

A complex network of glowing blue and white nodes connected by thin lines, set against a dark blue background. The network is dense and multi-layered, with some nodes appearing brighter than others. The overall aesthetic is futuristic and digital.

Red River



**AWS MIGRATION AND MANAGEMENT:  
THE RED RIVER WAY**



Migrating to the cloud can be a massive boost to an organization, but it can also be challenging: One in three cloud migrations fail, and one-quarter of companies don't meet their migration deadlines. These numbers illustrate the importance of having proven best practices that facilitate a successful cloud migration.

The cloud is always worth the effort you put into it. More than 60% of corporate data now resides in the cloud. These companies reduce their total cost of ownership by up to 40% by migrating their infrastructure. The cloud can significantly benefit companies seeking greater agility and elasticity, cost savings, and more rapid deployments. But there is a trick to migrating successfully. Having Red River on your side ensures success. We offer proven cloud migration best practices and a track record of successfully transitioning clients to Amazon Web Services (AWS).

What's our secret? In this ebook, we'll discuss how we migrate clients to AWS and can provide managed services for their cloud environment.



## OBSTACLES TO CLOUD MIGRATION

Cloud migration presents numerous benefits but also comes with a fair share of obstacles, including:

- **Adopting the wrong approach to migration:** Cloud migration may sound intimidating, but it can be much easier, quicker and more cost-effective than many expect. There are several generally accepted ways to move to the cloud, and companies must consider the right approach based on their infrastructure, applications and other business requirements.

For instance, Amazon identifies “seven Rs” of cloud migration – strategies for the type of cloud migration an organization can use depending on their needs (which we will cover more in depth later in this ebook). A “Rehost” migration, also called a “lift and shift,” keeps your applications more or less the same and moves them to the cloud; a “Refactor,” on the other hand, involves rebuilding many of these applications from the ground up.

It’s important to use the right approach for the right use case. For instance, if your business chooses a Refactoring approach when a Rehost migration alone might have been sufficient, it won’t be as efficient an expenditure of time and money. Red River can help your business choose the right approach and navigate the multiple variants.

A thoughtful, well-informed approach that identifies the strategy best suited to your business needs ensures successful cloud migration, maximizing cloud computing benefits while minimizing disruption.

- **Integrating legacy systems:** Many organizations rely on complex or customized systems developed over the years. Migrating legacy systems to AWS requires careful planning, as compatibility issues and dependencies can arise. Conducting a thorough assessment of existing systems, considering the use of application programming interfaces (APIs) and employing middleware solutions can facilitate a smoother transition.
- **Application compatibility and performance:** Applications originally designed for on-premises environments may not seamlessly operate in the cloud. Compatibility issues, performance degradation and latency problems can arise during migration. Organizations must assess their applications for cloud compatibility, consider refactoring (also called rearchitecting) where necessary and perform rigorous testing to ensure optimal performance in the new cloud environment.
- **Bandwidth and connectivity:** Cloud migration heavily relies on network connectivity, and organizations with limited bandwidth or unreliable internet connections may face significant challenges. Uploading large volumes of data to the cloud can be time-consuming, leading to potential disruptions to business operations. Instead, businesses can consider adopting incremental migration strategies, leveraging hybrid cloud models or investing in dedicated high-speed connections.
- **Lack of cloud expertise and skill gaps:** Cloud technologies and architectures are continuously evolving, making it essential for businesses to have skilled professionals who can navigate the complexities of migration. Investing in training programs, partnering with cloud service providers and hiring cloud consulting experts can help overcome this obstacle and ensure a successful migration process.

Migrating to AWS offers organizations many benefits, but choosing the right migration strategy is crucial for a successful transition. It is critical to approach cloud migration with a well-defined strategy, careful planning, and a willingness to adapt to ensure a smooth and successful transition. No matter your approach, working with a third-party expert with cloud migration experience is critical to your success. Here's how Red River approaches cloud migrations for our clients.



