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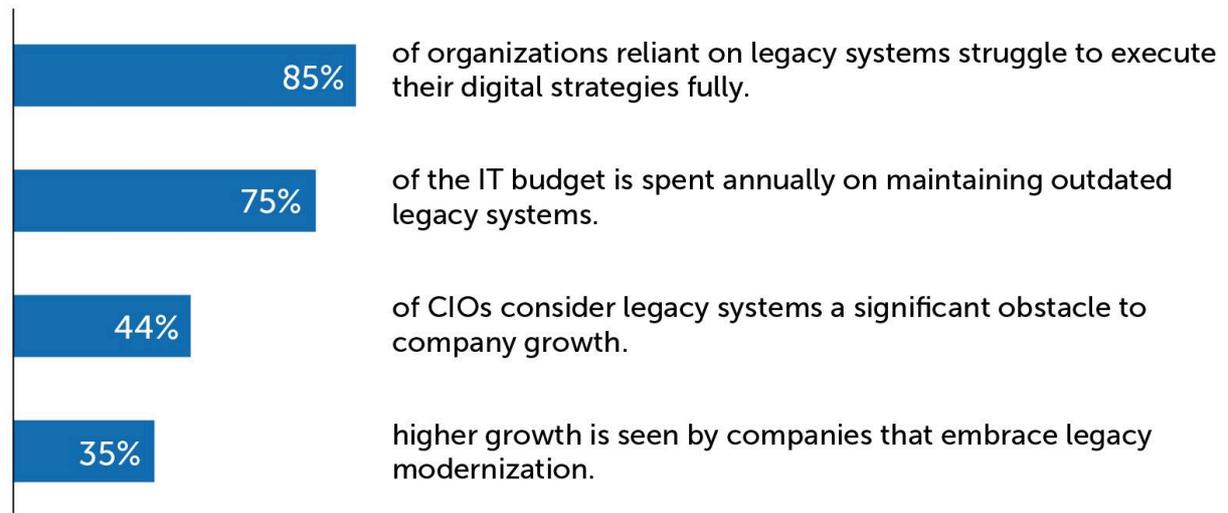
# The Ultimate Step-by-Step Guide to Legacy System Migration in 2025



# Introduction

Legacy infrastructure may seem like it's running "just fine" until unplanned downtime exposes hidden vulnerabilities in the hardware. Industry projections also support this observation, as 44% of CIOs view legacy systems as a significant barrier to business growth.

## The Data is too Impressive to Ignore



Source: openlegacy.com

At the same time, modern trends like cloud migration are reshaping business models and structures, driving decision-makers to move beyond their on-premise data center.

Legacy system migration is no longer an option. It has become a non-negotiable thing to thrive in 2025 and beyond. This urgent need is also reflected in industry forecasts, which project that the legacy system modernization market will grow from USD 20700.72 million in 2025 to USD 28192.08 million by 2033.

Whether you're unsure about where to start or need a detailed plan, this guide has got you covered. It explains everything you need to know about legacy systems migration, including the reasons why this process is essential, a clear step-by-step plan, and best practices. Discover actionable strategies to begin your migration journey before it becomes too late.



# Psychological Barriers Preventing Timely Legacy System Migration

Even after knowing the importance, why do smart leaders delay legacy migration decisions? It's not due to a lack of technical knowledge. It's not financial constraints either. Let's take a closer look at these barriers:



## 1. The Allure of Cheap Fixes

The immediate financial relief of buying spare parts is tempting. But they are only masking the inefficiencies of your legacy hardware.



## 2. The Procrastination Mentality

Every leader recognizes this sentiment: "We'll handle it next quarter." This mindset is a trap - stems from the belief that there will eventually be an "ideal" time to initiate a migration.



## 3. The Perfection Myth

Leaders often feel compelled to wait until the migration plan is flawless. But in reality, there is no perfect plan. Break the process into manageable segments. Start with a smaller, isolated piece of the system to build momentum and learn from early iterations.



