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SAPinsider

RESEARCH REPORT

# Cloud Architecture for SAP

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SAP

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# Executive Summary

SAPinsiders have been moving to the cloud for over a decade but the transformation process is far from complete. In addition, most organizations take a unique path to the cloud. Some started with a lift and shift of older on-premise systems to infrastructure-as-a-service environments, while others may have directly moved to SAP S/4HANA or even RISE with SAP/SAP Cloud ERP Private. Some started their remediation processes for data and code early, while others have done it following the move to SAP S/4HANA, or even after the move to RISE with SAP. What this has made clear is that, while establishing and maintaining cloud architecture for SAP is on nearly everyone's roadmap, most organizations are still in the middle of that transition.

To provide insights into the architecture and landscapes being used for SAP systems, SAPinsider surveyed 139 members of its community between July and October of 2025. To gain additional insights into where respondents stood on their use of the cloud, four questions in the survey were used to help gauge respondent maturity. This assessment started by seeking to understand the current architecture for their SAP workloads. Respondents indicated whether their organization was using a primarily cloud-native environment that included Kubernetes or microservices architecture, hybrid cloud with containerized SAP-adjacent services, hybrid cloud with some modularization, on-premise with limited cloud integration, or a primarily monolithic, on-premise environment.

Respondents were also scored on the extent to which SAP-related architecture is adopting cloud principles. Those that are fully cloud-native for SAP-adjacent and new services received the highest score followed by those with broad adoption across workloads, having pilot projects in place, conducting initial exploration, and those who have not yet started their cloud transition. Respondents were also asked about the level of architectural governance that exists for SAP-related cloud and hybrid cloud initiatives. Respondents could select from having full enterprise-level governance across SAP and cloud-native domains, a centralized government framework, standard guidelines across some teams, informal, project specific governance, or no governance at all.

Last, respondents were asked about the cloud tools and practices in use for SAP or SAP-integrated workloads. The more tools and practices in place the greater the impact on the maturity score. Answer choices included API-first development for SAP integration, CI/CD pipelines for SAP extensions, container orchestration, infrastructure-as-code, or none of the above.

Respondents with the highest scores were most likely to be running primarily cloud-native architecture with a Kubernetes or microservices architecture (47%) or hybrid cloud with containerized SAP-adjacent services (41%), are fully cloud-native for SAP-adjacent and new services (53%) or at least have broad adoption of cloud architecture across workloads (44%), and had full enterprise-level architectural governance across SAP and cloud-native domains (72%). These leaders represent 23% of respondents.

Those beginning their cloud journeys were mostly still on-premise with limited cloud integration (47%) or were still primarily on-premise (31%), were only conducting initial exploration (47%) or had not started adopting (33%) cloud principles, and had informal, project specific architectural governance for SAP-related cloud

**47%**

**of cloud beginners are still mostly running on-premise with limited cloud integration**

initiatives (51%). These respondents represented 32% of all respondents. The remaining 45% of respondents represent a majority that have hybrid cloud landscapes.

