

# CCT College Dublin

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## PART 1:

The cost of servers on-premises and in the cloud hanging on server designation. Dedicated servers may require higher costs upfront. Meanwhile, cloud servers from vendors such as Amazon Web Services (AWS) and Azure can be equipped when require, that's mean you can begin out with basic servers and build them up later. Total cost of ownership (TCO) analysis and your own consumption needs may help out to decide which server is beneficial for your case.

### **On-Premises Servers:**

Physical hardware that is managed and maintained on-site by your team is referred to as on-premises, or dedicated, servers. The location can be yours or a datacenter from a third-party vendor, with your own team on the ground and in charge of equipment maintenance.

On-premises servers typically cost more than other kinds of computer hardware. The typical cost of an on-premises server is estimated to be between \$1,000 and \$2,500, but this amount could be higher if you need servers that are more powerful.

Additionally, you must ensure that the specifications of the server are sufficient to meet future demand. If not, you might have to buy servers with more power sooner than necessary. The procedure for upgrading is also not very simple and may necessitate downtime.

Parts replacement, redundant hardware requirements for high availability, electric power and cooling requirements, and software licenses are additional factors that can increase the cost of on-premises servers. Additionally, qualified staff is required for on-premises servers.

If you have highly trained computer security teams monitoring on-premises servers, they are more secure. They may also be more dependable than cloud servers due to the fact that they do not require an internet connection.

Data security will always be of the utmost importance, regardless of whether an organization decides to keep its applications on-premises or in the cloud. However, businesses operating in highly regulated sectors may already have made the decision to

store their applications on-premise. In addition, knowing that your data is stored on your company's servers and IT infrastructure might give you more peace of mind already.

To use on-premise software, an organization must purchase a license or a copy of the software. There is typically greater security than with a cloud computing infrastructure because the software is licensed and the entire instance resides within an organization. Therefore, if a company requires all this additional security, why would it venture into the cloud?

The disadvantage of on-premise environments is that managing and maintaining the solution can cost an order of magnitude more than in a cloud computing environment. In order to support and manage any potential issues that may arise, an on-premise setup necessitates in-house server hardware, software licenses, integration capabilities, and IT personnel. This does not even take into account the amount of upkeep that a business is responsible for when something fails to function properly.

For workloads that are stable, a dedicated server is ideal. A cloud server, on the other hand, is superior for workloads that necessitate constant fine-tuning.

What is the anticipated workload for the server? Cloud server costs may eventually rise as a result of heavy workloads. In this instance, acquiring a dedicated server might be less expensive.

How consistent are the demands for work? In relation to the preceding question, a dedicated server is still the best choice when there is consistently high demand. However, you may want to move to a cloud server if your workloads rarely exceed peak demands. Do you anticipate any upgrades due to increased workload? Unless you can find a cloud services provider that can meet your specific requirements, a dedicated server is best if your anticipated higher workloads can only be met with specific server requirements.

Do you prefer to spread out costs over time or can you afford higher initial costs? Choose an on-premises server if you can spend money upfront and your requirements point to this. Given the lower initial investment, a cloud server may be preferable in the alternative.

## Consider the following in the cost of a server:

- **Infrastructure and maintenance costs:** On-premises servers require investment not only in IT infrastructure but also in physical infrastructure, including office space, insurance, and electricity and cooling equipment.
- **IT maintenance costs:** Computing, memory, and storage upgrades come to mind when it comes to on-premises servers, as well as hardware refreshes every few years or so.
- **Network traffic costs:** This can be significant for on-premises servers but more affordable on the cloud.
- **Energy costs:** Aside from the energy equipment requirements, energy costs may be higher on-premises since cloud service providers often get bulk discounts for energy use.
- **Labor costs:** Significant investment in personnel and training is required for on-premises servers, but not so much for cloud servers.

## Blade server model:

The HPE BladeSystem c3000 Platinum building transport distinctive capabilities to HPE BladeSystem.

The c3000 is ideal for:

- 1) Small branches of offices or work from home sites that have limited number of IT staff.
- 2) Applications have need of up to eight servers per enclosure.
- 3) Locations that have least squat rack and cooling ability.
- 4) Data centers have need to power connections to a constant power supply (UPS) or 100-120V AC wall outlets.

Similar to the c7000 enclosure, the Intelligent Management through the Onboard Administrator provides you full domain of your c3000 bladed infrastructure. Each c3000 enclosure refilling the moving parts of your infrastructure cables, power supplies and fans,

networking, and redundancy. The economical HPE c3000 solution with beneficial features that save you time, hassles, and energy, while making change quickly.

