

Achieve SAP HANA Automation & Standardization with Red Hat & Microsoft

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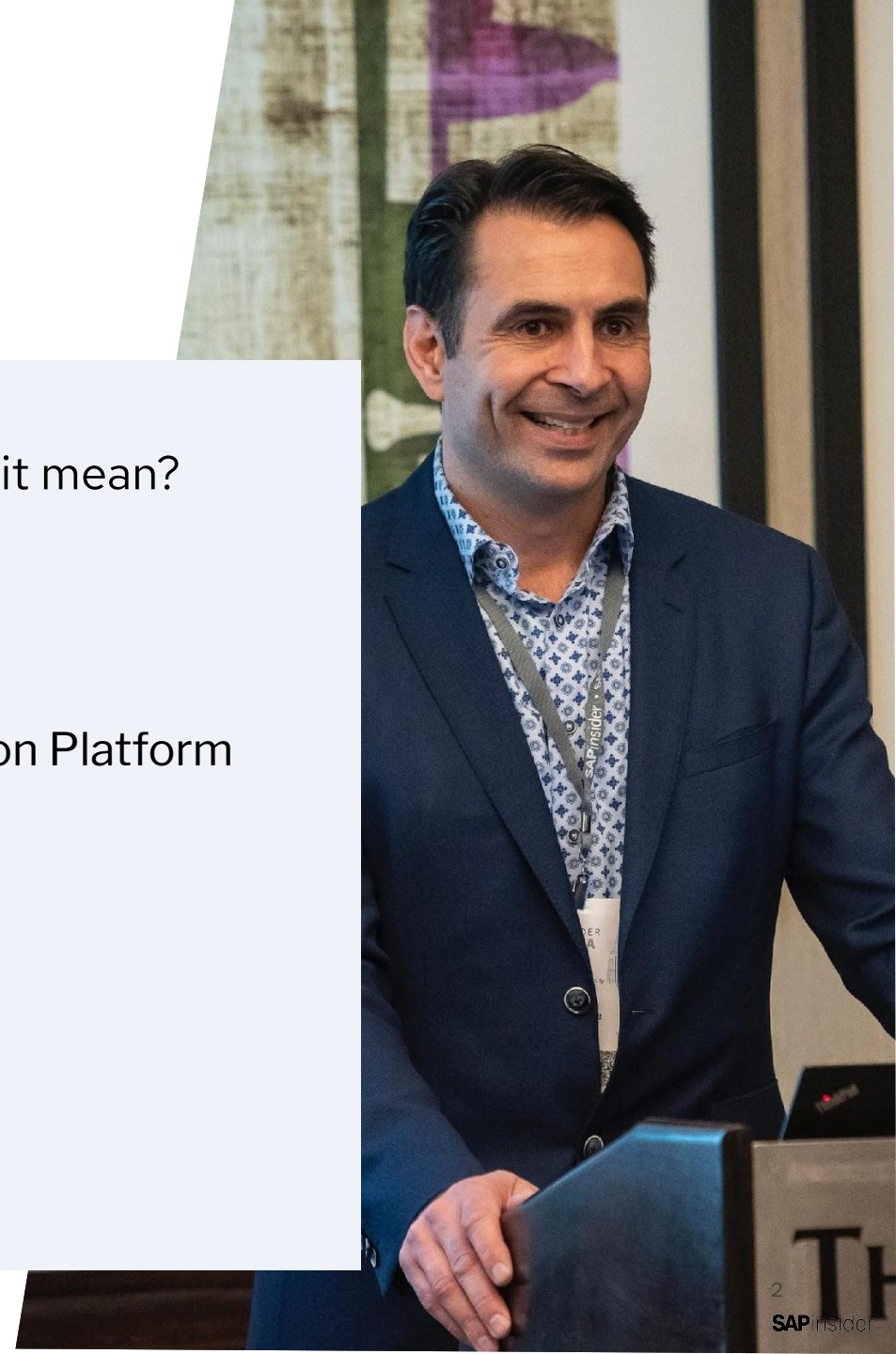
SAPinsider
Las Vegas

2023

SAPinsider

What We'll Cover

- SAP - Red Hat press release ... what does it mean?
- Why run SAP on Azure?
- Microsoft Solutions for SAP on Azure
- Introduction to Red Hat Ansible Automation Platform
- Automating SAP operations
- Wrap-Up



Topic 1

**SAP - Red Hat press
release ...
what does it mean?**



- *Red Hat and SAP extend support for the RISE with SAP solution on Red Hat Enterprise Linux, **the preferred operating system** for net new business for RISE with SAP solution deployments*

This collaboration aims to **enhance intelligent business operations**, support cloud transformation across industries and **drive holistic IT innovation**.

[SAP link](#)

red.ht/SAPNEWS

This joint initiative to extend SAP software workloads on Red Hat Enterprise Linux is intended to make it easier for SAP customers to achieve **greater business agility, accelerate cloud deployments and drive business innovation** by building on Red Hat's **scalable, flexible, open hybrid cloud infrastructure**. Customers can now more readily streamline cloud transformation projects based on SAP software, including SAP S/4HANA, based on the RISE with SAP solution underpinned by Red Hat Enterprise Linux.

The world's leading provider of open source enterprise IT solutions

More than
90%
of the
Fortune
500
use
Red Hat
products and
solutions¹

~19,500
employees

105+
offices

The first
\$3
billion
open
source
company
in the world²

Why Red Hat for SAP ?

