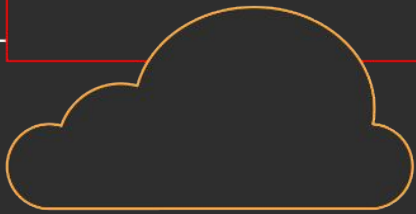


# Automation for SAP Workloads

Jason Delaune  
SAP Associate Principal Solution Architect  
[edelaune@redhat.com](mailto:edelaune@redhat.com)



# What we'll discuss today

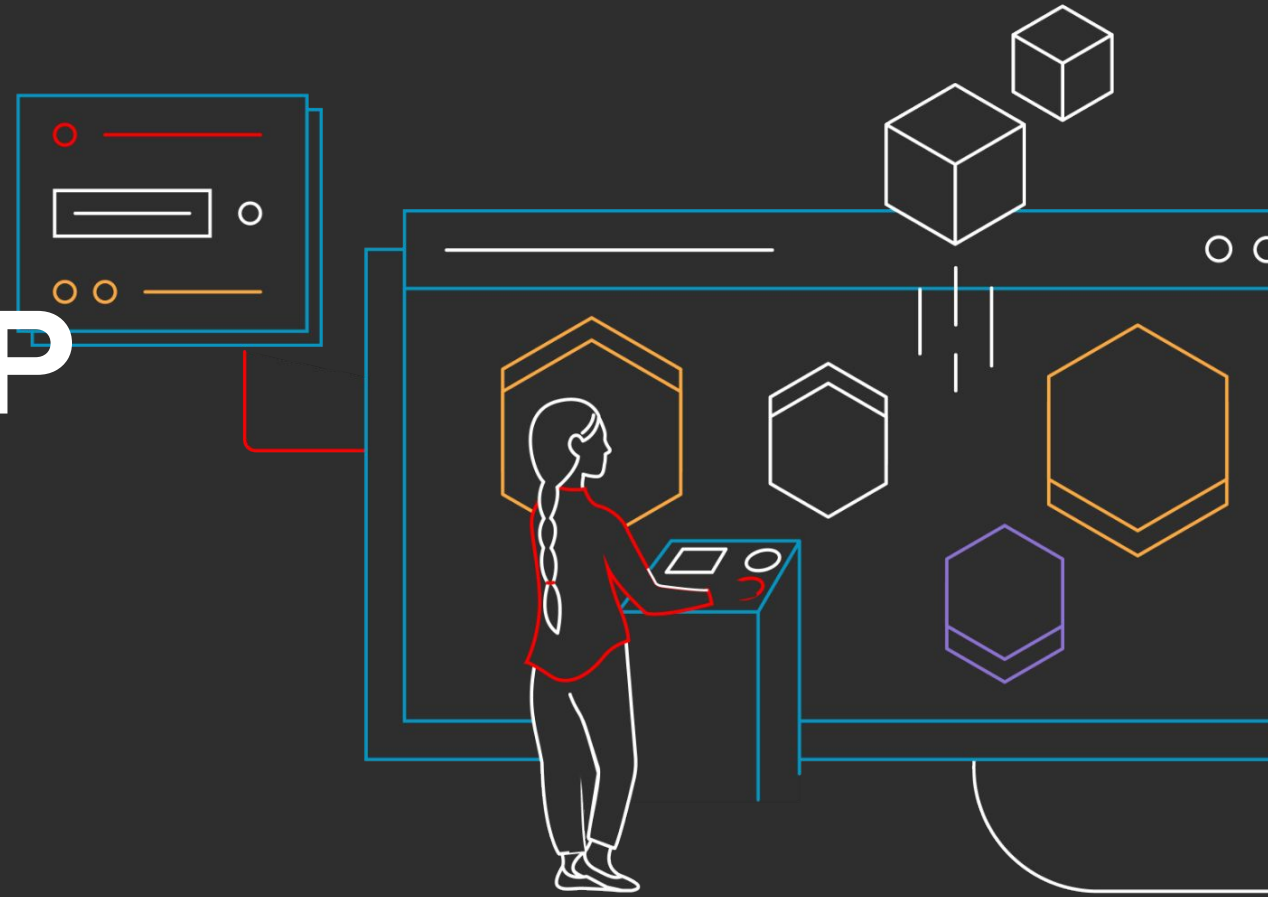
Red Hat & SAP  
Partnership

Automation

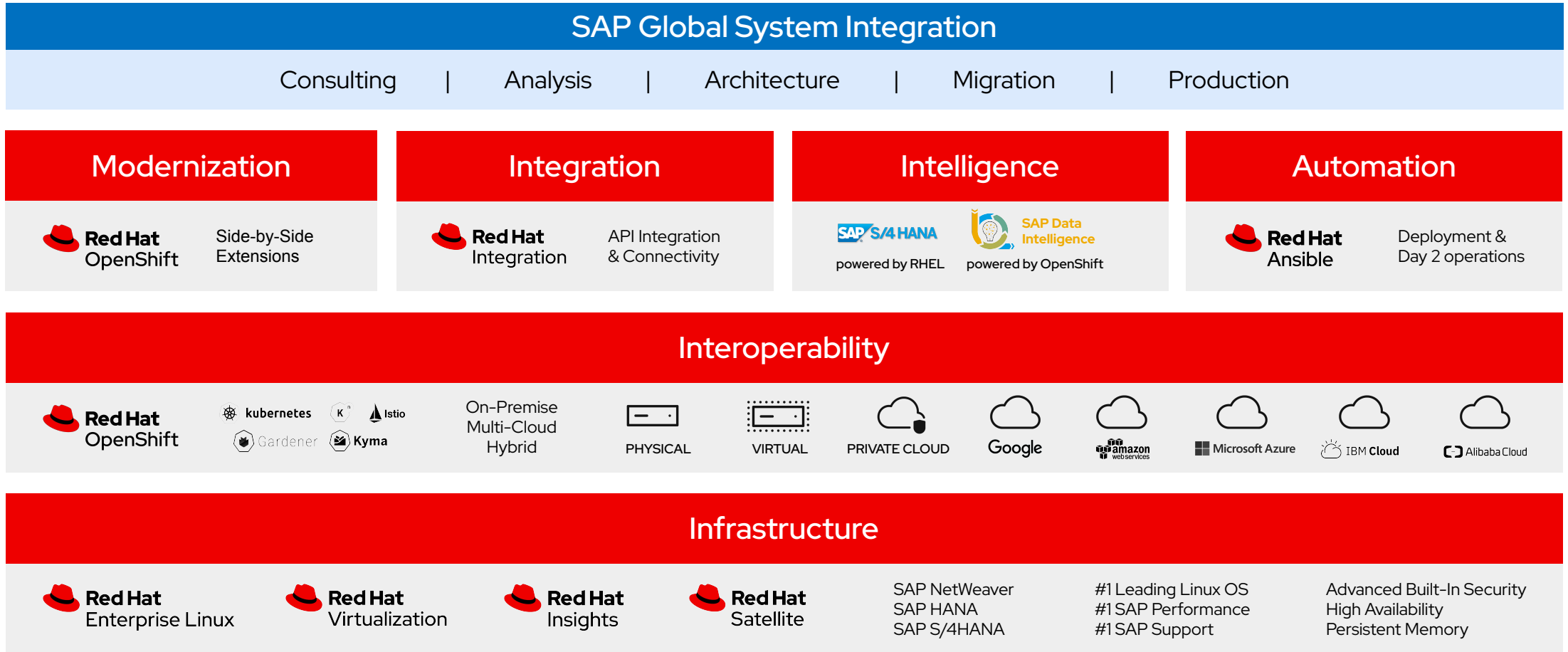
Red Hat Insights

Questions

# Red Hat and SAP Partnership

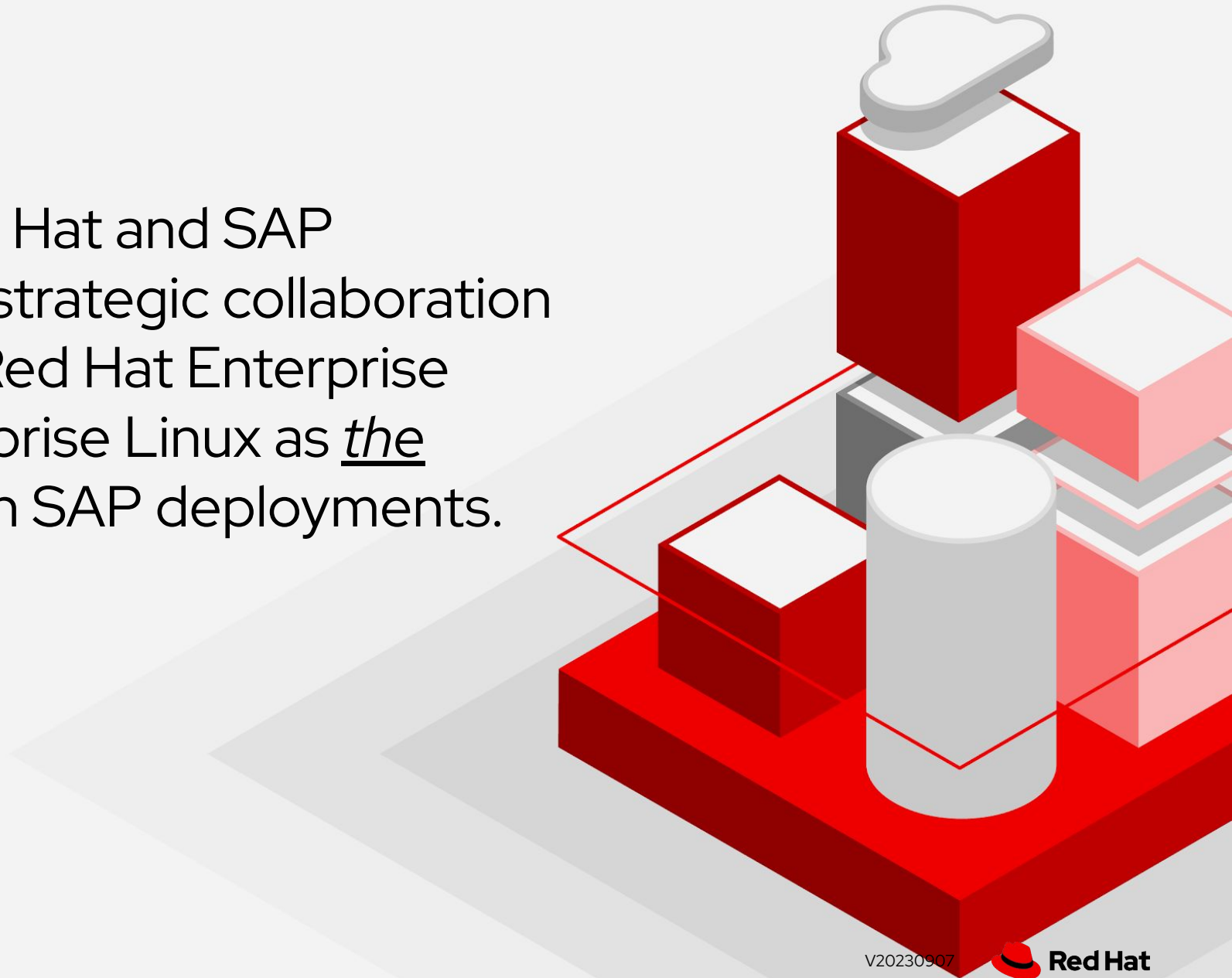


# The Complete and Open Hybrid Infrastructure for SAP

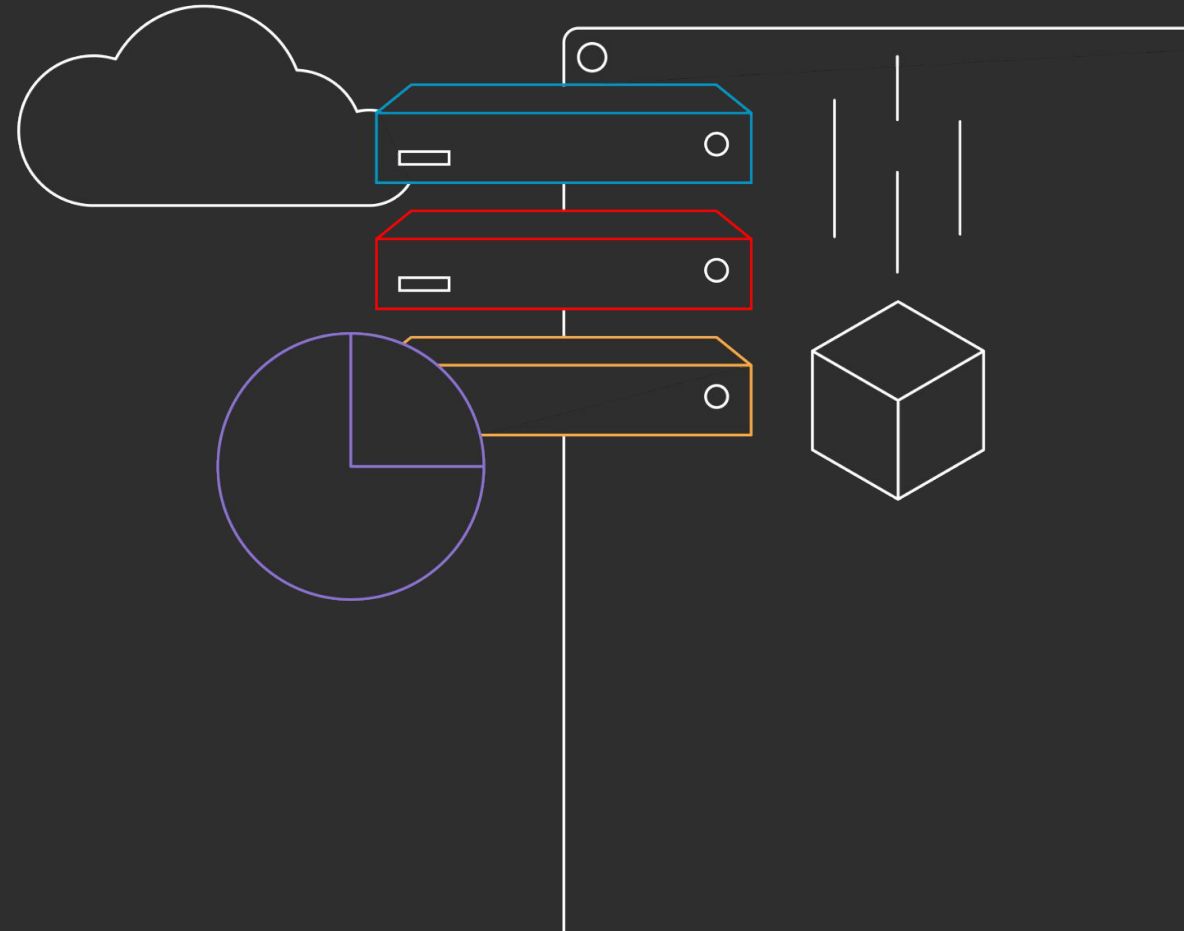


On **February 1, 2023** Red Hat and SAP announced an expanded strategic collaboration to increase SAP's use of Red Hat Enterprise Linux, with Red Hat Enterprise Linux as the preferred OS for RISE with SAP deployments.

