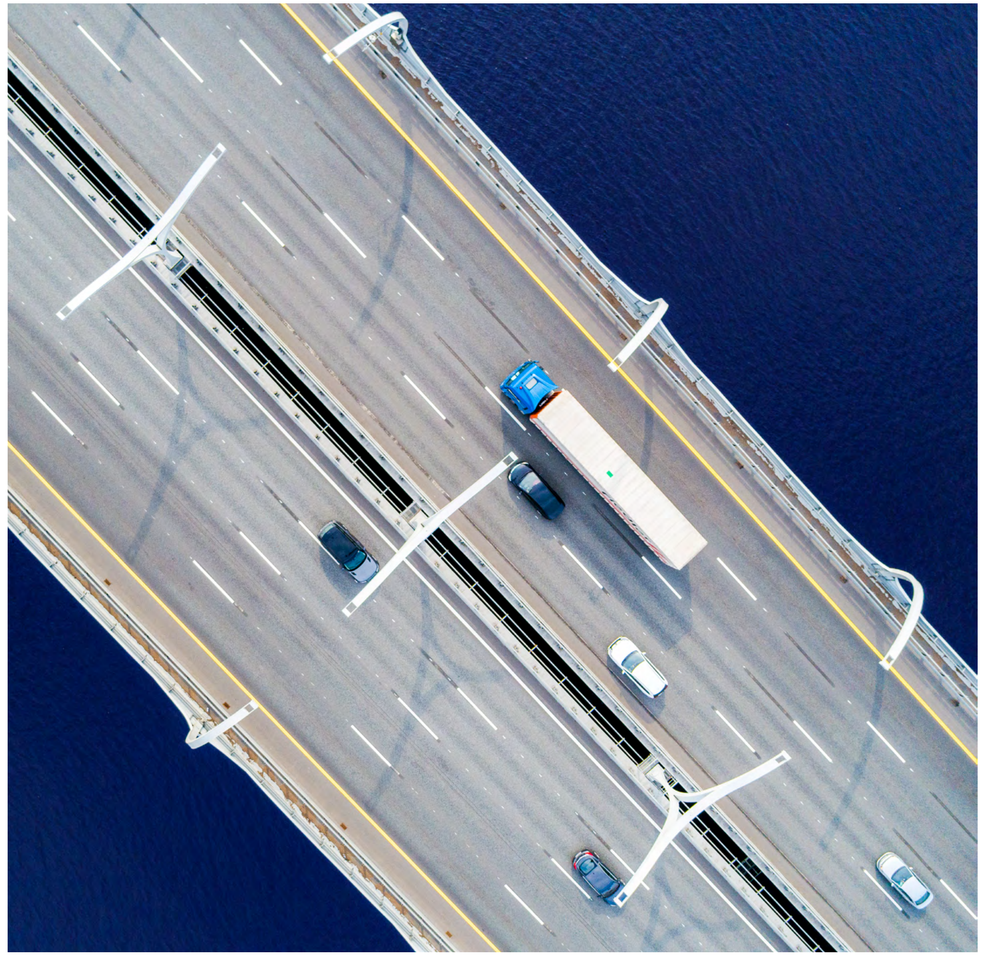
Accelerate SAP ERP modernization on IBM Cloud



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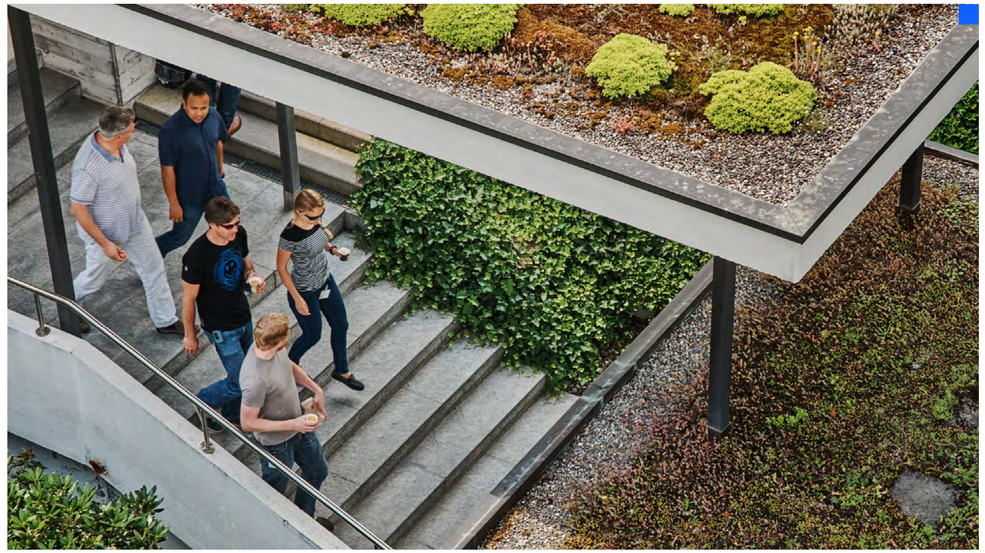

01
Introduction

Many organizations run their finance, supply chain, procurement and HR operations using SAP's ERP solutions. The ever-increasing need for speed, efficiency and innovation are driving organizations' need to both modernize their ERP and move to the cloud. Over a quarter of SAP customers today are "live" on SAP's next-generation ERP, SAP S/4HANA. According to the SAPinsider report, Deployment Approaches to SAP S/4HANA Benchmark Report 2022, 49% of the respondents were evaluating the business case or performing a proof of concept or currently implementing SAP S/4HANA.[1]

Businesses are looking for guidance to determine the best approach to move SAP applications to the cloud. In this ebook, we will introduce the "clean core" SAP ERP modernization approach and dive deeper into how IBM Cloud® helps accelerate the move to cloud.

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“Clean core” modernization approach

Traditional and heavily customized ERP architectures with point-to-point integration are much more difficult to upgrade and slow down innovation. A “clean core” means keeping the SAP ERP software system free of customization to make it more manageable, easier to upgrade and extensible to meet unique business needs that more often involve connecting SAP and non-SAP applications.