# THE RED RIVER APPROACH TO AWS CLOUD MIGRATION

The Red River approach to AWS cloud migration consists of three steps:

1. Assess
2. Mobilize and Plan
3. Migrate and Modernize

## 1. Cloud Migration Assessment

A comprehensive cloud migration assessment is essential for a smooth transition. This assessment incorporates elements like:

- Rapid discovery
- Utilization reports
- Workshops and readiness assessments

As part of the assessment, we build a business case that analyzes multiple factors including:

- Total cost of ownership (TCO)
- One-year, three-year, and five-year cash flow and cost breakdown
- Overall ROI
- Right-pricing and rightsizing
- Needed software licenses
- How best to ramp up the cloud and ramp down on-prem



## Rapid Discovery

The cloud migration assessment begins with rapid discovery. Rapid discovery involves automated tools and techniques that scan the entire IT landscape, providing a holistic view of the existing infrastructure and its dependencies. During this phase, we thoroughly analyze an organization's existing infrastructure, applications and data to identify the scope and complexity of the migration project.

## Utilization Reports

Accurate utilization reports play a vital role in cloud migration assessment. These reports capture the peak, minimum and average utilization metrics of CPU, memory, storage and other relevant resources. By analyzing these reports, we can identify resource bottlenecks, understand workload patterns and optimize resource allocation in the cloud environment. For example, Utilization reports provide valuable insights into workload performance and enable informed decision-making during the migration process.

**Example:** Say you have a provision on your data center with 12 CPUs and 16GB memory. The utilization report shows you're only using an average of 50% of that resource. In this instance, Red River would offer a rightsizing recommendation to leverage (and pay for) a virtual machine with only 6 CPUs. This repeatable process, applied across your architecture, can significantly lower cloud costs in the long run.



## Readiness Assessments

Readiness assessments, also called workshops, bring together cross-functional stakeholders to collaborate, discuss objectives and align expectations well before migration. These sessions facilitate knowledge sharing, address concerns and develop a migration strategy tailored to the organization's unique requirements. Concurrently, readiness assessments evaluate the organization's current state of preparedness for migration by identifying potential gaps and challenges to address before go-live.

## Total Cost of Ownership (TCO) Analysis

A TCO analysis evaluates the costs associated with migrating workloads to AWS, including infrastructure, licensing, support and ongoing operational expenses. We offer clients three different cost models under the TCO reporting structure:

- On-demand
- One-year reserved instance
- Three-year reserved instance cost

By assessing the TCO, organizations can make informed decisions regarding the feasibility and cost-effectiveness of migrating specific workloads to AWS. The TCO analysis provides valuable insights into the financial aspects of the migration, enabling organizations to optimize resource allocation and plan for long-term cloud adoption. Ultimately, we assess what it means to stand up a similar architecture in AWS.



## Choosing the Right Strategy for Cloud Migration (a.k.a. the Seven Rs)

As previously mentioned, the seven Rs of AWS are a set of strategies that help organizations determine the most suitable approach for their migration:

- 1. Rehost (Lift-and-Shift):** Rehosting involves migrating applications and workloads to AWS with minimal or no modifications. It aims to replicate the existing infrastructure as-is in the AWS environment. This approach offers a quick and straightforward migration path while leveraging AWS's scalable infrastructure.
- 2. Replatform:** This approach involves optimizing the applications or workloads during the migration. Replatforming may include adopting managed AWS services, such as migrating databases to Amazon RDS or moving applications to AWS Elastic Beanstalk. Replatforming aims to take advantage of AWS-specific features to improve performance, scalability and cost efficiency.
- 3. Refactor (Re-architect):** Refactoring restructures or redesigns applications or workloads to fully exploit cloud-native capabilities. This process can include breaking monolithic applications into microservices, adopting serverless architectures with AWS Lambda or rearchitecting applications to be more scalable and resilient. Refactoring allows organizations to optimize their applications for the cloud and improve agility and scalability.
- 4. Relocate:** This approach moves your entire infrastructure to the cloud without adding new hardware, modifying existing operations or rewriting applications. Typically, the infrastructure moves to a virtual machine environment under VMware Cloud Foundation technologies.





