Google Cloud

7 Application Integration Challenges

(And How To Overcome Them With Google Cloud)

Executive summary

Over the last decade, application integration has emerged as a driving force in the software development arena. Its importance has been amplified not just by the rise of cloud computing and adoption of APIs, but also by the dramatic proliferation of applications in business ecosystems.

This unprecedented surge in applications, and the resulting data silos created, require integrations to be built at a scale and speed previously unimagined. Today, application integration is a non-negotiable cornerstone of every software deployment.

In such a landscape, low-code application integration and iPaaS (Integration Platform as a Service) tools have emerged as a compelling alternative to custom code and building plugins manually. Such tools remain invaluable for unlocking the potential of knowledge workers and alleviating pressure on IT teams.

The democratization of application integration has accelerated workflows and continues to offer a range of benefits, including cost savings, more rapid integration, and enhanced agility. Plus, when offered via a cloud provider, services can scale effortlessly with demand.

This white paper will examine some of the biggest challenges faced when integrating applications today, and how to overcome them, as well as covering a few best practices and emerging industry trends.

Introduction

No application is an island – the creation of every novel user experience hinges upon the fluid, secure, and efficient interchange of data between diverse applications.

At its core, that is application integration: facilitating seamless communication between applications within the boundaries of cloud architecture. This is often achieved by leveraging APIs and connectors, without undermining governance.

The rewards of successful cloud application integration – business process automation, comprehensive customer views, efficient architecture – are so significant that more than 40 percent of respondents to the 2022 State of the CIO reported automation and integration as their top priority.

Still, effective cloud application integration is not without its difficulties. We'll be looking at some of these below, as well as how to tackle them head-on, and how Google Cloud's Application Integration can help you future-proof your business.

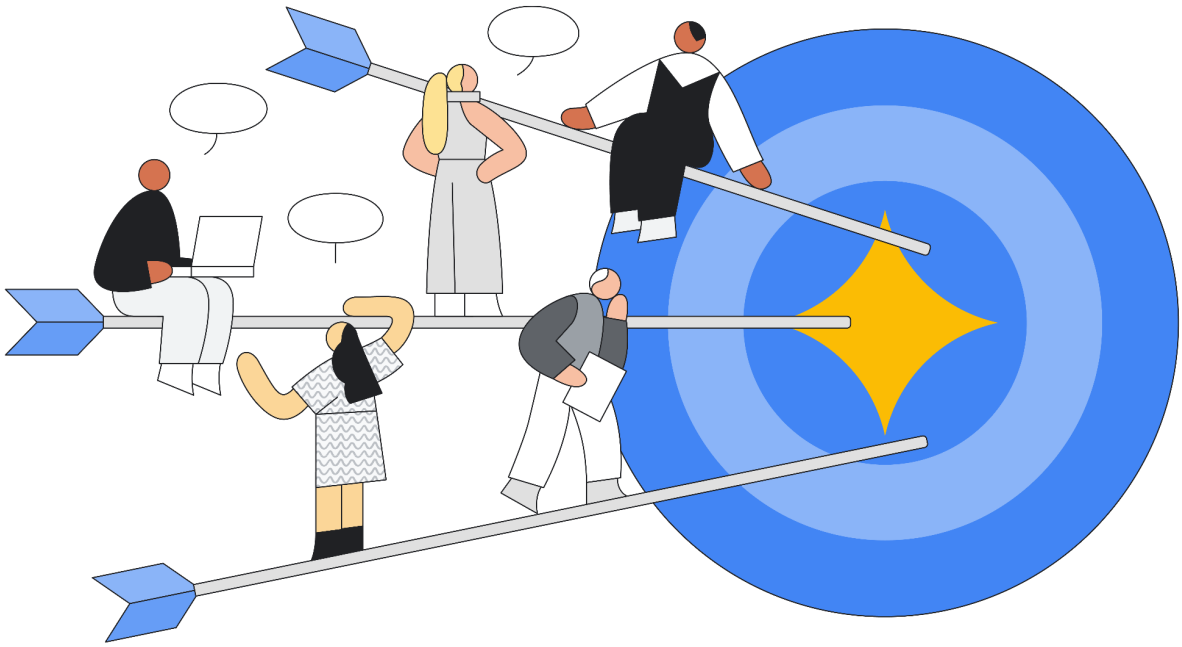
7 Common Application Integration Challenges