Let’s break down what it takes to build a clean SAP core.

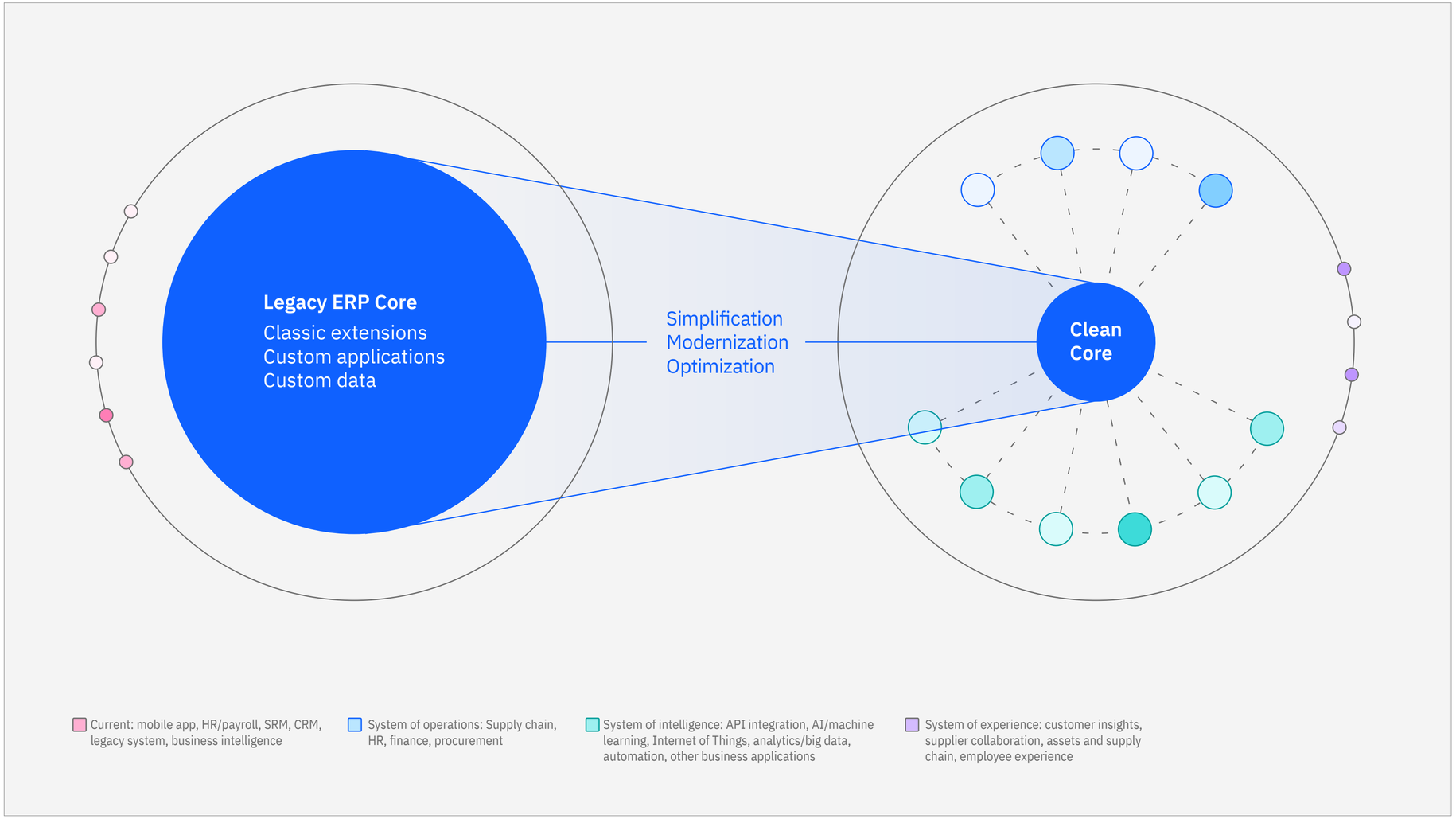


Figure 1. Keep SAP ERP software core, containing applications, custom data and integrations, free of customization and make it more manageable by applying a tailored mix of modernization patterns that aligns to Lean-ERP but allows an *unconstrained* business ambition.

Code simplification and modernization establishes a path away from current monolithic ERP models and custom code. The first step in code modernization is to ensure there is a cloud-native DevOps platform in place to contain the SAP extensions. All customizations in the SAP ERP environment can then be built as extensions on top of the cloud-native platform and integrated into this digital core through APIs. When choosing a cloud-native DevOps platform, the natural choice for SAP extensions is SAP Business Technology Platform (SAP BTP). SAP BTP facilitates the necessary connectivity setup that needs to exist between the extensions and the SAP S/4HANA core in terms of users, authorizations and access to APIs.

In addition, many organizations have already chosen a cloud provider and use the cloud-native services available to create innovative solutions. Many have a preferred cloud-native DevOps platform, supporting a “develop once, deploy anywhere” capability, such as Red Hat® OpenShift®. Enterprise-scale DevOps platforms are sometimes selected because they can be used to extend any application across the enterprise, not just SAP.

Data quality and conversion
As businesses plan their move to SAP S/4HANA, it’s critical to determine if the current state of data supports planned business outcomes and to automate remediation of data errors to reduce the overall data complexity and data footprint. SAP S/4HANA migration provides an opportunity to cleanse and archive data that has accumulated in SAP for years. In most cases there are duplicate, incomplete, obsolete and old records that are no longer needed. Because SAP S/4HANA requires the SAP HANA in-memory database to run on the server, reducing the data footprint can provide significant savings on hardware or cloud IaaS subscription costs.

Process optimization
simplify and optimize business processes to improve outcomes. Discover inefficiencies in current process paths, automation rates, throughput times and other process-specific KPIs in your organization. Take advantage of frameworks and tools that prompt immediate actions through automation and help ease the adoption of intelligent technologies.

