

Annual APIs and Integration Report 2021

The State of APIs, Integration and Microservices



This is independent research conducted by Vanson Bourne.

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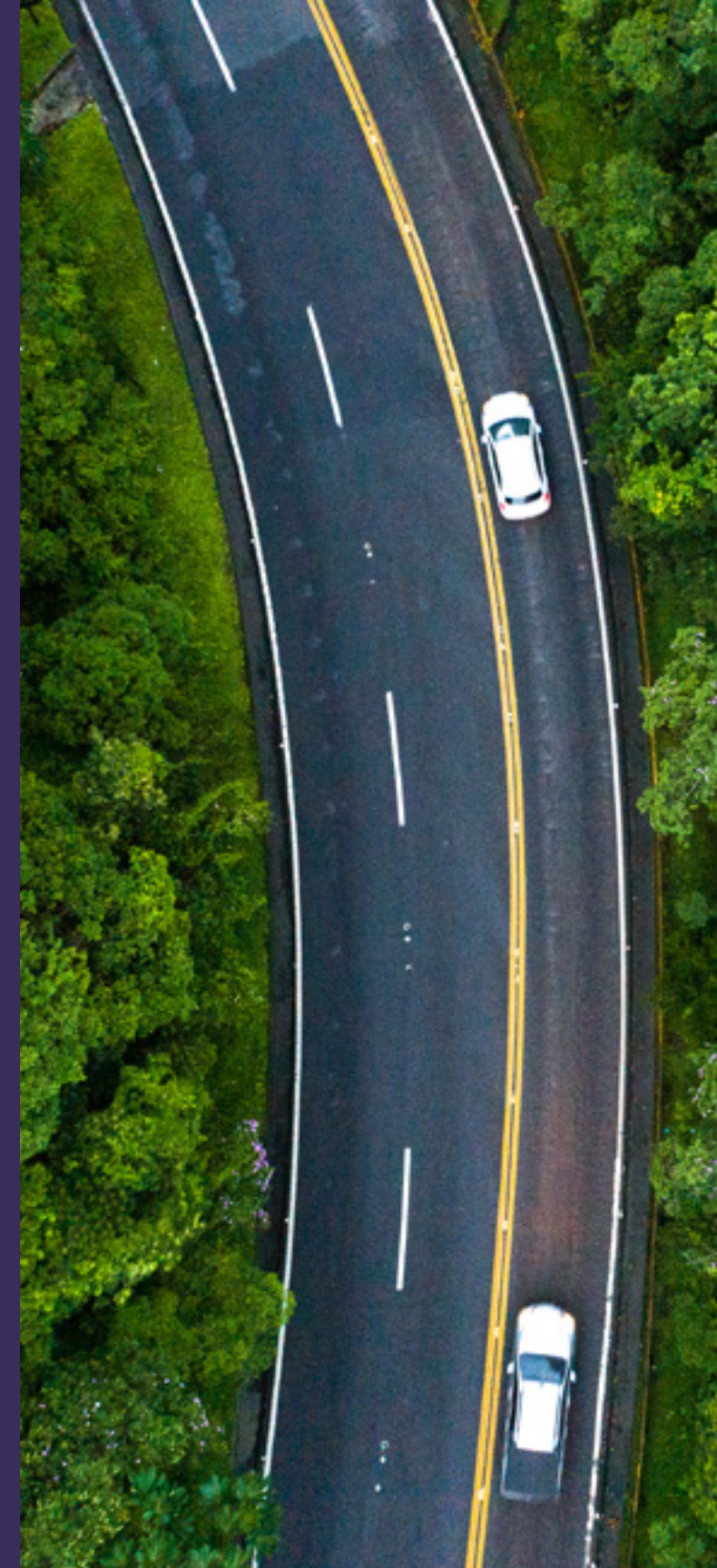
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Introduction

For modern organizations, having a highly connected IT environment is a must have. The need for integration – between different systems, applications, departments and individuals - has never been as important as it is today.

Many organizations are already using technology to help them to combat this challenge. APIs, integration and microservices systems are growing increasingly common and delivering a series of highly valuable benefits to organizations, with hybrid solutions (on-premises and cloud) now organizations' clear preference for integration.

However, as we will see, integration demands are growing further still, and organizations are pushing to use more sophisticated solutions. Looking at APIs, integration and microservices systems as separate technical tools is no longer good enough – the future for organizations is a bundled solution that incorporates all of these together.

The expected benefits from such a solution are considerable and this could prove to be a genuine differentiator for organizations in the coming years that are able to find a solution that enables this.

1

IT Leaders see API adoption as central to business operations



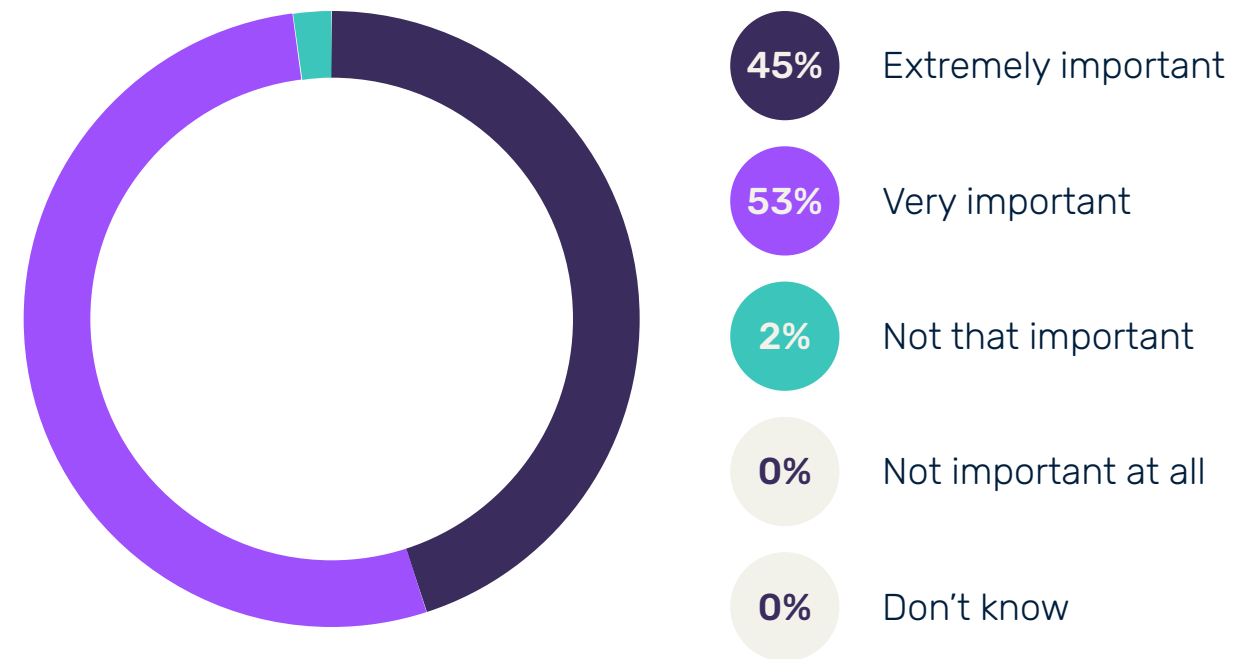
IT Leaders see API adoption as central to business operations

APIs play a vital role in ensuring that organizations' data, applications and devices are connected to one another. Organizations clearly appreciate the value that comes with API utilization and APIs prove to be a critical element in terms of operations and functionality, with **98%** believing that APIs are or would be extremely or very important to their organization's operations.

In addition, **93%** agree that APIs are relevant and essential to the functioning of organizations, while **86%** agree that without the use of APIs, organizations would be working in silos, further highlighting their importance.

» **60% of respondents from the retail sector report that APIs improve visibility of key data assets such as product, inventory and customer data across the business.**

How important are APIs/would APIs be to your organization's operations? [950]



APIs have a wide range of use cases in organizations

Respondents claim that their organization utilizes APIs across all or the majority of projects for a series of project types, illustrating both the range of use cases for APIs, and the extent to which they are used.

