

# Guiding Your Journey to SAP S/4 HANA: Effective Migration Strategies

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**Abstract** The evolution of technology has spurred a transformative wave in the enterprise resource planning (ERP) landscape, and at the forefront of this change is SAP S/4HANA. As organizations recognize the imperative to modernize their ERP systems, navigating the road to SAP S/4HANA has become a strategic journey that requires careful planning and execution. This article explores key considerations and migration strategies for enterprises embarking on the path to SAP S/4HANA.

**Keywords** SAP, HANA Migration, Digital Transformation, Transition to S4, In- Memory Computing

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## 1. Introduction

SAP HANA (High-Performance Analytic Appliance) is an in-memory relational database management system (RDBMS) developed by SAP. It is designed to process and analyze large volumes of data in real-time, providing businesses with the ability to make informed decisions based on up-to-the-minute information. Here are key aspects of SAP HANA.

## 2. Basic Concept

### 2.1. In-Memory Computing

SAP HANA stores and processes data in RAM (Random Access Memory), as opposed to traditional databases that primarily rely on disk storage. This in-memory computing capability allows for significantly faster data access and processing.

### 2.2. Columnar Database

SAP HANA uses a columnar database structure, optimizing the storage and retrieval of data for analytical queries. This design is particularly efficient for read-intensive operations, which are common in business intelligence and analytics.

### 2.3. Data Processing

SAP HANA enables both transactional and analytical processing on a single platform. It supports complex queries and aggregations, making it well-suited for advanced

analytics, data warehousing, and business planning applications.

### 2.4. Real-Time Analytics

One of the key advantages of SAP HANA is its ability to perform real-time analytics. It allows organizations to analyze and respond to data as it is generated, facilitating quicker and more agile decision-making processes.

### 2.5. Integration with SAP Applications

SAP HANA is tightly integrated with various SAP applications, including the SAP Business Suite and SAP BW (Business Warehouse). This integration enhances the performance of these applications and allows for real-time reporting and analysis.

### 2.6. Advanced Analytics

In addition to traditional business intelligence capabilities, SAP HANA supports advanced analytics features such as predictive analytics, machine learning, and spatial data processing. This enables organizations to derive deeper insights from their data.

### 2.7. Open Platform

SAP HANA is an open platform that supports multiple programming languages, including SQL (Structured Query Language), R, and various scripting languages. This flexibility allows developers and data scientists to work with the platform using their preferred tools and languages.

### 2.8. Cloud and On-Premises Deployment

SAP HANA can be deployed both on-premises and in the cloud. This flexibility gives organizations the choice to implement the solution in a manner that aligns with their IT infrastructure and business requirements.

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### 3. S/4 HANA Transition Options

There are three implementation scenarios available for SAP S/4HANA, as below:

#### 3.1. New Implementation

This scenario is suitable for those seeking to establish a new instance of SAP S/4HANA. It involves either migrating data from a legacy system or conducting a net-new installation of SAP S/4HANA.

#### 3.2. Landscape Transformation

Organizations opting for this scenario aim to streamline their existing SAP software landscape. This may involve consolidating various entities or processes or isolating specific components as part of the transition to SAP S/4HANA.

#### 3.3. System Conversion

This scenario is designed for those who wish to convert their existing SAP ERP application to SAP S/4HANA. The process includes migrating both business data and configuration to the new platform.

## 4. Key Considerations for Designing a Roadmap to S/4 HANA

This section aims to offer assistance in planning the transition to SAP S/4HANA and constructing a roadmap. While it outlines a general approach and addresses common customer queries, it provides generic statements and recommendations. It is important to note that, given the diverse nature of specific cases and requirements, the roadmap may vary significantly to SAP S/4HANA.

#### 4.1. Alignment with Business Strategy

A successful roadmap to SAP S/4HANA begins with a clear alignment with the overall business strategy. Organizations should articulate how the move to S/4HANA supports their long-term goals, such as improving operational efficiency, enhancing data-driven decision-making, or enabling greater agility. This alignment ensures that the roadmap is not just an IT initiative but a strategic enabler of business success.

#### 4.2. Assessment of Current Landscape

Before designing the roadmap, a comprehensive assessment of the existing IT landscape is crucial. This includes an analysis of the current ERP system, customizations, integrations, and data structures. Understanding the strengths and limitations of the current environment helps in making informed decisions about the migration approach, whether it is a new implementation, landscape transformation, or system conversion.

