evaluating the ROI of cloud migration

amdocs

table of contents

abstract

How do you determine the ROI of a cloud migration? Is it just a numbers game? How do you calculate and factor in the very real business value of "soft" capabilities like "agility" or "time-to-market"? And how do the answers to these questions fit into your decision-making process?

Clearly, the value of cloud migration cannot be measured only in numbers. You can calculate the costs before, after and during migration. Careful analysis can uncover cost items that at first you might have failed to consider. But the full **value** gained will still include intangibles that are notoriously difficult to approximate in dollars. For example, the agility an organization gains by going to the cloud allowing the organization to innovate faster; enhanced speed through cloud automation which reduces costs and increases competitiveness; the level of happiness many engineers will experience which increases productivity and prevents attrition. **The decision of whether to embark on a cloud migration project should therefore be based on a combination of both a rigorous analysis of costs – which on its own may justify the transformation – together with a deep, qualitative understanding of the true long-term gain on your investment in the cloud.**

problem statement

Organizations are switching to cloud at a faster rate than ever. Having a sound migration plan is a must for any enterprise taking on this task. Along with this plan, you will want to perform due diligence to understand the costs and returns associated with the migration. Executives will want hard figures to justify the investment to themselves and to management.

Many organizations that choose the cloud migration path tend to use an ROI assessment to determine if a cloud migration will save the company money, help them achieve their organizational goals, and how long it will take them to recoup that investment.

Although the ROI formula of return over costs appears relatively simple, it can be surprisingly complicated when applied to a cloud migration. Comparing on-prem vs cloud ROI calculations can turn complex, and may not return the data you need to facilitate decision-making. All too often running an ROI assessment is too challenging for companies. The results may be inaccurate and detrimental to the decision-making process. In such cases, expert advice should be sought to perform a more comprehensive assessment.

Accounting for "value" in the ROI calculation should be addressed on a case by case basis. Going down the route of trying to approximate all these value intangibles in the ROI equation (and have everyone agree on what value means) may make your head spin, but it can be done if you have the time and skills needed.

This paper will take a closer look at calculating costs and ROI in the cloud and try to provide answers to these challenges. We will walk through the considerations and approach to both ROI and value types of calculations, and ultimately give an answer as to how those calculations should be presented in decision-making.
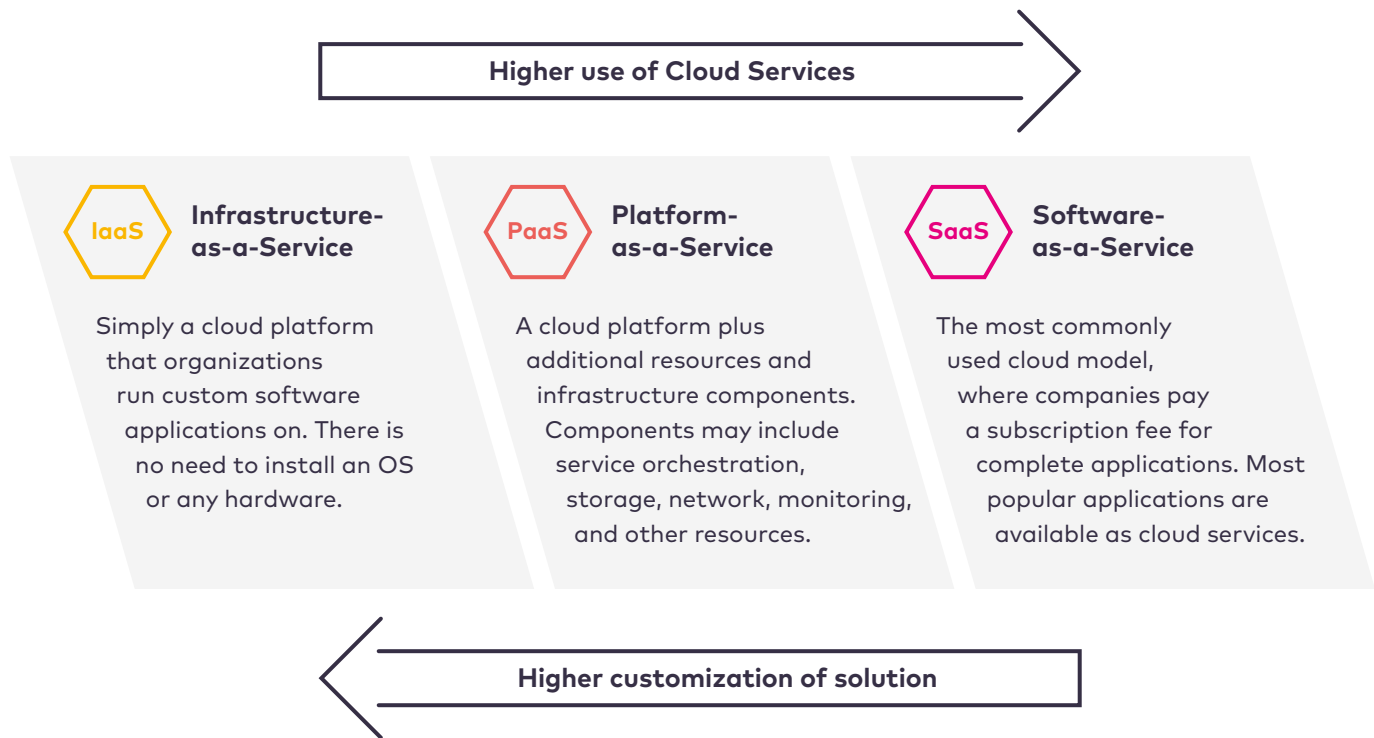
background