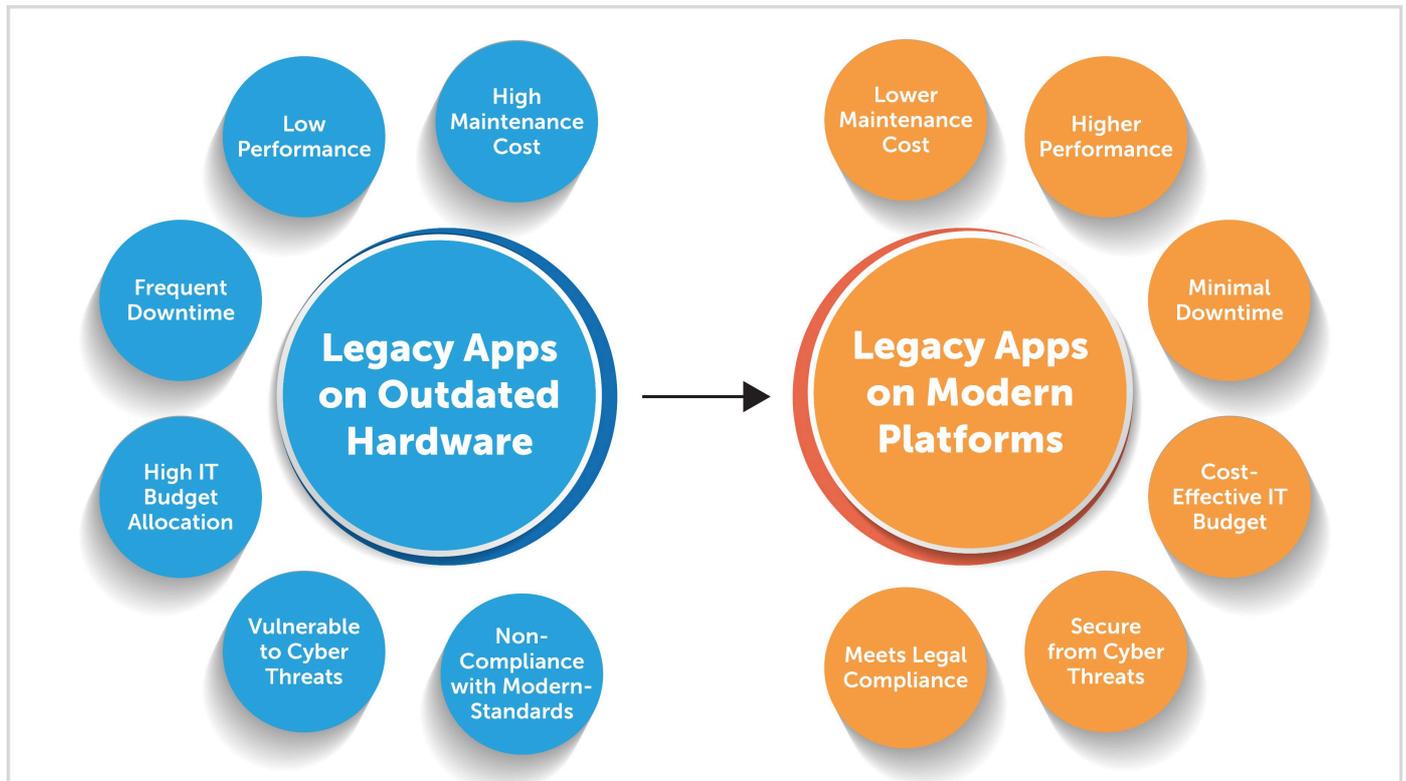
## 4. Fear of Career Risks

No one wants to be the CTO synonymous with a failed migration, fearing failure might damage their reputation. This fear drives many to cling to the status quo, even when the risks of staying outweigh the risks of change.

Ultimately, there's never a perfect time to migrate. Businesses often underestimate the **opportunity cost of waiting**: lost productivity, delayed innovations, and security vulnerabilities.

## Step 1: Assessment

So, when should migration begin? How to know when it's time to migrate legacy systems?



Let's look at the common red flags of legacy infrastructure that indicate the need for migration:

### 1. Is Your Business Continuity at Stake?

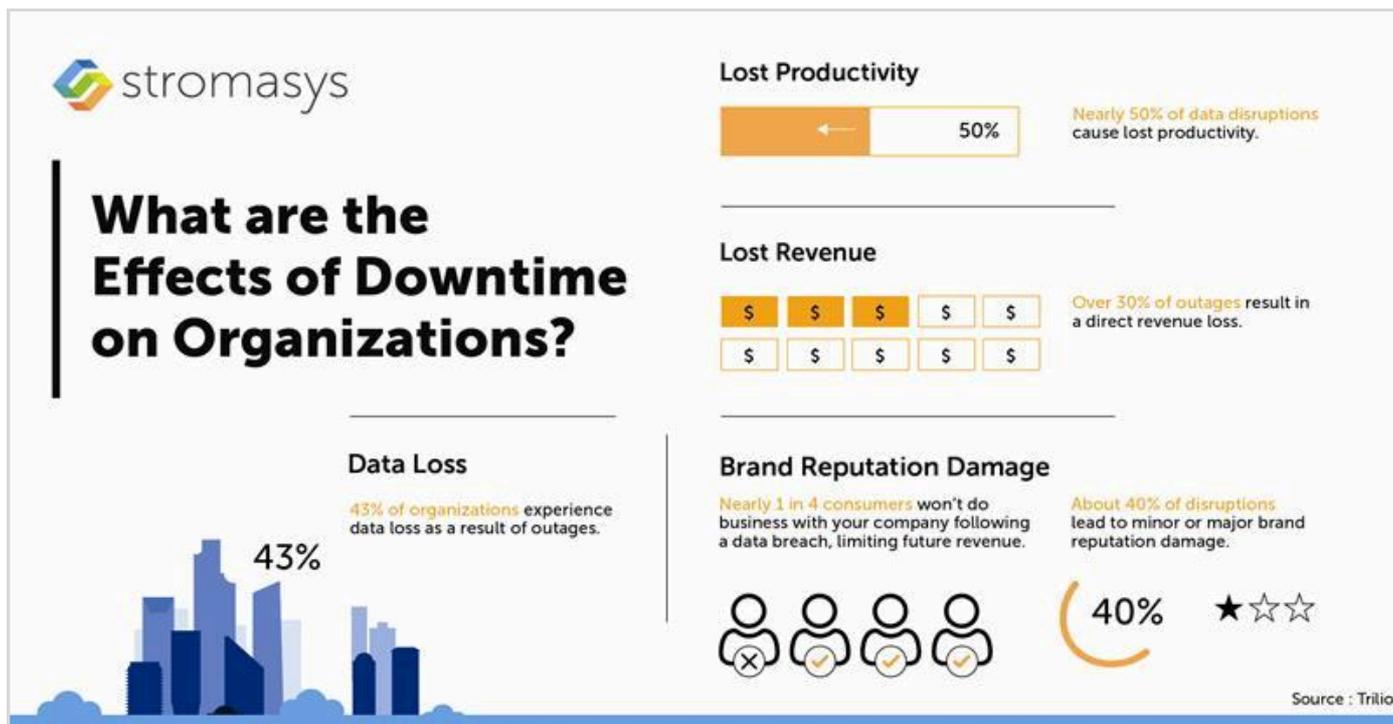
Legacy hardware running business applications presents ongoing concerns, with unplanned downtime being a significant factor in this issue. Data shows that **unplanned downtime** lasts for a minimum of 4 hours and a typical manufacturer faces an average of 800 hours of downtime each year.

Enterprises often overlook the impact of downtime, which extends beyond just financial losses – it affects every second of their operations. Consider the consequences: production halts, poor customer experience, and damaged brand reputation.

### 2. Are You Struggling to Maintain Your Legacy Systems?

**While legacy applications remain stable, the hardware platforms they run on are reaching obsolescence with vendors no longer supporting them. Fixes become harder to implement. As a result, managing them is becoming more difficult with each passing year.**

Take a real-life example: a Government Accountability Office analysis found that 8% of the IRS's (Internal Revenue Service) IT environment relies on outdated hardware. Hence, they had a difficult time finding people well-equipped with the knowledge needed to manage these systems.



### 3. Do You Allocate Most of Your IT Budget to Legacy Systems?

What is the annual cost of your organization's legacy servers (even if it is operational)? As legacy hardware reaches the end of its life cycle, support becomes increasingly costly. This is largely due to a diminishing pool of experts, many of whom are retiring or shifting their focus to newer technologies.

Energy bills can significantly impact IT budgets and unplanned downtime can exacerbate the issue. According to an IBM study, such downtime can cost companies as much as \$5.6 million each year.

### 4. Is Your Organization Vulnerable to Cyberattacks Because of Legacy Infrastructure?

Older protocols leave legacy systems easily exploitable by cybercriminals, especially when you rely on patching for every recent vulnerability. For industries like insurance or healthcare, this is a recipe for disaster.

### 5. Is Your Legacy System Compliant with Today's Legal Requirements?

Take GDPR, for example, which governs personal data management. Systems designed decades ago were never meant to handle these legal standards. Non-compliance can result in lawsuits and significant penalties, harming your reputation.