Although the right integration strategy will look different for every business, the obstacles below (and how to alleviate them) will always ring true for organizations considering digital transformation initiatives:

1. Limited resources and tight deadlines

Time and money have this in common: businesses could always use more of them. Integrating diverse applications with outdated or legacy tooling increases dependencies, slows development, and incurs additional costs.

Research in the marketing and HR spaces suggests that more than 40 percent of those surveyed cite missing or inadequate application integrations as a significant barrier to their success. Meanwhile, 35 percent of IT leaders (as identified in IDG's 2021 State of the CIO report) highlighted that budget constraints remain a problem.



There remains an obvious appetite for straightforward integrations in 2023, and their affordability continues to be a key concern for decision-makers.

2. Skills gaps within organizations

Integrations often require complex configuration and maintenance, which necessitates lengthy development cycles. In turn, demand is high for professional developers who understand the nuances of application integration. Unfortunately, there's a finite supply of qualified candidates.

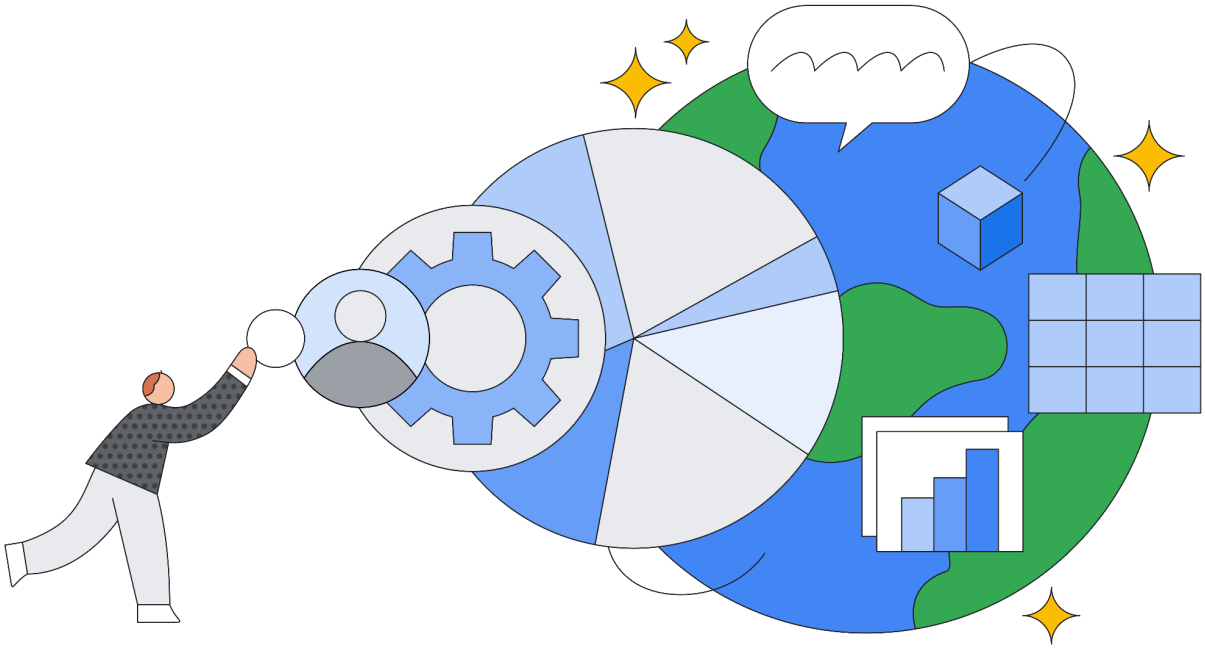
Organizations face a real risk of spiraling costs, whether due to meeting heightened salary expectations, training existing members of staff, and/or delaying projects while they negotiate with freelancers, consulting firms, or new hires.