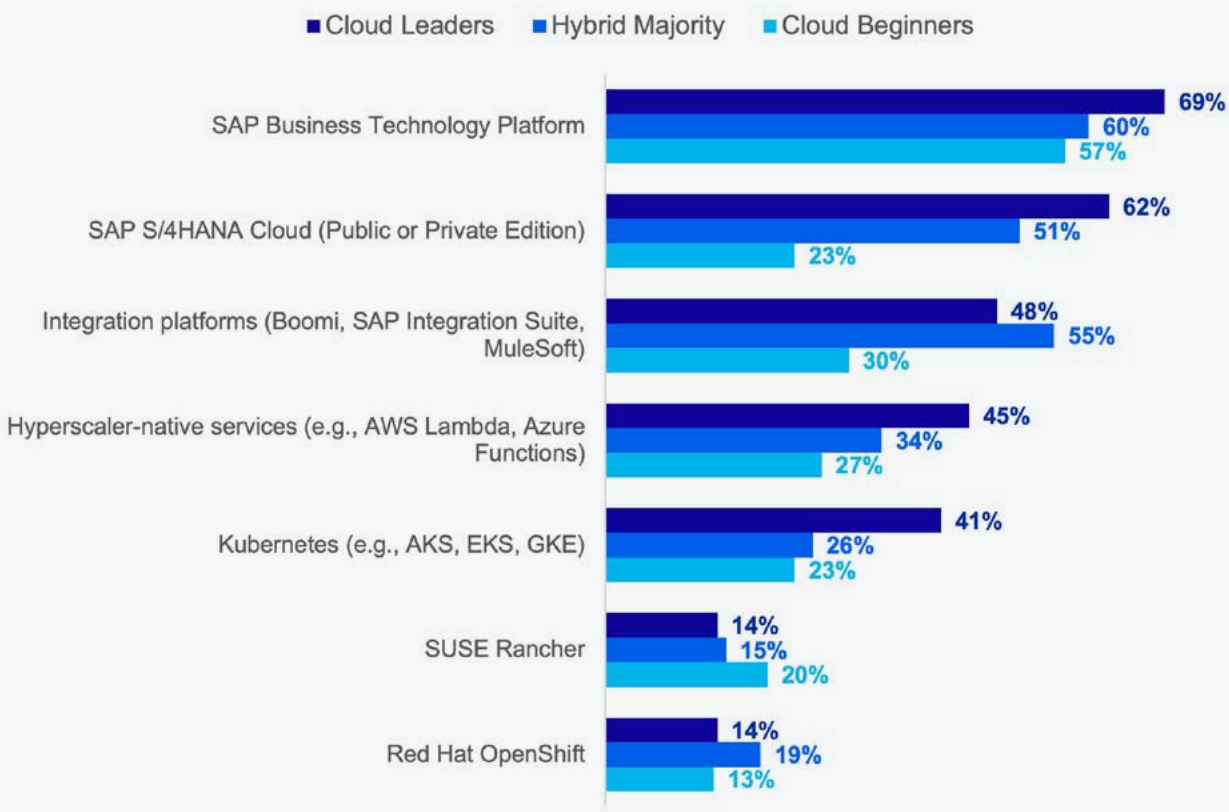
With a determination of respondent maturity, the first question asked was about the platforms being actively used to support SAP environments **(Figure 1)**. What is clear from this data is that leaders have generally made more progress in their adoption of cloud technologies than either cloud beginners or the hybrid majority. However, that is not true in every instance. For example, more than two thirds (69%) of leaders are already using SAP Business Technology Platform (BTP), but this is only slightly more than the hybrid majority (60%) or cloud beginners (57%). This difference is more marked with the adoption of SAP S/4HANA Cloud which is being used by 62% of leaders, 51% of the hybrid majority, and only 23% of cloud beginners.

**69%**

**of cloud leaders are already using SAP Business Technology Platform**

FIGURE 1

## Cloud or Hybrid Cloud Platforms Being Actively Used in SAP Environments



Interestingly, the hybrid majority are more likely to be using integration platforms (55%) than leaders (48%) or cloud beginners (30%). This suggests that, beyond the initial adoption of SAP BTP which is happening even for those that are still running predominantly on-premise landscapes, one of the first technologies adopted by the hybrid majority is that of an integration platform. Whether that is SAP Integration Suite, the most used service in SAP BTP, or something from an SAP partner or competitor, setting up the tools to connect enterprise workloads across cloud and on-premise environments is one of the first steps taken by those moving beyond an initial cloud deployment.

The use of SAP S/4HANA Cloud, either Private Edition inside a RISE with SAP (SAP Cloud ERP Private) package or Public Edition in a GROW with SAP(SAP Cloud ERP Public) package, by so many cloud leaders and members of the hybrid majority shows that respondents view this move as one that follows closely behind the adoption of SAP BTP. Given that SAP BTP can be used to streamline the adoption of SAP S/4HANA and that both of these solutions play a major role in SAP's clean core approach, it is no surprise that both of these solutions are seeing increasing use given the approaching end of mainstream maintenance in 2027.

