



Collaborate Board



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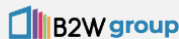


DATA TECHNICIAN

CLOUD COMPUTING & AZURE DATA FUNDAMENTALS (DP900) -DAY 1-



Just IT



Apprenticeships | Training | Recruitment

OBJECTIVES -DAY 1

- **Intent:**

To be able to define cloud computing and its characteristics, be able to differentiate between IaaS, PaaS and SaaS deployment models, recognise the key components of security, and identify major cloud providers such as AWS, Azure and GCP.

- **Implementation:**

Delivered using practical labs. Concepts explained through examples and exercises/quizzes

- **Impact:**

Gain the skills and confidence needed to understand data analysis processes and their types, preparing for more advanced studies or real-world applications. The impact measured through in-class mini-projects, labs & Quiz

Classroom Expectations

**BE PREPARED, BE PROFESSIONAL,
BE READY TO LEARN!**

01

CAMERAS ON



Cameras should be switched on with an appropriate background, and with you visible at your screen. If you have technical/ personal difficulties, inform your tutor.

02

MICS ON MUTE



Place your mics on mute unless asking or answering a question. Use the 'raise hand' function in MS teams to gain attention.



03

APPROPRIATE LANGUAGE USED



Use appropriate and professional language at all times.

04



BE READY



Be focused, ensuring you all have all equipment ready and a drink by your side. Be prepared to learn without interruption.

05



ENGAGE- TAKE NOTES AND ASK QUESTIONS!



Take notes throughout your session, ask questions and support each other. Help create a positive learning environment for everyone.

SAFEGUARDING & PREVENT

Out of normal working times please refer to our website <https://www.justit.co.uk/safeguarding/> for sources of information and support or contact the following agencies for immediate help.

- The Samaritans <https://www.samaritans.org/how-we-can-help/contact-samaritan/>
- Mind <https://www.mind.org.uk/information-support/>
- Local authority support <https://www.gov.uk/find-a-community-support-group-or-organisation>
- Anxiety UK <https://www.anxietyuk.org.uk/>
- Women's Aid <https://www.womensaid.org.uk/information-support/>
- Andy's Man Club <https://andysmanclub.co.uk/>

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CLOUD COMPUTING



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WHAT IS CLOUD COMPUTING?

- Cloud computing is the on-demand delivery of IT resources over the Internet with pay-as-you-go pricing.
- Instead of buying, owning, and maintaining physical data centers and servers, you can access technology services, such as computing power, storage, and databases, on an as-needed basis from a cloud provider.



WORKBOOK ACTIVITY

30 MINUTES

**Within your workbook, please complete
Day 1 task 1**

If completed early please work your way through [MS Learn Azure content](#)

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Day 1: Task 1

Please research and complete the below questions relating to key concepts of cloud.

Be prepared to discuss the below in the group following this task.

What can cloud computing do for us in the real-world?	
How can it benefit a business?	
What's the alternative to cloud computing?	
What cloud providers can we use, what are their features and functions?	

CASE STUDY ACTIVITY - 20 MINUTES

- Choose one case study (Netflix on AWS, NHS on Azure, or Spotify on Google Cloud)
- In your group, summarise:
 - Business challenge
 - Cloud solution
 - Outcomes (benefits & lessons learned)
- Create either:
 - A **3-slide PowerPoint**, or
 - A **one-page A4 poster** (max 100 words)
- Present to the class in **up to 5 minutes**
- Peer-assess another group's presentation using the rubric on your activity sheet

WHAT IS CLOUD COMPUTING?

- **File Storage and Sharing:** Google Drive, Dropbox, Microsoft OneDrive
- **Collaboration Tools:** Microsoft 365, Google Workspace, Slack
- **Customer Relationship Management (CRM):** Salesforce, HubSpot
- **Enterprise Resource Planning (ERP):** SAP, Oracle Cloud ERP
- **E-commerce:** Shopify, Magento, WooCommerce
- **Streaming Services:** Netflix, Spotify, Amazon Prime Video
- **Software as a Service (SaaS):** Adobe Creative Cloud, Zoom, Trello
- **Development and Testing Environments:** GitHub, GitLab, Bitbucket

