



The Foolproof Guide to Modernizing Your Portfolio

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Modernization is a competency that must be continuously invested in.

In addition to organizational woes, companies must manage the technical complexity of modernization itself.

Introduction

Application modernization is well established as being essential to keeping pace in a highly competitive business landscape. While market conditions can change at unprecedented rates, app modernization helps you move quickly to deliver business outcomes faster. According to AI Gillen at the International Data Corporation (IDC), the risks of avoiding or delaying modernization can be severe, such as being disrupted by more aggressive competitors, missing out on cutting-edge tools and technology, not taking advantage of opportunities for cost reductions, and losing talented developers.¹

Even though app modernization has been popular for years, we believe that no one is actually doing it well—no one! Some customers think that moving to the cloud means it's "their mess for less." Others view modernization as a project when, in reality, it's a competency that must be continuously invested in. Because code becomes legacy the moment it's deployed, the opportunity to modernize is ongoing—it doesn't end.

We hear about three common roadblocks when working with organizations like yours to accelerate their app modernization journey:

- You don't currently have enough people with the necessary skills and are constantly buying more technology to try and keep up with business demand.
- You've been on a journey to move to the cloud for a while and aren't moving quickly enough.
- You're moving to a public cloud but your costs aren't going down.

Do these roadblocks resonate with you? Although most organizations have put their best efforts toward modernizing, they're not seeing the expected returns—and certainly not as quickly as they hoped. Modernization complexity goes far beyond technology, especially within larger organizations that contain dozens of different business units, stakeholders and priorities. According to 451 Research, part of S&P Global Market Intelligence, the organizational implications of modernization can bring their own suite of challenges: "Shifts in the software development mindset, such as the move to agile, are a complex process. For cloud native, it's not just technology—there are similar kinds of organizational-process stumbling blocks in the way."² In addition to organizational woes, companies must manage the technical complexity of modernization itself. The average enterprise application portfolio contains webs of tightly integrated, complex monolithic systems, leading to issues such as:

- Lack of understanding about what app or workload goes where
- Inconsistent developer experience

1. International Data Corporation. "Accelerate Your Path to Containers Through Modern Tools and Techniques." AI Gillen and Matt Russell. 2022.

2. 451 Research, part of S&P Global Market Intelligence. "Golden Opportunity Ahead with Shift to Cloud Infrastructure, Cloud Native Apps as Default IT." William Fellows, Jean Atelsek, and Jay Lyman.

In many cases, the best approach is to not start with too many preconceived notions about your organization. As the needs of your organization reveal themselves, decisively adapt your team structure to support those needs.

- Substandard code quality, test coverage, and security
- Poor documentation and low portfolio visibility (e.g., application types, dependencies, security vulnerabilities, etc.)
- Expensive plans and strategies that lack execution
- Slow software and feature delivery

Clearly, modernization is difficult, whether it be the organizational impact, the technical complexity, or the pressure to demonstrate results quickly. We've found time and time again that successful modernization projects require the orchestration of three components: people, process and technology.

Without all three, it's likely that the project will progress slowly (if at all), lack direction and be difficult to execute.

Essentials for app modernization success

Across every modernization engagement we've conducted, regardless of industry, we've witnessed the importance of the relationship between people, process and technology. By accounting for these three pillars when building and executing a modernization strategy, we believe that organizations have a much higher chance of success.

It's important to set expectations appropriately with all stakeholders about the expected rate of progress. Making meaningful progress modernizing hundreds or thousands of existing applications will take significant time and effort. Changes happen incrementally; modernization often starts small and grows rapidly. It's important to realize this, set expectations appropriately, and take a systematic approach. It can be helpful to establish visible intermediate milestones to maintain momentum. For instance, you might want to set a goal to modernize 10 things and make sure the list includes different items to benefit various stakeholders, so everyone sees some benefit right away.

If your teams are currently developing and running monolithic apps using traditional infrastructure and manual processes, the way things are structured today might not make sense as you progress. Unfortunately, there's no single one-size-fits-all team structure that will satisfy your needs as you modernize, and you can't assume that the organizational structure that worked for another organization will work for you. In many cases, the best approach is to not start with too many preconceived notions about your organization. As the needs of your organization reveal themselves, decisively adapt your team structure to support those needs. The best organizational structure for you often reveals itself over time. Well-run software organizations know this and are always looking for better ways to operate, rather than sticking to one operating model. One thing that helps as you start your app modernization efforts is to have champions across all relevant teams, from your development teams to infrastructure teams to operations (assuming you have separate operations teams) and extending into business units. A few well-placed modernization

“Culture [is] the practices, technologies, behaviors, rewards, rules and systems that an organization follows... how things actually work around here.”¹

Michael Coté

Developer Advocate

VMware

advocates—with the ability to recognize problems, empathy to work with people with diverging views, and passion for your modernization vision—can help ensure everyone buys in and that things move forward.

