

Red Hat  
**Summit**

**Connect**

# Automation for SAP workloads

How to efficiently manage them through their whole lifecycle

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# Agenda

- Red Hat and SAP
- The case for automating SAP
- Ansible® Automation Platform for SAP modernization
  - Day 0/1 migration
  - Day 2 operations
- The Red Hat portfolio for SAP
- Q&A

# Red Hat & SAP

## PARTNERSHIP

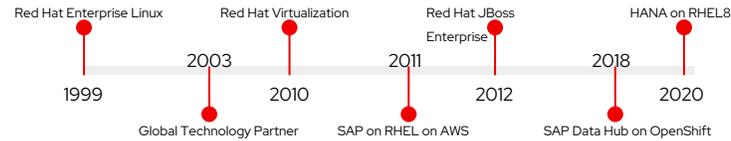


### 1<sup>st</sup> LINUX FOR SAP

SAP Venture Invested 1999  
Accelerated Linux Success

### 21 YEAR PARTNERSHIP

Open-Source base for many  
SAP Solutions & Innovations



## CUSTOMERS

MORE THAN  
**310**  
FORTUNE 500

MORE THAN  
**+30%**  
NEW CUSTOMERS / YEAR

## E2E INFRASTRUCTURE

Matching SAP's Technical Pillars of the  
Intelligent Enterprise



Integration



Cloud Native



Intelligence



SAP Data Intelligence  
on Red Hat OpenShift

Next-Gen Data



Open Platform



Security

3

Source:

- SAP Venture Fund Makes Equity Investment in Red Hat (March 1999) | <https://www.redhat.com/de/about/press-releases/press-venturefund>

- SAP Technology Strategy - Office of the CTO - Technical pillars to enable the Intelligent Enterprise (June 2018)



# Top challenges with SAP modernization

## 2027 Deadline

Sunsetting of SAP ERP Central Component (ECC) in 2027

## Organizational/Cultural Shift

More than just a technology migration—it requires a mind-set shift as part of a larger digital transformation strategy

## Time

Migration can take anywhere from 12 to 18 months (or longer), distracting teams from other priorities



## Complexity

Migration involves multiple teams, requires thoughtful planning, and careful decision-making

## Linux OS Required

SAP S/4HANA requires Linux for its processing speed, flexibility, security, and reliability.

## Legacy Customizations

SAP S/4HANA is a new product; custom code may not be forward-compatible with SAP S/4HANA

## SAP Skills/Training Gap

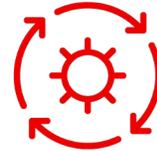
Lack of in-house expertise with S/4HANA and/or Linux

# Opportunities for success



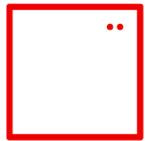
## Linux® OS

Adopt Linux® OS and move to SAP S/4HANA before 2027.



## Automation

Automate IT to focus on high value, strategic work.



## Modern Core

Modernize applications to make sure the SAP digital core is clean and Cloud-Ready to options like SAP S/4HANA Cloud or SAP RISE.



## Drive innovation

Include new, modern, innovative solutions into daily operations, and increase competitiveness, speed, and agility



“Red Hat Ansible Automation Platform provides a wealth of **SAP-specific roles** for automating SAP HANA landscapes.”

Source: IDC, [For SAP Landscapes, Migration Means Much More Than Just Linux](#), Peter Rutten and Sriram Subramanian, February 2021

# Ansible Automation Platform and Infrastructure-as-Code

## Holistic

Ansible Automation Platform assumes the work of many disparate solutions and integrates with RHEL and over 100 partner technologies from Microsoft, SAP, VMWare, and more.

## Consistent

Leverage automated, repeatable management workflows to reduce risk and ensure uniform configuration consistency across your complex hybrid infrastructure.

## Extensible

Augment the value of Red Hat Ansible Automation Platform beyond Red Hat Enterprise Linux across the Red Hat portfolio including OpenShift, JBoss, and more.