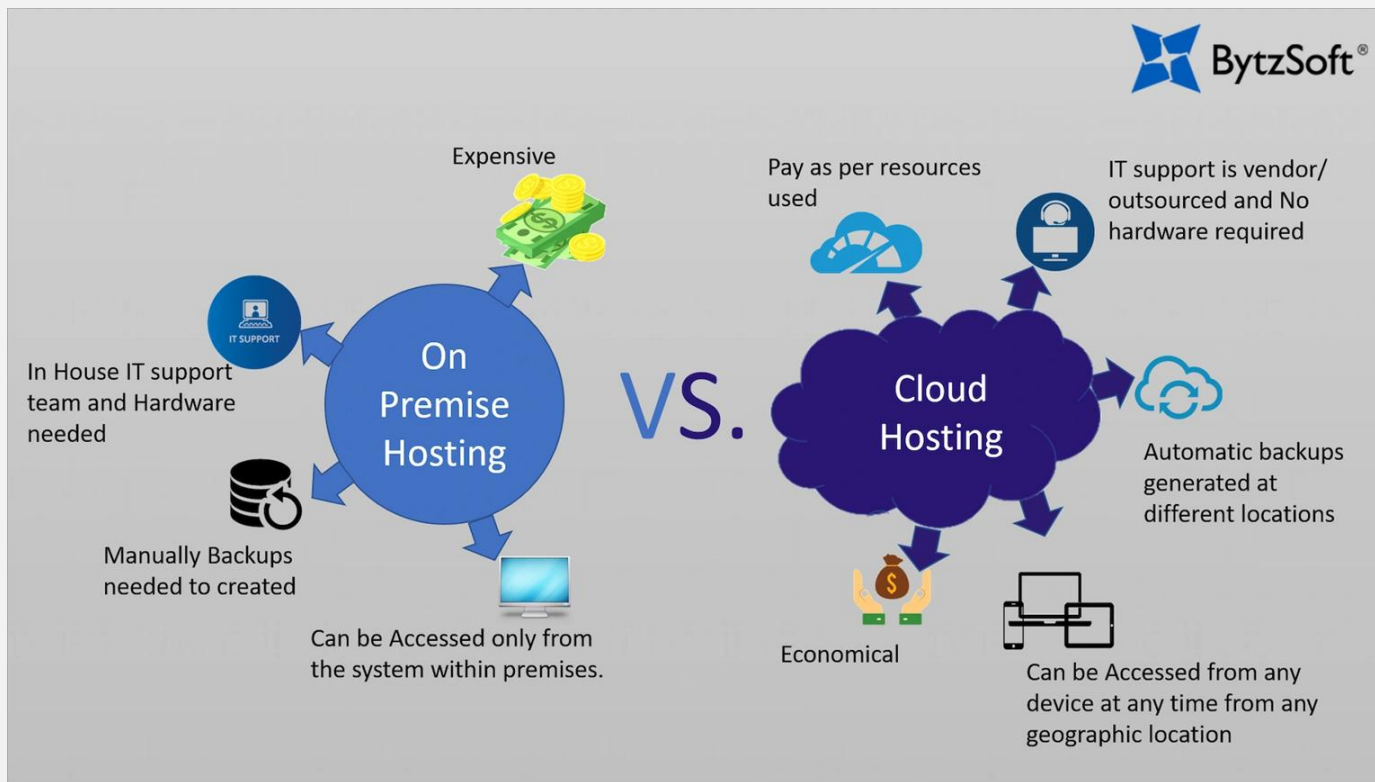
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WHAT IS CLOUD COMPUTING IN DATA?

- **Scalability:** Easily scale computing resources to handle large datasets.
- **Collaboration:** Enable teams to collaborate on data analysis in real-time from different locations.
- **Data Storage and Management:** Securely store vast amounts of structured and unstructured data.
- **Data Processing Power:** Access to high-performance computing for faster data processing and analysis.
- **Advanced Analytics and AI:** Use pre-built cloud-based AI and machine learning models.
- **Real-Time Analytics:** Perform real-time data analysis for up-to-the-minute insights.
- **Data Security and Compliance:** Benefit from cloud providers' security protocols and compliance certifications.
- **Data Backup and Recovery:** Automatic backups ensure data is protected against loss.
- **Integration with BI Tools:** Seamless integration with cloud-based Business Intelligence (BI) tools like Power BI, Tableau, and Looker.

KEEPING IT LOCAL?

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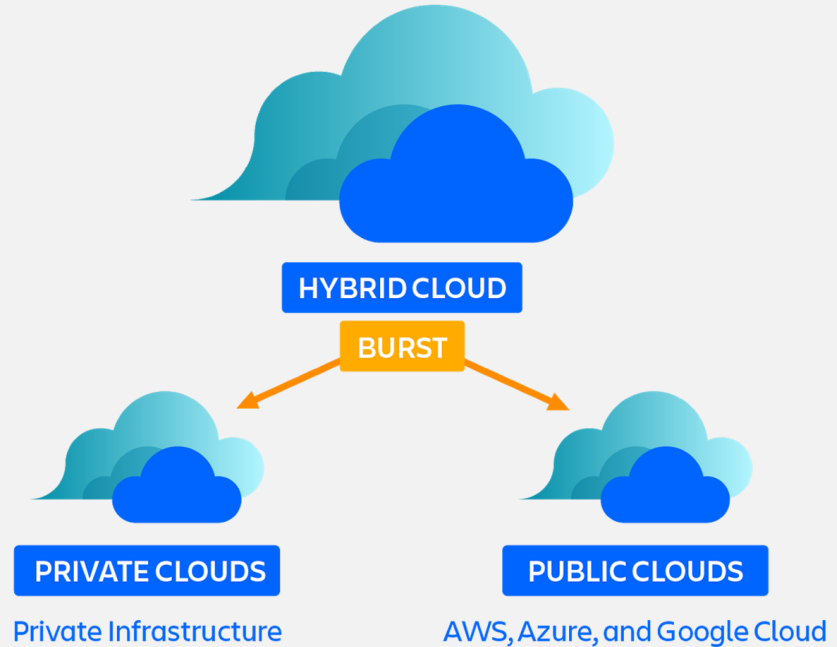


BENEFITS OF THE CLOUD

- Cloud computing provides computing resources—such as servers, storage, databases, and software—over the internet, allowing users to access these services on-demand.
- Users pay only for what they use, which offers flexibility to scale resources up or down as needed, avoiding the costs of maintaining physical hardware.
- Cloud services are accessible from anywhere with an internet connection, enabling users to manage and use resources without owning or maintaining physical infrastructure.

