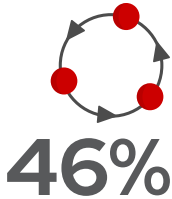


Speed your path to digital leadership

Modernize your SAP landscape with Red Hat and Intel



of organizations cite modernizing infrastructure with increased agility, flexibility, manageability, and security as a top initiative in their digital transformation efforts.¹

Red Hat and Intel provide a path forward to modernize your IT infrastructure and migrate to SAP HANA.

Using open source platform, container, automation, and integration technologies and innovative processors, storage, and networking, Red Hat and Intel deliver a flexible, high-performance foundation for critical workloads across your organization.



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Advance your business with modern IT infrastructure

Organizations are digitally transforming to increase productivity, improve technology support for operations, and take advantage of new opportunities.¹ As a result, modernizing IT infrastructure to increase agility, flexibility, manageability, and security is a top initiative for 46% of organizations.¹ Technologies like containers, microservices, and cloud infrastructure support these digital transformation efforts.

Digital transformation activities can help IT organizations to progress and become more valuable to their business. Modernization projects often receive significant funding and resources. This allows IT staff to update their skills and deploy the technologies they need to support business.

As a critical part of your business infrastructure, your SAP® environment can also benefit from modernization. To continue receiving SAP support organizations must migrate their underlying databases to SAP HANA® and their existing SAP applications to SAP S/4HANA® by 2027. SAP HANA is supported only on Linux® operating systems, so many organizations must also choose and deploy a new Linux foundation in their datacenter.

An in-memory data platform with transactional and analytical capabilities, SAP HANA powered by Intel® Xeon® Scalable processors and Intel Optane™ Persistent Memory (PMem) provides a foundation to conduct near real-time data analytics in the cloud or at the edge for faster time to insight with optimized performance and simplified business operations—in a single 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, with certified Intel technology, also incorporates databases, advanced analytic processing, applications, and integration services into a single platform that can run all your SAP enterprise applications, including SAP S/4HANA. These new capabilities increase the demands on your infrastructure and require optimized performance, scalability, and reliability.

Migrating to SAP HANA also presents an opportunity to realign your SAP environment with your overall digital transformation strategy. By modernizing your SAP environment, you can gain faster data access for users and applications, more accurate insight via machine learning models, and increased agility to better support digital business demands.

Choose expert partners to help you transform

Red Hat and Intel have common strategic goals and a strong partnership that spans more than two decades. Both companies focus on hybrid and multicloud infrastructure as the foundation for the future. SAP instances, powered by SAP-certified Intel technology, deliver faster access to more data, enabling operational automation, on-demand elasticity, and improved security and compliance capabilities. Hybrid environments bring together the technologies, tools, and processes you need to modernize today and future-ready your investment, for lower total cost of ownership (TCO) and greater return on investment (ROI). Open technologies are a key part of hybrid strategies, and Red Hat and Intel collaborate in upstream open source projects to deliver enterprise-focused features

¹ Altimeter, "The 2020 State of Digital Transformation: Benchmarking Digital Maturity in the COVID-19 Era," 2020.

Tried, tested, trusted

More than

90%

of companies in the Fortune 500 rely on Red Hat products.²

and technologies. The companies also help you navigate digital transformation with solutions that provide more choice, flexibility, and innovation over your deployments, so you can scale up or out as needed with the proven reliability and quality of service that supports more uptime and productivity.

Red Hat and Intel also have long-standing relationships with SAP. [Red Hat® Enterprise Linux](#) is one of two Linux platforms certified for SAP HANA and S4/HANA. An optimized offering for SAP workloads, Red Hat Enterprise Linux for SAP Solutions includes additional content to meet the demands of complex database environments. High availability and update support options provide the reliability and support your organization needs for critical business applications.