According to a 2021 CompTIA report, 74 percent of IT leaders acknowledge a skills gap within their organizations, with 61 percent attributing it primarily to emerging technologies. Ironically, it may be the very same emerging technologies – such as low-code tools – that provide the key to bridging these skill gaps.

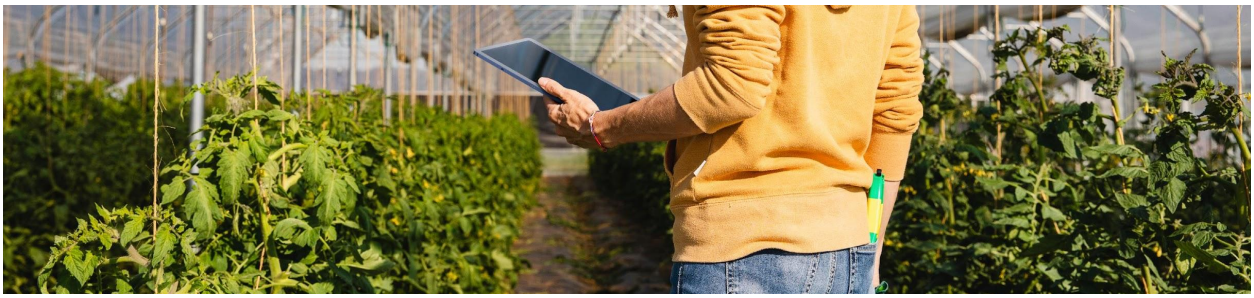
3. Growing importance of high availability and reliability in applications

Business processes increasingly rely on process automation and seamless communication between interconnected applications. This means, however, that applications can start to look a lot like dominoes: if one goes down, they all go down.

In hyperconnected organizations, any downtime or performance issues can have significant implications, from disruption to loss of trust from customers.



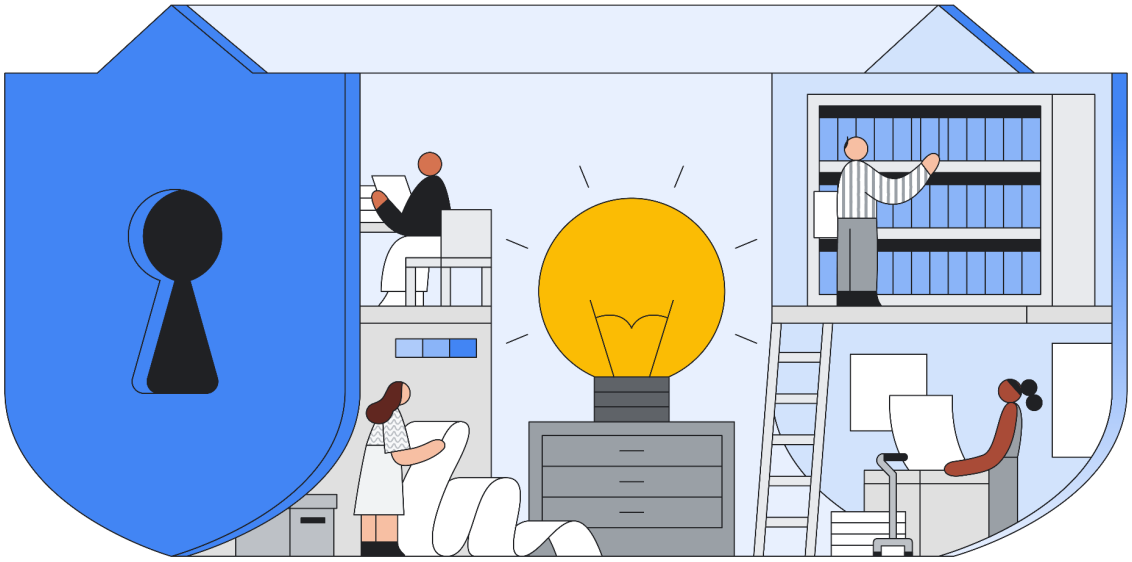
Although organizations can't control the uptime of services they connect with, they can ensure that they have contingency plans in place in case issues do arise.



