Considerations for modernizing your SAP environment

Modernization is a requirement

Migrating your SAP environment presents an opportunity to modernize your underlying IT infrastructure with cloud technologies to reduce costs, streamline operations and maintenance, and increase business agility. Choosing the right foundation is critical. When evaluating your options, be sure to consider:

- Linux and cloud platform features and optimizations.
- Management and automation.
- Security and compliance.
- Performance and scalability.
- Availability and stability.
- Flexibility and choice.
- Vendor support.

Migration presents an opportunity for modernization

Across industries, organizations are transforming their IT infrastructure and applications to better compete in a digital world. In fact, 77% of organizations are modernizing internal or customer-facing applications.[1] Optimizing your IT infrastructure and applications can help your organization get more from your existing IT investments while freeing budget and time for high-value projects.

As a critical part of your business infrastructure, your SAP environment can benefit greatly from modernization. SAP HANA® and SAP S/4HANA® provide increased speed, scale, and innovation, as well as cloud capabilities, for your business. And to take advantage of new features and continue receiving support from SAP, you must migrate to SAP HANA and SAP S/4HANA by 2027.

This migration presents an ideal opportunity to modernize both your SAP and overall IT environments. Open source platforms and cloud-based technologies can help you reduce operational costs, streamline operations and maintenance, and increase business agility and innovation. Modernizing your SAP environment can also help you restructure and decouple your core systems and services to simplify operations and make future updates easier.

Even so, migration and modernization can be daunting tasks. Moving to SAP HANA and SAP S/4HANA involves both system upgrades and database migrations. And modernization often requires new cloud-native technologies and approaches. Common concerns include:

- Integrating with legacy systems and getting the most value from technology investments.
- Selecting a reliable cloud provider that provides advanced security.
- Ensuring adequate capacity, performance, and scalability.
- Moving critical applications and workloads with less risk and downtime.
- Establishing new management procedures, development processes, and automation strategies.

Red Hat and Amazon Web Services (AWS) offer modern, optimized solutions that help you overcome these challenges, migrate more easily, and build a foundation for success.

Modernize more easily with Red Hat and AWS

Through long-standing cooperation, Red Hat, AWS, and SAP work together to certify Red Hat® and AWS products for production deployments of SAP applications, platforms, and databases. This collaboration delivers faster time to value, greater operational efficiencies, and high levels of security for cloud-based deployments.

Red Hat and AWS deliver a proven, adaptable, and innovative foundation for SAP HANA. Based on Red Hat Enterprise Linux® and Amazon Elastic Compute Cloud (Amazon EC2), these validated, prearranged solution configurations make building a stable, efficient environment easier and faster. An integrated support model streamlines resolution and reduces hassles.

1 *F5 Networks. "2021 State of Application Strategy Report," 2021.*

Red Hat Enterprise Linux offerings for SAP HANA

Red Hat provides two optimized Red Hat Enterprise Linux offerings for SAP environments.

- Red Hat Enterprise Linux for SAP with High Availability and Update Services is available directly through the AWS Marketplace. It includes the High Availability, Update Services, and Extended Update Support components.
- Red Hat Enterprise Linux for SAP Solutions is available on AWS through the Red Hat Cloud Access program. It includes the High Availability, Update Services, and Extended Update Support components, as well as Red Hat Smart Management and Red Hat Insights.

Read more about these offerings at access.redhat.com/articles/3751271.

Red Hat provides two Red Hat Enterprise Linux offerings that are optimized for SAP environments: Red Hat Enterprise Linux for SAP Solutions and Red Hat Enterprise Linux for SAP with High Availability and Update Services. Both offerings include SAP-specific features and optimizations to meet the demands of complex SAP environments. High availability and update support options provide the reliability and support your organization needs for critical business applications.

Amazon EC2 delivers cloud-based compute capacity with advanced security for your workloads. Flexible sizing and scaling options let you deploy only the resources you need now and expand as your needs grow. A suite of SAP-specific Amazon EC2 instances, including high-memory instances, lets you optimize your environment according to the needs of your workloads.

Considerations for deploying SAP HANA

An in-memory data platform with transactional and analytical capabilities, SAP HANA provides a foundation to conduct real-time data analytics, optimize performance, and simplify business operations—in one system. Transactions and analytics are processed on a single data copy to deliver insight from live data many times faster than disk-based relational databases. SAP HANA also incorporates databases, advanced analytic processing, applications, and integration services into a single platform that can run all of your SAP enterprise applications, including SAP S/4HANA. These new capabilities increase the demands on your infrastructure and require optimized performance, scalability, and reliability.

