



Strategies for Accelerating Migration to AWS

“Migrating IT portfolios to the cloud is only the beginning of what is possible.”

— *Stephen Orban, Former Head of Enterprise Strategy at AWS*

Introduction

Over the last 13 years, AWS and our partner ecosystem have helped thousands of organizations migrate applications to the cloud to lower their costs and improve their operational resiliency, gain business agility, and build a foundation for rapid innovation. Based on this experience, we’ve built the most complete and proven approach for migrating one to thousands of applications to the cloud so that you can have the confidence of realizing value from your cloud journey faster.

“AWS has amassed what can arguably be described as the most extensive library of cases covering thousands of successful migrations.”

— *IDC, Cloud Success: Migrate with a Plan to Mature, Doc # US44883619, March 2019*

Business Drivers

Often the decision to migrate applications to the cloud starts with a desire for cost savings; however, our customers find that the strategic value of migrating to AWS goes well beyond the infrastructure cost savings of retiring legacy infrastructure, including increased workforce productivity and business agility.

Regardless of the size of your migration, your organization will benefit from the experience, maturity, reliability, security, and performance of the AWS Cloud platform. And with the best global infrastructure and the broadest and deepest choices for compute, storage, and networking, you can maximize performance for your applications.

Your teams immediately gain the flexibility to test and iterate rapidly when you migrate your applications to the cloud. AWS has significantly more services than any other cloud provider, which means your teams can modernize applications with the latest technologies and the cloud with the most mature functionality.

Foundation for Successful Migration

Based on our years of experience helping organizations of all sizes migrate their application portfolios to AWS, we developed a set of best practices to help you build a foundation for your migration plan. AWS Professional Services and AWS Migration Competency Partners are certified in these best practices and have deep experience to help you migrate and modernize your applications in AWS. Regardless of where you are on your cloud journey, AWS Training and Certification has learning paths to help your staff develop their cloud skills.

“In the current dynamic business environment, organizations have to adapt at a very rapid pace. Business agility enabled by lower-cost cloud computing technology offers the unique ability to address this disruptive shift.”

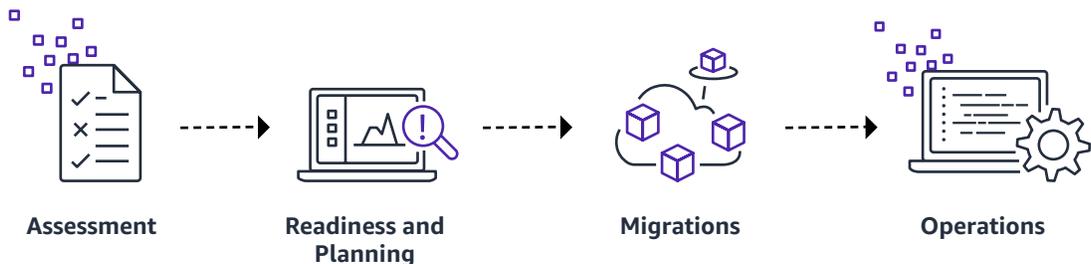


— IDC White Paper, sponsored by Amazon, *Fostering Business and Organizational Transformation to Generate Business Value with Amazon Web Services*, February 2018

The four-phase migration process and the seven common strategies for migration (“The 7 R’s”) described below serve as guiding principles to approach your migration but should not be considered hard-and-fast rules. Your organization has its own unique goals, constraints, core strengths, budgets, culture, and market pressures that will guide your decision-making process along the way. The most important decision is to get started with an application that is meaningful to your business so that you can demonstrate a compelling early success.

The Four-Phase Migration Process

The four-phase migration process—Assessment, Readiness and Planning, Migrations, and Operations—helps your organization approach a migration of tens, hundreds, or thousands of applications. It is important to note that while each phase is a common component of a successful migration, they are not discrete phases. In fact, when migrating many applications, this will be an iterative process. As you iterate and migrate more applications, you will be able to drive repeatability and predictability in processes and procedures, and find that the application process accelerates.



Seven Common Migration Strategies: “The 7 R’s”

One critical aspect of developing your migration strategy is to collect application portfolio data and rationalize it into what we refer to as “The 7 R’s”: Relocate, Rehost, Replatform, Refactor, Repurchase, Retire, and Retain. This is a method for categorizing what is in your environment, their interdependencies, each application’s technical complexity and business criticality, and how you’ll go about migrating each application or set of applications.

