

# Practical Guide to Optimizing Your Cloud Deployments



# The new dawn of digital transformation in the cloud

Many organizations today are turning to digital transformation to retain their competitive edge. According to IDG's 2020 State of the CIO Report<sup>1</sup>, 39% of CIOs reported their top priority was leading digital transformation initiatives. This strategic adoption of digital technologies helps organizations transform their processes to improve efficiency and productivity, deliver better employee and end-user experiences, and lower risks and costs.

These initiatives are driven by the modernization of applications, data, and platforms, which in turn requires considerations such as:

- Identifying and prioritizing areas for modernization
- Evaluating the best platforms to support the change
- Identifying and solving management and optimization challenges

One of the most common foundational pieces within digital transformation initiatives is leveraging cloud-based computing, applications, services, and platforms.

To attain these foundational pieces, **31%** of the global market turns to Amazon Web Services (AWS).<sup>2</sup> To support their cloud deployments, organizations also look to the AWS Marketplace, a curated digital catalog of software that runs on AWS, to find, buy, deploy, and manage third-party software and services they need to build solutions and run their operations.<sup>3</sup> Many organizations rely on ePlus, a leading consultative technology solutions provider, to align business with cloud strategies and deployments to leverage the most from these services and solutions. As an AWS Advanced Consulting Partner, as well as an AWS Marketplace Consulting Partner Private Offer (CPPO) partner since program inception, ePlus helps their customers transform their procurement processes to match the speed of cloud.

Cloud migrations, deployments, and solution implementations deliver significant benefits, but can be daunting tasks for both those just starting on their cloud journey and those already down this path. The sheer complexity of such endeavors and the ambiguity of responsibilities can create confusion that leads companies down the wrong path of costly and inefficient outcomes.

**ePlus** and **AWS** can deliver an optimized cloud experience, bringing clarity to your organization's cloud journey, accelerating migration to the cloud, reducing costs, and improving your overall experience.

# Cloud Optimization: Your Top Priority

One of the major megatrends of the last decade was the unprecedented growth in cloud adoption, with most organizations starting to use the cloud in some capacity. This trend has only accelerated during the time of COVID-19. Deloitte reported that 68% of CIOs ranked “migrating to the public cloud and/or expanding private cloud” as 2020’s top IT spending driver.<sup>4</sup> This is an increase of 20 points from a similar survey completed just half a year earlier.

However, all this growth does not necessarily equate to optimized cloud deployments as many workloads are moved for the wrong reason, have unrealistic expectations, or to an unsuitable platform. This has become even more evident when factoring in the recently accelerated migrations due to COVID-19 business impacts. Organizations are finding that they may not have put in the level of planning that they would have otherwise undertaken pre-COVID.

Flexera’s 2020 State of the Cloud Report<sup>5</sup> stated that 73% of organizations plan to optimize their existing cloud use (up from 64% in 2019), making it the top initiative for the fourth year in a row.

## What exactly is cloud optimization?

Cloud optimization isn’t a one-time effort, nor just about monthly cost savings. Cloud optimization is a cultural shift in the consumption of IT resources while moving from traditional data center infrastructure to cloud. A major component of that shift is adopting a FinOps framework and mentality. According to the FinOps Foundation,

“FinOps is shorthand for Cloud Financial Management. It is the practice of bringing financial accountability to the variable spend model of the cloud, enabling distributed teams to make business trade-offs between speed, cost, and quality.”<sup>6</sup>

Unfortunately, many organizations do not have the tools or resources to support a continuous cloud optimization practice. To help customers implement such a practice, ePlus developed a framework, the **Core Constructs of Optimized Cloud**, that provides a blueprint to build a foundation for success.

## Phases of FinOps



### Inform

Gives you the visibility for allocation and for creating shared accountability by showing teams what they’re spending and why.

### Optimize

Empowers your teams to identify and measure efficiency optimizations, then make goals based on those opportunities.

### Operate

Defines and executes processes which enable the goals of Technology, Finance, and Business to be achieved.

