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A Modern Approach to Cloud Migration Costs and Planning

The technological and cost considerations behind successfully migrating your infrastructure to Amazon Web Services (AWS).
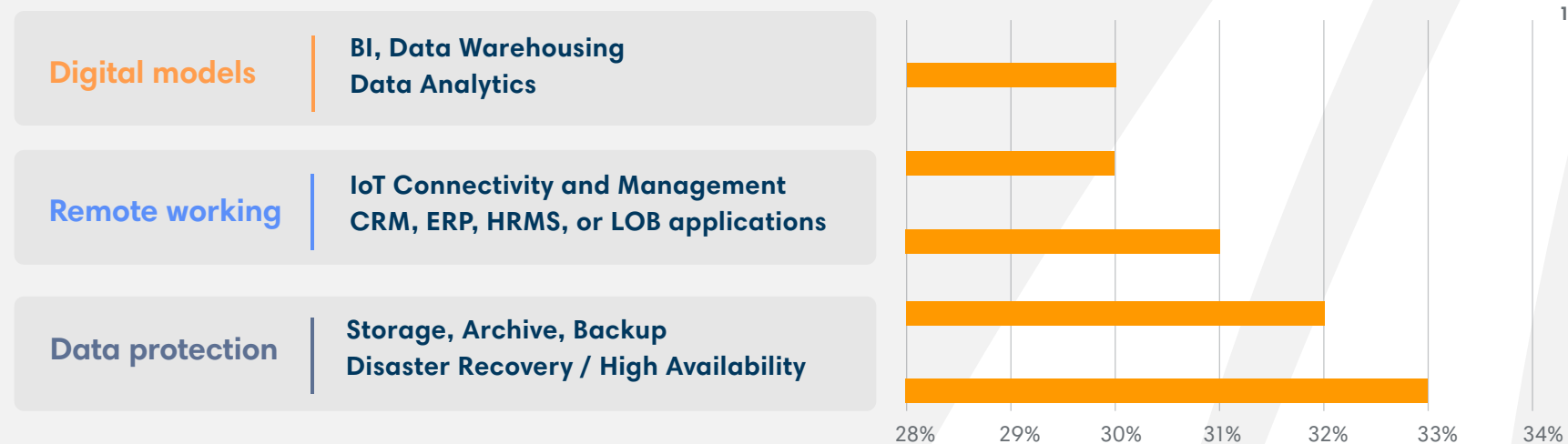
Contents

Embarking on Your AWS Cloud Migration Journey

Whether modernizing data protection, shifting to digital business models, or enabling employees to work remotely, IT leaders are turning to the cloud for increased agility, reduced costs, and improved time to value. Migrating to the cloud can be transformative, but it is not without risk – cost overrun, operational disruption, and delicate timelines can easily impede migration efforts. Successful cloud migrations require organizations to adopt a "cloud-smart" mindset, determining when to migrate workloads by prioritizing those that maximize organizational benefit while minimizing effort and cost.

What are the drivers pushing organizations to make the move to the cloud in the next three years?

Digital models	**BI, Data Warehousing** **Data Analytics**	
Remote working	**IoT Connectivity and Management** **CRM, ERP, HRMS, or LOB applications**	
Data protection	**Storage, Archive, Backup** **Disaster Recovery / High Availability**	

28% 29% 30% 31% 32% 33% 34%

1 - IDG Cloud Computing Study, 2020 - Page 4

Getting Started

No migration plan is the same. While target end-states may be similar, each organization must tailor their plan based on business objectives, resources, timing, requirements, and capabilities.

For many, the most challenging migration-related question is "where do I start to formulate my plan?"

To help you find a starting point for your cloud journey, this e-book will highlight key cloud migration considerations, steps, and challenges – helping you embark on your journey with the right information and best practices.

Here are some initial questions to keep in mind as you proceed through this e-book:

- Which workloads will you need to migrate and when should you migrate them to the cloud?

- How will those workloads impact your business?

- Are you accounting for on-premises contract commitments and planning to avoid "stranded costs"?

- Have you accounted for the financial aspects of the migration itself?