#### 4.3. Data Quality and Cleansing

Data is the lifeblood of any ERP system and migrating to

SAP S/4HANA presents an opportunity to enhance data quality. Organizations should invest time in cleansing and validating data before the migration. This includes addressing data inconsistencies, duplicates, and obsolete records. A robust data quality strategy ensures a smooth transition and sets the foundation for accurate reporting and analytics in the new system.

#### 4.4. User Training and Change Management

The success of any ERP migration hinges on user adoption, and training is a pivotal element. Organizations should invest in comprehensive training programs for end-users, key stakeholders, and IT teams. Additionally, a robust change management strategy is vital to address resistance, foster a culture of adaptability, and ensure a smooth transition for employees.

#### 4.5. Custom Code Analysis

Many organizations have custom code in their current ERP systems, and this code may need adjustments to function correctly with SAP S/4HANA. The roadmap should include a detailed plan for identifying, analyzing, and adjusting custom code. Leveraging tools and resources for code optimization ensures a seamless transition and minimizes post-migration issues.

#### 4.6. Integration with Other Systems

Consideration for how SAP S/4HANA integrates with other systems is paramount. Whether it is third-party applications, legacy systems, or cloud services, a comprehensive integration strategy is essential. This includes assessing the impact on existing integrations, planning for adjustments, and ensuring a smooth flow of data across the entire IT landscape. Depending on the scenario, this may include migrating from any database to SAP HANA, implementing SAP S/4HANA, loading and converting business data into the new and simplified business data model, and conducting landscape transformation activities.

#### 4.7. Project Management Office

The project management team oversees common project and quality management tasks, including project planning. Collaboration between the technical quality manager (TQM) from SAP and the project manager, whether from your company or the implementation partner, is integral to this workstream.

#### 4.8. IT and User Acceptance Testing

This workstream encompasses test planning and execution, including integration, regression, and user acceptance testing.

#### 4.9. Technical architecture and infrastructure

SAP S/4HANA has HANA as the underlying database. The introduction of SAP HANA into your data center must be properly planned based on your business and IT

requirements. You may also include connectivity to SAP Cloud Platform or any Hyper Scaler of choice for integration or extension use cases.

## 5. Tools & Accelerators

SAP offers a range of tools and resources to facilitate the migration from ECC (ERP Central Component) to S/4HANA. The migration process is a significant undertaking, and these tools aim to streamline various aspects of the transition. Here are key tools and resources provided by SAP for ECC to S/4HANA migration.

### 5.1. SAP Readiness Check

Offer an overview and planning baseline for important topics in the migration process. Assess the readiness of the current system for the planned conversion to SAP S/4HANA. Performs functional and technical assessments. Provides insights into changes and associated impacts. Assesses functional redesign needs for system conversion. Evaluates Fiori compatibility with your system's current transactional load. Covers technical aspects like sizing, data volume management, and software prerequisites. Facilitate team collaboration through an interactive dashboard. Analyses the existing system landscape. Provides insights into potential issues and areas that require attention. Generates a detailed report on the system's compatibility with S/4HANA.

### 5.2. SAP S/4HANA Migration Cockpit

SAP S/4HANA Migration Cockpit is a tool provided by SAP to facilitate and streamline the process of migrating data from legacy systems to SAP S/4HANA. It is an integral part of the data migration strategy when transitioning to the S/4HANA suite.

### 5.3. SAP Advanced Data Migration (ADM)

SAP Advanced Data Migration (ADM) stands as a robust solution designed to address the intricate challenges associated with migrating data in large-scale enterprises. In the dynamic landscape of business operations, where data is a critical asset, ADM emerges as a powerful tool to ensure seamless, accurate, and efficient data migration processes.

### 5.4. SAP Transformation Navigator

The SAP Transformation Navigator serves as a guiding companion rather than a mere options provider. This tool facilitates your journey through digital transformation by generating a tailored product roadmap comprising recommended SAP products and solutions aligned with your business needs. Furthermore, it aids in aligning your company's aspirations by selecting value drivers, thereby assisting in constructing a compelling business case for your transformative journey. The tool offers insights into customer proof points and successful adoption cases, serving as a valuable resource for potential license implications.

Upon completion, it produces a set of three guides (business, technical, and transformation) encompassing detailed information about products, licenses, integration, services, and business capabilities.

