

Intelligent Automation in the Cloud

Unlocking the true potential of IA

EY is the knowledge partner in this study.

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EXECUTIVE SUMMARY

Intelligent Automation (IA) is a term that describes a holistic solution for digital transformation. It blends Artificial Intelligence (AI) and cognitive features into Robotic Process Automation (RPA) to provide end-to-end automation. Having demonstrated value in boosting efficiency, enhancing worker performance, reducing operational costs, and improving customer journey experiences, IA's relevance and popularity have grown exponentially among enterprises.

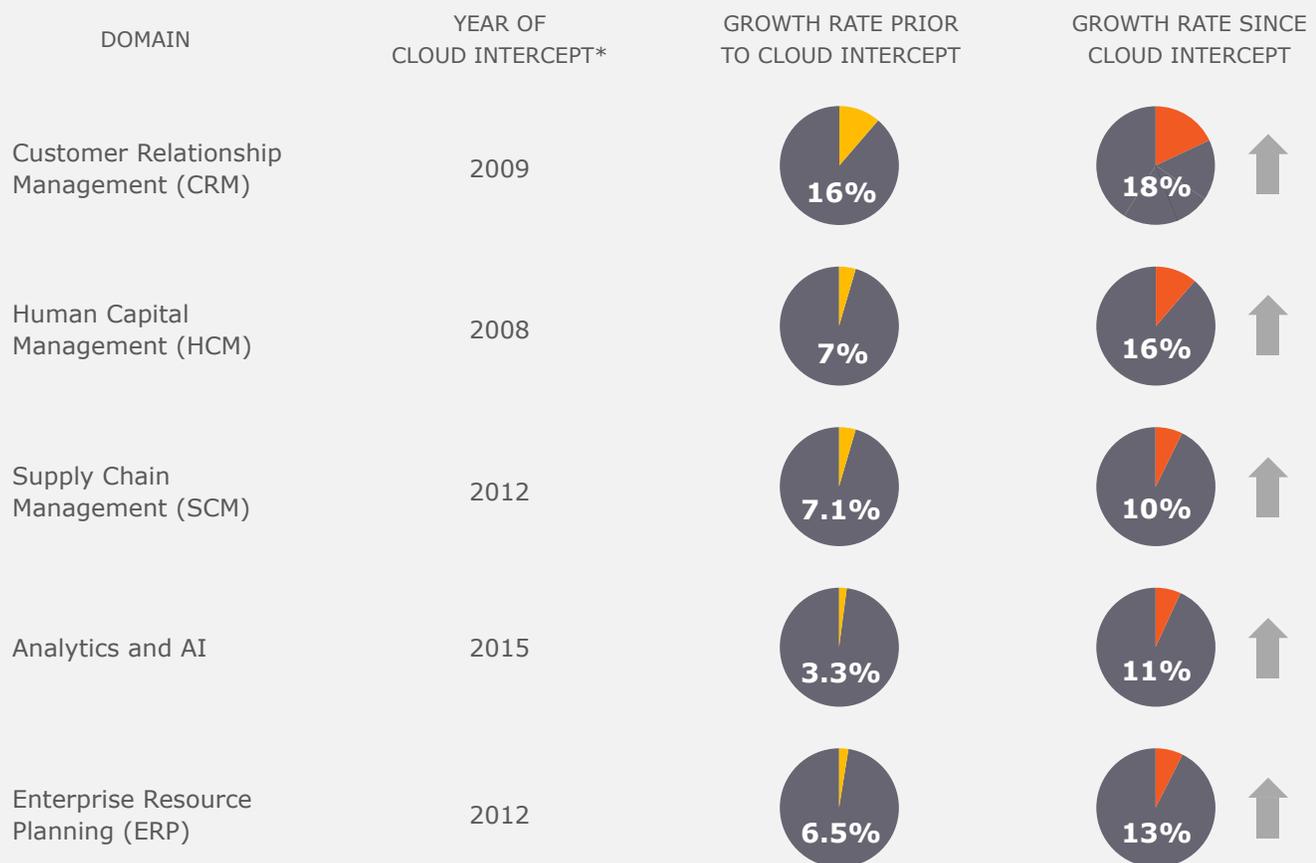
Customers are proactively seeking solutions that facilitate flexible deployment—thus, offering avenues to deploy IA in the cloud as well as on premises. With the cloud introducing the benefits of scalability, flexibility, and cost optimization, we expect customers to selectively transition from on-premise to cloud deployment, leading to hybrid IA ecosystems becoming a new reality. IA stakeholders can also expect cloud IA to address certain challenges posed by the on-premise approach.