[Press Release](#)



# Automation



# What if, automating the initial setup & operations of SAP workloads would be just as easy than selecting a collection on an online marketplace



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



Red Hat Insights agent activation



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



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



SAP instance system copies



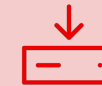
Spin up/delete new application servers on demand (namely for hyperscalers)



Kernel parameter changes



SAP kernel upgrade



DB backup/restore



Smart management and proactive issue resolution for SAP servers



DB operations



DB and OS patching



Cluster management



Shutting down of sandbox/pre-production systems to cold storage



Near-zero downtime maintenance



Instance refreshes



Stop/start of SAP instances

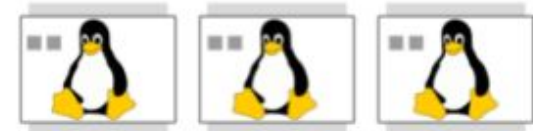
# The SAP LinuxLab Github Project

- ▶ A place for open source software that helps to make creating and managing SAP on Linux environments easier
- ▶ Consolidate efforts for ALL LinuxLab partners at a central place
  - <https://sap-linuxlab.github.io/>
  - <https://github.com/sap-linuxlab>
- ▶ Proper governance and licensing
- ▶ Initially founded by

IBM Lab for SAP Solutions



## SAP Linuxlab



A place for open source software that helps to make creating and managing SAP environments on Linux easier



