

Cambridge TECHNICALS LEVEL 3

Cambridge
TECHNICALS
2016

IT

MAPPING GUIDE

Unit CC* Cloud Computing

**Formerly Unit 25*

Version 1

INTRODUCTION

Prodigy are delighted to work with OCR, a progressive Awarding Organisation, who share the ambition of providing high-quality qualifications, learning solutions that are industry-led and reliable and valid assessment. The Cambridge Technicals in IT qualifications provide 'future-ready' skills for a learner to further their ambitions, whether that is in terms of further academic study, enter an apprenticeship or as a springboard to gaining employment.

Prodigy Learning (Prodigy) is an award-winning EdTech business providing digital skills certifications and learning solutions for a range of technologies including Adobe, Autodesk and Microsoft. Established in 2000, Prodigy now have offices in Dublin, London and Sydney. Having worked closely with Microsoft since 2000, Prodigy is a Microsoft Authorised Education Gold Partner and a MS Global Training Partner supporting academic institutions utilise Microsoft Imagine Academy, Microsoft certifications and other Microsoft Education solutions.

Historically, the UK has thrived on a rich research and technology base and has been at the forefront of global technology innovation. Enthusing young learners about following exciting careers in science, technology, engineering and mathematics (STEM) subjects is fundamental to maintaining this success. However, currently the UK has a widely acknowledged skills gap in the pipeline of talent studying computing-related disciplines. Therefore, providing high quality, engaging and relevant qualifications that equip learners with current technical knowledge and skills is essential to encourage more young people into the computing discipline, and moreover to ensure they progress to jobs in the sector.

MAPPED TO MTA CLOUD FUNDAMENTALS 98-369

1. Understand the cloud

	1.1.1 Differentiate between on-premises IT service models;	1.1.2 Differentiate between subscription or pay as you go vs. upfront CapEx/OpEx funding model;	1.1.3 Use cloud services to expand capacity (elasticity of the cloud), scalability, redundancy, and availability; differentiate between cloud services that are configurable vs. on-premises services that are customizable	1.2.1 Describe how cloud services manage privacy, how compliance goals are met, how data is secured at rest or on-the-wire, and how data and operations transparency requirements are met
1. Understand the characteristics and context of cloud technology and why it is used	X	X	X	X
1.1.1 Cloud technology characteristics and terms - elasticity	X	X	X	X
1.1.2 Cloud technology characteristics and terms - ubiquitous access	X	X	X	X
1.1.3 Cloud technology characteristics and terms - rapid deployment	X	X	X	X
1.1.4 Cloud technology characteristics and terms - on-demand self-service	X	X	X	X
1.1.5 Cloud technology characteristics and terms - resource pooling	X	X	X	X
1.1.6 Cloud technology characteristics and terms - pay-as-you-grow	X	X	X	X
1.1.7 Cloud technology characteristics and terms - multi-tenancy	X	X	X	X
1.1.8 Cloud technology characteristics and terms - automation	X	X	X	X
1.1.9 Cloud technology characteristics and terms - chargeback	X	X	X	X

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1.1.10 Cloud technology characteristics and terms - cloud bursting	X	X	X	X
1.1.11 Cloud technology characteristics and terms - minimal management effort	X	X	X	X
1.2.1 Cloud models - private	X	X	X	X
1.2.2 Cloud models - public	X	X	X	X
1.2.3 Cloud models - hybrid	X	X	X	X
1.2.4 Cloud models - community	X	X	X	X
1.2.5 Cloud models functionality - a private cloud is used by a specific organisation; can be hosted at the organisation's premises or at a remote location (or even a third party)	X	X	X	X
1.2.6 Cloud models functionality - public clouds are used by multiple organisations and are typically hosted by a particular cloud vendor	X	X	X	X
1.2.7 Cloud models functionality - hybrid cloud is where an organisation utilises certain services on the public cloud, but has a private cloud for sensitive services/data	X	X	X	X
1.2.8 Cloud models functionality - community clouds are designed for organisations working in a particular industry (e.g. financial) in order to take advantage of the services that would benefit them all (e.g. credit checking)	X	X	X	X
1.2.9 Location of each cloud model - on-premise	X	X	X	X