SECTION 1

CLOUD IN CONTEXT OF INTELLIGENT AUTOMATION

The initial growth of IA has been driven primarily by on-premise deployments. However, similar to the emergence of the cloud as a delivery mechanism for other domains, we expect the cloud to gain momentum for IA. Historical numbers indicate web-enabled delivery via the cloud contributed to accelerated growth across domains (Fig. 1). With the inception of web-enabled IA delivery, similar growth trends are likely to appear for IA as well.

Figure 1: Growth Rate Driven by Cloud Across Domains



Source: IDC, Gartner, Forbes and EY Research

* Year of cloud intercept is considered the year around which emergence of key vendors having cloud-based offerings was observed for a particular domain.

1.1 CHALLENGES IN ADOPTING ON-PREMISE IA



Lack of Clarity on TCO

Cost reduction drives IA adoption. However, most buyers still remain unclear on the Total Cost of Ownership (TCO) of IA and perceive that the overall cost of implementation may outweigh its benefits. This is due to lack of clarity on costs beyond licensing, such as infrastructure, assessment, development, maintenance and training.



Inefficient Bot Utilization

Bot utilization is a key factor that can influence the Return on Investment (ROI) of an IA implementation. Typically, no more than 20% of bots have 50% utilization. In addition, it is difficult to track bot utilization across medium- to large-scale deployments. This leads to an increase in the dollars spent on licenses and maintenance.



Time to Transition from PoC to Production

On-premise deployments can take around 18-55 days to transition a bot from ideation to production, depending on the complexity of use cases. Despite the relative ease of implementing IA, teams spend 25-30% of the time in system configuration and setup. In large-scale projects, the combined effort of noncore activities becomes sizable.



Unforeseen Delays in Infrastructure Setup

Infrastructure setup is a precursor to IA implementation, which is typically dependent on the IT team that's already involved in multiple initiatives. Many projects stall for not getting the infrastructure right or on time. Also, setting up infrastructure in an ad hoc manner may not support future scalability.

1.2 OVERCOMING CHALLENGES WITH CLOUD IA



Optimize TCO

The cloud acts as a springboard for organizations to scale automation projects by converting capital expenditures (CapEx) to operational expenditures (OpEx). Optimization of the upfront infrastructure costs and simplification in administration with the web-based interface can help achieve a TCO reduction of up to 21-27%



Improve Bot Utilization

With a web-enabled cloud interface, under-utilized bots can be tracked centrally across the organization. This can help repurpose the bots for different processes, ensuring improved utilization.



Faster Time to Value

The cloud enables effort optimization for activities such as infrastructure setup, software installation, environment management, platform upgrades, etc., helping accelerate setup cycles. The cloud has the potential to reduce the time for transitioning bots, from concept to production, by up to 24-30%.



Reduced Infrastructure Needs

With cloud delivery models, organizations can scale bots on demand, without worrying about adding more infrastructure. The cloud helps business users take control of the governance of the overall program by reducing dependence on IT.

In addition, the cloud makes IA more attractive for Small to Medium Businesses (SMBs) as it helps minimize upfront investment. Cloud-based delivery will enable Intelligent Automation to expand to a larger landscape of unaddressed organizations.

SECTION 2

CLOUD IA DEPLOYMENT MODELS AND IMPLICATIONS

Before initiating a cloud IA journey, it is imperative for enterprises to build clarity on possible deployment options that are available. It is equally important to have clarity on implications around cost and use cases.

2.1 CLOUD DEPLOYMENT MODELS

As we delve into the specifics on potential architecture types, we need to understand what constitutes an IA solution. For simplicity, we consider a bot deployment to be composed of the following components as shown in Fig. 2.

