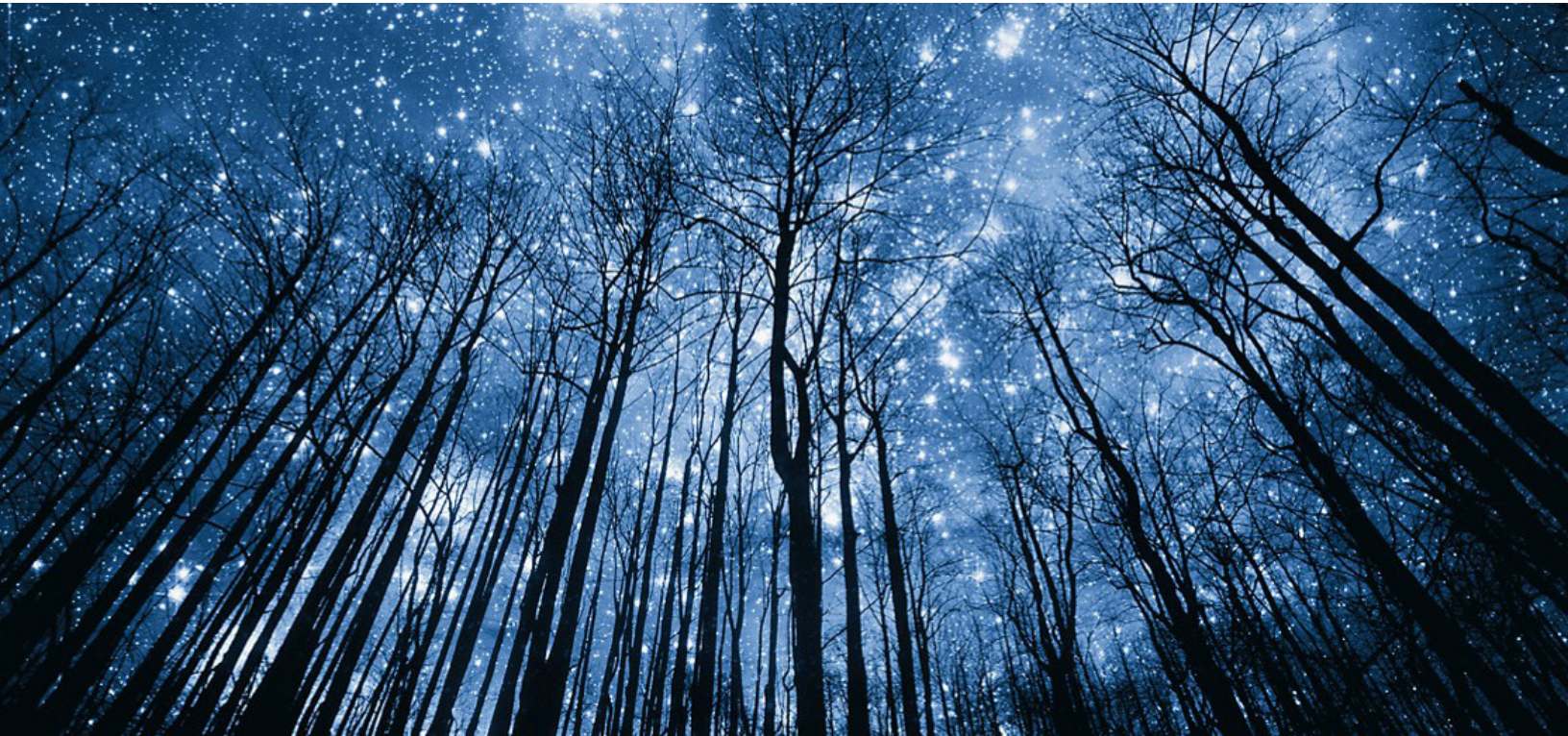


BEYOND CLOUD OPTIMIZATION: FINOPS TO GREENOPS



Sai Ganesh O

Solutions Architect
Rackspace Technology
Saiganesh27.is@gmail.com



The Dell Technologies Proven Professional Certification program validates a wide range of skills and competencies across multiple technologies and products.

From Associate, entry-level courses to Expert-level, experience-based exams, all professionals in or looking to begin a career in IT benefit from industry-leading training and certification paths from one of the world's most trusted technology partners.

Proven Professional certifications include:

- Cloud
- Converged and Hyperconverged Infrastructure
- Data Protection
- Data Science
- Networking
- Security
- Servers
- Storage
- Enterprise Architect

Courses are offered to meet different learning styles and schedules, including self-paced On Demand, remote-based Virtual Instructor-Led and in-person Classrooms.

Whether you are an experienced IT professional or just getting started, Dell Technologies Proven Professional certifications are designed to clearly signal proficiency to colleagues and employers.

[Learn more at \[www.dell.com/certification\]\(http://www.dell.com/certification\)](http://www.dell.com/certification)

Table of Contents

SI No	Topic	Page
1	Abstract	3
2	Introduction	5
3	Cloud Service Models	6
4	Shared Responsibility Model	7
5	Advantages and Disadvantages of Cloud	8
6	Cloud Performance vs Cost	10
7	Sustainable Cloud Consumption	11
8	What is FinOps?	12
9	FinOps Stakeholder Personas	13
10	FinOps Benefits	14
11	FinOps Core Principles	15
12	FinOps Maturity Model	16
13	FinOps Lifecycle	16
14	FinOps Challenges	17
15	Overcoming Cloud FinOps Challenges	18
16	Implementing Cloud FinOps	19
17	Maximizing Business Value through FinOps	19
18	FinOps to GreenOps	20
19	The Future of Green IT	21
20	Conclusion	23
21	References	24

Abstract

The cloud has revolutionized the way businesses approach IT deployments and operations. By leveraging cloud technology, companies can now take advantage of a range of benefits that were previously not possible with traditional on-premises deployments. One of the key advantages of the cloud is its ability to enable better innovation. This is because cloud providers such as Azure, AWS, and GCP offer a wide range of tools and services that businesses can use to develop and deploy their applications. This means that businesses can now focus on creating new and innovative solutions without having to worry about the underlying infrastructure.

Another major advantage of the cloud is its flexibility. With the cloud, businesses can now avoid the upfront expenses that are associated with procuring data centers and physical resources. Instead, they can opt for a pay-as-you-go model, where they only pay for the resources, they consume. This means that businesses can now scale up or down their resources as needed, without worrying about overprovisioning or underprovisioning.

The cloud also offers an attractive pricing model for businesses of all sizes. For example, cloud providers such as Azure, AWS, and GCP offer a wide range of pricing options, including pay-as-you-go and reserved instances that allows businesses to choose the option that best meets their needs. Also, the cloud enables businesses to take advantage of the massive economies of scale provided by cloud providers. This means that businesses can benefit from lower pay-as-you-go costs as a result of usage from hundreds of thousands of customers.

The cloud also allows businesses to avoid spending more money and time running and maintaining data centers, enabling them to focus on their applications and customers. Also, with the cloud, businesses can now shift to an everything-as-a-service approach, such as Infrastructure-as-a-service (IaaS), Storage-as-a-service (STaaS), Platform-as-a-service (PaaS), and so on. This allows businesses to avoid IT silos and also improves their business expense model.