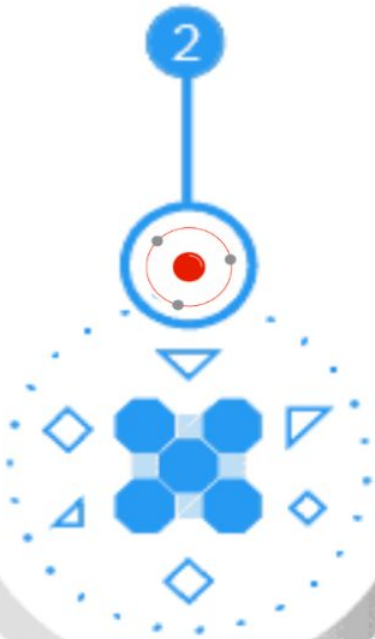
# Red Hat Upstream Development Model

for the SAP Automation Content

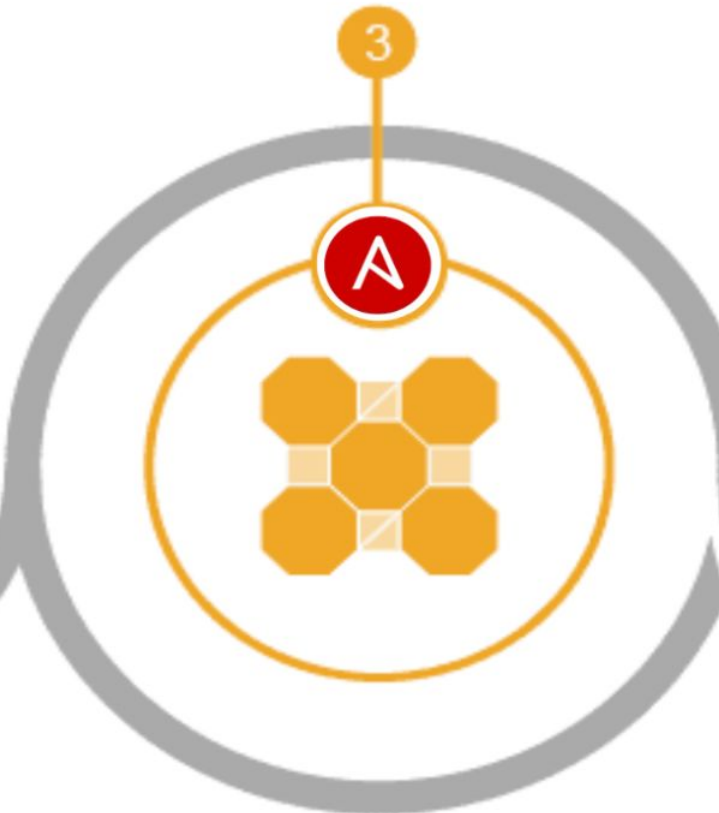
SAP LinuxLab



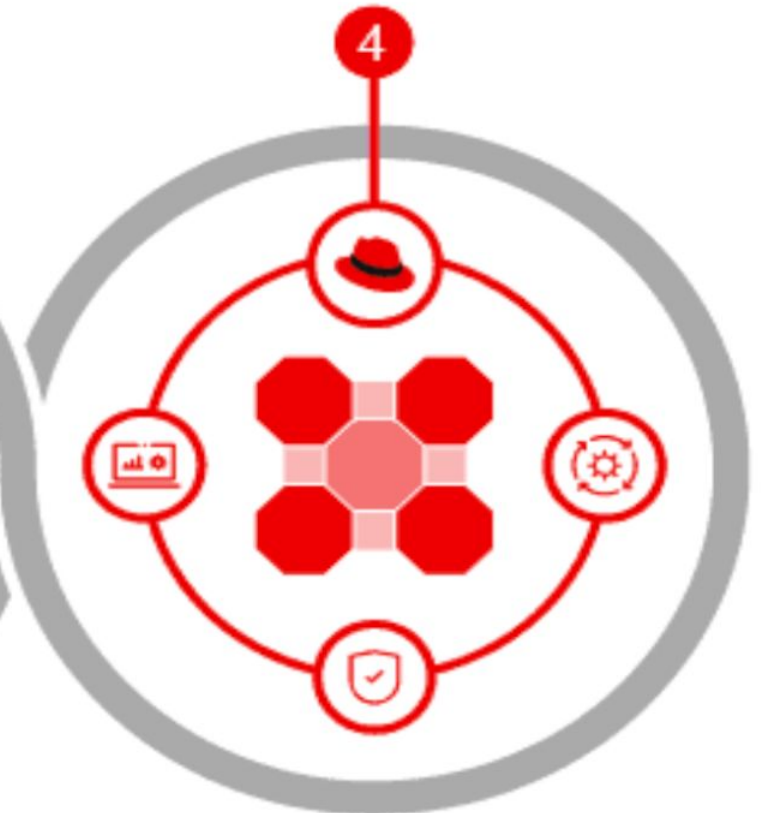
Galaxy



Ansible Automation Hub



Red Hat Enterprise Linux



# Red Hat Ansible Content Collections

The image shows a composite screenshot of the Red Hat Ansible Automation Platform interface. The top left shows the main dashboard with several tiles, including 'Red Hat Ansible Automation Platform' which is highlighted with an orange box. An orange arrow points from this box to a larger view of the 'Partners' page. In the 'Partners' page, the 'amazon' partner tile is highlighted with an orange box. Another orange arrow points from this box to a screenshot of the 'Amazon AWS Collection' page, which shows the 'Install' section with the command 'ansible-galaxy collection install amazon.aws' and a 'Download tarball' link.

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

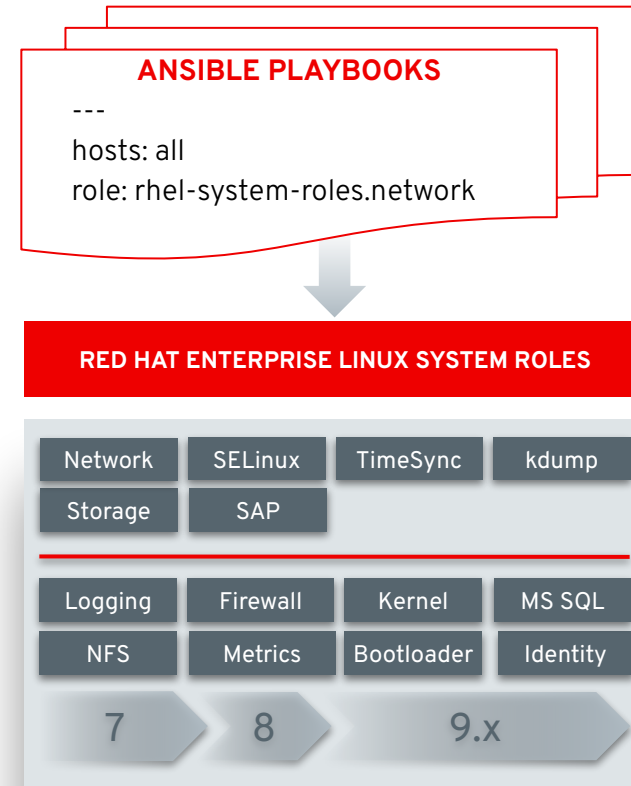
By combining multiple types of Ansible content (playbooks, roles, modules, and plugins), **flexibility and scalability** are greatly improved.

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

# RHEL System Roles for SAP

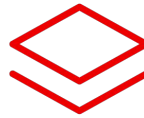
Included in RHEL for SAP Solutions and as Certified Collection on Red Hat Automation Hub

- ▶ Consistent configuration interface to RHEL compatible and tested with RHEL 7, 8, 9+
- ▶ Strictly aligned with applicable SAP Notes
- ▶ Configure the local or one or more remote systems
- ▶ Can be called from Red Hat Ansible Engine, Red Hat Ansible Controller, or Red Hat Satellite
- ▶ Use role variables for customizing host settings (e.g. RHEL kernel parameters)
- ▶ Supported as part of Red Hat Enterprise Linux 10 year product life cycle



# Automating Day 1 operations for SAP workloads

These are some of the use cases that can be automated with Ansible for **Day 1 operations**