Infrastructure modernization
This involves introducing cloud-native capabilities to ERP environments while extending the value of existing investments. When moving SAP ERP Central Component (ECC) or SAP S/4HANA to cloud, consider a cloud provider that can leverage your existing investments and offer infrastructure capacity that can scale in granular increments. This will help accelerate the time to value of your cloud migration and maintain right-sized environments where you pay for only what you need, without being forced to overprovision capacity.

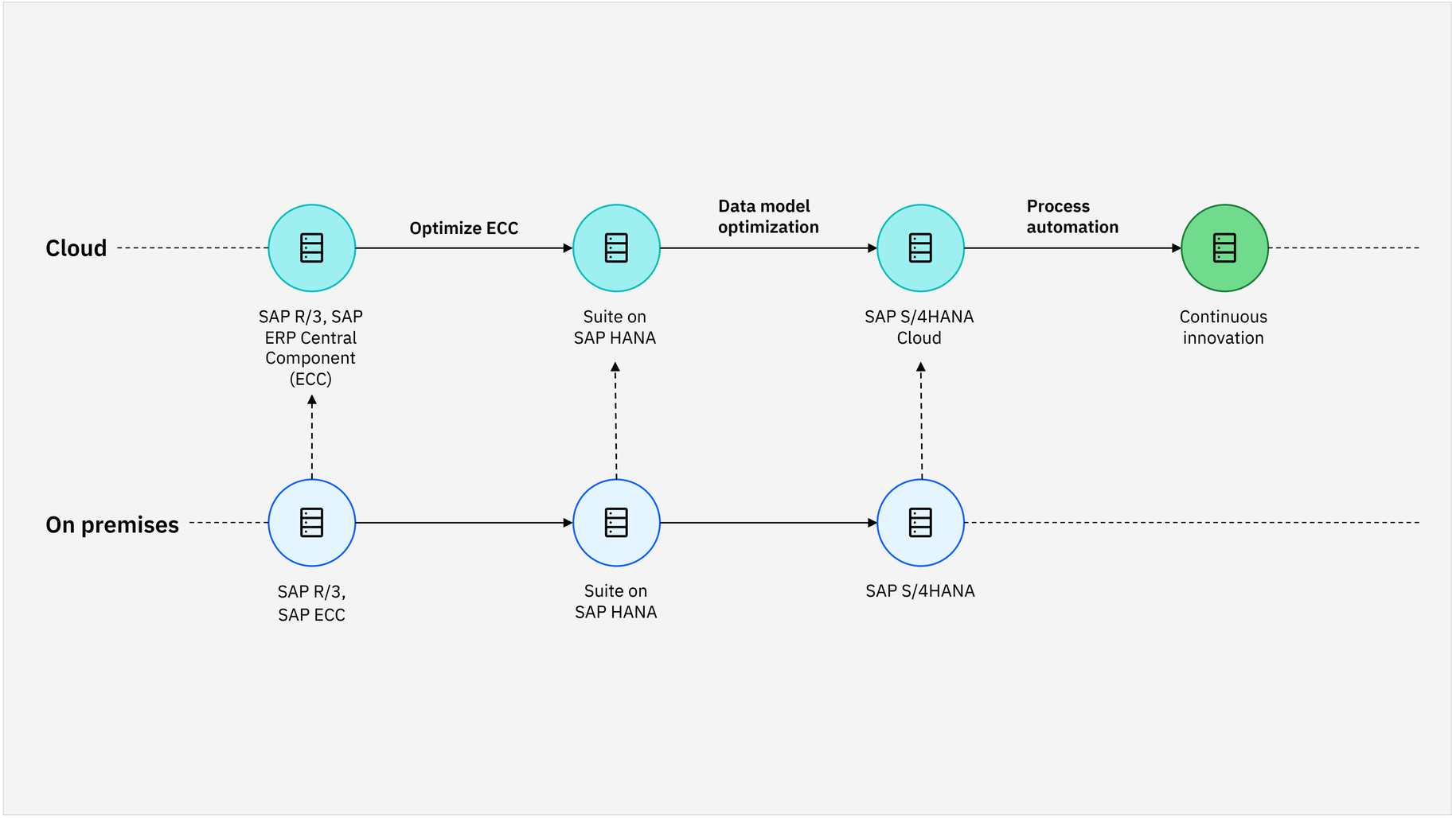


Figure 2. Cloud modernization of SAP ERP.

03
Considerations for infrastructure modernization

Whether you're considering a lift and shift of SAP ECC on AnyDB or of SAP Business Suite on SAP HANA, or modernizing your ERP solution to SAP S/4HANA Cloud, choosing the right infrastructure is critical. The IDC research found that organizations that moved SAP HANA or SAP S/4HANA to cloud took 14–21 months to execute the migration.[2] Their planned and unplanned downtime per year ranged from 12 minutes to over 16 hours.[2] Additionally, 85% of businesses consider data and analytics, AI/ML and IoT/Edge capabilities when choosing SAP S/4HANA cloud infrastructure.[2] Choosing the right cloud infrastructure is critical to reducing migration time, maximizing availability and enabling continuous innovation.

IBM Cloud helps accelerate time to value, make SAP IT infrastructure always available and enable continuous innovation by extending SAP applications with cloud-native solutions.