# The Core Constructs of Optimized Cloud

The ongoing management and optimization of cloud platforms can be challenging and lead to inefficiencies. The learning curve of next-generation cloud platforms is often more complex than organizations are prepared for. Nearly two-thirds of senior IT executives recently surveyed by Accenture<sup>7</sup> stated that they had not achieved the expected cloud benefits. Many also struggle to manage the cloud's cost, with organizations wasting an average of about 30% of their cloud spend, as recently reported by Flexera.

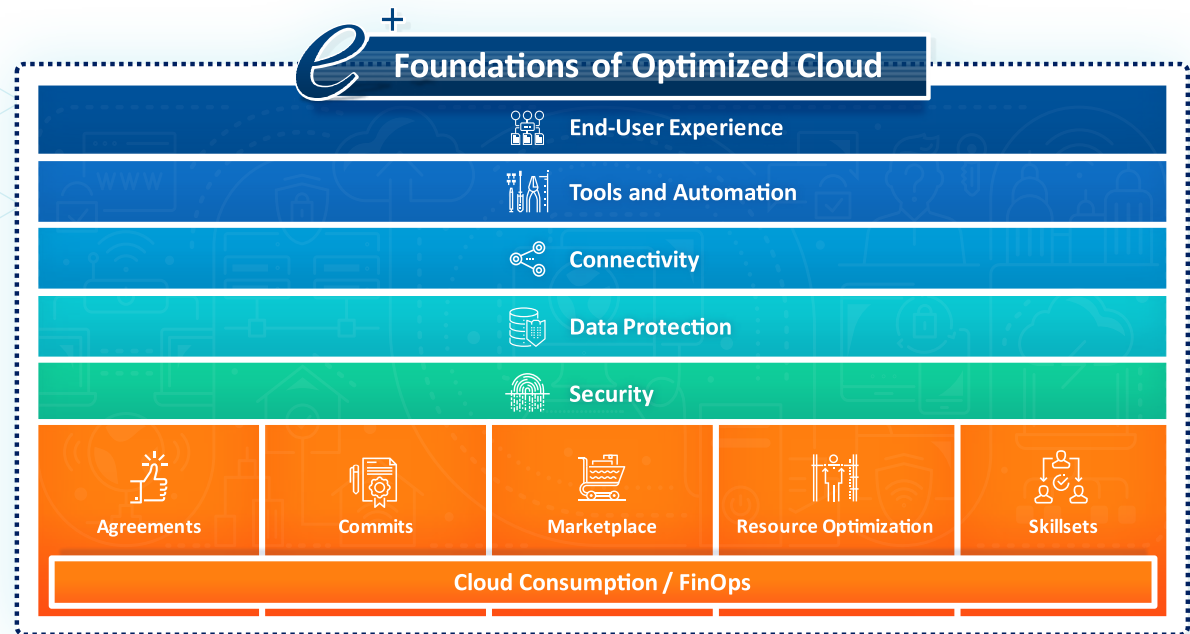
With the multitude of cloud offerings available, selecting the right solutions to support your organization's goals and needs can be an overwhelming task. The countless options available can make it challenging to navigate and assess, often resulting in inefficient and ineffective use of cloud resources.



The **Core Constructs of Optimized Cloud** framework helps organizations build a cloud foundation built on a culture of continuous optimization to maximize the value from all aspects of their cloud activities.

To support an optimized cloud foundation, it is critical that organizations:

- 1 Optimize cloud consumption via a FinOps framework
- 2 Continuously assess and audit security posture
- 3 Properly protect data stored in the cloud
- 4 Build a cloud-optimized WAN to support their multi-cloud future
- 5 Leverage the power and efficiency of automation
- 6 Measure focus on end-user experience



This framework ensures optimization remains a foundational aspect of your cloud journey. These core components support the development of a multi-cloud enterprise architecture to maximize the value that IT provides back to the business.

The first aspect provides a foundation of organizational excellence for consumption in the cloud while the second aspect examines the technological aspects to consider. Below we will delve into the key components of each that will help drive cloud optimization for your organization.