There were obvious ways in which cloud leaders, cloud beginners, and the hybrid majority were differentiated in the cloud or hybrid platforms that they were using and that continues in their top priorities for evolving SAP architecture over the next 12-24 months **(Figure 2)**. For cloud leaders the top priority is that of enhancing security and compliance across hybrid environments (52%). While this is a goal for a third of the hybrid majority (33%), a significantly greater number of cloud beginners (44%) are also focused on this as a priority.

**52%**

**of cloud leaders report that enhancing security and compliance across hybrid environments is their top priority**

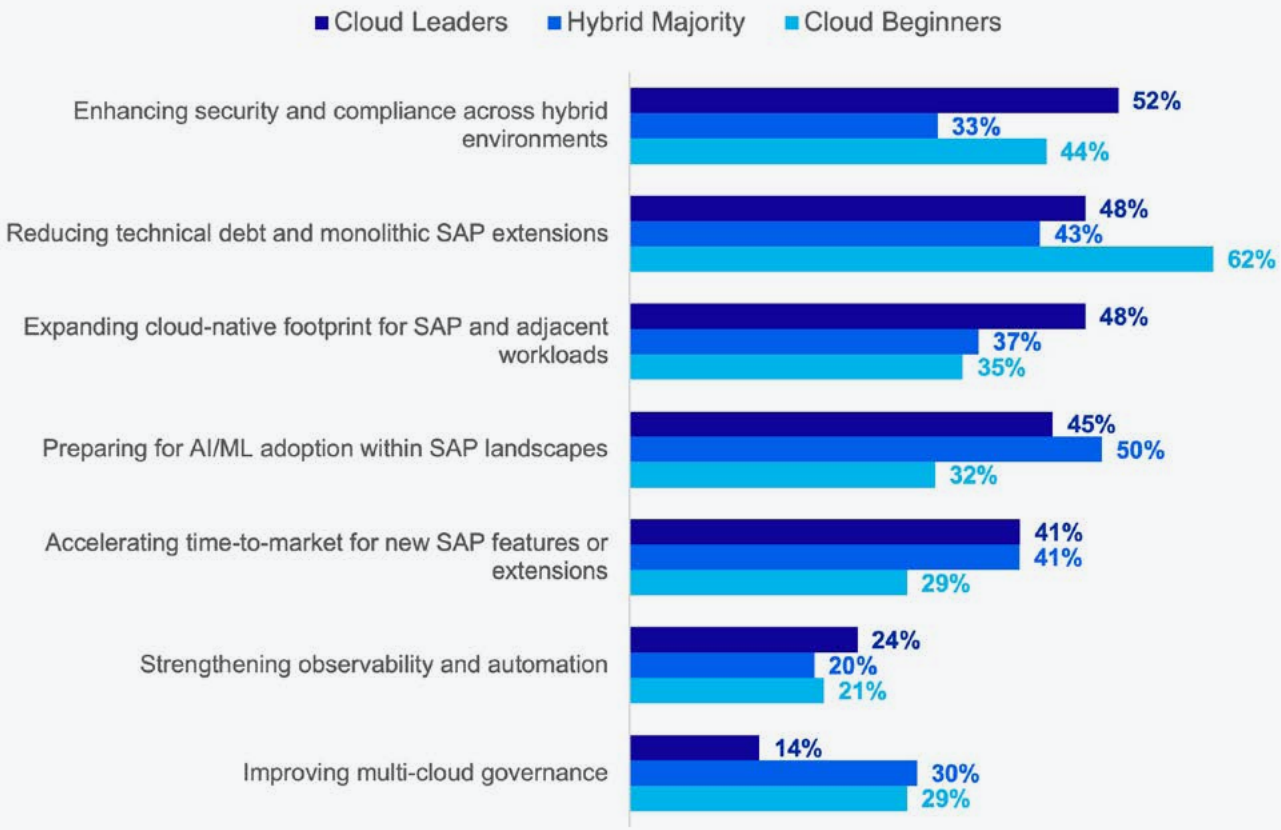
**INSIDER**
PERSPECTIVE

**"The main challenge our organization is facing with moving in implementing our plans for data, integration, and platforms has been securing executive sponsorship. Getting this support is essential in crafting a holistic strategy for the cloud that covers topics such as data harmonization, analytics, and how we will use SAP systems in cloud environments. We are working to raise the importance of moving to the cloud and having a best-in-class capability to support our organization in the future."**

