Azure Automation Tools

for Implementing Azure Solutions

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Table of contents

1. Major use cases of Azure automation 5

- Running VMs, provide backup and recovery
- Hosting and development of apps
- Azure security
- Scalability in Azure
- Azure automation compatibility

2. How cloud operations play a role 7

- Process automation
- Configuration
- Automation state configuration
- Shared resources and capabilities

3. Best practices of cloud automation with Microsoft Azure 9

- Choosing Correct Serverless Computing
- Track the workflows with tags
- Reuse the Applications

4. Native cloud automation tools from Azure 10

- Azure Pipelines
- Azure Boards
- Azure Virtual Machine
- Azure Active Directory
- Business Intelligence Tools
- Azure Automation

5. Benefits of Azure automation 11

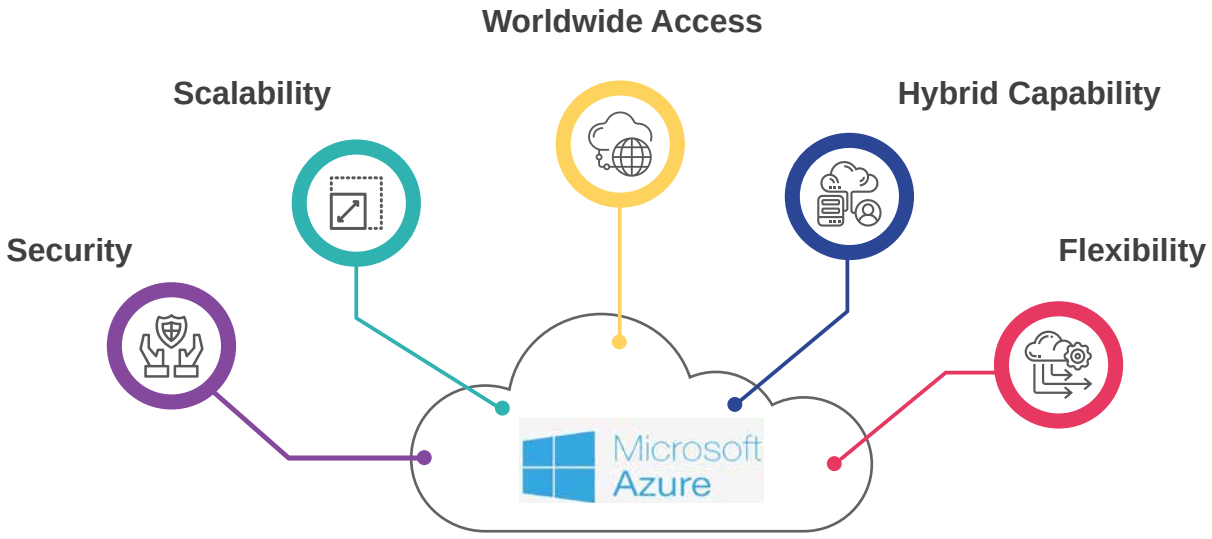
Introduction

With the increased need for cutting-edge technologies such as AI, big data analytics, and cloud computing, cloud automation has become the primary platform to fuel advanced business models and operations. The market studies are showing that the signs are incredibly positive. For instance, **IDC predicts that** "The as-a-Service segments of cloud spending will account for the majority of all cloud spending throughout the forecast, growing from 55.7% in 2021 to 64.1% in 2025."

While businesses are working to meet evolving customer expectations by delivering streamlined, bug-proof, and continuous value-adding solutions, they also have a few challenges to overcome, including security and maintenance.