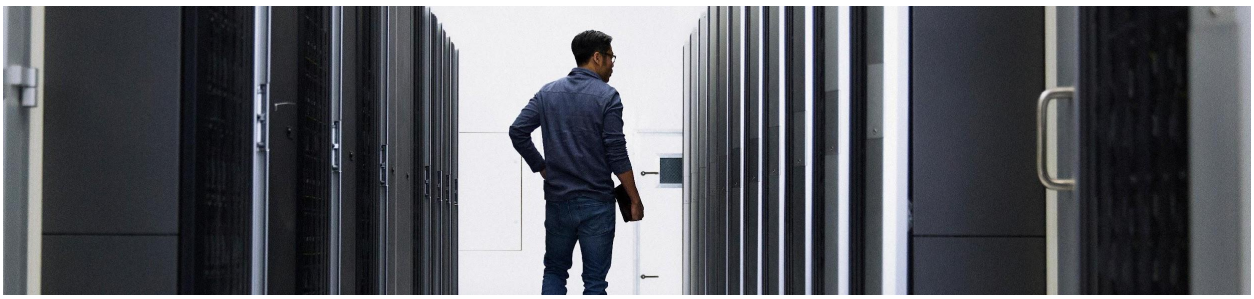
4. Rising security and privacy concerns

As we advance further into the digital age, security, and privacy concerns are escalating. The 2022 API Security Research Report by Google Cloud revealed that proactively identifying security threats (60 percent) and improving automation (57 percent) are at the top of most IT leaders' wish lists.

Almost every organization holds sensitive data about their customers, whether financial information or personal details. When integrating different applications, the likelihood is that this sensitive data will be exchanged and processed across these platforms.



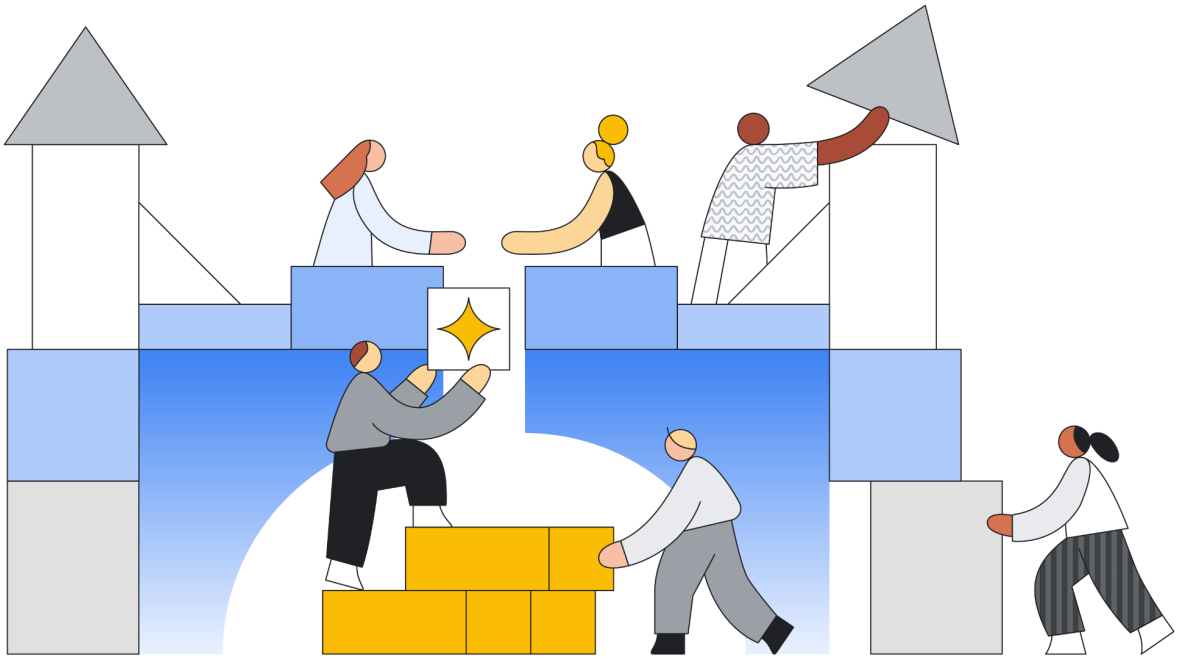
Along with the financial implications, breaches can lead to loss of customer trust and severe reputational damage. Furthermore, regulatory requirements around data protection and privacy (such as GDPR and CCPA) have increased the stakes, making non-compliance a costly affair.