- Is your team prepared to manage ongoing costs when you transition to the cloud?

Understanding Your Costs

Did You Know: Migrations that are left to chance or started without sufficient operational and financial planning can cause overspends of up to 70%.

In order to assess the true value of a migration to your organization, you need to understand your current costs, and what additional temporary costs may be incurred as part of the migration project. It's vital to ensure that your total cost of ownership (TCO) paints a complete picture and includes your contractual commitments for your on-premises resources. To ensure the most efficient migration path, you'll want to analyze and compare potential costs that will be incurred as you begin transitioning applications to various cloud providers. Timing, duration, cost of planned AWS services, and the order in which you migrate applications may all affect the cost of the migration.

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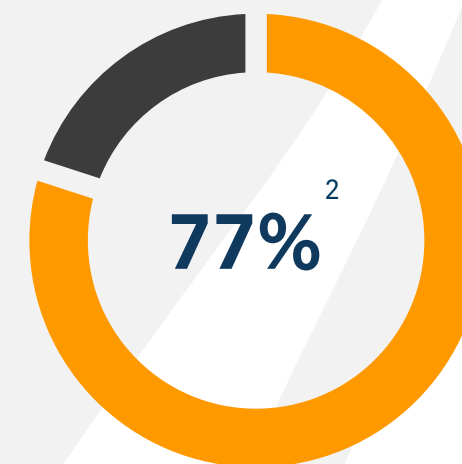
of CIOs have trouble articulating true cost of applications running in a data center

2 – 100 IT Cost Reduction Questions You Should Be Asking - Apptio Poster - https://www.apptio.com/resources/posters/100-it-cost-optimization-questions/

Aligning on Total Technology Costs

Organizational alignment is critical to ensuring a successful migration. Key stakeholders should be heavily involved, such as platform engineer managers, product managers, project managers, and anyone else who has insight into your current environment.

Ultimately, businesses should understand what technologies they rely on, their utilization of such technologies, and how those technologies bring value to the organization. Only then does it become possible to truly quantify the value of a cloud transformation and what your future cloud end-state should look like.

However, it can be difficult to do so without an apples-to-apples comparison between on-premises and cloud costs. Once you have your current total costs, ITFM tools can help identify which specific components should likely be migrated to which AWS service, and help understand how your current business needs will be affected by your migration plans.

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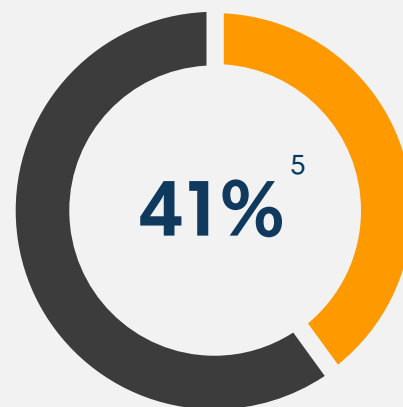
of organizations lack cloud strategy alignment between business and IT

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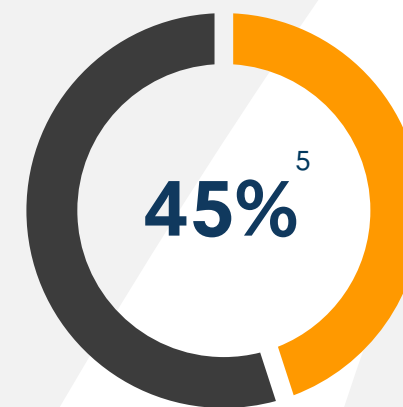
of organizations have no formal way of measuring IT value

5 – 100 IT Cost Reduction Questions You Should Be Asking - Apptio Poster - https://www.apptio.com/resources/posters/100-it-cost-optimization-questions/

Considering Migration Costs

? **Questions frequently asked by CIOs...**

· What do we have on-premises today and what is it costing us?

· What is the most efficient destination to run these applications?