For beginners let's review some basics of cloud migrations to understand the relationship between migration types and value.
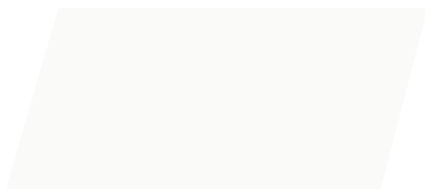
cloud models

Gartner describes cloud computing as a style of computing in which scalable and elastic IT-enabled capabilities are delivered as services using internet technologies. Cloud computing allows an organization to adopt different cloud models which let them depend more, or less, on these cloud services.

Cloud models range from Infrastructure components as a service (IaaS), to the addition of a platform to run your applications on (PaaS), to incorporating complete applications you pay for as a service in the cloud (SaaS). As you depend more on cloud services, you have a less customized solution. In general, the less customized, more dependent solution reduces your initial capital investment and increases your operational investment over time based on subscription fees. The following diagram summarizes the three cloud models and how they range in scope.

Higher use of Cloud Services

IaaS

Infrastructure-as-a-Service

Simply a cloud platform that organizations run custom software applications on. There is no need to install an OS or any hardware.

PaaS

Platform-as-a-Service

A cloud platform plus additional resources and infrastructure components. Components may include service orchestration, storage, network, monitoring, and other resources.

SaaS

Software-as-a-Service

The most commonly used cloud model, where companies pay a subscription fee for complete applications. Most popular applications are available as cloud services.

Higher customization of solution

An enterprise-level cloud migration may mix-and-mingle many of these cloud models on an application-by-application basis. Some applications may need a very custom IaaS approach versus others that may only require a PaaS approach. It may be decided that there is a need to keep some applications on-premises and move others to the cloud, creating what's known as a hybrid cloud solution.

journey the cloud – the 6 R's

Cloud models give an overall intent for a migration, but we also want to be more specific. We need a framework that can help us decide the right action to take either for our entire enterprise, or for individual systems when approaching the cloud migration. The most popular framework for application migration scenarios is referred to as the 6 R's.

1. Retain
Usually, this means leaving the application where it is and doing nothing for now, revisiting it at a later date. Organizations retain portions of their IT portfolio because they are not ready to migrate some applications and feel more comfortable keeping them on-premise. This could be for a number of reasons. For example, they may not be willing to migrate an application that was recently upgraded and so make changes to it again.

2. Retire
Get rid of, decommission or archive unneeded portions of your IT portfolio. Identifying IT assets that are no longer useful and can be turned off will help boost your business case and direct your team's attention toward maintaining the resources that are widely used.

3. Rehosting
Otherwise known as "lift-and-shift," Rehosting is taking the application from an on-prem server and moving it directly to the cloud with as little change as possible. In a large legacy migration scenario where the organization is looking to implement its migration and scale quickly to meet a business case, we find that the majority of applications are Rehosted.

4. Replatforming
We sometimes call this "lift-tinker-and-shift." This entails making a few cloud optimizations in order to achieve some tangible benefit, without changing the core architecture of the application.

5. Refactoring / Re-architecting
This is re-imagining how the application is architected and developed, typically using cloud-native features. This is generally 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.

6. Repurchasing
Casually referred to as "drop and shop," it involves moving to a different product and replacing your current environment.

Usually, implementation time and cost of the 6 R's will gradually increase as follows for a given migration.
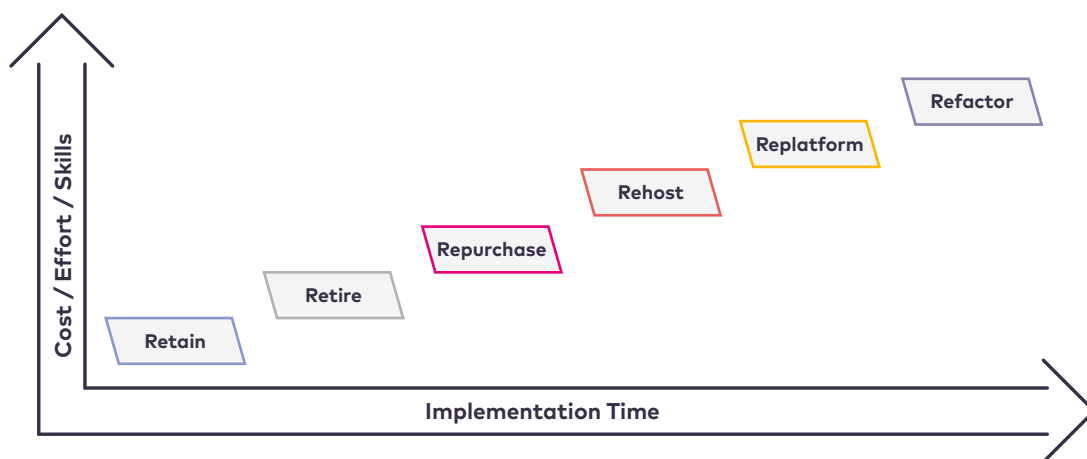
The cost of migration varies depending on the strategy choses, as does the value. Refactoring an application to cloud-native may give high value but may carry a relatively heavy price tag. Let's say you initially decide to go all-in and Refactor a particular application as you move it to the cloud. The cost, which would include ongoing service fees, migration costs from reengineering it and so on, might be high, particularly when compared to simply Retaining the application on-prem. So, you might be tempted to suggest to simply Rehost or Replatform the application to save on costs.