5. Choosing between centralized/decentralized integration management

When navigating the landscape of application integration, one crucial decision businesses face is opting for centralized or decentralized integration management.

Centralized management places all control and decision-making with a single team, ensuring standardization and consistency across integrations. However, this model can lead to bottlenecks and slow down development if the central team struggles to manage a growing number of integrations.



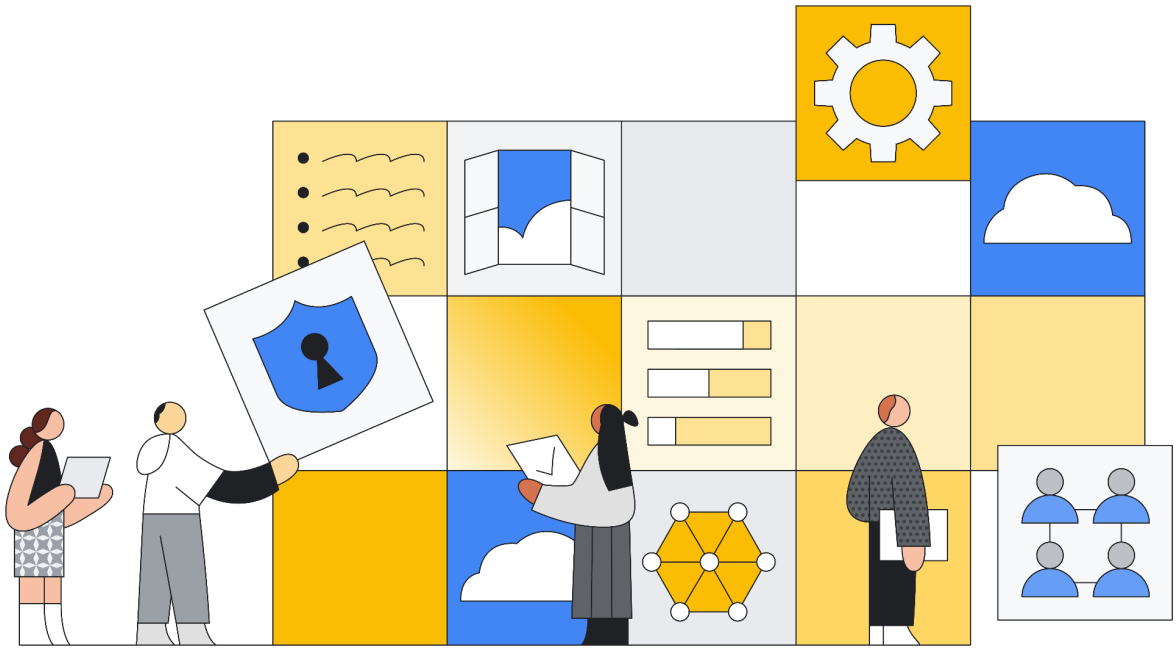
Decentralized management, on the other hand, empowers different teams to build their own integrations, which fosters agility and faster delivery. It can, however, result in a lack of standardization and increased complexity.

A hybrid approach, which combines central oversight with decentralized execution, aims to leverage the benefits of both models while mitigating their drawbacks.

6. Proliferation of applications

Research by Productiv indicates that the average SaaS portfolio has grown to 371 SaaS apps, a 32-percent increase between 2021 and 2023, and that's not to mention the additional on-premise solutions and legacy software solutions most organizations have to deal with on a daily basis.

These apps have specialized functionalities catering to various business functions, from customer relationship management and human resources to finance and operations, but they also result in application sprawl. Even though they each have specific benefits, they create silos of data and functionality that can lead to inefficiencies and inconsistencies.