· What will my cost structure look like during the migration?
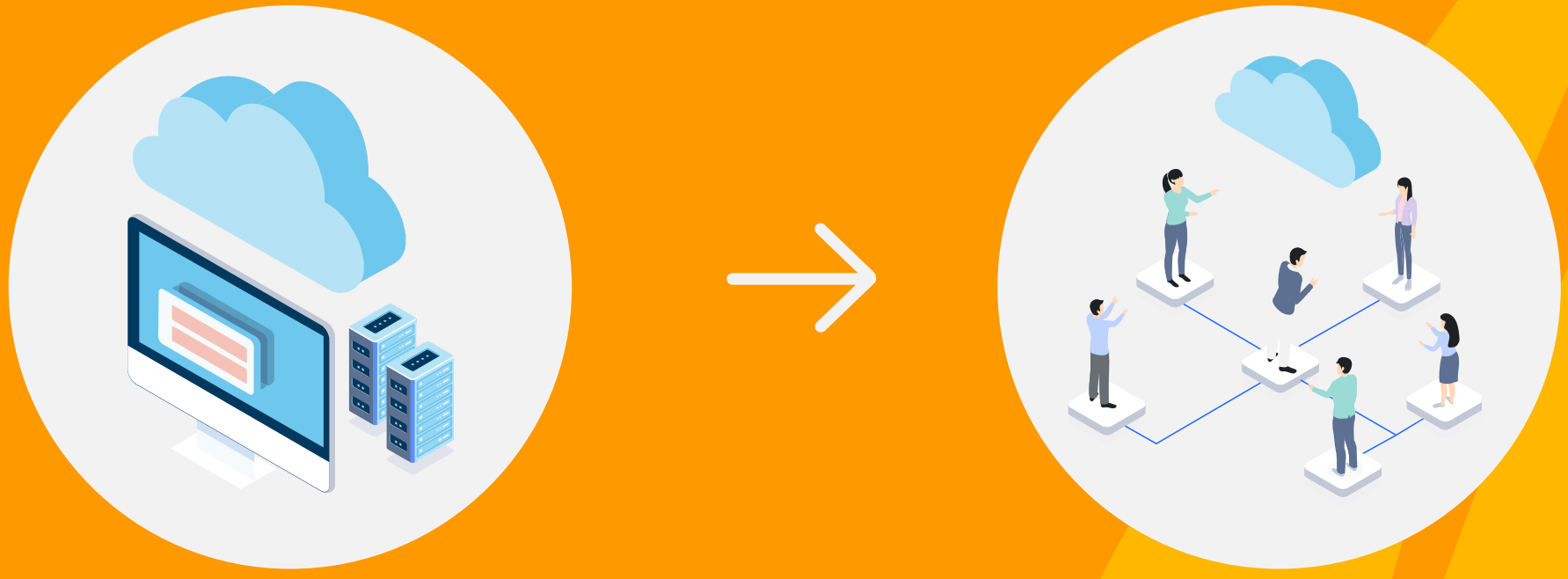
Developing Your AWS Migration Strategy

Once you have assembled a clear visualization of your on-premises costs and contract commitments, it is time to begin developing plans. Your plans should compare different migration strategies, and the timing and cost differences between each.

Each workload should be analyzed individually to best determine its ideal cloud migration path.

The commonly used "Six Rs" of migration strategy:

- **Retire:** Some workloads may be end-of-life and should be retired rather than migrated.

- **Repurchase:** Some workloads can be replaced by SaaS workloads. Migrating those on-premises workloads to a SaaS service can act as a cost-effective alternative.

- **Rehost:** Also known as a "lift and shift", this involves migrating workloads to IaaS VMs, essentially replacing an on-premises environment with a cloud-hosted equivalent.

- **Replatform:** Making a few optimizations to move a hosted service to a Platform as a Service solution.

- **Rearchitect:** This approach can offer significant long-term advantages, especially when rearchitecting takes into account opportunities for performance optimization and modernization, but this process may take longer and require specific technical skills to accomplish.

- **Retain On-Premises:** Some workloads may not be able to run on the cloud, especially those that must follow regulatory compliance that requires specific ownership of data infrastructure.

Each of the listed strategies has associated benefits, risks, resourcing requirements, and complexity. Third party solutions like **Cloudability Shift** can help organizations analyze different approaches and identify the particular strategy best suited to fit their objectives.