Application development being the use of APIs to provide data and functionality for use in business applications

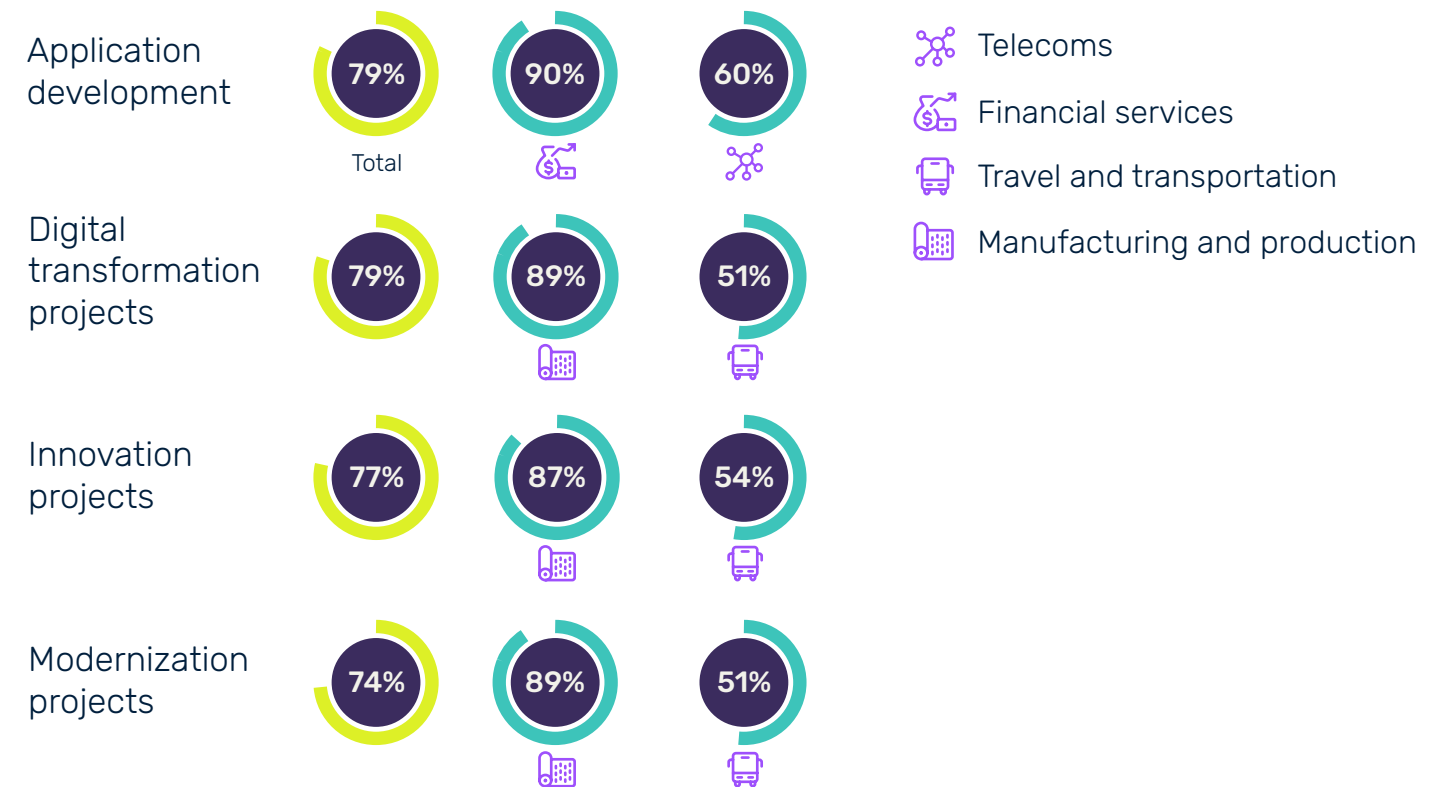
Digital transformation projects being the use of APIs to improve business operations and deliver value to customers

Innovation projects being the use of APIs to innovate faster and more effectively

Modernization projects being the use of APIs to improve the scalability and management of IT projects

For the following types of projects, to what extent are APIs being utilized within your organization? [950] **Split by sector**

Combination of "Utilized in all projects" and "Utilized in the majority of projects"

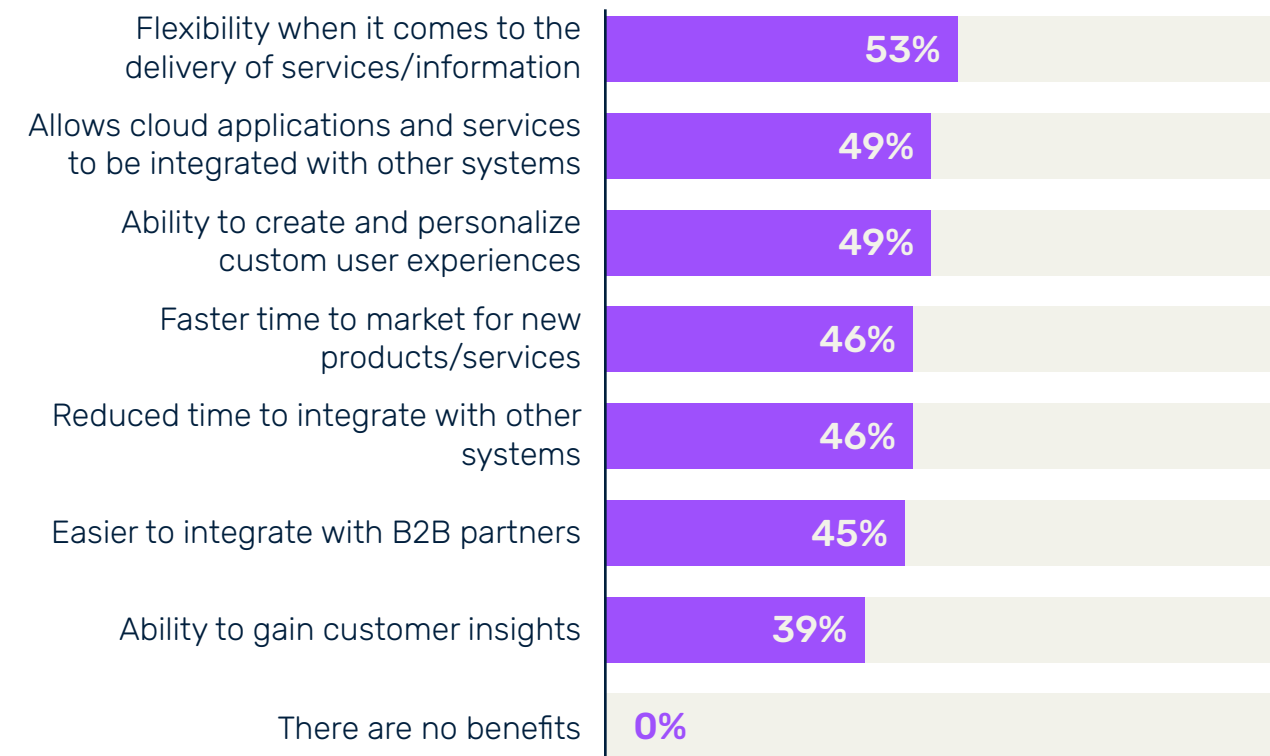


The biggest benefit for organizations through using APIs is flexibility

This large-scale utilization of APIs makes a lot of sense. A range of benefits are achieved through API utilization that can really steer businesses in the right direction when it comes to optimizing operations.

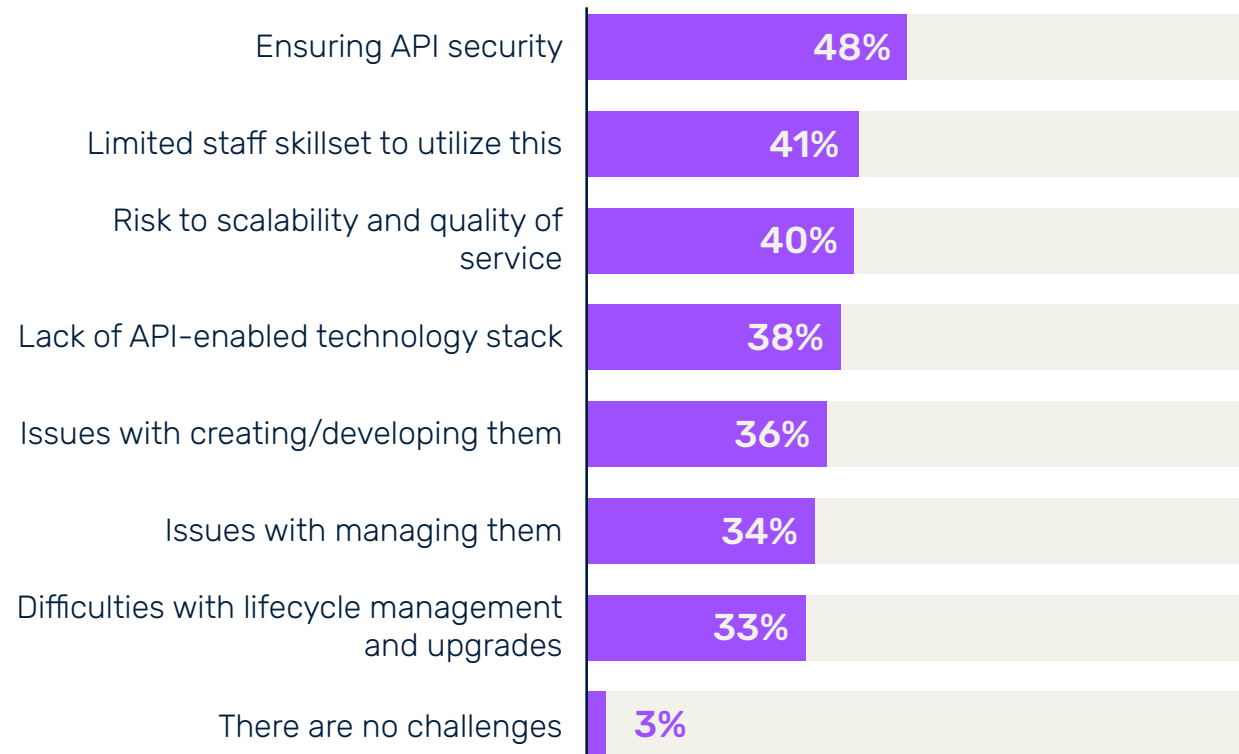
» **57% of respondents from the financial services sector believe that improving the customer experience by offering the right experience at the right time is a driver to adopting Open APIs.**

Which of the following benefits are achieved through utilizing APIs within your organization? [950]



Ensuring API security is top of mind

Which of the following challenges do you face when utilizing APIs within your organization? [950]



Despite the widespread use and the wealth of benefits associated with APIs, there are a range of challenges faced within API utilization that can prove problematic. Security is a concern for many, particularly in an era where cybersecurity risk is more prevalent than ever, and this concern translates into an API context as well.