People

Your people, and the type of culture that you foster within your organization, are arguably the most important components of your app modernization initiative. Sure, advanced technology might appear to be the end-all be-all facet to modernization, but without having people who are truly bought in to your mission, as well as having an organizational structure that supports it, it will feel impossible to get anything over the finish line. In this white paper, we share ways that can help align your team on modernization goals.

Process

Because modernization initiatives can potentially involve thousands of applications, it's critical to build a reliable and iterative process that helps you prioritize and analyze many apps promptly. In this paper, we cover the best practices and models that we use to quickly analyze entire portfolios.

Technology

The number of technology choices can feel endless, but it's important to select the tools and technology that will realistically be valuable based on your modernization goals. In this paper, we share the types of tools and technology that we use to help customers succeed in their own modernization journeys and share which criteria to look for as you make your own selections.

People

The people pillar is arguably the most important and impactful of them all. You've likely heard the Peter Drucker quote, “Culture eats strategy for breakfast!” Without internal buy-in, it can feel impossible to make any real progress. Michael Coté, developer advocate at VMware, defines culture as “the practices, technologies, behaviors, rewards, rules and systems that an organization follows...how things actually work around here.”³ By encouraging a product-driven culture (i.e., constantly evolving, focusing on high-quality user experience, ongoing timeline) as opposed to a project-driven culture (i.e., short term, a single goal, strictly defined measures of success), your organization is more likely to achieve high-impact outcomes over the long run, especially for massive undertakings such as portfolio modernization.

You can encourage a highly innovative culture in the way you structure your organization's working style and processes (e.g., agile methodology, pair programming, reducing obstacles for developers, etc.), by redefining how you

3. O'Reilly Media, Inc. “Changing Mindsets: The Missing Ingredient to Digital Transformation.” Michael Coté. May 2021.

perceive success and failure (viewing failure as a learning opportunity), and how you compensate your people (money is a fantastic motivator).

Rallying the troops

It's critical to receive commitment from key stakeholders, including the folks who will actually be doing the day-to-day modernization work. Make sure that you're able to rally your people by communicating a clear vision of your goals and how the outcomes will make everyone's lives better and easier, such as reducing developer toil, having the opportunity to build cool new products, and significantly increasing customer satisfaction.

Because app modernization initiatives might take resources away from other projects in the short term, it's important to emphasize that modernization leads to long-term ROI.

Process

You may have hundreds of applications that need attention, so homing in on the process element will prove essential as you set priorities and determine how to execute in a scalable manner.

Some organizations opt for a more manual process for analyzing their portfolio when building their modernization strategy. However, we've observed that the following problems arise through this strategy:

- Engagement with many people is necessary to gather information about workloads and, even then, the information might be subjective
- Reliance on out-of-date information
- A considerable amount of time is spent collecting, aggregating and validating information

In order to build an actionable and scalable modernization plan, we use a funnel technique to establish which technical factors, business factors, and organizational/people factors to consider. We can leverage tools, using the data that we've collected from the people and technology pillars, to model the disposition and prioritization of our modernization efforts—leading to fully mechanized decision-making. This model serves as a compass of portfolio modernization, determining which apps to modernize, how they should be modernized, and where they should land.

The Five R's

The Five R's play an important role—we can determine whether to retain, retire, rehost, replatform or refactor each application based on the results of the funnel.