Part of a multiyear technology partnership to optimize Intel platforms for SAP applications, the Intel and SAP Center of Excellence demonstrates the capabilities of Intel and SAP technology for digital transformation. Through engineering collaboration, SAP HANA fully supports [Intel Xeon Scalable processors](#) and [Intel Optane Persistent Memory](#), allowing significant advances in performance, business continuity, and data insight and analysis.

These partnerships help all three companies plan and integrate their technology roadmaps to offer the optimized joint solutions customers demand, faster.

Modernize your SAP environment and IT foundation with Red Hat and Intel

Red Hat and Intel provide modern foundation for both your IT infrastructure and your SAP landscape, allowing you to build a standardized, consistent architecture throughout your organization. The companies combine open source platform, container, automation, and integration technologies with innovative processors, storage, and networking to deliver a flexible, high-performance foundation for critical workloads. These components are tested and certified to work together reliably and integrated for increased performance, stability, and manageability.

- [Intel Xeon Scalable processors](#), high-performance processors designed for hybrid cloud environments and optimized for SAP HANA.
- [Intel Optane Persistent Memory](#), high-speed, high-density, non-volatile memory that boosts performance for demanding applications and combines large capacity with data persistence in an affordable package. Larger capacity at reduced cost.
- [Intel Optane Solid-State Drives \(SSDs\)](#), high-performance, large capacity storage that eliminates processing bottlenecks and supports bigger data sets cost-effectively.
- Intel's hardware enhanced security features—such as Intel SGX or AESNI—that offer security of data when at rest, in transit, or in use.
- Intel Internet of Things (IoT) market ready solutions.
- [Intel Ethernet 800 Series Network Adapters](#), high-throughput, low-latency networking for demanding cloud and enterprise workloads.
- [Red Hat Enterprise Linux for SAP Solutions](#), a flexible, enterprise Linux platform for bare-metal, virtual, container, and cloud environments, with SAP-specific optimizations and add-ons.
- [Red Hat Insights](#), a proactive identification and remediation tool for threats to security, performance, availability, and stability.

² Red Hat client data and Fortune 500 list, June 2019.

Take advantage of persistent memory

Compared to DRAM, Intel Optane persistent memory delivers key benefits for SAP HANA environments:

- Reduced memory costs
- Larger in-memory capacity
- Faster database start times
- Simplified data tiering
- Quicker insights

Read the [solution brief](#) to learn more about using persistent memory in SAP HANA environments.

Organizations that standardize on Red Hat infrastructure solutions benefit from

74%

less unplanned downtime.³

- [Red Hat Ansible® Automation Platform](#), a complete automation platform with a human-readable language for adopting DevOps practices.
- [Red Hat OpenShift®](#), an enterprise-grade, Kubernetes-based container application platform.
- [Red Hat Integration](#), a comprehensive set of integration and messaging technologies to connect applications and data across hybrid infrastructure.
- [Red Hat OpenShift Data Foundation](#), persistent, scalable, software-defined storage for container environments that is integrated with Red Hat OpenShift.

A modern Red Hat and Intel infrastructure delivers key IT and business benefits.

Increase agility

Every organization has different, evolving requirements. Red Hat and Intel help you become more agile by supporting DevOps practices, technology integration, and large ecosystems of certified partner products. Improve development agility and speed by creating new applications and extensions with reusable microservices and container architectures. Streamline development and operations with automated continuous integration and continuous delivery (CI/CD) pipelines. Take advantage of advanced integration capabilities to connect both SAP and non-SAP systems and data across your organization and provide faster, more accurate insight and decisions. Use your preferred third-party products, knowing they will work reliably with Red Hat and Intel platforms.

Boost performance

Delivering consistent and stable IT performance to the business is a top priority for 64% of organizations.⁴ A high-performance foundation is also required for SAP applications to provide the most value to your business. Red Hat and Intel offer software and hardware that are engineered and optimized together to deliver more performance and efficiency for IT and SAP workloads.