**DIRECTOR IT ARCHITECTURE, FOOD AND BEVERAGE COMPANY**

FIGURE 2

## Top Priorities for Evolving SAP Architecture Over the Next 12-24 Months




Given the continued increase in the number of cybersecurity attacks on enterprise environments, it is no surprise that all organizations are focused on doing as much as possible to enhance the security of these environments. Adding cloud-based environments to the enterprise landscape can have a significant impact on the overall attack surface of an organization, especially if they are moving beyond local deployments for the first time. This makes it vital for any organization to not only ensure that their cloud deployments are fully protected but that any integration and connection points are also protected.

Although all respondents are focused on eliminating technical debt and replacing legacy SAP solutions, cloud beginners (62%) a re more likely to prioritize this over the next one to two years than either leaders (48%) or the hybrid majority (43%). Based on the maturity assessment, cloud beginners are still primarily running on-premise systems with limited cloud integration and have only

**62%**

**of cloud beginners are still focused on reducing technical debt and monolithic SAP extensions**

reached the state of initial exploration in adopting cloud principles for their SAP-related architectures. They also have very limited architectural governance of their cloud and hybrid cloud initiatives. This makes it vital for these organizations to transform or update their existing SAP systems as they start to move more into cloud-based landscapes.

Even though most organizations have at least explored the possibility of utilizing artificial intelligence (AI) or machine learning (ML), it is the cloud majority (50%) that is more likely to be preparing for AI adoption within SAP landscapes. Although cloud leaders (45%) are not far behind, they are focusing more on expanding the cloud-native footprint of SAP and adjacent workloads (48%). This difference in the plans for AI/ML adoption does not suggest that cloud leaders are not prioritizing AI, just that it is not one of the top priorities for their SAP architecture over the next 12 to 24 months, something that may be true because they are adopting SAP BTP and SAP S/4HANA Cloud at a higher rate than other respondents.

One thing that should be a priority for all organizations over the next year when it comes to SAP architecture is to ensure that these projects are part of a multi-step transformation process. Cloud transformation today should not rely on one huge project, but should include smaller, more iterative steps that lead towards a larger whole. And with the ongoing need to continue to update and progress, ongoing innovation should also include smaller steps that can be completed and ROI demonstrated as organizations move onto the next milestone.

While organizations are following transition plans over the next two years, some are already experiencing the benefits o f having adopted cloud or hybrid cloud architecture. Most importantly, these benefits go beyond normal cloud expectations such as increased scalability or increased productivity, although those are also happening, but respondents are finding that adopting cloud or hybrid-cloud architecture helps with transforming their SAP landscapes **(Figure 3)**.