As a result, more businesses now prefer to migrate to the Public Cloud/Pay-as-you-go resources to benefit from the various economic, and operational advantages they offer. It is important for organizations to have a clear understanding of their cloud spend, usage, and resource allocation policies, in order to ensure that they are making the most of the cloud's benefits while staying within their budget. However, if organizations are not careful and without the right resource control policies, they can go over budget and suddenly find that their cloud spend is spiralling out of control.

Financial Operations (FinOps) changes that.

FinOps is a framework that combines finance and DevOps principles to optimize cloud deployments, control spending, and increase resource efficiency. It is a cultural practice that assigns responsibility to each team member and implements central best practices to manage operational expenses (OPEX) across cloud deployments.

At its core, FinOps is a method for teams to manage and control their cloud expenses by providing a clear understanding of how resources are being used and where cost savings can be made. It also ensures that each team member is aware of their responsibilities and is held accountable for managing their use of the cloud resources.

One of the key goals of FinOps is to help engineering, finance, business, and technology teams within the same organization achieve business value while maintaining financial accountability for cloud services. This is achieved by implementing a set of best practices that are designed to optimize resource utilization, minimize waste, and increase overall efficiency.

Public cloud vendors themselves offer various tools to monitor and track resource utilizations, set thresholds to limit usage within the set budget limit. These tools also allow for cost optimization and cost prediction. Also, there are various third-party tools available that can offer a granular view into an organization's IT resources, including both on-premises infrastructure and the cloud in the case of hybrid deployments.

Organizations across industries face increasing pressure to maximize their business value and simultaneously ensure that their growth is environmentally sustainable. FinOps can play an important role in this regard as it can help organizations to identify areas of inefficiency and waste, and make changes that will not only improve the bottom line, but also reduce the environmental impact of their cloud deployments.

In this article, we dive deep into the FinOps framework and GreenOps principles and understand the value companies can derive from adopting these practices. We will also look into the details of how FinOps and GreenOps help companies go beyond just thinking about the bottom line when creating and implementing a cloud sustainability strategy.

Introduction

The evolution of cloud technology has been a game-changer in the way businesses and individuals' access, store, and manage their data. The concept of cloud computing has been around since the 1950s, but it was not until the 21st century that it began to gain widespread adoption. The cloud is essentially a network of remote servers that can be accessed over the Internet and used to store, manage, and process data. This technology has brought about many benefits, and a few drawbacks, which will be discussed in this article.

Cloud computing has become an integral part of modern business operations, offering organizations a range of benefits such as scalability, accessibility, and cost-effectiveness. The cloud computing model allows businesses to access computing resources, such as servers, storage, and software, over the Internet, on-demand and as per their requirement. However, cloud computing is not a one-size-fits-all solution and organizations have different options to choose from. Each type of cloud computing has its own unique characteristics and use cases, and it is essential for organizations to understand them before making a decision. The different types are:

- **Public Clouds:** These clouds are owned and operated by third-party providers such as Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP). Public clouds offer a wide range of services, including compute, storage, databases, and analytics that are designed to be used by multiple customers. Public clouds are highly reliable, always accessible, and offer pay-as-you-go pricing, making them an affordable option for small and medium-sized businesses. Public clouds also offer easy scalability, so users can add or remove resources as their needs change. Also, public clouds offer built-in disaster recovery and high availability options.
- **Private Clouds:** These clouds are owned and operated by a single organization and are designed to be used exclusively by that organization. Private clouds can be built on-premises, using the organization's own servers, or hosted by a third-party provider. They offer greater control and security than public clouds as the organization has complete control over its data and applications. This is often a requirement for large organizations that must comply with strict regulatory requirements. However, private clouds are typically more expensive and require more resources to manage. Also, private clouds offer more customization options, as they are tailored to the organization's specific needs.
- **Hybrid Clouds:** These clouds combine the best of both public and private clouds by allowing organizations to run certain workloads on public clouds while keeping sensitive data and applications on private clouds. This allows for greater flexibility and scalability, and the ability to take advantage of the cost savings offered by public clouds. Hybrid clouds are often used by large organizations that must comply with strict regulatory requirements, but still want to take advantage of the benefits of public clouds. With hybrid clouds, organizations can move workloads between public and private clouds as per the requirement, making it a cost-effective solution.
- **Community Clouds:** These clouds are shared by a group of organizations that have similar requirements and concerns, such as government agencies or healthcare providers. Community clouds allow organizations to share resources and reduce costs while still maintaining control over their data. This is a good option for organizations that have similar needs but do not want to invest in their own private cloud. Community clouds also offer a higher level of security as they are used by a specific group of organizations.
- **Multi-cloud:** This is a strategy that uses multiple cloud services from different providers, rather than relying on a single provider. Multi-cloud is used for better flexibility and to

mitigate provider lock-in. This approach allows organizations to use the best-of-breed services from multiple providers, rather than being locked into a single provider. Multi-cloud approach also allows organizations to have more control over their infrastructure and services, and to have a backup plan in case of any service disruption from a single provider.

Cloud Service Models

Cloud service models refer to the different ways in which cloud computing services can be provided to customers. There are three main models: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS).

- **IaaS** is the most basic form of cloud service, providing customers with virtualized computing resources, such as servers and storage that can be accessed and managed over the Internet. Examples of IaaS providers include Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform. IaaS is often used by companies that want to run their own applications on the cloud, but do not want to invest in their own infrastructure.
- **PaaS** is a higher-level model, providing customers with a platform for developing, running, and managing applications. In addition to the virtualized computing resources provided by IaaS, PaaS also includes a development environment, a database, and other tools that are needed to create and run applications. Examples of PaaS providers include Heroku, Google App Engine, and AWS Elastic Beanstalk. PaaS is often used by developers and companies that want to create new applications quickly and easily, without having to worry about managing the underlying infrastructure.
- **SaaS** is the highest-level model, providing customers with access to software applications that are hosted and managed by the service provider. Examples of SaaS providers include Salesforce, Microsoft Office 365, and Google G Suite. SaaS is often used by companies that want to use software applications without having to install and maintain them on their own servers.

Each of these models has its own advantages and disadvantages. IaaS provides the most flexibility and control, but also requires the most technical expertise to manage. PaaS is less flexible but provides a more streamlined development environment. SaaS is the simplest to use, but also the least customizable.

Choosing the right cloud service model depends on the specific needs of a company. IaaS is a good choice for companies that want to run their own applications on the cloud. PaaS is a good choice for developers and companies that want to create new applications quickly and easily. SaaS is a good choice for companies that want to use software applications without having to install and maintain them on their own servers.

Shared Responsibility Model

The cloud shared responsibility model is a concept that defines the responsibilities of both cloud service providers and customers in securing and protecting data and resources in a cloud computing environment. This model is used to clearly outline the roles and responsibilities of each party, and to ensure that both parties are aware of their obligations when it comes to security and compliance.

The cloud service provider is responsible for the security of the cloud infrastructure, including the physical security of data centers, network security, and the security of the cloud platform itself. This includes ensuring that the cloud platform is regularly updated and patched, and that it is configured in a secure manner.

Customers, on the other hand, are responsible for the security of their own data and applications. This includes protecting sensitive data, such as personal information and financial data, and ensuring that their applications and systems are configured securely. It also includes ensuring that access to data and resources is controlled and restricted to authorized personnel, and that data is backed up regularly.