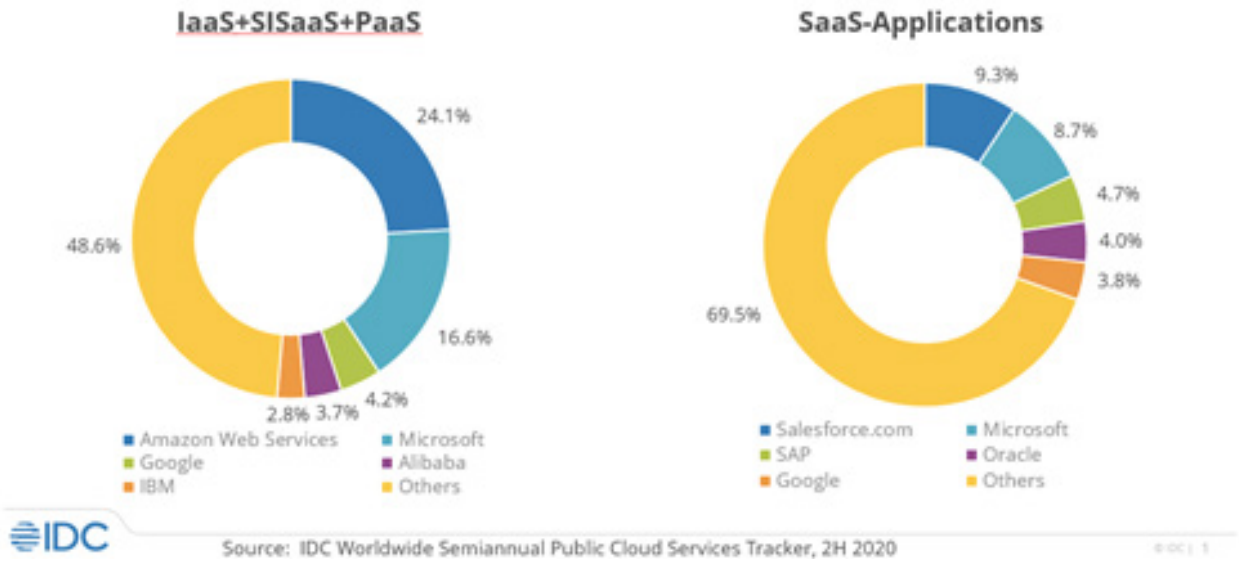
Now, the truth is that implementation can be daunting, even though automating cloud operations seems to be the most viable solution to such challenges. Enterprises must consider factors such as SLA monitoring, compliance, and security, VM sprawl, and integrating the automated processes into the infrastructure. This is where Microsoft Azure comes in handy.

Microsoft's Azure's cloud-based automation platform offers cost-effective automation services, including configuration management, process automation, update management, shared capabilities, and heterogeneous features. The Azure platform provides tools to support different industries and is compatible with open source technologies. At its core, Azure is a public cloud computing platform that also offers four forms of cloud computing - IaaS, PaaS, SaaS, and serverless. They can be used for virtual computing, storage, analytics, networking, and more.



The last two years have seen a surge in adoption too. **Reports show that in the global cloud infrastructure services market,** Microsoft Azure has 21% of the overall market share. **Microsoft's official reports also revealed that** their Azure-driven revenue reached $46.2 billion last year - increasing by 21% when compared to 2020. Furthermore, **Gartner's 2021 Magic Quadrant report for cloud infrastructure and platform services (CIPS)** has Microsoft Azure as one of the top three cloud service providers.