### **Cost of Items**

<i>Intel Xeon Processor</i> E5-2660 (8-cores, 20MB Cache, 2.20 GHz, 95W):	EUR 55.73
<i>32GB RAM DDR4:</i>	EUR112.15
<i>4 x 2TB SATA</i> Internal Hard Desktop price:	EUR 241.48
<i>RAID 5:</i>	EUR 700
<i>Windows Server 2019 Datacenter:</i>	EUR 4765.02
<i>UPS - 1500 VA:</i>	EUR 134
<i>Load Balancer:</i>	EUR 1.2

### **Space required for system:**

28 m of space is required for my system

## **PART 2: A Modern Data Centre**

In a building environment that has been specifically designed, a data center is a complex facility with extremely sophisticated and powerful IT equipment intricately paired with cooling systems. The goal of energy efficiency in such facilities becomes more difficult in this dynamic setting. The operation time and operating conditions of such facilities are another specification that complicates the situation. The fact that data centers operate continuously throughout the year at a very high functional capacity also raises concerns regarding equipment upkeep during operation.

In 2006, AWS set the standard for cloud computing by developing cloud infrastructure that enables faster, more secure construction and innovation. In order to safeguard our data centers against both natural and human-caused threats, we are constantly developing new designs and systems. After that, we set up controls, create automated systems, and go through audits by third parties to make sure everything is safe and in order. AWS is trusted by the world's most stringently regulated businesses as a result. Learn more about our security strategy for safeguarding the data of millions of active monthly customers by taking a virtual tour of one of our data centers.

## **Operational energy consumption**

The operational energy consumption of a data center typically falls into two general categories:

- The amount of energy required to run the IT equipment
- Needed energy

Numerous data centers have operational requirements that include not only electricity but also other resources like water. The impact on the environment is significant when you take into account the water that is used on site for data centers that use chillers based on cooling towers as well as the water that is used by the primary energy source that generates power for the data center (a national average of 7.85 liters of water are consumed for every kilowatt-hour produced). During its operation, a large data center with 15 MW I.T. Ability to consume around 80 to 130 million gallons of water per year.. The same DOE report from Lawrence Berkeley National Laboratory provides forecasted predictions and historical data on water consumption based on current trends in data center energy efficiency standards.

## **Storage in a Data Center**

Data centers store a lot of sensitive information for both their own purposes and the requirements of their customers. The amount of storage space available for backing up data locally, remotely, or both increases as storage media costs fall. Access times to data are reduced by developments in non-volatile storage media. Software-defined storage technologies, like other software-defined technologies, also improve storage system management staff efficiency.

## **Equipment for data centers**

Networks consist of cabling, switches, routers, firewalls, and other devices that link servers together and to the outside world. They can handle a lot of traffic without sacrificing performance if they are set up right. Core switches at the edge of the network connect the data center to the Internet, and a middle aggregate layer connects the core layer to the



access layer, where the servers are located, in a typical three-tier network topology. Software-defined networking and hyperscale network security are two examples of recent advancements that bring cloud-like agility and scalability to on-premises networks.

## **Workload**

The IT resources hosted by data center hardware or cloud platforms are called workloads. Data and applications make up workloads, and IT infrastructure provides the computational resources needed for workloads to complete tasks.

The amount of data and applications supported by the IT infrastructure at any given time determines the size of a workload. It is essential to ensure that the workload is properly matched with the appropriate resources when moving it to new IT infrastructure systems.

Analyzing the workload's security, scale, and platform requirements for applications and data is part of workload alignment. Depending on how the workload is used, certain servers and storage options are better suited to it.

A workload will run smoothly and effectively when it is aligned with an infrastructure resource that is best suited to it. A thorough comprehension of the following is required for effective workload management:

The quantity of servers and storage systems needed to support the workload,

1. the number of applications,
2. the list of networking components

A facility that houses computer systems and their associated components, such as storage and telecommunications systems, is known as a data center or computer center (also known as a datacenter). It typically includes security devices, environmental controls like air conditioning and fire suppression, redundant or backup power supplies, and redundant data communications connections. Large data centers are industrial-scale operations that consume as much electricity as a small town and occasionally contribute a significant amount of diesel exhaust pollution to the air.

A physical or virtual centralized repository for the storage, management, and dissemination of data and information organized around a particular body of knowledge or pertaining to a particular business is known as a data center (sometimes spelled datacenter).