## Efficient

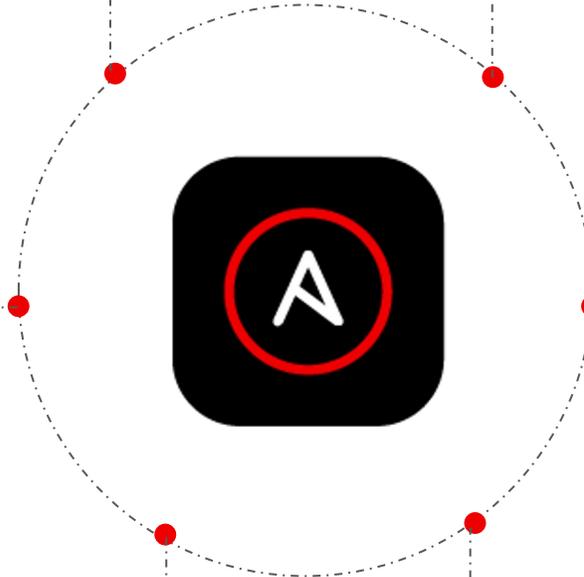
Spend less time on error-prone, time consuming tasks with simple-to-navigate features that get you automating faster. automation.

## Intelligent

Includes Red Hat Insights, with rich analytics to deliver an actionable view into your automation helping you measure ROI and prioritize your efforts.

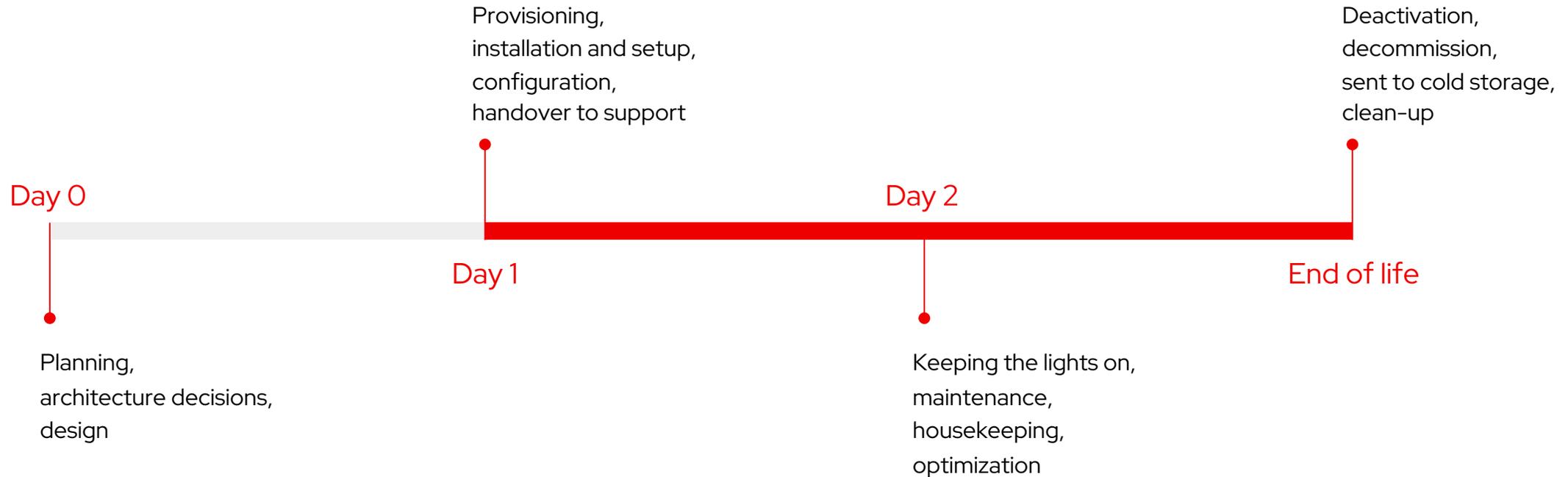
## Future-proof

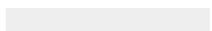
Move beyond Day 0 and Day 1 automation activities and establish a rock-solid foundation to build and expand into networking, security, and beyond.