The Four-Phase Migration Process

“The most important decision is to get started. Begin with an application that has business value so successful migration matters. You want to build momentum and experience with each subsequent application migration. Many customers have found it helpful to set a target like “30 applications in 30 days” to create the momentum and focus.”

— Miriam McLemore, AWS Enterprise Strategist; Former CIO at The Coca-Cola Company



Phase 1: Assessment

At the start of your journey, a migration assessment will help you identify your organization’s current readiness for operating in the cloud so that you can identify gaps in your people, process, and technology. Most importantly, you want to identify the goals and business outcomes for the migration and ensure you have a strong champion to lead the change.

You will need an initial understanding of your existing environment to develop a directional business case for migration. For large-scale migrations, the AWS Cloud Economics team can help you develop this business case. AWS TSO Logic provides a fast and frictionless discovery of your on-premises resources and provides a total cost of ownership (TCO) projection for AWS based on your actual utilization of resources and our years of helping customers optimize their compute, storage, database, networking, and software licenses on AWS.



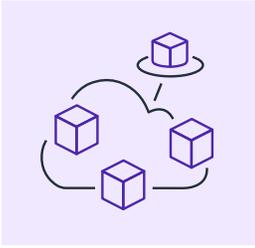
Phase 2: Readiness & Planning

During this phase, you address gaps in your organization's readiness that were uncovered in the assessment phase. The focus is on building your baseline environment (the "landing zone"), driving operational readiness, developing cloud skills, creating a strong migration plan (including initial migrations), and refining your business case.

A full analysis of your environment, complete with a map of interdependencies, as well as migration strategies and priorities, is key to building a successful migration plan. Using "The 7 R's" of common migration strategies, you will outline a migration plan for each application. This plan will be iterated on and matured as you progress through the migration, build confidence, learn new capabilities, and better understand your existing estate.

Not every decision in a migration can be automated, but our tools help you make easier and better decisions. AWS Application Discovery Service, as well as discovery and planning tools from AWS Migration Competency Partners, helps you make faster and more informed decisions with detailed information about application dependencies and utilization. AWS Migration Hub automates the status planning and tracking of application migrations, leveraging data from multiple AWS and partner solutions throughout the planning and execution of migrations.

To maximize the benefits of moving to the cloud, you need to give your teams the freedom and agility to innovate, but also to enforce controls ("guardrails") to protect your organization from risk. Using AWS Management and Governance services, you can improve business agility while maintaining governance and control over cost, compliance, and security. Based on the knowledge and experience we gained helping every imaginable type of organization migrate to AWS, we have built best practices to guide you in building your baseline environment, which we call the AWS Landing Zone. We also codify these best practices with AWS Control Tower, a tool to automate the setup of a landing zone that is a secure, well-architected, multi-account AWS environment and makes it easier to govern AWS workloads with rules for security, operations, and compliance. As part of building your AWS foundation, as well as to increase the speed of the migration, most enterprises use AWS Direct Connect, a private connection between an on-premises data center and an AWS Region.



Phase 3: Migrations

In this phase, the focus shifts from the portfolio level to the individual application level. Each application is designed, migrated, and validated according to one of the seven common migration strategies.

You want to build momentum and experience with each subsequent application migration. Many customers have found it helpful to set a target like “30 applications in 30 days” to create the momentum and focus.