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	1.1.1 Differentiate between on-premises IT service models;	1.1.2 Differentiate between subscription or pay as you go vs. upfront CapEx/OpEx funding model;	1.1.3 Use cloud services to expand capacity (elasticity of the cloud), scalability, redundancy, and availability; differentiate between cloud services that are configurable vs. on-premises services that are customizable	1.2.1 Describe how cloud services manage privacy, how compliance goals are met, how data is secured at rest or on-the-wire, and how data and operations transparency requirements are met
1.2.10 Location of each cloud model - off-premise	X	X	X	X
1.2.11 Technical difference between private and public types of clouds - private cloud requires in-house infrastructure including hardware, software and networking components; a suite of software known as a 'Stack' would be required to operate	X	X	X	X
1.2.12 Technical difference between private and public types of clouds - public cloud would just require a good internet connection and devices to access the services	X	X	X	X
1.3.1 Types of organisation that would benefit from cloud technology - start-ups with little capital	X	X	X	X
1.3.2 Types of organisation that would benefit from cloud technology - small businesses	X	X	X	X
1.3.3 Types of organisation that would benefit from cloud technology - organisations with varying levels of workforce e.g. the company may take on more employees at peak time of the year such as (Christmas) to handle the increased workload	X	X	X	X
1.3.4 Types of organisation that would benefit from cloud technology - mobile/global workforce	X	X	X	X
1.3.5 Types of organisation that would benefit from cloud technology - online retail	X	X	X	X
1.3.6 Types of organisation that would benefit from cloud technology - marketing agency	X	X	X	X
1.3.7 Reasons - lack of capital	X	X	X	X
1.3.8 Reasons - need to be flexible as the business growth is uncertain	X	X	X	X

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1.3.9 Reasons the work that the organisation does would be seasonal, hence the varying use population	X	X	X	X
1.3.10 Reasons - the organisations workforce would be spread globally and need to collaborate on the joint projects	X	X	X	X
1.3.11 Reasons the organisation was born online and thus has no fixed premises on which to host IT infrastructures	X	X	X	X
1.4.1 Types of organisation that may not benefit from cloud technology - military	X	X	X	X
1.4.2 Types of organisation that may not benefit from cloud technology - intelligence services	X	X	X	X
1.4.3 Types of organisation that may not benefit from cloud technology - health service	X	X	X	X
1.4.4 Types of organisation that may not benefit from cloud technology - research and development facility	X	X	X	X
1.4.5 Reasons - security of information	X	X	X	X
1.4.6 Reasons - sensitivity of information	X	X	X	X
1.4.7 Reasons - potential disclosure of customer data	X	X	X	X
1.4.8 Reasons - lack of willingness to change	X	X	X	X
1.4.9 Reasons - internal processes do not align with cloud services	X	X	X	X
1.4.10 Reasons - Perceived lack of technical knowhow	X	X	X	X

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1.4.11 Reasons - Already have considerable investment in own traditional IT infrastructure	X	X	X	X
1.5.1 Organisational roles and responsibilities when using cloud technology - capacity planners (responsible for costing the resource allocations with the cloud service assessments in order to apply chargeback costs to businesses)	X	X	X	X
1.5.2 Network operation centre staff (responsible for monitoring and managing cloud resources)	X	X	X	X
1.5.3 Organisational roles and responsibilities when using cloud technology - Vendor management staff (negotiate, service level contracts with the cloud vendor, update and extend them to meet changes over time)	X	X	X	X
1.5.4 Organisational roles and responsibilities when using cloud technology - support desk staff (aid users during transfer from traditional IT to cloud services, provide client support and manage incidents and problems)	X	X	X	X
1.5.5 Organisational roles and responsibilities when using cloud technology - cloud architect (expert responsible for the transition of organisations from using traditional IT to cloud technology, highly technical across several areas e.g. networking, virtualisation, sound understanding of legislation requirements)	X	X	X	X
1.5.6 Organisational roles and responsibilities when using cloud technology - cloud service manager (involved in service retirement, renewal, ordering and requesting procedures as well as tracking total cost of cloud ownership)	X	X	X	X

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2. Understand the business benefits of cloud services	X	X	X	X
2.1.1 Similarities and differences between cloud technology and outsourcing - ownership	X	X	X	X
2.1.2 Similarities and differences between cloud technology and outsourcing - usage	X	X	X	X
2.1.3 Similarities and differences between cloud technology and outsourcing - service levels	X	X	X	X
2.1.4 Similarities and differences between cloud technology and outsourcing - cost	X	X	X	X
2.2.1 Business considerations when implementing cloud services - scalability	X	X	X	X
2.2.2 Business considerations when implementing cloud services - security	X	X	X	X
2.2.3 Business considerations when implementing cloud services - hardware independence	X	X	X	X
2.2.4 Business considerations when implementing cloud services - variable cost	X	X	X	X
2.2.5 Business considerations when implementing cloud services - time to market	X	X	X	X
2.2.6 Business considerations when implementing cloud services - distribution over the internet (ease of access)	X	X	X	X
2.3.1 How cloud technology enhances business value - Upfront (capital) expenditure is minimised	X	X	X	X