Figure 2: Components of an IA solution



Intelligent Document Processing (IDP)
Cognitive bot for extraction of unstructured data



Analytics
Platform for operational and business intelligence

IA vendors offer three key cloud-based deployment options as summarized in Fig. 3.

Figure 3: Key cloud deployment models



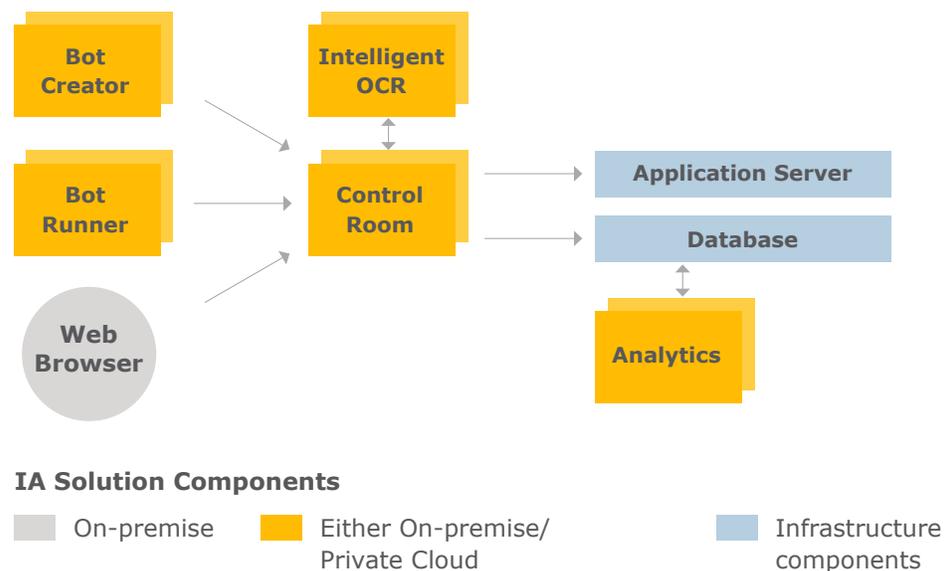
The following section describes the cloud-based IA deployment models in detail.

1. CLOUD-ENABLED MODEL

In the cloud-enabled model, the customer’s in-house CoE team deploys and manages bots. All the IA components are hosted on the customer’s private cloud. (Refer to Fig. 4.) This model follows a lift and shift strategy, where everything is moved as is from on premises to the cloud.

Figure 4: Architecture of Cloud-enabled model

On-premise/Cloud (located on customer’s end)



Benefits

- Helps optimize infrastructure setup times when compared with on-premise deployment
- Provides up to 5% TCO reduction over on-premise deployment

In the cloud-enabled model, TCO reduction is restricted to 5%, owing to additional investments for building in-house expertise.



Concerns

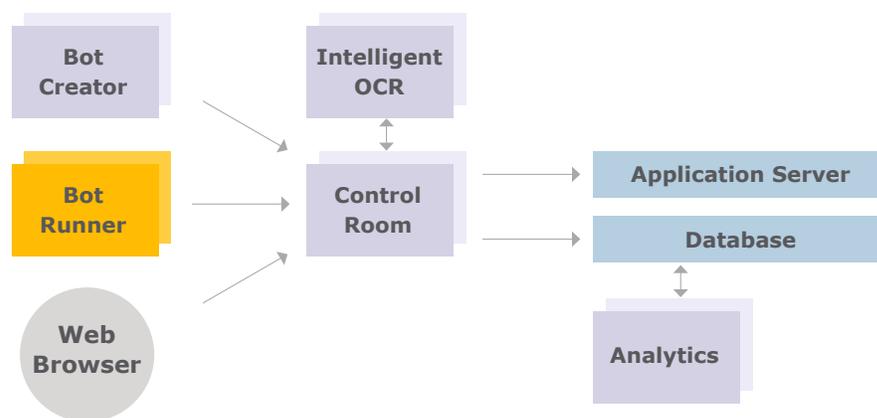
- Customers need to invest in building in-house expertise, which results in an additional effort of 30-35%
- Since the platform is not native to the cloud, some of the cloud benefits, such as scalability and disaster recovery, can only be partially realized
- Scarcity of in-house technical expertise can result in higher implementation and maintenance costs, negatively impacting ROI