But before making any fictional rash decisions, let's look at cloud value.

cloud value

Cloud Value can be boiled down into a few simple categories: Agility, Productivity, Quality, Reduced Costs, and Employee Retention. Any improvements in these will have a lasting impact on your organization.

Agility

Agility refers to the ability to rapidly adapt and provide cost efficiency in response to changes in the business environment. Cloud computing allows companies to significantly decrease the time it takes to provision and deprovision IT infrastructure. This speeds the delivery of IT projects that are critical to revenue growth or cost reduction.

Productivity

The cloud provides a more productive environment for collaborative working. The flexible infrastructure that can be accessed from any browser translates into businesses enhancing their productivity rather than being inhibitors of change. Organizations can step up or tone down their operations to support their business goals such as attracting and retaining new customers or speeding up the time-to-market for the latest services.

Quality

The cloud can improve service and product quality through customization and enhanced user relevance. Cloud provides the opportunity to automate deployments and rollbacks. Your enterprise can ship and test features faster, up to many times per day. This feature is especially important since it creates an environment for continuous improvement, improving your product and your client's experience overall. If at any point your deployment fails, a well implemented infrastructure will provide ways to fail fast and gracefully.

Reduced costs

Cloud computing can optimize ownership use by reducing the application portfolio total cost of ownership. This is realized through reducing licensing costs, open-source adoption, and Service-Oriented Architecture (SOA) reuse adoption. Cloud also optimizes the cost associated with delivering a specified IT service capacity by aligning IT costs with IT usage. The capital expenditure (CAPEX) versus operating expenditure (OPEX) utilization balance can be more effectively managed with pay-as-you-go savings. Thanks to economies of scale, cloud providers can facilitate better up-to-date resources for less money than most in-house implementations.

Employee retention

Cloud-native implementations provide the opportunity for your IT team to go through a full cultural transformation. This transformation puts cooperation, communication, and empowerment at the core of the organization's values. This new culture provides the ideal scenario for team members to shift their focus from process-oriented and support tasks to research and development, and it breaks the communication barriers between company silos. A successful movement to this kind of culture makes for happy employees that are engaged in work they want to do, and greatly increases employee retention.

All these categories roll up to provide organizations a great deal of value. But, as mentioned, much of this value is intangible and difficult for decision-makers to translate into numeric terms. Agility, productivity, and quality are all inherently qualitative categories.
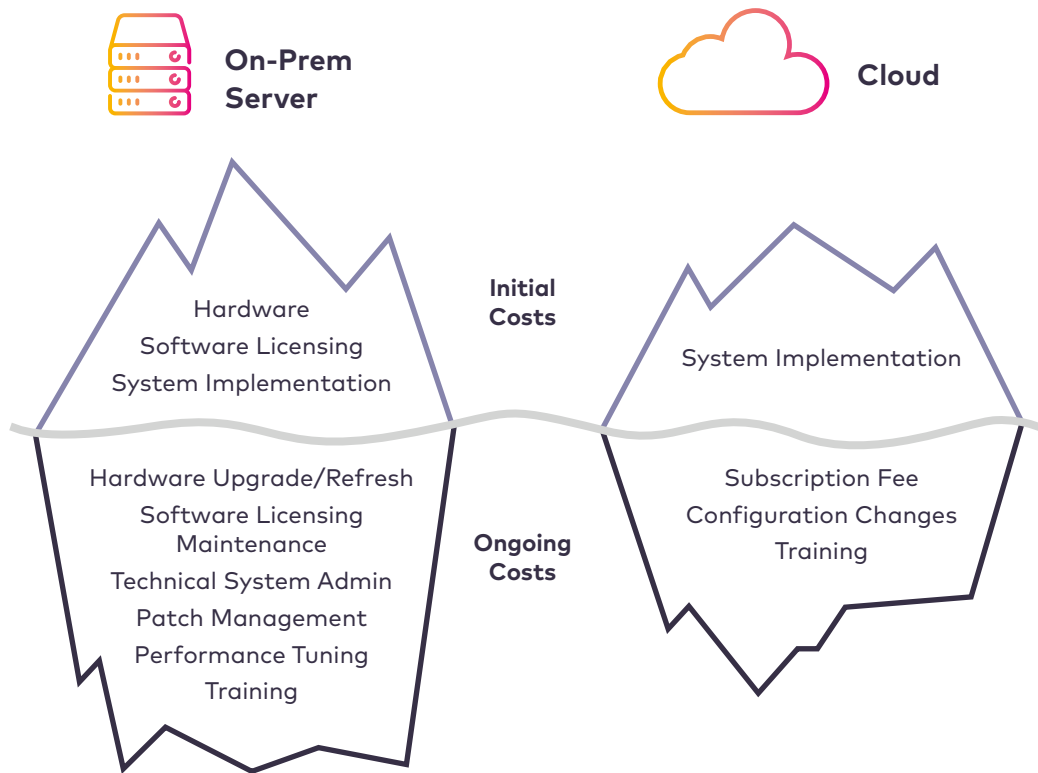
Yet these categories are certainly part of the reason your company is willing to invest to move to the cloud in the first place. Surely there must be a method to break them out into value figures. We will delve more into this problem in a bit. First, let's start with some of the basics of estimating costs in the cloud.

estimating costs in the cloud

The first step most companies take when moving to the cloud is running costs figures. This usually involves assessing the current IT infrastructure for costs to provide a comparison baseline (represented by Retain from our 6 R's). From there you can estimate your future cloud infrastructure costs, and actual migration costs for a particular application's move of being Refactored, Replatformed, or another path into the cloud. This allows you to compare the baseline costs to what the cloud version looks like.