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2.3.2 How cloud technology enhances business value - variable (operating) cost in predictable	X	X	X	X
2.3.3 How cloud technology enhances business value - reduces integrity risks- data backup is available	X	X	X	X
2.3.4 How cloud technology enhances business value - ability to monitor access and data usage	X	X	X	X
2.3.5 How cloud technology enhances business value - ease of providing access to users and partners to data in the cloud	X	X	X	X
2.3.6 How cloud technology enhances business value - redundancy links that will allow for increased availability	X	X	X	X
2.4.1 Business benefits of service models - improvement of speed of internal development and deployment (developers do not need to worry about the platform or infrastructure prior to development)	X	X	X	X
2.4.2 How cloud technology enhances business value - reduce reliance on internal technical skills (deployment is on demand and does not require consideration being given to procurement of hardware/software and instillation/commissioning)	X	X	X	X
2.4.3 How cloud technology enhances business value - simplified interface for user groups	X	X	X	X
2.4.4 How cloud technology enhances business value - service design around the needs of users (self-dash service models enable user experience provision and use to be considered when determining which platform to adopt)	X	X	X	X

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3. Understand the requirements of cloud services	X	X	X	X
3.1.1 Cloud service models - software as a service (SaaS) (e.g. Microsoft Office 365, google Apps for Work, Google Docs, Zoho, Microsoft Dynamics CRM)	X	X	X	X
3.1.2 Cloud service models - platform as a service (PaaS) (e.g. Google App engine, Force.com, Azure)	X	X	X	X
3.1.3 Cloud service models - Infrastructure as a service (IaaS) (e.g. Microsoft Azure, Amazon Web Services, Google Compute)	X	X	X	X
3.1.4 Cloud service models - Communication as a service (Caas) (e.g. Microsoft Skype, Google Voice)	X	X	X	X
3.1.5 Cloud service models - Anything (or everything) as a services (XaaS)	X	X	X	X
3.2.1 Accountabilities and responsibilities based on cloud service model - IaaS - Organisation is responsible for virtual server creation, deploying updates and managing the cloud infrastructure. Cloud vendor is responsible for underlying hardware and physical datacentre infrastructure. From this the organisation can create their applications and deploy related services	X	X	X	X
3.2.2 Accountabilities and responsibilities based on cloud service model - PaaS - The cloud vendor provides the platform to develop on and the organisation is responsible for developing their applications and deploying their services	X	X	X	X

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3.2.3 Accountabilities and responsibilities based on cloud service model - SaaS - The cloud vendor provides the applications and services that the organisation consumes as is.	X	X	X	X
3.3.1 Organisations internal skills requirements to support their cloud model (SaaS, PaaS, IaaS) - technical skills	X	X	X	X
3.3.2 Organisations internal skills requirements to support their cloud model (SaaS, PaaS, IaaS) - project management skills	X	X	X	X
3.3.3 Organisations internal skills requirements to support their cloud model (SaaS, PaaS, IaaS) - vendor management skills	X	X	X	X
3.3.4 Organisations internal skills requirements to support their cloud model (SaaS, PaaS, IaaS) - data integration skills	X	X	X	X
3.3.5 Organisations internal skills requirements to support their cloud model (SaaS, PaaS, IaaS) - business and financial skills	X	X	X	X
3.3.6 Organisations internal skills requirements to support their cloud model (SaaS, PaaS, IaaS) - security and compliance skills	X	X	X	X
3.4.1 Technology that make cloud services possible - hardware: servers	X	X	X	X
3.4.2 Technology that make cloud services possible - components: hard drive solid data drive (SSD)	X	X	X	X
3.4.3 Technology that make cloud services possible - components: central processing unit (CPU)	X	X	X	X
3.4.5 Technology that make cloud services possible - random access memory (RAM)	X	X	X	X

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3.4.6 Technology that make cloud services possible - storage: network attached storage	X	X	X	X
3.4.7 Technology that make cloud services possible – storage: storage area network (SAN)	X	X	X	X
3.4.8 Technology that make cloud services possible - storage: just a bunch of disks (JBOD)	X	X	X	X
3.4.9 Technology that make cloud services possible - storage: redundant array of independent disk (RAID)	X	X	X	X
3.4.10 Technology that make cloud services possible - networking (allows cloud availability): devices - switch	X	X	X	X
3.4.11 Technology that make cloud services possible - networking (allows cloud availability): devices - router	X	X	X	X
3.4.12 Technology that make cloud services possible - networking : protocols - internet protocol suite (TCP/IP)	X	X	X	X
3.4.13 Technology that make cloud services possible - networking : services - domain name system (DNS)	X	X	X	X
3.4.14 Technology that make cloud services possible - networking : dynamic host configuration protocol	X	X	X	X
3.4.15 Technology that make cloud services possible - networking (allows cloud availability): availability: bandwidth	X	X	X	X
3.4.16 Technology that make cloud services possible - networking (allows cloud availability): availability: internet access	X	X	X	X