14–21 months

Time for organizations to execute migration of SAP HANA or SAP S/4HANA to cloud[2]

0.2–16+ hours

These same organizations' planned and unplanned downtime per year[2]

85%

Businesses that consider data and analytics, AI/ML and IoT/Edge capabilities when choosing SAP S/4HANA cloud infrastructure[2]

04

IBM Cloud for SAP Applications

IBM Cloud is the only high-performance SAP-certified IaaS that offers both Power and x86 infrastructure to run production, dev/test and high-availability/disaster recovery (HA/DR) environments.[3]

The IaaS portfolio of IBM Cloud consists of:

- IBM® Power® Virtual Server (only SAP-certified IaaS on Power for SAP HANA deployments)
- IBM Cloud for VMware Solutions (only SAP-certified IaaS on VMware)
- IBM Cloud Virtual Servers
- IBM Cloud Bare Metal Servers

20%

Typical reduction in time to migrate when SAP solutions were deployed on IBM Cloud versus in other clouds[4]

Accelerate time to value

According to IDC special report, *Infrastructure Adoption Trends for SAP HANA and S/4HANA*, clients deploying SAP solutions on IBM Cloud were able to migrate 20% faster than on other clouds.[2]

The broad portfolio of IaaS options on both Power and x86 environments enable Like-to-Like migration of on-premises SAP environments to cloud. This helps accelerate the Day 1 deployment of SAP applications in the cloud. The virtualized environments also enable you to dynamically change capacity to scale up and down. Power Virtual Server offers granular memory scaling from 128 GB to 22.5 TB that enables you to pay only for the capacity you need without being forced to overprovision. On the Intel x86 environment, IBM Cloud offers flexible compute options that scale from 128 GB to 18 TB.

Additionally, SAP on IBM Cloud supports real-time decision making with leadership in SAP ERP throughput and SAP BWH analytics performance.[5]

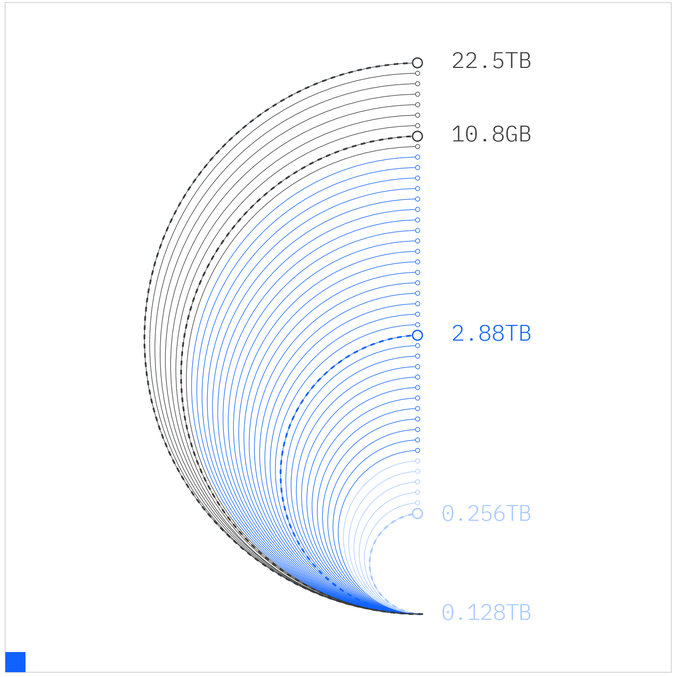


Figure 3. With IBM Power Virtual Server you can scale granularly from 128 GB to 22.5 TB without overprovisioning.

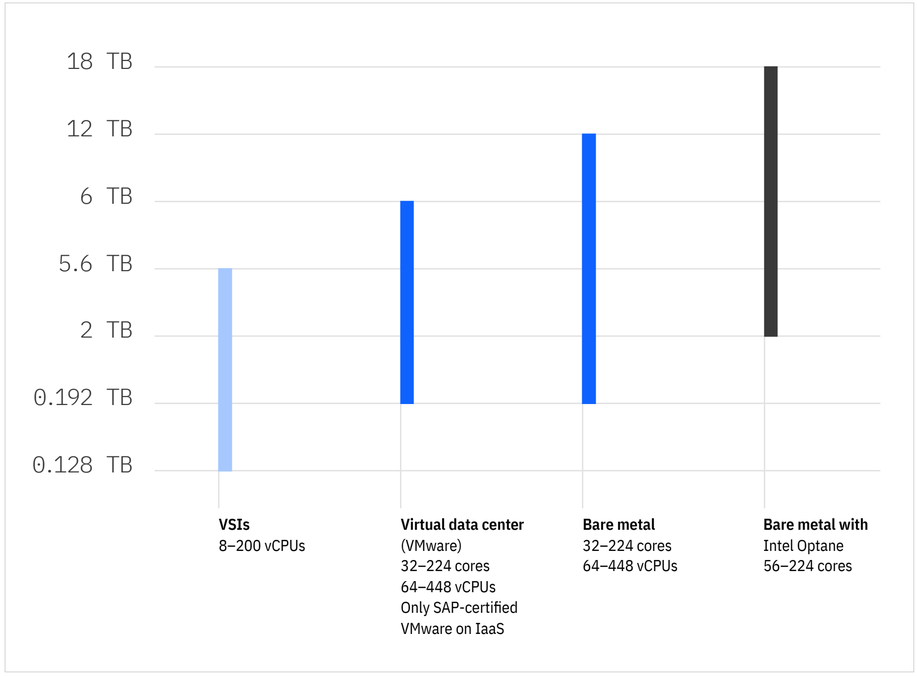


Figure 4. IBM Cloud offers flexible compute options that scale from 128 gigabytes to 18 terabytes.

Mitigate IT infrastructure risk

SAP ERP platforms execute critical financial and operational processes. When businesses choose to move those processes to cloud, they need assurance that their data is protected and that the systems are available 24x7. IBM Security® services has defined a framework featuring 13 layers that focus on the critical elements of the SAP stack. This framework ensures full coverage, going from regulatory and compliance to the most technical details related to cybersecurity.

IBM Cloud empowers the 13 layers with the ability to:

- Govern resource configurations and centrally manage compliance.
- Gain complete authority over data at rest, in transit and in use.
- Deploy locally and scale globally with resilient and highly available infrastructure.