Moving to the cloud means going away from all the hardware-related costs of managing rooms of servers towards a pay-per-use model with ongoing subscription fees. The following diagram illustrates some of the initial and ongoing (often more hidden) costs related to this transition.

On-Prem Server

Cloud

Initial Costs

Hardware
Software Licensing
System Implementation

System Implementation

Ongoing Costs

Hardware Upgrade/Refresh
Software Licensing
Maintenance
Technical System Admin
Patch Management
Performance Tuning
Training

Subscription Fee
Configuration Changes
Training

As you can see, the bulk of ongoing costs for the cloud involve subscription fees, configuration changes and training or new hiring.

In the context of assessing cloud migrations, many companies use the concept of Total Cost of Ownership (TCO) for comparing cloud solutions to the current state. Most cloud providers have built-in TCO calculators for forecasting future/proposed cloud implementation costs. For your current on-prem implementation, these cost figures should be available via IT audits.

TCO intends to uncover both the direct and indirect costs of owning and procuring certain assets or products. It includes a few key components:

• Acquisition/Physical Hardware costs
• Operations Costs
• Personnel Costs

The TCO cost calculation should be performed for each phase of ownership: acquisition, operation, documentation and training, and retirement.

The steps for calculating TCO costs for an application are outlined here in more detail.

1. **Audit current IT infrastructure costs**
   a. **Direct Costs.** This refers to dollar amount costs that are directly reflected in the business balance sheets. These include hardware, software, contractors, warranties, supplies, network bandwidth, storage, database capacity. For direct costs, we also add operations costs. Examples of operating costs are maintenance labor, facilities maintenance/staffing/ real estate, utilities, and any other IT-related cost. We will also add any administrative cost related to maintaining the IT department running smooth.

   b. **Indirect Costs.** These types of costs are more difficult to estimate, but equally important. Costs such as the loss of productivity suffered by employees and customers from infrastructure downtime. Other indirect costs relating to infrastructure include cooling costs, power, or infrastructure improvements. Indirect costs usually vary between different enterprises and implementations.

2. **Calculate your estimated cloud infrastructure costs**
   The current IT infrastructure audit, when implemented correctly, should provide enough information to compare to its prospective cloud implementation. This audit should give you a clear understanding of the network, storage and capacity needed to move your current IT implementation to the cloud. Most cloud service providers have their own TCO calculators. Here are some links to the most common: Amazon, Google, VMware, Azure. Scenarios and details of an actual migration will vary, but these calculators will provide a rough idea of the monthly cost for which you'll need to budget. It is important also to consider that your cloud migration infrastructure may or may not be the same as your current implementation.

   Successful migrations should give you a chance to optimize your current services and their costs. As time goes by, cloud providers can serve better resources for cheaper. They also provide optimization software to make sure you are taking full advantage of your cloud implementation. Your company can run assessments and spin up or down services to adjust as needed.

3. **Estimate cloud migration costs**
   This step accounts for the costs involved in executing the actual migration of your IT operations to the cloud. The migration will be affected by factors such as cloud model selected, as well as vendor compatibility. The following costs associated with a migration estimation are just a few considerations.

   a. **Data migration.** These are fees associated with moving data to the cloud, and labor costs to ensure data integrity during and after the migration.

   b. **Integration and testing.** These are fees associated with how compatible current systems are with vendor cloud applications and updated cloud infrastructure. This will take engineering research to understand the effects of a cloud migration on legacy software, vendor compatibility, and cloud implementation. This type of research takes time – which translates into money that must be accounted for.

   c. **Consulting fees.** A cloud migration can be difficult, and you will likely need outside expertise to assist. Whether it's mapping a strategic approach, developing a cloud architecture, executing the migration process, or all the above, consultants' knowledge and experience across many industries and situations can be very valuable.

4. **Approximate additional post-migration costs.**
   Costs such as continued integration and testing of apps, training, labor, security and compliance, administration, and others need to be forecasted in order to estimate the post-migration budget. Keep in mind that one of the benefits of moving to cloud services is the potential cost savings derived from post-migration ongoing optimization. A robust implementation will provide insights via logging and monitoring tools to better assess which features and services can be optimized. Using metrics, you can then optimize implementations or even decide to decommission certain features.

> One of the benefits of moving to cloud services is the potential cost savings derived from post-migration ongoing optimization.

Within TCO calculations, companies struggle to identify hidden costs that, if not identified, may bias figures towards an overly-optimistic view. The following table showcases the general categories of hidden costs in a TCO model related to software development. Rows represent resource categories and columns represent IT life-cycle stages.