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3.4.17 Technology that make cloud services possible - networking (allows cloud availability): availability: quality of service (QOS)	X	X	X	X
3.4.17 Software (drives the cloud enabling users to access the services): operating systems (e.g. Linux, Windows)	X	X	X	X
3.4.18 Software (drives the cloud enabling users to access the services): databases (e.g. MySQL)	X	X	X	X
3.4.19 Software (drives the cloud enabling users to access the services): applications (e.g. web browser, word processing, graphic design, customer relationship manager (CRM))	X	X	X	X
3.4.21 Software: (drives the cloud enabling users to access the services): authentication - multifactor authentication (MFA)	X	X	X	X
3.4.22 Virtualisation (the building block of cloud services enabling scale and growth): hypervisor	X	X	X	X
3.4.23 Virtualisation (the building block of cloud services enabling scale and growth): virtual machines (VM)	X	X	X	X
3.4.24 Virtualisation (the building block of cloud services enabling scale and growth): network virtualisation	X	X	X	X
3.4.25 Orchestration (ensures continuation of services): managing the starting and stopping of server clusters	X	X	X	X
3.4.26 Datacentre components - power	X	X	X	X
3.4.27 Datacentre components - cooling	X	X	X	X
4. Understand the features of cloud storage	X	X	X	X

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4.1.1 Cloud storage services - Consumer storage service options: OneDrive	X	X	X	X
4.1.2 Cloud storage services - Consumer storage service options: Dropbox	X	X	X	X
4.1.3 Cloud storage services - Consumer storage service options: Google Drive	X	X	X	X
4.1.4 Cloud storage services - corporate storage services: OneDrive for business	X	X	X	X
4.1.5 Cloud storage services - Consumer storage service options: Box.com	X	X	X	X
4.1.6 Synchronisation/uploads tools - desktop downloads	X	X	X	X
4.1.7 Synchronisation/uploads tools - dedicated app on mobile device	X	X	X	X
4.1.8 Benefits - ability to roll back to previous version	X	X	X	X
4.1.9 Benefits - track editing access	X	X	X	X
4.2.1 Integration of SaaS with storage - Cloud vendor services are often integrated with their SaaS productivity suite, which allows the file to be edited via the browser version or the desktop/mobile application	X	X	X	X
4.2.2 Integration of SaaS with storage - If the provider does not have its own productivity suite, it may have an add-on that allows you to use another vendor's SaaS application	X	X	X	X
4.3.1 Permission levels - none (private)	X	X	X	X

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4.3.2 Permission levels - public	X	X	X	X
4.3.3 Permission levels - shared - edit	X	X	X	X
4.3.4 Permission levels - shared - view	X	X	X	X
4.4 Data deduplication to reduce capacity usage - a lot of data on cloud services is replicated, such as emails that have been forwarded to several people in an organisation; data deduplication enables the removal of duplicated files and thus decreases storage space needed	X	X	X	X
4.5.1 Migrating/integrating data hosted in-house to a cloud based service - software tools: command line utilities (requires expertise) (e.g. AzCopy)	X	X	X	X
4.5.2 Migrating/integrating data hosted in-house to a cloud based service - software tools: command line interfaces (CLI) (can be automated and highly repeatable) (e.g. PowerShell cmdlets/scripts)	X	X	X	X
4.5.3 Migrating/integrating data hosted in-house to a cloud based service - software tools: file transfer protocol (FTP)	X	X	X	X
4.5.4 Migrating/integrating data hosted in-house to a cloud based service - software tools: graphical utilities (e.g. storage explorer)	X	X	X	X
4.5.6 Migrating/integrating data hosted in-house to a cloud based service - software tools: cloud portal site (can be cumbersome and is a manual task) (e.g. Azure portal page)	X	X	X	X