Executing Your Migration Plans

You've made your migration plans. Now it's time to turn those plans into execution. As your IT departments begin moving your applications to the cloud, it becomes critical to accurately report progress, gauge budget overruns, and track variations in cost. While hosting data on AWS has its associated costs, the process of migrating data to the cloud also incurs costs due to the time and human resources needed. Tracking and estimating these cost variables is essential to meeting key business objectives and ensuring projects are in alignment with best practices and remain within scope.

During this stage, the cloud environment needs to be set up to adequately handle the incoming workloads that are being migrated from on-premises to the cloud. This includes assessing and potential training of staff around developing, operating cloud based solutions, building out network topologies with the right connectivity for applications and internal traffic, securing networks with VPNs or network appliances, defining the virtual data center, planning for storage, selecting the correct VMs, and creating High Availability / Disaster Recovery plans. With the many required technical considerations, it helps to think of a cloud migration as a series of smaller mini-migrations, each one requiring validation, testing, course-correcting, and value assessment. This way, each step can be audited to determine if it aligns with the broad migration goals, and if it remains within the cloud migration budget set during the planning phase.

Obstacles to Avoid

Migrations rarely go as planned. Often, the prolonging of migration projects are affected by external factors like budgetary changes or shifting organizational priorities that draw away resources.

Some common obstacles to avoid along your migration journey include:

- Resource cost overrun
- Failed migration jobs/technical hurdles
- Improper/lack of timing for contract commitments
- Over-provisioned cloud resources

- Lack of visibility into on-going costs
- Prolonged migration/hybrid stage times
- Multitude of corrections/on the fly changes due to lack of planning

The key to overcoming migration obstacles is the ability to continuously refine and re-simulate your migration plans. Having a third party solution to help you track your migration and adjust your plan along the way can help you understand the impact changes can have-whether to timeline or budget-to best inform decision making.

Interested in seeing how Cloudability Shift can help you manage through changes in your migration plan?

→ **Get a demo today**

To better understand the requirements for each workload that needs to be migrated, we've defined a set of analysis steps that can help discern specific workload considerations and how to address them:

Step 1:

Define your migration roadmap and prioritization around inflection points

Your organization faces forks in the road when it comes to evaluating and renewing on-premises platform and infrastructure investments. When assets reach the end of their life, there is a sweet spot between the completed depreciation schedule (no more hit to OpEx) and no significant performance degradation driving up support costs. It's not a permanent state, but this opens a window of opportunity to make a change and an optimal time to migrate. A data center lease that comes up for renewal, scheduled tech refreshes, dev/test workloads that need more elastic capacity, and fully depreciated assets reaching end-of-life are all points of inflection to adopt public cloud.

Step 2:

Identify your committed infrastructure and platform spend

The cost savings from public cloud are undercut if you have already committed to expanding on-premises capacity. In-flight projects on infrastructure or platform capacity need to be evaluated for scope, deliverables, and projected success before you build a business case for your cloud migration strategy.

Step 3:

Limit the duration of your duplicate capacity

There may be organizational pushback to execute a cloud migration strategy if you are already committed to on-premises spend. The arguments for the cloud easily get derailed if you are signing up for redundant capacity. A full cloud migration needs redundancy during a transition to ensure continuation of service, but once the migration is complete, organizations must make decisions regarding remaining on-premises infrastructure and platform footprints (e.g. switch off, decommission, or repurpose and optimize them until end of life).

Step 4:

Define your excess capacity

Industries with seasonal demand (e.g., retail) build on-premises infrastructure and platform capacity to satisfy peak demand—leaving excess capacity dormant for the rest of the year. This scenario is tailor-made for public cloud adoption. Even if you use on-premises infrastructure and platform resources for normal capacity, surges in usage are better served by the pay-as-you-go option of the AWS Cloud. These bursts of usage need to be quantified prior to public cloud adoption. By defining on-premises excess capacity (and the time it's used), organizations can include peak utilization costs into the TCO of public cloud services.