BENEFITS OF THE CLOUD

- Agility
- Elasticity
- Cost savings
- Global deploy
- High availability



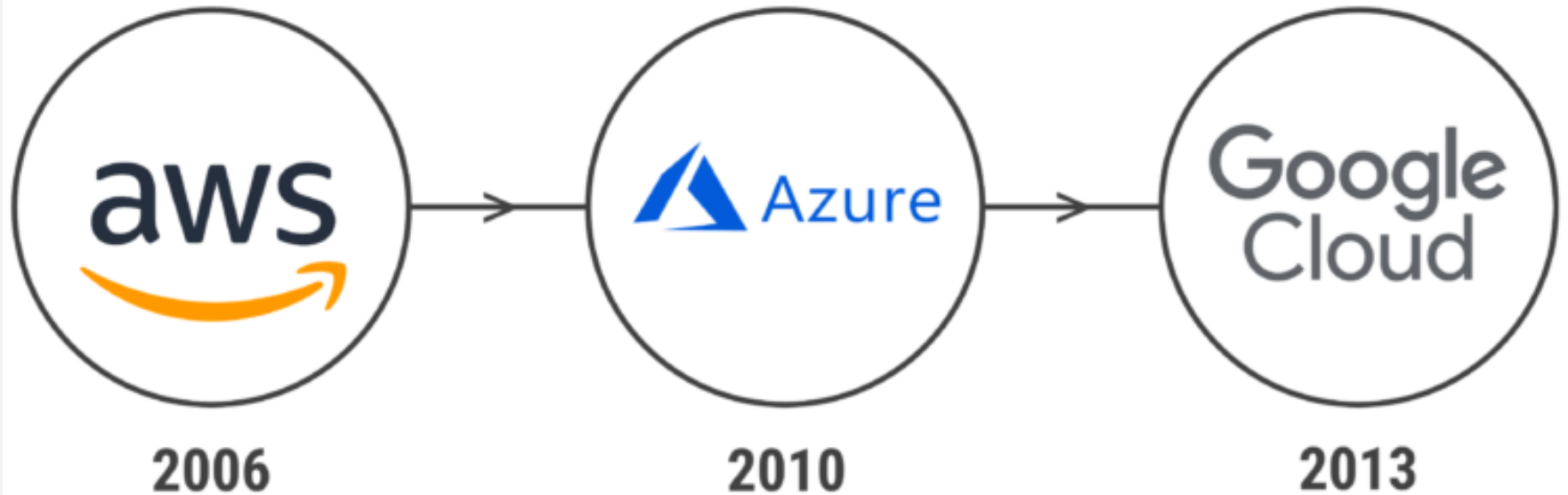
BENEFITS OF THE CLOUD ACTIVITY

Choose **one keyword** from the list below:

- Agility
- Elasticity
- Cost savings
- Global deploy
- High availability

Research its definition and a real-world example of how a business uses that benefit in the cloud. Use the Nearpod link in the chat.

CLOUD COMPUTING PROVIDERS



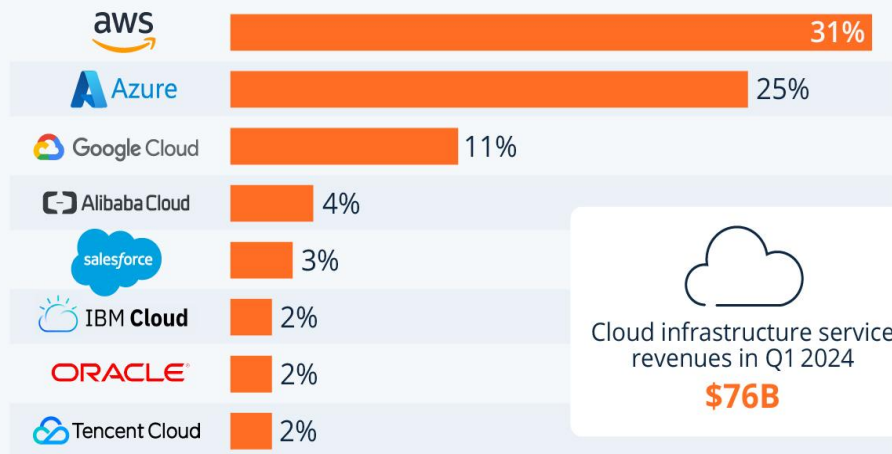
CBINSIGHTS

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CLOUD COMPUTING MARKET SHARE

Amazon Maintains Cloud Lead as Microsoft Edges Closer

Worldwide market share of leading cloud infrastructure service providers in Q1 2024*



* Includes platform as a service (PaaS) and infrastructure as a service (IaaS) as well as hosted private cloud services

Source: Synergy Research Group



AWS vs Azure vs Google Cloud Comparison



HOW DO
THEY
FUNCTION?

Virtual Servers	Instances	VMs	VM Instances
Platform-as-a-Service	Elastic Beanstalk	Cloud Services	App Engine
Serverless Computing	Lambda	Azure Functions	Cloud Functions
Docker Management	ECS	Container Service	Container Engine
Kubernetes Management	EKS	Kubernetes Service	Kubernetes Engine
Object Storage	S3	Block Blob	Cloud Storage
Archive Storage	Glacier	Archive Storage	Coldline
File Storage	EFS	Azure Files	ZFS / Avere
Global Content Delivery	CloudFront	Delivery Network	Cloud CDN
Managed Data Warehouse	Redshift	SQL Warehouse	Big Query

ADVANTAGES



- Enterprise friendly services
- Instant access to resources
- Increase in speed and agility
- Secure and reliable



- Better development operations
- Strong security profile
- Provides a cost-effective solution
- Op-Ex friendly



- Better pricing than competitors
- Live migration of virtual machines
- Improved performance
- Redundant backups

DISADVANTAGES



- Limitations of EC2 service
- Technical support fee
- Network connectivity dependency
- Downtime



- Different codebase for cloud and premise
- PaaS ecosystem is not as efficient as IaaS
- Poor management of GUI and tools
- No integrated backup