### 5.5. SAP Fiori Apps Library

The SAP Fiori Apps Library is a centralized hub that houses a vast collection of Fiori apps designed to streamline and simplify user interactions with SAP applications. It serves as a dynamic resource for businesses leveraging the Fiori design principles to deliver intuitive, responsive, and efficient user interfaces.

### 5.6. SAP S/4HANA Migration Object Modeler

The SAP S/4HANA Migration Object Modeler is a pivotal tool designed to facilitate and streamline the intricate process of data migration during the transition to SAP's next-generation business suite, S/4HANA. In the evolving landscape of enterprise technology, where data precision is paramount, the Migration Object Modeler emerges as a powerful solution, empowering organizations to achieve seamless and accurate data migration.

### 5.7. Maintenance Planner

The Maintenance Planner (MP) stands as a crucial tool in orchestrating the planning phase of a system conversion, underscoring the importance of initiating it early in the migration process to ascertain the technical feasibility of transitioning from SAP ERP to SAP S/4HANA. This tool plays a pivotal role in assessing the compatibility of add-ons, allowing organizations to proactively determine how to handle each one. Notably, it conducts a thorough examination to identify unsupported add-ons that may pose challenges during the conversion process.

### 5.8. ABAP Test Cockpit

The ABAP Test Cockpit (ATC) stands as SAP's essential toolset for conducting static checks and unit tests on ABAP programs, leveraging the foundation of Code Inspector (SCI) checks. This tool is integral for the identification of ABAP custom code requiring adaptation to preempt potential functional issues. Evaluating custom code is a critical task, often underestimated in complexity. It is not a task to be initiated at the onset of a project; rather, adjusting ABAP to run seamlessly on HANA is a substantial undertaking that demands proactive attention well in advance.

### 5.9. Simplification Item Catalog

SAP furnishes a catalog of simplification items for each S/4HANA release, with the current S/4HANA 1909 release comprising 632 items. These items serve to delineate incompatible or disruptive changes inherent in SAP S/4HANA as compared to SAP ERP or preceding versions of SAP S/4HANA. Conduct the Simplification Items check expeditiously, as the adjustment of intricate business processes may necessitate more time than initially

anticipated. On average, the simplification check report typically highlights between 50 to 80 relevant simplification items for a given system. Given the potential significance of these items as potential showstoppers, leveraging the tool early in the process is imperative to identify and address them promptly, contributing to a smoother and more expeditious conversion.

### 5.10. SAP Roadmap Viewer

The SAP Roadmap Viewer grants entry to the comprehensive content of the SAP Activate Methodology, encompassing tasks, templates, and accelerators. Additionally, it incorporates valuable project experiences derived from SAP S/4HANA implementations, offering substantial support for your conversion project through structured documentation for each project phase. If you seek a consistent and proven approach, you will discover it within the SAP Roadmap Viewer.

## 6. Project Methodology

The "Transition to SAP S/4HANA" roadmap unfolds in distinct phases aligned with the SAP Activate methodology, detailed in the below section:

### 6.1. Discover Phase

Focuses on recognizing the value of SAP S/4HANA within the digital transformation strategy. It involves creating an implementation plan, identifying high-level areas in the existing solution landscape that benefit from SAP S/4HANA, and devising a value-based implementation strategy. A "cloud trial" may be employed to highlight potential implementation issues.

### 6.2. Prepare Phase

Officially initiates the project after the business case approval. This phase includes the preparation of an implementation plan, considering findings from the "Discover" phase and potentially incorporating insights from a prototype project. Additional preparation activities, such as the detailed planning of specific scenarios are undertaken. General project preparations, including staffing and governance, are carried out.

### 6.3. Explore Phase

Involves defining the to-be design of the SAP S/4HANA solution, documenting functional gaps, and prioritizing them. Fit-Gap-Workshops are conducted with pre-configured sandbox systems representing SAP's Best Practice solutions. For system conversion scenarios, existing custom code is analysed for SAP S/4HANA readiness. Technical design and documentation are crucial for the technical setup of sandbox and development environments. All technical and functional aspects are fully planned and documented by the end of this phase.

### 6.4. Realize Phase

Encompasses preparing the technical architecture and infrastructure for SAP S/4HANA. Supporting systems are set up or converted following best practices and the implementation plan. Custom code is adjusted, and application and analytics functions are implemented, configured, integrated, and tested. Integration validation addresses performance issues in key business processes. IT adjusts operational tools and procedures, and end-user training is conducted.