Credibility

More than 90%

of companies in the Fortune 500
use Red Hat Enterprise Linux¹

Red Hat named a **leader in**

**multicloud container
development platforms**

in the Q3 2020 Forrester Wave Report²

Red Hat named a **leader in**

**infrastructure
automation platforms**

in the Q3 2020 Forrester Wave Report³

Confidence

20+ year partnership

with SAP

SAP preferred OS

For net new Rise for SAP solution
development

Co-innovators with SAP

around multicloud, open source, and
Kubernetes technology

Consistency

Red Hat is the only vendor

with a complete and **open hybrid cloud**
infrastructure for SAP workloads

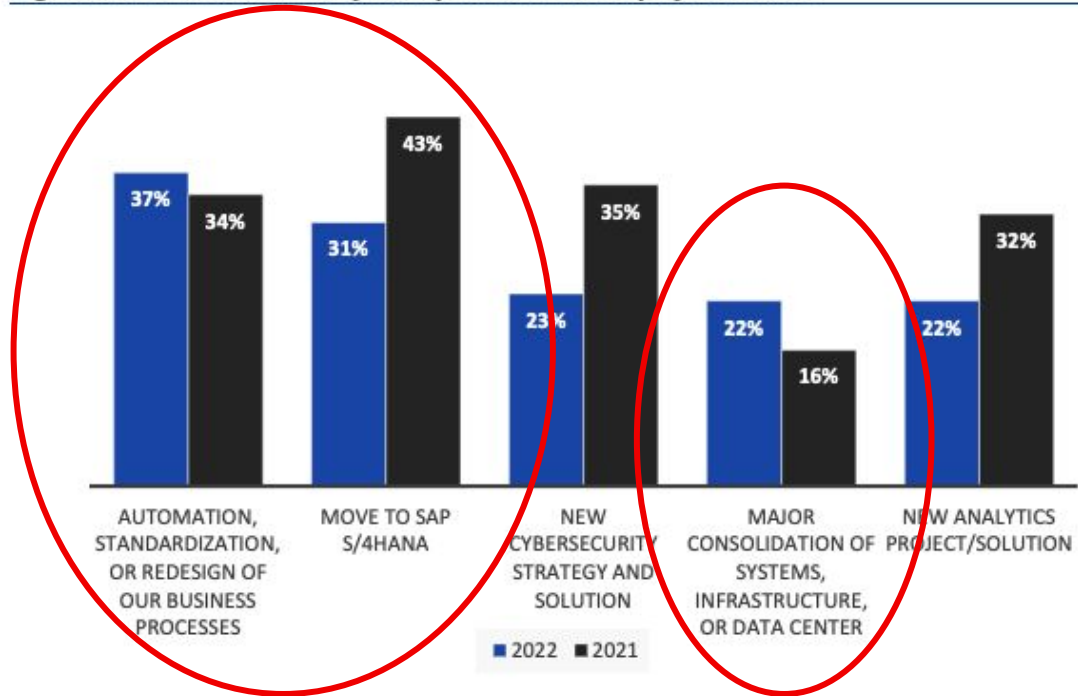
Our turnkey portfolio provides

**scalability, stability and
flexibility**

Red Hat helps enterprises prepare
for anything by

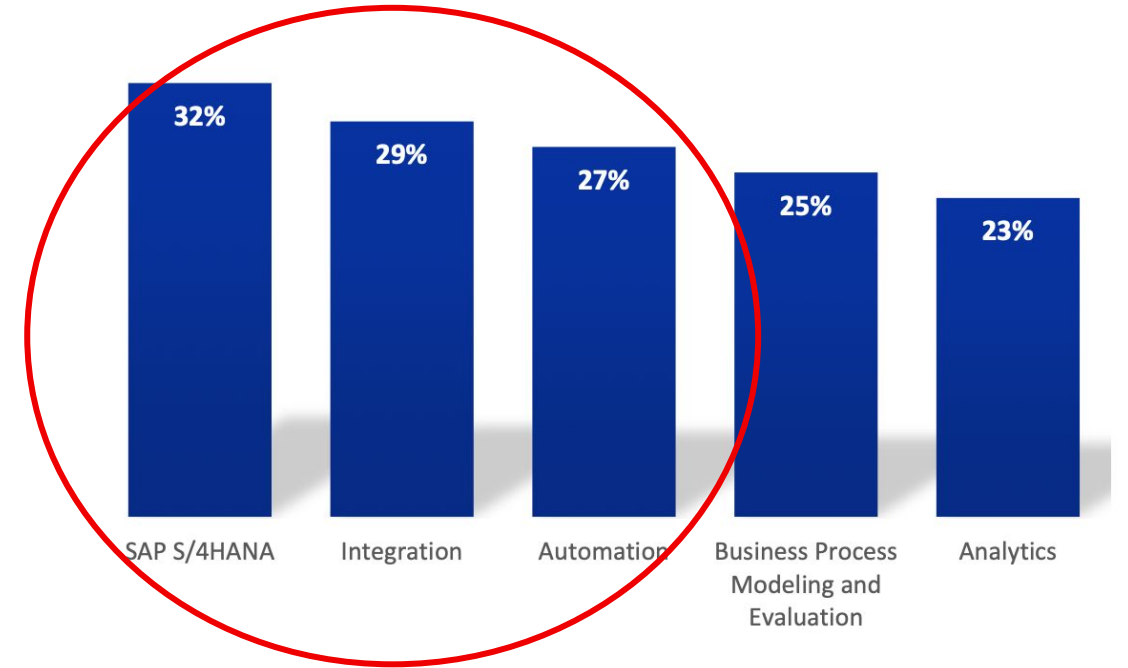
avoiding vendor lock-in

Figure 1: What best describes your top transformation project for 2022?



Source: SAPinsider, December 2022

Figure 6: Top skills needed for transformation success



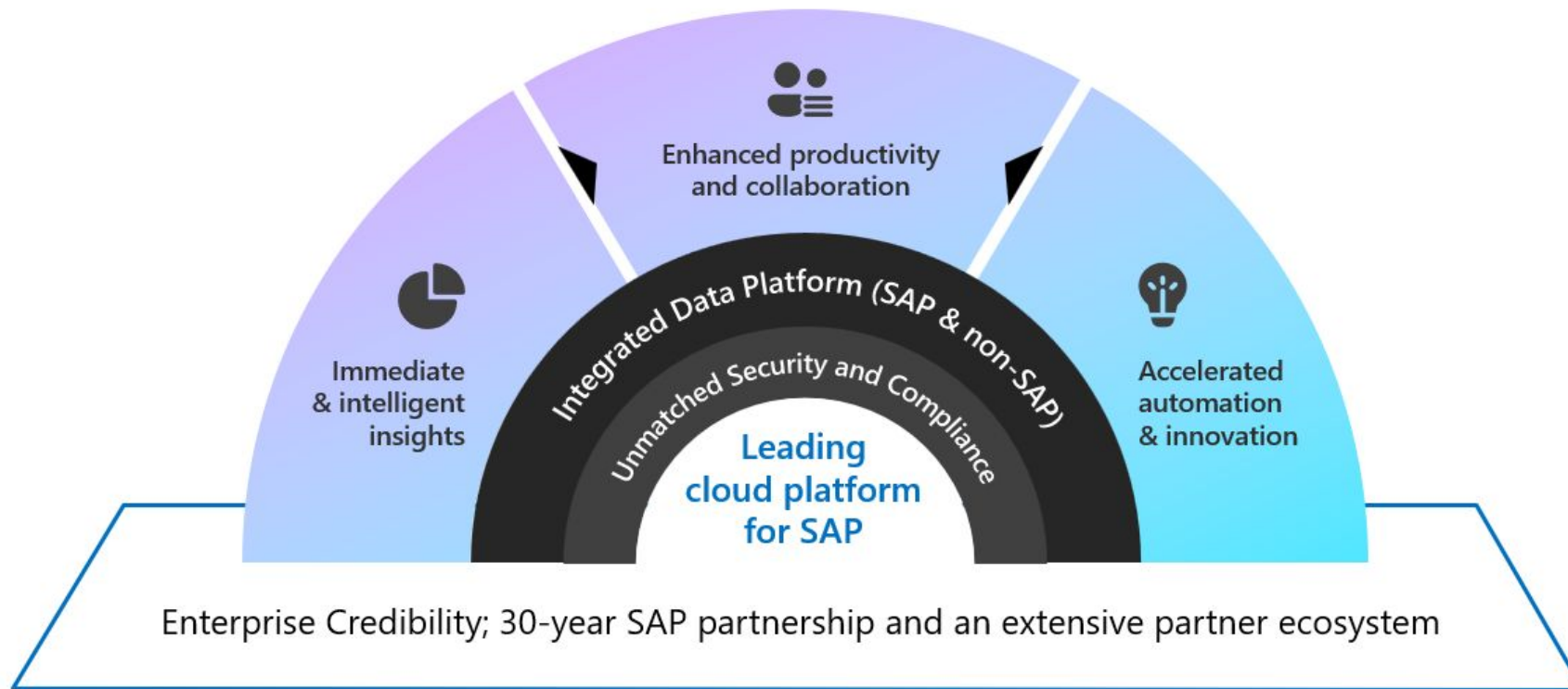
Source: SAPinsider, December 2022

Topic 2

Why run SAP on Azure?



Why Microsoft Cloud for SAP RISE and Direct



We're working closely so you can drive collaboration across your company

Customers prefer Azure as their choice to run SAP S/4HANA in the cloud*



30+ Year partnership



Extensive customer overlap, serving most of today's largest enterprises



SAP runs Microsoft Azure and Microsoft runs SAP



Ongoing global investments and an aligned ecosystem



"The case for digital transformation has never been more urgent. By bringing together the power of Azure and Teams with SAP's solutions, we will help more organizations harness the power of the cloud so they can more quickly adapt and innovate going forward."

Satya Nadella
CEO of Microsoft



"New ways of working, collaborating and interacting completely transform how we operate. Our trusted partnership with Microsoft is focused on continuously advancing customer success."

Christian Klein
CEO of SAP SE

* Sources: Deployment approaches for SAP S/4HANA 2020 SAPinsider Benchmark Report and DSAG Investment Report 2020.

Preferred cloud provider of leading players for SAP across all industries



Consumer Product Goods



Manufacturing



Energy



Utilities



Retail



Banking and Insurance



Health and Pharma



Automotive and Transportation



Services and Multi-sector



SAP on Microsoft: How do we think of SAP as a First-Class Azure Citizen?



Discover

Discover your current SAP estate, document core SAP landscapes and customizations

Define goals

Determine your key stakeholders and organize your community around key performance indicators (KPIs)



Prepare

Assess and plan for your landscape to map to your future vision

Right-size SAP to fit your business needs

Leverage reference architectures designed by Microsoft and SAP

Draft plans for business continuity, migration cutover, testing, and organizational readiness



Migrate

Create your Landscape

- Customer or Partner self-creation
- Terraform/Ansible Infrastructure as Code
- Catalog build process

Register & Validate: the built environment as a first-class Azure resource

Migrate with best practice and DMO

Optimize : Compare running system to base line



Run - AIOps

Optimize landscapes with cloud operational best practices

Security center to continuously enhance your environment

Contextual Telemetry and Actions

Frictionless Azure services and integration with third-party apps

Active cost management

Secure with MS Sentinel



Innovate

Integrate your entire IT environment and secure access with Azure AD (SSO)

Drive immediate insights with data visualization tools

Invent new customer experiences by extending the core platform

Integration Hub Single location to discover, consume, integrate

Automated

OptimizedSeamless

SLA

An extensible platform for Partners, ISV and Customers

SAP on Microsoft: How do we think of SAP as a First-Class Azure Citizen?



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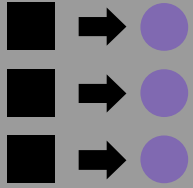
Topic 2

Microsoft Solutions for SAP on Azure?



SAP Deployment Automation Framework |

Overview



MIGRATE

Realize your migration plan and communicate it to the business

Deploy environment across compute, networking, security, and database needs

Test for recovery and performance

Migrate to bring your technology to life

Automated deployment of SAP on Azure following a Microsoft-supported Reference Architecture. Provides industry leading Infrastructure-as-Code and Configuration as Code based automation modules with Terraform and Ansible respectively



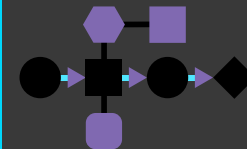
NEW

Open Source

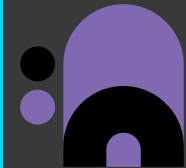
Repo Azure/sap-automation
<https://github.com/Azure/sap-automation>



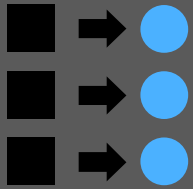
IaaS Setup, SAP software install, SAP HANA, High availability (HA) configuration



Fast, consistent deployments
Jointly-created reference architectures



Modularized, supports customization



DEPLOYMENT

Realize your migration plan and communicate it to the business

Deploy environment across compute, networking, security, and database needs

Test for recovery and performance

Migrate to bring your technology to life

SAP Deployment Automation Framework | Features

Infrastructure Deployment

- ✓ Framework for deployment of Ref. Architecture
- ✓ Scalable from Regional to Global Deployment
- ✓ Networking support
- ✓ HA Ready Architecture
- ✓ Availability Sets Support
- ✓ Availability Zone support
- ✓ Proximity Placement Groups
- ✓ Customizable disk configuration
- ✓ Custom Image Support
- ✓ Extendable naming convention
- ✓ Disk encryption support
- ✓ Key Vault Support
- ✓ DB Tier: HANA & AnyDB support
- ✓ Application Tier: Linux and Windows

Configuration and Installation

Base OS Configuration activities, such as:

- sudoers, host file, CIS recommendations, time synchronization, os package installation

SAP specific OS Configuration activities, such as:

- Disk/LVM/Filesystem configuration, OS packages for SAP installation, User Creation, Kernel Tuning, SAP OS Note application

SAP Software Installation

- Software downloaded from SAP, persisted in customer repository
- Ability to repeatable install S/4, at a target Version, Support Stack, and Patch level
- Delivers a running S/4 single install. in ~2 hours and S/4 HA install in ~3 hours (HSR, Pacemaker) - ready for Basis post-installation activities.