One of the key aspects of the cloud shared responsibility model is that customers are responsible for the security of their own data, even when it is stored in the cloud. This means that customers must ensure that their data is properly encrypted, and that they have implemented appropriate security controls to protect it. Also, customers must ensure that their applications and systems are configured securely, and that they have controls in place to detect and respond to security threats.

Another important aspect of the cloud shared responsibility model is compliance. Both cloud service providers and customers must ensure that they are compliant with relevant laws, regulations, and industry standards. This includes ensuring that data is protected in accordance with data protection laws, and that systems and applications are compliant with relevant security standards.

In addition to security and compliance, cost optimization is also an important aspect of the cloud shared responsibility model. Cloud service providers are responsible for providing cost-effective and scalable infrastructure, but customers also have a role to play in optimizing their own cloud costs.

Customers can optimize their cloud costs by monitoring and managing their usage of resources. Cloud services are typically billed on a pay-as-you-go basis, so customers can reduce their costs by only using the resources that they need and releasing any unnecessary resources. This includes monitoring and adjusting the number of virtual machines they are running, as well as the amount of storage and network bandwidth they are using.

The cloud shared responsibility model not only includes security and compliance, but also cost optimization. Cloud service providers are responsible for providing cost-effective and scalable infrastructure, but customers also have a role to play in optimizing their own cloud costs. This can be achieved by monitoring and managing resource usage, making use of reserved instances, or committed use discounts, using automation, and using cost management and optimization tools provided by cloud service providers. Both parties working together can help keep the cloud cost optimized and cost-effective.

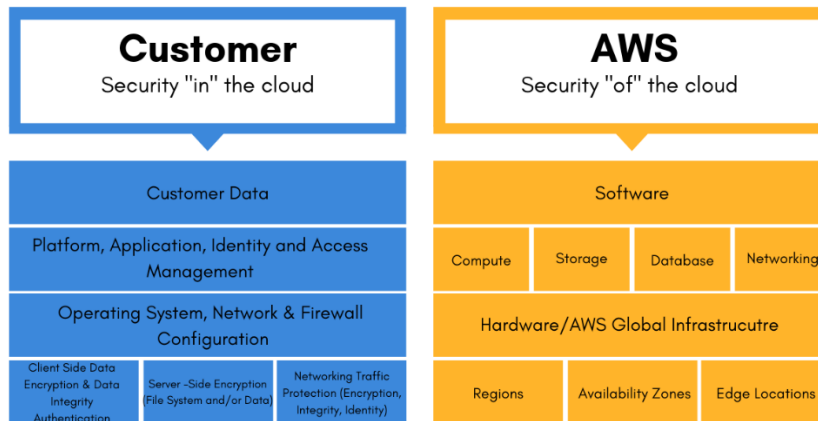


Image Source - <https://www.cloudmanagementinsider.com/wp-content/uploads/2019/07/shared-responsibility-model.png>

Advantages and Disadvantages of Cloud

Each of these different types of cloud computing has its own set of advantages and disadvantages, and the best option for a given organization depends on its specific needs and requirements. However, in general, public clouds are the most cost-effective option for small and medium-sized businesses, while private clouds are better suited for large organizations with strict regulatory requirements. Hybrid clouds and community clouds offer a middle ground, allowing organizations to take advantage of the benefits of both public and private clouds. Multi-cloud approach allows organizations to have more control over their infrastructure and services.

One of the most significant benefits of cloud technology is cost savings. Businesses of all sizes can save money on IT infrastructure and maintenance by using cloud services. Instead of having to invest in and maintain their own servers, businesses can rent server space from cloud service providers. This can significantly reduce their IT costs. Also, businesses can scale their resources up or down as needed, which can help them save money on resources they do not need. This is known as elasticity, which means that businesses only pay for the resources they use, and they can scale them up or down depending on their usage.

Another advantage of cloud technology is accessibility. With cloud services, users can access their data from anywhere with an Internet connection. This is useful for businesses with employees who work remotely or travel frequently. This allows for seamless collaboration, as all team members can access the same files and documents, regardless of their location. This has become more important than ever in the era of remote work, especially during the pandemic.

Cloud technology also offers increased collaboration and productivity. With cloud services, multiple users can access and edit the same document simultaneously. This can help teams work more efficiently and effectively. This feature is especially useful for businesses that have employees working in different time zones. Also, cloud services often come with various tools and applications that can improve communication and collaboration among team members.

In terms of data security, cloud technology can provide an added layer of protection for businesses. With cloud services, businesses can store their data on servers that are managed by experts. These servers are often located in secure data centres and are backed up regularly. This can help businesses protect their data from cyber-attacks and natural disasters.

However, cloud technology also has its disadvantages, businesses must consider the cost of cloud services when evaluating their options. The cost of cloud services can vary widely depending on the provider, the services used, and the amount of resources needed. As a result, businesses must be mindful of their usage patterns and budget when using cloud services.

One way to optimize cloud costs is through proper resource management. Businesses should monitor their usage patterns and make adjustments as needed to ensure they are not over-allocating resources. This can be done through using tools such as auto-scaling, which automatically adjusts the number of resources based on usage patterns. Also, businesses should consider using reserved instances, which can help them save money by committing to a longer-term usage plan.

Another way to optimize cloud costs is through proper vendor management. Businesses should shop around for the best deals and negotiate with vendors to get the most favorable terms. Also, businesses should also consider using a multi-cloud strategy, which involves using multiple vendors for different services. This can help businesses to avoid vendor lock-in and take advantage of the best deals from different vendors. Businesses should also consider using cost management tools, which can help them track and optimize their cloud costs. These tools can provide detailed cost breakdowns, identify areas of waste, and suggest ways to reduce costs.

Customers can also optimize their cloud costs is by monitoring and managing their usage of resources. Cloud services are typically billed on a pay-as-you-go basis, so customers can reduce their costs by using only the resources that are needed and releasing any unnecessary resources. This includes monitoring and adjusting the number of virtual machines they are running, as well as the amount of storage and network bandwidth they are using. Customers can also optimize their cloud costs is by using reserved instances or committed use discounts. These options allow customers to commit to a certain amount of usage over time, and in return, they receive a discounted rate. Customers can also optimize their cloud costs by making use of automation. For example, they can use autoscaling to automatically adjust the number of virtual machines they are running based on usage or use automation to shut down non-production resources when they are not in use.

Also, Cloud Service Providers also offer cost management and optimization tools which can help customers track their usage, identify areas where they can reduce costs, and make informed decisions about how to optimize their cloud infrastructure. AWS Offers CloudWatch which is their native AWS tool that allows you to monitor and manage cloud costs by providing real-time metrics, setting budgets, and automating actions. It can be used with other native AWS cost management tools such as AWS Cloud Explorer, AWS Cost and Usage Report, and AWS Budgets. Similarly, Azure also offers Azure Cost Management + Billing which is a native cloud cost management tool for Microsoft Azure Cloud Service. The tool allows you to monitor and manage Azure cloud costs, perform cost analysis, set budgets, export cost management data, and view cost optimization recommendations based on Azure best practices. Also, there are various third-party tools available that can offer a granular view into an organization's IT resources, including both on-premises infrastructure and the cloud in the case of hybrid deployments.

FinOps is another way to optimize cost is through, which is the practice of using a set of methodologies and tools to optimize the costs of cloud services which we investigate in the further sections of this article.