### 6.5. Deploy Phase

Finalizes readiness for SAP S/4HANA and business processes for production go-live. This involves final testing, rehearsing the cut-over, and ensuring the IT infrastructure is optimized. End-user training is delivered, and the productive instance of SAP S/4HANA is implemented or converted on the Go-Live weekend. The "hyper care" phase follows, optimizing IT operations before full operational responsibility is transferred to the production support team.

### 6.6. Run Phase

Focuses on stabilizing and optimizing operations. The SAP system is continuously updated, incorporating the latest innovations from SAP. This phase marks the beginning of the innovation cycle.

## 7. Cost and Licensing

The licensing and cost options for SAP S/4HANA migration can vary based on several factors, including the deployment model, edition chosen, and the specific needs of your organization. It's important to note that SAP's pricing and licensing models may be subject to change, and you should always refer to the latest information provided by SAP or consult with SAP representatives for the most accurate and up-to-date details.

Here are some general considerations regarding licensing and cost options for SAP S/4HANA migration:

### 7.1. Editions or Versions

SAP S/4HANA is available in couple of editions, such as SAP S/4HANA RISE or cloud and SAP S/4HANA On-Premise.

### 7.2. Deployment Models

7.2.1. Cloud: SAP offers a cloud-based deployment model where you pay for a subscription based on factors such as the number of users and specific functionalities required.

7.2.2. On-Premises: For on-premise deployments, the pricing may include software licenses, maintenance, and support fees. Licensing may be based on metrics like the number of users or the size of the organization.

### 7.3. User Licensing

In addition to offering customers the versatility to employ the deployment alternatives, SAP presents flexible licensing

options with three distinct models:

**7.3.1. Perpetual License Model:** SAP's perpetual license model grants the customer enduring rights to utilize the software perpetually, primarily applicable in on-premises deployment scenarios. In this context, the initial one-time software fee confers perpetual usage rights for a specified quantity of software. This fee forms the foundation for the annual SAP support fee, contingent upon the terms outlined in the respective SAP support agreement.

**7.3.2. Subscription License Model:** The subscription license model is applicable to all SAP software deployed in the cloud. Under this model, customers do not possess perpetual usage rights; instead, they remit an annual subscription fee as part of a term contract. This fee encompasses all Software as a Service (SaaS) components, inclusive of support. Subscription terms typically span three to five years, with renewal lengths defined in the contract, typically ranging from one to three years. In standard private or public cloud contracts, customers retain the flexibility to augment the contract with new software or additional quantities of existing software during the initial term or renewal periods.

**7.3.3. Consumption-Based Model:** The consumption-based model is presently applicable to a subset of SAP software deployed in SAP's public cloud, including solutions such as SAP Fieldglass, SAP Ariba, and SAP Cloud Platform. In this model, customers are billed retrospectively based on actual usage. The fee incorporates SAP Enterprise Support cloud edition and all SaaS components.

#### 7.4. Infrastructure Costs

For on-premises deployments, organizations may need to consider infrastructure costs, such as hardware, storage, and networking.

#### 7.5. Support and Maintenance

Annual maintenance and support fees are typically part of the overall cost. These fees may cover updates, patches, and access to SAP support services.

#### 7.6. Additional Functionalities

Additional functionalities or modules beyond the core SAP S/4HANA offering may have separate costs.

#### 7.7. Customization and Integration

Costs associated with customizing the system or integrating it with other applications.

#### 7.8. Contractual Agreements

Licensing agreements and costs are subject to negotiation, and contractual terms may vary based on the specific agreement with SAP.

It's crucial to engage with SAP representatives or authorized partners to get a personalized quote and discuss the specific requirements and circumstances of your organization. Additionally, SAP regularly updates its offerings, so it's advisable to check the latest information on the official SAP website or contact SAP directly for the most accurate details.

### 8. Conclusions

The road to SAP S/4HANA is not merely a technological upgrade but a strategic move to reshape the digital core of an organization. By understanding the imperative, laying a strong foundation, and considering the intricacies of designing a roadmap, enterprises can navigate the migration journey with confidence. The collaboration with SAP Value Assurance further ensures a smooth transition, allowing organizations to harness the full potential of SAP S/4HANA and pave the way for a digitally empowered future. As organizations embark on this transformative journey, they are not just migrating systems but navigating toward a future of innovation, agility, and unparalleled business capabilities.

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