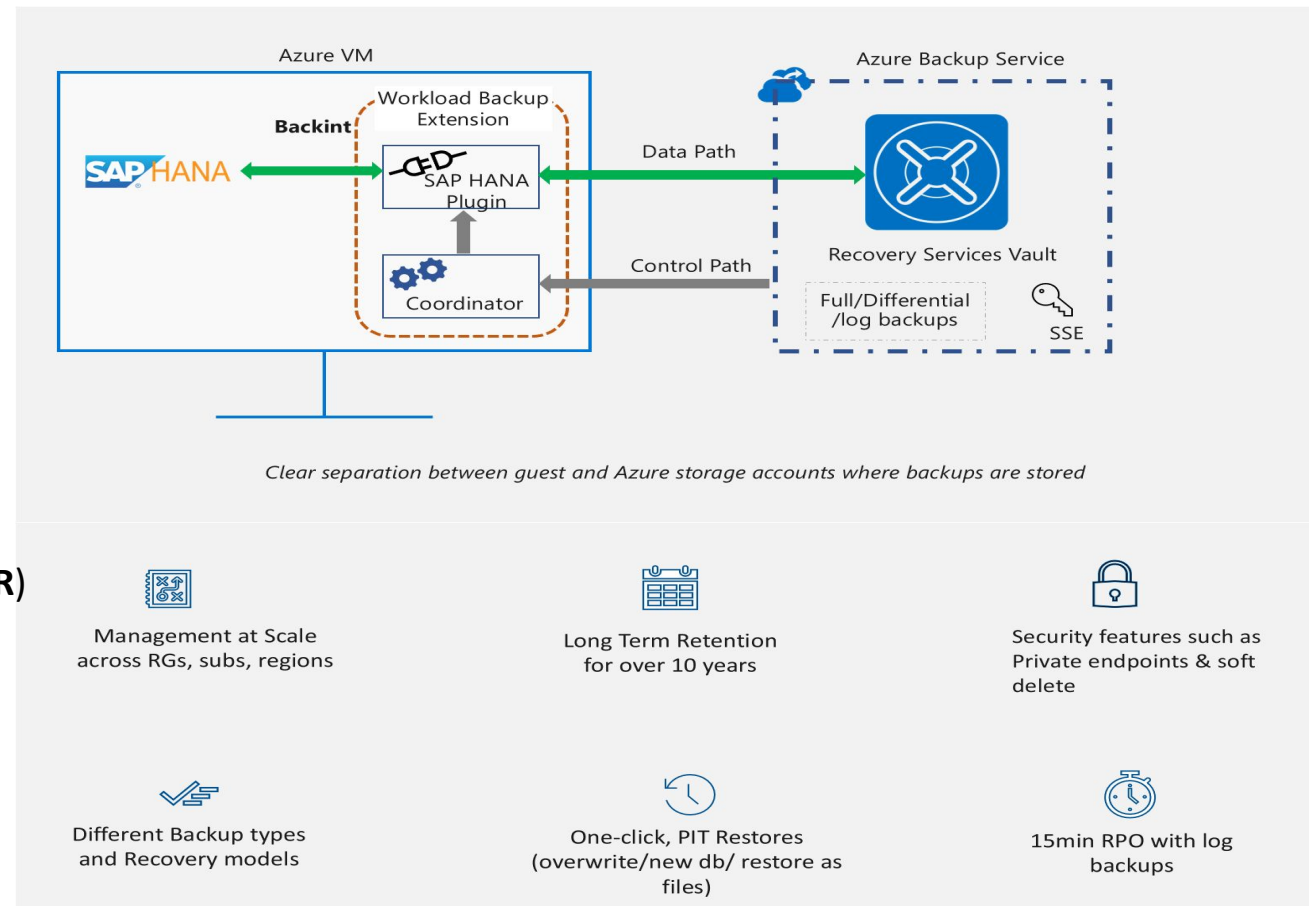
Azure Backup for SAP HANA | Overview

Simple, reliable and secure data protection for SAP HANA databases using Azure Backup's Backint certified solution

Key Benefits

- Zero infrastructure solution
- 15-minute Recovery Point Objective (RPO)
- One-click, point-in-time restores
- Long-term retention
- Backup Management from Azure
- Instant backup & restore w/ **snapshots**
- Automatic backup support for HANA system Replication (**HSR**)
- Cost optimized
- Built-in enterprise class resilient protection capabilities.

Learn more: [Documentation](#) | [Additional Resources](#)



Azure Monitor for SAP Solutions (AMS)

End to end SAP technical monitoring in Azure portal

Key benefits

Collect and visualize end-to-end telemetry at one place with one tool in Azure portal

Simplified set-up & maintenance experience

Easily create a single-pane-of-glass for SAP & non-SAP deployments by combining telemetry from AMS & Azure Monitor

Integration with Azure Light house

Correlate SAP telemetry with Azure Infra

Setup alerts with a few clicks

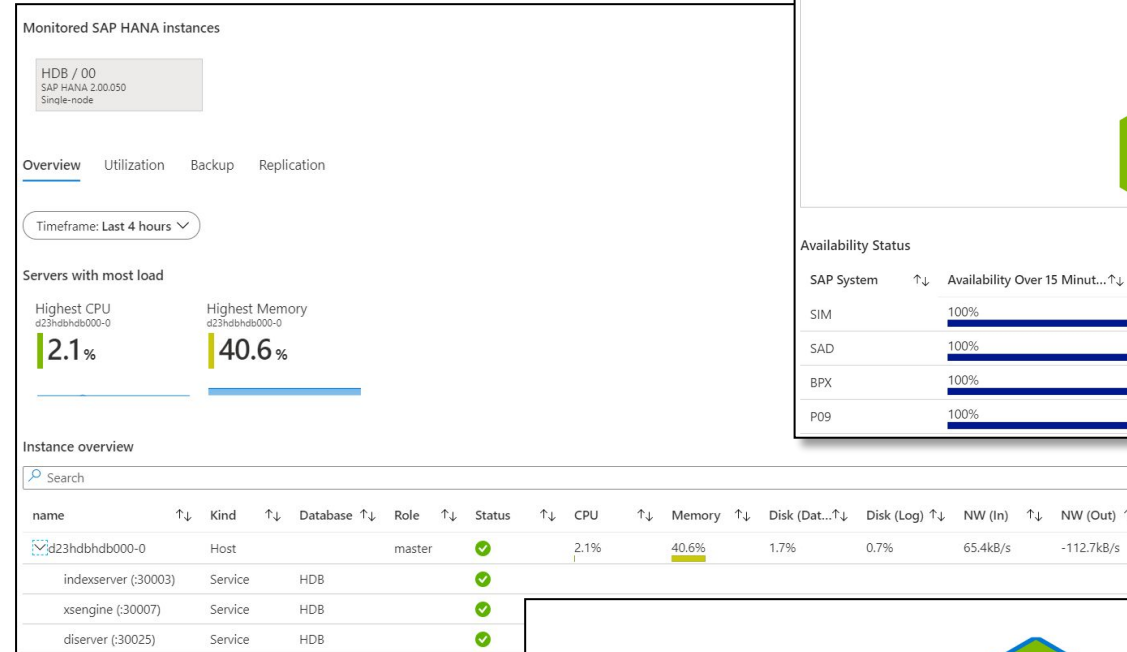
Target user personas

SAP Basis team

Infrastructure team

Partner/Hosters

Learn more: [AMS documentation](#)



Picture above: shows SAP HANA telemetry in Azure portal.



Picture above: shows SAP NetWeaver availability at SID level, in Azure portal.



Picture on right: shows High availability (pacemaker) cluster status and statuses of underlying nodes and resources.