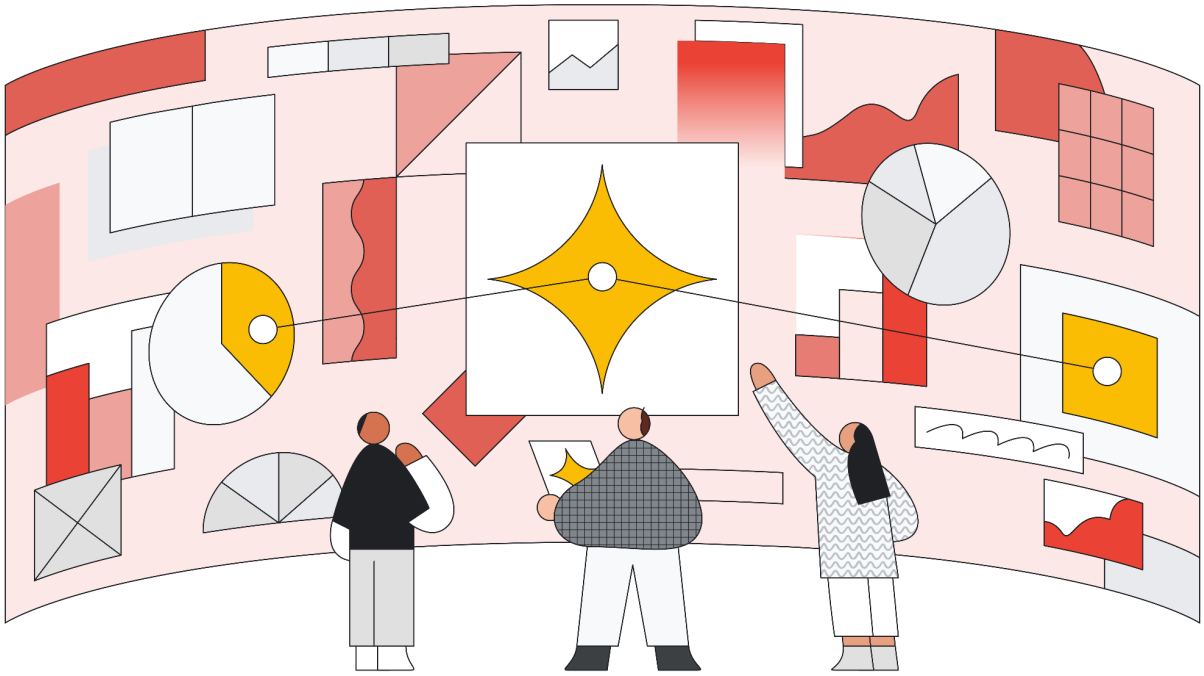


The output from these diverse technologies – different file formats, structured vs. unstructured or semi-structured data, etc. – creates increased complexity and a need for standardized integrated processes to accelerate delivery.

7. Growth in data volumes

Over the last five years alone, the amount of worldwide data created, captured, copied, and consumed annually has increased almost fourfold. Organizations have reacted accordingly to the growth of data volumes, for which they're also partially responsible – according to research commissioned by Harvard Business Review in 2023, 91 percent of leaders reported increased investments in data and analytics.

Although increases in the amount of data available come with all sorts of exciting analytics potential, they also mean that the amount of data that can be integrated is constantly growing.



Businesses need to figure out how much of this data is actually relevant to them. When managed improperly, increasing data volumes can lead to negative outcomes, including:

1) Organizations attempt to process large volumes of data, which can create potential issues with the performance of integrations and/or increase infrastructure costs.

2) Organizations fail to take advantage of relevant data because connecting to source applications is too difficult and/or costly, resulting in unutilized data silos.

A big problem here is that legacy systems are suddenly being asked to cope with volumes and/or types of data far larger or more complex than those they were designed to handle.

Considerations for high-performing cloud application integration

Before you can look at how to make the process of integrating applications smoother, it's important to take steps to assess your organization's current cloud integration readiness. And, no matter where that level might be right now, it's always possible to get to where you need to be.