Preparing for a Soft Landing in the AWS Cloud

After taking the time to meticulously plan your migrations and track on-premises costs, don't forget to apply the same rigor to your destination point. It is critical to monitor and continuously optimize your public cloud footprint to ensure you don't incur cloud cost overrun and are able to successfully realize the ROI of your cloud migration.

Here are some key steps that should underpin this next phase of your cloud journey:

Step 1

Accounting for resource usage across clouds

Most companies employ a multi-cloud strategy, therefore, it is critical to allocate and keep track of your applications across AWS. Having a consolidated view across AWS from a single pane of glass can be critical to accomplish this. You should have a holistic allocation strategy that embraces native constructs like accounts and subscriptions, and also tags applications to help you align them with your financial strategy.

Step 2

Provide transparency through reports and dashboards

Since many stakeholders and leaders from different parts of the enterprise will want to know how public cloud costs are affecting the business, you'll want to find a tool with the ability to create custom dashboards based on what's important to each team. You should shape these reports and dashboards by the type of stakeholder that needs to query the data or glean the insights.

For example, an engineering manager might want to know how much compute instance usage is increasing across different compute categories. A finance manager wants to know how much those compute instances cost per month. Both might want to know what percentage of that resource usage is being covered by discounted pricing, such as AWS Savings Plans.

Be Proactive About Responding to "Cost Events"

The decentralized nature of AWS cloud consumption, and the sheer scale of cloud billing (typically many millions of billing lines a month) means that it's easy for "cost events" to go unnoticed. An event could be a gradual increase in specific usage-which means budgets will then be exceeded-or it could be unexpected and unusual usage, which causes a spike in costs. Make sure you implement official budgets and that stakeholders are notified of projected overruns ahead of time. Also, rely on AI to detect anomalous spending patterns and alert team members immediately.

Start building in the best practices of constant reporting, open dialog, and cross-team FinOps check-ins to keep tabs on both cloud costs and utilization.

Optimizing AWS Cloud Costs and Operational Best Practices

Cloud cost optimization is an ongoing concern that your organization should never truly stop prioritizing. Costs can quickly spiral out of control without some measure of attentive adjustment over time. We've identified four key areas and activities that can help your organization keep cloud costs under control and visible over time:

Step 1

Allocate costs back to the business and institute a chargeback

Once all your cloud spend is accounted for, you can map allocations to your organizational and accounting structure for accurate cloud financials and chargeback models. Implementing a holistic strategy that includes stakeholders, empowers purchasing decisions in alignment with business rules, and brings accountability to business units is key to success.

Developing a taxonomy in alignment with your business needs and using a cloud solution that can apply meta tags to your applications and track spending is vital to understanding your costs. Data is constantly updated and should reflect the near-real time costs with discounts, credits, and amortizations always factored in. This will add important new layers of detail and accountability to the previous reports and dashboards that we mentioned.

Step 2

Rightsize cloud services

Generally, AWS lists their offerings with a general sense of their features and value. For example, AWS touts their M family of Amazon Elastic Compute Cloud (Amazon EC2) instances as "general purpose." There's also the memory-focused R family and the compute-optimized C family. Underneath that classification there are many different options with different costs.

As your migrated projects and workloads start to report actual cloud costs, use a cloud cost management platform that can help compare costs for various services. Best-of-breed solutions will recommend "rightsizing" changes to optimize AWS spending, which can lower costs greatly.

Step 3

Optimize cloud infrastructure utilization and costs over time

Unmanaged cloud resources, like compute, storage, databases, machine learning, containers, data transfer, and more, can generate significant costs. This often happens when "someone leaves a machine on" or allows applications or servers to consume excess resources.

For this reason, it is essential to implement effective governance and resource management. Optimizing services for your organization and aiming to have a high percentage of utilization can significantly cut costs and increase the value delivered by your cloud migration. ITFM solutions may assist in analyzing underutilized resources, identifying potential sprawl, and reducing poor or forgotten (shadow IT) purchasing decisions.