### 6. Is Your Business Stuck in the Past Instead of Progressing?

Many enterprises are oblivious to the opportunity cost of using vintage hardware. Keeping them operational makes IT teams focus on outdated technology, when they should focus on progress. For example, old hardware can make it difficult to migrate from on-premises infrastructure to a hybrid cloud because it isn't compatible with the cloud environment.

## Step 2: Planning

Planning sets the stage for long-term success. The first important thing is to audit your current infrastructure.

**Use this checklist to understand the scope of migration work ahead:**

- Recognize critical systems running on outdated hardware.
- Evaluate mission-critical applications with a cost-benefit analysis to prioritize their migration.
- Assess system performance and stability under peak and normal workloads.
- Document key dependencies, including databases, middleware, and APIs.
- Assess the adequacy of backup, recovery, and failover mechanisms.
- Evaluate the integrity and consistency of existing data.
- Identify systems relying on temporary fixes, patches, or outdated workarounds.
- Analyze how well legacy systems support current business workflows and identify processes at risk of disruption.
- Review security protocols for outdated components like firewalls, encryption, or access controls.
- Evaluate third-party integrations and assess their dependence on legacy APIs.
- Assess system scalability to meet future growth demands.
- Analyze rollback and contingency plans for potential migration issues.



## Define Your Goals

Now that the evaluation is done let's see how to set measurable goals during this transition to avoid ambiguity.



### Long-Term Business Goals

How will migration improve your business? Whether it's increasing operational efficiency, reducing maintenance costs, or speeding up transactions, define the measurable goals. Tie these goals to key performance indicators (KPIs) so that can track ROI during and after the migration.

**Goals should be SMART:** specific, measurable, achievable, relevant, and time-bound.

For instance, a SMART goal can be:



**We want to reduce legacy hardware maintenance costs by 50% within the next 6 months." Or something like, "We want to extend the business continuity of our legacy applications by at least 4 years."**



### Flexible, Scalable Systems

Another goal should be ensuring the new system can scale with your business. Make flexibility a priority. An agile system makes adopting future technology easier.





## Assess the Scope

Not every piece of the puzzle needs to move. Decide what stays, goes, or migrates.

### Break your evaluation into three parts:

- » Retire obsolete hardware no longer serving any purpose
- » Retain legacy applications that still meet business needs but consider integrating them with modern hardware platform for better efficiency and reliability
- » Only rewrite or rearchitect the systems that require additional functionality to meet modern business needs.

## Develop a Detailed Plan

Did you know 96% of firms that went through the legacy migration process exceeded their deadline and budget? Don't let your organization be one of them. Instead, take proactive steps by asking yourself the following questions:

- » What are the timelines for the legacy system migration and its phases? Are they realistic, and can they be adjusted if needed?
- » How will progress be tracked?
- » What risks might come up, and do you have a backup plan? What will you do if issues arise?
- » What resources are needed, such as staff, tools, and budget?

## Choose the Right Migration Strategy

This is where planning meets execution. Selecting the best strategy depends on your objectives, resources, and timeline.



### Lift and Shift (Rehosting)

This approach is the quickest and most cost-effective way to transition to a modern infrastructure. It involves moving legacy applications to a new platform without changing the application itself. With this approach, businesses can run their critical legacy applications on modern platforms without writing a single line of code. This strategy is perfect for businesses with limited resources or time constraints that do not wish to change their essential legacy applications.



### Rewriting Applications

Rewriting involves building new applications from scratch using modern platforms and programming languages. It offers maximum flexibility but comes at a higher cost and timelines.



### Rearchitecting

Similar to rewriting, this method involves updating the architecture of your current system for cloud compatibility or other modern infrastructure. It serves as a middle ground between lift and shift and rewriting, offering performance benefits without requiring a complete rebuild.



### Replatforming

A step beyond lift and shift, this approach involves modifications to improve performance and compatibility when moving to a modern platform. Replatforming makes sense if your applications almost meet modern standards but need a few adjustments.

## How do you choose the right strategy?

Modifying or replacing legacy applications can be costly and risky. These applications, often in use for over 20 years, contain numerous workflow processes and have undergone many modifications.

Consider cost, budget, timespan, risk tolerance, and the need for change in the application when deciding.

**Pro tip:** If you're looking for a quick, cost-effective, and low-risk strategy, emulation (lift and shift) may be your best option.

## Step 3: Preparation

How to prepare for their migration effectively while minimizing risks and costs? Check it out below:

### 1. Form a Migration Team

A successful migration needs both technical skills and understanding from the users to work smoothly with business operations. Here, you need to answer the following questions:

- Does the organization have an in-house team that understands legacy systems and their dependencies?
- Should external consultants specialized in similar migrations be hired?