# Cloud Consumption

Cloud consumption is the core foundation of any optimized cloud deployment. Inefficiencies in an organization's consumption of cloud can lead to wasted spend, unnecessary risk, and dissatisfied executives. When examining cloud consumption, focus on the following key components: Agreements, Commits, Marketplace, Resource Optimization, and Skillsets.

## Agreements

The agreement with your cloud provider is the cornerstone of all cloud consumption. Options include traditional pay-as-you-go, working with an AWS Solution Provider partner, and leveraging enterprise discount programs. The right type of agreement is key to maximizing your discounts, support levels, and funding to support activities such as proof-of-concepts (POCs) and migrations.

## Commits

Arriving at the appropriate level of commitment for your organization is essential. *Over-committing* means over-spending for unused resources, while under-committing means your organization is over-spending on those resources consistently in use. Establishing appropriate commitments is one of the most effective ways to decrease your cloud costs. For example, organizations that are forecasting consistent workloads for years to come can make a multi-year commitment and take advantage of discounts.

This component includes both resource-level commitments, such as reserved instances and savings plans, as well as agreement-level commitments such as Enterprise Discount Programs (EDPs).

## Marketplace

The AWS Marketplace offers more than 11,000 third-party software and solutions services that your organization can take advantage of. Users can easily find, select, and purchase solutions with automated deployment, all with the click of a button. These listings frequently include consumption-based cost models, meaning you pay only when the resources are used. Billing is simple with consumption showing up on your monthly AWS bill. To top things off, a portion of AWS Marketplace spend is eligible towards retiring EDP commitments, which can be significant for enterprise customers.

When an organization doesn't correctly govern its AWS Marketplace usage, it can put the ability to procure and make decisions in the wrong hands, resulting in the purchase and deployment of "shadow IT" and inadvertently circumventing standard procurement processes. This action can introduce or increase security risks, the procurement team's loss of control of purchasing, with no means to centrally track and no contract validation or budget approval, and the ability to negotiate pricing to leverage appropriate discounts.

Within the AWS Marketplace component, ePlus can help your organization fully leverage all the AWS Marketplace value, while mitigating the risks outlined above. Our procurement transformation methodology ensures your organization benefits from all the discounts you are entitled to based on the buying power with specific independent software vendors (ISVs) while mitigating risks by keeping procurement in control and adhering to all internal purchasing processes and procedures.

## Resource Optimization

Deploying and operating in the cloud can be overwhelming for organizations due to the need to constantly balance their resource use. Managing within a cloud environment is still a new concept for many. Applying the familiar traditional data center methodologies to operate and maintain these resources is not the best approach.

Many organizations are accustomed to leveraging resources in a data center, where infrastructure components have already been accounted for and there is no incremental cost for usage. When leveraging consumption-based virtual resources in the cloud, there is a fee for every hour they run. It can become very easy to lose track of the lifecycle of these virtual resources, leading to wasted spend. It is not uncommon for organizations operating in the cloud to be unable to account for all of the cloud resources they have running.

To compound the situation, organizations are finding that the services and resources they have in the cloud are often over-provisioned and under-utilized, which means they are overpaying every hour that the over-provisioning remains in place.

According to a recent report by Flexera, organizations are over budget for cloud spend by an average of 23% and expect cloud spend to increase by 47% next year.<sup>6</sup> This trend illustrates the criticality of resource optimization—every day you fail to optimize, your organization is overpaying.

Resource optimization is a combination of tools, people, and methodology. When properly managed, your organization can endeavor to:

- 1** | Continuously examine your resources to ensure they are right-sized
- 2** | Make the appropriate level of resource- and agreement-level commitments
- 3** | Reduce the risk of stranded resources that are no longer in use

This mindset and methodology help your organization gain visibility and manage all of your cloud resources, reducing cloud adoption burden and cost.

## Skillsets

One of the biggest cloud adoption inhibitors is the lack of internal skillsets and cycles to support the new technologies being leveraged.