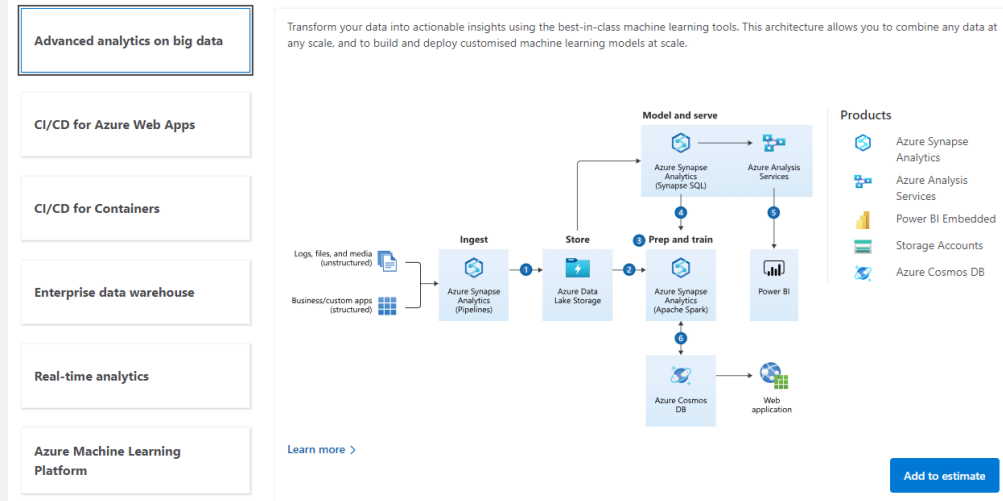


- Support fee is quite hefty
- It has a complex pricing schema
- Downloading data from GCS is expensive. (i.e., it's \$ 0.12 per GB)

AZURE COSTING

- Spend 10 minutes on the Azure costings [link](#) to find out the expected cost of Microsoft Azure.
- Then post your findings on the next slide (collab board)

Is it expensive? Do we have access to a lot of services? How could it be used in industry?



Microsoft Modules

Now, it is time for more MS DP-900 modules.



Collaborate Board

^ Instructions



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CLOUD COMPUTING SERVICES



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WORKBOOK ACTIVITY

30 MINUTES

**Within your workbook, please complete
Day 1 task 2**

If completed early please work your way through [MS Learn Azure content](#)

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Day 1: Task 2

Please research the below cloud offerings, explain what they are and examples of use cases.

Cloud Offerings	Explain what it is	When / how might you use this service in the real-world?
IaaS (Infrastructure as a service)		
PaaS (Platform as a service)		
SaaS (Software as a service)		

QUIZ

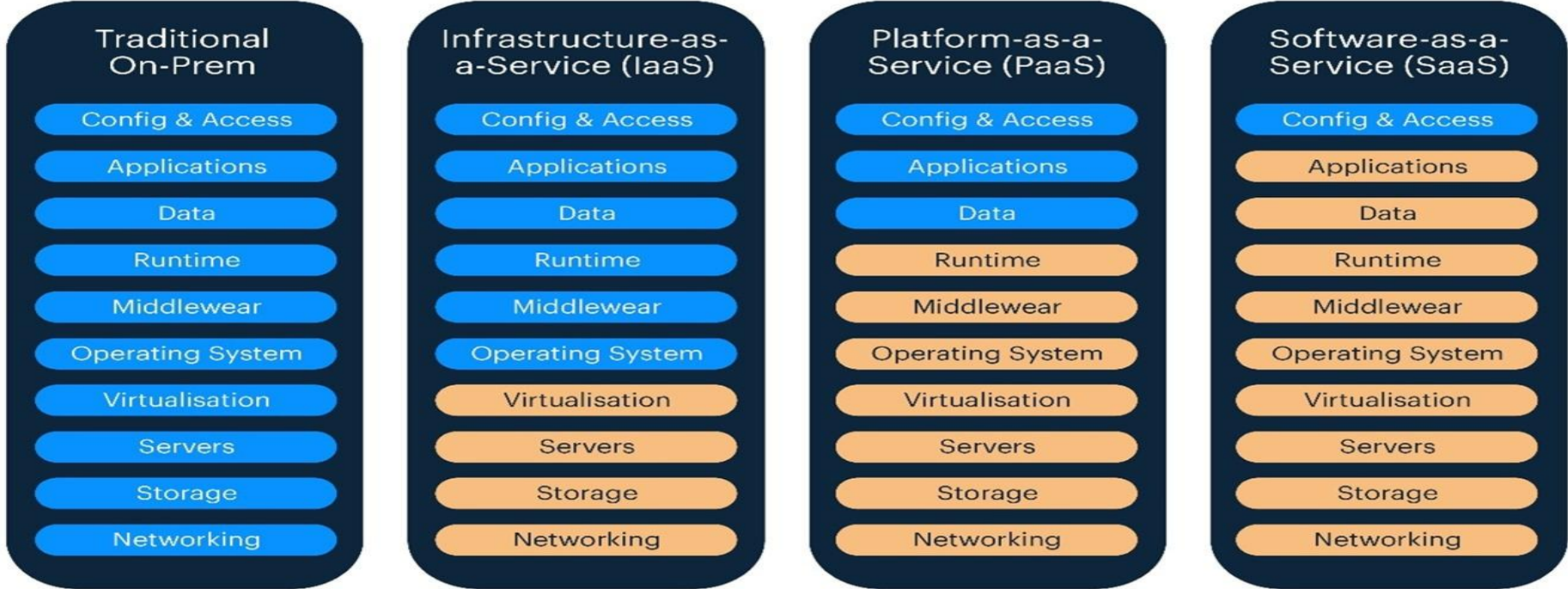
Use the Nearpod link in the chat to complete this multiple-choice quiz.