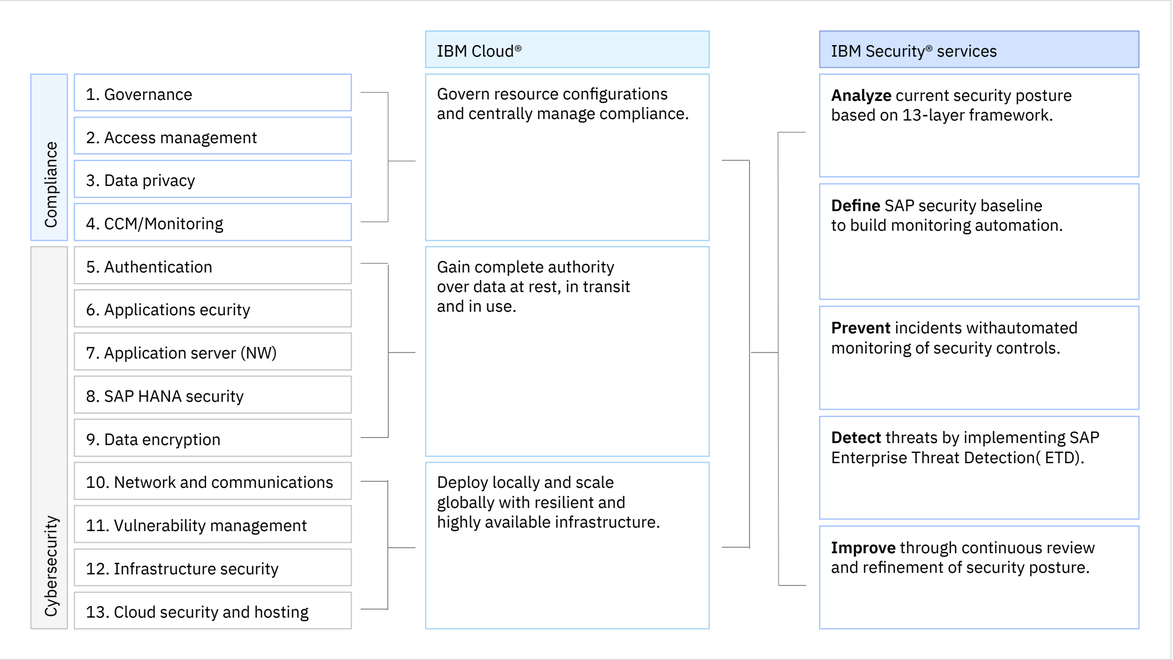


Figure 5. The 13-layer framework for SAP is focused on reducing cybersecurity and regulatory compliance risks.

Govern resource configurations and centrally manage compliance

IBM Cloud Security and Compliance center allows you to view your security and compliance postures from a unified dashboard.

Ensuring that best practices and external regulations are always adhered to can be a time-consuming process. The IBM Cloud Security and Compliance Center routinely scans the available resources in cloud environments on a set schedule and creates an inventory that can be used for auditing purposes. As part of the scan, the IBM Cloud Security and Compliance Center validates your configurations against a predefined set of control implementations called *goals* before calculating a compliance score. Your score can help you to know which issues you need to address first.

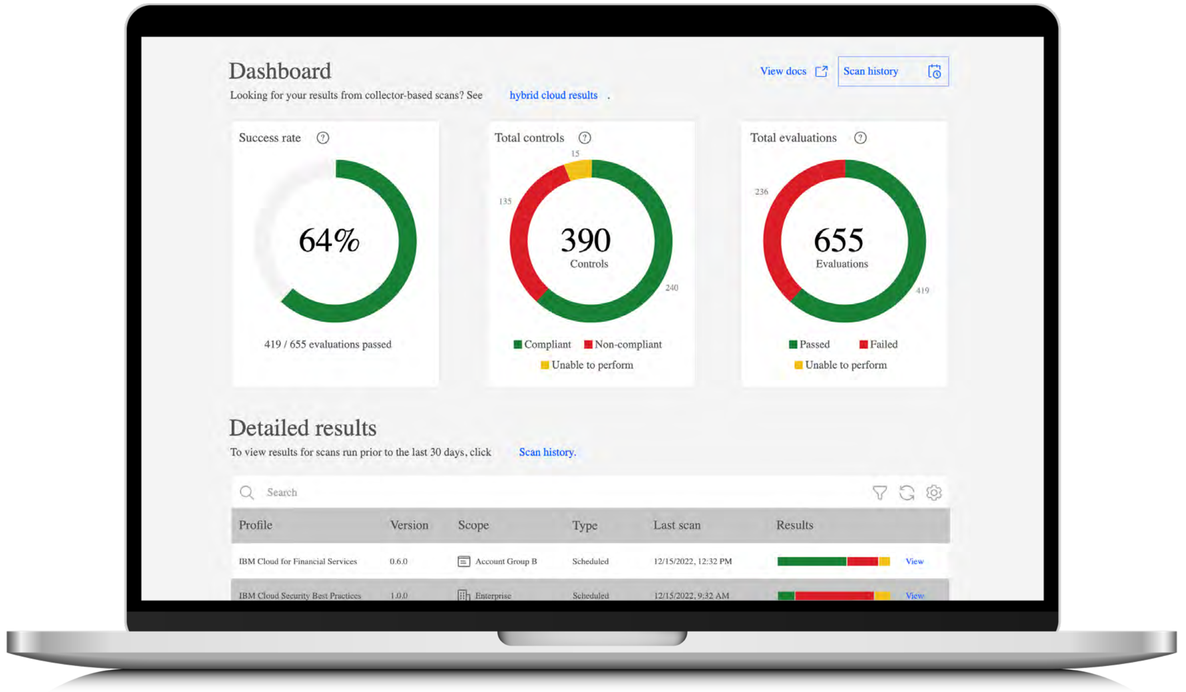


Figure 6. The IBM Cloud Security and Compliance Center provides visibility to security and compliance postures on a single dashboard.

Gain complete authority over data at rest, in transit and in use.

Protecting sensitive information and intellectual property, and meeting compliance and regulatory requirements, requires organizations to protect their data end to end—when it's at rest, in transit and in use.