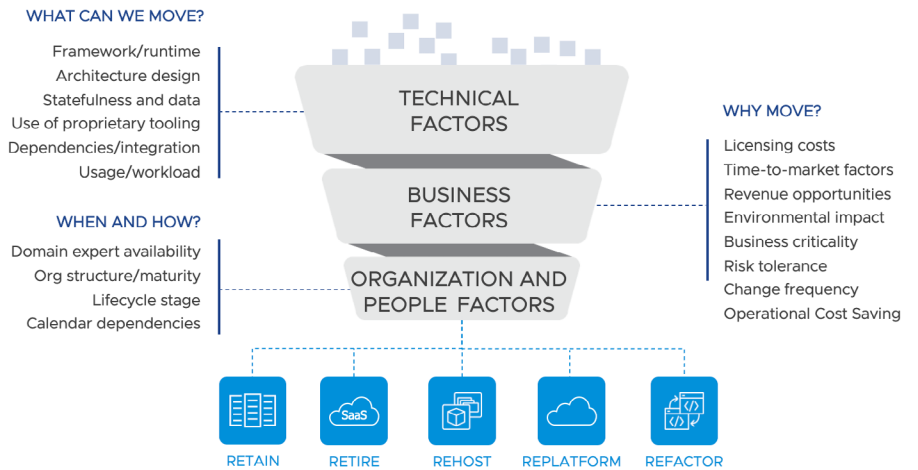


Figure 1: Before modernizing, it's important to build a decisioning framework using variables such as technical, business and organizational factors.

Refactor

Refactoring refers to making significant source code changes to the application (i.e., rewriting the application or service), typically using cloud native technologies such as microservices and APIs. While the process can be complex and laborious, this strategy actually provides the most benefit for high-value systems and applications that require frequent updates and innovation.

Replatform

Replatforming involves containerizing an application and moving it to a Kubernetes-based platform. There might be small code changes needed to take advantage of the new environment. This strategy is commonly implemented when moving applications running on virtual machines (VMs) to container-based apps running on a modern app platform or public cloud infrastructure.

Rehost

Rehosting refers to changing the infrastructure or operation of an application without changing the application itself. This is often done to gain the cost benefits of the cloud when the rate of change to an application is low and wouldn't benefit from refactoring or replatforming.

Retain

Retaining involves optimizing and retaining an application as is. This strategy might be used when there is data that can't be moved or a modernization that can be postponed.

Retire

Retiring is when a traditional application is no longer used or is replaced with an off-the-shelf, software-as-a-service (SaaS) offering.

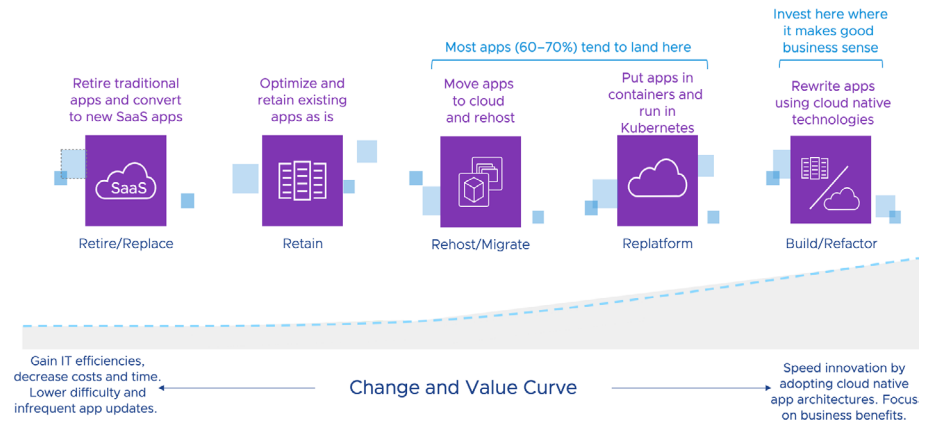


Figure 2: Typically, the more time you invest in modernizing an application (e.g., refactoring), the more value you'll get out of the application. However, not every app will need such treatment.

In most cases, the higher the business value of an application, the greater potential benefit there is to undergo more change. By refactoring primarily business-critical and high-value apps, you can maximize your team's time while prioritizing the applications that have the most to gain from more flexible architectures and scalable infrastructure. Applications that remain unchanged for long periods of time and don't hinder your company's ability to innovate don't need to be rewritten. When the goal is to increase IT efficiencies and decrease IT costs for apps requiring infrequent updates, you'll be better off rehosting or replatforming these applications.

Throughout this entire process, we like to emphasize the importance of small, iterative steps to achieve big wins in our modernization initiative. A series of small learnings controls the risk of big, fatal failure.

Technology

Technology is another key pillar for successful modernization projects because it enables us to gather large amounts of information quickly. However, it's important not to get carried away with the capabilities of technology itself. Using the other pillars of people and process, we can distill the data that the technology pillar provides for us and create an actionable plan that aligns back to the business goals.