Cloud Performance vs Cost

Cloud computing has become an essential part of modern businesses and organizations, providing a flexible and cost-effective way to access and manage computing resources. However, as organizations increasingly rely on the cloud, the challenge of balancing performance and cost has become a prevalent issue. This problem, referred to as the cloud performance vs cost problem, is a trade-off between achieving high levels of performance and keeping costs low.

One of the primary advantages of the cloud is its ability to scale resources on demand. This means that organizations can increase or decrease their usage of resources as their needs change. However, this flexibility can also lead to unexpected costs if resources are not properly managed. For example, an organization may provision more resources than it needs, leading to unnecessary costs. Also, an organization may not be aware of all the resources it is using, leading to a lack of visibility and control over costs.

To address the cloud performance vs cost problem, organizations must find a balance between the two. One way to do this is by using cloud cost management tools. These tools can help organizations monitor and control their usage of cloud resources. They can provide detailed reports on resource usage, and allow organizations to identify and eliminate unnecessary resources. Also, they can enable organizations to optimize their usage of resources to achieve the best balance of performance and cost.

Another approach to addressing the cloud performance vs cost problem is to use a mix of different cloud services. For example, some organizations may choose to use a combination of public and private cloud services. Public cloud services are typically less expensive than private cloud services, but private cloud services can offer better performance and security. A mix of both can provide organizations with the best of both worlds. Also, organizations can also consider using a combination of different types of cloud services, such as Infrastructure as a Service (IaaS) and Platform as a Service (PaaS). IaaS provides organizations with the flexibility to configure their own infrastructure, while PaaS provides a preconfigured platform for building, deploying, and managing applications.

Furthermore, cloud optimization service can be a viable option for organizations to optimize their cloud usage. These services can provide automated rules to start and stop instances, move to a different class, or move to a different region, based on performance and cost. This approach can help organizations to save costs by shutting down instances that are not being used and turning on instances that are needed.

The cloud performance vs cost problem is a significant consideration for organizations that use cloud resources. By using a combination of cost management tools, a mix of different cloud services, and cloud optimization services, organizations can achieve a balance between performance and cost, and maximize the value of their cloud investment. By carefully monitoring and managing their cloud resources, organizations can ensure that they are getting the most out of their cloud investment while keeping costs under control.

Sustainable Cloud Consumption

Cloud computing has become an essential part of today's business operations, and for businesses that are committed to sustainability, consuming cloud services in an efficient and responsible manner is crucial. The cloud not only offers a wide range of benefits for businesses, but it also provides an opportunity for them to reduce their environmental impact and promote long-term growth.

One of the keyways for businesses to consume cloud services in a sustainable way is by implementing a "cloud-first" strategy. This approach involves prioritizing cloud-based solutions over traditional on-premises data centers. By hosting services and applications on cloud platforms, businesses can reduce their energy consumption and carbon footprint. This is because cloud providers often invest in renewable energy sources and use advanced technologies to optimize their infrastructure.

Scalability and flexibility are two other important aspects of consuming cloud services in a sustainable way. Cloud platforms allow businesses to adjust their usage and costs based on their changing needs, rather than overprovisioning resources and wasting energy. This means that businesses can scale up or down their usage as needed, without having to invest in expensive hardware or infrastructure. This can also help businesses to avoid the costs that are associated with maintaining and upgrading on-premises data centers.

Another way to consume cloud services in a sustainable way is by adopting practices such as serverless computing and containerization. These technologies allow for more efficient use of resources and can help to minimize the number of servers that are required to run a particular application. Serverless computing, for example, allows businesses to run code without the need for servers, which can significantly reduce energy consumption. Containerization, on the other hand, enables businesses to package their applications and dependencies together, making them more portable and easier to manage.

Businesses can also evaluate the energy efficiency of the data centers that their cloud providers use by seeking out providers that are certified by third-party organizations like the Green Grid. These certifications indicate that the data center meets certain energy-efficiency standards, which can help businesses to make more informed decisions about where to host their services and applications. Finally, sustainable businesses must also consider the end-of-life of their cloud resources and implement policies for decommissioning and disposing of them responsibly. This can include retiring old resources and releasing them back to the provider for reuse, or properly disposing of them in an environmentally friendly manner.

Consuming cloud services in a sustainable way is essential for businesses that are committed to reducing their environmental impact and promoting long-term growth. By implementing a cloud-first strategy, taking advantage of the scalability and flexibility that is offered by cloud platforms, and responsibly managing the end-of-life of resources, businesses can consume cloud services in an efficient and responsible manner. The cloud offers a wide range of benefits for businesses, and by consuming cloud services in a sustainable way, businesses can not only improve their operations but also make a positive impact on the environment.

What is FinOps?

FinOps is a framework that combines finance and DevOps principles to manage operational expenses across an organization, often in conjunction with cloud computing. Its main goal is to enable different teams within an organization, such as engineering, finance, business, and technology, to work together to achieve business value and maintain financial accountability for cloud services. The best practices for FinOps were developed by the FinOps Foundation, a non-profit trade association whose members include Atlassian and Cloudify. FinOps aims to drive revenue by fostering collaboration among cross-disciplinary teams to make the best decisions about performance, quality, and cost in technology investment and execution decisions, particularly those related to cloud usage. The focus is on making the "best" investment decisions, not just the cheapest ones.

FinOps, or financial operations, is the process of managing and optimizing the financial resources of a business or organization. This includes the management of financial transactions, budgeting, forecasting, and financial reporting. FinOps professionals are responsible for ensuring that a company's financial resources are being used efficiently and effectively to support the organization's goals and objectives. One of the key responsibilities of FinOps professionals is to manage the company's financial transactions. This includes the recording, processing, and reporting of financial transactions such as sales, purchases, and payments. FinOps professionals use accounting software and other tools to track and analyse financial data, and work closely with other departments, such as sales and marketing, to ensure that financial transactions are accurately recorded and reported.

Another important aspect of FinOps is budgeting and forecasting. FinOps professionals work with department heads and other stakeholders to create and manage budgets, and they use financial modelling and forecasting tools to predict future financial performance. This helps the company to identify potential financial risks and opportunities, and to make informed decisions about how to allocate resources. In addition to these core responsibilities, FinOps professionals may also be responsible for other financial activities such as financial reporting, compliance, and risk management. They may also be involved in strategic planning and decision making, by providing financial analysis and insights to support the company's overall strategic goals.

In recent years, FinOps has become an increasingly important area of focus for companies of all sizes. With the rise of digital technologies and the growing importance of data-driven decision making, companies are increasingly looking to FinOps professionals to help them navigate the complex and rapidly changing landscape of financial operations.

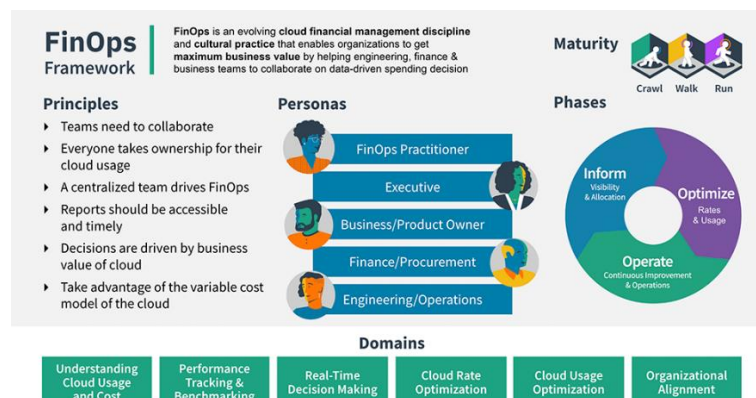


Image Source - <https://www.finops.org/wp-content/uploads/2023/01/intro-slide.png>

FinOps Stakeholder Personas

The FinOps Foundation identifies five main groups of people, known as "personas," who typically work together in a FinOps setting.