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



High-availability cluster build on both application and DB tiers



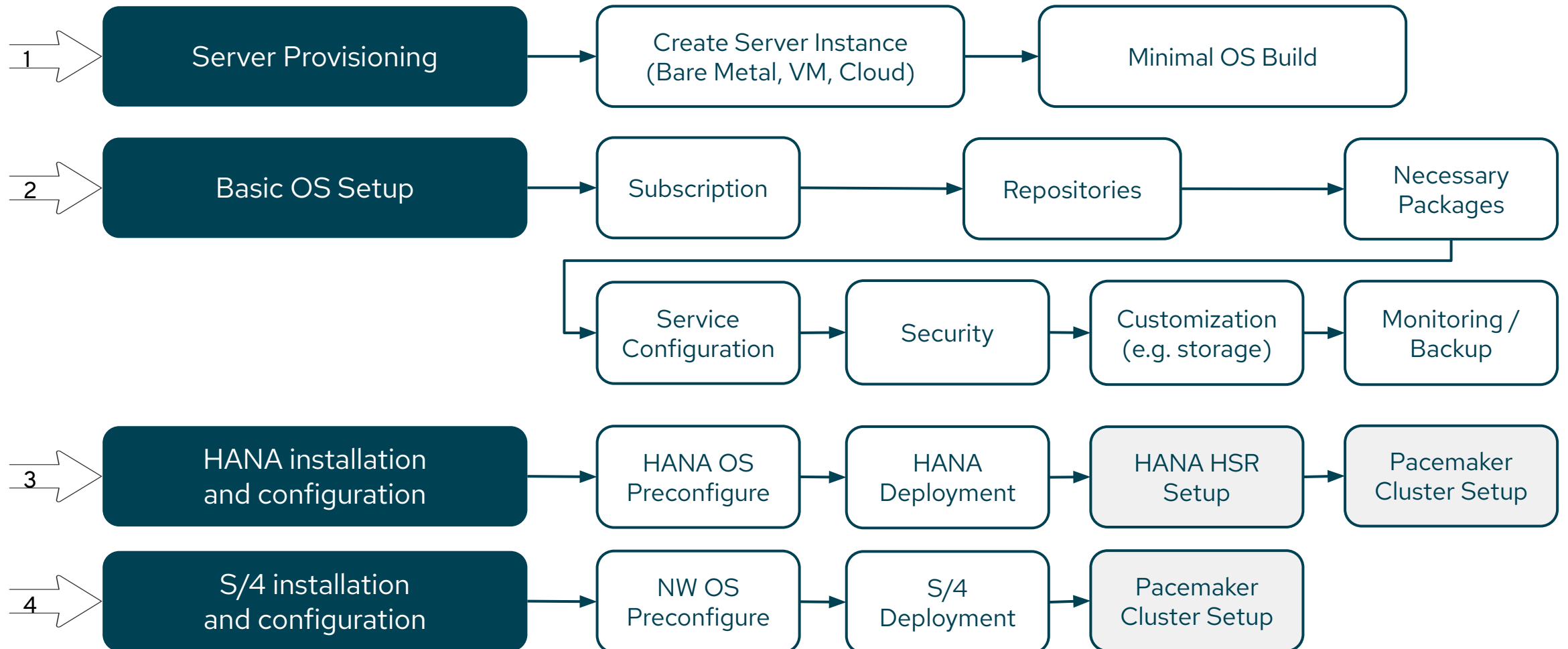
Red Hat Insights agent activation



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















# The SAP S/4HANA Deployment Process Breakdown

## Ansible Roles for OS Base Configuration

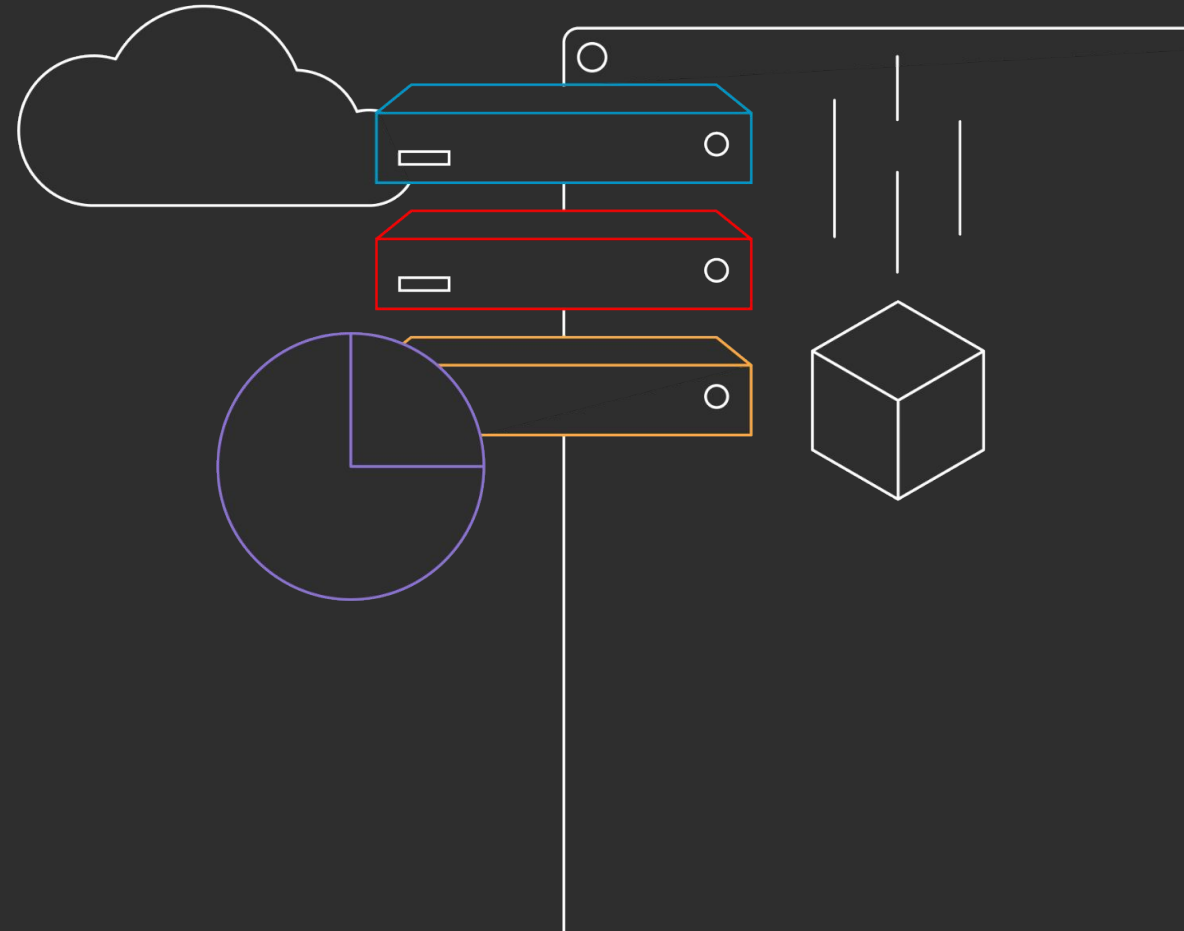


# Automating Day 2 operations for SAP workloads

These are some of the use cases that can be automated for **Day 2 operations**

-  SAP instance system copies
-  Spin up/delete new application servers on demand (e.g. 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 of SAP instances
-  Shutting down of sandbox/pre-production systems to cold storage and pulling them out of storage when needed
-  Smart management and proactive issue resolution for SAP servers
-  Near-zero downtime maintenance for SAP servers

# Red Hat Insights



# What is Red Hat Insights Services?

## Overview of Insight Services



### Advisor

Availability, performance, stability, and security risk analysis



### Vulnerability

Assess Common Vulnerabilities and Exposures (CVEs) with advisories



### Compliance

Assess and monitor compliance, built on OpenSCAP



### Subscriptions

Track progress of your Red Hat subscription usage efficiently and confidently



### Drift

Create baselines and compare system profiles



### Policies

Define and monitor against your own policies to identify misalignment



### Patch

Analyze for Red Hat product advisory applicability to stay up to date



# Introducing Insights Dashboard for SAP

Red Hat Insights provides curated views for SAP infrastructure and enables push button remediation

The screenshot shows the Red Hat Insights dashboard for SAP workloads. The top navigation bar includes 'Workloads SAP' and 'Clear filters'. Below this, there's a section for 'Advisor recommendations' with a search bar and a 'Download executive report' link. The main content area displays a table of recommendations:

Name	Added	Total risk	Risk of ch...	Syste...	Ansible
> VM network performance is decreased when the vhost_net kernel feature is not enabled	17 days ago	Important	Very Low	3	✓
> Network connections will hang when insufficient memory is allocated for the TCP packet fragmentation	1 year ago	Important	Moderate	1	✓
> SAP HANA will not work well when the version of specific packages does not meet the requirements	1 year ago	Important	Very Low	1	✓
> SAP HANA is not supported when running on uncertified kernel					

Two callout boxes highlight specific recommendations:

- SAP HANA will not work well when the version of specific packages does not meet the requirements**
- SAP HANA is not supported when running on uncertified kernel**

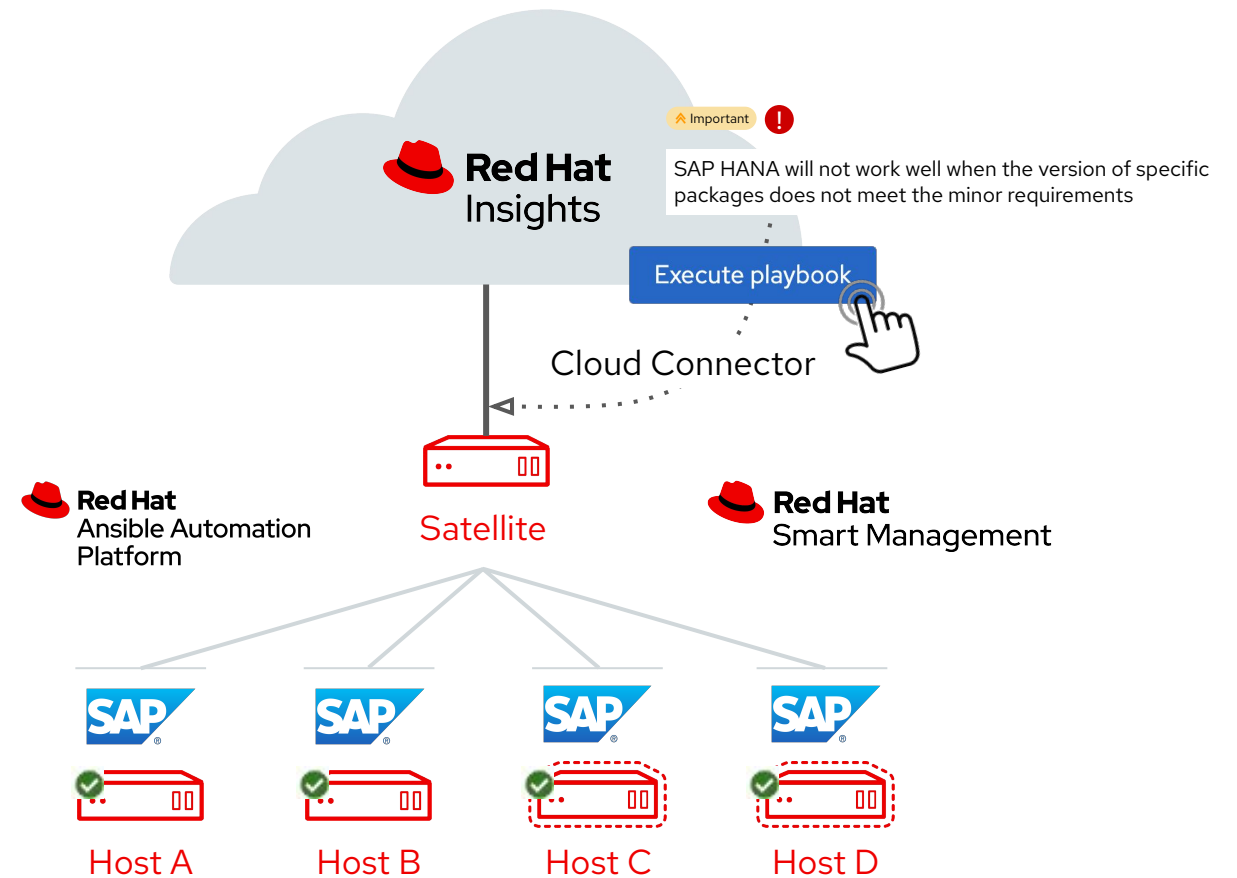
## SAP workload detection

- Adds a specific view just for SAP on RHEL customers
- Auto detection and profiling of SAP workloads so that Insights identifies SAP systems for you
- Includes SAP specific recommendations, facts, and filters for a focused SAP experience
  - More than two third with an automated remediation through Ansible playbooks
- SAP facts are now available and can be used across services (e.g. Drift, Policies).

# Completely Automated SAP Environments

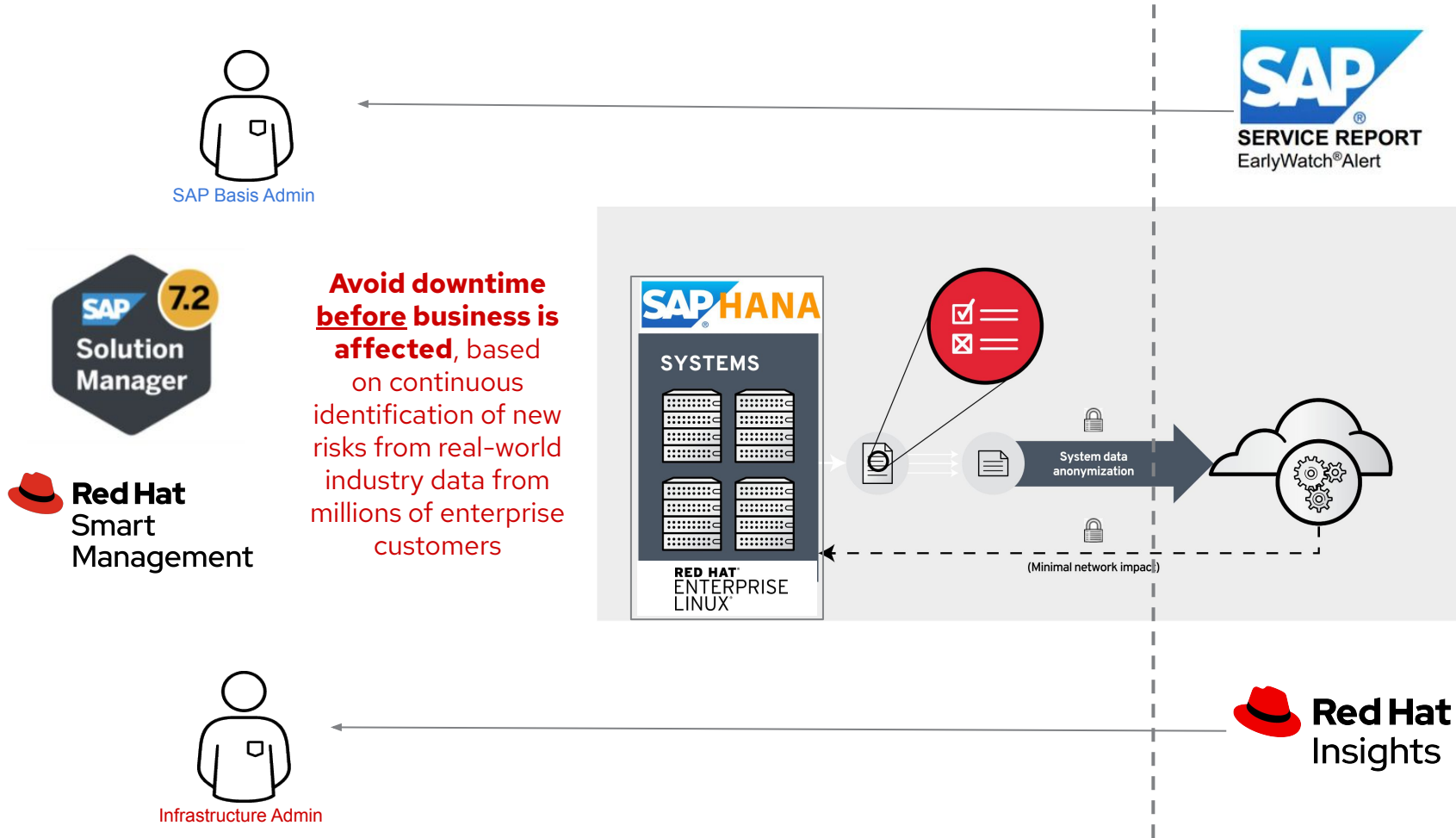
Automated fix of performance, vulnerability, and compliance risks in SAP environments