Data is often encrypted at rest in storage and in transit across the network, but applications and the sensitive data they process—data in use—are vulnerable to unauthorized access and tampering while they're running. Due to an increased understanding of the need to protect data in use, the adoption of confidential computing is on the rise. The term confidential computing refers to cloud computing technology that protects data while in use.

In the "clean core" modernization approach, wherein customizations are built as cloud-native extensions that integrate with SAP ERP, there will be scenarios in which these extensions handle sensitive data. Consider this scenario: a mobile bank using a chatbot as the first step in allowing customers discuss ways to resolve their debt.

The chatbot uses an AI/ML model to automate the debt payment proposal and that model gets the customer data from SAP S/4HANA. The chatbot is built as a cloud-native extension and conversations can contain personally identifiable information (PII). Because of the risk to customer privacy, the bank needs to ensure that the data is safe and the solution is compliant with banking regulations. They can deploy the chatbot extension in a trusted execution environment to ensure that conversation data is protected at rest, in transit and in use.

Protect data across the compute lifecycle.

To achieve the highest level of commercial privacy assurance, IBM goes beyond confidential computing to help protect your sensitive data across the entirety of the compute lifecycle. This requires a holistic approach—spanning compute, containers, databases and encryption.

Hyper protect your sensitive data and workloads in the cloud.

IBM's capabilities include industry-leading security services for cloud data, digital assets and workloads. These services are built on IBM® LinuxONE security-rich enclaves, which offer built-in protection for data at rest and in transit, plus protection of data in use. The services are designed to make it easy for developers to build applications that deal with highly sensitive data while helping companies meet regulatory compliance requirements.

As companies migrate their mission-critical SAP applications to IBM Cloud, they can get the security with end-to-end capabilities and customizable solutions to help secure their data, all backed by expert support.