# Ansible Automation Platform for SAP modernization

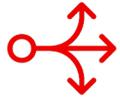
# Day x operations concept



 = Preinstallation

 =  **Red Hat**  
Ansible Automation  
Platform

# Automating Day 1 operations for SAP workloads



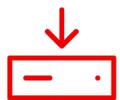
Provisioning of the target node(s) (VMs)



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

# Ansible roles for Day 1 operations

## **redhat\_sap.sap\_hana\_ha\_pacemaker**

- Configures pacemaker to provide a highly available SAP HANA instance

## **redhat\_sap.sap-s4hana-deployment**

- Runs the fully automated installation of SAP S/4HANA with an existing SAP HANA installation on the same server or on a separate server

## **redhat\_sap.sap\_hana\_deployment**

- Deploys SAP HANA

## **redhat\_sap.sap\_hana\_hsr**

- Configures SAP HANA System Replication (HSR) on 2 existing SAP HANA deployments

## **redhat\_sap.sap\_hana\_mediacheck**

- Checks SAP HANA installation media

## **redhat\_sap.sap\_hostagent**

- Deploys SAPHOSTAGENT on the server

## **sap-netweaver-preconfigure**

- Configures server for SAP Netweaver software according to Best Practices in SAP OSS Notes

## **sap-hana-preconfigure**

- Configures server for SAP HANA according to Best Practices in SAP OSS Notes

## **redhat\_sap.sap\_rhsm**

- Registers and subscribes a server to RHEL for SAP related repositories

## **sap-preconfigure**

- Installs required packages and configures server based on Best Practices in SAP OSS Notes

other linux system roles for network, ntp, subscription mgmt, etc.