COVID-19 and heightened technological vulnerabilities have meant that many organizations are considering security more so than in the past. It's understandable then that API security comes out as the top challenge. However, examples such as limited staff skillset and ability to scale point towards more fundamental struggles that would have existed regardless of the events of 2020. These are areas that organizations must look to address.

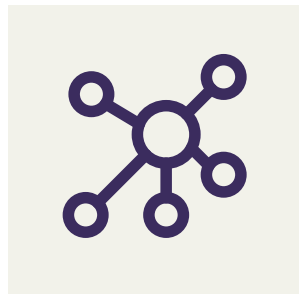
Basic API solutions no longer meet the needs of most businesses

Organizations recognize the relevance of APIs, but they want more than just basic solutions:



83%

agree that basic API management solutions are no longer adequate for meeting organizations' needs



93%

agree that as API utilization becomes more mainstream, organizations now require more advanced API solutions to experience the full range of benefits that APIs offer

For organizations to be able to truly embrace APIs, see more of the benefits that they can deliver, and help their organization to become more connected, advanced capabilities are needed in terms of the API solution(s) that they use.

Basic API management solutions are typically limited to API security and authentication capabilities. Advanced API management solutions add capabilities to attract and engage developer communities and partner ecosystems, monetize APIs, and monitor the full path of API consumption, from backend apps to the edge.

2

Integration systems
– the future is hybrid

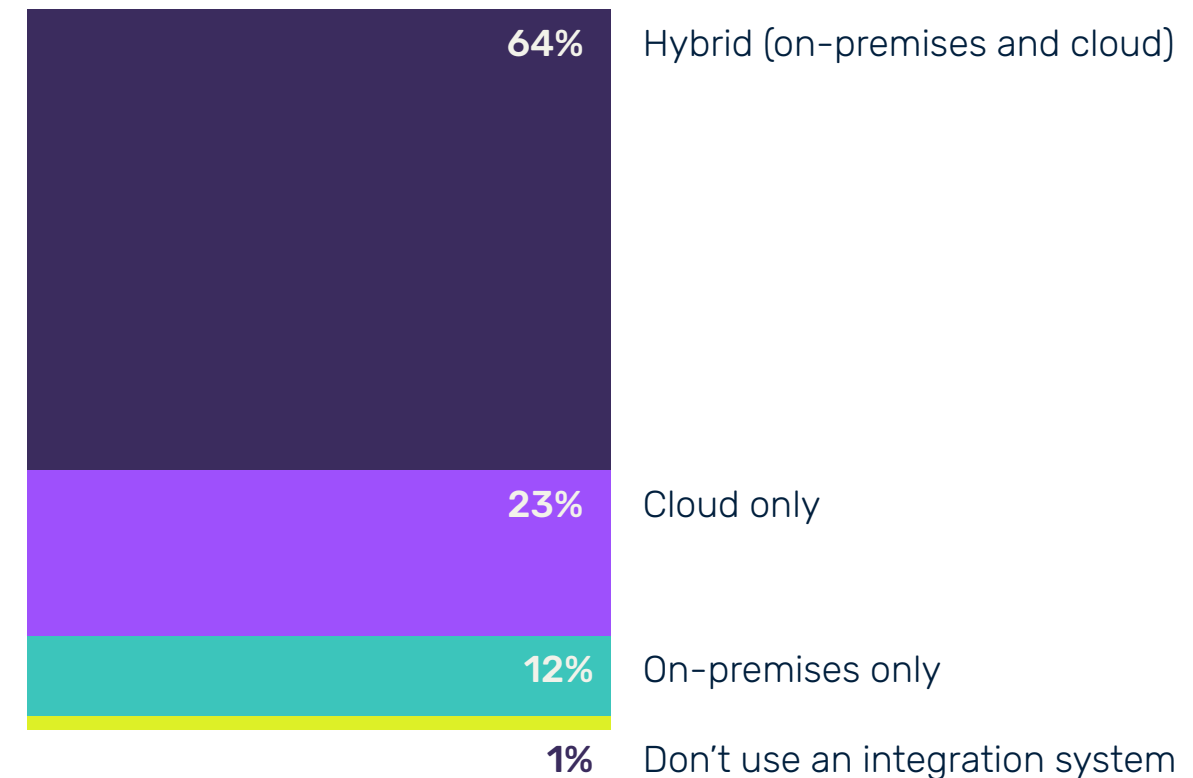


Integration systems – the future is hybrid

Integration systems are now commonplace in organizations, with **99%** using one. Organizations are most likely to be running some form of hybrid integration system, both on-premises and in the cloud (**64%**), versus cloud-only (**23%**) and on-premises only (**12%**).

» This preference for hybrid integration systems makes sense, with **99.7%** of respondents claiming that their organization uses the cloud in some capacity.

Which of the following best describes where you are running your integration systems utilized in your organization? [950]

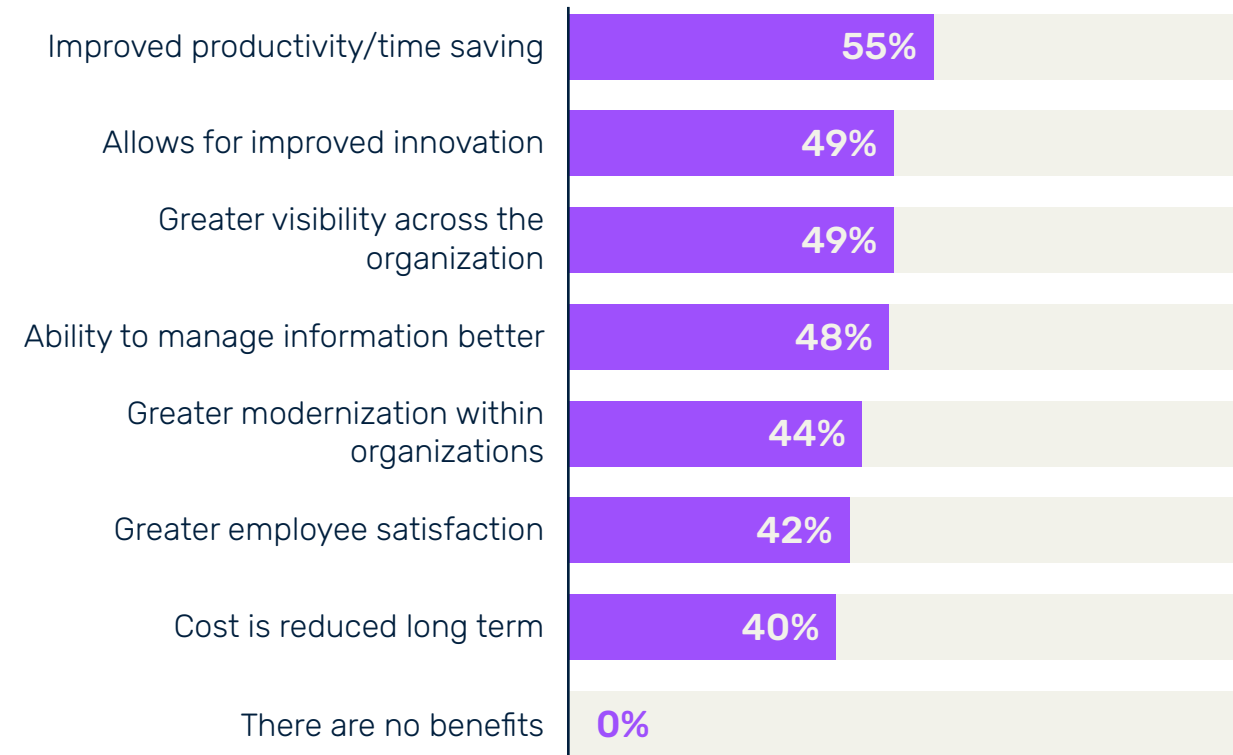


Hybrid integration systems can help to accelerate business capabilities

Positively, of those who are currently using hybrid integration, all (**100%**) respondents identify at least one benefit that is experienced in their organization as a result of using integration systems.

