



HOW WESTERN DIGITAL CONSOLIDATED MULTIPLE ERPS INTO A WINNING HYBRID CLOUD MODEL

Abstract

Legacy ERP systems usually do not support upgrades or enhancements and are governed by manual activities that are not usually tracked. The new generation of cloud solutions offer agile capabilities but can be time and cost-intensive. Hence, it is important to choose the right approach to ensure that cloud migration supports organizational goals, realizes returns quickly and offers a risk-free transition.

Western Digital embarked on a multi-ERP transformation journey with Infosys cloud solutions, part of Infosys Cobalt, and a combination of approaches that allowed them to consolidate processes, migrate functionality and achieve a seamless exchange between on-premises and cloud environments across the globe. This paper describes this transition and explains how the new hybrid model works through the example of customer drop shipment.

Introduction

Organizations looking to digitally transform have many ways to transition out of their legacy environment to modern solutions. Some undergo a complete overhaul, from legacy to next generation solutions. Others opt for an upgrade within the same legacy environment. Many also choose to migrate a portion of their operations while maintaining links with the legacy environment.

The right approach depends on certain factors, such as:

- Amount of change the organization can accommodate in a short period of time.
- Size of budget available for the project.
- Number of standardized processes the organization is willing to incorporate.
- Security features provided by the new technology.
- Percentage of processes covered by the new cloud solutions.
- Amount of risk the organization can withstand during the process.

Infosys has vast experience helping clients and partners transition from legacy to modern cloud solutions. Among these, the story of Western Digital stands out as an example of a particularly successful migration.

Overview of Western Digital

Western Digital Corporation is a U.S.-based manufacturer of computer hard disk drives (HDD), data storage devices, data technology products and cloud storage services — to name a few. Western Digital Storage is the arm that acquired HGST and SanDisk, which complicated the ERP environment for this consolidated business.

During the acquisition, Western Digital used the Oracle E-Business Suite as its ERP solution, whereas HGST and SanDisk were on legacy SAP systems. Maintaining three different ERP systems for each line of business was proving difficult and expensive. Western Digital chose to consolidate the ERP system to address challenges like:

- **Inefficiencies in the financial closing and consolidation processes** that required manual workarounds to access financial data in three different ERP systems.
- **Lack of a single source of truth for financial reporting**, resulting in loss of data and integrity during consolidation.

- **Poor access to key real time insights**, which limited timely and effective decision-making.
- **Delayed operational decision-making** due to scattered financial data that compromised planning.
- **Limited operational resilience** as a result of multiple ERP systems that could respond to rapid change, revise custom code, enable new functionality or even upgrade system versions.

Western Digital wanted to consolidate all environments, integrate various business functions, and adopt new technologies. With this objective in mind, executives conducted an initial study in 2015 and 2016. Then company leaders chose the Infosys solution for Oracle Cloud ERP, part of Infosys Cobalt, as their future ERP platform. The decision considered the return on investment (ROI), potential risk and future business growth. System consolidation and financial planning were the foundation for the ERP implementation.



Figure 1. Multi-ERP transformation to Cloud



Choosing the right ERP cloud migration approach

As a conglomerate of three different brands, Western Digital was dealing with three ERP systems: one Oracle Applications R12 and two SAP systems. Each had multiple integrations and custom solutions, which made it difficult to manage inventory stock and valuations and consolidate the organization's finances. Migrating to a consolidated cloud solution posed its own challenges and risks for an organization as large as Western Digital.