	Acquisition	Maintenance	Upgrade/Retire
Software	Obvious Cost	Obvious Cost	*Hidden Cost*
Hardware	Obvious Cost	Obvious Cost	*Hidden Cost*
Personnel/HR	*Hidden Cost*	*Hidden Cost*	*Hidden Cost*
Facilities	*Hidden Cost*	*Hidden Cost*	*Hidden Cost*

Hidden HR costs can include things like the shift in the organization itself over a cloud migration. A cloud migration involves a significant change in job responsibilities for engineers and non-engineers, as well as the potential for organizational changes as roles adapt to a more collaborative, non-siloed mentality. While some employees may be onboard with learning new cloud-based technologies and operating this way, others may not. You can expect a certain level of attrition from those unwilling to change. On the other hand, you may also expect some attrition from not moving to the cloud since engineers will look for workplaces where they can develop marketable skills. You can also expect the need to hire new cloud experts or consultants during the transformation. Additionally, things like training and communication for new technologies and roles/responsibilities should all be a part of the migration plan and so figure into costs. It is important to see that all these personnel, onboarding and training costs add up.

Other hidden costs are related to the software and development effort itself. One example is when moving from on-prem application A to cloud application B, the data migration and keeping data consistency between the two applications can be tricky. Depending on the size of the data and the cloud provider, this may involve costs of temporarily increasing cloud bandwidth or, with larger data sets, physical transport to a cloud data center using hard drives.

As you analyze how you want to move into the cloud using different 6 R strategies, you may develop more advanced cost models that show a number of phases. The following diagram is an assessment we created for a client engagement that illustrates specific costs for a Replatform, then Refactor, phased strategy.

Replatform then Refactor
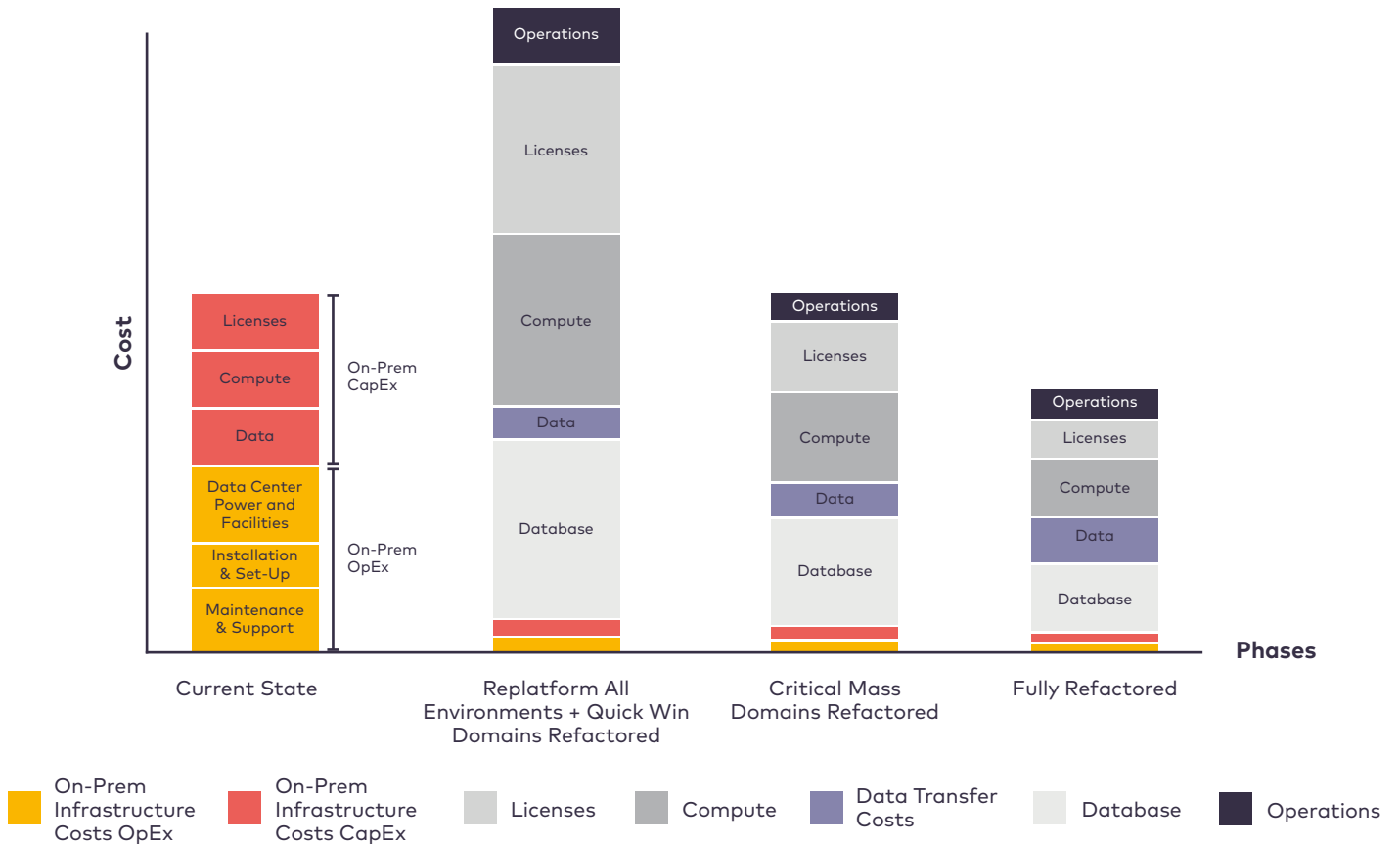
Initial implementation costs show a spike at the point when they have to keep both implementations running. Data consistency, increased network bandwidth, data migration, and hiring/developing skilled staff will increase your initial costs. Then as the application is fully Refactored, the costs dip below the initial state, and the new state showcases the shift in responsibilities from on-prem to cloud provider.

software-specific TCO cost drivers

When it comes to analyzing the costs of software licensing between in-house and cloud implementations, there are a few points to analyze when performing a true TCO calculation.