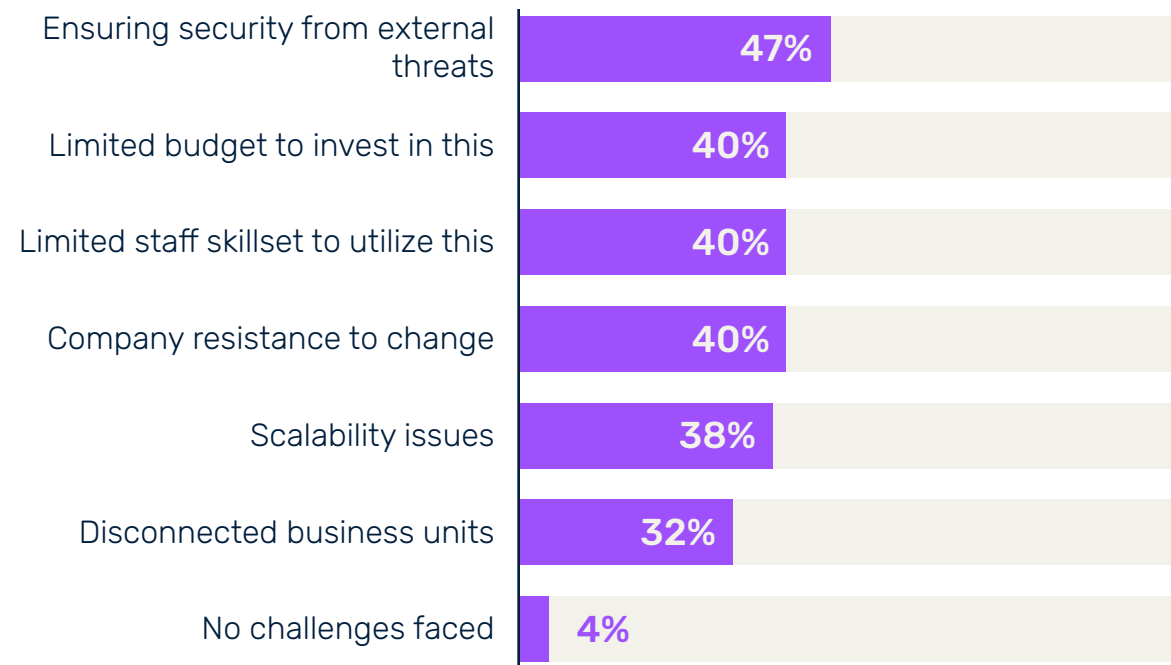
Productivity and time saving is a key advantage of hybrid integration systems, a critical capability within organizations who feel the brunt of time pressures.

Which of the following benefits are achieved through utilizing integration applications/systems within your organization?
[610] *Based on those using a hybrid integration system*



However, there are challenges faced when using integration systems...

Which of the following challenges do you face when utilizing integration applications/systems within your organization?
[943] *Based on those using integration systems*



Most commonly, challenges when utilizing integration systems relate to ensuring security from external threats (**47%**). This was also a key challenge in terms of API utilization and is clearly a prominent barrier in the current climate where security risks are increasingly top of mind.

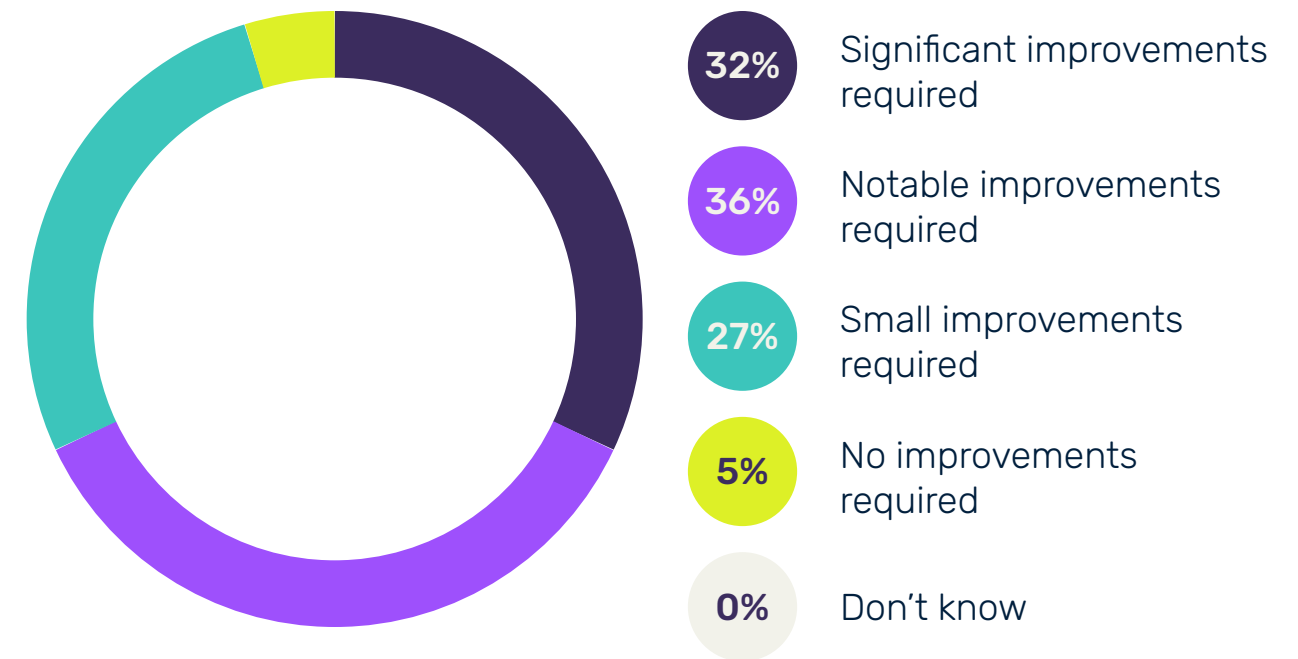
Internal organizational barriers such as limited budget, staff skillset and resistance to change also come into play. Businesses would certainly benefit from solutions that are reasonably priced and easier to use. They would also benefit from greater clarity as to how such solutions can maximize potential.

There's work to be done in order to optimize integration

The vast majority (**95%**) also believe that improvements are required to integration processes within their organization, demonstrating that some work needs to be done on integration systems.

Organizations should strive to improve how they take advantage of integration solutions and address the ways in which technologies (such as APIs and microservices) can help with this. This can only benefit organizations and would allow them to maximize potential when it comes to how integration processes and systems are currently run.

To what extent do you believe that integration processes require improvement in your organization? [950]



Building integrations has changed considerably in recent times

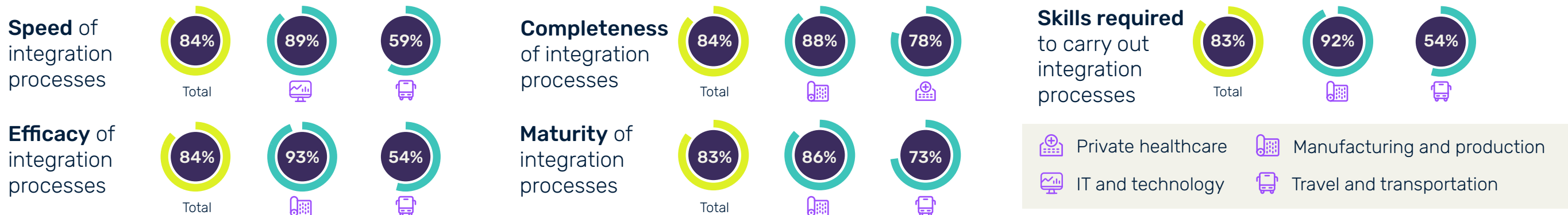
While there's been clear progression over the last three to five years for building integrations in terms of things such as integration speed and efficacy, the skills required to carry out integration processes has also increased at a very similar rate (**83%**). So, while it's impressive that other elements have progressed over time, there is clearly a demand on the skills needed. This highlights the need for a solution that doesn't require a multitude of skills that organizations may find difficult to keep up with.

Integration systems are continuing to grow in both their value to businesses and in their sophistication, with hybrid integrations now becoming the norm. Organizations that don't keep pace may find themselves falling behind their more connected competitors.

How would you describe the way in which building integrations has changed over the last 3-5 years in the following areas?