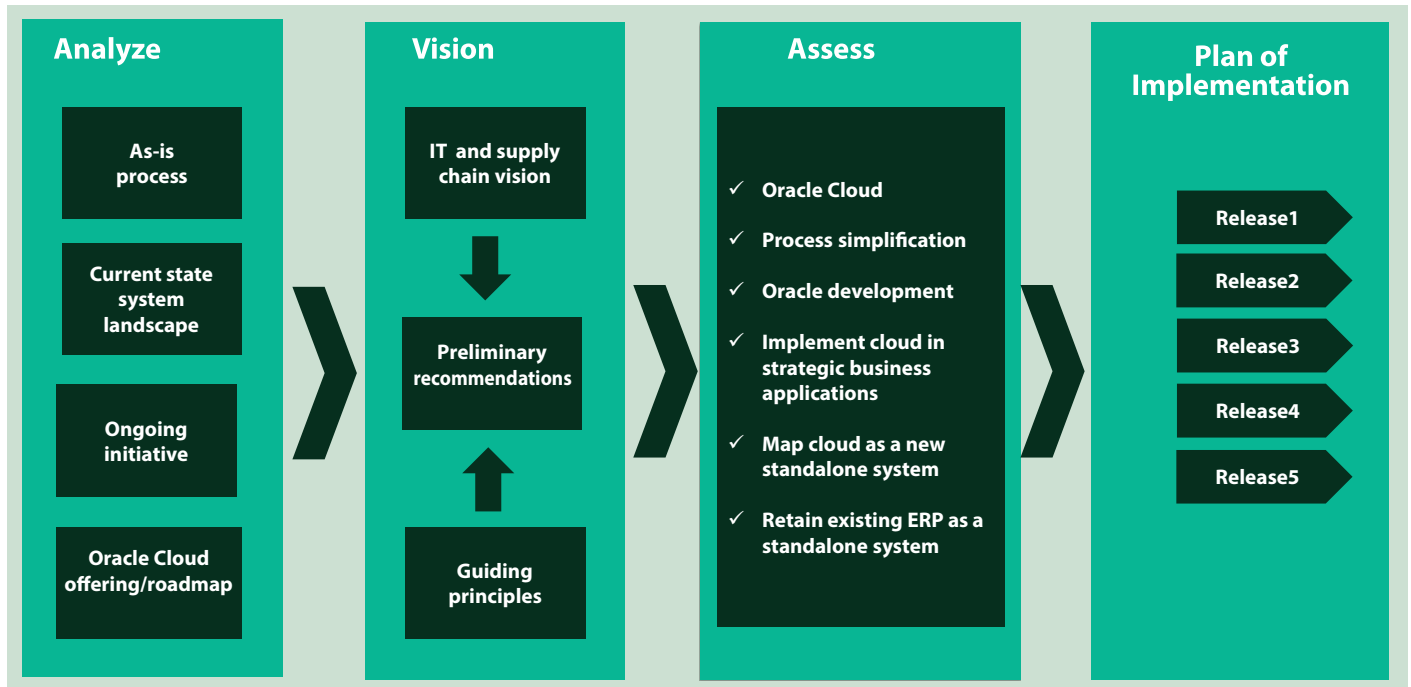


Figure 2. The four steps of Western Digital's modernization process

Step 1 — As-is analysis: Company leaders reviewed the existing processes related to manufacturing, transfer of materials, procurement, financial reporting, and consolidation. The analysis covered manufacturing plants, logistic centers, and sales offices across the world and included the multiple ERPs and various subsidiary systems. Western Digital also considered the offerings and Oracle Cloud implementation, in keeping with future business goals.

Step 2 — Align the vision: Based on the post-analysis recommendations, Western Digital reviewed the guiding principles to move into cloud and internally aligned their IT and supply chain vision to define the preliminary recommendations.

Step 3 — Process assessment: Executives compared their important business processes with Oracle Cloud

capabilities. Those processes that needed to be differentiated for the cloud were selected as the starting point. After this, other processes and their respective cloud capabilities were also considered before selecting the final list of processes.



Step 4 — Implementation plan: With these elements in place, Western Digital created an implementation plan based on the following factors and functionalities:

- **Implement standard cloud functionality** — Deploy out-of-the-box features, such as source to pay, order to cash, and intercompany, that are readily available and mature.
- **Explore cloud readiness** — Evaluate the performance of standard functionalities before adopting advanced features, such as serial number management and supply chain planning. Complex functionalities that are not cost effective can be implemented outside of cloud and then integrated seamlessly.
- **Plan for change management** — Adopt cloud depending on the functions to be added, such as implementing finance and procurement first before proceeding to manufacturing.
- **Retain the current system and explore options** — Follow the nonmonolithic implementation approach to retain some of the existing customer-facing legacy applications in the initial phases. This enabled Western Digital to manage logistics in Oracle Transportation Management (OTM), while customer billing and revenue management resided in the legacy ERP.