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4.5.7 Migrating/integrating data hosted in-house to a cloud based service - software tools: Send hard drive/data physically to the cloud vendor's local data centre (used when an organisation wishes to absolve themselves of the responsibility of uploading their own data): Azure import export service	X	X	X	X
4.5.8 Migrating/integrating data hosted in-house to a cloud based service - software tools: Send hard drive/data physically to the cloud vendor's local data centre (used when an organisation wishes to absolve themselves of the responsibility of uploading their own data): AWS import/export snowball	X	X	X	X
5. Understanding the deployment requirements for the cloud-based services for organisations	X	X	X	X
5.1.1 Considerations for adopting cloud services - whether or not the service model is appropriate for the organisations needs	X	X	X	X
5.1.2 Considerations for adopting cloud services - whether or not the vendor's cloud deployment model meets the organisation's needs and regulatory requirements	X	X	X	X
5.1.3 Considerations for adopting cloud services - whether or not change in security/from organisational to cloud data centre hosting has any impact on legal or regulatory requirements	X	X	X	X
5.1.4 Considerations for adopting cloud services - whether or not the cloud vendor has an established track record in providing the service with a guaranteed uptime	X	X	X	X
5.1.5 Considerations for adopting cloud services - can the cloud service scale to meet the organisation's future expansion plans	X	X	X	X

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5.1.6 Considerations for adopting cloud services - whether or not the cloud vendor has sufficient redundancy	X	X	X	X
5.1.7 Considerations for adopting cloud services - can the performance metric of the cloud service be monitored by the business	X	X	X	X
5.1.8 Considerations for adopting cloud services - will the cloud service be affordable during both peak and off-peak hours	X	X	X	X
5.1.9 Considerations for adopting cloud services - whether or not the cloud vendor's systems are protected in a secure and stable facility	X	X	X	X
5.1.10 Considerations for adopting cloud services - whether or not the organisation's infrastructure is suitable to allow reliable access to cloud-based services	X	X	X	X
5.1.11 Considerations for adopting cloud services - whether or not there is a sound exit plan if the cloud vendor fails to uphold the correct contract	X	X	X	X
5.2.1 Cloud readiness assessment - set up a pilot programme	X	X	X	X
5.2.2 Cloud readiness assessment - identify cloud service opportunities based on business needs	X	X	X	X
5.2.3 Cloud readiness assessment - review results from pilot	X	X	X	X
5.2.4 Cloud readiness assessment - modify any technical and financial elements to enable adoption	X	X	X	X

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5.3.1 Role of IT department when choosing cloud services - advise on application lifecycle	X	X	X	X
5.3.2 Role of IT department when choosing cloud services - help to understand performance metrics	X	X	X	X
5.3.3 Role of IT department when choosing cloud services - help to understand the provider's quality of service	X	X	X	X
5.4.1 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: cost of services	X	X	X	X
5.4.2 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: duration of the agreement	X	X	X	X
5.4.3 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: responsibilities of the customer and the service provider	X	X	X	X
5.4.4 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: availability and performance requirements	X	X	X	X
5.4.5 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: service monitoring and reporting	X	X	X	X
5.4.6 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: remediation and reliability for service disruption	X	X	X	X
5.4.7 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: dispute resolution procedures	X	X	X	X

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	1.1.1 Differentiate between on-premises IT service models;	1.1.2 Differentiate between subscription or pay as you go vs. upfront CapEx/OpEx funding model;	1.1.3 Use cloud services to expand capacity (elasticity of the cloud), scalability, redundancy, and availability; differentiate between cloud services that are configurable vs. on-premises services that are customizable	1.2.1 Describe how cloud services manage privacy, how compliance goals are met, how data is secured at rest or on-the-wire, and how data and operations transparency requirements are met
5.4.8 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: a mechanism for reviewing and updating the SLA, including a change control process	X	X	X	X
5.4.9 Service Level Agreements (SLA) - cloud SLA should also include: data location	X	X	X	X
5.4.10 Service Level Agreements (SLA) - cloud SLA should also include: service multitenancy	X	X	X	X
5.4.11 Service Level Agreements (SLA) - cloud SLA should also include: transparency (data breach notifications)	X	X	X	X
5.4.12 Service Level Agreements (SLA) - cloud SLA should also include: disaster process recovery notification	X	X	X	X
5.4.13 Service Level Agreements (SLA) - cloud SLA should also include: legal data release notification	X	X	X	X
5.4.14 Service Level Agreements (SLA) - cloud SLA should also include: data ownership	X	X	X	X
6. Know regulatory issues that impact cloud technology	X	X	X	X
6.1.1 Data transference - Data Protection Act and its bearing on the cloud technology	X	X	X	X
6.1.2 Data transference - transfer of data within the European Economic Area (EEA)	X	X	X	X