Poor communication between teams can cause delays. Make sure everyone is on the same page by fostering an environment of transparency. If extra help is needed, consider seeking external expertise from vendors experienced in legacy migrations.

Clear accountability ensures no critical task slips through the cracks. Also, define points of escalation to stop bottlenecks from derailing progress.

### 2. Hire the Right Vendor

The right vendor can make even the most complex migrations manageable. Questions to ask yourself:

- Does the vendor have experience handling systems like yours?
- Can they provide references from industries similar to yours?

Don't just compare pricing. Evaluate the kind of support each vendor offers. A cheaper provider might cost more in delays or lack of critical capabilities down the line.

### 3. Create Risk Mitigation Strategies

From data loss to extended downtime, challenges arise. Identifying risks beforehand helps you address them proactively and reduce disruption during migration. Draft contingency plans to deal with unexpected things.

#### Questions to ask yourself:

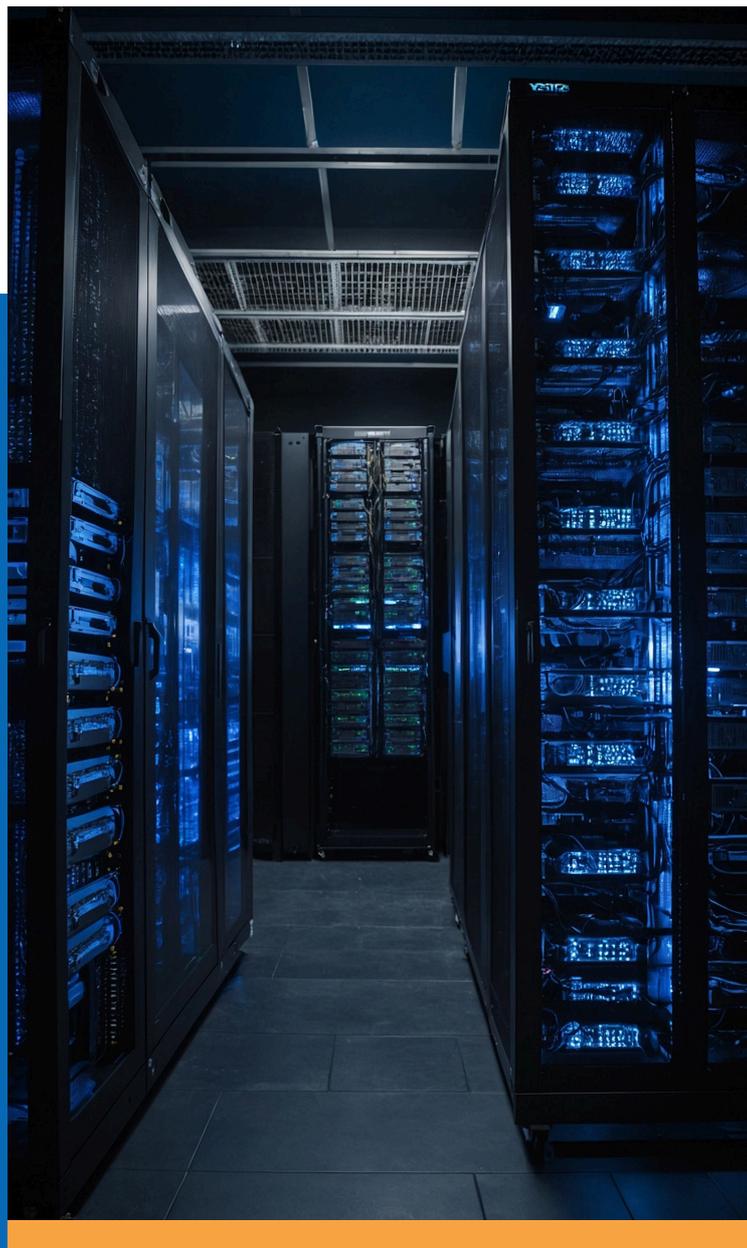
- Has a risk analysis been performed specific to this migration?
- Is there a backup plan in place if system downtime exceeds expectations?

Want a frictionless migration journey? In that case, lift and shift will be a suitable choice for you, reducing risk without investing too much time on preparation.