For instance, the National Climatic Data Center (NCDC) is a public data center that manages the largest archive of weather data in the world. A private data center may be housed in the facilities of an organization or it may be operated as a specialized facility. Although it may be referred to as a server room or even a computer closet, every business has a data center.

The network operations center (NOC), a restricted access area containing automated systems that continuously monitor server activity, Web traffic, and network performance, may be synonymous with the data center in this sense.

A four-tiered system that makes it easy to identify various topologies of data center site infrastructure design. The tiered classification system developed by the Uptime Institute is a method of site infrastructure functionality that meets common benchmarking standard requirements.

#### **The Uptime Institute's classification of the four tiers:**

**Level 1:** consisting of a single path for the distribution of power and cooling with no redundant components and offering 99.671% availability

**Level II:** consisting of a single path for the distribution of power and cooling with redundant components,

**Level III:** consisting of multiple active power and cooling distribution paths, but only one path is active, has redundant components, and can be maintained simultaneously, offering 99.982 percent availability

**Level IV:** consisting of multiple active power and cooling distribution paths, having fault tolerance, redundant components, and offering 99.95 percent availability

## **Data center main security considerations**

### **Physical Security**

While digital security is often the first port of call for individuals considering security within data centers, the impact of a physical security breach or natural disaster can prove even more debilitating than a data breach. Some physical security considerations include;

## **Location Security**

Building a replacement data center? Consider location carefully. While data hubs like Silicon Valley tends to be an exception, companies tend to create facilities several miles outside of cities, faraway from airports, train tracks, chemical facilities and out of the trail of natural disasters such as tornados, earthquakes and hurricanes. Location restrictions? Amazon.com houses data centers all over the country that are impersonate as merely large, undistinctive warehouses hiding in simple sight.

## **Redundant Utilities**

Providing of a knowledge center to get through a numbers of failure scenarios has become dangerous for many businesses. A secure facility will employ two separate sources for critical utilities, having the ability to trace electricity back to two unique substations. Controlled Access

Data center security needs to control the access of workers, contractors and visitors. Keep entry points to a minimum to make sure full visibility on those entering the facility, leverage CCTV and security barriers to stay unwanted intruders out and operate a strict access policy for those on-site. Access control systems - ideally two-factor authentication, protect data from worker negligence activities while a electronic visitor management solution will give full visibility and access for any third-party contractors or visitors who may need unplanned access.

## **Digital Security**

While physical security makes up one-third of the safety equation, digital security precautions must even be taken in order to protect the files stored within.

## **Encryption**

It is necessary when working within divided computing environments where application workloads communicate through both private and public networks, encryption defends data at points of sensibility behind the info centers control.

## **Regulatory Compliance**

Both a legal requirement and a safeguard against potential threats, ensuring your data center complies with leading industry standards (such as ISO 27001) and regulations (PCI & HIPAA) requires the foremost stringent of security standards. By using compliance

guidelines as a framework for security planning you'll ensure a robust security strategy is in place to safeguard against potential threats.

### **Structural Security**

The infrastructure on which your data center is made will have a profound impact on data security. Utilizing adaptive security measures allows workloads to maneuver freely without third-party intervention. Ensure regular auditing of application interactions and remain aware of any potential risks.

The leading provider of Access Control, Digital Visitor Management & CCTV technology, TDS is that the preferred security provider for data centers throughout the US, UK and Ireland.

### **Geo-redundancy**

Geo-redundancy is that the distribution of mission-critical components or infrastructures, like servers, across multiple data centers that reside in several geographic locations. Geo-redundancy acts as a security net in case your primary site fails or in the event of a disaster or an outage that impacts an entire region.

Should a workload fail thanks to hardware, networking, power or another issues, it can failover to at least one of the alternate locations with minimal impact to the service. That way, your business continues to function as normal (ultimately resulting in improved end-user experience).

Geo-redundancy aims to guard your data while minimizing downtime by replicating your organization's data and IT infrastructure to other sites, like secondary data centers or colocation facilities, spread across different geographic regions. This helps ensure your mission-critical applications and workloads will remain available and unaffected within the event of a region-wide outage or disaster at your primary site.

### **Data center hypervisor compare with client-side hypervisor**

Type 1 hypervisors are generally used on organizational servers. organizational servers in place of virtualized PCs are mostly use in a data center. How is a hypervisor software different from an operating system?

A type 1 hypervisor acts like a lightweight operating system and runs directly on the host's hardware, while a type 2 hypervisor runs as a software layer on an operating system, like other computer programs.