COMMON SERVICE MODELS

- **Infrastructure as a service (IaaS)**
 - Unconfigured network and computing resources
 - Virtual machines, switches, routers, firewalls, load balancers
- **Platform as a service (PaaS)**
 - Virtual machines with pre-installed operating systems and software/database environments
 - Customer creates and maintains the applications
- **Software as a service (SaaS)**
 - Fully configured applications



COMMON SERVICE MODELS



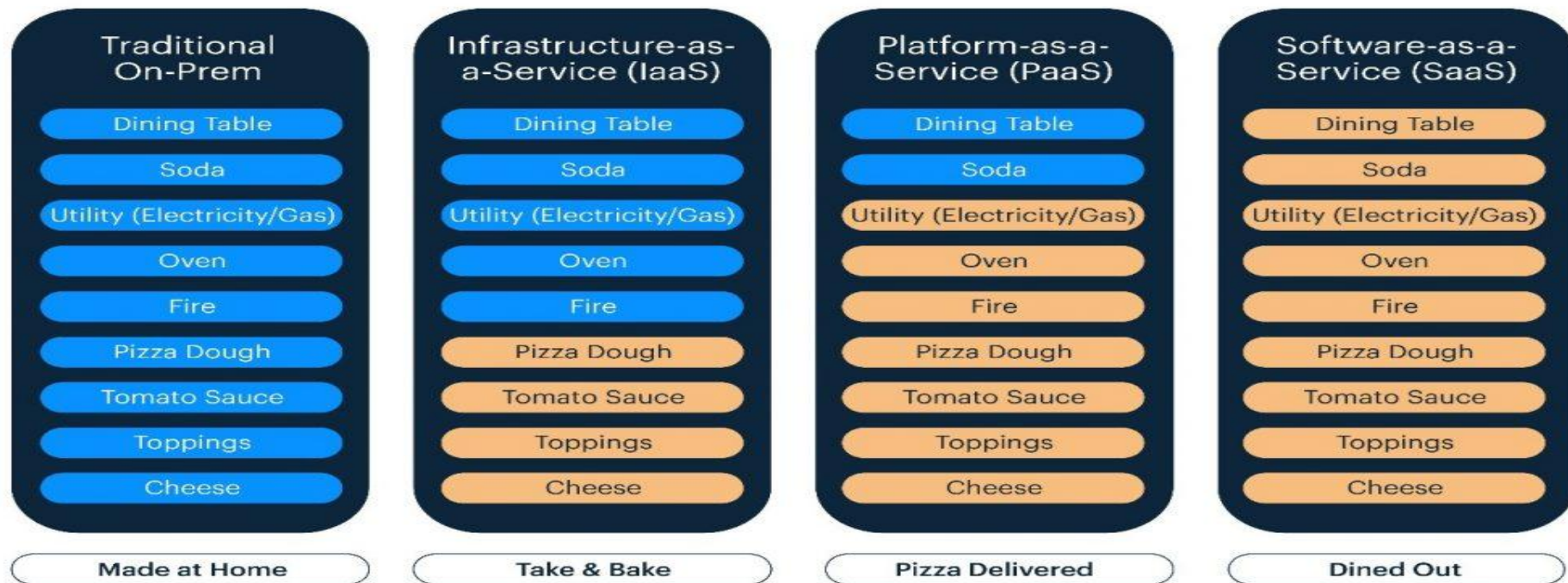
You Manage



Vendor/CPS Manages

COMMON SERVICE MODELS

Pizza-as-a-Service



CLOUD SERVICE MODELS: IAAS

Infrastructure as a Service, sometimes abbreviated as IaaS, contains the basic building blocks for cloud IT and typically provide access to networking features, computers (virtual or on dedicated hardware), and data storage space.

Infrastructure as a Service provides you with the highest level of flexibility and management control over your IT resources and is most like existing IT resources that many IT departments and developers are familiar with today.



CLOUD SERVICE MODELS: PAAS

Platforms as a service remove the need for organisations to manage the underlying infrastructure (usually hardware and operating systems) and allow you to focus on the deployment and management of your applications.

This helps you be more efficient as you don't need to worry about resource procurement, capacity planning, software maintenance, patching, or any of the other undifferentiated heavy lifting involved in running your application.



CLOUD SERVICE MODELS: SAAS

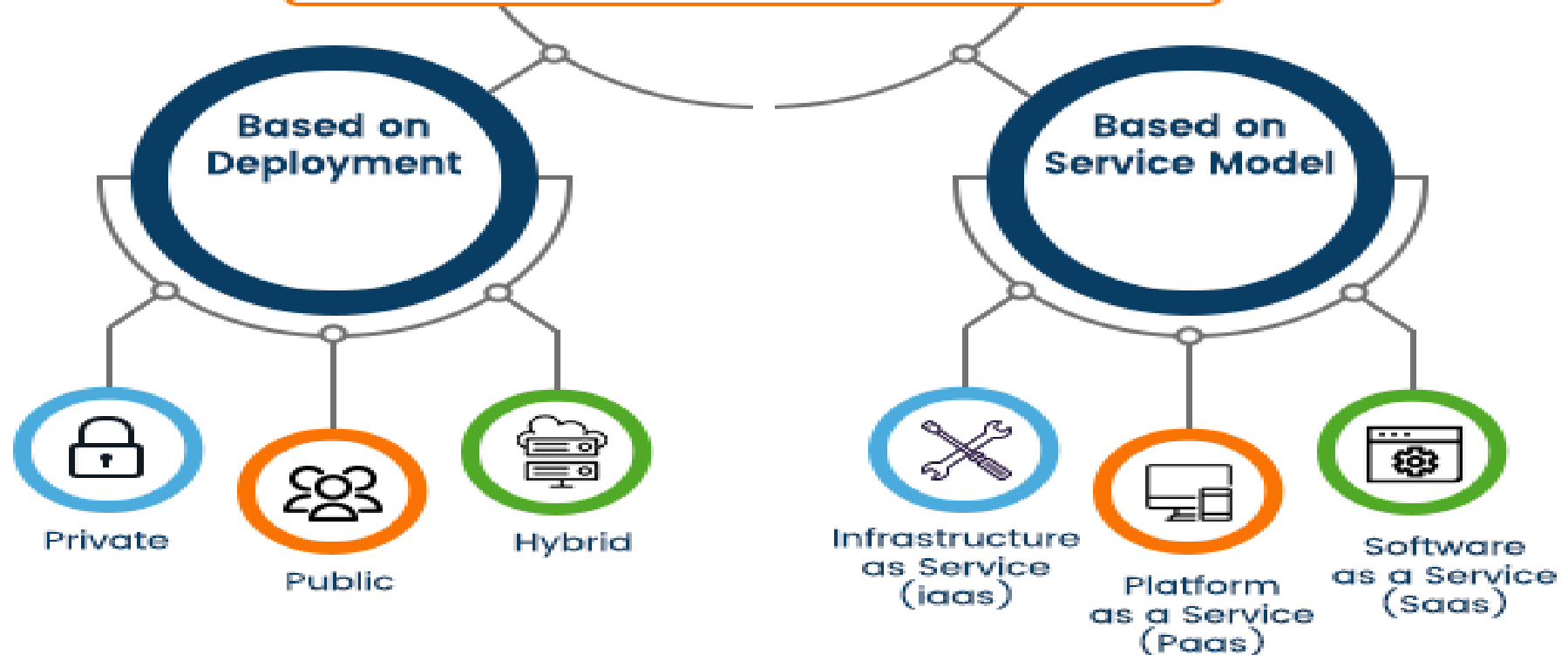
Provides you with a completed product that is run and managed by the service provider.