5. **Repurchase:** Repurchasing replaces existing applications or software with a different AWS product or service. It may involve transitioning from on-premises commercial software to software-as-a-service (SaaS) or replacing proprietary software with open-source alternatives. Repurchasing can help organizations modernize their technology stack and leverage the benefits of cloud-native services.
6. **Retain:** This process also identifies applications or workloads that should remain in their existing on-premises or data center environments. Organizations may retain specific systems for various reasons, such as compliance requirements, data sovereignty concerns or cost considerations.
7. **Retire:** The overarching deliverable from the Red River assessment process is to provide a realistic view of your cloud load. As part of the process, we use tools to accurately simulate the behavior of applications and workloads in the target cloud environment. By running load tests and performance simulations, organizations can identify potential issues, validate the cloud infrastructure's scalability and optimize their applications' overall performance. The realistic view of the load ensures a smooth transition to AWS and mitigates any performance or availability risks.

As part of our assessment, we determine the optimal strategy for your organization's cloud migration. We typically recommend a Rehosting migration to begin with followed by modernizing down the road.



## **Rightsizing (and Rightpricing)**

As previously mentioned, of the most common migration variants used by Red River is a lift-and-shift approach – that is, Rehosting – aiming to migrate applications and infrastructure components as they are without significant modifications. This approach ensures that the migrated workloads align with the target AWS environment while maximizing performance and minimizing costs.

However, in some cases, rightsizing may be applied to optimize resource utilization and cost efficiency. By analyzing the utilization reports, the assessment team identifies opportunities for rightsizing, such as adjusting CPU and memory configurations to match the workload requirements accurately. For instance, if you have provisions on your data center with 12 CPUs and 16 GB of memory but only ever use 50% of that, our team would recommend a VM with 6 CPUs instead, saving you money on more expensive hardware you don't need.

Another key strategy used by the Red River is rightpricing, which ensures you aren't being charged for extra computing time that you aren't using. For instance, if you had several instances of a VM that were operating 24/7 for one of your teams that wasn't actually working around the clock, we would suggest a plan that opted for on-demand computing power instead, only charging you for the time you were using.

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## 2. Cloud Migration Mobilization and Planning

Cloud migration mobilization and planning requires prioritization of the applications to migrate first to last. Migration is never a cold one-off cutover; instead, these processes typically move in logical phases within a timeline. In this second phase, we turn the questions we asked in the Assessment step into concrete and detailed planning, design, and preparation.

Think of it this way: In the first phase, we asked the questions. In this phase, we determine the answers. As part of our discovery and planning process, we'll provide detailed plans answering questions like:

- Does your organization need a hybrid network?
- What security posture will keep data safe?
- How can we best leverage Active Directory?
- How can we maintain or improve our end-user experience?
- What is the best approach to establishing resiliency in the cloud environment?

As part of the mobilization process, we help our customers to determine key elements of their cloud deployment, including:

1. **Account management** topics like identity and access management (IAM) and organizational units (OUs)
2. **Data lifecycle and governance** – for instance, determining backup policies as well as processes for data retention
3. **Networking** specifics, like hybrid vs. fully cloud infrastructure
4. **Deployment and operations parameters** (environment, dev/production, tagging and logging, notifications, etc.)
5. **Security and compliance** – does the organization have a culture of cybersecurity awareness, for instance?
6. **Migration details**, like what should be prioritized, any app dependencies, and the like.



Notably, cloud migration occurs in phases; it is rarely “one and done.” The process of going live with a cloud migration involves several crucial steps to ensure a smooth and secure transition:

- **Setting the landing zone:** The landing zone is the foundation that sets up the initial infrastructure to host your cloud resources. This process usually includes setting up Virtual Private Clouds (VPCs), which provide isolated networking environments. The number and configuration of VPCs depend on your organization’s specific requirements and the desired segregation of resources.
- **Identity and Access Management (IAM) setup:** Red River defines proper access controls, implements multi-factor authentication and establishes appropriate user roles and permissions to maintain security and governance as part of our standard process.
- **Enabling security:** We enhance the security of your cloud environment by:
  - Configuring firewalls to control inbound and outbound traffic
  - Implementing Network Access Control Lists (NACLs) for additional network-level security
  - Utilizing services like AWS Shield to protect against DDoS attacks
  - Enabling Amazon GuardDuty for continuous threat detection and monitoring
- **Setting up the platform:** AWS platform setup involves provisioning the necessary infrastructure resources such as virtual machines, storage and databases. Organizations can leverage Infrastructure-as-Code (IaC) tools like AWS CloudFormation or Terraform to automate and streamline the provisioning process, ensuring consistency and scalability.
- **Establishing the operating model:** As a final step, we set up essential monitoring and logging services such as Amazon CloudWatch for real-time resource tracking and AWS CloudTrail for auditing API activity and configuring alerts and notifications for proactive incident management.