## **IaaS, PaaS, and SaaS**

They are also known as cloud computing service models or cloud service models.

On-demand access to cloud-hosted physical and virtual servers, storage, and networking the backend IT infrastructure for running applications and workloads in the cloud is known as infrastructure as a service (IaaS).

On-demand access to a complete, ready-to-use, cloud-hosted platform for developing, running, maintaining, and managing applications is known as PaaS.

On-demand access to cloud-hosted, ready-to-use application software is known as SaaS. SaaS, PaaS, and IaaS do not compete with one another. Most large companies use all three, while many mid-sized businesses use more than one.

The term "as a service" refers to the manner in which these offerings consume IT assets and the primary distinction between cloud computing and traditional IT. In traditional IT, an organization buys, installs, manages, and maintains its own on-premises data center's IT assets hardware, system software, development tools, and applications. The assets in cloud computing are owned, managed, and maintained by the cloud service provider; They are consumed by the customer through an Internet connection, and they can pay for them through a subscription or pay as you go model.

Therefore, the primary benefit of IaaS, PaaS, SaaS, or any "as a service" solution is cost savings: Without having to purchase and maintain everything in its own data center, a customer can access and scale the IT capabilities it needs at a predetermined cost. However, there are additional benefits that are unique to each of these options.

## **PART 3: Migration Strategy**

A consistent AWS experience is provided by AWS hybrid cloud services at the edge, on-premises, and in the cloud. Build hybrid architectures that meet your specific requirements and use cases by choosing from the broadest selection of computer,

networking, storage, security, identity, data integration, management, monitoring, and operations services.

## **Benefits:**

### **Accelerate digital transformation**

By placing cloud infrastructure and services where you need them, you can speed up the start-up of digital transformation projects. Use AWS to modernize and manage all of your applications, even those that require local processing, latency, and data residency in particular locations.

Enhance IT and developer productivity and observe a reduction in costs.

Provide IT with the same hardware, services, and tools for operating infrastructure across on-premise, cloud, and edge environments, and provide developers with a common platform for building, deploying, and managing applications.

### **Provide unique services and experiences**

Facilitate interactive and responsive applications and speed up the delivery of new, distinctive offerings to users. In order to bring your applications, infrastructure, and services closer to your end users, deploy them on premises, near major metropolitan areas, and at the edge of 5G networks.

## **The migration procedure:**

The three-step migration procedure is intended to assist your company in preparing for the migration of tens, hundreds, or thousands of applications. Although each phase is a common component of a successful migration, it is an iterative process rather than a single phase. You will be able to drive repeatability and predictability in processes and procedures as you iterate and migrate more applications, and you will discover that the migration process accelerates. Automation and intelligent recommendations based on AWS machine learning are provided by our extensive portfolio of AWS migration tools and our established ecosystem of third-party migration tools to speed up the three-phase migration process.

## The key steps for migration process are:

- Create IAM user for AWS Replication Agent
- Create the Replication Settings template in the AWS MGN Console
- Install the AWS Replication Agents on source servers
- Configure the Launch Settings in the AWS MGN console
- Launch the test instances
- Launch the cutover instances
- Finalize cutover

## Prerequisites

- Create the virtual networking environment for this walkthrough
- Add internet route to the Public-MGN-Demo-Route Table (Destination 0.0.0.0/0 with Internet gateway as target)
- Associate the Staging Area Subnet and Migrated Resources Public Subnet with the Public-MGN-Demo-Route Table
- And associate the Migrated resource private subnet with the Private-MGN-Demo-Route Table
- Add inbound rules for HTTP and HTTPS
- Add inbound rules to the Private-MGN-Demo-SG security group for the MYSQL port from the Bastion host private IP address and the SSH port from the Public-MGN-Demo-SG security group.

## Services

### Migration Evaluator

Migration Evaluator (Formerly TSO Logic) convey precise data-driven suggestion to right-size and right-cost calculate. Our predictive analytics provide insights on an ongoing basis to make sure that you are always running each application in the best place, with the

proper software and at the shortest TCO even as your environment, cloud options, and costs change. Migration Evaluator helps you build a transparent business case to accelerate your migration planning.

### **AWS Migration Hub**

AWS Migration Hub gives one location to find the improvement of application migrations across multiple AWS and partner solutions. Migration Hub gives permission you to settle on the AWS and partner migration tools that fulfil your requisites, while giving visibility into the rank of migrations across your folder of applications. Migration Hub also provides key metrics and progress for individual applications, no matter which tools are being used to migrate each of the applications. once you have to create right-sized EC2 instance suggestions for running on-premises workloads in AWS, use Migration Hub.