MAPPED TO MTA CLOUD FUNDAMENTALS 98-369

	1.1.1 Differentiate between on-premises IT service models;	1.1.2 Differentiate between subscription or pay as you go vs. upfront CapEx/OpEx funding model;	1.1.3 Use cloud services to expand capacity (elasticity of the cloud), scalability, redundancy, and availability; differentiate between cloud services that are configurable vs. on-premises services that are customizable	1.2.1 Describe how cloud services manage privacy, how compliance goals are met, how data is secured at rest or on-the-wire, and how data and operations transparency requirements are met
6.1.3 Data transference - transfer of data to the US	X	X	X	X
6.1.4 Data transference - transfer of data to other parts of the world	X	X	X	X
6.1.5 Data transference - subject to local regulations	X	X	X	X
6.1.6 Data transference - privacy and electronic communications regulations	X	X	X	X
6.1.7 Data transference - consequences of a data breach	X	X	X	X
6.2.1 Information Security - Computer Misuses Act	X	X	X	X
6.2.2 Information Security - Official Secrets Act	X	X	X	X
7. Know about impact, risks and security issues related to cloud technology	X	X	X	X
7.1.1 Impact of cloud adoption on business processes - Financial model transition from capital expenditure(CapEx) to operating expenditure (OpEx)	X	X	X	X
7.1.2 Impact of cloud adoption on business processes - data ownership	X	X	X	X
7.1.3 Impact of cloud adoption on business processes - skills required within the organisation (potential for employee redundancies)	X	X	X	X

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	1.1.1 Differentiate between on-premises IT service models;	1.1.2 Differentiate between subscription or pay as you go vs. upfront CapEx/OpEx funding model;	1.1.3 Use cloud services to expand capacity (elasticity of the cloud), scalability, redundancy, and availability; differentiate between cloud services that are configurable vs. on-premises services that are customizable	1.2.1 Describe how cloud services manage privacy, how compliance goals are met, how data is secured at rest or on-the-wire, and how data and operations transparency requirements are met
7.1.4 Impact of cloud adoption on business processes - responsibility when outages are experienced	X	X	X	X
7.1.5 Impact of cloud adoption on business processes - protection against external exposure	X	X	X	X
7.1.6 Impact of cloud adoption on business processes - employee access and storage of company data on personal devices, including use of MDM (Mobile Device Management)	X	X	X	X
7.1.7 Impact of cloud adoption on business processes - managing cloud service providers, including the use of SSO (Single-Sign-On)	X	X	X	X
7.1.8 Impact of cloud adoption on business processes - managing users and their rights across services	X	X	X	X
7.1.9 Impact of cloud adoption on business processes - privacy	X	X	X	X
7.2.1 Performance of services - network latency	X	X	X	X
7.2.2 Performance of services - available bandwidth	X	X	X	X
7.2.3 Performance of services - user access method (wireless)	X	X	X	X
7.3.1 Risks - customer data being exposed	X	X	X	X
7.3.2 Risks - data integrity (e.g. data that is transmitted down a channel can sometimes be corrupted; this could be due to incomplete transmission, y accident or maliciously	X	X	X	X

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	1.1.1 Differentiate between on-premises IT service models;	1.1.2 Differentiate between subscription or pay as you go vs. upfront CapEx/OpEx funding model;	1.1.3 Use cloud services to expand capacity (elasticity of the cloud), scalability, redundancy, and availability; differentiate between cloud services that are configurable vs. on-premises services that are customizable	1.2.1 Describe how cloud services manage privacy, how compliance goals are met, how data is secured at rest or on-the-wire, and how data and operations transparency requirements are met
7.3.3 Risks - lock in with a cloud provider (e.g. there could be increased reliance and if the vendor increases prices the organisation may feel obliged to pay it as they don't think they can leave)	X	X	X	X
7.3.4 Risks - providers going out of business	X	X	X	X
7.3.5 Risks - data ownership (e.g. it needs to be made clear in the SLA that the data, although hosted by a cloud vendor, belongs entirely to the organisation)	X	X	X	X
7.3.6 Risks - Service Level Agreements	X	X	X	X
7.3.8 Risks - interfaces change (e.g. cloud services are in constant flux so there is a risk that the interface could change on a daily basis; having a clear road map from the vendor and a transitional phase (both are available simultaneously) between the transitional interfaces can help to alleviate the issue	X	X	X	X
7.3.9 Risks - availability (unforeseen downtime)	X	X	X	X
7.3.10 Risks - lack of internet connection	X	X	X	X
7.3.11 Risks - Insider threats (e.g. disgruntled or opportunistic employees (that may be leaving the organisation) who can access and download data from the cloud service from anywhere	X	X	X	X
7.3.12 Risks - external threats (hacking)	X	X	X	X
7.3.13 Risks - accidental exposure via multitenancy (e.g. hacking or data leaks via multitenancy issues	X	X	X	X
7.3.14 Risks - shadow It (departments within a business bypass their IT department and use cloud based services instead)	X	X	X	X

