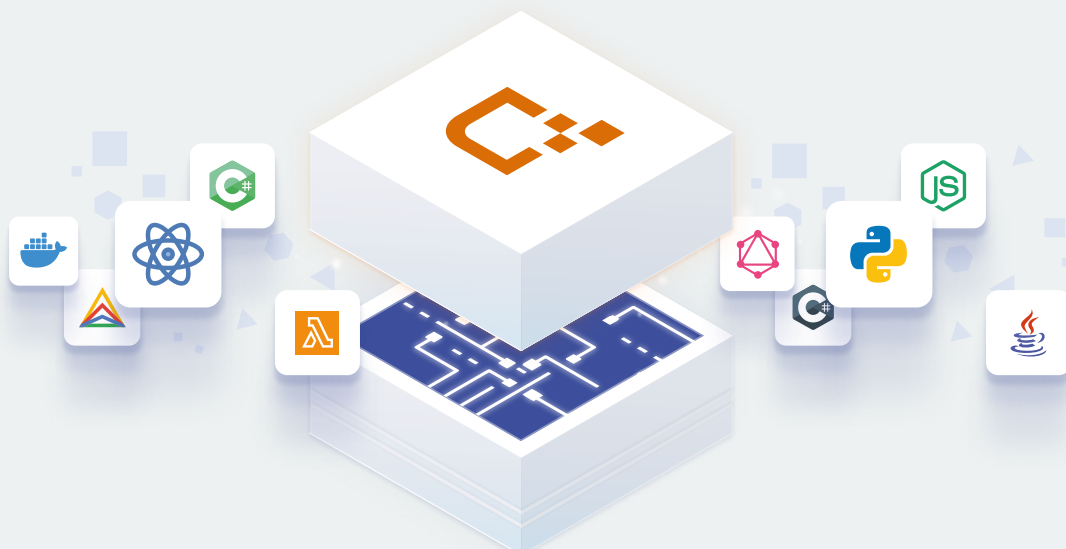
lost failure alerts



"100s of APIs developed from their SAP back-end system using OpenLegacy's Hub platform. The initial 8 APIs were used to support mobile apps for field technicians to submit expense reports. They also leveraged OpenLegacy's LDAP and single sign-on support for security and ease of use.

3 days

to create 8 REST APIs



Conclusion

SAP ERP solutions are likely to remain central to integrated business systems for the foreseeable future, so it's vital to find the best way to connect them using APIs with other applications and the mobile world so that you can maximize their value.

There are several options for connecting to your on-premises SAP ERP via APIs, summarized in the table below.

API choices for on-premises SAP ERP					
		SAP PI/PO	Gateway	3rd Party ESB	OL Hub
	Highly flexible	✓	✓	✓	✓
	Meets modern cloud requirements	✗	Partially	Unknown	✓
	ABAP Developers NOT required	✗	✓	✗	✓
	BASIS Resources and Servers NOT required	✗	✗	✗	✓
	No Code	✗	✗	✗	✓
	Time to delivery	6 weeks	3 weeks	6 weeks	1 day

Connecting the systems using SAP PI/PO, Gateway, or third-party ESBs brings significant drawbacks, with time-consuming and error-prone processes that require specialized expertise. Many of these solutions lock you into on-premises use rather than ease the almost certain transformation to the cloud.

OpenLegacy Hub is a best-practice alternative to these more traditional solutions. It makes generating APIs for all your SAP ERP and other business software systems quick, easy, and painless while future-proofing them for later migration to the cloud.



About OpenLegacy Instantly Integrate Legacy Systems to the Cloud

OpenLegacy offers a cloud-first legacy modernization platform. OpenLegacy Hub delivers high ROI with a simple, disruption-free, method to generate, extend and manage digital services from legacy systems to the cloud.

Jumpstart and optimize your modernization journey and follow it through, no matter the chosen strategy.