[950] Split by Sector

Combination of "Significantly" and "Slightly increased"



3

Microservices are more mainstream than you think



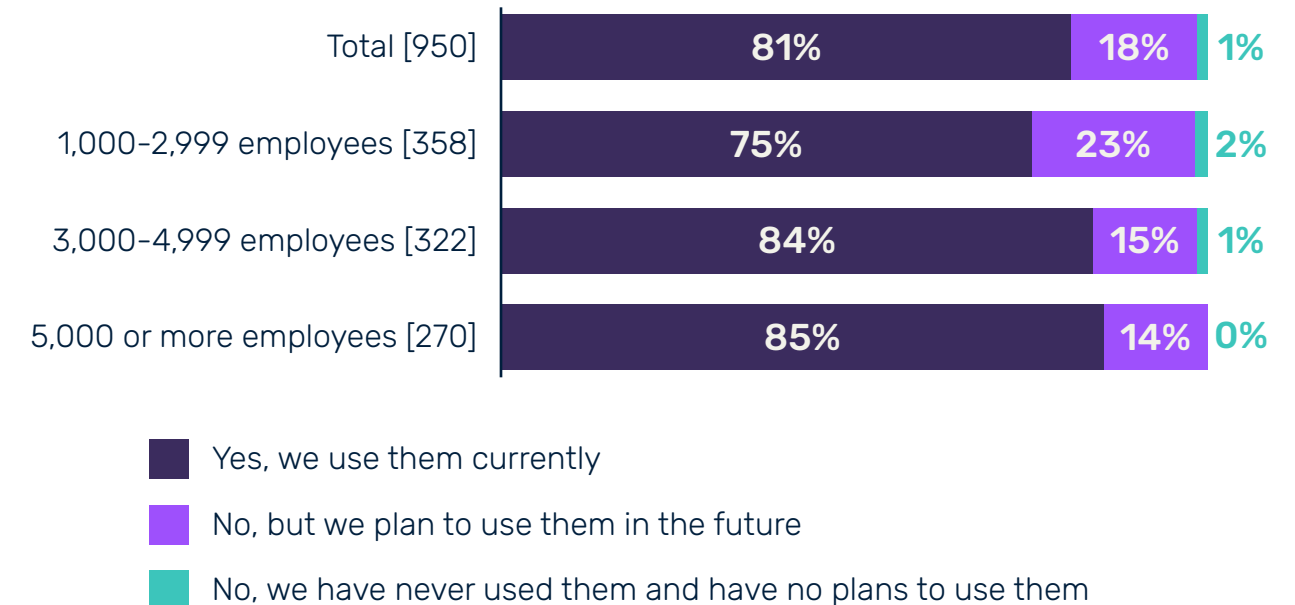
Microservices are more mainstream than you think

While not quite as well-established as APIs, there is already a clear desire from organizations to be utilizing microservices.

Most (**81%**) currently utilize microservices within their organization to some extent while less than a fifth (**18%**) don't use microservices currently, but plan to in the future.

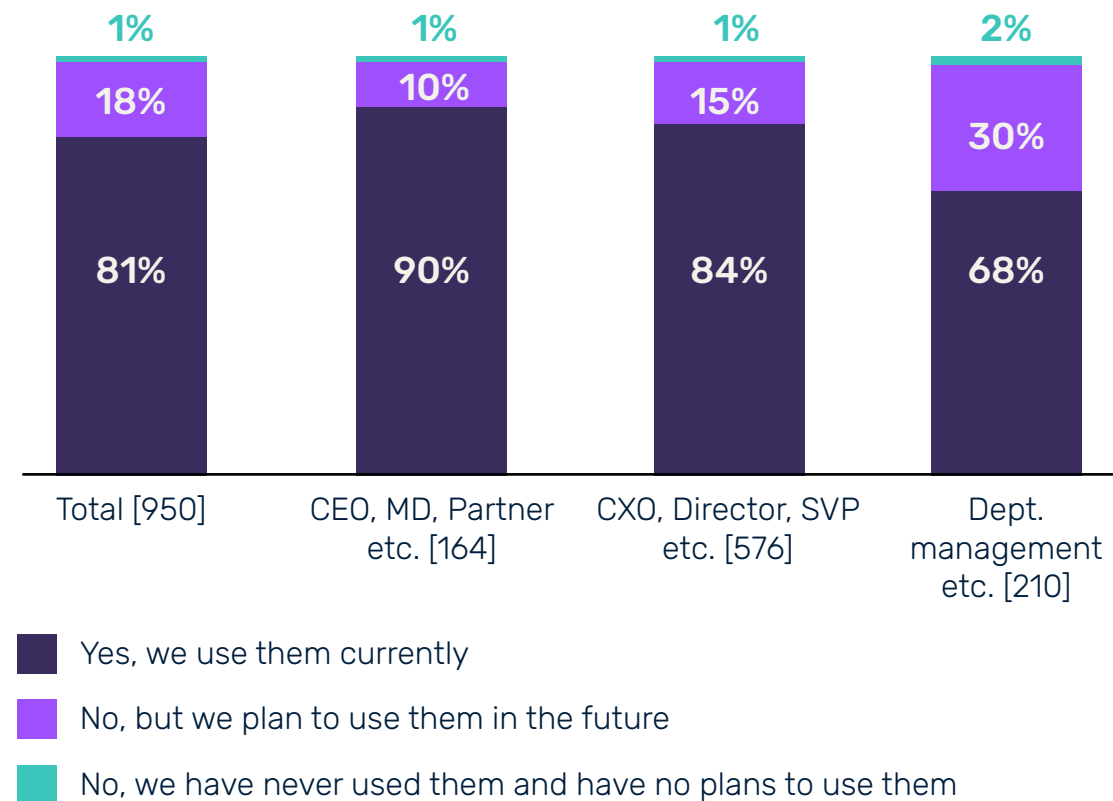
Larger corporations are more likely to be using microservices currently, in comparison to smaller organizations of 1,000-2,999 employees. This trend suggests that perhaps the larger sized organizations are more likely to both require and benefit from the utilization of microservices when deploying day-to-day operations.

Do you utilize microservices within your organization?
[Base sizes in chart] *Split by organization size*



Awareness of microservice utilization appears to vary based on seniority

Do you utilize microservices within your organization?
[Base sizes in chart] *Split by seniority*



It's those in the most senior positions who are the most likely (**90%**) to claim to be using microservices within their organization; much more so than those who work in departmental and intermediate management (**68%**) who are likely to have more direct engagement with microservices.

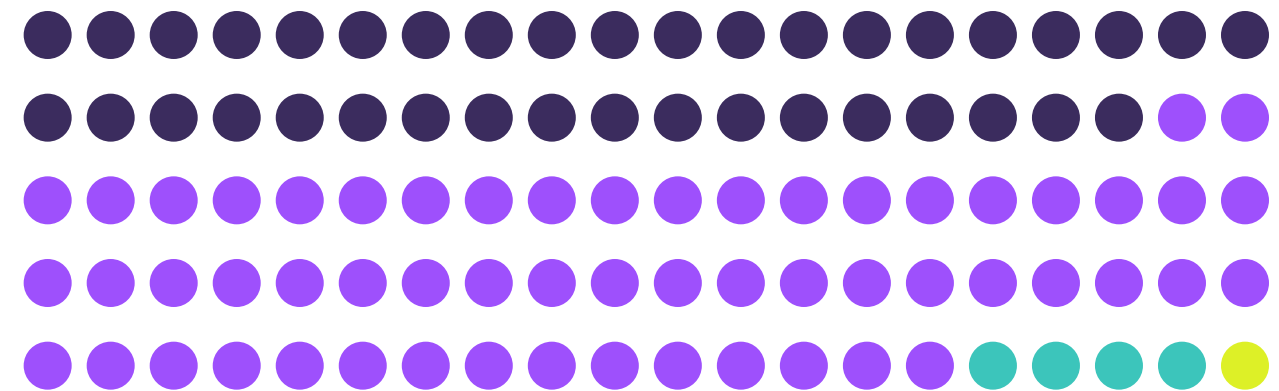
This may demonstrate that those in the most senior positions see the value in the adoption of microservices but have a limited view of the true extent of their use across their organization.

It's important for parties within organizations to be on the same page when it comes to awareness of microservices if they hope to maximize the opportunities that come with their adoption.

The importance of microservices is clearly recognized

The vast majority (**95%**) believe that microservices are or would be extremely or very important to their organization's operations. This helps to explain why so many organizations are already exploring utilization of microservices.

How important are microservices/would microservices be to your organization's operations? [950]