Cost Drivers	Traditional On-prem	Cloud Application
Capital Expenses	Upfront purchase of software and hardware May require network infrastructure enhancements, facilities Need to support third-party monitoring, test tools, security products	No Upfront Costs Pay-as-you-go subscription pricing All inclusive: maintenance, support, training, and upgrades all hardware, networking, storage, database, administration
Design and Deployment	May take months to deploy Professional services cost up to 3x the initial software purchase Difficult for a vendor to build best practices Requires staff or contract labor to research, design, integrate, test, tune, launch, train	Deployment cadence up to multiple times per day Lower cost using a consistent set of best practices
Ongoing Infrastructure	Ongoing software maintenance, upgrades Ongoing hardware replacement once every three-five years Requires network monitoring and management tools May require additional networking equipment and bandwidth to accommodate incremental traffic	Vendor provides as part of a subscription
Ongoing Ops, Training, Support	Requires resources to operate, monitor, support, and upgrade the application Need to hire, train and certify support personnel	Vendor provides as part of a subscription There may be some training fees Customer must ensure adequate internet access and bandwidth

adding in value to the equation

Having calculated costs and made comparisons, we can now turn to the subject of accounting for value. In an ideal world, we don't want to merely look at costs without also considering the value of an investment.

basic ROI definition

If you are unfamiliar with ROI, it is usually expressed as a percentage of gain from an investment over the cost of the investment. ROI calculations are sometimes expressed in different ways. The simplest definition is:

$$ROI = \frac{(\text{Gain from investment - Cost of Investment})}{\text{Cost of Investment}} \times 100$$

For example, if you expect to invest $2,500 in cloud services and support for year 1, and you project earnings (cost savings and new revenue) of $10,000 after the first year as a result of your investment, then your projected ROI is 300 percent, computed as follows:

$$ROI = \frac{\$10,000 - \$2,500}{\$2,500} \times 100 = 300\%$$

A positive ROI indicates that your projected gains compare favorably to your projected investment costs; in this case, a 300% gain. ROI includes the notion of a predicted gain over a time period — the figure could be related to 1-year, 5-year, or any notional time period used for comparison.

When it comes to assessing the ROI for a cloud migration, the calculation is slightly different in that gain is considered as value in the equation. The adjusted formula that is commonly used is:

$$ROI = \frac{\text{Final Value of Investment - Initial Value of Investment}}{\text{Cost of Investment}} \times 100$$

Here we substitute the upper right "Cost of Investment" metric from the previous calculation for an "Initial Value of Investment" metric. This implies that you should consider the initial value an implementation may have. You end up with a value-focused ROI calculation where you assess all the value gained from a monetary invested amount (cost of investment).

As previously mentioned, translating value in this equation into numeric/quantitative terms is difficult, and it will be different for each case. Discover what value means for an organization, identify the intangibles, and derive numbers that represent your best effort. In other arenas, ROI calculations for more tangible assets are more straightforward. But the cloud itself has a different value proposition that actually builds on itself.