2. CLOUD-INSPIRED MODEL

In the cloud-inspired model, a third-party service provider offers the full suite of integrated services. These services include technical expertise, infrastructure maintenance, and monitoring, in addition to traditional services such as process excellence and change management. The IA components are hosted on the service provider’s cloud, much like a managed services model. (Refer to Fig. 5)

Figure 5: Architecture of Cloud-inspired model

Cloud (located on service provider’s end)



IA Solution Components

- On-premise
- Either On-premise/Cloud
- Cloud
- Infrastructure components



Benefits

- Up to 10-17% of TCO reduction, contributed to by efficiencies and best practices brought in by the service provider, along with the savings generated through the cross-utilization of resources
- No or minimal reskilling is involved from the perspective of the customer

In the cloud-inspired model, 10-17% TCO reduction can be achieved through efficient delivery mechanisms of a service provider.



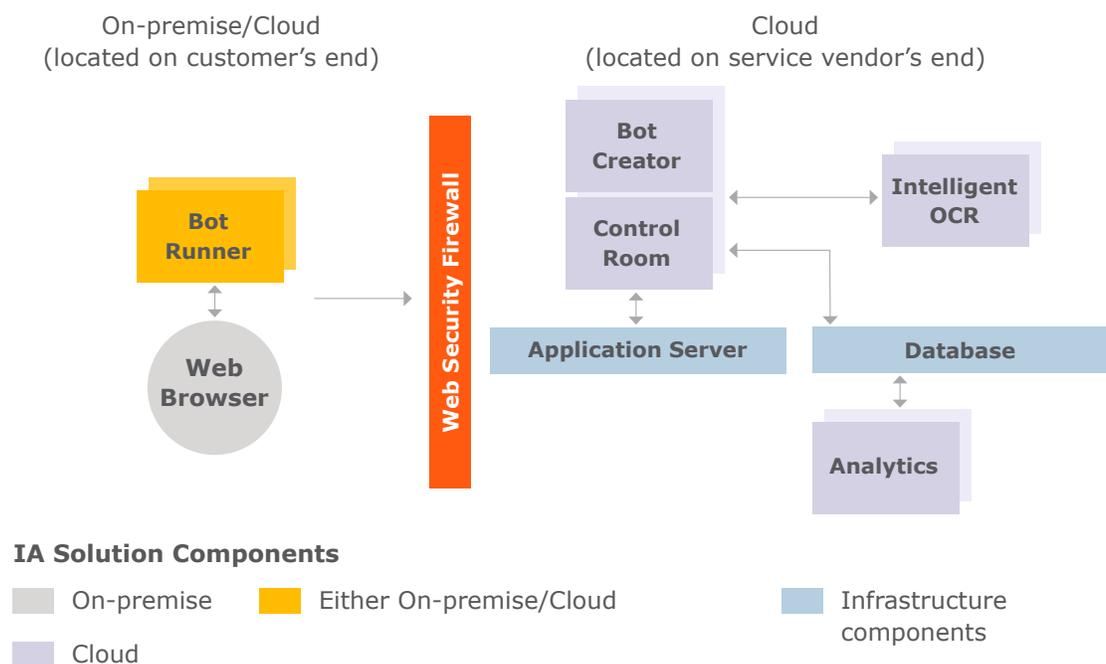
Concerns

- Choosing the right service provider for a long-term relationship takes effort and time
- Perceived concerns of limited visibility into architecture, security, and data privacy practices

3. CLOUD-NATIVE MODEL

In the cloud-native model, the IA platform is hosted in the cloud and supports the cloud as well as on-premise deployments. Typically, the Bot Creator, Control Room, and other infrastructure components are hosted on the IA vendor’s cloud and are offered as RPaaS. (Refer to Fig. 6) The model offers flexibility with respect to Bot Runners that can either be downloaded on a need basis for on-premise deployment or can be accessed via a web browser.