# 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

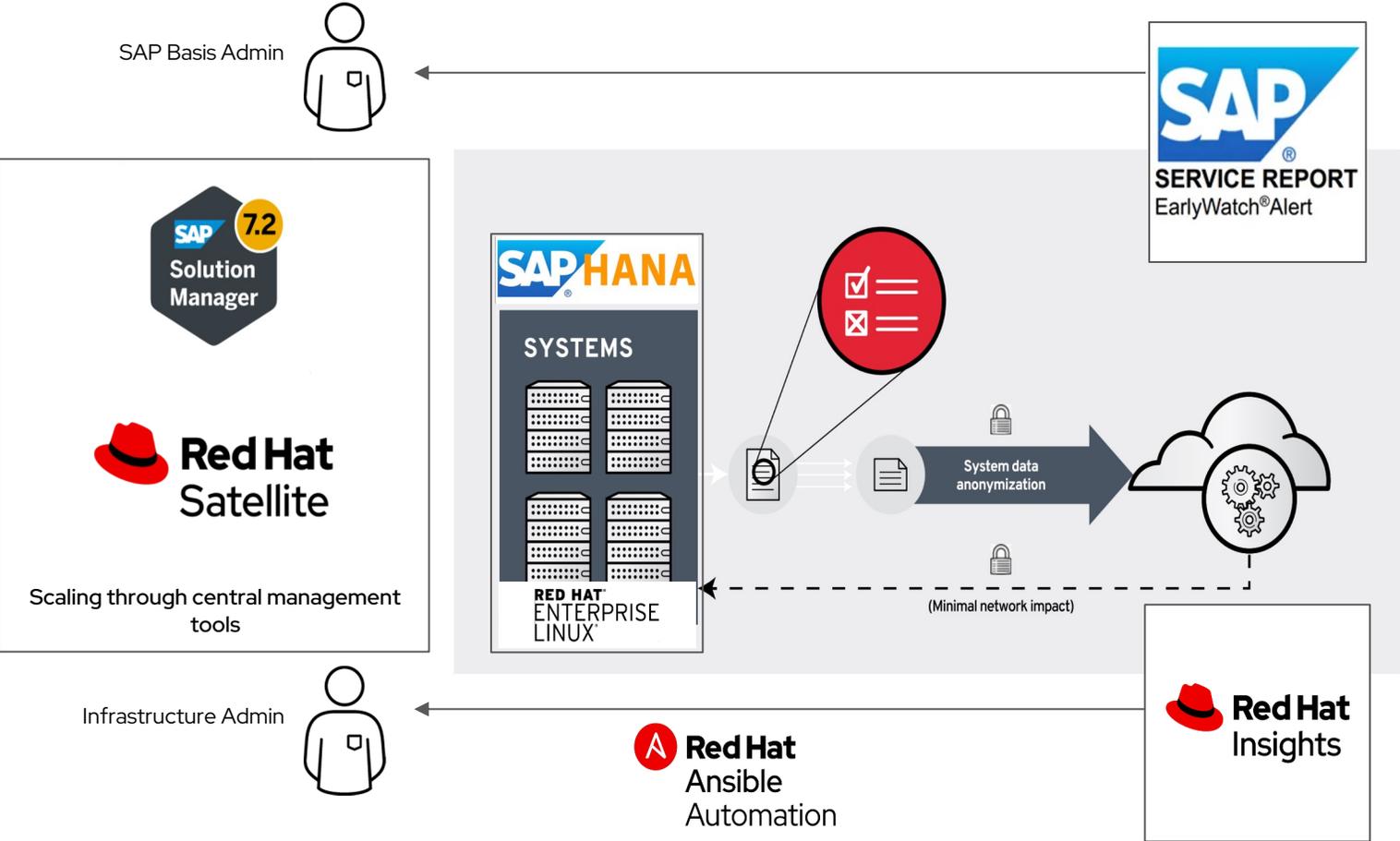


Smart management and proactive issue resolution for  
SAP servers



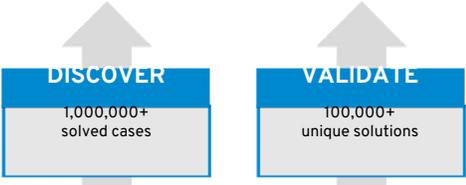
Near-zero downtime maintenance for SAP servers

# Smart Management for SAP



- SAP Early Watch**
- Proactive Application Monitoring
  - Top down view
  - Insights from SAP Solution Manager

- Red Hat Insights**
- Proactive Infrastructure Monitoring
  - Bottom up view
  - ML in Red Hat Datacenter