exponential value

To truly understand the ROI of becoming cloud-native, we have to understand how value is created from investing in IT. The following diagram shows a comparison of demand for traditional IT resources versus cloud-based resources.
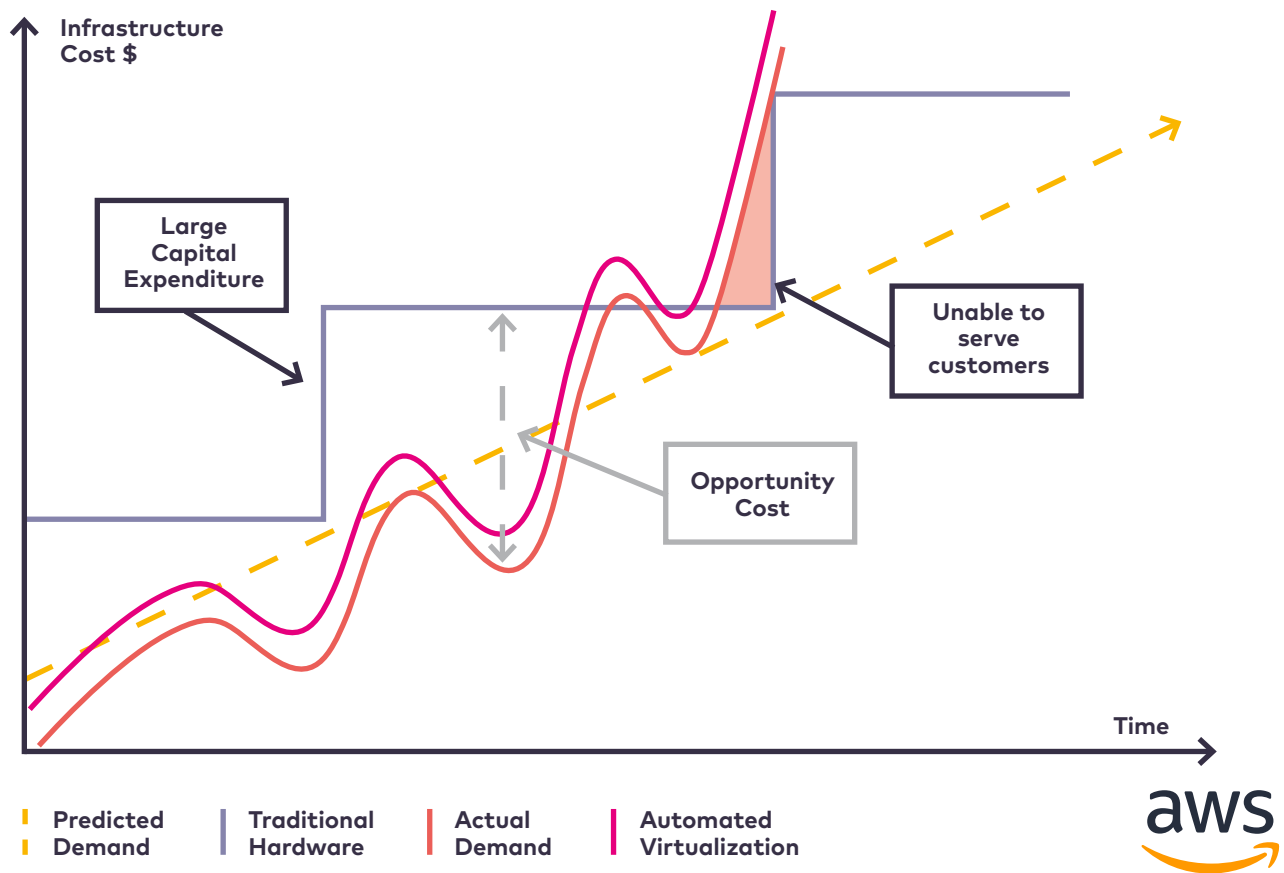
Traditional on-prem infrastructure requires provisioning resources for your estimated peak demand scenario. In most cases, this translates into underutilized resources and large periodical capital expenditures (represented as the blue stair-stepping line graph above). All of these transactions also come with maintenance and support overhead. Cloud services (represented by the yellow line) grow as an on-demand model that provides the necessary resources at the right time, aligning them with your enterprise's demand and minimizing downtime. The cloud model additionally provides the opportunity to shift your team's focus from IT maintenance and support, into providing value for your business' end goal.

It is important to note that the ROI of cloud services is directly proportional to how cloud-native those services are. The deeper the immersion into cloud services, the bigger the return.

The key way the cloud produces compound returns when going fully cloud-native is in the category of agility. It refers to quickly adapting your services to meet customer demands. **Cloud agility takes this a step forward by providing agility to the whole enterprise, not just the IT department. Being able to quickly provision resources, developing and deploying new infrastructure in minutes become great assets when aligning them with the enterprise's end goal and strategy**.

> A successful cloud model implementation should make your entire operation more agile, not just your IT department. Depending on the immersion, it could transform your entire company's culture.

The cloud provides many ways of achieving agility.

- **Quick time to market:** Cloud computing allows companies to significantly decrease the time it takes to provision and shut down IT infrastructure, speeding delivery of IT projects that are critical to revenue growth or cost reduction. **While a physical server could take days or weeks to procure and provision, a cloud server takes minutes.** Faster time to market means a faster time to revenue.

- **Automated allocation of resources:** Cloud computing simplifies provisioning, de-provisioning and shut down resources through automation and easy-to-use web consoles and APIs. **The time an IT systems administrator spends on managing and supporting cloud infrastructure is reduced greatly compared to that seen in a physical environment.**

- **Flexibility and Scalability:** Cloud computing allows the flexibility for businesses to scale up or down their resources to meet the sudden burst in demand or website traffic to meet unpredictable application development or production needs. **The pay-per-use model of cloud computing offers its subscribers the opportunity to either rent or subscribe to the platforms, systems, infrastructure and data services which can be rapidly scaled up or down on an as needed basis.** Common workloads that require on-demand scalability include testing and development, load testing, seasonal spikes in traffic, and new application releases. These require no need to wait for hardware and software resources — the cloud makes everything immediately accessible.

- **Adaptive Auto-Scaling:** Cloud computing uses API's, software etc. for accessibility of cloud platforms and services. It is easier to automate IT management and provisioning in a cloud environment. You can integrate business intelligence and analytics platforms, IT monitoring tools with the cloud, allowing the systems to be more adaptive. As an example, **new servers can be automatically provisioned (or de-provisioned) when load balancing thresholds are met.**

- **Faster Innovation:** Cloud computing allows companies to support an increased pace of product development and marketing programs that better align IT infrastructure and management costs with the goals and objectives of the business.