Another element in this phase is establishing a CCOE (Cloud Center of Excellence), comprised of key stakeholders on our customer's team – usually including people like an organization's CTO, IT managers, app developers, network and database engineers, and others – who work to introduce the cloud to their broader organization.

It may be necessary to offer workforce development programs to upskill and train employees on how to be effective and secure workers in the new cloud environment, which Red River offers as an approved and certified AWS training partner.

Also in this phase, we start the very first parts of the migration process. Each of these settings and architectures undergo a pilot phase that containerizes test applications to ensure everything works properly. Our clients run partially on-premises and partially in the cloud during a systematic, phased deployment that maximizes efficiency while minimizing down time or disruption. We ensure AWS and the cloud environment are working for the client.

Embarking on the cloud migration journey requires more than just understanding the destination; it necessitates meticulous analysis, strategic planning, and the ability to ask critical questions. At Red River, we follow a comprehensive and documented planning process that ensures a smooth transition to the next critical stage of your cloud journey: Migration. Our methodological approach allows us to anticipate and navigate challenges, ultimately setting your organization up for successful integration with AWS.



### **3. Cloud Migration and Modernization**

Critical questions have been asked and answered. We've identified the optimal approach for your business, developed detailed plans to achieve this approach, achieved buy-in from key stakeholders and established a CCOE to get the organization on board, and tested how your organization functions in the cloud using pilot applications. It's time for the third phase: migrating the rest of your business into the cloud.

This phase involves executing the migration plan, including provisioning cloud resources, transferring data and migrating applications. It is crucial to closely monitor the migration process, test the functionality of applications in the cloud environment and ensure minimal disruption to business operations at each migration stage.



## MANAGE AND SUPPORT YOUR CLOUD ENVIRONMENT

After successfully migrating to the cloud, Red River Managed Service excels in its cloud management practices. It's a post-management process designed to handle day-to-day network operations and create strategies to optimize your time in the cloud.

With our proactive and strategic approach, Red River Managed Services ensures optimal performance, scalability and security. We leverage advanced monitoring tools to track system health, promptly identifying and resolving issues continuously. Red River also employs robust automation and orchestration techniques to streamline operations and maximize efficiency.

Red River Managed Services applies the same rigor to addressing the potential for cloud sprawl that we used in your migration process. Red River effectively manages cloud spend by closely monitoring resource utilization and implementing cost optimization strategies. During this ongoing strategic process, we can create better policies to handle your ever-increasing data load.

Red River is also an AWS Certified Training Partner. As part of our cloud management process, we can offer ongoing training to keep your teams on track with evolving best practices to manage these resources.

Red River's comprehensive cloud management framework guarantees seamless operations, enabling clients to focus on their core business objectives with confidence.



## CLOUD MANAGED SERVICES WITH RED RIVER

Red River is the trusted cloud migration advisor to top enterprises, government organizations and more. We offer a litany of vital cloud services of all sorts, including:

- Invoice and subscription management
- Governance and policy management
- Data protection
- Capacity and resource planning
- Security and identity management
- Cost management
- Patch management
- Monitoring, alerting and reporting
- Support services

We conduct evidence-based reviews at regular intervals, as agreed upon by our client, and use these as an opportunity to provide a Well Architected Assessment of your AWS environment, ensuring that your organization is always operating at a high level of efficiency and security.

If you're considering migrating applications or architectures to the cloud, find out why we're the top choice for AWS migration and management.





## ABOUT RED RIVER

Red River brings together the ideal combination of talent, partners and products to disrupt the status quo in technology and drive success for business and government in ways previously unattainable. Red River serves organizations well beyond traditional technology integration, bringing 25 years of experience and mission-critical expertise in security, networking, analytics, collaboration, mobility and cloud solutions. To learn more, visit [redriver.com](http://redriver.com).