The following sections discuss considerations for migrating and modernizing your SAP environment.

Linux platform

Your underlying operating system can greatly impact how well your SAP applications perform. Standardizing on one operating system can ease migration to SAP HANA while improving stability for critical applications and workloads.

SAP has chosen two enterprise distributions of Linux as the operating system for SAP HANA and SAP S/4HANA. As a leading operating system for servers and other large-scale systems, Linux provides the power, flexibility, and reliability needed for critical applications. In fact, 100% of today's 500 fastest supercomputers run a Linux distribution.[2]

Open, flexible, and security-focused, Red Hat Enterprise Linux for SAP with High Availability and Update Services and Red Hat Enterprise Linux for SAP Solutions combine the reliability, scalability, and performance of Red Hat Enterprise Linux with additional content specific to operating SAP landscapes, making it easier to manage your SAP environment. A single subscription model and operating system provide a cost-effective, consistent platform that streamlines operations and increases stability. Red Hat provides SAP-specific repositories that contain additional packages for running SAP applications. It also includes features and optimizations for SAP environments to provide better performance and stability. Standardizing your SAP environment on Red Hat Enterprise Linux simplifies management and consistency, allowing you to derive more value from your investments.

Red Hat Enterprise Linux also prepares you for future adoption of container technologies and cloud-native IT approaches. Using Red Hat OpenShift® and Red Hat Integration, you can decouple your core SAP applications from custom code and implement extensions as scalable, independent microservices running in containers. This approach keeps your SAP core clean and simplifies system updates and changes.

2 *"TOP500 List – June 2021." TOP500, accessed 10 September 2021.*

Prepare for new technologies

Artificial intelligence (AI) and machine learning (ML) technologies like SAP Data Intelligence can help you turn your data into a valuable business asset.

Red Hat OpenShift and Red Hat Integration form a Kubernetes-based, hybrid cloud foundation for SAP Data Intelligence, allowing your organization to take advantage of new technologies and innovation.

Read the Simplify deployment and operation of SAP Data Intelligence overview to learn more.

Cloud platform

Migrating your SAP environment to the cloud can provide increased performance and scalability while helping you control costs. With the right cloud foundation, you can speed deployment of new resources, transform operational economics, and deliver elastic scalability to meet changing levels of demand.

Amazon EC2 provides cloud-based, security-focused, resizable compute capacity for workloads and applications. A suite of Amazon ECS instances, supported by both SAP and Red Hat platforms, lets you select the right configuration for your applications. For example, Amazon EC2 High Memory Instances are purpose-built to run large in-memory databases and can contain up to 12TB of memory in a single instance. You can also start with smaller instance sizes and easily transition to larger instances as your data grows.

The AWS Marketplace lets you purchase Red Hat Enterprise Linux for SAP with High Availability and Update Services subscriptions on demand and pay only for the time you use, allowing you to scale elastically and cost-effectively. You can also easily move your Red Hat Enterprise Linux for SAP Solutions subscription between on-site and AWS environments through the Red Hat Cloud Access program.

AWS continually deploys the latest hardware innovations, so you can take advantage of computing advances without needing to research, procure, integrate, and refresh hardware yourself. Additionally, all Red Hat platforms and tools work consistently across both on-site and AWS infrastructure, allowing you to create a standardized hybrid environment.

Management and automation

To be most effective, all systems in your SAP landscape must be up-to-date and in compliance with security and regulatory policies. Consistent management and configuration across development, test, and production environments are key. Visibility and insight into your environment and operations help to optimize administration and processes.

To streamline operations, Red Hat includes intelligent management tools in SAP-optimized Red Hat Enterprise Linux offerings. Both offerings contain Red Hat Insights, a Software-as-a-Service (SaaS) solution that helps you proactively identify and remediate a variety of threats to avoid outages, unplanned downtime, and security and compliance risks. Red Hat Insights incorporates years of Red Hat support experience—including SAP expertise and best practices—to identify vulnerabilities before they impact critical operations. If a system contains a known vulnerability, Red Hat Insights automatically alerts you and provides instructions—including Red Hat Ansible® Automation Platform playbooks—for fixing the problem.