### 4. Prepare for the UAT

User Acceptance Testing (UAT) ensures that the migration achieves its intended objectives. To execute a successful UAT, you need a robust plan:

- Identify the primary users who will be participating in UAT
- Develop test scenarios and test cases
- Define clear and measurable criteria for what will be considered acceptable during the process
- Establish a timeline for it
- Set up a UAT environment that closely replicates the production environment



## Step 4: Migration

At this point, if you have selected the lift and shift emulation as your migration strategy, you can feel secure knowing that you won't need to make any code changes.

However, if you decide to go with an alternative strategy, there are several key considerations you should be aware of to ensure a smooth transition.

### Migrate Incrementally for Better Results

Rushing to migrate an entire system in one go is a common mistake. Incremental migration, addressing smaller sections or modules, is both safer and more manageable.

### Benefits of Incremental Migration

- **Early Problem Detection:** Spot code flaws or data mismatches in smaller test environments before they affect the entire system.
- **Minimized Disruption:** With staged rollouts, critical business operations continue uninterrupted while adjustments are made.

### Practical Steps

- Perform pilot testing on a specific area.
- Gradually replace old sections with new ones once the pilot succeeds.
- Resolve any issues before moving on to the next section.

## Code Migration

Once the data is in place, it's time to migrate the code. For many organizations, the existing system contains custom workflows, business logic, and integrations. These need to function correctly on the new platform.

### Steps for a Smooth Transition

- **Audit Existing Code:** Identify which customizations and third-party integrations are essential. Eliminate outdated or redundant processes.
- **Replatform Code:** Port code from the legacy system to the new environment, ensuring compatibility with the target platform's architecture. This may involve rewriting or optimizing code.
- **Update Third-Party Integrations:** Ensure third-party tools and systems connect seamlessly to the new software. Proper API configuration is critical during this step.

### Common Mistakes to Avoid

- **Skipping Compatibility Checks:** The entire platform can break down if your migrated code or third-party tools don't align with the new system.
- **Neglecting Performance Optimization:** Code migration provides an opportunity to streamline performance. Avoid transferring clunky scripts or inefficient code quickly without optimization.

Teams adopting rehosting often report faster data consistency checks because they're not juggling new backend formats. For others, migrating codes to a new system requires careful execution.

### User Acceptance Testing (UAT)

Once the data and code migration are completed, it is time for UAT or user acceptance testing. UAT involves testing out each feature of the new system with teams or representatives from the organization's departments.

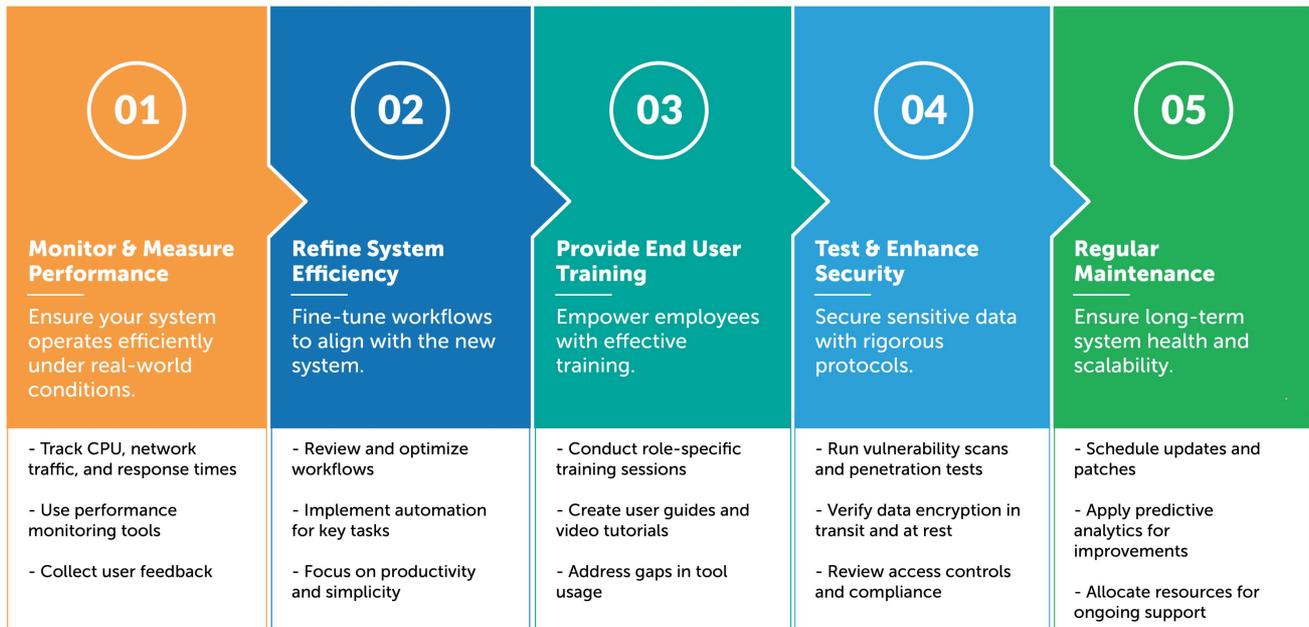
Skipping UAT often results in operational confusion, interruptions, or missed functionality. Missteps at this stage are amplified once the system goes live, resulting in user dissatisfaction or extended downtime.