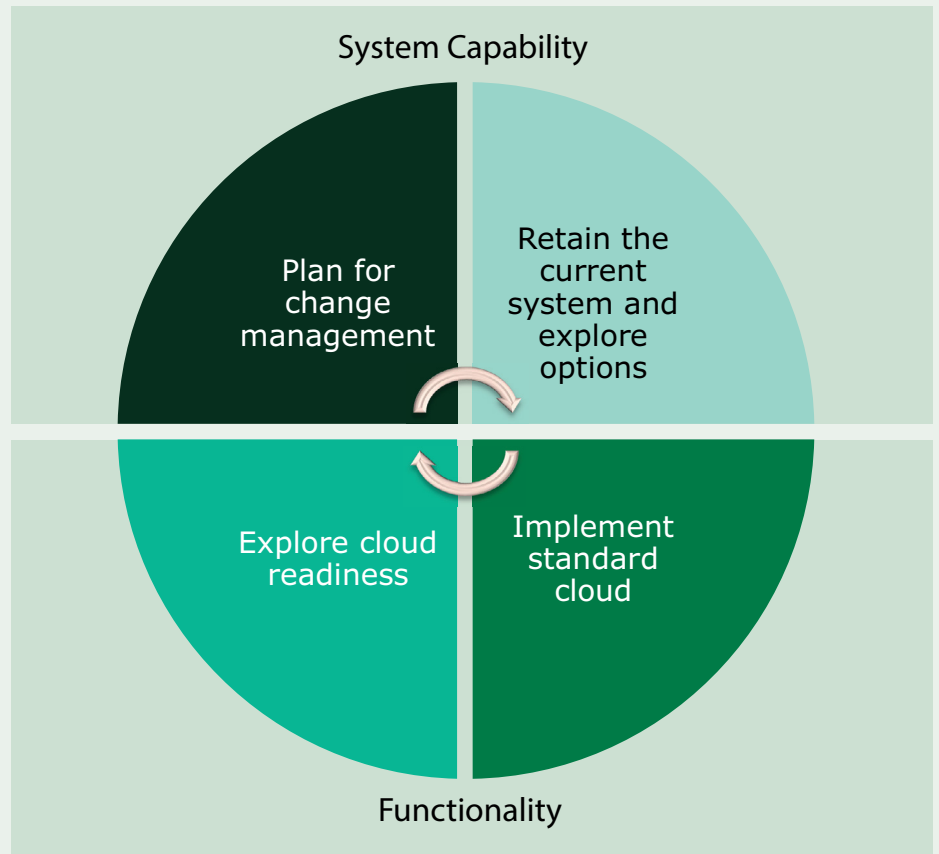


Figure 2. Implementation plan for Oracle Cloud

Considering all these factors, Western Digital designed the cloud transformation journey to start processes that are low risk and have high cloud compatibility. Then

the company moved to a large-scale, site-specific approach. At each phase, the processes and roadmap were constantly reviewed to track progress.

Phase 1: A process-centric approach to cloud migration

Western Digital began its cloud journey with smaller processes (low risk and high cloud compatibility). Executives adopted a process-centric approach instead of moving the entire operations of a site into the cloud, they selected a specific process and deployed this on cloud. The same method was repeated across a few sites at first and then across all sites globally. This enabled Western Digital to begin its cloud transition and constantly assess the organization’s ability to simultaneously invest in change and manage risk.

Thus, the company moved all the foundational elements to the cloud in order to standardize the financial closing, consolidation, planning, and reporting

processes. Then, leaders moved other finance and indirect procurement processes to the cloud. Those included general ledger, asset lifecycle management, indirect procurement, accounts payable, cash management, and taxes. This gave them a single system of record for operational finance; financial planning and reporting; and indirect procurement processes.

Through this new system, Western Digital and HGST can procure indirect materials from suppliers via the cloud while their component and HDD manufacturing processes continue in the legacy systems. The accounts payable module was also implemented. This phase was recognized as a major milestone in Western Digital’s cloud journey since it moved the source-to-receipt, invoice-to-pay, and account-to-report processes to the cloud.