Step 4

Reduce hourly rates through commitment-based discounts

Once your teams have an established run rate of cloud costs and utilization, it's time to identify services that have consistent use. In exchange for long term commitments (typically one or three years), cloud providers offer deep discounts on particular resource usage. These commitments are "use-it-or-lose-it", so organizations should leverage these commitments for the workloads that are stable or for usage that will continue to grow.

At enterprise scale, the management of these commitments becomes a manual, error-prone burden. Use a cloud cost management platform to take this work off of the shoulders of your FinOps teams.

Strategic Roadmap: Considerations for Planning Your Cloud Journey

Analysis and Discovery	What hardware/applications/storage do we currently have?
	How are they being used/supporting the needs of the business?
	How many of them touch/retain/interact with sensitive information?
	How can we consolidate, end of life, migrate, adapt, transform them?
	Which will we retire, replace, rehost, re-architect, retain on-premises or repurchase (SaaS)?
	What will we actually save in cost or burden by moving to the AWS Cloud?
	How are we measuring costs?
Establishing the Vision	Can we move data stores/workloads pertaining to sensitive information to the cloud?
	For any app/workload, what is the benefit to user productivity?
	What cost models are we using to determine our savings?
	How will we establish a sustainable cost analysis model to prove ongoing success?
Building Your Plan	Which AWS Cloud services will we use for applications and storage?
	How will our teams migrate each one?
	What will our "bubble" costs for the transitional state be?
	What will be the cost of prolonged delays?
	Which delaying factors can we account for before we get started?
	(If Applicable) How is our organization training users on any changes?
	(If Applicable) Will users and IT be ready for production at the same time?

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| Testing, Piloting, Adjusting | What will/can we "lift and shift"? |
	What will require a duplicated or hybrid state for testing?
	What can we temporarily test in the cloud?
	How will we secure any sensitive information?
	How will we implement and refine mechanisms for controlling costs?
	For any altered processes, how will we gain end user feedback for improvements?
	How can we plan and replan financially for continued improvements during and after the migration?
Migration	What are the inflection points for our on-premises licenses and hardware?
	What are the paths for each migration, and which is the most efficient for cost and maintenance?
	Do we have the resources to handle the migration or will we need to hire vendors or purchase solutions?
	What delegation and resource management needs to be accounted for to handle the extra burden?
	How are we monitoring our progress and tracking costs as the migration proceeds?
Put Planned Models Into Place	How can we continue to analyze costs of the migration end state?
	How can we account for increasing costs based on need?
	How can we optimize operational models for cost and ensure they are working?
	What steps can be taken to reduce and quickly respond to cloud cost anomalies?
	How will leadership and staff maintain open and clear communication to ensure consistency and maintain progress?
	How can we prove our defined metrics for success have been met, or improve our current state to meet them?
Report, Adjust, and Establish Sustainable Operations	How can we easily report financial success back to the organization?
	How can we analyze our financial status to prove and improve our efficiency over time?
	What are the models we will use to determine what new tech we will invest in?
	How will we justify expansion of existing tech consumption?
	Will we need to update our definition of success?
	How will we gather feedback from IT teams and users to confirm solutions meet organizational needs?
	Once we establish an operational cost model, how can we improve/iterate on it?

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Cloudability Shift: A Modern Migration Planning Solution

Starting your migration journey?

Cloudability Shift is a cloud financial management solution that helps companies analyze, plan, and track migrations to AWS. The platform increases the success rate of cloud migration initiatives, ensuring organizations define a target end state, quantify the value of cloud transformation, refine plans conscious of cost and impact, and track migration progress against the plan. Designed to enable informed, flexible migration planning, Cloudability Shift allows organizations to move fast, spend wisely, and maximize the ROI of their AWS Cloud strategy.