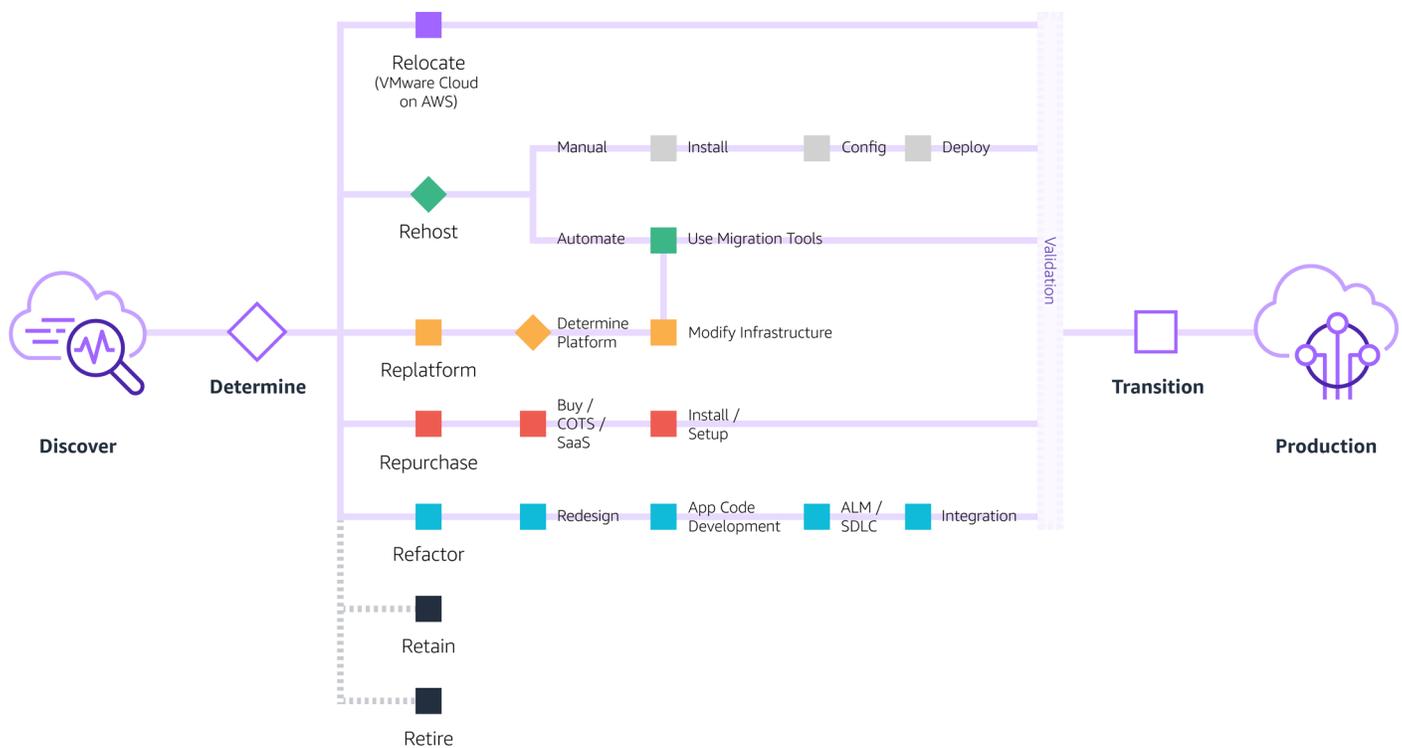


Phase 4: Operations

As applications are migrated, you will optimize your new foundation, turn off old systems, and constantly iterate toward a modern operating model. Think of your operating model as an evergreen set of people, processes, and technologies that continually improves as you migrate more applications.

Ideally, you will be building off the foundational expertise you already developed. If not, use your first few application migrations to develop that foundation and your operating model will continually improve and become more sophisticated as your migration accelerates. AWS Managed Services can also help you accelerate your migration by providing ongoing management and operations of your AWS infrastructure, leaving your team free to focus on your applications and build their skills in the cloud. AWS Managed Services has no long-term commitments and automates common activities such as change requests, monitoring, patch management, security, and backup services and provides full lifecycle services to provision, run, and support your infrastructure.

Seven Common Strategies for Migration: “The 7 R’s”



1. Relocate

– Move vSphere-based applications to AWS without application changes

VMware Cloud on AWS allows you to quickly relocate hundreds of applications virtualized on vSphere to the AWS Cloud in just days and to maintain consistent operations with your VMware Cloud Foundation-based environments.

Once in the AWS Cloud, your applications are easier to optimize or rearchitect to take advantage of the breadth and depth of AWS services.

2. Rehost

– Also known as “lift-and-shift”

In a large-scale migration scenario where you need to migrate and scale quickly to meet a business case, such as a data center lease termination, we find that the majority of applications are rehosted.

Most rehosting can be automated with tools such as CloudEndure Migration, (from CloudEndure, an AWS company). CloudEndure Migration quickly rehosts a large number of machines from multiple source platforms (physical, virtual, or another cloud) to AWS without worrying about compatibility, performance disruption, long cutover windows, or long-distance data replications. For times when you can't install an agent on the server, AWS Server Migration Service offers an agentless service, which makes it easier and faster for you to migrate thousands of on-premises workloads to AWS from a snapshot of the existing servers.

We find that applications are easier to optimize and rearchitect once they are already running in the cloud, as your organization will have developed better skills and can iteratively adopt new technologies (e.g., containers, serverless, etc.) without having to deploy and manage the underlying services.