Figure 6: Architecture of Cloud-native model



★ Benefits

- Leads to an 21-27% TCO reduction over an on-premise model
- Cloud-native architecture facilitates cloud as well as on-premise deployment, without any changes in architecture, enabling flexibility
- Requires up to 24-30% less time to move a bot to production when compared with an on-premise model

Cloud-native architecture provides options of on-premise or cloud deployment, giving customers greater flexibility.

In the cloud-native model up to 21-27% TCO reduction can be realized, attributed to cloud-led delivery and state-of-the-art platform-specific features.

⚠ Concerns

- Offers limited visibility into architecture, security, and data privacy practices as the components are hosted on the IA vendor’s cloud. To address these concerns, customers can ask the IA vendors for architecture and security-related documentation to ensure compliance.

Fig. 7 summarizes the key differences among the three deployment options.

Figure 7: Comparison of key deployment models with on-premise architecture

	 Cloud Enabled	 Cloud-Inspired	 Cloud-Native
TCO	0-5% reduction	10-17% reduction	21-27% reduction
Time to move a bot to production	20-25% increase	24-30% reduction	24-30% reduction
Training needs	30-35% more effort for hiring and reskilling	Minimal training investment	Minimal training investment

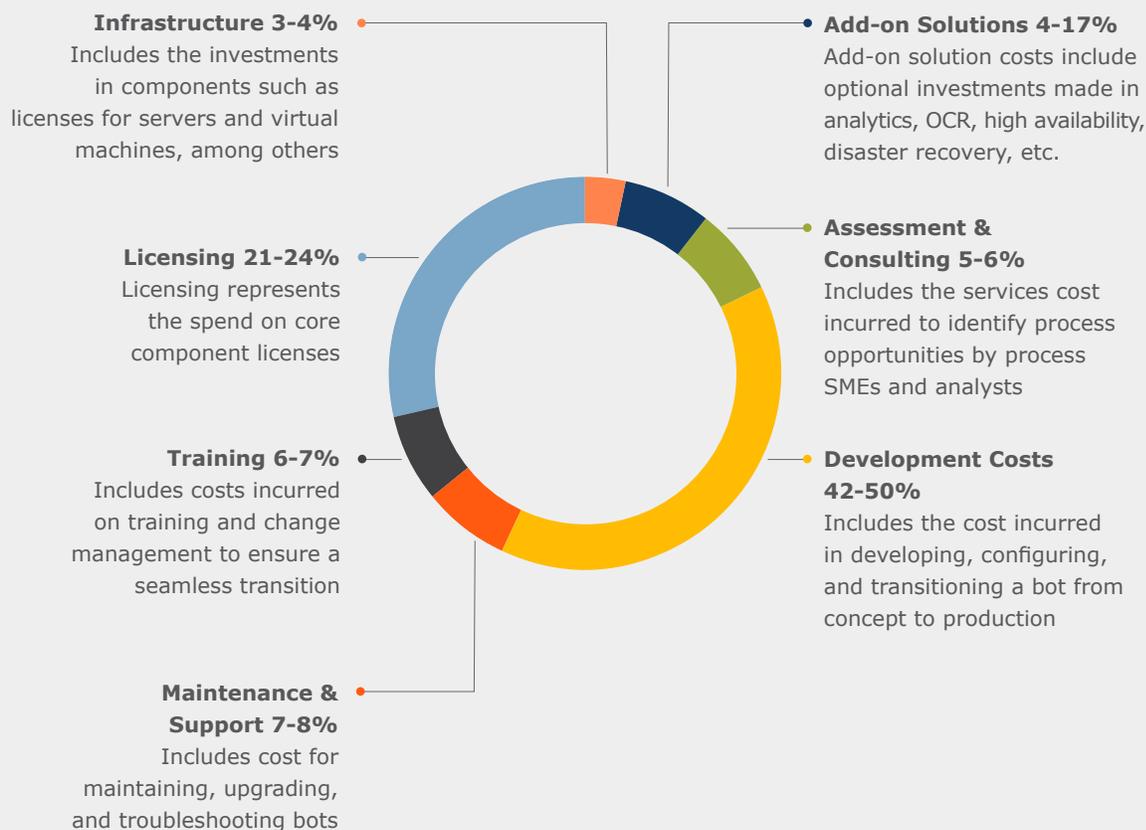
Organizations seeking scalability, flexibility, security, and cost economies are likely to harness the potential of cloud-based IA. And the cloud-native approach is expected to emerge as the favorite deployment approach within enterprises as it offers much-needed flexibility to customers to have their IA solutions hosted either on premises or In the cloud as deemed suitable.