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	1.1.1 Differentiate between on-premises IT service models;	1.1.2 Differentiate between subscription or pay as you go vs. upfront CapEx/OpEx funding model;	1.1.3 Use cloud services to expand capacity (elasticity of the cloud), scalability, redundancy, and availability; differentiate between cloud services that are configurable vs. on-premises services that are customizable	1.2.1 Describe how cloud services manage privacy, how compliance goals are met, how data is secured at rest or on-the-wire, and how data and operations transparency requirements are met
7.4.1 Security - data encryption (in transit/in rest)	X	X	X	X
7.4.2 Security - under account management	X	X	X	X
7.4.3 Security - under permissions management	X	X	X	X
7.4.4 Security - user device/points of access	X	X	X	X
7.4.5 Security - validating security of provider	X	X	X	X
7.4.6 Security - multiple data access points (i.e. mobile devices)	X	X	X	X
7.4.7 Security - user accessing organisational services using public places/public Wi-Fi	X	X	X	X
7.4.8 Security - shoulder surfing when users are accessing data from the cloud	X	X	X	X
7.4.9 Security differences between cloud models (public, private, hybrid, community) - multitenancy issues	X	X	X	X
7.4.10 Security differences between cloud models (public, private, hybrid, community) - data segregation	X	X	X	X
7.4.11 Security differences between cloud models (public, private, hybrid, community) - network isolation	X	X	X	X
7.4.12 Security differences between cloud models (public, private, hybrid, community) - laws and regulation	X	X	X	X
7.5.1 Incident management principles - first response	X	X	X	X
7.5.2 Incident management principles - identity	X	X	X	X

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	1.1.1 Differentiate between on-premises IT service models;	1.1.2 Differentiate between subscription or pay as you go vs. upfront CapEx/OpEx funding model;	1.1.3 Use cloud services to expand capacity (elasticity of the cloud), scalability, redundancy, and availability; differentiate between cloud services that are configurable vs. on-premises services that are customizable	1.2.1 Describe how cloud services manage privacy, how compliance goals are met, how data is secured at rest or on-the-wire, and how data and operations transparency requirements are met
7.5.3 Incident management principles - report to responsible person	X	X	X	X
7.5.4 Incident management principles - data/device preservation	X	X	X	X
7.5.4 Incident management principles - documentation	X	X	X	X

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	1.3.1 Describe the service/feature improvement process;	1.3.2 Monitor service health, service maintenance, and future roadmap publishing;	1.3.3 Identify guarantees, service level agreements (SLA), and capping of liability of the cloud service provider	1.4.1 Differentiate between types of cloud services and their characteristics, including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS);	1.4.2 Integrate the cloud with on-premises services in hybrid scenarios
1. Understand the characteristics and context of cloud technology and why it is used	X	X	X	X	X
1.1.1 Cloud technology characteristics and terms - elasticity	X	X	X	X	X
1.1.2 Cloud technology characteristics and terms - ubiquitous access	X	X	X	X	X
1.1.3 Cloud technology characteristics and terms - rapid deployment	X	X	X	X	X
1.1.4 Cloud technology characteristics and terms - on-demand self-service	X	X	X	X	X
1.1.5 Cloud technology characteristics and terms - resource pooling	X	X	X	X	X
1.1.6 Cloud technology characteristics and terms - pay-as-you-grow	X	X	X	X	X
1.1.7 Cloud technology characteristics and terms - multi-tenancy	X	X	X	X	X
1.1.8 Cloud technology characteristics and terms - automation	X	X	X	X	X
1.1.9 Cloud technology characteristics and terms - chargeback	X	X	X	X	X
1.1.10 Cloud technology characteristics and terms - cloud bursting	X	X	X	X	X