**Number 1 challenge**  
for organizations at the beginning of their cloud journey



**Number 4 challenge**  
For organizations already operating in the cloud

Source: 2020 Flexera State of the Cloud Report<sup>5</sup>

With the countless number of cloud services available, it is impossible for any organization to have mastered them all. These gaps in cloud expertise can inhibit organizations from reaching their cloud adoption goals in a timely fashion.

When deploying in the cloud, it is critical to build a methodology to ensure that your team members are constantly being trained, enabled, and supported. This is typically done via a combination of tools, internal training programs, and support from external partners via professional, managed, and staffing services. This approach gives your organization access to the right resources that support your cloud initiatives, ensuring that your staff has access to the proper training, enablement, and tools to be successful.

## Customer Story: Financial services organization optimizes its cloud consumption



### Business challenges

- Lack of confidence that the current manual examination of AWS billing provides proper visibility
- The organization wasn't aware of its cloud consumption blind spots



### Solution

- ePlus Cloud Cost Optimization Assessment



### Business outcomes

- ePlus provided a comprehensive assessment of the company's current cloud consumption, identifying the few critical areas of inefficiencies and built a plan to optimize and right-size current consumption
- Identified over \$17,000 per month that the company could recoup in the short-term



# Enabling Technology

While cloud consumption is the foundation of an optimized cloud deployment, the technology layers above it are equally critical.

As such, the focus on Security, Data Protection, Connectivity, Tools and Automation, and End-user Experience completes the framework of the Core Constructs of Optimized Cloud:

1

**Security:** Developing an enterprise-wide security approach that fits your organization's needs across both data center and cloud deployments.

2

**Data Protection:** Protecting all aspects of your data residing in the cloud.

3

**Connectivity:** Delivering multi-cloud services with high-availability and predictable performance.

4

**Tools and Automation:** Maximizing the efficiency of the cloud via concepts such as infrastructure as code and serverless computing.

5

**End-user Experience:** Providing metrics on the satisfaction of your end-users to ensure that cloud is enhancing their experience.



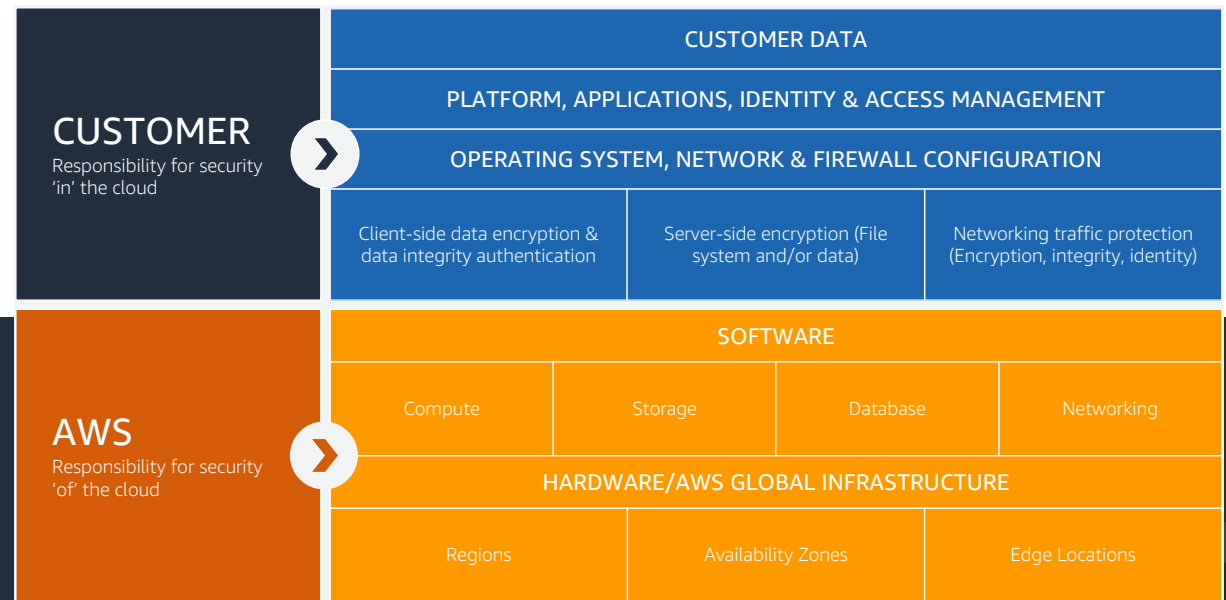
## Security

When deploying in AWS, it is critical to understand the Shared Responsibility Model which defines responsibility for security and compliance in the cloud. AWS is responsible for the security OF the cloud while the customer is responsible for the security WITHIN the cloud.<sup>8</sup> This translates to the fact that the bulk of the security responsibility ends up in the customer's hands.