Gain greater insight from your data, faster, with integrated solutions. Red Hat and SAP engineers work together to ensure that SAP applications running on Red Hat Enterprise Linux achieve high levels of performance on Intel platforms. Red Hat Enterprise Linux running on Intel Xeon Scalable processors also holds world records for SAP BW Edition of SAP HANA V3 in total data load and transformation runtime, total complex query phase runtime, and query executions per hour.⁵

Derive more value from large datasets with persistent memory. Intel Optane memory delivers near-DRAM performance in greater capacities, allowing you to shift more data from storage to memory. As a result, you can analyze larger datasets—faster—and take advantage of advanced analytics workloads like machine learning.

³ IDC White Paper, sponsored by Red Hat, "The Value of Standardizing on Red Hat Infrastructure Solutions," November 2017. [redhat.com/en/resources/value-of-standardizing-red-hat-infrastructure-solutions](https://www.redhat.com/en/resources/value-of-standardizing-red-hat-infrastructure-solutions).

⁴ Harvey Nash and KPMG, "CIO Survey 2019: A Changing Perspective," 2019. [home.kpmg/xx/en/home/insights/2019/06/harvey-nash-kpmg-cio-survey-2019.html](https://www.kpmg.com/xx/en/home/insights/2019/06/harvey-nash-kpmg-cio-survey-2019.html).

⁵ Red Hat, "Red Hat Enterprise Linux with Intel's newest Xeon processors posts record performance results across a wide range of industry benchmarks," April 16, 2019. red.ht/2HqfhGL.

Tests using Intel Optane persistent memory showed up to

12.5x

faster SAP HANA database start-up times.⁶

Organizations that standardize on Red Hat infrastructure solutions require

42%

less IT staff time to manage.³

Organizations that standardize on Red Hat infrastructure solutions experience

44%

faster deployment of new applications and features.³

Gain stability

When your business relies on your SAP environment, it must be up and running at all times. Red Hat and Intel help you increase stability through platform reliability and rapid recovery. Deploy a reliable, stable operating environment for your SAP landscape using Intel Xeon Scalable processors, Intel Optane persistent memory technology, and Red Hat Enterprise Linux. The [Red Hat Enterprise Linux High Availability Add-On](#)—included with Red Hat Enterprise Linux for SAP Solutions—provides failover orchestration across your environment to keep your SAP workloads up and running at all times. 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. Red Hat Enterprise Linux also includes in-place upgrade capabilities and live patching for important and critical Common Vulnerabilities and Exposures (CVEs).

Rapidly identify and remediate threats to availability, security, stability, and performance with predictive operating system analytics. Red Hat Insights delivers proactive, automated, targeted issue resolution to ensure that your environment is operating optimally and avoid problems and unplanned downtime. With more than 600 rules, including many specific to SAP system configuration requirements and best practices, you can identify vulnerabilities before they impact critical operations.

Speed start-up and recovery time to increase business continuity with persistent storage. Intel Optane storage products retain your data during database and system restarts, eliminating the need to load tables into memory upon database start up. Tests using Intel Optane persistent memory have shown up to 12.5 times faster start-up times.⁶

Reduce costs

Saving costs is a top priority for 54% of organizations.⁴ Red Hat and Intel help you reduce TCO for your IT and SAP infrastructure. Run both general IT and SAP workloads on the same infrastructure to improve efficiency and resource use. Consolidate workloads and databases onto fewer systems with high-density memory and SSDs. Rearchitect your database storage hierarchy to reduce costs with large-capacity, affordable persistent memory. Streamline operations and reduce staff training needs by standardizing on a single set of platforms and processes. Automate common tasks, as well as [SAP HANA application deployment](#), using Red Hat Ansible Automation Platform playbooks to increase speed and accuracy. All of this adds up to lower capital and operational expenses (CapEx and OpEx), freeing more budget for innovation and strategic initiatives.