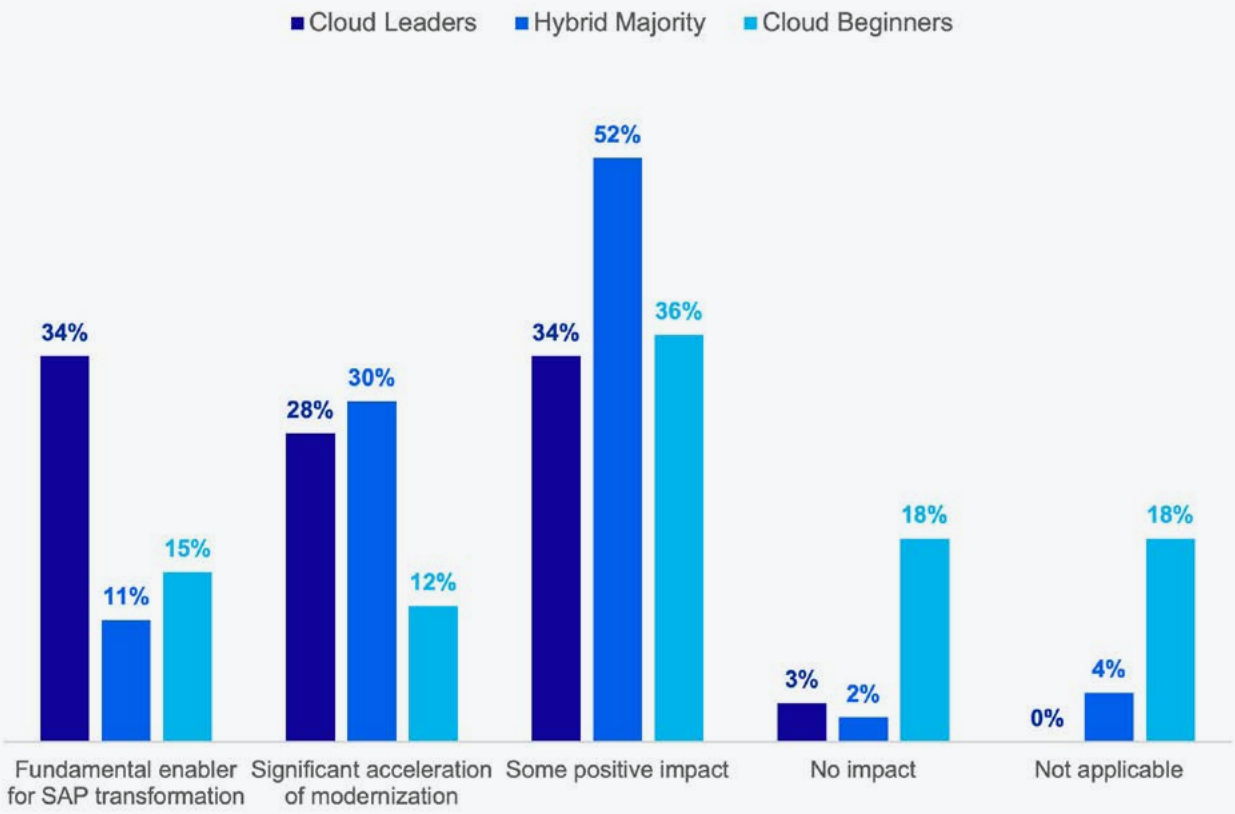
**INSIDER**
PERSPECTIVE

**"Moving to the cloud has allowed us to increase the pace of applying problem fixes and updates. This is because, in the cloud, updates are not held up within an organization. In addition, as business requirements change, it is possible to readily expand cloud systems without delays of capital expenditure or scheduled hardware orders. Moving to the cloud has also enabled greater access through web-enabling SAP. We've also seen benefits in security, scalability, accessibility, and flexibility."**

**BUSINESS SYSTEMS CONSULTANT, MANUFACTURING COMPANY**

FIGURE 3

## Impact of Adopting Cloud or Hybrid Cloud Architecture in Transforming SAP Landscapes




For a third of leaders (34%), adopting cloud architecture has been a fundamental enabler for SAP transformation. Another third (28%) have seen the use of cloud architecture offer significant acceleration to their modernization plans, while the remaining third (34%) have not had the same level of acceleration but still are seeing some positive impact. With leaders reporting that they are more likely to be using SAP BTP or SAP S/4HANA Cloud, this demonstrates that they have transformed or modernized their SAP systems and supports the idea that adopting cloud or hybrid-cloud architecture helps transform SAP landscapes.

The hybrid majority are generally seeing a positive impact on the transformation of their SAP landscapes, though the benefits are not as significant as for cloud leaders. However, with 52% reporting at least some positive impact, another 30% are seeing a significant acceleration of their modernization plans as a result of adopting cloud architecture, using cloud is at least helping organizations reduce their reliance on older infrastructure in combination with providing enhanced continuity and resilience.

Although cloud beginners are yet to experience the same level of impact, nearly one in five (18%) report that they have experienced no impact while another 18% are not sufficiently advanced in their adoption of cloud architectures to notice an impact, a third (36%) are seeing positive impact while another quarter (27%) have experienced much more significant acceleration. Given that transformation of the SAP landscape must move beyond SAP systems to those that are SAP-adjacent or are integrated with SAP solutions, the adoption of cloud architecture helps provide capabilities that are needed to update and change the enterprise. This includes access to technologies such as cloud data lakes, event-driven architectures, integration platforms, and even more centralized management and observability making cloud architecture key to the success of transformation initiatives.