Azure Monitor for SAP solutions (AMS)

Turn-key and feature-rich technical monitoring for SAP on Azure

Features:

- Collect & visualize end-to-end SAP telemetry at one place in Azure portal
- Monitor SAP Application (NetWeaver), SAP HANA, High-availability (Pacemaker) clusters, IBM Db2, Microsoft SQL server, OS (Linux)
- Combine SAP telemetry from AMS with Infra telemetry from Azure Monitor
- **Integration with Azure Center for SAP solutions**
- Pre-defined alert templates
- Easy to set-up, maintain and use
- **No agents for SAP NetWeaver, SAP HANA, IBM Db2 & SQL Server**
- Retention period up to -2 years
- Integration with ITSM tools

PUBLIC PREVIEW since July 2022

Read [announcement here](#)

Get started by logging into [Azure portal](#)

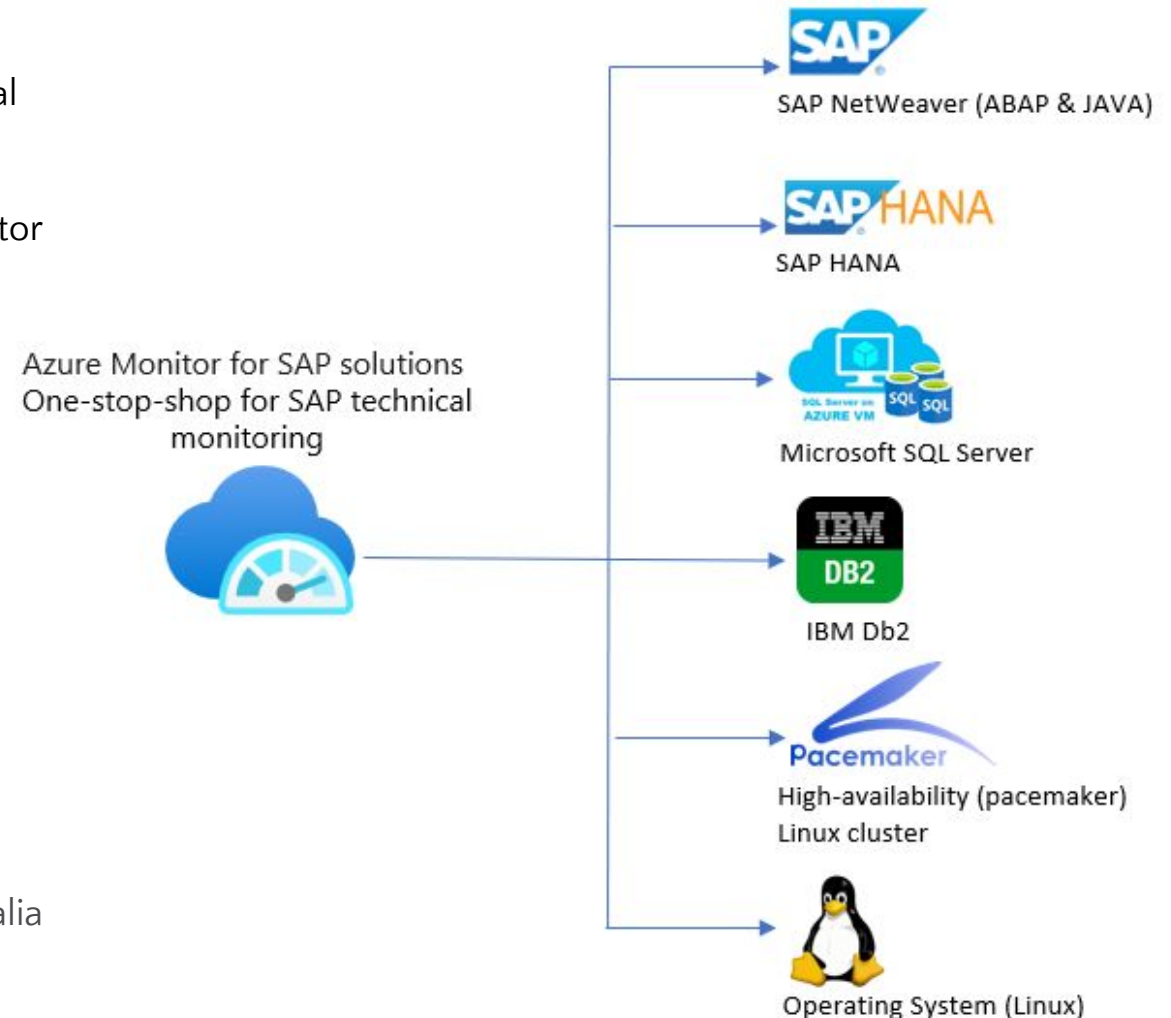
[Public documents](#)

Regions:

All US regions, North Europe, West Europe, East Australia, South-east Australia
Central Australia, East Asia, South-east Asia, Central India, South India.

Pricing:

AMS does not have license fee; consumption charges are applicable.



Microsoft Sentinel

Optimize security operations with cloud-native SIEM powered by AI and automation



Harness the scale
of the cloud

56% reduction
in management
effort for
infrastructure
and SIEM



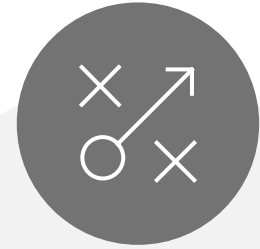
Detect
evolving threats

79%
decrease in
false positives
over three years



Expedite
incident response

80% reduction
in investigation
labor effort



Get ahead
of attackers

67%
decrease in time
to deployment with
pre-built SIEM content
and out-of-the box
functionality

Business-critical data in SAP systems must be protected



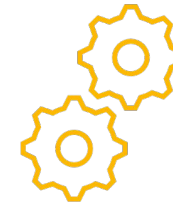
SAP system users and managers not security professionals and lack security expertise and awareness



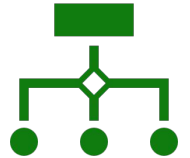
SAP system breach could result in exposed customer data, disruption to key business processes, loss of revenues and major reputation impact



SOC teams traditionally have very little visibility into SAP systems and the business processes they support



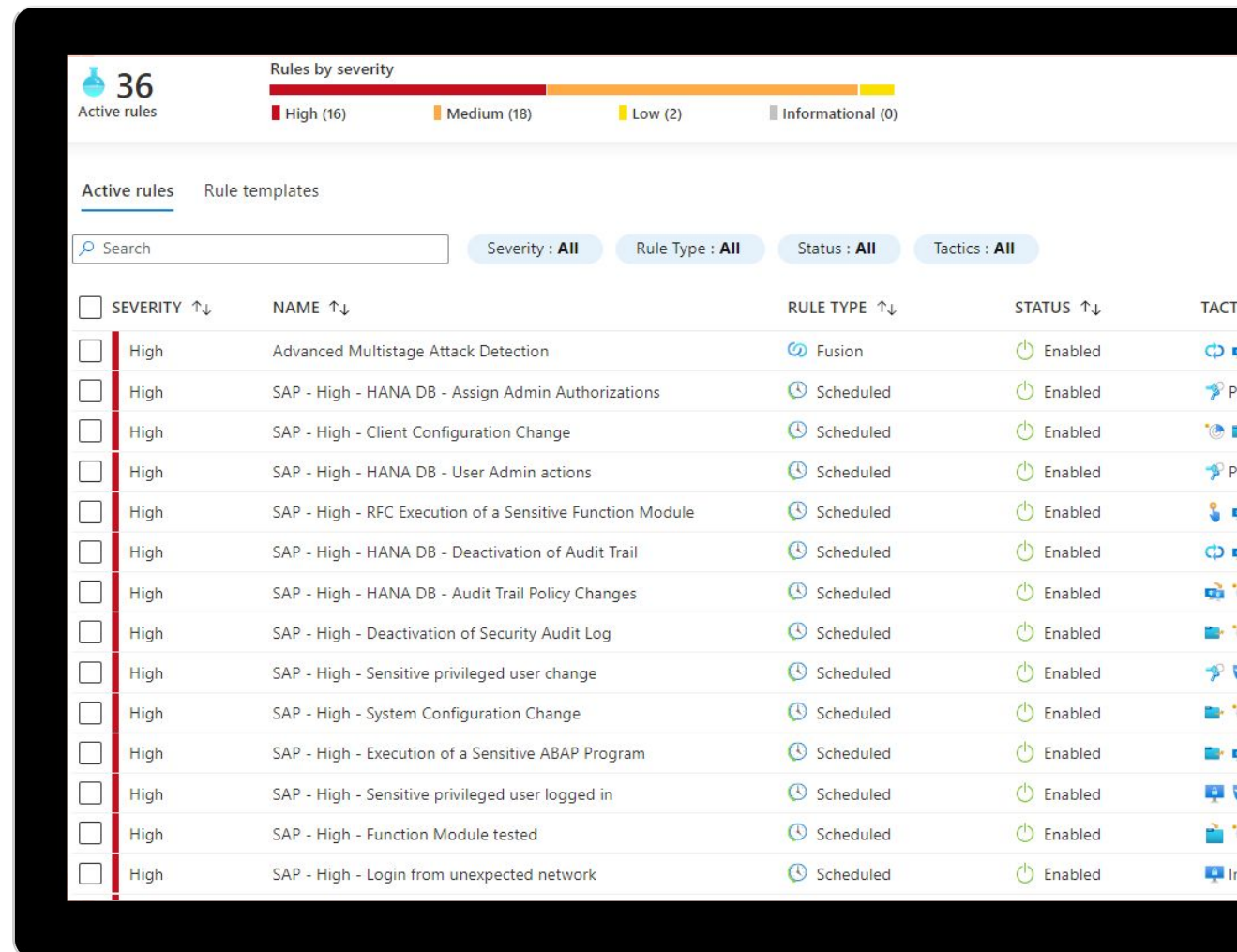
Once an attacker is in the system there are few controls to monitor, detect and respond to data exfiltration, process disruption or other bad acts



SAP application activities needs to be correlated with other data sources across the organization for efficient threat detection and response

Microsoft Sentinel solution for SAP

- Continuously monitor SAP systems for threats at all layers: business logic, application, database, and OS
- Detect threats like privilege escalation, unapproved change and more with out-of-the-box detections
- Correlate SAP monitoring with other signals across your organization
- Build your own detections to monitor sensitive transactions and other business risks
- The solution will GA from August 2022, with a six-month free promotion offer. Billing will start on 02/01/2023 and will be free when a workspace is in a Microsoft Sentinel free trial.