Public Cloud Services, 2020 Market Shares



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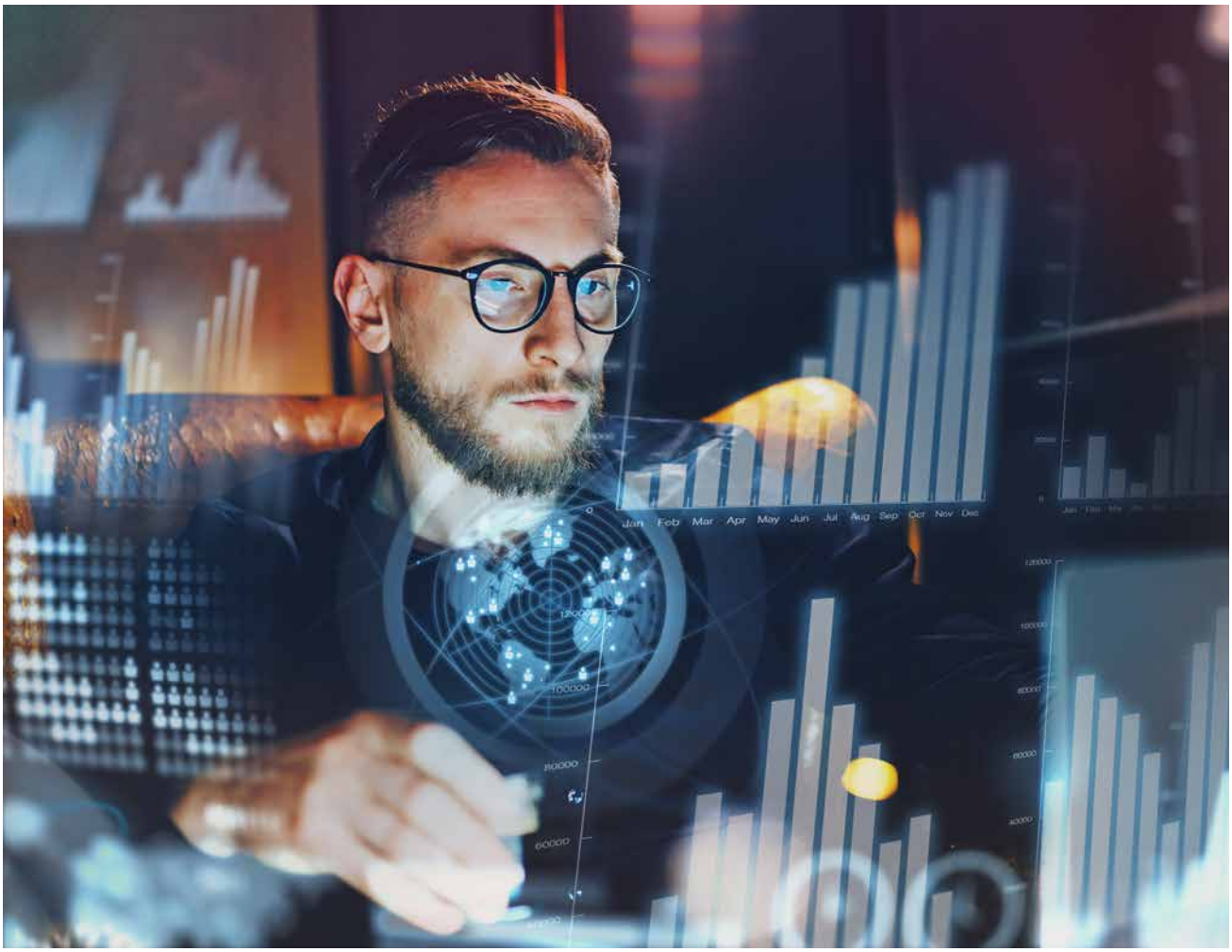


Major use cases of Azure automation

Figure 1: Magic Quadrant for Data Integration Tools

Source: Gartner (August 2021)

Source: https://www.microsoft.com/azure/partners/news/article/microsoft-named-a-leader-in-2021-gartner-r-magic-quadrant-tm-for-data

Running VMs, provide backup and recovery

Azure is commonly used in running virtual machines or containers in the cloud. It is also used as a platform to host databases in the cloud for backup and disaster recovery, etc. With all the offerings from Azure, it is easy to see how it can be used to enhance and implement backup and disaster recovery, back up in any language, on any operating system, and from anywhere.

Hosting and development of apps

It can also be used to host and develop web and mobile apps. Azure comes with patch management, autoscale, and integration capabilities to on-premises apps. The automatic patch management for virtual machines, managing infrastructure is easy. The autoscale feature is inbuilt and automatically adjusts your resources based on web traffic. It can link your web app to an on-premises app seamlessly.

Azure security

Azure can distribute and supplement AD and give your DNS robust security, centralized management, and a global reach. Additionally, it enables multi-factor authentication, adding a layer to security.