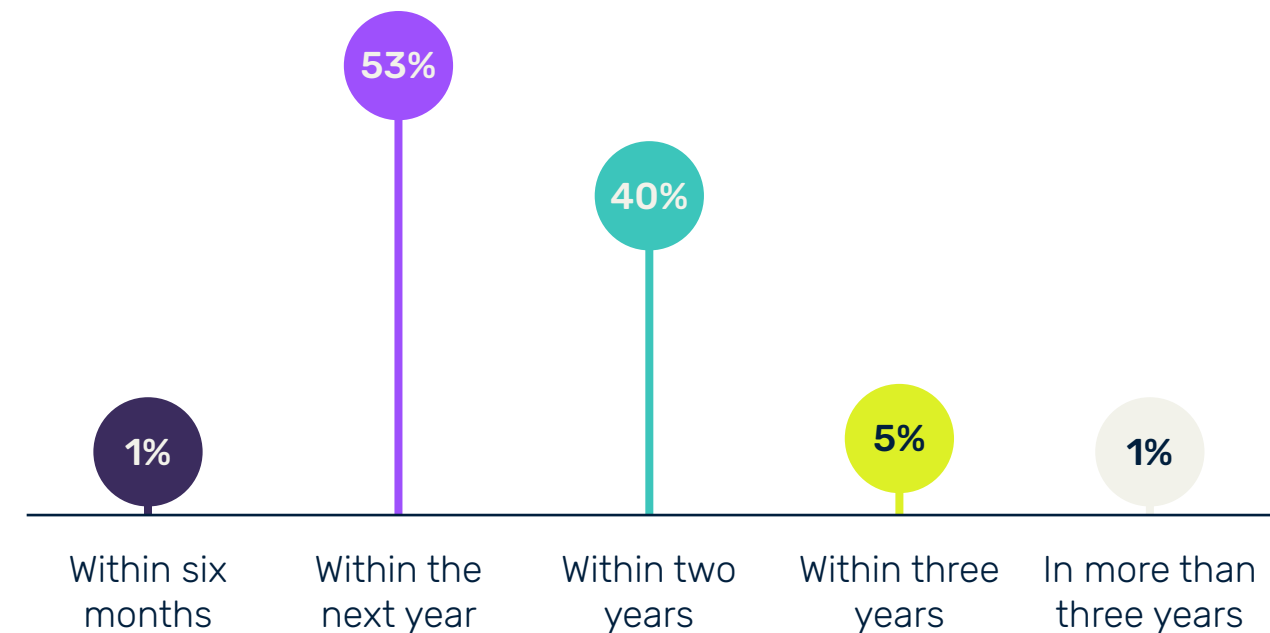


Soon even more organizations will be embracing microservices

For those who plan to utilize microservices, they will likely do so in the near future in most cases. More than half (**54%**) plan to implement the use of microservices within the next year. This further illustrates just how eager organizations are to implement microservices. With only a very small minority (**1%**) planning to implement microservices within the next 6 months though, it is clearly a process that requires time and thought. And it raises the question, why the wait?

Despite these organizations not planning to jump straight into microservices utilization right away, it appears that it's becoming not a case of "if" but "when" in terms of adoption. Those that are not doing this – and doing this well – could be left trailing their competition.

At what point do you plan to implement the use of microservices within your organization? [167] *Based on those who do not currently use microservices but plan to in the future*



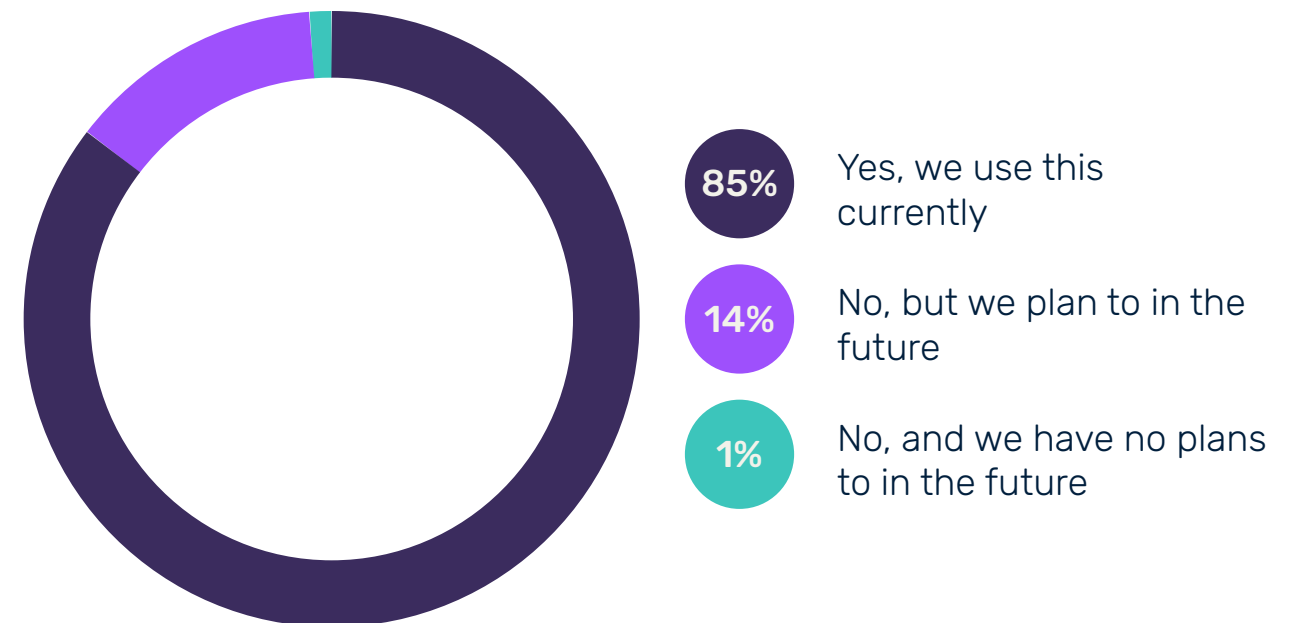
Service mesh and microservices go hand in hand

A service mesh is a dedicated infrastructure layer for facilitating service-to-service communications between microservices, often using a sidecar proxy.

In the context of service mesh, the majority (**85%**) of those whose organization is already using microservices claim that their organization is currently using service mesh as part of its microservices management, with an additional **14%** planning to in the future.

This scale of integration suggests that organizations consider service mesh and microservices as highly complementary components. This is particularly important in the context of how businesses operate, with service mesh helping them to manage microservices.

Does your organization currently utilize service mesh as part of its microservices management? [771] *Based on those who currently use microservices within their organization*

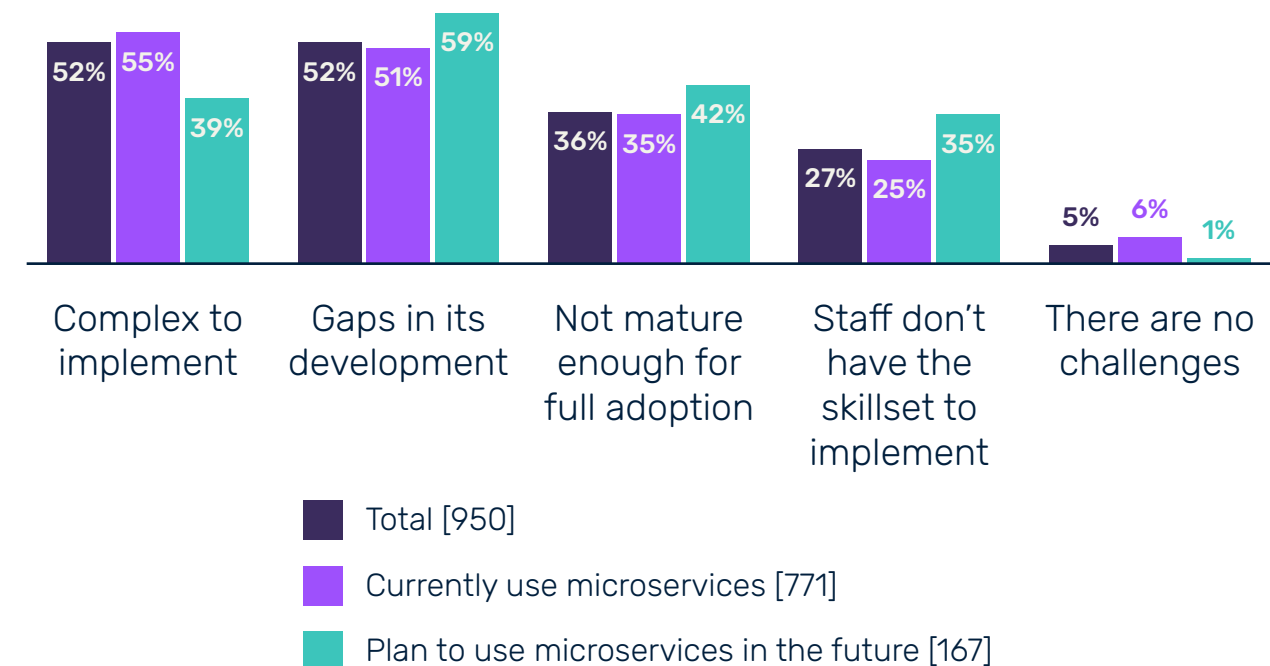


Perceptions of service mesh differ based on experiences with microservices

However, there are challenges faced or expected with service mesh implementation, and these vary between those who currently use microservices versus those who plan to in the future. Those who already use microservices find the complexity of service mesh a key challenge (**55%**), while only **39%** of those planning to use microservices expect this challenge. It's telling that those who have experienced the use of microservices first-hand are more likely to recognize this complexity.

Meanwhile, those who plan to use microservices in the future are more likely to believe that gaps in service mesh development, service mesh not being mature enough for full adoption and limited staff skillset to implement effectively are key challenges. For organizations to get the most out of microservices and service mesh, they must find ways to overcome these issues.

What challenges come with/do you expect will come with service mesh implementation for microservices within your organization? [Base sizes in chart] *Split by use of microservices*



Greater business agility is the greatest benefit achieved through the use of microservices

The apparent rush toward microservices utilization makes a lot of sense. A range of benefits are being achieved through use of microservices.

Businesses are arguably under more pressure than ever to be pushing the boundaries in terms of agility and scalability, all while improving their security wherever possible. Microservices may hold a lot of value in helping them achieve this.