Azure Center for SAP solutions

Products and services

Fully integrated first-party Azure services that are fully supported, always up-to-date, and incorporate the latest cloud innovations

Tools

Ongoing integration with Products

Frameworks

Governance and guidance frameworks are updated periodically as required

Azure Virtual Instances for SAP solutions:
Bringing SAP workload awareness to Azure

SID

(A)SCS

App Instance

Database

Compute

Storage

Networking

Quality Check for SAP workloads on Azure



Open source

Enterprise scale for SAP on Azure Assessment



Well-Architected Framework for SAP on Azure



Deployment Checklist for SAP on Azure



SAP Deployment Automation Framework (open source)



Available

Azure Monitor for SAP Solutions (preview)



ACSS preview

Azure Backup for SAP



Integration coming soon

Azure Cost Management + Billing



ACSS preview (NEW)

Microsoft Sentinel solution for SAP



Integration coming soon

Azure Inventory Checks for SAP

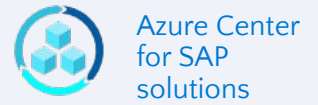


Azure workbook

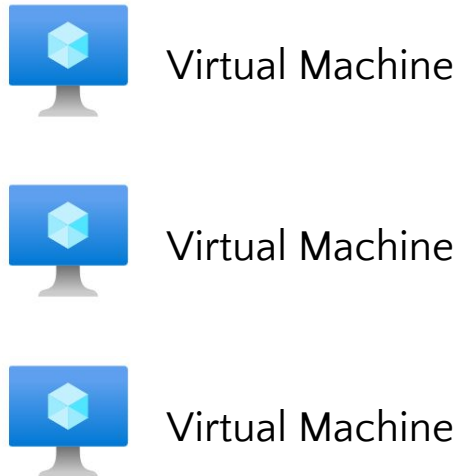
Seamless integration with virtual instance

SAP systems now a top-level workload in Azure

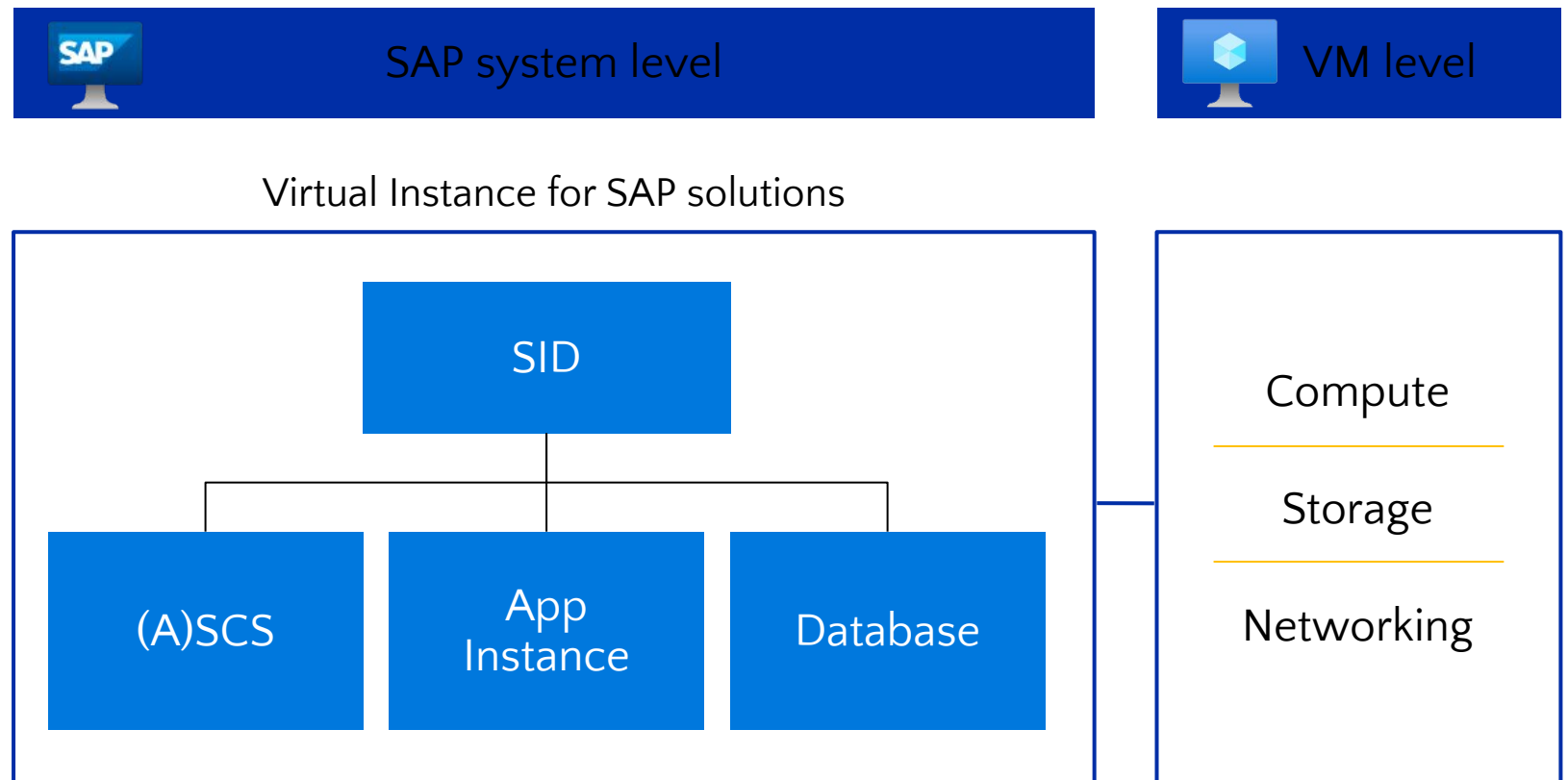
Logical representation supports SAP awareness



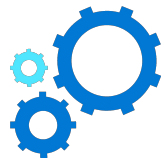
Before:
Manage at the VM level



Today:
Manage at SAP layer or at the VM level



Complete experience to deploy and manage SAP in the cloud with Azure Center for SAP Solutions



Guided SAP deployment

- Optimize deployments with best-practices guidance and automation.
- Retain flexibility to customize infrastructure.
- Choose portal-based experience or other interfaces such as CLI or API



Intelligent, seamless SAP management

- Register existing systems to manage alongside new deployments.
- Manage systems holistically.
- Boost system reliability with quality checks.



Foundation for innovation

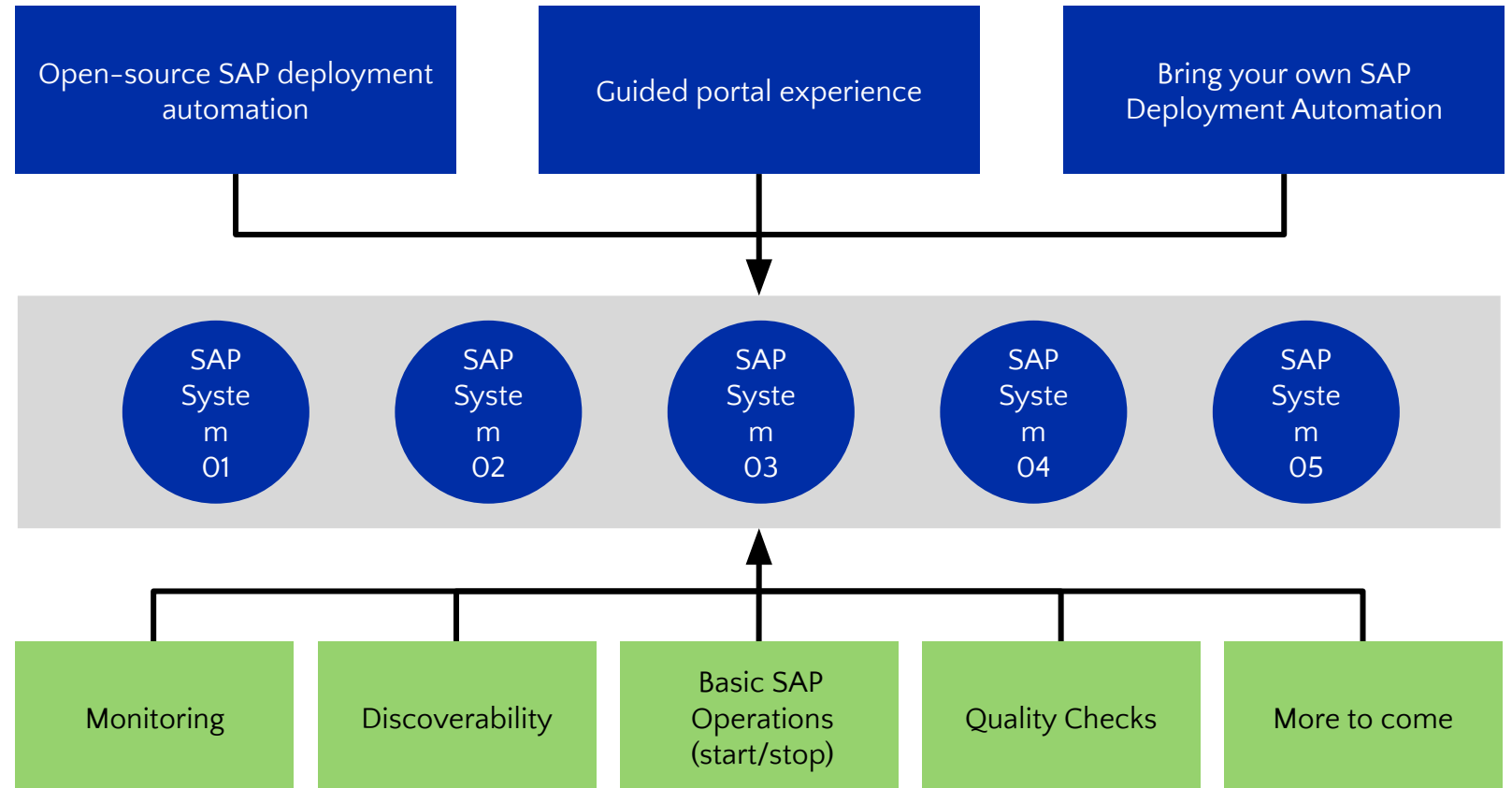
- Adopt functionality on your terms
- Create custom solutions to extend capabilities
- Free up resources to deliver high-value line-of-business solutions.