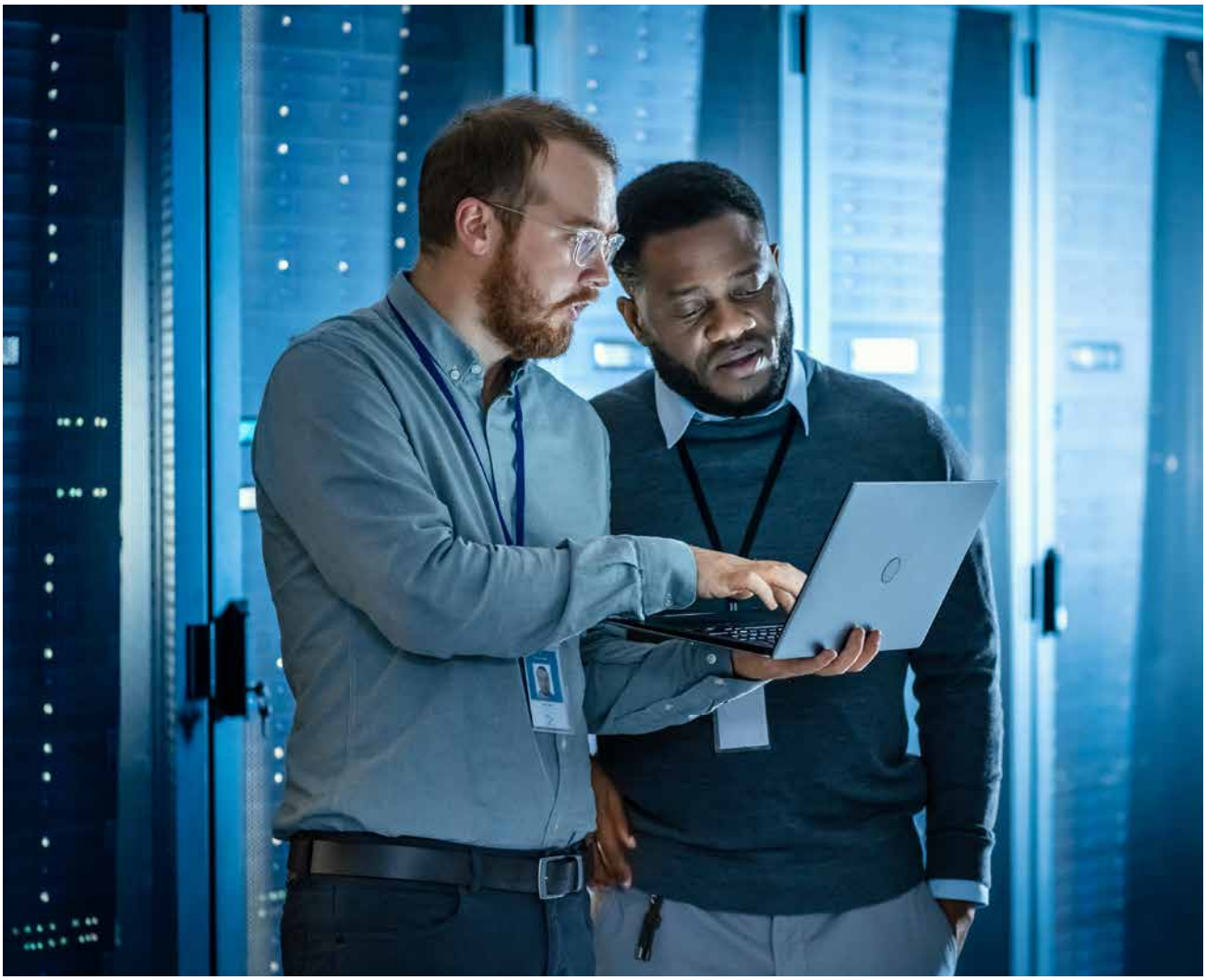
Scalability in Azure

Azure's flexibility, scalability, and security empower organizations as they move towards IoT solutions. From within the IoT hub, you can manage billions of devices and draw insights to cut costs, improve customer experiences, and make informed business decisions.

Azure automation compatibility

Since Azure automation is compatible with multiple vendors, cloud platforms, and on-premises systems, it delivers automation, OS updates, and configuration services across all environments. Azure automation is based on and built using PowerShell and offers a multitude of integration opportunities. The availability of a graphical interface minimizes the need for any scripting skills.