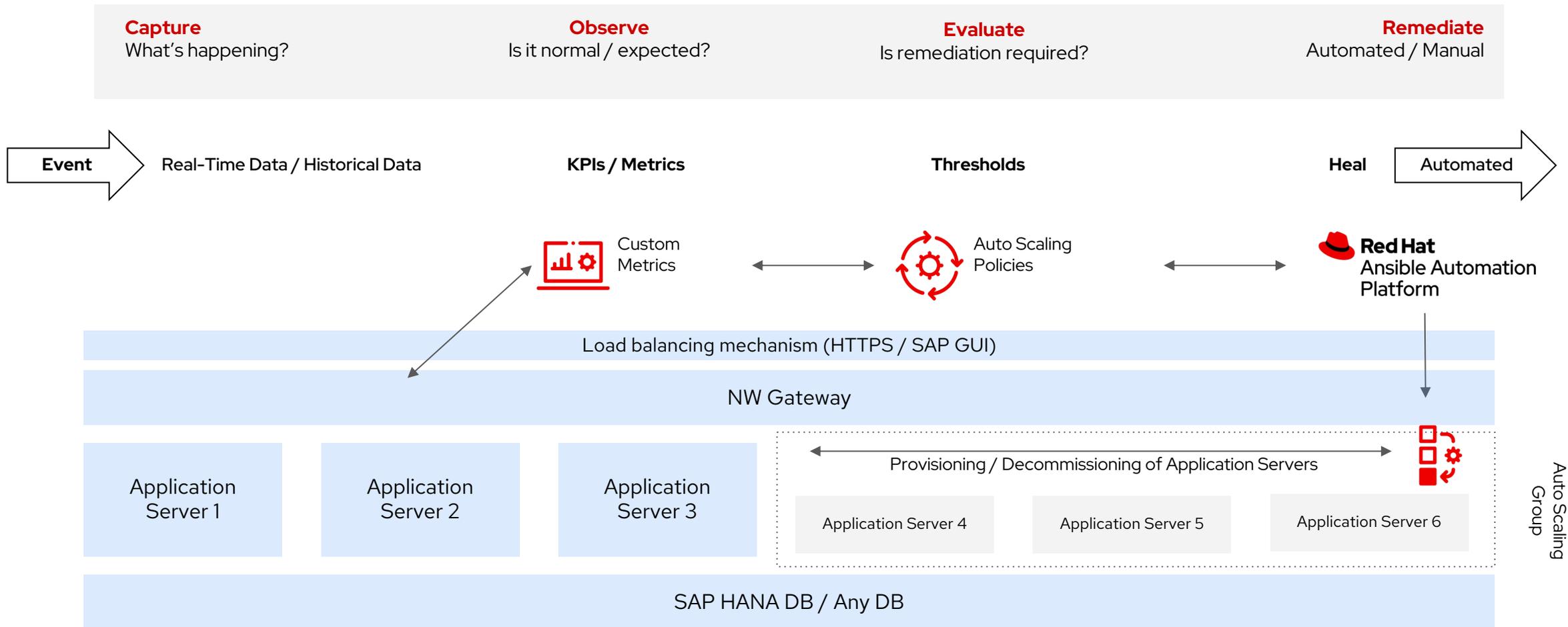
# SAP specific rules in Insights

The screenshot displays the Red Hat Insights interface. The left sidebar contains navigation options: Insights, Dashboard, Advisor, Recommendations (selected), Systems, Topics, Vulnerability, Compliance, Patch, Drift, Policies, Inventory, Remediations, Register Systems, Subscription Watch, and Product Materials. The main content area is titled 'Advisor recommendations' and includes a search bar, filters for 'Systems impacted' (1 or more) and 'Status' (Enabled), and a 'Download executive report' link. A table lists 16 recommendations with columns for Name, Added, Total risk, Risk of change, Systems, and Ansible status. Several recommendations are marked as 'Incident'.