Modular and extensible

How it works



- 1** **Deploy**
Choose how to deploy your SAP System on Azure
- 2** **Create logical representation**
of each system as you deploy or register existing deployments
- 3** **Manage**
Configure operations with management capabilities



Topic 3

Introduction to the Red Hat Ansible Automation Platform



Why Ansible?



SIMPLE

Human readable automation
No special coding skills needed
Tasks executed in order
Usable by every team
Get productive quickly



POWERFUL

App deployment
Configuration management
Workflow orchestration
Network automation
Orchestrate the app lifecycle



AGENTLESS

Agentless architecture
Uses OpenSSH & WinRM
No agents to exploit or update
Get started immediately
More efficient & more secure

What can I do with Ansible?

Automate the deployment and management of your entire IT footprint

Do this...

Configuration
Management

Orchestration

Application
Deployment

Provisioning

Continuous
Delivery

Security and
Compliance

On these...

Firewalls

Load Balancers

Applications

Containers

Clouds

Servers

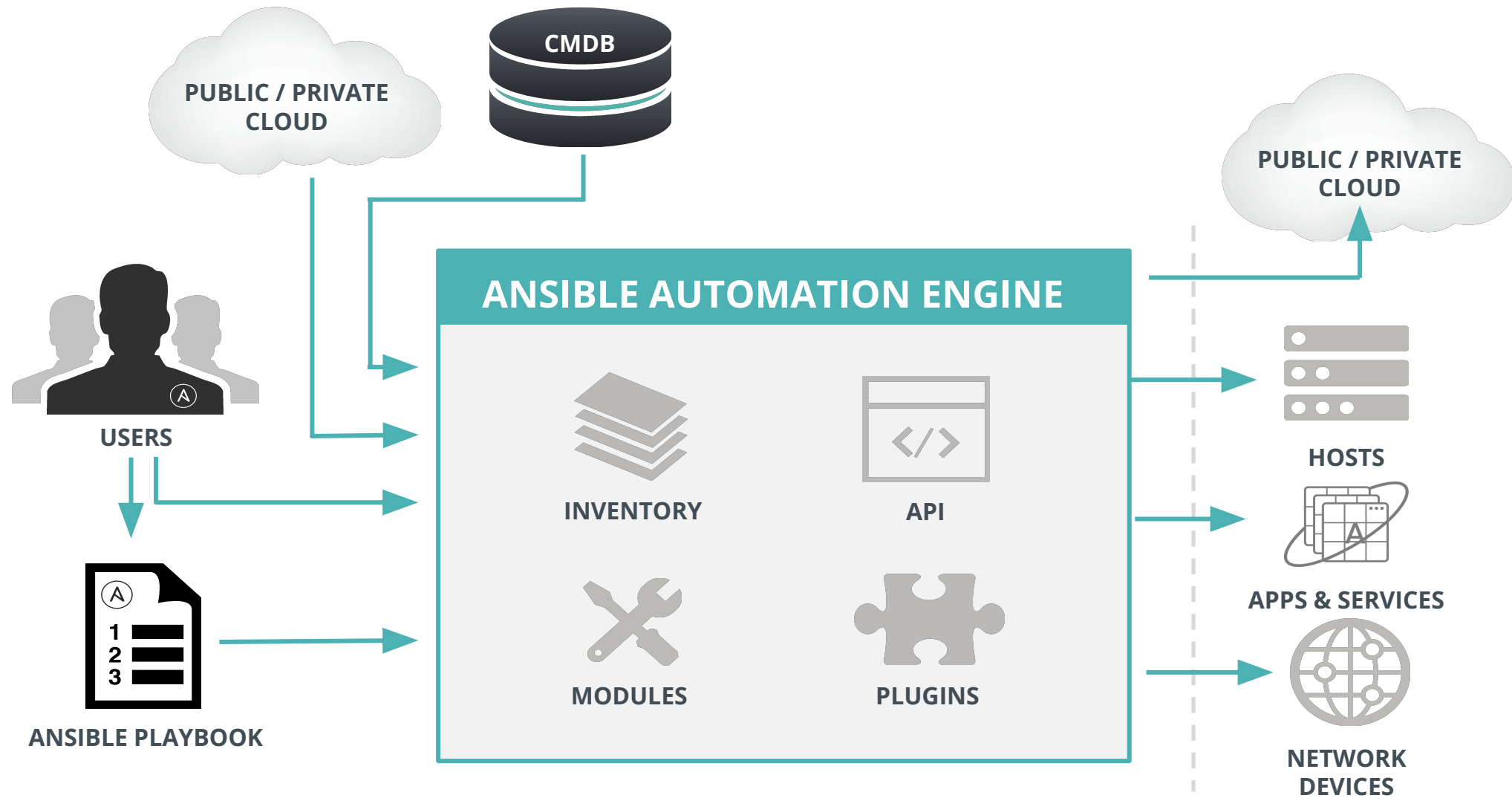
Infrastructure

Storage

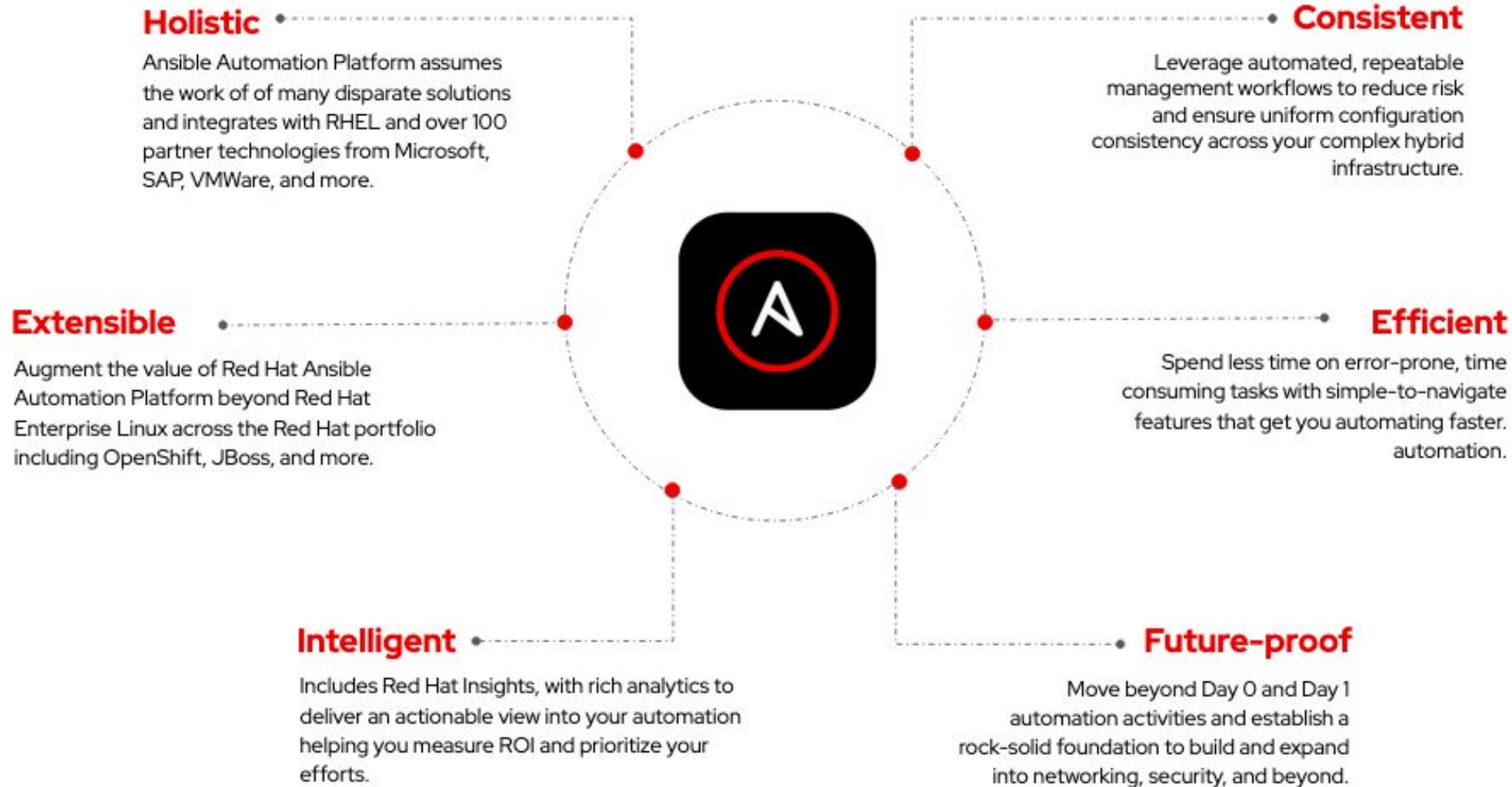
Network Devices

And more...