After successfully migrating the indirect procurement process, Western Digital enabled end customer order creation in the cloud. Here, the end-customer order is generated in Oracle Cloud and passes through the Oracle Global Trade Management (GTM) system to validate trade compliance and credit checks. In case validation fails, the order is placed on hold and needs human intervention. On successful validation, the orders are sent to the legacy ERP for fulfillment. To achieve this, orders had to be integrated with GTM and the legacy ERP for further processing.

Having moved these three processes to Oracle Cloud, Western Digital was able to evaluate procurement, ordering, receiving, and accounts payables scenarios. This slow start also streamlined change management, allowing them to take bigger leaps in future.

Phase 2: Transitioning from process-centric to site-specific approach

After successfully migrating these processes to the cloud, Western Digital executives extended the migration to a wider, site-specific approach. In this phase, they aimed to consolidate all manufacturing plants on the cloud, with the sales offices and logistic centers remaining in legacy SAP. In other words, the company would transition from a three legacy ERP system to a cloud-based solution while retaining a legacy component. The overarching vision was to eventually consolidate all operations in the cloud.

Western Digital has HDD component factories across the world, including in China, Thailand, Malaysia, Philippines, and the U.S. The company extended its cloud journey to these manufacturing plants

with a complete ERP implementation involving a variety of processes: direct procurement, manufacturing, intercompany transfers, inventory, costing, and financial transactions. Some of the key callouts from this journey were the single standard cost model worldwide, intercompany transfers between factories in both cloud and hybrid models, and tight integration with various manufacturing execution systems (MES) for manufacturing sync-up. This was the first step in the implementation of a typical hybrid cloud model whereby materials are transferred between component factories in cloud and HDD factories on legacy SAP or Oracle EBS.

In the hybrid model, HDD component factories were migrated to Oracle Cloud, but the finished goods factories remained in legacy SAP and EBS. Thus, the transfer of materials from the component factories to the HDD factories becomes a

transaction between two systems — an Oracle Cloud instance and a legacy ERP instance. Purchase orders created in HDD legacy ERPs to procure the components integrates with Oracle Cloud as sales orders on the component factories with the price maintained between HDD and component factories. As the sales order is shipped from the component factories, the purchase order is received in the legacy ERP. Intercompany invoicing is also enabled between the two systems. This was the first step in transitioning to the site-specific approach.

With this approach, Western Digital was able to move its component and HDD factories and their primary logistics center to the cloud, along with contract manufacturing and research and development sites. The remaining logistics centers and sales offices were consolidated into a single legacy SAP ERP application.



Key steps in enabling a hybrid cloud model for drop ship process

Western Digital deployed a typical hybrid model combining cloud and legacy systems. Customer orders are placed in Oracle Cloud and connect to the legacy ERP, which triggers a demand at the primary logistics center in Thailand. The product is then shipped directly from the Thailand logistics center to the customer. Several external applications are also integrated with Oracle Cloud to complete the order lifecycle process as described below:

Master data management

- Part master — The SKUs are defined in Oracle PDH and interfaced with legacy SAP, GTM/OTM, and Oracle Warehouse

Management Cloud (WMS). The SKUs will be screened and categorized in GTM for trade compliance

- Customer master — Internal customer and external customer ship-tos will be defined in Oracle Customer Data Management (CDM) and interfaced with GTM/OTM and WMS. Customer information will be screened in GTM for trade compliance

Booking customer sales order on Oracle Cloud

The sales representative books the sales order in Oracle Cloud with customer details, request date, material, and quantities. The order first goes through a credit check procedure and then a GTM scanning and validation process. After passing both checks, the order is sent to the legacy SAP ERP.

Interfacing customer sales order to legacy SAP

In the legacy SAP ERP, the shipping planner schedules the sales order lines manually based on material availability and chooses Oracle Cloud shipping as the entity for drop shipment. The internal purchase order is also created in SAP ERP for the scheduled sales order line with the supplier marked as Oracle Cloud entity. Automation allows the creation of the sales order in Oracle Cloud with SAP ERP entity as the internal customer. All the details needed to execute the dropship shipment are passed from SAP to Oracle Cloud. These include end customer details along with material, quantity and customer requested date.