Even though all respondents are experiencing benefits from moving to cloud, there are also challenges involved in the process as seen in **Figure 4**. For cloud leaders, the biggest challenge is that of a lack of cloud expertise within SAP teams (55%), while cloud beginners and the hybrid majority are finding that the cost or complexity of re-architecting SAP workloads is their biggest challenge. With the adoption of cloud-based systems accelerating, and with more SAPinsiders using SAP BTP and SAP S/4HANA Cloud in conjunction with cloud solutions that are integrated with their business processes, employees with deep cloud experience have often been difficult to source. In addition, because many SAP teams are made up primarily of those who started their careers with on-premise systems, there is also a specific lack of cloud expertise within those teams.

**55%**

**of cloud leaders report their biggest challenge is a lack of cloud expertise within SAP teams**

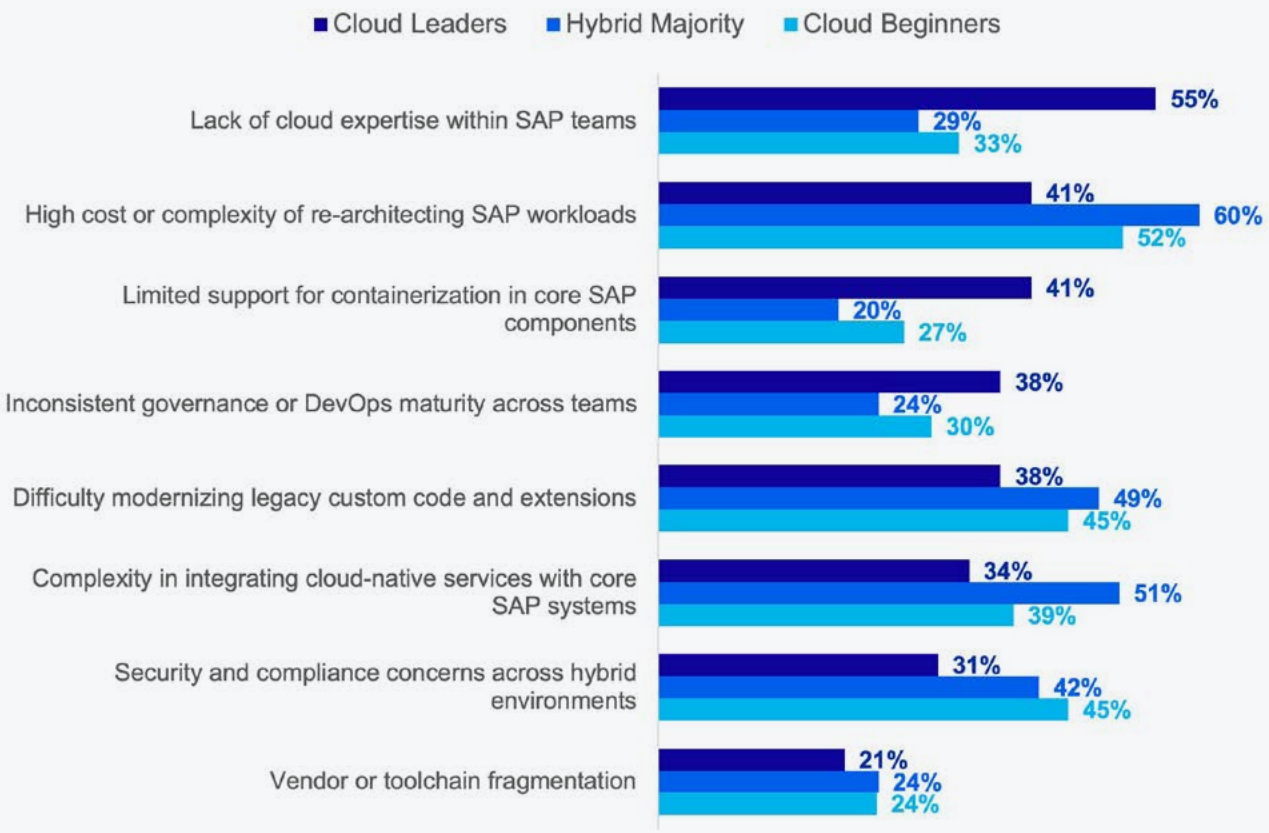
## INSIDER PERSPECTIVE

**"Cloud providers invest heavily in security and compliance measures, often surpassing what individual organizations can achieve on-premise. This helps organizations better protect sensitive SAP data and ensures compliance with industry and regulatory standards. In addition, cloud providers working with SAP offer a wide range of additional services like AI/ML, analytics, and data management that enhance SAP functionality. Integration with other cloud services and third-party applications becomes more straightforward."**