How Ansible works



Ansible Automation Platform & Infrastructure-as-Code



Business value of Ansible Automation Platform

Significant ROI



667%
over 5 years

Reduced Risk



30%
more efficient security
teams

Better Collaboration



30%
more efficient teams

Increased Revenue



1.95M
total new revenue
gained/year

Improved Productivity



76%
reduction in
unplanned downtime

Faster Time-to-Market



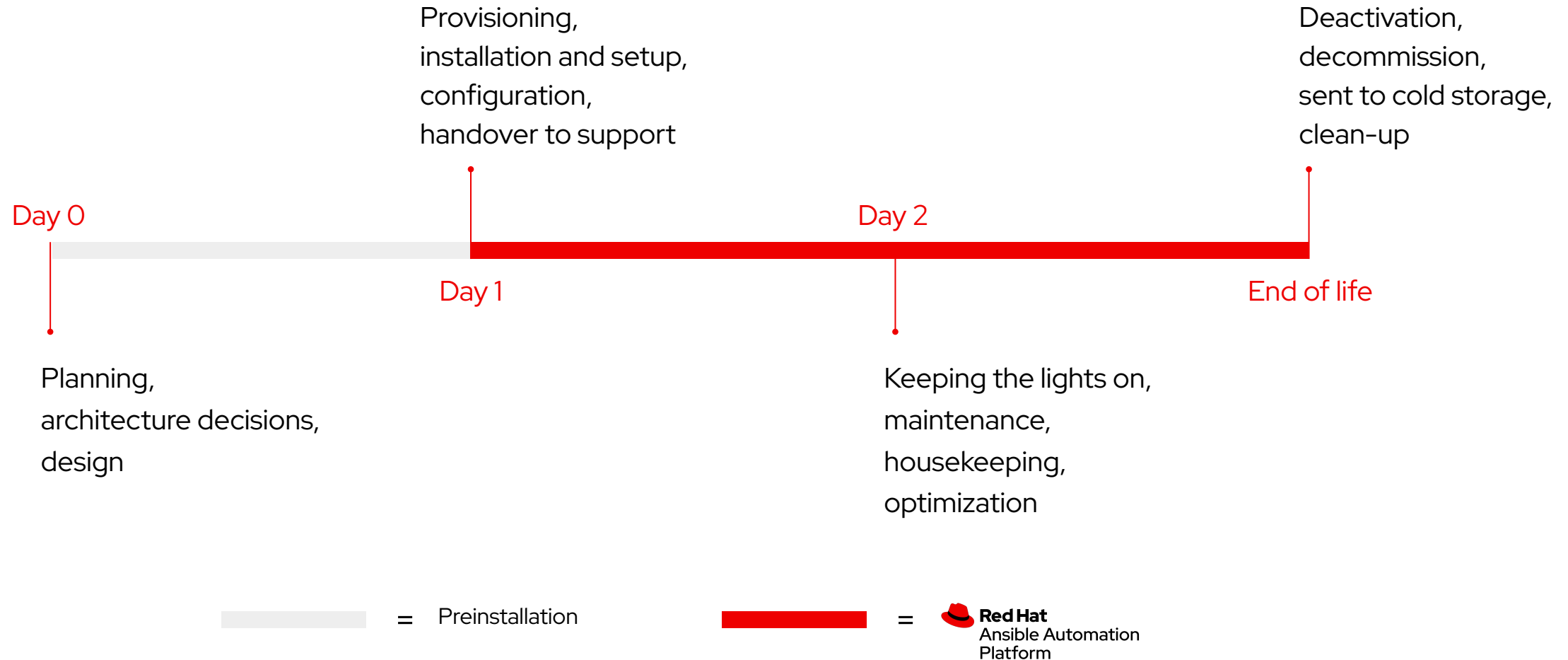
39%
more applications
developed each year

Topic 4

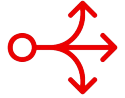
Automating SAP Operations



Day x operations concept and its placement in IT operations



Automating Day 1 operations for SAP workloads



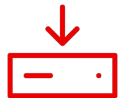
Provisioning of the target node(s) (VMs)



Installation of Red Hat Enterprise Linux on VMs; activation of Red Hat Enterprise Linux subscriptions, initial patching



DB installation (SAP HANA or any other SAP supported DB)



Installation of SAP S/4HANA (or SAP NetWeaver)



Migration of SAP workloads to a cloud environment



Activation of SAP HANA system replication (or equivalent high-availability feature of other DBs)



High-availability Red Hat Enterprise Linux Pacemaker cluster build on both application and DB tiers



Red Hat Insights agent activation



Migration of SAP workloads from Suse Linux Enterprise Server to Red Hat Enterprise Linux

Available Day 1 SAP automation content

Community Led

Repository: [community.sap install](#)¹

- sap_general_preconfigure
- sap_ha_install_hana_hsr
- sap_ha_install_pacemaker
- sap_ha_prepare_pacemaker
- sap_ha_set_hana
- sap_ha_set_netweaver
- sap_hana_preconfigure
- sap_hana_install
- sap_hostagent
- sap_install_media_detect
- sap_netweaver_preconfigure
- sap_storage
- sap_swpm

1 - Supported by upstream community

Red Hat Certified

Collection: [redhat.sap install](#)^{2,3}

... Or ...

Package: [rhel-system-roles-sap](#)^{2,4}

- sap_general_preconfigure
- sap_ha_install_hana_hsr⁵
- sap_ha_install_pacemaker⁵
- sap_ha_prepare_pacemaker⁵
- sap_ha_set_hana⁵
- sap_hana_install⁵
- sap_hana_preconfigure
- sap_netweaver_preconfigure

2 - Supported by Red Hat

3 - Available via Red Hat Automation Hub















with Ansible Automation Platform (AAP) subscription

4 - Available via a RHEL for SAP Solutions subscription

5 - Role is in Tech Preview Support status

Note: Previous versions of the [redhat.sap](#) community roles should be considered deprecated and no longer used. It is recommended to move to the new community.sap* collections for any new projects.

Automating Day 2 operations for SAP workloads

-  SAP instance system copies
-  Spin up/delete new application servers on demand (namely for hyperscalers)
-  Instance refreshes
-  Kernel parameter changes
-  SAP kernel upgrade
-  DB operations
-  DB and OS patching
-  Resource addition (CPU, memory, disk)
-  Cluster management
-  DB backup/restore
-  Stop/start SAP instances
-  Shutting down of sandbox/preproduction systems to cold storage and pulling them out of storage
-  Smart management and proactive issue resolution for SAP servers
-  Near-zero downtime maintenance for SAP servers

Available Day 2 SAP automation content

Community Led

Repository: [sap-linuxlab.operations](https://github.com/linuxlab/sap-linuxlab.operations)

- sap_kernel_update^R
- parameter_info^M
- service^M
- system_info^M
- system^M

Repository: [community.sap_operations](https://github.com/linuxlab/community.sap_operations)¹

- os_ansible_user^R
- os_etchosts^R
- os_knownhosts^R
- sap_profile_update^R
- sap_operations.sap_facts^M
- sap_operations.sap_monitor_hana_status^M
- sap_operations.sap_monitor_nw_status^M
- sap_operations.sap_monitor_nw_perf^M
- sap_operations.sap_monitor_nw_response^M
- sap_control^R
- sap_fapolicy
- sap_firewall^R
- sap_rhsm^R

1 - Supported by upstream community
R - Ansible Role
M - Ansible Module

Red Hat Certified

Collection: [sap.sap_operations](https://github.com/linuxlab/sap.sap_operations)^{2,3}

- sap_kernel_update^R
- parameter_info^M
- service^M
- system_info^M
- system^M
- HANA update^{R,4}
- HANA database backup^{M,4}
- HANA database restore^{M,4}
- HANA hdbuserstore^{R,4}

2 - Supported by Red Hat
3 - Available via Red Hat Automation Hub
with Ansible Automation Platform (AAP) subscription
4 - Future / planned item