2.1.1 COST BENEFITS FROM CLOUD-NATIVE MODEL

There are reasons to believe the future of cloud-based IA will be primarily driven by the cloud-native deployment approach. The new-age IA solutions will blend a cloud-native architecture with other advanced IA functionalities to provide the maximum cost benefit to prospects and customers.

Before taking a deep dive into the likely TCO reduction a cloud-native model is expected to drive, let us first understand the cost components of an IA solution. (Refer to Fig. 8).

Figure 8: Cost components and estimated share in TCO



% share of cost component in TCO is estimated based on a TCO modeling study conducted for IA: Total Cost of Ownership of Intelligent Automation: Estimate and Optimize TCO.

<https://www.automationanywhere.com/lp/tco-report>

We expect a cloud-native approach, when combined with modern IA features, can help deliver significant TCO reductions in the range of 21-27%. This estimated reduction is contributed to the following components.

10-22%



Infrastructure Cost

Infrastructure Cost

Components such as the Control Room or the Bot Creator can be delivered via web interface in the cloud. This eliminates the need to buy expensive hardware and saves the effort in setting up the development environment, leading to a reduction of 10-22% in infrastructure cost.

Development and Deployment Cost

An advanced cloud IA platform offers an instant-on web interface for developers to easily develop, deploy, and manage bots. In addition, a unified, visual interface with a collection of drag-and-drop commands can further optimize development efforts. This all can lead to a reduction in development and deployment cost between 25-27%.*

25-27%



Deployment and Development Cost

48-50%



Maintenance and Support Cost

Maintenance and Support Cost

Automatic platform upgrades diminish delays caused by manual intervention. Also, platform-specific, low-code development features can reduce the effort to maintain the bots. This can lead to up to 48-50% reduction in maintenance and support cost.*

Training Cost

Easy-to-learn, user-friendly IA platforms in the market offering in-product learning capabilities and localized interfaces are expected to drive efficiencies in training hours invested. This can contribute 23-25% reduction in the total cost of training.

23-25%



Training Cost

14-35%



Add-on Solutions Cost

Add-on Solutions Cost

With cloud-led delivery, High Availability and Disaster Recovery (HA/DR) come as a part of the base offering. This can help achieve a reduction of around 14-35% in the overall add-on solutions cost.

License Cost

With cloud-based model, IA vendors are likely to reduce licensing costs to up to 26%.

26%



License Cost

*Effort reduction benefits are dependent on implementation partners to be passed onto the customers.

2.2 USE CASE PRIORITIZATION FOR CLOUD IA

With an increasing focus on cloud IA, it becomes imperative to understand the cloud’s likely impact on IA use cases. The lack of a consistent process to prioritize the right automation opportunities can result in organizations fumbling early in their cloud IA journey.

Use cases that execute seamlessly during on-premise deployments may fail in the cloud due to the incompatibility of data, integration issues, and inaccessibility of applications.

The success of automating a use case through cloud-based IA is influenced by an assortment of factors highlighted on the right.

Use cases that measure high on automation potential and cloud-based application landscape and meet compliance requirements will have the highest potential to transition early to the cloud for automation.