Which of the following benefits are achieved through utilizing microservices within your organization? [771]

Based on those who currently use microservices within their organization



55%

Greater business agility



51%

Improved security



50%

Greater ease of scalability



50%

Easier for teams to focus on their part



49%

Addresses architectural need to support services



48%

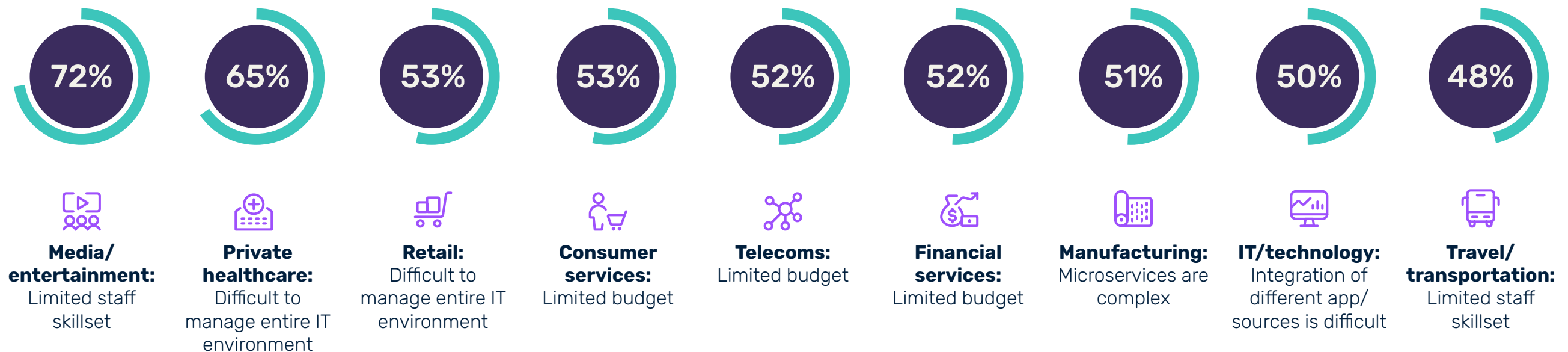
Easier to fix bugs in specific areas

Organizations face a number of challenges related to microservices too

The appetite for microservices is clearly there in organizations, but without being able to overcome these challenges, organizations won't be able to truly embrace their potential advantages.

Most common challenge per sector, when utilizing microservices [771] *Split by sector*

Based on those who currently use microservices within their organization



4

Opportunities for acceleration
– a bundled solution

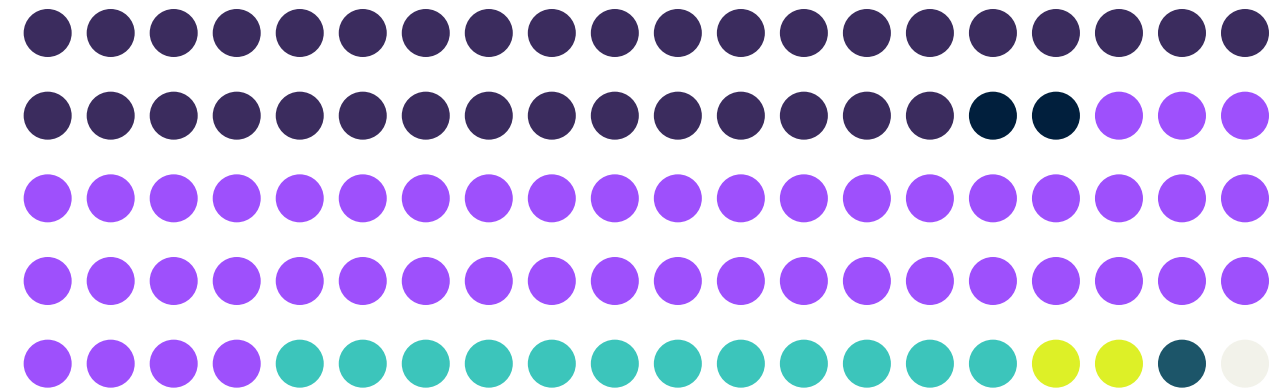


Opportunities for acceleration – a bundled solution

We know that in isolation, organizations are really embracing APIs and microservices, along with their wider integration solutions, but it appears the demand does not stop there...

Most (**97%**) believe that it would be beneficial to combine the utilization of APIs, integration and microservices together as a bundled solution.

If it were possible within your organization, would you want to combine the utilization of APIs, microservices and integration together in one package? [950]



- 37%** Yes - extremely beneficial
- 47%** Yes - very beneficial
- 13%** Yes - somewhat beneficial
- 2%** No - probably not beneficial
- 1%** No - definitely not beneficial
- 1%** We already do this

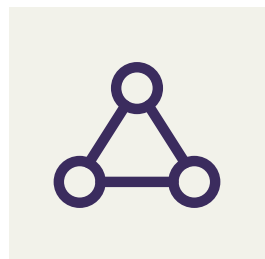
A bundled solution could further emphasize the benefits of APIs and microservices

Generally speaking, respondents agree that APIs and microservices complement each other in a way that means they would make sense to be brought together into one bundle for integration purposes.



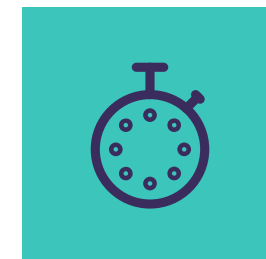
93%

agree that APIs and microservices are related and it makes sense for them to be bundled together in one solution



93%

also believe that organizations that can integrate API management with their use of microservices will have a distinct advantage over their competitors



92%

agree that the need for fast and efficient integration in enterprise organizations has never been greater

Driving optimum potential – a bundled solution could be the answer

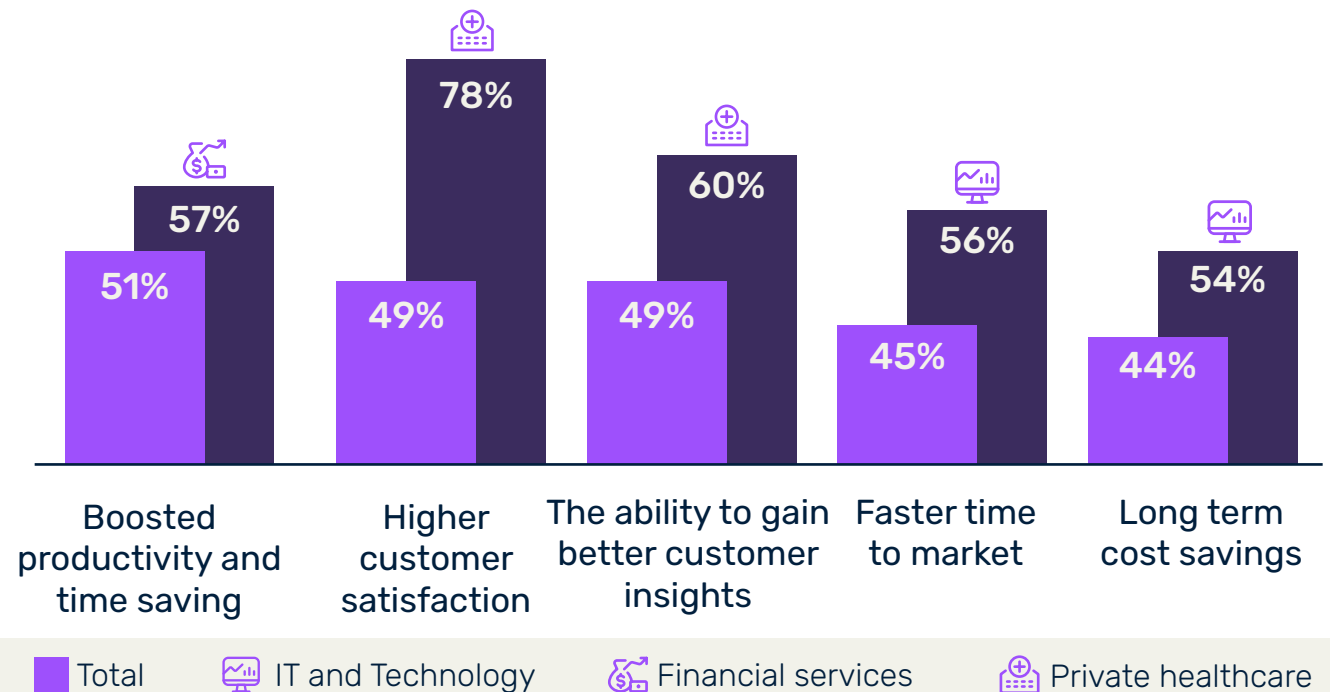
To further support the notion that a bundled solution would serve a positive purpose to organizations, there are an array of expected benefits that come with combining APIs, integration and microservices.

Benefits of a bundled approach not only focus on how organizations operate in terms of productivity and potential, but also with the customer in mind. Higher customer satisfaction and the ability to gain customer insights go hand in hand. In an era where consumers have so much choice, it makes sense why businesses are putting the customer at the center of their world.