Define your path to modernization and migration

Modernization is a journey, not a single act. With adaptable, integrated platforms, Red Hat and Intel help you modernize on your schedule and deliver flexibility without sacrificing stability. KubeVirt Advanced integration technologies let you continue to use existing applications as virtual machines (VMs) and replace them over time, on your schedule. Container- and microservices-based platforms let you refactor legacy applications and custom extensions that integrate with your SAP environment to operate more flexibly and efficiently. They also provide a foundation for new, cloud-native and

⁶ Intel, "SAP HANA Democratizes In-memory Compute with Intel® Optane™ DC Persistent Memory," August 23, 2019. [youtube.com/watch?v=vxkk5mmJE80](https://www.youtube.com/watch?v=vxkk5mmJE80).

⁷ Flexera, "RightScale 2019 State of the Cloud Report from Flexera," February 2019. [info.flexerasoftware.com/SLO-WP-State-of-the-Cloud-2019](https://www.flexerasoftware.com/SLO-WP-State-of-the-Cloud-2019).

About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers integrate new and existing IT applications, develop cloud-native applications, standardize on our industry-leading operating system, and automate, secure, and manage complex environments. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500. As a strategic partner to cloud providers, system integrators, application vendors, customers, and open source communities, Red Hat can help organizations prepare for the digital future.

About Intel

Intel, a world leader in silicon innovation, develops technologies and initiatives to advance how people work and live. Second-generation Intel Xeon Scalable processors with Intel Optane DC persistent memory form the reference design platform for SAP HANA. It delivers optimal performance, security, flexibility, and total cost of ownership to meet today's data center needs. Make better business decisions faster with an intelligent data management strategy from Intel and SAP.



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containerized applications and workloads, like SAP Data Hub and machine learning. Finally, Red Hat and Intel partner with systems integrators to ease your migration to SAP HANA, Red Hat Enterprise Linux, and Intel hardware.

Extend your IT environment to the cloud

58% of organizations have a hybrid cloud strategy and 84% have a multicloud strategy.⁷ A Red Hat and Intel foundation lets you seamlessly extend your IT infrastructure to the cloud, giving you more choice. Many SAP applications are supported in private and public cloud environments and consistency across private, hybrid, public, and multicloud infrastructure lets you deploy these workloads where you want, without requiring changes. Red Hat Enterprise Linux for SAP Solutions is also certified and easily deployable on major cloud providers like Amazon Web Services (AWS), Microsoft Azure, Google Cloud, and IBM Cloud. In fact, Red Hat Enterprise Linux is the top commercial Linux distribution for public cloud deployments.⁸ Additionally, several cloud and managed service providers offer Red Hat OpenShift as a service, allowing you to deploy containerized workloads with less effort.

All of this adds up to increased workload portability and deployment options. Place your applications on your choice of infrastructure to optimize performance, costs, scalability, and security and move them as needed.

Move forward faster with expert services

Not every organization has the time or resources to research, build, integrate, and deploy a new IT foundation themselves. [Red Hat Consulting](#) provides a variety of services to help you modernize faster. By combining open tools and standards, industry insight, organizational knowledge, and proven methodologies, Red Hat Consulting can help you modernize your IT architecture, migrate to a flexible cloud infrastructure, implement a storage solution, or accelerate business agility by deploying containers on cloud. Red Hat and Intel also work with leading systems integrators (SIs) to help you migrate and modernize your SAP landscape.

Learn more

Your business relies on your SAP environment for critical processes and data. SAP HANA migration presents an opportunity to modernize your underlying IT infrastructure and realign with digital business needs. Together, Red Hat and Intel deliver more value for your organization. With a flexible, high-performance IT foundation, you can accelerate data access, deliver more accurate insight, and improve agility to better support evolving business demands.

Learn more at redhat.com/sap, intel.com/sap, and intel.com/redhat.

⁸ *Management Insight Technologies, sponsored by Red Hat, "State of Linux in the public cloud for enterprises," February 2018. redhat.com/en/resources/state-of-linux-in-public-cloud-for-enterprises.*