You don't have to think about how the service is maintained or how the underlying infrastructure is managed; you only need to think about how you will use that particular piece of software.



CLOUD DEPLOYMENT MODELS

TYPES OF CLOUD COMPUTING



WORKBOOK ACTIVITY

20 MINUTES

**Within your workbook, please complete
Day 1 task 3**

If completed early please work your way through [MS Learn Azure content](#)

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Day 1: Task 3

Please research the below terms and explain what they are, when they would be appropriate and a real-world example of where it could be implemented (i.e. what type of organisation).

Public Cloud	
Private Cloud	
Hybrid Cloud	
Community Cloud	

CLOUD DEPLOYMENT ASSESSMENT

10 MINUTES

Instructions

1. Work in pairs and each complete the worksheet independently.
2. You have **5 minutes** to finish your responses.
3. When finished, share your worksheet with your partner.
4. Use the rubric to peer-mark each other's work (total score out of **5**).
5. Complete the self-reflection; your final score will be out of **7**.

CLOUD DEPLOYMENT MODELS

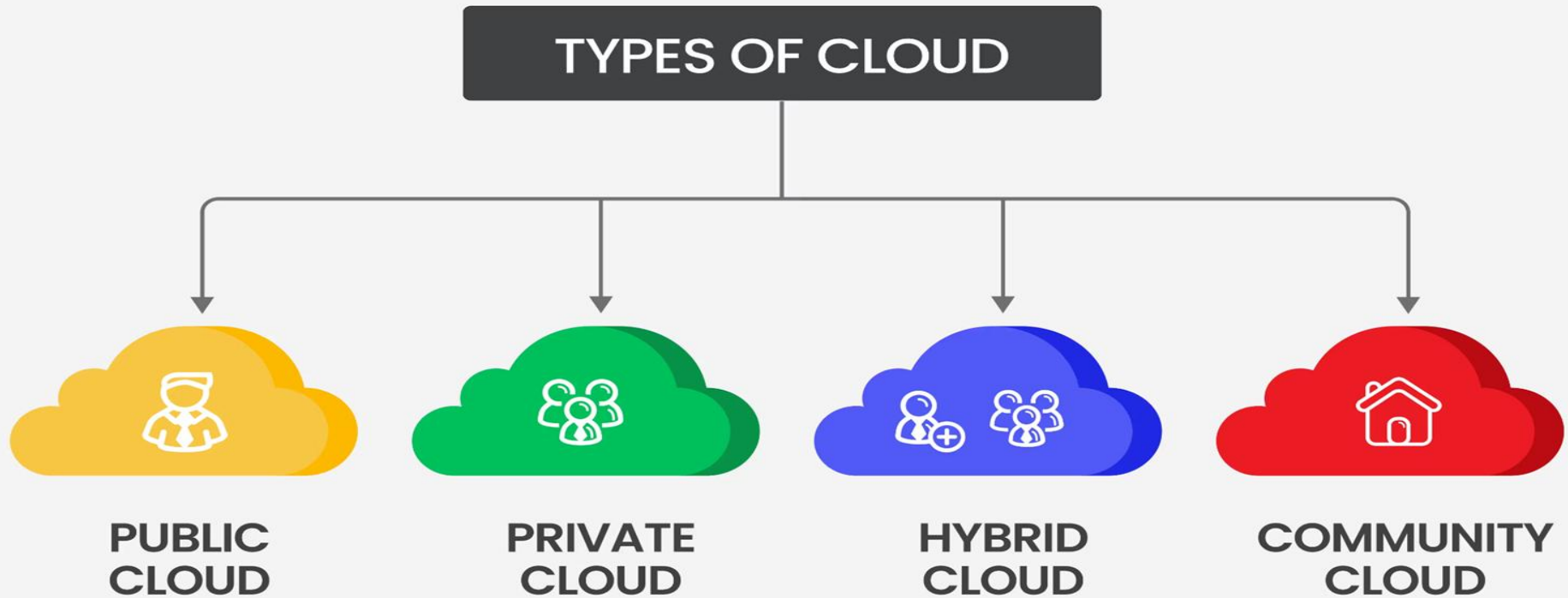
A deployment architecture that varies depending on the amount of data you want to store and who has access to the infrastructure.