Automation Potential

Prevalence of high-volume, repetitive, rule-based processes across business functions that can be partially or fully automated



Cloud-Based Application

Demonstrated history of applications in the cloud makes the use case fit for cloud-based IA architectures



Regulatory Compliance

Stringency of industry and geography-specific compliance and internal IT security policies negatively impact the adoption of cloud IA

Figure 9: Expected timeline for business functions to transition to the cloud



Sales and Marketing



Customer Success



HR



IT



Finance



Supply Chain

Expected timeline to transition to the cloud

Fig. 10 highlights the key areas across business functions that are favourable candidates to be automated through cloud IA. The various use cases within these areas can have varying potential to be automated in the cloud. Our recommendations of use cases and their potential to be automated using cloud-based IA are inspired by discussions with 30 major accounts.

Figure 10: Key areas of focus for cloud IA across business functions

We anticipate Sales & Marketing and Customer Services to be the early adopters of cloud IA, followed by IT and HR. Highly regulated functions such as Finance and Supply Chain are expected to adopt cloud IA at a slower rate.

Business Functions	Expected % of Use Cases to Transition to Cloud
Sales and Marketing	
 <ul style="list-style-type: none"> Lead management Competitive insights Brand monitoring Sales forecasting and reporting 	<p>70%</p> <p>10%</p> <p>20%</p>
Customer Service	
 <ul style="list-style-type: none"> Customer record management Compliant and request management Automated reporting of key metrics 	<p>65%</p> <p>30%</p> <p>5%</p>
Human Resource	
 <ul style="list-style-type: none"> Employee onboarding and offboarding Payroll management Performance and talent management Time, attendance and leave management 	<p>55%</p> <p>33%</p> <p>12%</p>
IT	
 <ul style="list-style-type: none"> Help desk management Application monitoring System availability and threat monitoring Identity and access management Reporting of key KPIs and SLAs 	<p>60%</p> <p>30%</p> <p>10%</p>
Supply Chain and Operations	
 <ul style="list-style-type: none"> Freight management Inventory management Automated reporting Procure to pay anomaly detection Contract management 	<p>50%</p> <p>35%</p> <p>15%</p>
Finance	
 <ul style="list-style-type: none"> Financial planning & reporting Standard journal entries Accounts Receivable processing Accounts Payable processing Operational finance and accounting 	<p>60%</p> <p>25%</p> <p>15%</p>

- 0–6 months
- 6 months–1 year
- 1 year+

Organizations need to examine their mix of functions to find the most attractive opportunities and determine where cloud IA deployments will deliver maximum benefits.

SECTION 3 BENEFITS OF CLOUD IA

Having established the TCO benefit of cloud-based IA (through reference to the cloud-native deployment approach), let us now shift our focus to some of the other benefits.

Business Agility

Cloud IA delivers unprecedented scale for organizations having a large application portfolio and a high volume of transactions to automate. Developers require minimal or no installation to start building bots on cloud IA and can scale bots in minutes, rather than hours, with ease.

Just a Click



To scale from 10 to 100 to 1,000 bots

24-30%

Reduction in development efforts

48-50%

Reduction in maintenance efforts

Hybrid Approach



On-premise or cloud deployment without any architectural changes



Scalability

Cloud IA enables scaling up of bots from tens to hundreds to thousands with just a click, without worrying about additional infrastructure provisioning.



Faster Time to Value

The cloud, when combined with advanced IA features, can help shrink development effort by 24-30%. In addition, ease of maintenance with features such as automatic upgrades of the platform can lead to up to 48-50% reduction in the maintenance effort.



Flexibility

The hybrid approach of IA to deploy across on-premise and cloud infrastructure enables organizations to experience flexibility without changing the underlying architecture. Deployment of bots in the cloud also offers anytime, anywhere access to control and monitor bot performance in real time.

Security and Compliance

With increasing maturity of cloud security standards, security no longer remains a barrier as it used to be a few years ago. In fact, security has shaped up to be a driver for cloud adoption. This is because Cloud Service Providers (CSPs) are facilitating greater security control over on-premise deployments.

Data Security



Secure Access



Adherence to



Secure Environment

With the cloud, the IA platform can be kept updated at all times. Whenever any vulnerabilities are detected, the fixes can be rolled out to all customers instantaneously.



Data Security

CSPs offer capabilities to classify and label data, ensuring sensitive data protection. IA vendors ensure data security by encrypting data at rest and in transit. Additionally, IA features such as safe credential repository, audit logs, and threat detection tools further strengthen cloud security.