Although Azure automation runs as a cloud-based Service, it can be configured to interact and automate on-premises infrastructures using Hybrid Worker. The Hybrid Runbook Worker is a feature that allows you to run Runbooks directly on the computer hosting the role, interact with local resources in the environment, and against other tools managing these resources. Runbooks can be stored and managed in Azure Automation and then delivered to designated Hybrid Worker computers.

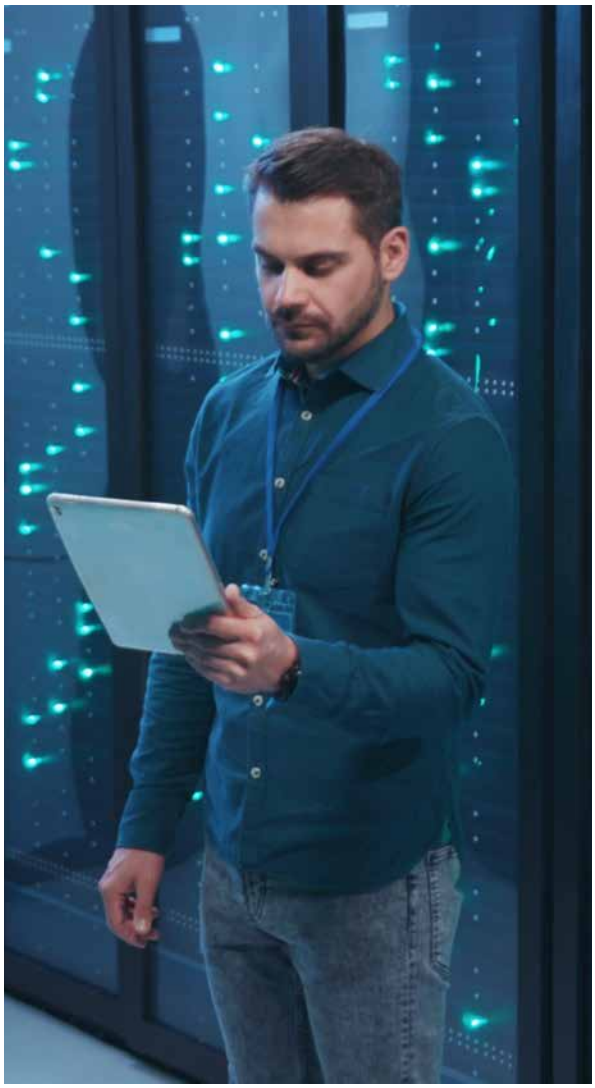


How cloud operations play a role

Typically, automation is required in three areas of cloud operations:

- Deployment and management - Delivering repeatable and consistent infrastructure as code.
- Responses - Creating event-based automation to diagnose and resolve issues.
- Orchestrating and integrating automation with other Azure or third-party services and products.

Automation provides total control during deployment, operations, and enterprise resources and workloads.



Process automation

Process automation helps you focus on work that adds value by eliminating eros and boosting efficiency. It supports the integration of Azure with third-party services that are used to deploy, configure, and manage the end-to-end processes.

Configuration

Configuration management has two capabilities in Azure automation:

- Change tracking and inventory allow you to track Windows and Linux VM and server infrastructure changes. It supports tracking across daemons, software, registry, services, and files in the environment and notices unnecessary changes, and raises alerts where required.

- Inventory support triggers querying in-guest resources improving visibility in the installed applications

Automation state configuration

Automation state configuration includes update management features across hybrid environments. It enables visibility to update compliance across the board, including on-premises. You can create scheduled deployment to orchestrate update installations or exclude it from a deployment entirely.

Shared resources and capabilities

Through Azure automation, shared resources and capabilities enable role-based controls, flexible scheduling, auditing, tagging, and source control integration. These shared resources include modules and modules gallery, schedules, python 2 and 3 packages, connections, certificates, credentials, and variables.

- Azure Automation provides support for Azure RBAC (role-based access control) to regulate access to the resources and automation accounts.

- Source control integrations promote configuration as code that enables configurations or runbooks into a source control system.