Drop-ship in a Multi-ERP Scenario with OTM/GTM & WMS

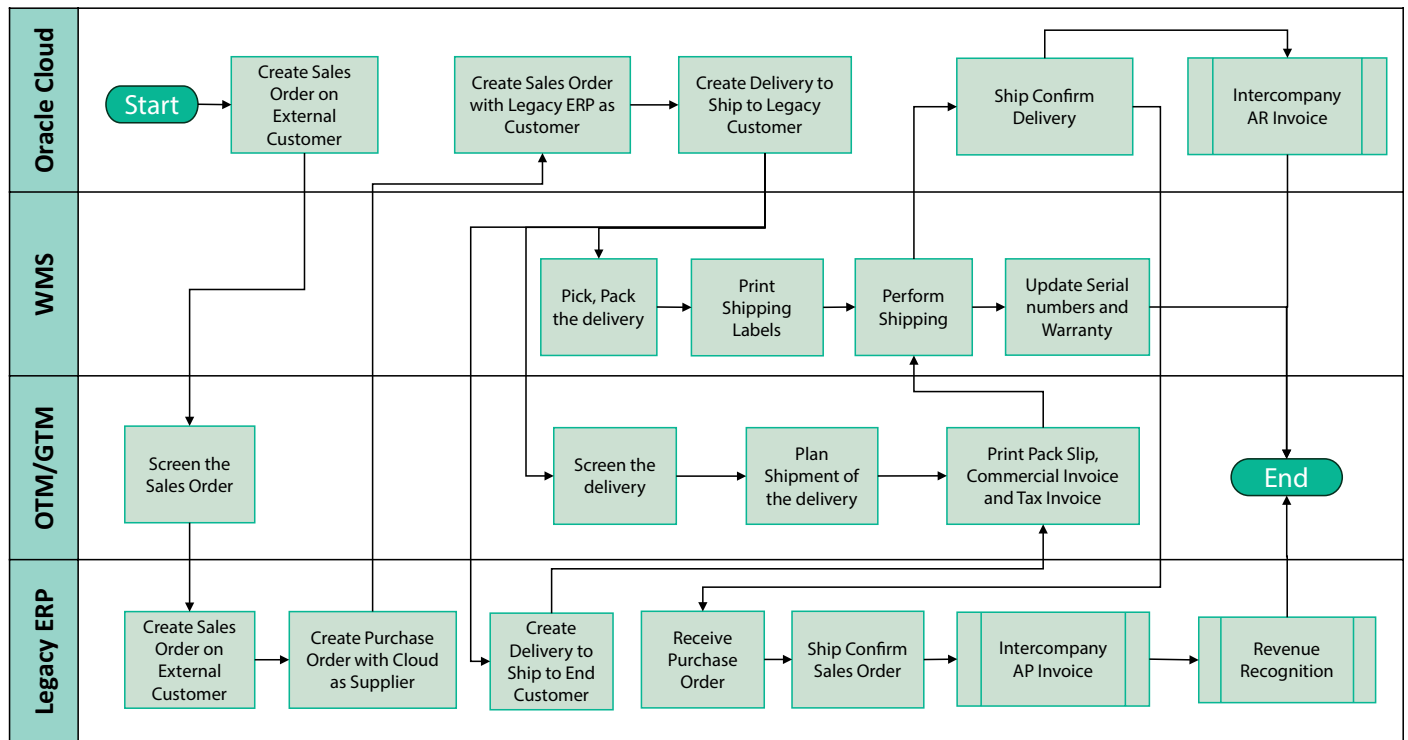


Figure 3. Drop shipping products in a multi-ERP environment

Prioritize the sales order for shipment in Oracle Cloud

The sales order is created in Oracle Cloud with instructions to ship the order directly to the end customer and to bill the legacy ERP. The sales order will carry the end customer details that are captured in the legacy system. Logistics users prioritize the order by performing allocations and reservations to block supply. Once the order is due to be shipped, the logistics user initiates delivery creation. Delivery information is sent to GTM-OTM for shipment screening and planning. This information carries all the master data parts number, category, country of origin, shipping plant, quantity, customer bill-to, customer ship-to, internal customer bill-to, and license. The delivery information is also sent to the WMS system for serial number allocation, palletization-packing, and shipping.

Delivery processing in GTM/OTM

Using this delivery information, GTM screens the shipped material and all parties to validate that it is legitimate and meets trade compliance regulations. Once the product passes these checks, OTM performs shipment planning through carrier management. OTM groups multiple deliveries into shipment plans to optimize the process and reduce costs. OTM also generates the packing list, commercial invoice, and tax invoice documents that are required for customs declaration and clearance at the border.