Identifies the specific type of cloud environment based on ownership, scale, and access, as well as the cloud's nature and purpose.

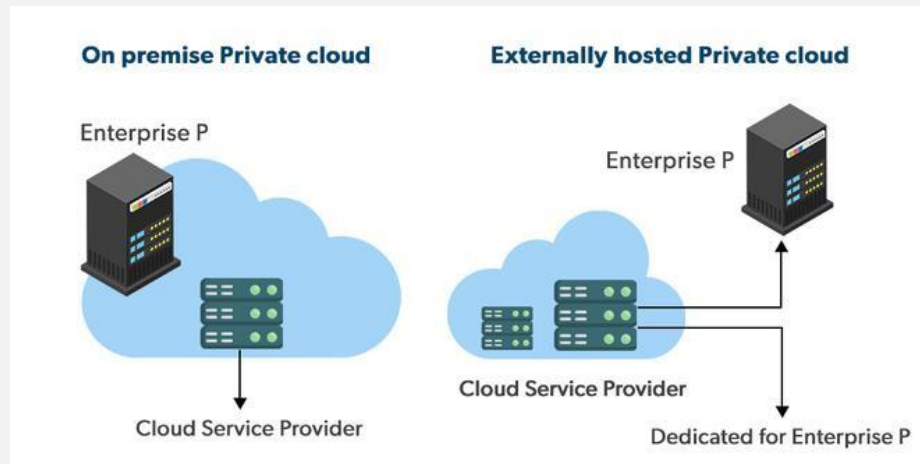
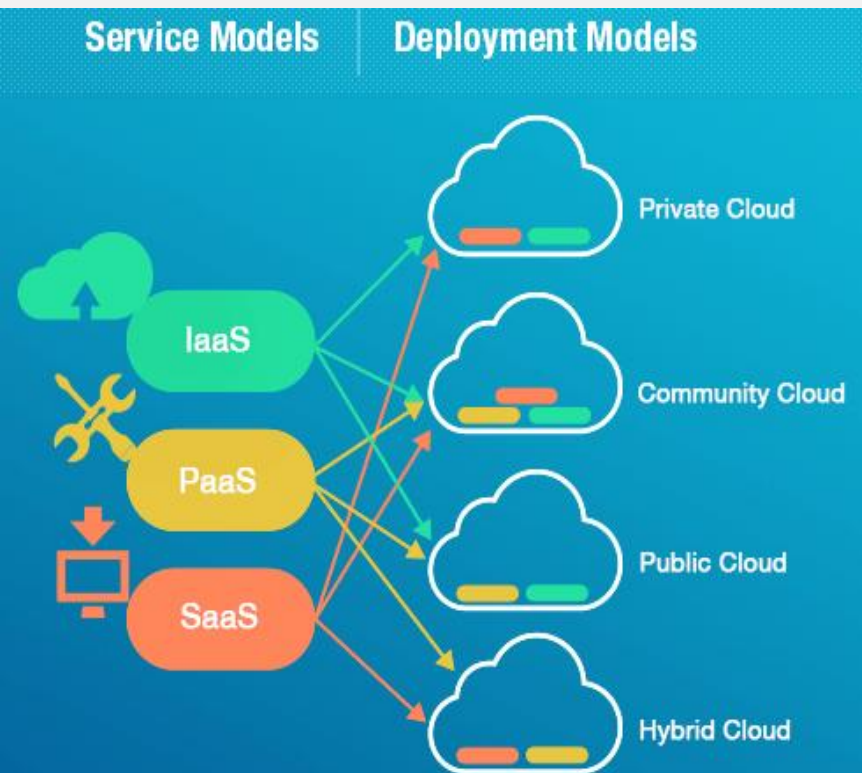
The location of the servers you're utilising and who controls them are defined by a cloud deployment model.

It specifies how your cloud infrastructure will look, what you can change, and whether you will be given services or will have to create everything yourself.

CLOUD DEPLOYMENT MODELS



CLOUD DEPLOYMENT MODELS



CLOUD DEPLOYMENT MODELS: PUBLIC

Public Cloud

Benefits

- No upfront capex
- Pay as you go
- No maintenance
- Highly scalable
- Highly reliable

Limitations

- Low visibility and control
- Compliance and legal risks
- Cost concerns

Use Case

- Unlimited scalability
- Varying peak demands
- Fast growing businesses
- Backup & disaster recovery solutions

CLOUD DEPLOYMENT MODELS: PRIVATE

Private Cloud

Benefits

- Better security
- Better control
- Predictable costs
- Legal compliance

Limitations

- Limited scalability
- Huge initial capex
- Limited access

Use Case

- Highly regulated businesses
- Tech companies that require complete control
- Large companies that require custom solutions

CLOUD DEPLOYMENT MODELS: HYBRID

Hybrid Cloud

Benefits

- Best of both the worlds
- Better Control
- Cost-effective

Limitations

- Low visibility and control
- Additional complexity
- Compliance and legal risks
- Cost concerns

Use Case

- Best of both the worlds
- Switch between different delivery models based on security & scalability requirements

CLOUD DEPLOYMENT MODELS: WHICH?