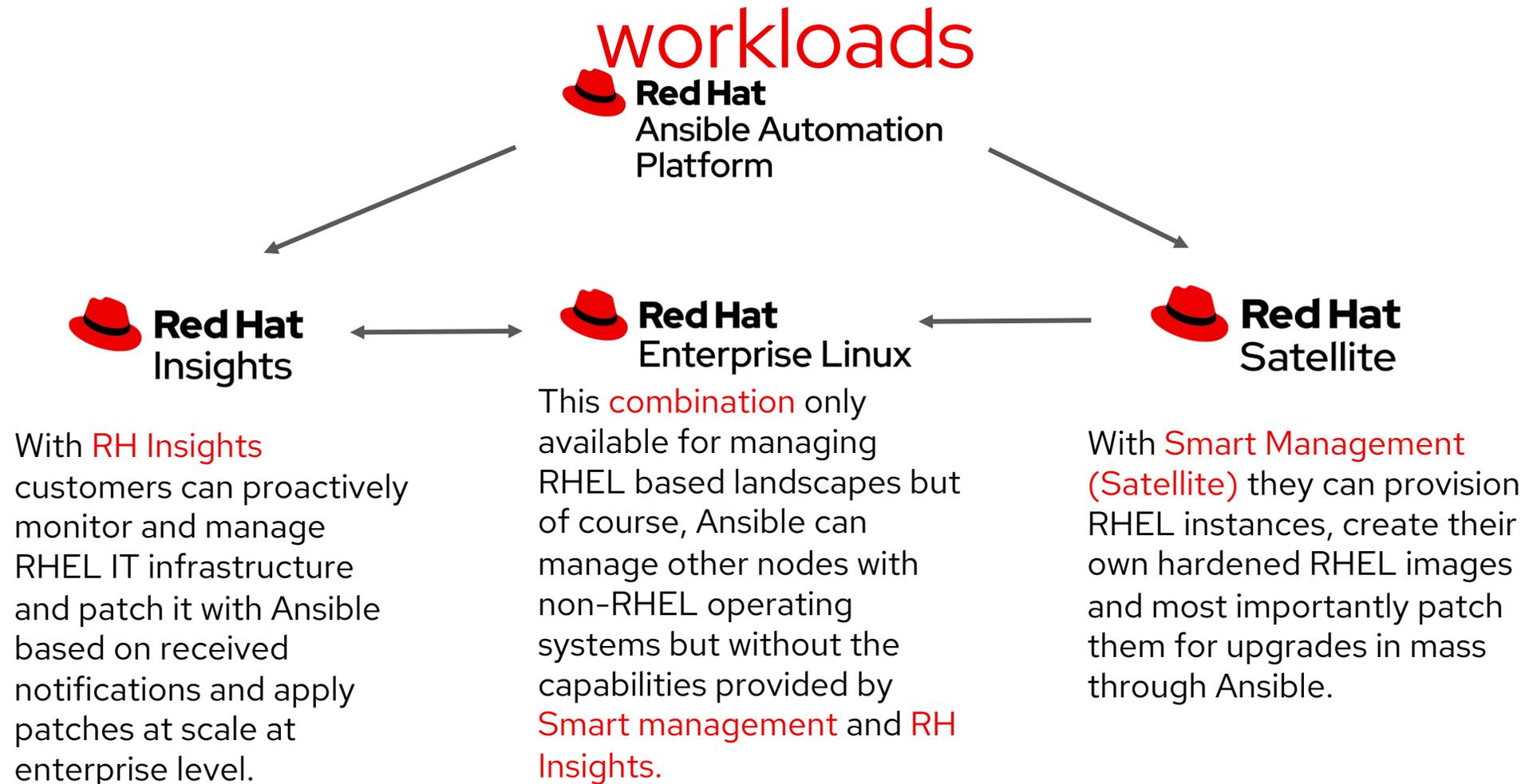
Name	Added	Total risk	Risk of change	Systems	Ansible
<b>Incident</b> Misconfigured applications running on EC2 instances where IMDSv1 is enabled will have access to the internal Metadata service by exploiting application vulnerabilities	9 months ago	Important	Very Low	3	Yes
When the Insights Client is earlier than "3.1.0", it is not able to get recommendations dependent on core collection	19 days ago	Important	Very Low	5	No
<b>Incident</b> Cluster integrity cannot be guaranteed because no fence devices available in HA cluster	4 years ago	Important	Low	2	No
SAP HANA will not work well when the version of specific packages does not meet the minor requirements	2 years ago	Important	Very Low	4	Yes
Kernel panic might occur when using the SELINUX=disabled option in the /etc/selinux/config	3 months ago	Important	Moderate	8	Yes
The Amazon Time Sync Service is not configured on EC2 instances which might result into inconsistent and inaccurate time	11 months ago	Moderate	Very Low	2	Yes
The dnf installs lower versions of packages when the "best" option is not present in the /etc/dnf/dnf.conf	6 months ago	Moderate	Very Low	2	Yes
Cluster nodes are fenced frequently as DHCP is used for corosync interconnection	4 years ago	Moderate	Low	1	No
Kdump will fail if the minimum required crashkernel reservation size is not configured correctly when the third-party modules are loaded	1 month ago	Moderate	Very Low	2	Yes
<b>Incident</b> SAP HANA is not supported when running on an uncertified EC2 instance	2 years ago	Moderate	Low	2	No

# Self healing architecture

Fully automated provisioning and decommissioning of SAP Application Servers



# Complete platform for automation of SAP



# Red Hat solutions for SAP

# Red Hat solutions for SAP



**Red Hat**  
Ansible Automation  
Platform



## **Red Hat** Enterprise Linux

- Create stable, future-ready infrastructure
- Leverage **high-availability clustering for SAP solutions**
- Meet security and compliance objectives



## **Red Hat** OpenShift

- Develop and deploy end-to-end business processes
- **Leverage cloud-native tools w/o advanced business application experience**
- Streamline application support



## **Red Hat** Smart Management

- Ensures Red Hat Enterprise Linux runs efficiently
- Improves **security** and **enforces compliance**



## **Red Hat** Insights

- **Predictive analytics and reporting**
- Monitor and remediate critical issues



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