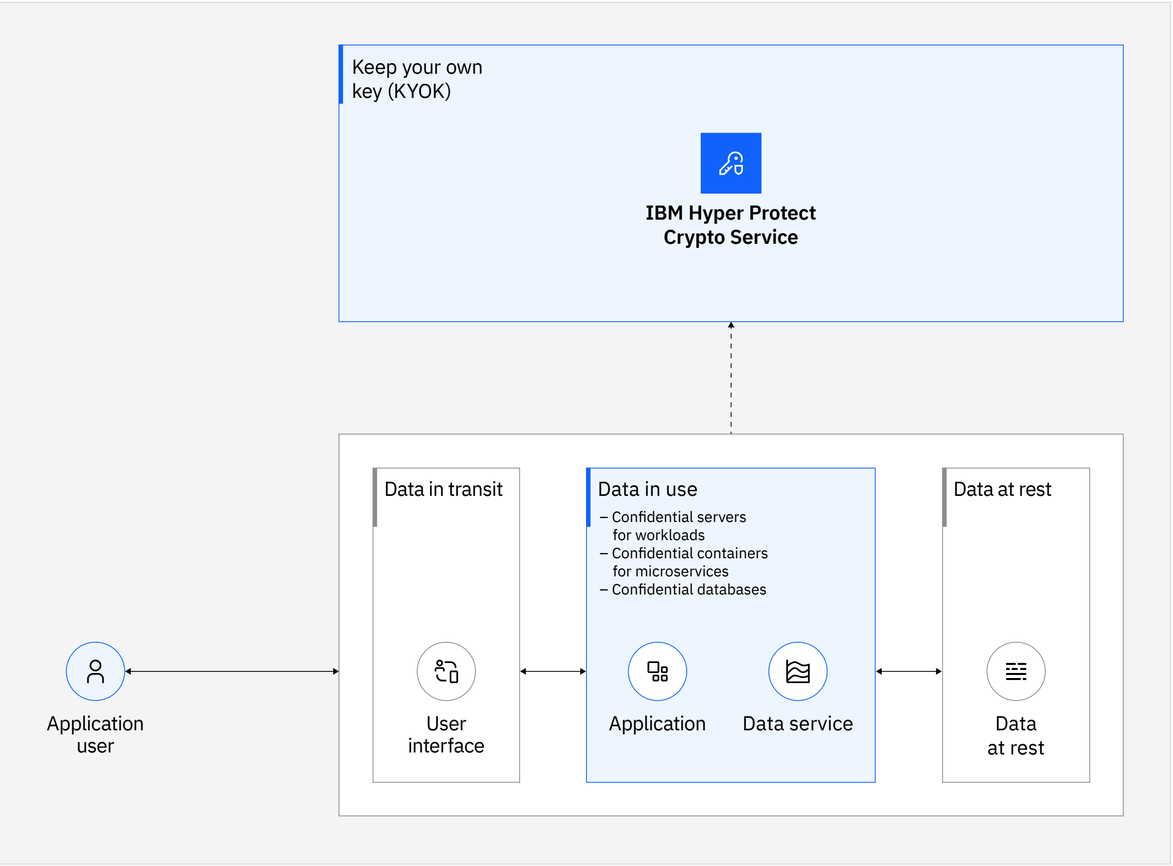


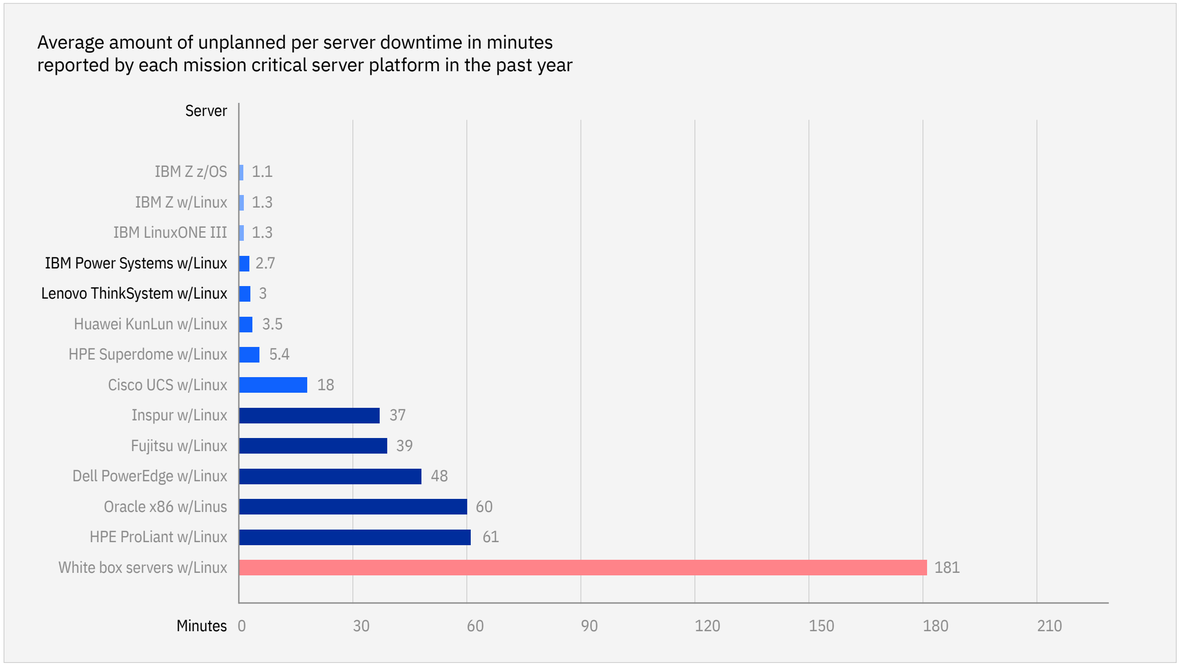
Figure 7. IBM Hyper Protect Crypto Services is a security solution built for the cloud.

Deploy locally and scale globally with resilient and highly available infrastructure.

Deploying business-critical SAP applications in the cloud requires thought, planning and confidence in your cloud technology partner. IBM Cloud is designed with built-in high-availability features that avoid single point of failure by providing:

- Redundant power feeds
- Redundant network devices and connections
- Redundant systems

IBM Cloud for SAP is built on Power and Lenovo systems that are ranked most reliable[6] and secure[7] among the SAP-certified infrastructures surveyed for the ITIC 2022 Global Server OS reports.



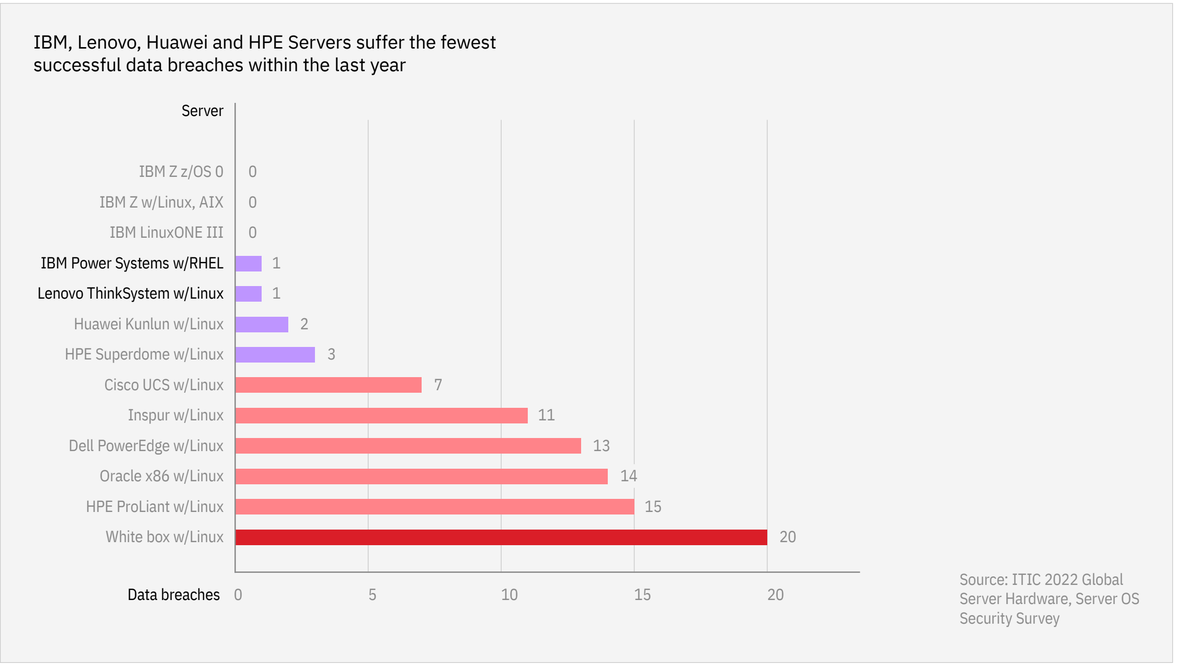


Figure 8. Reduce downtime with redundant systems.

Empower an intelligent, more sustainable enterprise

The key to the “clean core” modernization approach is to keep the SAP ERP digital core free of custom code and leverage cloud-native extensions that connect into the core for all customizations.

This requires you to consider the capabilities of cloud-native services when choosing the cloud platform. IBM’s cloud-native solutions address the needs for data and AI, sustainability, automation and security. These solutions run on Red Hat OpenShift and are available on multiple public clouds (including IBM Cloud, Amazon Web Services and Microsoft Azure), private clouds and on-premises properties—all the way to the edge.