Benefits of Ansible Automation for SAP customers

System Provisioning



<20 min

SAP HANA setup

System Patching



<1 min

Near Zero Downtime

Predictable Management



99%

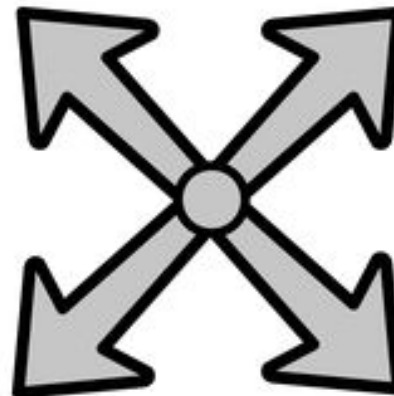
Reduced work hour for updating

Hybrid Cloud

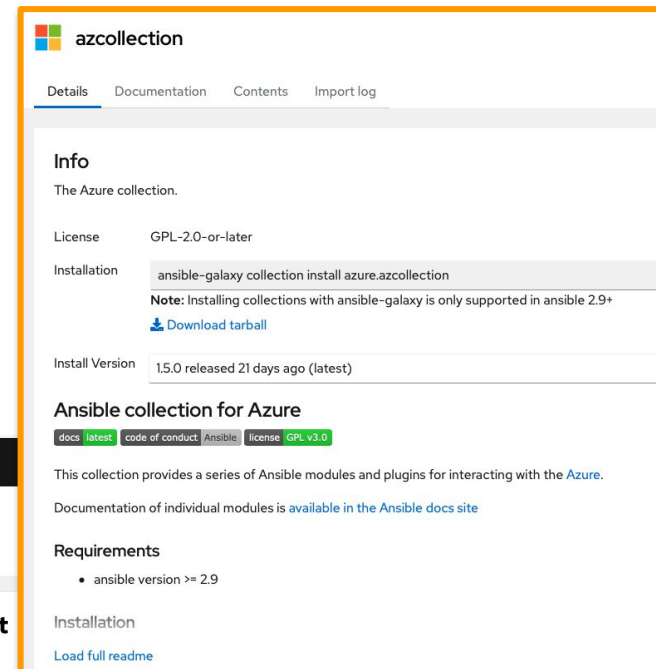
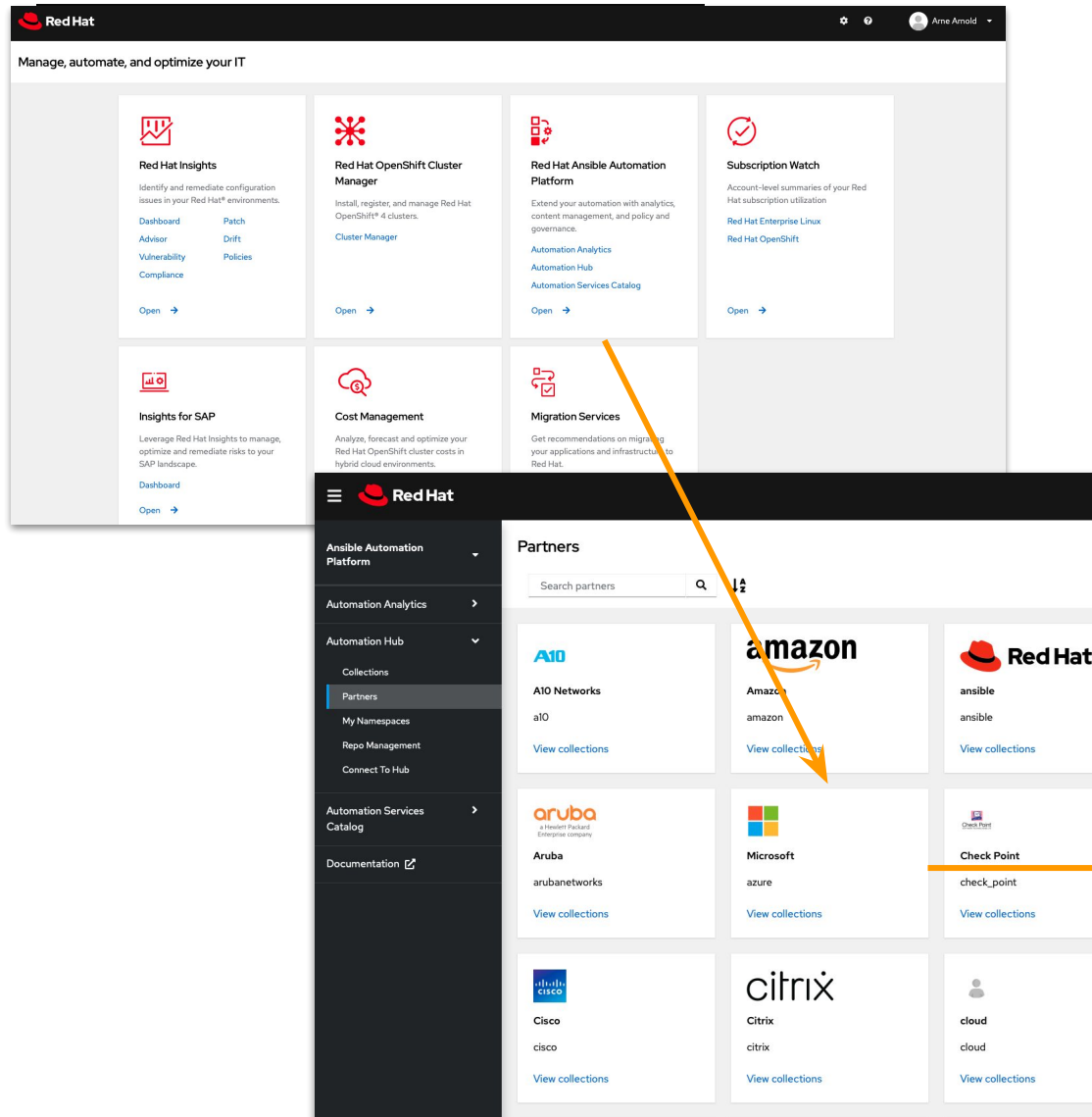


60%

Efficiency gains



Red Hat Automation Hub

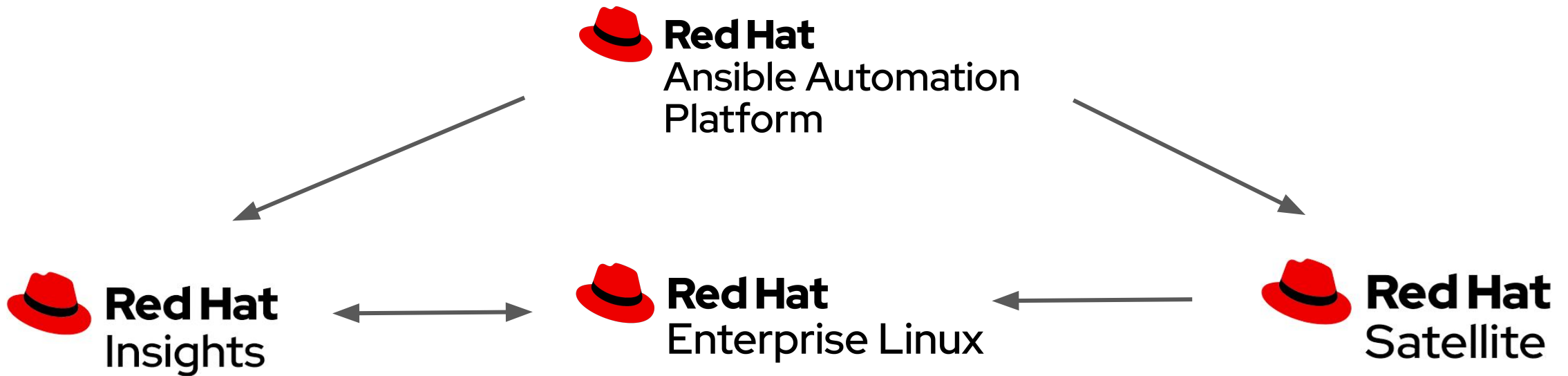


With the release of Red Hat Ansible Automation Platform, **Ansible Content Collections** represent the new standard of distributing, maintaining and consuming automation.

By combining multiple types of Ansible content (playbooks, roles, modules, and plugins), **flexibility and scalability** are greatly improved.

Ansible Content Collections are **fully supported within Ansible**, and documentation is made available for consuming and developing such.

Complete platform for automation of SAP workloads



Wrap Up



A few SAP automation on public cloud customer case studies

Case Study # 1 Automotive company needed to modernize their global SAP landscape with more than 400 Systems to MS Azure. Very complex and heterogeneous environment threatened to delay the process with an estimated time to complete going beyond 2030.

Solution: Leveraging Ansible Automation Platform managed to complete the migration on time and at scale

Case Study # 2 Chocolate manufacturer moving various workloads to Azure. Special SAP requirements needed to be covered and needed to consolidate a number of automation silos.

Solution: By using Ansible Automation Platform for Day 0/1 deployments and various Day 2 automation tasks managed to complete everything in record time

Case Study # 3 Global energy and chemical company wanted to increase efficiency and stay compliant while reducing costs

Solution: Using Ansible to optimize their automation approach increased productivity by 35% compared with the previous year. Also managed to free up more than 6,000 work hours, previously dedicated to repetitive IT administration tasks and redeploy on more strategic work.

Ansible Automation Platform References



SONOS

verizon[✓]



vmware[®]



splunk[>]



comcast[®]



JUNIPER[®]
NETWORKS



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Key Points to Take Home

- SAP & Red Hat Deepened our Relationship
 - Preferred OS for Rise with SAP
 - Innovation & Open Hybrid Cloud
- Ansible provides a powerful automation platform for the entire SAP life cycle
- Red Hat offers a holistic approach for SAP automation and modernization
- Microsoft and Red Hat are collaborating to bring innovation to our customers
- Microsoft Azure offers a strong set of solutions to help our customers with their cloud journey

Where to Find More Information

- [Red Hat Ansible Automation Platform for SAP S/4HANA migration](#)
- Automating your SAP HANA and S/4HANA by SAP deployments using Ansible ([SAP Blogs Part 1, 2, 3 and 4](#))
- [Smart Management for SAP](#)
- [Managing SAP workloads with automation on Microsoft Azure](#)
- Microsoft Azure Center for SAP Solutions release blog is [here](#).
- Microsoft Azure Monitor for SAP release blog is [here](#).
- Microsoft Azure solutions for SAP link is [here](#).

Thank you! Any Questions?

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