	Private Cloud	Public Cloud	Hybrid Cloud
Cloud Hardware	The entire cloud infrastructure (i.e the physical servers, storage, networking etc) must be procured by the organisation that owns the private cloud	The public cloud service provider like Amazon or Microsoft provides the infrastructure	For the private cloud, your organisation must provide the infrastructure where as the public cloud service provider provides the infrastructure for the public cloud
Tenancy	Single-tenancy. A private cloud is usually used by a single organisation.	Multi-tenancy: A public cloud is used by multiple organisations.	The private part of the hybrid cloud is used by a single organisation. The public part of the hybrid cloud is used by multiple organisations.
Data Center Location	Inside the organisation's corporate network.	Anywhere on the Internet. Public cloud (like AWS and Azure) data centers for example, are typically located in many countries across the entire world.	The private cloud data center is typically inside the organisation's corporate network and the public cloud data center could be anywhere on the internet.

CLOUD DEPLOYMENT MODELS: WHICH?

	Private Cloud	Public Cloud	Hybrid Cloud
Scalability	Private cloud scalability is limited by the amount of infrastructure. Beyond certain point it is impossible to scale up, unless the organisation procures additional hardware and set it up.	We never run out of resources in a public cloud. It provides near-unlimited scalability.	The scalability of the private cloud services and resources is limited by the underlying available infrastructure, where as with the public cloud services we do not have such a limitation.
Cloud Maintenance	The organisation itself is responsible for setting up and maintaining the private cloud.	The cloud service provider is responsible for setting up and maintaining the public cloud. organisations and even general public can use the public cloud services by paying a monthly fee.	The private cloud is managed by the organisation that owns it where as the public cloud is managed by the cloud service provider.
Accessibility	Only the organisation that owns the private cloud can access private cloud resources and services.	A public cloud is exposed to the public. So, anyone can access it's resources and services.	Private cloud services can be accessed only by the organisation that owns it where as public cloud services can be accessed by anyone.

CLOUD DEPLOYMENT MODELS: WHICH?

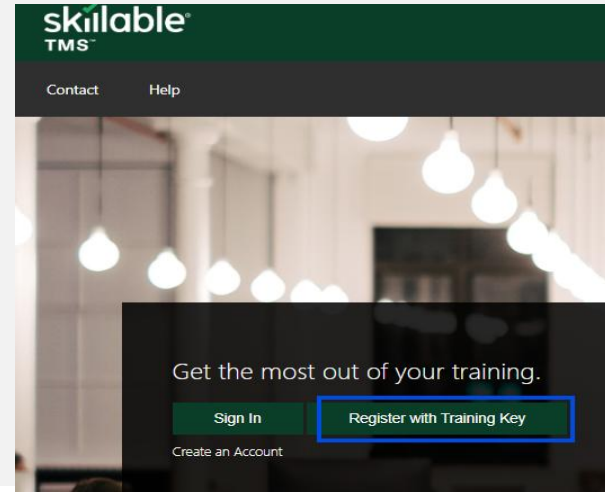
	Private Cloud	Public Cloud	Hybrid Cloud
Costs	<p>Involves huge initial capital expenditure as the organisation must purchase all the cloud hardware, set it up and maintain there on. To maintain the private cloud, the organisation needs to hire workforce.</p> <p>So there is monthly operating expenditure as well.</p>	<p>With the public cloud there is no initial capital expenditure, but you pay a monthly fee for the public cloud services you use. The more you use the services, the more you have to pay. The overall price tag may be higher than what you anticipated, especially if you use lot of public cloud services for a long time.</p>	<p>With the private cloud, the organisation is faced with both, the initial capital expenditure as well as monthly operating expenses to maintain it. With the public cloud you pay a monthly fee for the services and resources you use.</p>

CLOUD DEPLOYMENT MODELS: WHERE?

A public server will typically store data where?



REGISTER YOUR SKILLABLE KEY



DP-900T00-A Microsoft Azure Data Fundamentals [Cloud Slice Provided]



♥ ⌚ 7h 40m 🔗 3 🧪 3



Organization: Skillable

Program: Training

Training Formats: Instructor-Led, Self-Paced

Description Simple Styled

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CLOUD COMPUTING AND CORE VALUES

- Our use and development of cloud computing are deeply intertwined with core values.
- Alongside technical skills, we must consider the ethical, social, and civic dimensions of cloud computing.
- Concepts like data security and accessibility relate to the rule of law and individual liberty.
- Cloud technologies impact employability and create a modern work environment that affects well-being.
- Critical thinking and online safety are essential skills in navigating the digital landscape and building resilience against harmful online influences, aligning with Prevent principles.

CLOUD COMPUTING AND CORE VALUES

DISCUSSION ACTIVITY – 10 MINS

Each group will be assigned one of the following core values:

- British Values
 - Employability
 - Well-being
 - Safeguarding
 - Prevent
-
- Discuss potential challenges or conflicts that may arise between cloud computing and this value.
 - Share your findings in the Nearpod discussion board.

CLOUD COMPUTING AND CORE VALUES QUIZ

Use the Nearpod link in the chat to answer this Quiz.

OBJECTIVES - DAY 1 RECAP

- **Intent:**

To be able to define cloud computing and its characteristics, be able to differentiate between IaaS, PaaS and SaaS deployment models, recognise the key components of security, and identify major cloud providers such as AWS, Azure and GCP.

- **Implementation:**

Delivered using practical labs. Concepts explained through examples and exercises/quizzes

- **Impact:**

Gain the skills and confidence needed to understand data analysis processes and their types, preparing for more advanced studies or real-world applications. The impact measured through in-class mini-projects, labs & Quiz



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OBJECTIVES - DAY 2

- **Intent:**

Describe the role of current legislation (and subsequent additions and amendments) in protecting users and their data from attack or misuse. Be able to explain in further detail the services Azure offers and how it stores data.

- **Implementation:**

Delivered using practical labs. Concepts explained through examples and exercises/quizzes

- **Impact:**

Gain the skills and confidence needed to understand data analysis processes and their types, preparing for more advanced studies or real-world applications. The impact measured through in-class mini-projects, labs & Quiz