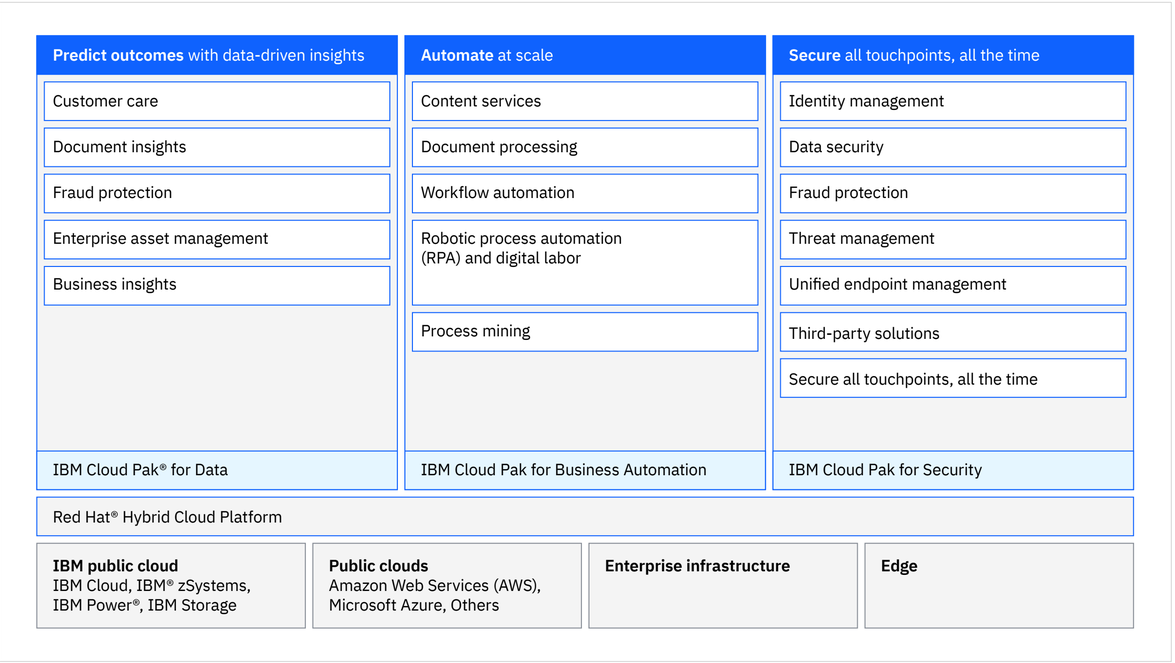


Figure 9. Do more with cloud-native extensions available across a hybrid multicloud environment.

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IBM Cloud deployment models

IBM Cloud offers flexible SAP deployment models that include RISE with SAP – premium supplier edition and RISE with SAP – classic edition. Following are the differences between them.

SAP-certified IaaS For lift and shift, HA/DR and development and testing (dev/test) for SAP ECC and SAP S/4HANA	SAP-certified IaaS with managed services For S/4HANA modernization, ECC lift and shift
Power Virtual Server Enable Like-to-Like migration of SAP ECC on SAP HANA, Oracle Database and IBM Db2® and SAP S/4HANA on Power on prem to cloud for production, dev/test and HA/DR use cases.	**RISE with SAP – premium supplier option (Power Virtual Server, VPC)** SAP's managed-service solution for SAP S/4HANA Cloud, private edition on IBM Cloud with IBM Consulting™ delivering technical managed services.
VMware, bare metal Enable Like-to-Like migration of SAP ECC on SAP HANA, Oracle Database, Db2 and SAP S/4HANA on x86 on prem to cloud for production, dev/test and HA/DR use cases.	**ManagePlus (Power Virtual Server, VPC)** IBM Consulting delivers technical managed services on IBM Cloud with Bring-Your-Own-License (BYOL) for SAP solutions.
	GSI partner-managed services GSI partner-managed services on IBM Cloud with BYOL for SAP solutions.

06

Client success in action

↓20%

Lower IT infrastructure costs Prysmian Group expects to see by building a new environment on IBM Cloud →

↑78%

Faster IT provisioning has empowered Polynt to slash their time to market for new business services →

↑10%

Faster month-end closing was achieved, offering deeper insights into Andhra Paper's financial performance →

07

Getting started with SAP on IBM Cloud

Discuss your SAP workloads. Ask for an analysis of your existing SAP environment and receive precise system requirements for the move to IBM Cloud.

1. Deployment Approaches to SAP S/4HANA, SAPinsider Benchmark Report, July 2022. (Registration required to download the report)

2. Rutten, Peter, Infrastructure Adoption Trends for SAP HANA and S/4HANA 2021—Part 2: Market Trends/Landscape, IDC, December 2021. Doc # US48416021. (Available by purchase, only)

3. Certified and Supported SAP HANA Hardware, Certified and supported SAP HANA hardware directory, SAP SE.

4. Rutten, Peter, Avoiding Cloud Migration Pitfalls for SAP, IDC Research, Inc., December 2022. Doc # US498548922

5. IBM Power Virtual Server E980; two-tier SAP SD standard application benchmark running SAP enhancement package for ERP 6.0 EHP5; IBM Power9™ 3.9 GHz processor, 16,384 GB memory, 16p/160c/1280t, 164,008 SD benchmark users (907,820 SAPS), IBM AIX® 7.2, Db2 10.5. Certification # 2020020. All results can be found at www.sap.com/benchmark. Valid as of 9 January 2023. Overall World Record for SAP BW Edition for SAP HANA Benchmark Version 3 on 8 sockets on 205.4 and 184.6 billion initial records (as on 8 January 2023). Leadership in Phase 1: Data Load and Phase 3: Runtime of complex query for SAP BW Edition for SAP HANA Benchmark Version 3 on 8 sockets on 100.1 billion initial records (as on 8 January 2023). https://www.sap.com/dmc/exp/2018-benchmark-directory/#/bwh?sort=Initial%20Records&sortDesc=true

6. ITIC 2022 ING Global Server Hardware, Server OS Reliability Report, Information Technology Intelligence Consulting Corp., August 2022.

7. ITIC 2022 Global Server Hardware, Server OS Security Report, Information Technology Intelligence Consulting Corp., August/September 2022.

IBM Cloud
IBM Corporation
New Orchard Road
Armonk, NY 10504

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