- ▶ Support push-button deployments of SAP on top of Red Hat Enterprise Linux for SAP Solutions
- ▶ Provide automated remediation of issues identified by Red Hat Insights, tailored for SAP workloads, at scale
- ▶ Operationalize Red Hat expertise to help IT more efficiently keep systems in line with SAP requirements
- ▶ Lower risk of unplanned downtime by proactively addressing performance issues



# Get Ahead of Key Security Risks

Don't Wait for Your Security Team to Tap You on the Shoulder



**Avoid downtime before business is affected**, based on continuous identification of new risks from real-world industry data from millions of enterprise customers

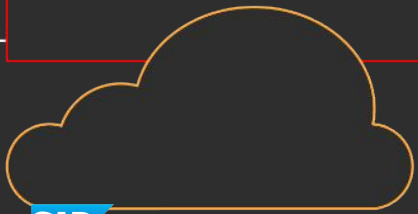
## SAP Early Watch

- proactive application monitoring
- top down view
- ML in SAP datacenter

## Red Hat Insights

- proactive infrastructure monitoring
- bottom up view
- ML in Red Hat datacenter

# Questions





# Thank You!



<https://linkedin.com/company/Red-Hat>



<https://facebook.com/RedHatInc>



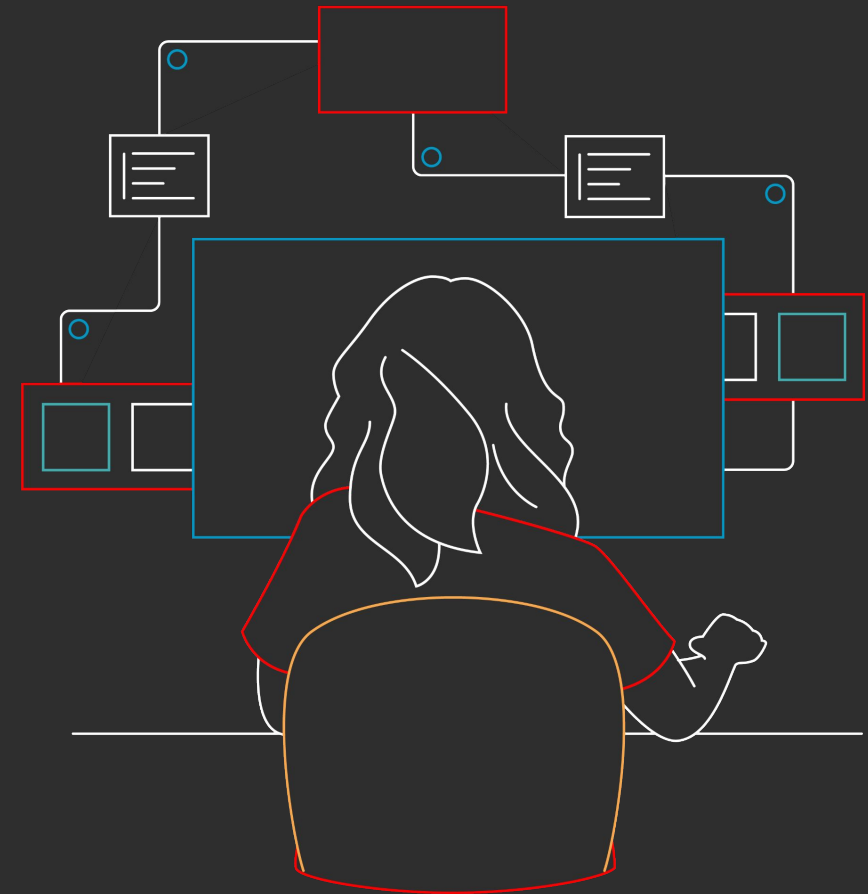
<https://youtube.com/user/RedHatVideos>



<https://twitter.com/RedHat>



# Additional Resources



# More Information

## → Red Hat Insights

- Blog: [Red Hat Insights Dashboard Provides Automatic Discovery, Health and Security Assessment for SAP HANA on RHEL](#)
- Blog: [How to Gain Deeper Insights Into Your SAP Landscape Running on RHEL](#)
- Blog: [Put Your SAP Applications on a Firm Foundation](#)
- KB: [Enable Red Hat Insights on Public Cloud Pay-As-You-Go Images](#)
- Blog: [Red Hat Insights vs. SUSE Manager](#)

## More Information (cont'd)

### → Ansible System Roles

- KB: [Red Hat Enterprise Linux System Roles for SAP \(Latest Version\)](#)
- Doc: [Red Hat Enterprise Linux System Roles for SAP \(Version 2\)](#)
- KB: [Red Hat Enterprise Linux System Roles for SAP - collection redhat.sap\\_install](#)
- Blog (multi-part): [Deploying SAP S/4HANA Systems Using The Red Hat Portfolio](#)
- Training (**FREE**): [Ansible Basics: Automation Technical Overview \(DO007\)](#) (**note:** not SAP specific)
- Blog: [SAP Linux Lab for all SAP Automation](#)



# Red Hat Ansible Content for SAP installation

Available Day-1 SAP automation content

## Repository: [community.sap\\_install](#)<sup>1</sup>

- sap\_anydb\_install\_oracle
- sap\_general\_preconfigure
- sap\_ha\_install\_hana\_hsr
- sap\_ha\_pacemaker\_cluster
- sap\_hana\_install
- sap\_hana\_preconfigure
- sap\_hostagent
- sap\_hypervisor\_node\_preconfigure
- sap\_install\_media\_detect
- sap\_netweaver\_preconfigure
- sap\_storage\_setup
- sap\_swpm
- sap\_vm\_preconfigure

1 - Supported by upstream community



## Collection: [redhat.sap\\_install](#)<sup>2,3</sup>

... Or ...