Azure automation is designed to work across Linux and Windows physical serves and VMs in Azure, or your enterprise network, or other cloud providers. It delivers automation and configuration of deployed workloads and their operating system consistently. Through its Arc-enabled servers, this consistency flows across all non-Azure machines, too. These services simplify the onboarding of hybrid machines.

Azure automation defines hybrid orchestrations and configuration management and is the tool with which administrators can create runbooks to perform management tasks for the desired functionality.

Best practices of cloud automation with Microsoft Azure

The objective of an enterprise is to make businesses more agile, resilient, and cloud-ready. Ensuring cloud readiness would start with automation. However, it is still essential to follow best practices in cloud automation.

Here are a few practices and tools to help enterprises automate their cloud using Microsoft Azure.

Choosing Correct Serverless Computing

Maintaining any existing infrastructure is an additional workload, where there is a need for seamless data flow and data representation. Serverless computing can reduce some of the load by monitoring and managing the infrastructure itself. Once you know whether the app is orchestrated by a third party or runs on its logic, it is easier to choose among the different options in serverless computing.

Track the workflows with tags

Each piece of data on the cloud is crucial when it comes to automation. Therefore, it is essential to group similar data together. However, this data that flows into the business infrastructure comes in various forms including, voice, text, and graphical data. Users may find it challenging to segregate and characterize the data. Enterprises must categorize data using proper tags. They can achieve this by using Azure's tagging feature, which allows them to collect and manage the metadata from various sources.

Reuse the Applications

Azure's features are robust yet not strong enough to run the application independently in a given environment. Fortunately, the workaround is to use the infrastructure-as-code templates in Azure Resource Manager to create and clone the workflow. While not all of these workflow components may be relevant, retaining a few of them can help edit and execute different tasks later.

Native cloud automation tools from Azure

Azure Pipelines

Azure pipelines allow enterprises to incorporate automation into their CI/ CD pipelines. With this tool, enterprises can automate code development and deployment even as they monitor every detail. Based on the complexity of the environment, the enterprises can make necessary changes quickly, allowing them to implement automation without any hassles.

Azure Boards

Azure Boards offer flexibility for enterprises to implement rich capabilities to all their projects. These capabilities include native support from Kanban, Scrum, customized dashboards, and integrated reports. You can track these projects through artifacts known as “Work Items” in Azure Boards, and the progress gets updated as soon as the project moves ahead, in real-time. Azure Boards use the following stages - New, Active, and Closed.

Azure Virtual Machine

A virtual machine empowered by Microsoft Azure offers an added advantage to enterprises as it helps them leverage the most out of contemporary cloud computing. This tool enables enterprises to use their machines or systems without increasing expenditure in purchasing or maintenance.

Azure Active Directory

Azure Active Directory or AD includes everything an enterprise might need to secure its data or account activity using identity management for modern-day cyber-security. The tool enables a combination of sign-in and multi-factor authentication and various other security features. They can be synchronized with an on-premises active directory and authenticate other cloud-based systems via OAuth.

Business Intelligence Tools

BI tools such as Power BI from Microsoft have a wide range of benefits to offer. One of the most significant benefits is accumulating and processing data efficiently. It also helps enterprises organize, analyze, visualize the data, and enhance the dashboards and reporting.

Azure Automation

Azure Automation helps users blend configuration management and orchestration tools to deploy multi-tier applications with a single command. Admins can create runbooks to carry out management tasks effortlessly. Automation also enables the users to provide the necessary infrastructure modification and create webhooks using Azure Resource Manager (ARM) templates.

Benefits of Azure automation

Having discussed the various aspects of Azure automation tools and how they help with Azure solutions, it is easy to see how it can benefit your organization:

- Little to no upfront costs in software or infrastructure
- Pay only for what you receive from automation
- Global deployment made possible with one click
- Keep multiple deployments in step with a straightforward approach through automation
- The cloud vendor handles infrastructure maintenance, updates, and patching
- Ability to execute runbooks on-premises and maintain the data within your data center

The choice of automation tools depends on your environment and your workflow. Testing different options to find the right one or a combination of tools would be a good start. Or you could consult an Azure expert from Aspire Systems. However, it is quite clear that cloud computing platforms and Azure automation tools are the way to move forward.

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