- **Executives:** These are typically business leaders such as CIOs, CTOs, or heads of Cloud Center of Excellence. They are responsible for setting the overall strategy and direction for the FinOps team and ensuring that the team is aligned with the broader business objectives. They are also responsible for ensuring that the team is efficient, accountable, and transparent in its operations. They focus on budget management and ensuring that the team can deliver the desired results within the allocated budget.
- **Product Owners:** Product Owners are the department heads or project leaders who are directly responsible for creating, deploying, and managing cloud workloads for the business. They work closely with the executives to ensure that the cloud workloads are aligned with the broader business objectives and that they are delivered in a timely and cost-effective manner. They are also responsible for ensuring that the cloud workloads are optimized for performance, scalability, and cost.
- **Engineering:** FinOps teams need individuals that understand and use cloud technology such as software engineers, systems engineers, cloud architects, and engineering managers. These are the FinOps team members that translate budgets and requirements into actionable cloud environments where workloads are deployed. They handle much of the troubleshooting, automation, and scaling needed to optimize a cloud workload. They work closely with product owners and executives to ensure that the cloud workloads are delivered on-time and within budget.
- **Finance:** A key aspect of cloud use is cost, and finance professionals such as procurement specialists, financial planners, and business financial advisors help to establish budgets, handle accounting, and implement cloud forecasting. This typically involves using ongoing billing to create more accurate cloud cost models. Finance specialists may also take on price negotiations with cloud providers. They work closely with the executives and product owners to ensure that the cloud workloads are delivered within budget and to identify cost savings opportunities.
- **Practitioners:** A FinOps practitioner is a relatively specialized or dedicated role that is intended to facilitate FinOps environments and initiatives, effectively leading collaboration and guiding FinOps team members through prescriptive activities and best practices. They act as the glue that holds the team together and ensures that everyone is working towards the same goal. They work closely with the executives, product owners, engineering, and finance teams to ensure that the FinOps environment is running smoothly and that all team members are following best practices.

It is worth noting that there are no set requirements for team size or composition, but the above mentioned five personas are considered as the major stakeholders in FinOps environment. The composition of the team may vary depending on the organization and their specific needs.

FinOps Benefits

The goal of Cloud FinOps is to ensure that an organization's cloud spend is aligned with their business objectives and that they are getting the most value for their money.

There are several benefits to implementing Cloud FinOps within an organization:

- **Cost Savings:** One of the main benefits of Cloud FinOps is the potential for cost savings. By using tools to monitor cloud usage and identify areas of waste, organizations can eliminate unnecessary cloud spend. This can include identifying and shutting down idle resources and reducing overprovisioned services. Also, Cloud FinOps can help organizations to identify and take advantage of discounts, such as reserved instances, which can result in significant cost savings.
- **Improved Visibility:** Cloud FinOps provides organizations with better visibility into their cloud spend. This includes providing detailed reporting on usage, costs, and trends. This information can be used to identify patterns and areas for improvement, enabling organizations to make more informed decisions about their cloud usage and spending. Also, Cloud FinOps can be used to identify and track cloud-related costs that are often overlooked, such as data transfer and storage costs.
- **Better Collaboration:** Cloud FinOps promotes collaboration between different teams within an organization. This includes finance, IT, and development teams. By working together, these teams can ensure that everyone is working towards the same goal of reducing cloud spend and getting the most value for the organization's money. Also, Cloud FinOps can be used to establish and enforce policies around cloud usage and spending, which can help to ensure compliance with regulatory requirements.
- **Improved Governance:** Cloud FinOps helps organizations to establish and enforce policies around cloud usage and spending. This can help to ensure compliance with regulatory requirements and prevent overspending. Also, Cloud FinOps can be used to establish and enforce role-based access controls, which can ensure that only authorized users can access and change cloud resources.
- **Scalability:** Cloud FinOps enables organizations to easily scale their cloud usage and spending as their business grows. This helps organizations to stay agile and respond quickly to changes in demand. Also, Cloud FinOps can be used to identify and track cloud-related costs that are often overlooked, such as data transfer and storage costs.

Implementing Cloud FinOps can be a complex and time-consuming process, but the benefits are worth the effort. By using Cloud FinOps, organizations can save money, improve visibility, increase collaboration, improve governance, and scale their cloud usage and spending as their business grows. Also, Cloud FinOps can be used to identify and track cloud-related costs that are often overlooked, such as data transfer and storage costs.

In order to implement Cloud FinOps, organizations must take a multidisciplinary approach that involves finance, IT, and development teams. This includes identifying areas of waste, implementing cost-saving measures, and monitoring usage and costs. Also, organizations must establish and enforce policies around cloud usage and spending. This includes role-based access controls and compliance with regulatory requirements.

FinOps Core Principles

Cloud FinOps consists of a set of best practices and principles that organizations can use to optimize their financial management in a cloud computing environment. These principles are designed to help organizations reduce costs, improve efficiency, and achieve greater visibility into their cloud spend. This allows them to make more informed decisions about their cloud usage, while also ensuring that they are getting the most value from their cloud investments.

- **Cost Optimization:** One of the core principles of Cloud FinOps is cost optimization. This involves identifying and eliminating unnecessary costs, such as underutilized resources or overprovisioned services. Organizations can use tools such as cost optimization dashboards and cost allocation tagging to identify and eliminate these costs. By doing this, organizations can save money on their cloud expenses while still being able to access the resources they need.
- **Financial Transparency:** The second principle of Cloud FinOps is financial transparency. This involves providing clear visibility into an organization's cloud spend, including detailed information about costs, usage, and forecasting. This transparency allows organizations to make informed decisions about their cloud usage and costs, by understanding where their money is being spent and how they can optimize their resources to reduce costs.
- **Cloud Governance:** The third principle of Cloud FinOps is cloud governance. This involves establishing policies, procedures, and controls to manage cloud usage and costs. This can include setting up budget alerts, creating cost allocation tags, and implementing cost optimization best practices. By having a governance framework in place, organizations can ensure that their cloud usage is aligned with their goals and objectives, and that they are not overspending on unnecessary resources.
- **Automation:** The fourth principle of Cloud FinOps is automation. This involves using tools and technology to automate tasks such as cost optimization, budget management, and cloud governance. Automation can improve efficiency and accuracy, while also reducing the risk of human error. By automating these processes, organizations can ensure that they are always getting the best value for their money, without having to manually monitor and optimize their resources.
- **Continuous Optimization:** The final principle of Cloud FinOps is continuous optimization. This involves continuously monitoring and optimizing cloud usage and costs to ensure that they are aligned with an organization's goals and objectives. By continuously optimizing their cloud resources, organizations can ensure that they are getting the most value for their money, and that they are always making the most informed decisions about their cloud usage.

By implementing these core principles of Cloud FinOps, organizations can reduce costs, improve efficiency, and achieve greater visibility into their cloud spend. This can help organizations make more informed decisions about their cloud usage, while also ensuring that they are getting the most value from their cloud investments.