Access Management

Multiple levels of security are enabled via multifactor authentication and role-based access control. Access is protected by the use of Virtual Private Cloud (VPC) routing and firewall rules.



Privacy and Regulatory Compliance

The cloud provides capabilities (e.g., to restrict the location of data) that can be used by vendors to meet industry and geography-specific compliance, such as GDPR and HIPAA.

Resilience

The cloud brings enormous storage and compute power for high availability and disaster recovery. It ensures seamless business continuity, resulting in 24/7/365 bot functioning with zero downtime.

99.5%+

Availability of IA platform

Zero Downtime

Due to automatic upgrades



High Availability and Disaster Recovery

The cloud provides scalable infrastructure, redundant storage, and backup policy. In addition, IA vendors have a defined business continuity and failover procedure to ensure high availability at all times.



Automatic Upgrades

A cloud deployment model ensures automatic upgrades without any manual intervention, thus, preventing downtime.

SECTION 4

KEY RISKS AND WAYS TO MITIGATE

Despite the above-mentioned benefits of cloud IA, organizations are likely to encounter certain risks during deployment. Customers need to be aware of the risks and potential implications in terms of loss of reputation, penalties, operational inefficiencies, and fraud. Organizations need to evaluate the risks beyond technology and establish controls across the entire ecosystem.

Technology Risk



Absence of proper segregation of duties leading to unauthorized access of data and applications



Lack of visibility into the architecture and security protocols of the IA vendor

Data Risk



Non-adherence to evolving data privacy mandates and state-specific laws



No classification of information leading to mishandling of sensitive data



Lack of information around the location of data in the cloud

Mitigation

- Use identity access management to centrally control users and audit logs to gain visibility into their actions.
- Enterprises should ask the IA vendor for third-party certifications covered, reports for the assessments, and security layers.
- Enterprises should leverage the capabilities of the IA platform, providing data encryption, password manager, etc. to ensure security. Developers should avoid hardcoding of credentials within the bot.
- Enterprises should maintain information classification guidelines, along with instructions on how to handle various types of data.
- Enterprises and IA vendors should decide the location for storing data per the data residency compliance.

Governance



Lack of incident response and risk plan



Lack of program governance leading to chaos, loss of trust, and missed opportunities

Operational Risk



Lack of business continuity and disaster recovery plan



Network latency/breaks

Audit and Compliance



Unmet data privacy regulations and industry-specific compliance



Lack of audit readiness

Mitigation

- An IA project can involve IA vendor, service provider and customer IT, and business teams. It is the shared responsibility of all stakeholders to collaboratively work toward creating an incident and risk management plan.
- The setup of a program governance committee and regular cadence between the customer, IA vendor, and service provider is important for the success of an IA project.
- A Business Continuity Plan (BCP) should be in place to support robust IA services and operations. Customers should plan for activities such as backup and define lines of communication and responsibilities for a recovery scenario.
- Enterprises should plan for network optimization at their end to ensure uninterrupted service.
- Organizations should be aware of the changes in the industry and work with the IA vendor to ensure adherence to evolving industry-specific compliance mandates (e.g., HIPAA).
- Organizations can be audit-ready by using audit capabilities provided by IA vendors to trace user actions and conform to best practices such as NIST AC-6.

The key is to balance the risks with the value cloud IA provides to the business. IT executives should evaluate risk holistically to reap efficiencies, cost savings, and additional benefits that cloud IA promises.

CONCLUSION

Cloud IA adoption remains largely at experimental and pilot stages. With the cloud offering significant ROI (higher returns, scalability, and faster time to market), it is expected to soon become mainstream. As organizations embark on their cloud journey, it is imperative to look for a suitable cloud deployment model that is in line with the company policies. It also requires a clear strategy for the identification of use cases to be migrated to the cloud and plan for risks in advance.

Web-enabled cloud delivery has been a game-changer for various domains. Cloud-led IA delivery is also likely to open new avenues for enterprises by enabling greater scalability, security, and flexibility at reduced costs.

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