Red Hat Enterprise Linux for SAP Solutions also includes Red Hat Smart Management, which combines Red Hat Satellite with cloud-based remediation capabilities. A scalable life-cycle administration platform, Red Hat Satellite lets you provision, patch, configure, and fully control all of your Red Hat infrastructure, including development, test, and production systems. Automation and monitoring features help you ensure that systems have the latest security patches and quickly remediate configuration drift. Complete auditing capabilities record and report the historical state of your systems at any point in time. Red Hat Satellite also provides subscription management capabilities, so you can optimize subscription use across your organization.

Security and compliance

Your critical systems must be up to date and protected at all times. Many issues within SAP environments arise because services do not have the most current security patches and updates. Control of security updates and system patches is essential as you move to SAP HANA. Automated detection and notification capabilities can alert you when systems and software require updates, helping you keep pace with system security and compliance requirements.

Red Hat and AWS provide advanced security features to protect your environment. Red Hat's integrated software stack allows you to implement a continuous security approach to protect your business and infrastructure from operating system to application. Integration between Red Hat Enterprise Linux, Red Hat Satellite, and Red Hat Insights delivers increased monitoring and remediation capabilities and proactive compliance controls. Plus, Red Hat Product Security continually scans for and responds to emerging threats and rapidly providing patches for vulnerabilities.[3]

AWS policies, architecture, and operational processes are built to the stringent requirements of the most security-sensitive AWS customers. The company manages the security of its underlying cloud infrastructure and provides security guidance and expertise for your workloads and configurations through online resources, personnel, and partners. AWS also maintains many compliance programs and certifications from accreditation bodies across geographies and industries, reducing your compliance burden. AWS environments are continuously audited to ensure continuous compliance.

Additionally, Red Hat and AWS provide security advisories for current issues and can work with you to resolve problems when needed.

Performance

A high-performance foundation is required to maximize the business value of your SAP applications. Migration provides an opportunity to optimize your environment for the best possible performance. SAP HANA requires massive amounts of data to be held in-memory. Accordingly, the settings and parameters of the underlying operating system must be tuned for maximum performance.

Red Hat and AWS provide a high-performance foundation for SAP environments. Developed by Red Hat and SAP engineers, Red Hat Enterprise Linux offerings for SAP include specialized features and optimizations for running SAP workloads. Red Hat and SAP engineers work together in the SAP Linux Lab to ensure that SAP applications running on Red Hat Enterprise Linux achieve high levels of performance across hardware platforms.

AWS provides a selection of purpose-built, SAP-certified instances to optimize the performance of SAP workloads. Amazon EC2 Bare Metal Instances let you run Red Hat Enterprise Linux directly on the underlying hardware while still providing cloud services, flexibility, and optimizations. Amazon EC2 High Memory Instances provide up to 12TB of memory for SAP HANA databases and up to 48TB of memory for scale-out SAP S/4HANA workloads.

Scalability

In addition to high performance, database scalability is required to support large datasets. SAP HANA can handle several hundred terabytes of data, and its performance depends on the scalability and performance of both the operating system and the underlying infrastructure.

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3 *Learn more about Red Hat Product Security at* access.redhat.com/security/overview.

Streamline your migration and modernization efforts

Red Hat and AWS provide several tools to help you migrate and modernize faster.

- SAP HANA Quick Start: Based on best practices from AWS and SAP, this quick start guide helps you deploy fully functional SAP HANA systems in AWS. You can use either a single-node architecture with multiple availability zones or a multinode architecture with a single availability zone, depending on your needs.
- AWS Launch Wizard: AWS Launch Wizard provides a guided, automated SAP application deployment and configuration experience. Support for the Red Hat Enterprise Linux image builder tool lets you deploy custom operating system images using AWS Launch Wizard.
- Red Hat Ansible Automation Platform content: SAP-specific Red Hat Ansible Automation Platform content allows you to automate common migration and management tasks.

Red Hat and AWS solutions streamline scaling, so you can start with only the resources you need now and rapidly expand as needs change. On-demand availability and resource scaling ensures your environment is never constrained. The AWS Trusted Advisor tool monitors your applications and reports capacity use to help maintain steady, predictable performance at the lowest possible cost. Predictive scaling capabilities use data collected from your actual Amazon EC2 use, billions of data points drawn from Amazon's own observations, and well-trained machine learning models to forecast expected traffic and EC2 use on a daily and weekly basis.

Further, Amazon's global footprint lets you choose where to place workloads to support new markets, customer demands, and regional regulations.

Availability and stability

SAP workloads are critical for your business and downtime is unacceptable.