3. Replatform

– Sometimes referred to as “lift-tinker-and-shift”

This entails making a few cloud optimizations in order to achieve tangible benefits, without changing the core architecture of the application. For example, if you're managing a messaging broker today, you can easily replace this with the fully managed Amazon MQ service, without re-writing your applications, or paying for third-party software licenses. Or, if you're migrating a Windows-based application

that requires file storage, you can use the fully-managed Amazon FSx for Windows File Server. To reduce the amount of time you spend managing database instances, you can move to a database-as-a-service offering such as Amazon Relational Database Service. AWS Database Migration Service makes this replatforming easier than ever. When moving from one database source or version to a new platform or software version, AWS Database Migration Service keeps the source database fully operational during the migration, enabling near-zero downtime during the cutover.

4. Repurchase

– Replace your current environment, casually referred to as “drop and shop”

This is a decision to move to a newer version of software or purchase an entirely new solution. You may also be looking for a new software licensing model that allows you more flexibility to match your business needs. AWS Marketplace is a curated digital catalog where you can find, buy, deploy, and manage third-party software and services that you need to build solutions and run your business.

5. Refactor

– Change the way the application is architected and developed, usually done by employing cloud-native features

Typically, refactoring (or rearchitecting) is driven by a strong business need to add features, scale, or improve performance that would otherwise be difficult to achieve in the application’s existing environment.

If your organization is looking to boost agility or improve business continuity by moving to a service-oriented architecture (SOA), this strategy may be worth pursuing—even though it is often the most expensive solution.

6. Retain

– Do nothing, for now

You may have portions of your IT portfolio that you are not ready to migrate, or believe are best kept on premises. Keep in mind that as more of your portfolio moves to the cloud, allocation of data center expenses across fewer applications may eventually drive a need to revisit the retained applications.

For applications that remain on-premises, AWS Outposts bring the same hardware and software in the AWS cloud, the same services and APIs, the same management tools, and the same support and operating model to virtually any data center, co-location space, or on-premises facility. With Outposts, you have a truly consistent hybrid cloud, so that you can develop once and deploy across Outposts on-premises or in the AWS cloud without having to recertify your applications.

7. Retire

– Decommission or archive unneeded portions of your IT portfolio

By rationalizing your IT portfolio and identifying assets that are no longer useful and can be turned off, you can boost your business case and direct your team's attention toward maintaining the resources that are more widely used.

Migration Strategies: Employing “The 7 R’s”

Organizations considering a migration often debate the approach to get there. While there is no one-size-fits-all approach, your focus should be on grouping each of the applications into buckets defined by one of the migration strategies.

Some of these choices are clear and easy to determine. Some organizations will employ a repurchase strategy and migrate their back-office technology to an “as-a-service” model. Others will look for ways to retire systems and applications that are no longer in use. Still, others will decide that retaining certain portions of their portfolio as is on premises, is the best solution for their current situation, and will simplify management of these applications by rehosting on AWS Outposts and have a truly consistent hybrid cloud.

Consider relocating, rehosting, and replatforming as ways to quickly gain the benefits of cloud and free up resources to work on rearchitecting applications in the cloud. Because refactoring/rearchitecting includes updates to the code base, it tends to be a longer approach. This approach should be targeted to specific applications that need a refresh or already have significant feature changes planned but not as a prerequisite to getting an application migrated. The most common rearchitecting approach is to first rehost or replatform the application to the cloud, and then do iterative updates to embrace AWS platform capabilities gradually.

CloudEndure Migration lets you quickly do this rehost without worrying about compatibility, performance disruption, or long cutover windows. Organizations with a compelling reason to migrate quickly—for example, a data center lease is expiring, wanting to avoid a costly refresh cycle, or looking to achieve a quick budget win—should leverage the rehosting migration strategy. In a large legacy scenario where an organization is looking to scale the migration quickly, AWS has found that many applications are best rehosted or relocated.

The replatform strategy is similar to rehosting because the core architecture of the applications is not changed when they are replatformed. The biggest advantage is that when the replatform strategy is used, a few cloud optimizations may be made to deliver a specific, tangible benefit such as migrating your application to a fully managed platform like [AWS Elastic Beanstalk](#). Elastic Beanstalk automatically scales your application up and down based on your application's specific need, so that your application can handle peaks in workload or traffic while minimizing your costs.