As per recent research by Flexera, security is cited as the number one challenge for cloud decision-makers and users, with 83% of surveyed enterprises reporting it as a top concern.<sup>6</sup> Organizations must ensure security measures are appropriate and effective across areas such as cloud firewalls, intrusion detection and prevention, identity and access management, endpoint protection, and overall cloud security posture management in AWS. This becomes especially critical in the context of multi- and hybrid-cloud deployments.

Many organizations are employing a multi-cloud architecture to allow the flexibility to run each individual workload in the most appropriate platform. But these environments result in the need for more complex management practices as each cloud is managed to adhere to its own best practices with its own unique tools. This multi-cloud approach also poses an additional challenge as it presents hackers with a larger attack surface making security even more critical. Organizations need an approach that empowers security management across their data centers and all of their cloud environments.

Organizations should focus on standardizing policies and procedures across all of their platforms and then focus on implementing a security posture within each platform that fits specific requirements and needs. Within the AWS Shared Responsibility Model, it is critical to fully understand the aspects of security that are the responsibility of the customer and manage those appropriately.



AWS Shared Responsibility Model

# Customer Story: Healthcare organization improves security posture



## Business challenges

- A healthcare organization had experienced significant evolution of their technology infrastructure over the years, but the overall security posture was struggling to keep up.
- IT learned of a cloud deployment that they were previously unaware of, which sparked an initiative to investigate their cloud usage and associated risks.



## Solution

- In-person Cloud Usage and Risk Workshop orchestrated by ePlus to assess current cloud usage, which included data discovery, identification of existing threat vectors, and mapping of a go-forward strategy
- The solution included Cloud Access Security Broker (CASB) technology, Web Proxy (Forward/Reverse), and Data Loss Protection



## Business outcomes

- Visibility across entire cloud usage substantially minimized risks and vulnerabilities while improving the overall compliance program
- New compliance program has protected cloud-based sensitive data, set up controls over current cloud usage, and allowed the organization to implement a strategy to adopt new cloud applications in the future safely
- Implementation of a new, comprehensive solution through a single vendor allowed them to retire an expensive and hard-to-manage legacy proxy solution, eliminating operating costs and recurring monthly fees associated with a service contract for an inferior product

## Data Protection

Data protection has always been critical, but moving data to the cloud creates a new set of concerns and requirements.

### What is the definition of data protection?

When it comes to data protection, the immediate thought goes to backup and disaster recovery. In reality, data protection encompasses all of the ways that you ensure your data is always available and your most critical assets are properly protected. This includes the architecture, tools, services, and processes your organization leverages to protect all of your data, regardless of the platform it sits within.

Inadequate data protection can be extremely costly. For example, the average cost of downtime exceeds \$300,000 per hour, according to 86% of global respondents of the 2020 Statista survey.<sup>9</sup> The resulting total price tag of a data breach expenditure is, on global average, \$3.86M, according to a 2020 IBM study.<sup>10</sup>

Organizations should devise a plan that covers all aspects of protecting their data. This includes elements such as:

- High-availability architecture
- Single file and server recovery
- Geographically dispersed disaster recovery
- Ransomware protection
- Data encryption
- Data loss protection

Combining the traditional approaches your organization has today with cloud-native approaches and third-party solutions to address any gaps, your organization can significantly improve protection of your most critical assets.



“ePlus played a crucial role in helping us support our virtual desktop workloads and shore up our recovery capabilities, enabling our essential workforce while bolstering data protection.”