We can prioritize five considerations to inform our modernization roadmap using VMware technology. The following are the five considerations, what insights they provide, and how they influence the roadmap:

- 1. Application dependencies** – Inform migration wave planning and impact the disposition and order in the roadmap. By gathering application dependency insights, you can identify large groups of dependent apps, simplify complex information, and build a notional idea of where to start.
- 2. End-of-life (EOL) stacks** – Identify more vulnerable systems and provide a mitigation plan to run applications in a secure environment. By understanding EOL impact, you can identify instability risk and preemptively remediate the risk through landing zone placement.
- 3. Application resource utilization** – Analyze how applications currently use resources and how to optimize resources for better ROI/TCO. The objective is to prioritize apps that leverage elastic computing to maximize cost savings and identify key apps to invest in re-architecting for horizontal scaling. The value of understanding application resource utilization is that you can better use shared resources and realize cost savings.
- 4. Technical feasibility** – Identify apps feasible for cloud migration and make decisions regarding replatforming, refactoring and rewriting. We can effectively prioritize which apps to modernize based on a decision model of technical feasibility.
- 5. Application archetypes** – Group apps by technical similarity to turn thousands of apps into tens of groups and make decisions for those groups instead of individual applications. By grouping apps, you can identify those with overlapping patterns and replicate these patterns across your portfolio. With this data, you can build out your center of excellence through this documentation and move more quickly as an organization.

At VMware, we have several tools that help to collect this data, including VMware Aria Operations for Networks and Cloud Suitability Analyzer.

[VMware Aria Operations for Networks](#) provides agentless infrastructure and network discovery capabilities:

- Security policy
- Infrastructure discovery
- Identification of modernization candidates
- Network usage
- Data center usage optimization

[Cloud Suitability Analyzer](#) provides line-of-code-level insights as well as portfolio-level insights (economies of scale):

- Cloud feasibility
- Technical debt

At VMware, we help organizations of all sizes modernize their portfolios to deliver business outcomes faster.

- Application archetype
- Application languages
- Code metrics

Rapid portfolio modernization

We've established the key elements of modernization, and we know how difficult it can be—but how can we avoid these challenges? At VMware, we help organizations of all sizes modernize their portfolios to deliver business outcomes faster. We use several guiding principles in our engagements:

- Start small.
- Approach iteratively (quickly build foundational program components using hands-on work for a scaled migration factory).
- Learn by doing.
- Build confidence.
- Demonstrate results quickly.
- Build a center of excellence (i.e., a team that maintains categories and landing zones, gets feedback as you scale).

We offer a three-stage service called rapid portfolio modernization that leverages the pillars of people, process and technology to help organizations realize outcomes in days and weeks instead of months and years. Each of the three stages (explore, navigate and accelerate) offers unique insights and outcomes for our customers.

Explore

The explore stage leverages enterprise architecture expertise and tools to automate portfolio discovery and analysis with end-to-end visibility. You'll glean insights on portfolio dependencies and network inspection to determine migration suitability.

After the app portfolio assessment, we'll help you identify opportunities to modernize based on the insights gained during the portfolio discovery and assessment. Together, we'll find patterns across your portfolio, identify measurable ways to accelerate your initiative, and define the next steps.

Navigate

In the navigate stage, we'll help you build a tactical roadmap for executing your app modernization and migration initiative. You'll understand your portfolio from technical and business perspectives, learn how to deliver cost savings and real ROI, and prioritize a set of apps to migrate or refactor. We'll also identify potential opportunities to optimize the path to production for your modernized applications to maximize efficiency and cost savings.

Learn more

To get started, fill out this [contact form](#).

For more information about VMware products and services

Call 877-4-VMWARE (outside North America, +1-650-427-5000), visit vmware.com/products, or search online for an authorized reseller.

Accelerate

The accelerate stage implements the roadmap created during the navigate stage for applications that will be rehosted to a VMware Cloud environment or replatformed to a VMware Tanzu environment.

When rehosting apps to VMware Cloud, we will help you migrate up to 60 VMs to your desired cloud infrastructure with minimal downtime. You'll receive migration verification, a knowledge transfer session, and a handover.

When replatforming apps to VMware Tanzu, we will help you containerize existing apps and migrate these to a Tanzu platform based on Kubernetes or Cloud Foundry. You'll work side by side with VMware experts to learn patterns for containerization and migration as we help deliver production-ready containers and de-risk your initiative.

With rapid portfolio modernization, we've helped dozens of customers break through standstill modernization efforts and provide fast and tangible results.

Next steps and resources

For more information about rapid portfolio modernization, check out these resources:

- [Solution overview](#)
- [Webpage](#)