With traditional systems, incorporating a new technology, adding a new product, or implementing a new feature, is often a lengthy process. The following diagram illustrates how the time for these kinds of deployments can be greatly reduced in the cloud.
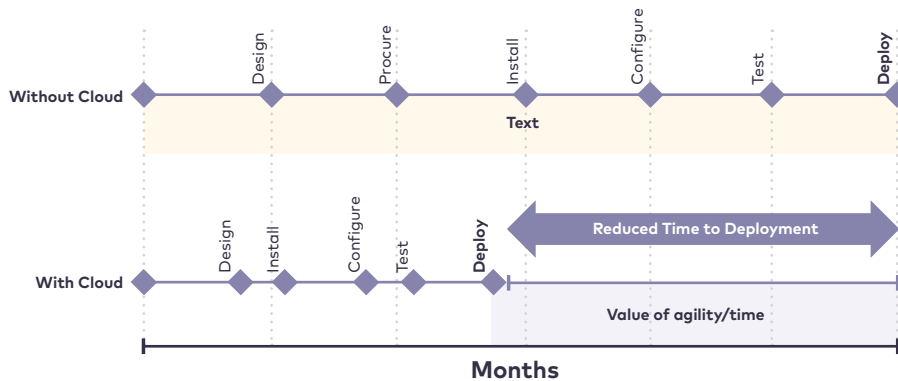
Take experimentation as an example of agility. With a cloud-native system, you have quick access to a broad set of resources. You can setup fast installation and configuration of your software, do all the necessary test exercises (experiment), take the new product or feature to market, or, in the worst case, fail fast and only pay for the timed provision of those resources. This gained speed provides the perfect scenario for developing new sources of revenue at a faster rate, and potential innovation from quick access to experimentation.

All these described gains in agility amount to the cloud being an *ROI multiplier unto itself*.

> Cloud computing allows IT enterprises to focus their attention on doing things that help grow revenue, increase customer engagement, and open new product channels. That is the true compound return on investment of cloud technology.

As you move through cloud migration, you may notice your engineers have new-found time to innovate and explore new technology. Newly Refactored cloud services may allow your company to cut corners and streamline entire business processes. A new culture built on cloud enablement will emerge that focuses on speed and cooperation. These are all returns that we've watched clients experience as pleasant and unforeseen surprises during their cloud journey. These returns build on each other in an exponential way relative to the level of cloud immersion the organization undergoes.

Remember. The heart of digital transformation is data. A successful digital transformation will give you access to data at every point of your organization, provide a platform to become more efficient, and capitalize on that data faster. If these changes allow your organization to develop competitive products and services that customers will buy in the future, the return on investment just might be priceless.

Calculating the ROI on Intangible Value

Getting back to the question of calculating a robust ROI using cloud value, the inherent difficulty is apparent. It requires estimating a value for the intangibles mentioned throughout this paper. Moreover, since cloud value builds on the level of cloud adoption, a complete Refactoring would return greater value than Replatforming. Therefore the model must be able to take into account the difference in ROI depending on the migration method chosen (i.e. which of the 6 R's). The ROI model would also have to take into account the importance of the application; Refactoring an application that is more central to the organization's goals would return greater value than Refactoring a less important application. Ultimately true value is company specific and will vary from company to company.

Another challenge is comparison of servers. Comparing one local server to an on-cloud server is easy but comparing the availability of that server over multiple regions throughout the globe and you are talking about an entirely different scenario.

what can we base cloud decisions on?

Despite the challenges in calculating ROI, many executives want to see those numbers. Companies may either make an ROI calculation or use the TCO model for cost calculations. These numbers lend a sense of accountability and due diligence to the migration as a whole. But it is best to recognize that they do not give the entire picture. Because costs don't factor in value.

Decision making should be based on a mix of cost or ROI calculations together with the knowledge of all the specific intangibles your company expects to gain with the cloud.

ROI calculations should rely on company-specific value. For example, at some companies you may factor other measurements or KPI's into the ROI picture such as website clicks or cost-savings.

The deliverable from an ROI study should be an ROI report that lists, in addition to financial calculations, also all the intangibles your company hopes to achieve by specific movements into the cloud: CI/CD automation, faster feature delivery, innovation gains etc. This is a list of all the reasons the engineers and business people see specific value for your organization moving into the cloud.

If only cost calculations are done, you may go deeper into calculating a full TCO model. The cost calculations should likewise be accompanied by a report of all the intangibles the organization hopes to gain.

The numbers in such a report may be challengeable. It may be easy to balk at the initial costs or simplified ROI calculation of Refactoring an application. But in the end your organization may favor the larger and more expensive lift knowing that it opens up a world of value with the increased cloud usage it brings.

conclusion

The key realization when performing a Cloud readiness assessment is that the cloud is an economic innovation, and every benefit of the cloud will translate into an economic impact that builds on itself. Due to the difficulties in quantifying classic ROI for cloud migration, it may be worthwhile to engage external experts to assist in building an assessment that encompasses both the financial cost and also the intangible value of the migration, as they apply to your organization. While calculating TCO costs or using simple ROI calculations are certainly recommended for due diligence, they should be considered only one of several methods to employ when assessing cloud implementation. An effective ROI or costs report will highlight how cloud computing can impact the business execution, drive innovation, and help your organizational goals.

contact us

If you'd like to chat with us about help with your cloud migration assessment, contact Michael Isaacs, Amdocs Global Services at **Michael.Isaacs@amdocs.com**

This white paper was authored by R. Carlos Hernandez.

about amdocs

Amdocs' purpose is to enrich lives and progress society, using creativity and technology to build a better connected world. Amdocs and its 25,000 employees partner with the leading players in the communications and media industry, enabling next-generation experiences in 85 countries. Our cloud-native, open and dynamic portfolio of digital solutions, platforms and services brings greater choice, faster time to market and flexibility, to better meet the evolving needs of our customers as they drive growth, transform and take their business to the cloud. Listed on the NASDAQ Global Select Market, Amdocs had revenue of $4.1 billion in fiscal 2019. For more information, visit Amdocs at www.amdocs.com.

www.amdocs.com

amdocs