- Adam Gold, Chief  
Technology Officer, CHOC



## Customer Story: Healthcare organization improves security posture



### Business challenges

- A healthcare organization wanted to deploy a next-generation data protection solution to protect mission-critical data and servers to the cloud
- Also wanted to improve its disaster recovery SLAs while lowering costs and maintaining adherence to strict governance, risk, and compliance mandates



### Solution

- ePlus Cloud Consulting Services
- Next-generation backup solution from Rubrik, replicating to AWS for offsite recoverability
- Replication of mission-critical workloads to AWS via CloudEndure to lower disaster recovery SLA
- AWS Control Tower environment with Palo Alto Networks VM series integration



### Business outcomes

- Decreased risk of exploits, malware, previously unknown threats, and data exfiltration to keep applications and data secure from Day 1 with AWS Control Tower
- Improved security posture and resiliency of remote worker virtual desktop access, providing critical care workers access to their applications
- Lower costs and reduced Recovery Point Objectives (RPO) and Recovery Time Objectives (RTO) leveraging the new disaster recovery solution




## Connectivity

When leveraging cloud, connectivity is a critical aspect of an optimized architecture. In a multi-cloud world, IT is depended upon to deliver high-availability and predictable performance, all while maintaining control, visibility, security, compliance, and governance of platforms the organization doesn't fully own.

Traditional cloud deployments relied on public internet and VPN for basic connectivity. As critical workloads become commonplace in the cloud, organizations began to rely on various means—including direct connects, cloud-adjacent infrastructure, and hub-and-spoke architectures—to control inter- and intra-cloud connectivity. The evolution of cloud connectivity is the concept of the cloud-optimized WAN, which is focused on keeping IT in control of the multi-cloud networks of the future.

ePlus has developed a methodology to identify the optimal means for your organization to connect to the cloud. This methodology examines your traditional connectivity and costs in conjunction with your cloud connectivity requirements. In optimizing your multi-cloud connectivity, IT can maintain visibility, increase security, and decrease complexity...all while saving money.



## Tools and Automation

While adopting new cloud technologies, organizations continue to leverage investments made in existing tools. Along that journey it is important to take things a step further and begin layering in cloud-native and third-party cloud-specific capabilities. Modernization in the cloud is most effective when focused on concepts such as DevOps, infrastructure as code (IAC), containers, automation, and serverless computing. These modern capabilities require a different approach, skillset, and toolset than most organizations are accustomed to running in the data center.

When organizations truly adopt the **DevOps** methodology, automated cloud services can be leveraged to provision compute, network, and storage resources seamlessly to support rapid development efforts. With a proper DevOps practice, the Development and IT Operations teams leverage automation to achieve faster time to market for products and/or services.

When following effective DevOps practices, the value of **IAC** becomes evident—with the ability to manage infrastructure environments the way development manages code releases. Scaling with push button-based deployment allows for an accelerated means to gain a consistent, scheduled, tested, and version-controlled infrastructure.

As organizations continue to look towards multi-cloud architectures to gain advantages on where and when they move and scale workloads, portability is an absolute requirement. **Containers and container orchestration** lend themselves perfectly to this by allowing applications to be deployed across private and public clouds in an automated and standardized fashion. Efforts to test, validate, and release have never been easier.

## Customer Story: Parking management company embraces public cloud



### Business challenges

- The company was moving to a new software-defined networking platform and sought to leverage public cloud resources and modern architecture (containers and microservices)
- Lack of dedicated internal resources to support this initiative



### Solution

- ePlus Cloud Consulting Services – Automation and Orchestration, Application Modernization, DevOps
- Retooled and modernized applications using microservice-based architecture to enable future scalability and meet shifting business requirements



### Business outcomes

- Improved innovation to more efficiently meet milestones and better support product launches
- Enhanced ability to deploy new services and meet business opportunities
- Leverage an on-demand consumption model aligned directly to system resource utilization to reduce costs

**Serverless computing** is a method to provide resources as needed where organizations are charged based purely on usage. Organizations gain flexible and scalable computing resources without the need to manage the underlying infrastructure. Whenever a workload requires additional resources, it can leverage an event-driven architecture to auto-scale as necessary.