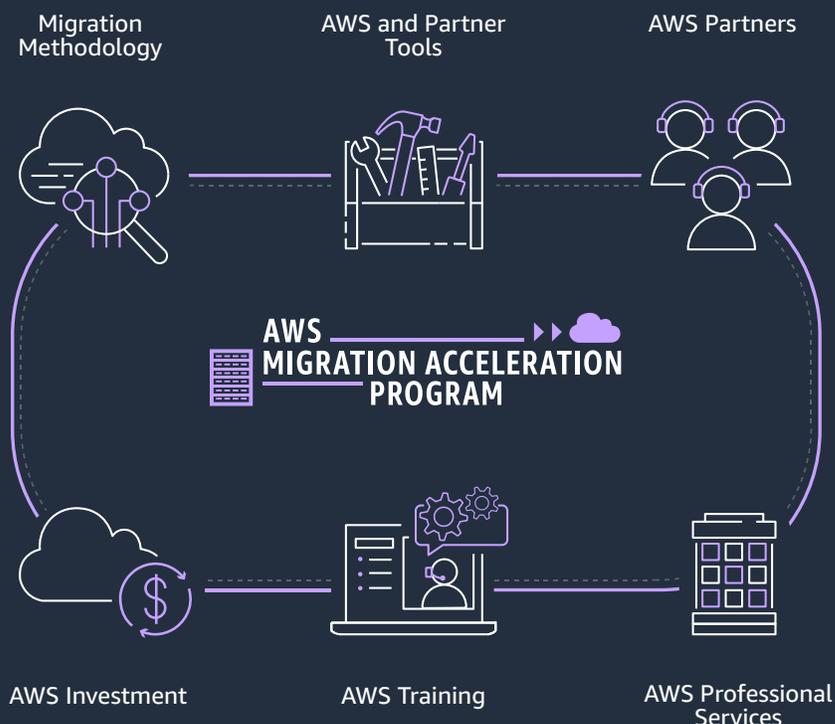
The refactor strategy takes more time to execute but can ultimately prove to be an effective way for an organization to reestablish its culture. It also typically leads to a healthy Return on Investment (ROI) and can help to reset the stage for years of agile development and continuous reinvention to boost overall business performance. The refactor strategy should be considered in cases where a cloud-native architecture is necessary to achieve needed business capabilities.

Ready for a Transformational Migration?

Our customers who achieve the most business results from migrating to AWS are those who urgently and purposefully take on a transformational journey to maximize the benefits of the cloud. They develop their organizational, operational, and technical capabilities, while migrating significant parts of their application portfolios at the start of their journey, so that they can free up IT resources to focus on what really adds value to their business.

The **AWS Migration Acceleration Program (MAP)** provides you the experience and best practices from thousands of migrations that have gone before you. The program is based on our proven methodology for planning and executing migrations from one to thousands of applications, as well the support, best practices, and tools to address the people, process, and technology considerations to ensure your migration leads to strong business outcomes.

[Contact AWS Sales](#) to get started with a free Migration Assessment.



Additional Resources

There's many great resources to help you in your cloud journey. We've put together here a collection of perspectives from our AWS Enterprise Strategy team.



1. EXECUTIVE SUPPORT

[Driving Change from the Top](#)



2. RE-SKILLING STAFF

[Getting Started with Training for the Cloud](#)



3. CLOUD TRANSFORMATION PRINCIPLES

[What are Your Cloud Transformation Principles?](#)



4. SECURITY

[Security at AWS](#)



5. CLOUD CENTER OF EXCELLENCE (CCOE)

[Using a CCOE to Transform the Entire Enterprise](#)



6. REHOST OR REFACTOR?

[The Great Cloud Refactoring Debate](#)



7. AVOIDING DIGITAL TRANSFORMATION PITFALLS

[Effective Patterns for Enterprise IT](#)



8. AWS ENTERPRISE STRATEGY BLOG

[Gain leadership perspectives from AWS and other large enterprises as you get started with your own transformation journey.](#)

ABOUT AWS

For 13 years, Amazon Web Services has been the world's most comprehensive and broadly adopted cloud platform. AWS offers over 165 fully featured services for compute, storage, databases, networking, analytics, robotics, machine learning and artificial intelligence (AI), Internet of Things (IoT), mobile, security, hybrid, virtual and augmented reality (VR and AR), media, and application development, deployment, and management from 61 Availability Zones (AZs) within 20 geographic regions, spanning the U.S., Australia, Brazil, Canada, China, France, Germany, India, Ireland, Japan, Korea, Singapore, Sweden, and the UK. Millions of customers including the fastest-growing startups, largest enterprises, and leading government agencies—trust AWS to power their infrastructure, become more agile, and lower costs. To learn more about AWS, visit aws.amazon.com.