Delivery processing in WMS

The WMS works as a system of record for tracking serial numbers, customer warranties, and warehouse management. It performs all operations needed to ship goods to customers. Once the delivery is received in the WMS, employees use this information for physical shipping. The WMS also receives information from OTM regarding the shipment carrier's pickup details. Based on the pickup date, warehouse users schedule the packing of products into pallets or boxes according

to customer requirements and the type of product being shipped. Customer specific labels are printed from the WMS in the format requested by the customer. Once the carrier arrives at the facility, the warehouse operator transfers the material along with the shipping documents printed from OTM. At this time, when the material is about to leave the warehouse, the shipping transaction is executed in the WMS to close the delivery and reduce the inventory. Serial numbers and warranty information are recorded in the WMS against the customer number to help track the warranty and repair or replacement processes. The confirmation of delivery in the WMS tells OTM to close the delivery and communicate to Oracle cloud to complete the shipment process. With this, shipping of goods to end customer is successfully completed.

Closing the shipment and initiating intercompany transactions in cloud

Ship confirmation in the WMS tells Oracle Cloud to close the delivery. On receiving this alert, the delivery will be processed systemically. Next, transactions are triggered to generate intercompany accounts receivable (AR) invoices and recognize intercompany revenue. When the delivery is closed in Oracle Cloud, it triggers a message to the legacy ERP confirming the drop shipping of the goods.

Generating customer AR invoice and revenue recognition in legacy

After the shipping confirmation from Oracle Cloud, the legacy system performs systematic transactions to generate the customer AR invoice. First, the purchase order associated with the Oracle Cloud sales order is received, triggering an intercompany AP invoice in SAP. The stock in hand is increased and is allocated to the customer sales order. Then, the sales order delivery is virtually shipped out of the legacy system. This will create the customer AR invoice and recognize the revenue in SAP

Challenges in the hybrid cloud model

Security — Data resides on multiple ERP applications that are accessed by thousands of employees. Hence, identifying the right access control points is an important aspect in hybrid models.

Continue legacy ERP systems

— Organizations must continue using legacy ERP systems until they complete their migration to cloud. There are various alternative approaches on how to continue using legacy ERP systems with public cloud or private cloud environments.

Integration layers — When ERP systems comprise legacy and cloud, the integration layer becomes the heart of business processes. Hence, the integration strategy must be coherent, use the latest integration architecture to mitigate issues after go-live, and be scalable for future requirements.

People — A multi-ERP approach requires business process experts to align across multiple work areas, rather than having a functional consultant dedicated towards a single technology.

Business continuity — In case of planned application downtime, organizations must provision standby systems through decentralized autonomy, thereby allowing processes to continue seamlessly. Organizations must consider buffer and decentralized autonomy in design to allow operations to continue seamlessly in case of application downtime.

Conclusion

Many organizations find it difficult to migrate from legacy applications to advanced cloud solutions. This is even more challenging when there are multiple ERP systems from different technologies. Western Digital embarked on a cloud journey in a planned and systematic manner beginning with an evaluation process, an assessment and roadmap finalization. They developed a multi-year migration program with several approaches, such as a function-specific approach following by a site-specific one, over a period of time. After achieving success on hosted financial reporting, indirect procurement, and order entry processes, Western Digital deployed cloud across processes in its component factories and HDD factories.

Ultimately, Western Digital consolidated its infrastructure in a hybrid model with an Oracle cloud-based solution and a legacy SAP ERP. This approach provides them with flexibility to enrich, upgrade and enhance applications on-demand. Western Digital's cloud transformation is a unique example of how different migration approaches help deliver value based on organizational goals. It also highlights the need for the right implementation partner to guide organizations on their cloud journeys.

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Infosys Cobalt is a set of services, solutions and platforms for enterprises to accelerate their cloud journey. It offers over 14,000 cloud assets, over 200 industry cloud solution blueprints and a thriving community of cloud business and technology practitioners to drive increased business value. With Infosys Cobalt, regulatory and security compliance, along with technical and financial governance comes baked into every solution delivered.

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