Organizations are striving to become more digitally connected and demand for a solution that encompasses APIs, integration and microservices is very high.

What do you think the benefits would be for organizations in combining APIs, microservices and integration processes? [926] *Split by sector*

Based on those who would want to combine APIs, microservices and integration together in one package.



Conclusion

While organizations are clearly utilizing APIs, integration and microservices in isolation currently and see the value in doing so, there are some key challenges that should be addressed before they can truly embrace the best benefits of these technologies.

Integration in particular has progressed over the last few years in terms of speed, efficacy, completeness and maturity; although the skills required to carry out integration processes has also increased at a similar rate. Solutions should simplify integration processes to overcome this barrier.

A bundled solution – one that combines APIs, integration and microservices – can help to progress organizations, as well as the services they provide to customers. Boosted productivity, customer satisfaction and better customer insights are hugely desirable aspects that organizations should strive for.

The current business landscape demands digital connectivity more than ever before. A bundled solution could be exactly what organizations need in order to deliver that.

Unlock innovation with APIs, integration and microservices

Modern companies need modern solutions to tackle modern problems. Those that will thrive – and unlock innovation – will tackle their digital transformation faster.

The key to unlocking innovation is connections – flexible, digital connections built on APIs, integration and microservices. With these in place, systems, departments, partners and “things” can all communicate freely so that there is no drag on your data. But managing all of these connections is no trivial task. They can be built and hard-coded manually, but that is an expensive, time-consuming and inflexible approach to digitalization. It is not sustainable and it is not smart.

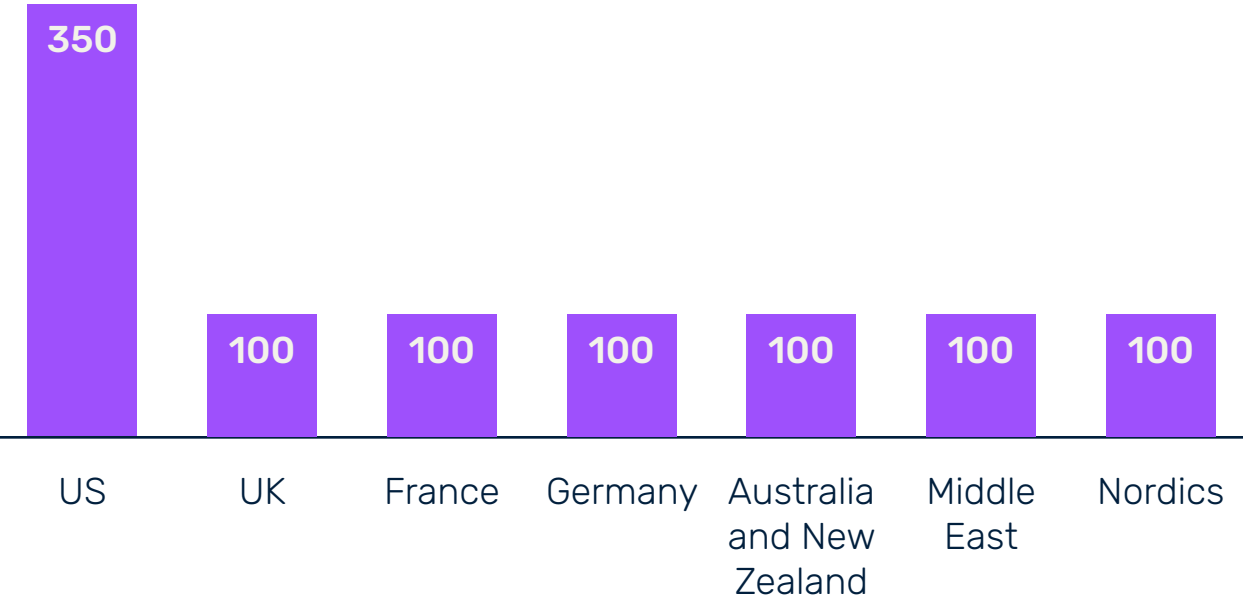
What companies need is one platform to manage them all. At Software AG, we built webMethods to be this platform. It is a modern API, integration and microservices platform that runs in the cloud and on premises, offers unified out-of-the-box connectivity, and is architected to tackle the next generation of digital transformation challenges.

To learn more about what you can do with better connections, visit: <https://www.softwareaggov.com/solutions/government-api-integration/>

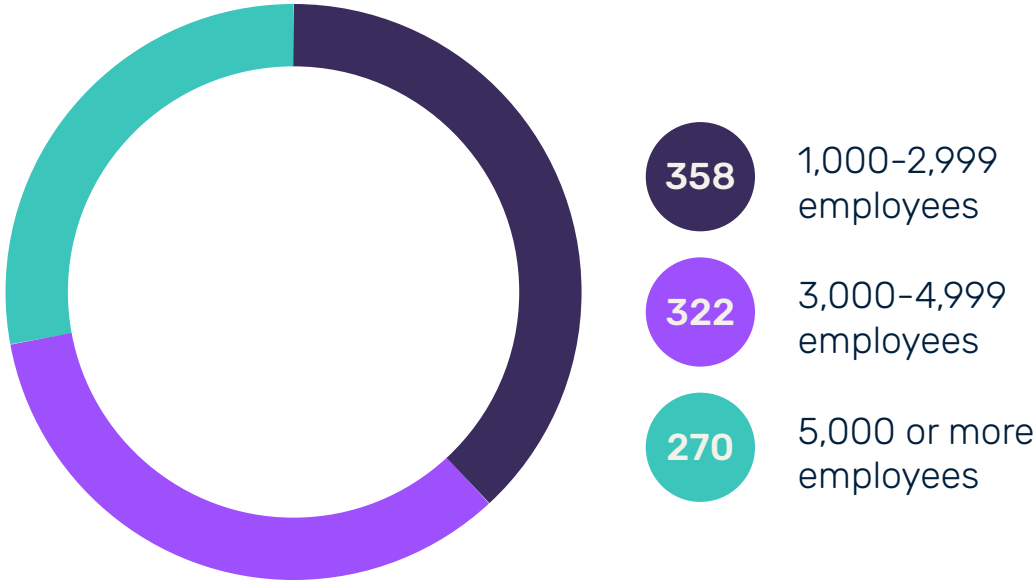
Demographics

This quantitative study surveyed 950 IT decision makers between December 2020 and January 2021. All interviews were conducted using a rigorous multi-level screening process to ensure that only suitable candidates were given the opportunity to participate.

Respondents by region



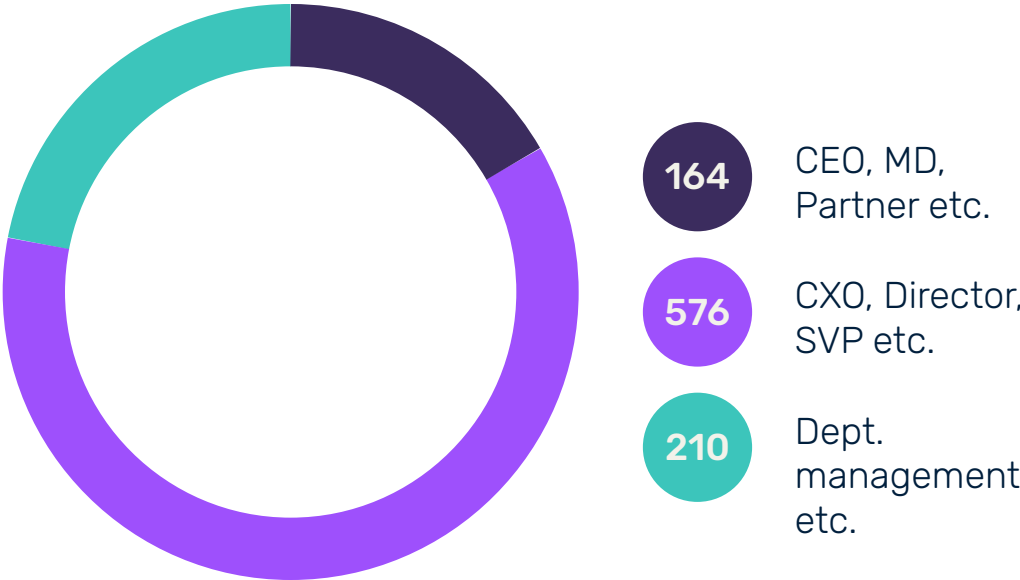
Respondents by organization size



Demographics

This quantitative study surveyed 950 IT decision makers between December 2020 and January 2021. All interviews were conducted using a rigorous multi-level screening process to ensure that only suitable candidates were given the opportunity to participate.

Respondents by role



Respondents by sector





Software AG is the software pioneer of a truly connected world. Since 1969, it has helped 10,000+ organizations use software to connect people, departments, systems and devices. Software AG empowers truly connected enterprises using APIs, integration & microservices; IoT & analytic; and business & IT transformation. Software AG's products establish a fluid flow of data that allows everything and everyone to work together.



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