### **AWS Prescriptive Guidance**

AWS Prescriptive Guidance provides time-tested strategies, guides, and patterns from AWS and AWS Partners to help accelerate your cloud migration, modernization, or optimization projects. These resources were developed by experts and are based on years of experience helping customers realize their business objectives on AWS.

## **Challenge Task**

Recently, Flexera conducted its annual State of the Cloud Survey on the newest cloud trends. They questioned 997 technical professionals over a broad cross-section of enterprises about their assumption of cloud infrastructure. Their findings were insightful, especially with regard to current cloud computing challenges.

To answer the most question of what are the challenges for cloud-based computing, below we've expanded upon some of their findings and provided additional problems that businesses may need to address.



### Top cloud challenges for all organizations



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## Security issues

We introduced the point of contention surrounding data protection in our definitive business intelligence trends guide. security may be a pressing concern in the world of cloud-based computing, as you're unable to see the exact location where your data is stored or being processed. This increases the risks which will arise during the implementation or management process.

Currently, 93% of leading companies across sectors are highly concerned about experiencing a big data breach within their cloud-centric ecosystems.

The main issues surrounding cyber threats are:

- Compromised credentials
- Broken authentication
- Human error
- Mass sensitive data breaches
- Hacked interfaces and APIs
- Account hijacking

## **Cost management and containment**

For the foremost part, modern computing can save businesses money. within the cloud, a corporation can easily ramp up its processing capabilities without making large investments in new hardware. Businesses can instead access extra processing through pay-as-you-go models from public providers. However, the on-demand and extensible nature of cloud computing services sometimes make it hard to brief and estimate quantities and costs.

Luckily there are several ways to stay cloud costs in check, for instance , optimizing costs by conducting better financial analytics and reporting, automating policies for ruling, or keeping the management reporting practice on the course, in order that these issues in computing could be decreased.

## **Lack of resources/expertise**

Lack of resources and/or expertise is also a challenge which has to face by cloud companies and enterprises. Organizations are increasingly placing more workloads within the system while cloud technologies continue to rapidly advance. thanks to these factors, organizations are having a troublesome time keeping up with the tools. Also, the necessity for expertise continues to grow. These challenges are often minimized through additional training of IT and development staff. a robust CIO championing cloud adoption also helps. As Cloud Engineer Drew Ferment says:

“The success of adoption and migrations comes right down to your people—and the investments you make in a talent transformation program. Until you specialize in the #1 bottleneck to the flow of cloud adoption, improvements made anywhere else are an illusion.”

## **Governance/Control**

There are many challenges facing cloud computing and control is in situ number 4. Proper IT governance should ensure IT assets are implemented and used consistent with agreed-upon policies and procedures; ensure that these assets are properly controlled

and maintained, and make sure that these assets are supporting your organization's strategy and goals.

In today's cloud-based world, IT doesn't always have full control over the provisioning, de-provisioning, and operations of infrastructure. This has increased the problem for IT to provide the governance, compliance, risks, and data quality management required. To mitigate the varied risks and uncertainties in transitioning to the cloud, IT must adapt its traditional IT control processes to incorporate the cloud. to the present effect, the role of central IT teams within the system has been evolving over the last few years. together with business units, central it's increasingly playing a role in selecting, brokering, and governing cloud services. On top of this third-party cloud computing/management providers are progressively providing support and best practices.

## **Compliance**

Compliance is an issue for everyone using backup services and storage. whenever a company moves data from the internal storage to a cloud, it's faced with being compliant with official regulations and laws. for instance, healthcare organizations within the USA have to act in accordance with HIPAA, public retail companies need to act in accordance with SOX.

Depending on the region and demands, every organization must make sure these standards are well-respected and administrated.

This is one of the many challenges facing cloud computing, and although the procedure can take a specific amount of time, the info must be properly stored.

Customers have to find for vendors that can give compliance and see if they are adjusted by the standards they need. Some vendors offer certified compliance, but in some cases, additional input is required on both sides to ensure proper compliance regulations.