- **Test with real users.** Instead of relying solely on IT teams, involve people from other departments as well.
- **Conduct end-to-end testing** of all features, including data access, workflows, and user interfaces.
- **Document feedback** from test users. Resolve all issues, big or small – before launch.
- **Make UAT a formalized process.** The time you spend here will save costly issues post-implementation.

## Step 5: Post-Migration

Achieving post-migration success requires continuous effort. Here's how to make sure your migration is a lasting success.

### Post-Migration Success: Key Pillars for Long-Term Optimization



### Monitor and Measure System Performance

Begin by assessing CPU usage, network traffic, and response times. Are the applications functioning smoothly under real-world conditions?

Evaluate your system's reliability and scalability. Performance monitoring tools can also help you proactively identify and address potential bottlenecks.

Additionally, analyze user feedback. Are employees experiencing quicker processing times? Are issues arising in specific processes? Gather insights and merge them with performance data to ensure each part of the system provides value.



## User Training

If your migration changes system functionality or introduces new tools, employees need to know how to leverage them. Provide detailed training sessions and ensure materials like user guides and video tutorials are readily available for reference.

Fortunately, with emulation, minimal user training is required. Since the legacy operating system remains unchanged (although the platform on which it operates will change significantly), most of the training will focus on how to manage the emulator and the host system for the emulator.

In contrast, strategies like rewriting the system require extensive user training to facilitate quicker adoption and reduce downtime.