There are multiple different factors to consider when choosing integration strategies, tools, and practices. Your requirements will influence not only what the end result looks like, but how you go about integrating:

- If you're dealing with sensitive information, prioritize implementing robust data security and compliance measures.
- Utilize pre-built integrations and connectors where appropriate to streamline and accelerate your integration development.
- Implement in-depth monitoring and performance optimization via more customizable solutions.
- Optimize existing architecture **before** starting the cloud application integration process.

Evaluate your organization's current architecture to ensure it is flexible and scalable enough to support cloud application integration. Trying to accelerate integration with monolithic or outdated architecture can be like trying to put the cart before the horse.

Many organizations have *ideas* about how to streamline their infrastructure – e.g., leveraging microservices (in conjunction with service mesh) and containerization – but just haven't gotten around to them yet. Adopting a modern and flexible architecture can provide significant benefits for cloud application integration, such as increased agility and scalability.

How can Google Cloud help with your integration needs?

Google Cloud's Application Integration has been meticulously engineered to address the growing problem of SaaS application sprawl, which the infusion of generative artificial intelligence (AI) into the software development space is certain to magnify.

Application Integration creates a cohesive, interconnected ecosystem that enables a more seamless, efficient, and holistic approach to business operations. The product offers 75+ connectors – a roster that is rapidly expanding – to seamlessly integrate Google Cloud or third-party applications (such as Salesforce, Zendesk, ServiceNow, and many more), ensuring rapid implementation times for organizations with minimal effort required.

The intuitive no-code designer, coupled with a data mapper, lets you build integrations and workflows with ease. This user-friendly design removes the need for API/integration expertise, democratizing the integration process across knowledge workers. Such an approach enables decentralized development while ensuring consistent quality and control.

Prioritizing high availability and uptime, Application Integration provides built-in load balancing for your applications, along with monitoring and alerts for third-party applications. You can scale integrations as they grow by leveraging Google Cloud's infrastructure while ensuring security and compliance with services like identity and access management.

If you're using services like BigQuery or Cloud Pub/Sub within your data stack, Application Integration works with them seamlessly using built-in connectors that allow you to build comprehensive workflow automations across Google Cloud and other applications.

Conclusion

Integrating applications can have powerful benefits – automated workflows, reduced data entry, enhanced monitoring, analytics, and more – that save both time and money. But there's a catch-22 at work here…

Implementing and managing integrations manually can be time-consuming, due to both the setup process and ongoing observation/tweaking. When implemented correctly, iPaaS can help to streamline some of these processes and reduce overall complexity.

Because Application Integration sits within Google Cloud's suite of products – including integration solutions like Apigee, Eventarc, Workflows, Dataflow, and many more – it offers a more holistic approach. Integrations with the products you're already using are truly native (no workarounds or hacked-together connectors!) and are fully managed on Google's side. Let's think again about some of the struggles many organizations face when integrating apps:

- Resource (and time) limitations
- Technical limitations and skills gaps
- Need for high availability and reliability
- Security and governance concerns
- Scalability and performance issues, e.g., rising volumes of data
- Wide range of applications and data types

We've seen above how effective implementation of Application Integration can ease many of these concerns, from its scalable pricing model and no-code editors to seamless connections and deep integration with third-party services. And, because it's all built on Google's secure-by-design foundation, you're always protected by progressive layers of security.

More and more organizations are coming to realize that integration challenges are responsible for slowing down their digital transformation initiatives; a market study by IDG and TeamDynamix found that 89 percent of companies are grappling with a data integration backlog and that 74 percent don't believe they have the resources to handle their current workload.

From a strategy standpoint, effective cloud application integration is increasingly seen as vital for modern organizations. Those who fail to understand the importance of application integration in business today risk becoming increasingly isolated and will struggle to reap all of the benefits that a more connected user experience can bring.

Visit our website to learn more about our product, or explore the magic of Google Cloud's Application Integration by creating a project in the console.

If you want to jump right in, check out our sample integration on Quickstarts.