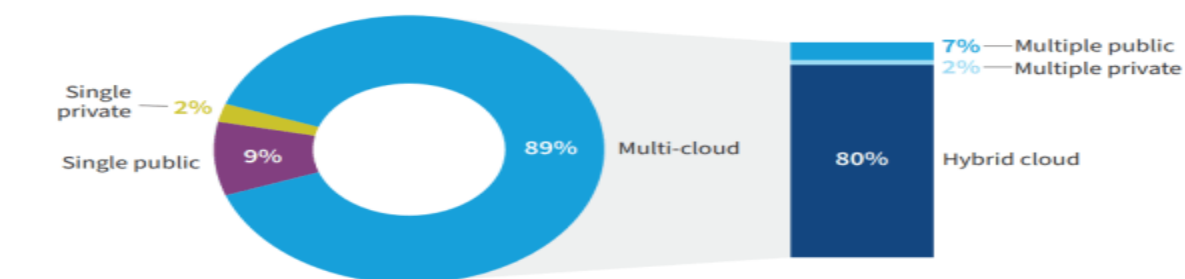
## **Managing multiple clouds**

The position of multi-cloud has increased aggressively in recent years. Companies are shifting or combining public and personal clouds and, as mentioned earlier, tech giants like Alibaba and Amazon are leading the way.

The survey by Flexera shows that 89% of companies have a multi-cloud strategy. Organizations with a strategy by combining both public and personal clouds reach up to 80%, while enterprises with a technique of multiple public or private clouds increased little but stay under 10%.

**FIGURE 9**  
Multi-cloud remains the de facto standard.

Cloud strategy for all organizations



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Source: Flexera 2022 State of the Cloud Report  
**Flexera**

While organizations leverage a mean of almost five clouds, it's evident that the use of the cloud will continue to grow. That's why it's important to answer the main questions organizations are facing today.

## Migration

Migration is one of the main cloud computing center problems. This is generally the process of fixing an application to the cloud. Although moving a replacement application is a straightforward process, when it involves moving an existing application to a new environment, many cloud difficulties arise.

Many leading companies are currently migrating their applications to the cloud, and over half of them find it more difficult than expected projects are over budget and deadline.

What are the issues faced during storing data in a cloud-centric ecosystem? Most commonly cited were:

- Extensive troubleshooting
- Cybersecurity challenges
- Slow data migrations
- Migration agents
- Cutover complexity
- Application downtime
- Dependency mapping
- Assessing technical feasibility
- Understanding application dependencies
- Cost-optimization after migration

## Report:

Organization's current readiness for cloud operations is evaluated at the beginning of your journey. Most importantly, you want to determine the desired business outcomes and construct the migration business case. You can use our tools to evaluate your on-premises resources and create a cost projection for running applications in AWS that is both appropriate and optimized. Begin by working with Migration Evaluator, which offers a projection of your total cost of ownership (TCO) for AWS based on the actual resources you use and our years of experience assisting customers in optimizing their AWS compute, storage, database, networking, and software licenses. Utilize AWS Migration Hub if you only require recommendations for the appropriate EC2 instance size for running on-premises workloads in AWS.

Using the AWS Cloud Economics Center, a tried-and-true method based on hundreds of customer engagements that provides a compelling, Board-

level business case and justification prior to undertaking a large-scale migration, AWS can assist you in developing this business case.

Review the AWS Prescriptive Guidance migration and modernization strategies, guides, and patterns once you have your business case.

Innovative guidelines and best practices for navigating the cloud landscape, planning your migration journey, and accelerating your transformation are covered in the provided content.

Frequently open area clients like state and neighborhood government organizations can need cloud talented IT staff and are looking for direction on the most proficient method to move their responsibility from an on-premises server farm to Amazon Web Administrations (AWS).A highly automated lift-and-shift (rehost) solution that simplifies, expedites, and reduces the cost of migrating applications to AWS was launched by AWS in April 2021.It lets businesses move a lot of physical, virtual, or cloud servers at once without having to worry about compatibility, performance, or long cutover window. Cloud Endure Migration serves as the foundation for AWS MGN, which enhances it by integrating with the AWS management console. This offers a flexible and integrated solution to customers in the public sector. MGN lets you control permissions and access with AWS identity and access management (IAM), operate from within the AWS Management Console, and monitor AWS MGN with Amazon CloudWatch and AWS CloudTrail.

A common method for migrating to AWS is lift-and-shift, also known as "rehost," in which a workload is moved from on-premise with little or no changes. We find that most applications are rehosted when moving to the cloud to reduce risk and speed up time to production in a scenario involving a large legacy migration where the company wants to quickly scale the

migration to meet a business case. For instance, GE Oil & Gas discovered that rehosting enabled it to save approximately 30% of its costs even without implementing any cloud optimizations.

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