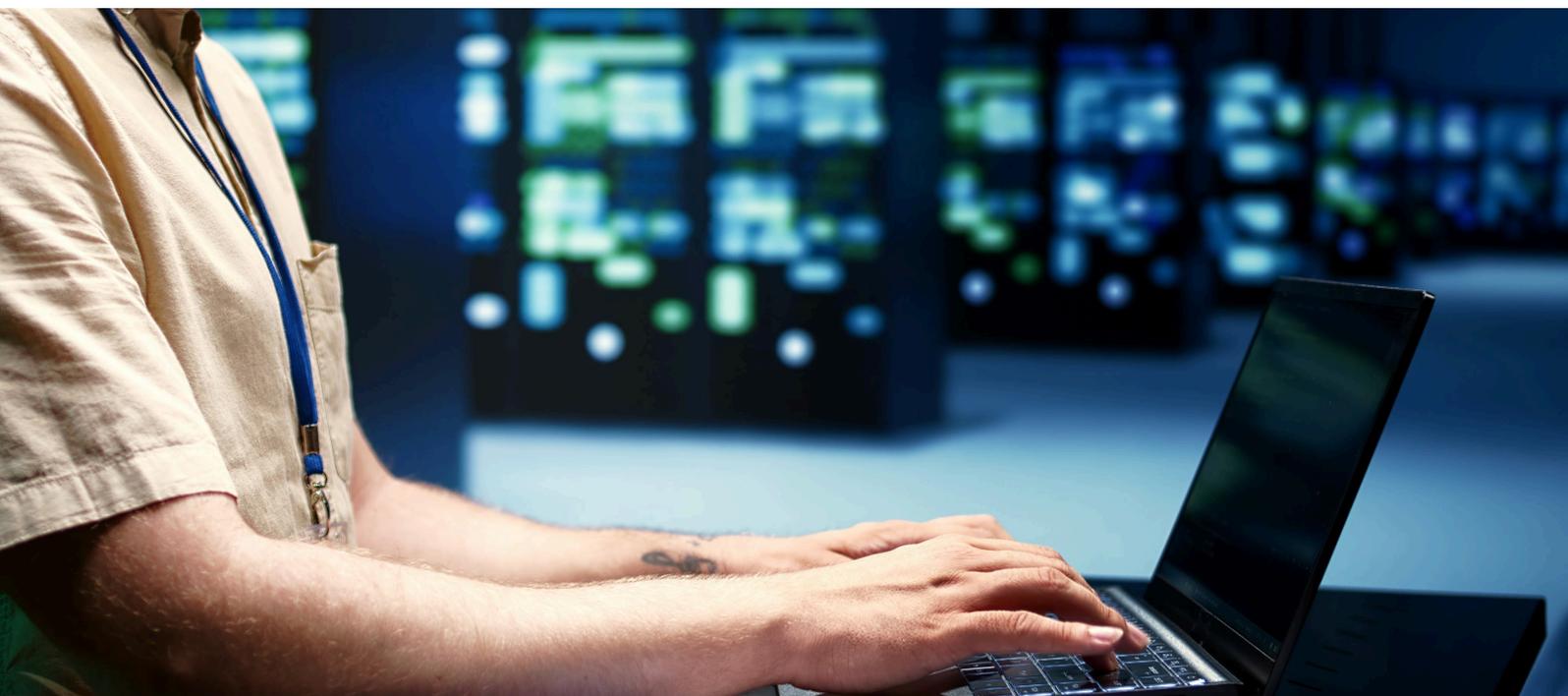


## Test and Enhance Security Post-Migration

It's critical that sensitive business data is protected throughout and after the migration process.

Verify that data encryption methods function properly, both in transit and at rest. Review access controls to ensure only authorized personnel can access sensitive data and major system functions. Compliance with data regulations like GDPR or HIPAA should also be revisited post-migration.

**Pro Tip:** Integrate legacy systems into your new infrastructure by upgrading the backup solution, reinstating monitoring, and updating the asset inventory database. Additionally, review all related contracts, including insurance and maintenance agreements, and decommission any old hardware or network components if applicable to save energy by powering them off. Also, claim your credits for Green Credit Policy.



# Best Practices for a Successful Migration

Legacy system migration isn't just another IT task. Here's how to get your legacy system migration right:



## 1. Don't Hesitate to Seek External Help

Migration complexities are beyond most internal IT teams' expertise. Hire professionals who specialize in enterprise migrations. Experienced vendors or consultants have likely encountered (and solved) challenges similar to yours. Their expertise can save you time and prevent costly errors.



## 2. Never Ignore Indirect Costs

One of the most common mistakes is budgeting only for direct expenses like services or tools while ignoring indirect costs like downtime or retraining.



## 3. Prioritize Security Throughout

Integrating security from Day 1 of your migration project is non-negotiable. Implement secure backups, access controls, and continuous monitoring to ensure data integrity before, during, and after the transition.



## 4. Engage Stakeholders Early

Get buy-in from all parties, including executives, IT teams, and department heads. Regularly communicate progress, highlight benefits, and address concerns. A collaborative environment prevents resistance and boosts adoption rates.



## 5. Document Everything

Create thorough documentation during each phase of migration. This includes processes, configurations, testing protocols, and troubleshooting steps. It will be invaluable for onboarding, training, and future upgrades.



## 6. Create a Rollback Plan

Every stage of your migration should have a fallback option. Maintain your legacy system in parallel in a read-only mode for contingency.



## 7. Communication Wins

Once the migration is underway or complete, highlight measurable wins like reduced costs, improved system speed, and higher productivity. These victories will help build internal trust and credibility.

*The hardest part of any migration isn't technical complexity - it's deciding to take the first step.*

## Get Your Legacy Migration Done Right with a Team of Experts

Legacy system migration is a high-stakes challenge. Most decision-makers lack the resource bandwidth or expertise to handle migrations internally. Even understanding where to start can feel overwhelming.

### Why Do Companies Need Professional Help?

An expert team ensures your migration is strategic and seamless. They assess your business requirements, tailor a migration plan, and implement it with precision. Beyond reducing the risk of failure, they recommend the best software. Their involvement doesn't stop there - they provide post-migration support to keep systems stable and efficient.

### How Stromasys Can Help

Stromasys specializes in preserving mission-critical applications while eliminating legacy hardware using their Charon virtualization solutions.

The process is as follows:

- Stromasys engineers work with your team to assess your systems and set goals that meet your needs.
- The right combination of Charon solutions and host systems will be recommended for optimal performance.
- Charon will be installed on your chosen server or cloud platform. During testing, all application behaviors are stabilized to ensure functionality matches your original environment.
- Applications remain unchanged while running on new hardware, eliminating disruptions and preserving operational continuity.

**Your legacy hardware doesn't have to be a liability. Start your migration journey today!**

[Book a Demo](#)