IT MANAGER, MEDICAL EQUIPMENT COMPANY

FIGURE 4

## Challenges Encountered When Adopting Cloud or Hybrid Cloud Architectures for SAP Workloads




Determining how to address these challenges can be difficult for SAPinsiders. For example, even though both the cloud majority and cloud beginners face the challenge of the high cost or complexity of re-architecting SAP workloads, cloud leaders and the hybrid majority are also seeing the benefits of lower infrastructure or operational cost from adopting cloud-native or hybrid cloud architecture for the SAP or SAP-adjacent systems. This suggests that moving to the cloud offers longer term cost benefits, but the initial cost of switching to subscription-based licensing or re-architecting SAP workloads can be high.

However, with SAP starting to embed AI in updated releases of new applications, for example in the SAP Ariba releases available in early 2026, SAPinsiders will not be able to continue to run legacy applications forever. And with the end of 2027 just over two years away, that change will likely come first with the need to move to SAP S/4HANA Cloud through the auspices of a RISE with SAP(SAP Cloud ERP Private) contract. SAPinsiders must be prepared for this change, and should follow the guidance of cloud leaders in making this possible.

This year's survey also revealed other trends, including the following:

- SAP is the most likely technology partner to be used to support cloud or hybrid cloud architecture for cloud leaders (72%), the hybrid majority (67%), or cloud beginners (58%). SAP is followed by Microsoft Azure (46%), Amazon Web Services (43%), Google Cloud (26%), ServiceNow (20%), Red Hat (17%), and IBM (17%).

**72%**

**of cloud leaders are using SAP as their technology partner to support cloud or hybrid cloud architecture**

- The owner of cloud or hybrid cloud strategy for SAP workloads varies significantly depending on the maturity of the respondent. Cloud leaders report that their cloud strategy is most likely to be owned by the cloud infrastructure team (38%) or the CIO (38%). The hybrid majority report that the enterprise architecture team (56%) or CTO (38%) are most likely to be leading their cloud strategy. Cloud beginners report that it is the CIO or Head of IT (67%) who is leading their cloud strategy for SAP. Given these varying results, it seems essential that organizations collaborate across teams to ensure that they are implementing the most effective cloud strategy.

**67%**

**of cloud beginners report their CIO or Head of IT owns their cloud strategy for SAP**

- The factors having the biggest impact on cloud architecture strategy for SAP workloads again vary based on where the respondent organization is in their cloud journey. Leaders report that the need to modernize IT to support faster innovation and deployment of applications and systems (45%) is the biggest factor impacting their strategy. Cloud beginners (43%) and the hybrid majority (43%) are equally impacted by the need to eliminate technical debt from aging existing SAP systems and integrations.

**45%**

**of cloud leaders report the need to modernize IT to support faster innovation is the biggest factor impacting their cloud strategy for SAP**

# Required Actions

## Work with experienced cloud partners to drive the success of broader cloud initiatives.

With even cloud leaders reporting that they face challenges with a lack of cloud expertise in their SAP teams, the need for cloud knowledge is vital. Bringing in resources that have experience with transitioning SAP workloads to the cloud will be crucial in ensuring that cloud strategy for SAP workloads is both achievable and successful in meeting goals. This can be achieved by hiring team members with this experience or seeking out partners that specialize in cloud transformation. In addition, SAPinsiders should invest in educating internal teams about how they can best utilize cloud systems and architecture.

## Ensure that cloud projects have small, realistic milestones to demonstrate the value of the project in achievable steps.