FinOps Maturity Model

In order to effectively manage and optimize these costs, it is important for organizations to have a clear understanding of their current level of maturity in terms of FinOps, and a plan to progress to higher levels of maturity. This is where the FinOps maturity model comes in.

The FinOps maturity model is a framework that helps organizations assess and improve their financial operations by defining different levels of maturity and providing guidance on how to progress from one level to the next. The model is based on the idea of incremental steps, with the process being described as "Crawl, Walk, Run." Organizations start at an elementary level, with each success story building confidence for growth into the next level.

The first level of the model is the "Crawl" stage, where the organization focuses on reducing its cloud spends by understanding its current costs and correctly allocating spend to various users. The organization's actions in this stage are primarily reactive, addressing cloud spend after it has become a problem. Cost-saving tools are employed to successfully reduce the spend.

The next level is the "Walk" stage, where the organization's actions become more proactive. Policies and architecture are established to anticipate cloud spend and the focus shifts to something more than just discovering opportunities to reduce cloud spend.

The final level is the "Run" stage, where the organization has fully optimized financial operations. The organization uses advanced analytics and machine learning to drive continuous improvement and make data-driven decisions. The focus is on the efficiency levels of teams, forecasting capabilities, and developing artificial intelligence for high-speed applications.

It is important to note that achieving FinOps is a gradual process that takes time and careful preparation. Teams within the organization must build trust and embrace FinOps best practices when they see their collaboration creates positive results. Organizations can start small in scope and complexity, and with repetition, they can mature to larger and more complex processes. By following the FinOps maturity model, organizations can improve their financial performance, reduce costs, and increase efficiency.

FinOps Lifecycle

The cloud FinOps lifecycle is a comprehensive framework for managing and optimizing the costs that are associated with using cloud services. It is a cyclical process that helps organizations gain real-time visibility into their cloud costs, develop strategies to reduce spend, and continuously monitor and optimize their cloud usage.

The FinOps life cycle consists of three main phases: Inform, Optimize, and Operate. Each phase builds on the previous, and as the organization advances through the phases, it does so in the Crawl, Walk, Run maturity model.

- **Inform Phase:** In this phase, the organization seeks to gain real-time visibility into its cloud costs. This includes identifying which services and resources are being used, how much they cost, and who is responsible for them. This information is collected through accurate tagging of resources, which can be a challenging task due to the dynamic nature of cloud resources and the fact that some resources may be untaggable or inconsistently tagged.

Once accurate tagging is in place, the organization can use this information to create detailed cost reports, allocate costs to the appropriate teams, and identify areas of overspending. The goal of this phase is to gain visibility into cloud costs and to encourage better decision-making.

- **Optimize Phase:** Once the organization has a clear understanding of its cloud usage, it can develop strategies to reduce spend. This includes identifying opportunities for rightsizing, autoscaling, and shutting down unused resources. The organization may also investigate anomalies in usage patterns, looking for opportunities to save costs. Additional savings can be achieved by using reserved instances, savings plans, and by comparing pricing between different cloud vendors. Setting goals for optimization is a key focus in this phase, as the organization works to identify the most effective ways to reduce costs.
- **Operate Phase:** Once goals have been established, the organization moves into the Operate phase, where it implements the savings strategies that are developed during the Optimize phase. This may involve modifying the cloud infrastructure, adjusting usage patterns, and monitoring cloud spend against budgets to ensure that performance goals are being met. The focus of this phase is on execution, as the organization works to put its cost-saving strategies into action and continuously monitor and optimize its cloud usage.

As the organization completes the FinOps life cycle, it circles back to the Inform phase, where it evaluates new data and looks for additional opportunities to reduce costs. The new data will further increase visibility, resulting in even greater understanding of cloud spend, and allowing the organization to continue advancing through the Inform, Optimize, and Operate phases.

The FinOps life cycle is a continuous process that requires ongoing monitoring, management, and optimization. By following this framework, organizations can ensure that they are getting the most value from their cloud investments and that they can manage costs effectively throughout the entire lifecycle of their cloud projects.

FinOps Challenges

While FinOps can bring significant benefits such as cost savings, improved visibility, better collaboration, improved governance, and scalability, there are also several challenges that organizations may face when implementing it.

- **Lack of visibility:** One of the biggest challenges of FinOps is the lack of visibility into cloud spending. Many organizations do not have a clear understanding of their cloud usage and costs, which makes it difficult to identify areas of waste and make informed decisions about their cloud usage and spending. Without visibility, it becomes challenging to understand how much is being spent, what resources are being used, and where cost optimization opportunities lie.
- **Data silos:** Another challenge of FinOps is the presence of data silos within organizations. This can make it difficult for different teams to access and share information, which can impede collaboration and make it harder to identify areas of waste. Data silos can also make it challenging to get a holistic view of cloud spending, which is necessary to make informed decisions.
- **Complex pricing models:** Cloud providers have complex pricing models that can be difficult to understand and navigate. This can make it difficult for organizations to identify the most

cost-effective options and take advantage of discounts. The complexity of pricing models can also make it challenging to forecast and budget for future cloud spending.

- **Lack of automation:** FinOps requires a significant amount of data gathering, analysis, and reporting, which can be time-consuming and resource intensive. Without automation, it can be difficult for organizations to keep up with the workload and make decisions quickly.
- **Resistance to change:** FinOps requires a cultural shift within organizations, as it involves changing the way teams work together and the way they think about cloud spending. This can be a significant challenge, as some team members may be resistant to change. It is important to have a clear communication plan in place to ensure that everyone understands the benefits of FinOps and how it impacts their work.
- **Lack of expertise:** FinOps requires a specialized skill set, and organizations may struggle to find individuals with the necessary expertise to implement it. This can make it challenging for organizations to get started with FinOps and achieve the desired results.

Overcoming Cloud FinOps Challenges

As more companies move their infrastructure and applications to the cloud, it has become increasingly important to effectively manage and control cloud spending. However, this can be a complex and challenging task, as cloud environments are constantly changing and evolving. Let us now discuss some strategies for overcoming the challenges of cloud FinOps.

- **Establish a Cloud Governance Framework:** A strong governance framework is essential for effective cloud FinOps. This includes setting clear policies and procedures for cloud usage, as well as implementing tools and technologies to monitor and control cloud spending. It is important to establish roles and responsibilities for different teams, such as IT, finance, and security, and to ensure that everyone is aware of the cloud governance framework.
- **Utilize Cost Optimization Tools:** There are various cost optimization tools available, such as AWS Cost Explorer, Azure Cost Management, and Google Cloud Billing. These tools can help you understand your cloud spending and identify areas where you can reduce costs. They can also help you identify and eliminate unnecessary resources, such as idle or underutilized instances.
- **Implement Rightsizing:** To effectively manage cloud costs, it is important to ensure that you are using the right amount of resources for your workloads. This includes right sizing your instances and optimizing storage and networking resources.
- **Monitor and Audit Cloud Usage:** Regularly monitoring and auditing cloud usage can help you identify and address any issues or concerns that are related to cloud spending. This includes identifying and mitigating any security risks, as well as ensuring compliance with regulations and standards.
- **Automate and Streamline Processes:** Automating and streamlining processes can help you more effectively manage and control cloud spending. This includes automating the provisioning and de-provisioning of resources, and automating the scaling of resources to match demand.
- **Leverage a Cloud Management Platform:** A cloud management platform (CMP) can provide a centralized view of cloud resources, usage, and costs across multiple cloud providers and accounts. This can help you better understand and manage your cloud environment and can also provide additional cost optimization and automation capabilities.