Moving your organization forward on a path towards DevOps, IAC, containers, automation, and serverless computing is key to harnessing the full value of the cloud.



## End-user Experience

One of the most important things IT can deliver is an elevated end-user experience. All of the above factors are for naught if this experience is not a positive one for the users of your services. An organization's migration to the cloud is a valuable opportunity to assess the current experience of end-users and identify ways to improve it during the move.

During this migration, it is critical to baseline the experience in its initial state (on-prem, legacy architecture, etc.) and then compare it to what is experienced when your organization is in the cloud. ePlus provides a suite of tools and services to help organizations understand their end-users' interactions with their applications, providing metrics to ensure they are in touch with the end-users' experience.

## Customer Story



### Business challenges

- Lack of visibility on the end-user experience and the cause of negative experiences when they happened
- Needed to implement an end-to-end observability platform that integrated into the CI/CD pipeline, thus ensuring visibility and performance at every stage of development, all the way to production



### Solution

- Customized and implemented an AppDynamics solution that addressed Application Performance Monitoring (APM), Infrastructure Monitoring, and integration into the customer's CI/CD pipeline



### Business outcomes

- With the ePlus/ AppDynamics solution, the customer can correlate business health with the performance of their applications, allowing them to prioritize the most critical customer-facing services
- Significant streamlining of user acceptance testing and shortened delivery cycles resulted from the integration with the CI/CD pipelines
- Enhanced and more cost-effective deployment, leading to a significantly improved customer experience

# Conclusion

Embarking on a cloud journey can be a complex task—and taking a wrong turn on the road can result in expensive results that fail to deliver as expected. The key to gaining maximum value from the cloud comes primarily down to how effectively an organization can optimize the foundation of this new and exciting cloud platform.

Cloud optimization is not a one-time analysis but rather a continuous practice and way of life. One that your organization can achieve via the **Core Constructs of an Optimized Cloud**. ePlus, together with AWS, can help your organization attain cloud optimization via this framework. ePlus is committed to making sure your organization gets the most out of its AWS and cloud experience.

Learn more about optimizing  
your cloud with ePlus

## References

1. (2019). 2020 State of the CIO. IDG. <https://resources.idg.com/thank-you-2020-state-of-the-cio-executive-summary-rl?submissionGuid=e9011b8c-aed7-406d-ba9f-2bb72990e266>
2. (2021, February 2). Global cloud infrastructure market S4 2020. Canalys. <https://www.canalys.com/newsroom/global-cloud-market-q4-2020>
3. (n.d.). Solutions in AWS Marketplace. AWS. <https://aws.amazon.com/marketplace/solutions>
4. Okubo, N., Stewart, D., Liu, M., & Jehu, P. (2020, December 7). The cloud migration forecast: Cloudy with a chance of clouds. TMT Predictions 2021. Deloitte Insights. <https://www2.deloitte.com/xe/en/insights/industry/technology/technology-media-and-telecom-predictions/2021/cloud-migration-trends-and-forecast.html>
5. (2020). 2020 Flexera State of the Cloud Report. Flexera. <https://info.flexera.com/SLO-CM-REPORT-State-of-the-Cloud-2020>
6. (n.d.). What is FinOps? FinOps Foundation. <https://www.finops.org/what-is-finops/>
7. (2019). Perspectives on Cloud Outcomes: Expectation vs. Reality. Accenture. <https://newsroom.accenture.com/content/1101/files/ResearchReport.pdf>
8. (n.d.). Shared Responsibility Model. AWS. <https://aws.amazon.com/compliance/shared-responsibility-model/>
9. Alsop, T. (2020, December 7). Average cost per hour of enterprise server downtime worldwide in 2019. Statista. <https://www.statista.com/statistics/753938/worldwide-enterprise-server-hourly-downtime-cost/>
10. (2020). Cost of a Data Breach Report 2020. IBM. <https://www.ibm.com/security/digital-assets/cost-data-breach-report/#/>