Analyze migration scenarios

Creating a migration strategy begins by understanding your total cost of ownership for on-premises resources and forecasted cloud costs. Model and compare workload migration scenarios, balancing on-premises commitments, business objectives, and cost impacts to develop a clear and defensible migration plan.
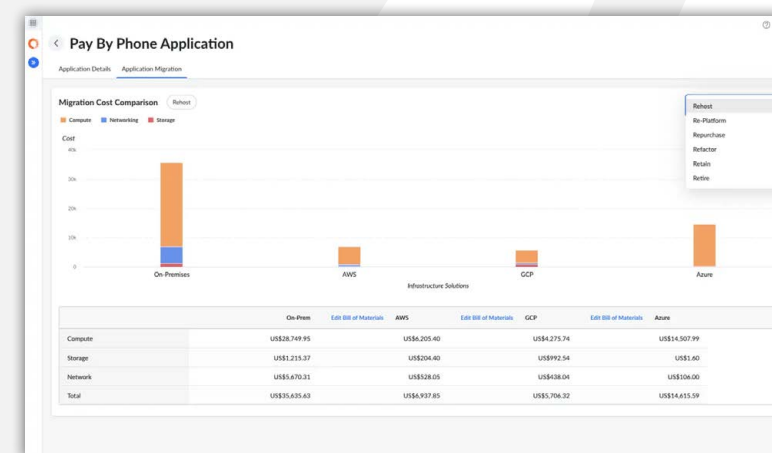
Refine your plan

Migrations rarely go as planned. Minimize organizational risk and cost over-run by adapting your migration strategy to your changing needs. Adjust variables in real time to continuously refine your plan, remaining conscious of cost and schedule impact while leveraging ongoing analysis to optimize workloads.
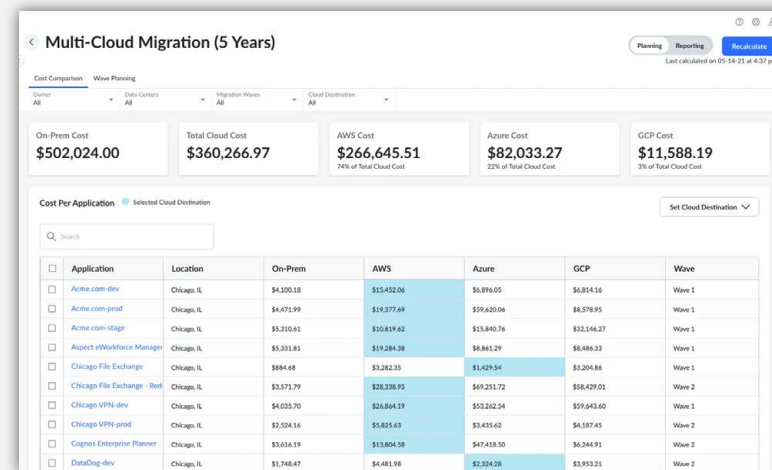
Track and communicate progress

Effective tracking can provide key stakeholders clarity and confidence as an organization migrates to the cloud. Track planned costs against your cloud actuals throughout–and after–your move. Drill into cost drivers to maximize the ROI of your migration strategy and detect variances as they arise for greater cost and operational efficiency.

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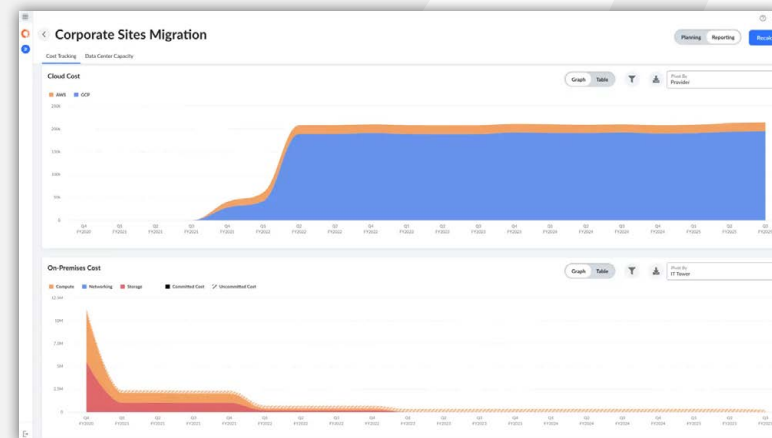
Get Started

Whether you need help analyzing the true cost of the cloud, optimizing your technology spend, or communicating IT's value to the business, Apptio can help.

➡ **For more information about Cloudability Shift, please visit aws.amazon.com/marketplace/**