Overall, effective cloud FinOps requires a combination of strong governance, cost optimization tools, right-sizing, monitoring, and auditing, automation, and leveraging a cloud management platform. By implementing these strategies, you can better manage and control your cloud spending, and ensure that your organization is getting the most out of its cloud resources.

Implementing Cloud FinOps

The most ideal time to adopt FinOps is when a company is migrating to the cloud. This is because during the migration process, the company's existing cloud resources can be examined and modified to conform to the FinOps methodology. However, even if a company already has a presence in the cloud, the adoption of FinOps can still bring significant cost savings.

The process of adopting FinOps starts with setting specific and clear goals. These goals should be developed in collaboration with representation from each team that interacts with the cloud and should focus on addressing the company's pain points. Often, the initial goal is to control cloud spend, particularly in multi-cloud and hybrid cloud environments where costs can quickly spiral out of control. After the goals are established, an assessment of the organization's readiness for the transition must be completed. This includes evaluating the company's current tagging system to ensure that it is current and accurate, as well as testing and evaluating various FinOps tools to determine their suitability for the business, particularly in a multi-cloud and hybrid cloud environment.

A dedicated FinOps team must be established to lead the transition and support the ongoing practice of FinOps. This team should include key participants from all affected teams and should focus on brainstorming the company's needs, particularly in a multi-cloud and hybrid cloud environment. A centralized team is important for the success of FinOps. The team must also have the authority to establish spending limits and communicate the value of these limits to the organization. Throughout the process, the organization should have an advocate or champion to drive the adoption of FinOps to completion, particularly when it comes to managing costs across multiple cloud providers and maintaining the balance between on-premises and cloud infrastructure.

It is important to note that the goal of FinOps is not just to save money, but to make money. FinOps is more than a cost-optimization tool, it seeks to ensure that each dollar spent yields the most in business value, particularly in a multi-cloud and hybrid cloud environment where costs can quickly spiral out of control. This includes not only reducing cloud spend but also enhancing the other benefits of cloud computing such as speed, agility, and flexibility. When FinOps is successful in reducing wasted cloud spend, it creates an incentive for additional cloud spend as the organization sees the business value being created.

Maximizing Business Value through FinOps

The field of FinOps has seen a surge in popularity in recent years as more organizations look for ways to optimize their use of cloud resources and maximize value. According to industry research firm IDC, by 2023, most cloud users will have established a dedicated FinOps function within their organization.

While the primary focus of FinOps has traditionally been on managing cloud costs, the field is evolving and the aspirations of FinOps professionals extend beyond just cost management. The community has identified cost allocation, data analysis and show back, managing anomalies, managing commitment-based discounts, and forecasting/budgeting as the top FinOps capabilities, which suggest that for most organizations FinOps goals are closely tied to managing cloud cost. However, the true potential of FinOps lies in its ability to take a holistic approach to performance and efficiency.

To truly maximize business value in the cloud, organizations must implement systems and processes that consider the entire cloud environment and its performance and efficiency, including multi-cloud and hybrid cloud environments. This means having a clear understanding of the costs that are associated with each cloud platform, and their respective strengths and weaknesses. Also, it also involves having the necessary tools and processes in place to manage, allocate, and report on costs across multiple cloud platforms.

Also, FinOps professionals must also ensure that their cloud spend is being used efficiently and sustainably to support the dynamic needs of business applications. This includes monitoring cloud resources to identify and address inefficiencies, such as overprovisioned or underutilized resources, as well as implementing automation and optimization techniques to improve the overall performance and efficiency of the cloud environment.

Sustainability is an increasingly important aspect of FinOps, as the public cloud has environmental benefits. Compared to on-premises infrastructures, public cloud providers are inherently more efficient because they benefit from economies of scale. For example, a group of servers that are shared by thousands of applications is more efficient, both financially and environmentally, than thousands of servers in thousands of data centers. Cloud providers are also making major investments to improve data center energy efficiency and ensure cleaner energy sources.

For example, Microsoft has invested in various methods of sustainable energy and cooling such as project Natick, an underwater data center that is powered by renewable energy and cooled by seawater. Similarly, AWS has also invested in sustainable cooling methods for its data centers, and custom, renewable silicon for its hardware. Furthermore, cloud providers have prioritized improving the transparency of their environmental impact.

FinOps to GreenOps

As we discussed previously, FinOps, is the process of managing and optimizing the costs that are associated with using cloud computing services. GreenOps, on the other hand, is the practice of using technology and operations to reduce the environmental impact of an organization. Combining these two areas, Cloud FinOps to GreenOps is the process of managing and optimizing cloud costs while also reducing the environmental impact of an organization. In recent years, the use of cloud computing has grown rapidly, and so has the environmental impact of data centers. As more organizations are becoming aware of the importance of sustainability, the adoption of Cloud FinOps to GreenOps becomes increasingly essential for companies to remain competitive and responsible.

Hyperscalers like Amazon Web Services (AWS) and Microsoft have made efforts to reduce the energy consumption and increase the use of renewable energy sources in their data centers. AWS announced that it aims to achieve 100% renewable energy for its overall infrastructure footprint by

2025. Microsoft, on the other hand, has committed to no longer emitting carbon by 2030 and to provide the technologies that help others to do the same.

The GreenOps methodology provides companies with an approach and indicators to reduce their ecological footprint, carried out through their cloud consumption. This includes identifying and eliminating unnecessary cloud resources, implementing eco-friendly cloud services, optimizing resource usage, monitoring, and reporting. In addition to these, there are few more strategies that can be implemented to reduce the environmental impact of cloud computing:

- **Promoting serverless:** Serverless computing allows organizations to consume resources only when the application is active. This means that resources are not wasted when the application is not in use.
- **Scheduling jobs:** By scheduling jobs between two time slots, organizations can avoid energy peaks at specific times of the day, such as 10:00 and 11:00.
- **Prioritizing data duplication:** By prioritizing data duplication in certain regions only when it is necessary, organizations can reduce the amount of energy that is used for data storage.
- **Disaster recovery:** Having a ready-to-go infrastructure in another region that will only be used if there is a disaster recovery plan being activated, reduces the need for constant resource allocation and energy consumption.

The Power Usage Effectiveness (PUE) is also an important indicator of the energy efficiency of a data center. PUE evaluates the performance of a data center, by making a ratio of the energy it uses, against the energy used by computer equipment, which is taken in isolation. Cloud provider customers should ask their cloud provider to demonstrate the transparency of its PUE. Another indicator is Carbon Usage Effectiveness (CUE), which is the ratio between the total CO2 emissions that are caused by the total energy consumption of the data center and the energy consumption of computer equipment. GreenOps would be incomplete without the existence of several efficiency indicators such as Energy Reuse Factor (ERF) which is defined as the ratio between the reused energy and the sum of all the energy that is consumed in a data center.

As an organization's cloud maturity grows, tools are now available to not only optimize the costs, but also in terms of environmental consequences. However, the success of FinOps and GreenOps methodologies does not only rely on rigorous application of all best practices. It is also the development of a corporate culture that is related to these topics. The human aspect should not be underestimated if one wants to take advantage of the synergies between the GreenOps and FinOps approaches.