The era of the "big bang" project is over. SAPinsiders can no longer afford to embark on a three-year deployment project and only come back to executives and stakeholders once that project is complete. Cloud environments provide the ability to complete and deploy more realistically with goals in achievable steps. This helps demonstrate the value for stakeholders and ensure continued investment and support of cloud initiatives. This also aligns well with SAP's shift to a focus on continuous innovation using tools that facilitate Business Transformation Management. These include SAP Signavio, SAP LeanIX, SAP Cloud ALM, WalkMe, SAP BTP and SAP Build, and Joule for Consultants and Developers. Making sure that cloud projects follow this methodology will help ensure the success of cloud transformation initiatives.

## Utilize the capabilities available in packages like RISE with SAP (SAP Cloud ERP Private) to help drive the cloud transformation of SAP workloads.

Although SAP has changed the name of the package the customers license from RISE with SAP to SAP Cloud ERP Private, customers have multiple capabilities that they can leverage in order to streamline and accelerate their transformations. This includes advisory and implementation services that can help customers successfully transition their SAP workloads to the cloud. One example of this is the standardized framework provided by SAP which is based on an enhanced version of the SAP Activate project road map. Another is that each customer is assigned a client delivery manager and technical service manager to ensure the success of their move. SAP also assigns an enterprise architect to each SAP Cloud ERP Private project. While this architect's focus is SAP, it is another capability that organizations can leverage to support their broader cloud architecture initiatives.

# DART MODEL FRAMEWORK

# STRATEGY AND NEEDS FOR CLOUD AND AI SECURITY STRATEGY FOR SAP SYSTEMS

## DRIVERS

- Need to modernize IT to support faster innovation and deployment of applications and systems (45%)
- Industry shift towards modular and composable ERP solutions that require cloud environments (32%)
- Need to eliminate technical debt from aging existing SAP systems and integrations (32%)
- Pressure to optimize infrastructure costs or consolidate or exit from existing on-premise data centers (32%)

## ACTIONS

- Adopting SAP Business Technology Platform (SAP BTP) (55%)
- Transitioning to a cloud ERP solution like RISE with SAP/ SAP Cloud ERP Private (41%)
- Increasing use or hyperscaler/public cloud PaaS services (e.g. Azure Functions, AWS Lambda) (41%)
- Utilizing API-first and event-driven architecture development (34%)

## REQUIREMENTS

- Upskilling internal teams in cloud-native technologies (86%)
- Cloud skills and training plans (83%)
- Agile or product-centric delivery models (79%)
- Executive-level sponsorship (79%)
- Centralized architecture and governance (76%)

## TECHNOLOGIES

- Cloud data lakes and data services (45%)
- Integration platforms (41%)
- Infrastructure-as-Code (41%)
- Data integration platforms or data mesh architecture (41%)
- Cloud-based AI and machine learning tools (38%)
- API management and event streaming (e.g., Kafka, Event Mesh) (34%)
- Centralized identity and access management (34%)
- Enterprise architecture management tools (34%)
- Kubernetes or OpenShift platforms (31%)
- Observability tools (31%)

# APPENDIX | THE DART™ METHODOLOGY

SAPinsider has rewritten the rules of research to provide actionable deliverables from its fact-based approach. The DART methodology serves as the very foundation on which SAPinsider educates end users to act, creates market awareness, drives demand, empowers sales forces, and validates return on investments. It is no wonder that organizations worldwide turn to SAPinsider for research with results.

## The DART methodology provides practical insights, including:

| | |
|---|---|
| **DRIVERS** | These are macro-level events that are affecting an organization. They can be both external and internal, and they require the implementation of strategic plans, people, processes, and systems. |
| **ACTIONS** | These are strategies that companies can implement to address the effects of drivers on the business. These are the integration of people, processes, and technology. These should be business-based actions first, but they should fully leverage technology-enabled solutions to be relevant for our focus. |
| **REQUIREMENTS** | These are business and process-level requirements that support the strategies. These tend to be end-to-end for a business process. |
| **TECHNOLOGY** | These are technology and systems-related requirements that enable the business requirements and support the company's overall strategies. The requirements must consider the current technology architecture and provide for the adoption of new and innovative technology-enabled capabilities. |

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