## Package: [rhel-system-roles-sap](#)<sup>2,4</sup>

- sap\_general\_preconfigure
- sap\_ha\_install\_hana\_hsr<sup>5</sup>
- sap\_ha\_pacemaker\_cluster<sup>5</sup>
- sap\_hana\_install
- sap\_hana\_preconfigure
- sap\_netweaver\_preconfigure
- sap\_swpm<sup>5</sup>

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

# Red Hat Ansible Content for SAP operations

Available Day-2 SAP automation content

Repository: [community.sap\\_operations](https://github.com/ansible-community/sap_operations)<sup>1</sup>

- `os_ansible_user`<sup>R</sup>
- `os_etchosts`<sup>R</sup>
- `os_knownhosts`<sup>R</sup>
- `sap_profile_update`<sup>R</sup>
- `sap_hana_backint`<sup>R</sup>
- `sap_pyrfc`<sup>M</sup>
- `sap_control`<sup>R</sup>
- `sap_fapolicy`<sup>R</sup>
- `sap_firewall`<sup>R</sup>
- `sap_rhsm`<sup>R</sup>
- `sap_pyrfc`<sup>R</sup>
- `pyrfc_handler`<sup>P</sup>

## Legend:

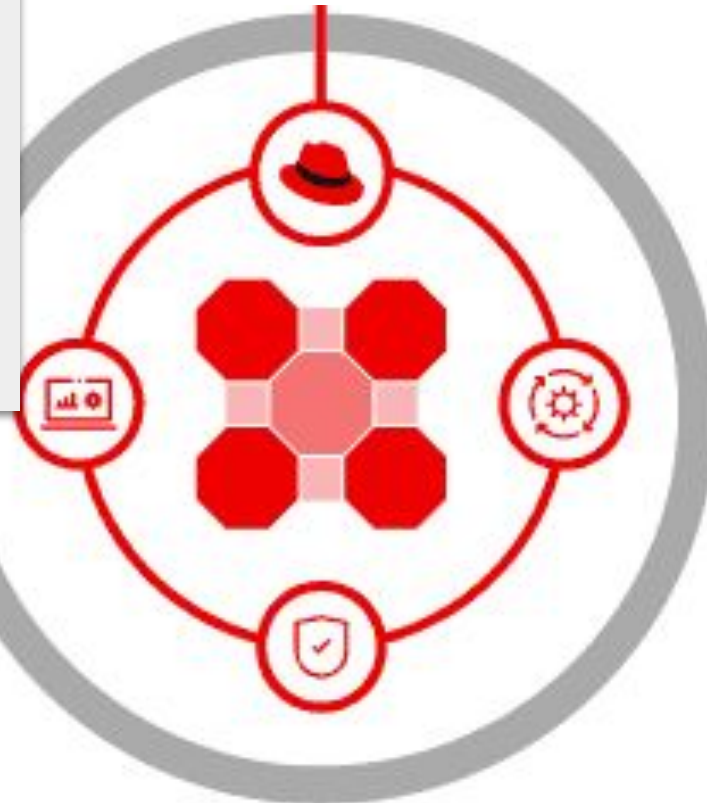
1 - Supported by upstream community

R - Ansible Role

M - Ansible Module

P - Ansible Plugin

Source Code: [SAP LinuxLab](#); [RedHat-SAP](#)



# Red Hat Ansible Content for SAP operations

## Available Day-2 SAP automation content

### Repository: [sap.sap\\_operations](#)<sup>1</sup>

- hana\_update<sup>R</sup>
- prepare<sup>R</sup>
- sap\_kernel\_update<sup>R</sup>
- unpack<sup>R</sup>
- abap\_system\_info<sup>M</sup>
- hana\_backup<sup>M</sup>
- hdbuserstore<sup>M</sup>
- hdbuserstore\_info<sup>M</sup>
- host\_info<sup>M</sup>
- parameter\_info<sup>M</sup>
- rolling\_kernel\_switch<sup>M</sup>
- service<sup>M</sup>
- system<sup>M</sup>
- system\_info<sup>M</sup>
- abap<sup>P</sup>
- abap\_rfc\_doc<sup>P</sup>
- saphost (doc\_fragments)<sup>P</sup>
- saphost (utils)<sup>P</sup>
- soap<sup>P</sup>
- suds\_helper<sup>P</sup>
- valid\_sid (filter)<sup>P</sup>
- valid\_sid (test)<sup>P</sup>
- valid\_sid (utils)<sup>P</sup>

### Collection: [sap.sap\\_operations](#)<sup>2,3</sup>

- hana\_update<sup>R</sup>
- prepare<sup>R</sup>
- sap\_kernel\_update<sup>R</sup>
- unpack<sup>R</sup>
- abap\_system\_info<sup>M</sup>
- hana\_backup<sup>M</sup>
- hdbuserstore<sup>M</sup>
- hdbuserstore\_info<sup>M</sup>
- host\_info<sup>M</sup>
- parameter\_info<sup>M</sup>
- rolling\_kernel\_switch<sup>M</sup>
- service<sup>M</sup>
- system<sup>M</sup>
- system\_info<sup>M</sup>
- abap<sup>P</sup>
- abap\_rfc\_doc<sup>P</sup>
- saphost (doc\_fragments)<sup>P</sup>
- saphost (utils)<sup>P</sup>
- soap<sup>P</sup>
- suds\_helper<sup>P</sup>
- valid\_sid (filter)<sup>P</sup>
- valid\_sid (test)<sup>P</sup>
- valid\_sid (utils)<sup>P</sup>

#### Legend:

- 1 - Supported by upstream community
- 2 - Supported by Red Hat
- 3 - Available via Red Hat Automation Hub  
with Ansible Automation Platform (AAP) subscription

- R - Ansible Role
- M - Ansible Module
- P - Ansible Plugin

**Source Code:** [SAP LinuxLab](#); [RedHat-SAP](#)