The Future of Green IT

The future of Green IT is closely tied to the widespread adoption of automation in digital businesses. As more organizations automate their operations and decision-making processes, the ability to integrate sustainability considerations into these processes becomes increasingly valuable. Automation in Green IT refers to the use of technology and software to optimize energy consumption, reduce carbon footprint, and minimize environmental impact. One key area where automation can support green initiatives is in sustainability-aware planning and placement. Sustainability-aware planning allows organizations to identify energy-intensive workloads and optimize or migrate them to more sustainable environments. For example, it can aid in cloud migration by considering the environmental impact of different cloud providers and regions. By automating the process of identifying and analysing energy consumption patterns, organizations can

make data-driven decisions about where to run their workloads for maximum efficiency and minimal environmental impact.

Sustainability-aware placement is another strategy that can help organizations achieve a more sustainable cloud operation. This approach dynamically places workloads based on the environmental cost of where they run, enabling organizations to minimize their carbon footprint. This can be achieved by using machine learning algorithms to analyze the energy consumption patterns of different regions and providers, and then placing workloads in the most energy-efficient location. Also, it enables customization of analytics to prioritize sustainability over financial cost for certain workloads or applications. This means that organizations can make trade-offs between financial and environmental considerations, based on the specific requirements of their workloads and applications.

Multi-cloud and Hybrid cloud strategies are also an important approach for organizations to consider when it comes to Green IT. Multi-cloud allows organizations to spread their workloads across multiple cloud providers, enabling them to take advantage of the strengths of each provider while minimizing the environmental impact. Hybrid cloud, on the other hand, allows organizations to run their workloads on a combination of on-premises and cloud infrastructure, enabling them to optimize their resources and minimize environmental impact.

Another approach that can help organizations achieve a more sustainable cloud operation is Cloud FinOps. Cloud FinOps is the practice of managing and optimizing cloud costs and usage. It can help organizations identify and reduce unnecessary cloud spending, which in turn can reduce their carbon footprint. By automating the process of monitoring and analyzing cloud costs, organizations can make data-driven decisions about where to run their workloads for maximum efficiency and minimal environmental impact.

Finally, organizations can leverage GreenOps to achieve a more sustainable cloud operation. GreenOps is the practice of managing and optimizing cloud operations to minimize their environmental impact. It can help organizations identify and reduce unnecessary cloud spending, which in turn can reduce their carbon footprint. By automating the process of monitoring and analyzing cloud costs and usage, organizations can make data-driven decisions about where to run their workloads for maximum efficiency and minimal environmental impact.

By adopting strategies such as sustainability-aware planning, Cloud FinOps, Cloud Optimization, Multi-cloud and Hybrid cloud, and GreenOps, organizations can unlock the full potential of cloud operations while minimizing their environmental impact. This will not only benefit the environment but also provide a competitive advantage for organizations in the end. By automating Green IT processes, organizations can save costs, increase efficiency, and ultimately achieve a sustainable future for their business.

Conclusion

FinOps is essential for organizations that want to optimize their cloud spending and achieve their sustainability goals. FinOps can help organizations identify areas where they can reduce costs and improve efficiency while also reducing their environmental impact in a more specific and accurate way. This is achieved by analyzing financial data, identifying areas where they can invest in sustainable technologies or services, and making strategic investments that help them to achieve their sustainability goals in a more efficient way.

To implement FinOps, organizations must set specific and clear goals, assess their readiness for the transition, establish a dedicated team, and have an advocate or champion to drive the process to completion. The goal of FinOps is to make money by ensuring that each dollar spent yields the most in business value, particularly in a multi-cloud and hybrid cloud environment. FinOps metrics should be tied to business outcomes, with the goal of increasing cloud spend as it creates measurable business value.

Cloud FinOps is a powerful methodology for managing and optimizing cloud spending. By implementing Cloud FinOps, organizations can save money, improve visibility, increase collaboration, improve governance, and scale their cloud usage and spending as their business grows. Also, Cloud FinOps can be used to identify and track cloud-related costs that are often overlooked, such as data transfer and storage costs.

Consuming cloud services in a sustainable way is essential for businesses that are committed to reducing their environmental impact and promoting long-term growth. By implementing a cloud-first strategy, taking advantage of the scalability and flexibility that is offered by cloud platforms, and responsibly managing the end-of-life of resources, businesses can consume cloud services in an efficient and responsible manner. The cloud offers a wide range of benefits for businesses, and by consuming cloud services in a sustainable way, businesses can not only improve their operations but also make a positive impact on the environment.

Cloud FinOps to GreenOps is a powerful combination of strategies that can help organizations save money, reduce their environmental impact, and operate more sustainably. By implementing these strategies, organizations can improve their bottom line while also making a positive impact on the environment. As more organizations are becoming aware of the importance of sustainability, the adoption of Cloud FinOps to GreenOps becomes increasingly essential for companies to remain competitive and responsible.

In conclusion, FinOps is an essential strategy for organizations that want to optimize their cloud spending and achieve their sustainability goals. By analyzing financial data and identifying areas where they can invest in sustainable technologies or services, organizations can reduce costs, improve efficiency, and decrease their environmental impact. To implement FinOps, organizations must set specific goals, establish a dedicated team, and have an advocate to drive the process. Combining FinOps with sustainable IT practices, such as Cloud FinOps and GreenOps, can help organizations save money, reduce their environmental impact, and operate more sustainably. As more organizations become aware of the importance of sustainability, the adoption of FinOps and sustainable IT practices become increasingly essential for companies to remain competitive and responsible.

References

- “FinOps Foundation - What Is FinOps?” FinOps Foundation - What Is FinOps?, <https://www.finops.org/introduction/what-is-finops/>.
- Bigelow, Stephen J. “What Is FinOps?” WhatIs.Com, TechTarget, <https://www.techtarget.com/whatis/definition/FinOps>
- “Accelerating FinOps & Sustainable IT - Aiops.” Home - IBM Community, <https://community.ibm.com/community/user/aiops/viewdocument/accelerating-finops-sustainable-i?CommunityKey=8e1487dd-98f9-435f-adc6-7a37d8b9b217&tab=librarydocuments>
- Laughter, Robert. “The FinOps Journey to Intelligent Spending.” CloudSaver, <https://www.cloudsaver.com/resources/white-papers/the-finops-journey-to-intelligent-spending/>
- “Maximize Business Value with Cloud FinOps | Google Cloud.” Google Cloud, <https://cloud.google.com/resources/cloud-finops-whitepaper>
- “AWS Marketplace: GreenOps for Sustainability.” Cloud Computing Services - Amazon Web Services (AWS), <https://aws.amazon.com/marketplace/pp/prodview-37t5xmgvvhna>

Disclaimer: The views, processes or methodologies published in this article are those of the authors. They do not necessarily reflect Dell Technologies' views, processes, or methodologies.

Dell Technologies believes the information in this publication is accurate as of its publication date. The information is subject to change without notice.

THE INFORMATION IN THIS PUBLICATION IS PROVIDED "AS IS." DELL TECHNOLOGIES MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WITH RESPECT TO THE INFORMATION IN THIS PUBLICATION, AND SPECIFICALLY DISCLAIMS IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Use, copying and distribution of any Dell Technologies software described in this publication requires an applicable software license.

© 2023 Dell Inc. or its subsidiaries. All Rights Reserved. Dell and other trademarks are trademarks of Dell Inc. or its subsidiaries. Other trademarks may be trademarks of their respective owners.