Together, Red Hat and AWS provide:

- Continuous availability for SAP applications through integration with highly available SAP offerings like SAP HANA, SAP NetWeaver, and SAP S/4HANA.
- Your choice of SAP applications for use with Red Hat and AWS high availability solutions. Choose from automated SAP HANA System Replication, SAP NetWeaver ASCS (ABAP SAP Central Services) and Enqueue Replication Server (ERS), and SAP S/4HANA ASCS/ERS based on Standalone Enqueue Server 2 (ENSA2).

Additionally, Red Hat Enterprise Linux delivers a reliable, stable operating environment for your SAP landscape. Both Red Hat Enterprise Linux for SAP offerings include the Red Hat Enterprise Linux High Availability Add-On to keep your SAP workloads up and running at all times. The High Availability Add-On provides failover orchestration across environments running in one or more AWS availability zones. Using Pacemaker and specialized Amazon EC2 and SAP resource agents, Red Hat Enterprise Linux offers a standards-based approach for high-availability operations.

Red Hat Update Services provides up to four years of support—including security patches and critical fixes—for select minor releases of Red Hat Enterprise Linux. When you upgrade to a new minor release, binary compatibility and kernel stability ensure that your system remains stable and that both SAP and custom applications continue to execute smoothly.

Flexibility and choice

Every organization is different. You need technology partners that allow you to tailor your environment with the technologies, services, and products that meet your organization's requirements today and in the future.

Red Hat and AWS give you an extensive choice of services and third-party products to customize your environment. Red Hat Enterprise Linux runs consistently across both on-site and cloud infrastructure, allowing you to move applications and workloads without changing them. A suite of Amazon EC2 instances—supported by both SAP and Red Hat platforms—lets you select the right configuration for your applications. You can choose to purchase Red Hat Enterprise Linux with High Availability and Update Support directly from the AWS Marketplace, or move your Red Hat Enterprise Linux for SAP Solutions subscription to AWS through Red Hat Cloud Access. The AWS Marketplace also offers a variety of independent software vendor (ISV) solutions that are validated

Get help from the experts

Take advantage of professional services to help you migrate with less hassle and effort.

- Red Hat Consulting offers expert migration and modernization services, based on years of experience.
- AWS Partner Network SAP Competency Partners provide certified SAP HANA and cloud migration services.

to run on Red Hat Enterprise Linux, so you can easily add the products you require. Plus, Red Hat, AWS, and SAP partner with systems integrators to ease your migration to SAP HANA, Red Hat Enterprise Linux, and AWS.

Additionally, Red Hat and AWS work together to help you take advantage of the latest technology without disrupting your business. Tight integration between Red Hat products and AWS services ensures that all new products, features, and services are available and supported by both companies soon after launch. Joint development ensures reliable interoperability to support business continuity. Support for multiple processor models lets you use the appropriate platform at all times.

Support

Issues in your SAP environment can cause costly downtime. To maintain business continuity, you need technology partners that provide ongoing, easy-to-access, enterprise-grade support.

With Red Hat and AWS, support is simple and hassle-free. Red Hat and AWS work with SAP and certified hardware and cloud providers to deliver support for your SAP environment. An integrated support model gives you a single point of contact for issues. Call AWS, Red Hat, or SAP, and the companies work together internally to identify and resolve issues quickly, minimizing downtime for your environment. Subscriptions purchased through the AWS Marketplace require business-level support, which includes level 1 and 2 support from AWS and level 3 escalation to Red Hat and SAP.

You can also engage a Red Hat Technical Account Manager (TAM) to provide specialized product knowledge and industry expertise and help you plan and implement your migration.

Learn more

SAP HANA migration presents an opportunity to modernize your underlying IT infrastructure and realign with digital business needs. Red Hat and AWS provide validated solutions for SAP HANA that improve datacenter innovation, efficiency, and flexibility. Get started quickly and easily using the SAP HANA Quick Start.

Learn more about Red Hat and AWS solutions for SAP at access.redhat.com/articles/3671571 and amzn.to/2XdTylv.

About Red Hat

Red Hat helps customers standardize across environments, develop cloud-native applications, and integrate, automate, secure, and manage complex environments with award-winning support, training, and consulting services.

facebook.com/redhatinc
@RedHat
linkedin.com/company/red-hat

North America
1 888 REDHAT1
www.redhat.com

Europe, Middle East, and Africa
00800 7334 2835
europe@redhat.com

Asia Pacific
+65 6490 4200
apac@redhat.com

Latin America
+54 11 4329 7300
info-latam@redhat.com

redhat.com
F30301_1021_KVM