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	1.3.1 Describe the service/feature improvement process;	1.3.2 Monitor service health, service maintenance, and future roadmap publishing;	1.3.3 Identify guarantees, service level agreements (SLA), and capping of liability of the cloud service provider	1.4.1 Differentiate between types of cloud services and their characteristics, including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS);	1.4.2 Integrate the cloud with on-premises services in hybrid scenarios
1.1.11 Cloud technology characteristics and terms - minimal management effort	X	X	X	X	X
1.2.1 Cloud models - private	X	X	X	X	X
1.2.2 Cloud models - public	X	X	X	X	X
1.2.3 Cloud models - hybrid	X	X	X	X	X
1.2.4 Cloud models - community	X	X	X	X	X
1.2.5 Cloud models functionality - a private cloud is used by a specific organisation; can be hosted at the organisation's premises or at a remote location (or even a third party)	X	X	X	X	X
1.2.6 Cloud models functionality - public clouds are used by multiple organisations and are typically hosted by a particular cloud vendor	X	X	X	X	X
1.2.7 Cloud models functionality - hybrid cloud is where an organisation utilises certain services on the public cloud, but has a private cloud for sensitive services/data	X	X	X	X	X
1.2.8 Cloud models functionality - community clouds are designed for organisations working in a particular industry (e.g. financial) in order to take advantage of the services that would benefit them all (e.g. credit checking)	X	X	X	X	X
1.2.9 Location of each cloud model - on-premise	X	X	X	X	X
1.2.10 Location of each cloud model - off-premise	X	X	X	X	X

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	1.3.1 Describe the service/feature improvement process;	1.3.2 Monitor service health, service maintenance, and future roadmap publishing;	1.3.3 Identify guarantees, service level agreements (SLA), and capping of liability of the cloud service provider	1.4.1 Differentiate between types of cloud services and their characteristics, including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS);	1.4.2 Integrate the cloud with on-premises services in hybrid scenarios
1.2.11 Technical difference between private and public types of clouds - private cloud requires in-house infrastructure including hardware, software and networking components; a suite of software know as a 'Stack' would be required to operate	X	X	X	X	X
1.2.12 Technical difference between private and public types of clouds - public cloud would just require a good internet connection and devices to access the services	X	X	X	X	X
1.3.1 Types of organisation that would benefit from cloud technology - start-ups with little capital	X	X	X	X	X
1.3.2 Types of organisation that would benefit from cloud technology - small businesses	X	X	X	X	X
1.3.3 Types of organisation that would benefit from cloud technology - organisations with varying levels of workforce e.g. the company may take on more employees at peak time of the year such as (Christmas) to handle the increased workload	X	X	X	X	X
1.3.4 Types of organisation that would benefit from cloud technology - mobile/global workforce	X	X	X	X	X
1.3.5 Types of organisation that would benefit from cloud technology - online retail	X	X	X	X	X
1.3.6 Types of organisation that would benefit from cloud technology - marketing agency	X	X	X	X	X
1.3.7 Reasons - lack of capital	X	X	X	X	X

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1.3.8 Reasons - need to be flexible as the business growth is uncertain	X	X	X	X	X
1.3.9 Reasons the work that the organisation does would be seasonal, hence the varying use population	X	X	X	X	X
1.3.10 Reasons - the organisations workforce would be spread globally and need to collaborate on the joint projects	X	X	X	X	X
1.3.11 Reasons the organisation was born online and thus has no fixed premises on which to host IT infrastructures	X	X	X	X	X
1.4.1 Types of organisation that may not benefit from cloud technology - military	X	X	X	X	X
1.4.2 Types of organisation that may not benefit from cloud technology - intelligence services	X	X	X	X	X
1.4.3 Types of organisation that may not benefit from cloud technology - health service	X	X	X	X	X
1.4.4 Types of organisation that may not benefit from cloud technology - research and development facility	X	X	X	X	X
1.4.5 Reasons - security of information	X	X	X	X	X
1.4.6 Reasons - sensitivity of information	X	X	X	X	X
1.4.7 Reasons - potential disclosure of customer data	X	X	X	X	X
1.4.8 Reasons - lack of willingness to change	X	X	X	X	X

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	1.3.1 Describe the service/feature improvement process;	1.3.2 Monitor service health, service maintenance, and future roadmap publishing;	1.3.3 Identify guarantees, service level agreements (SLA), and capping of liability of the cloud service provider	1.4.1 Differentiate between types of cloud services and their characteristics, including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS);	1.4.2 Integrate the cloud with on-premises services in hybrid scenarios
1.4.9 Reasons - internal processes do not align with cloud services	X	X	X	X	X
1.4.10 Reasons - Perceived lack of technical knowhow	X	X	X	X	X
1.4.11 Reasons - Already have considerable investment in own traditional IT infrastructure	X	X	X	X	X
1.5.1 Organisational roles and responsibilities when using cloud technology - capacity planners (responsible for costing the resource allocations with the cloud service assessments in order to apply chargeback costs to businesses)	X	X	X	X	X
1.5.2 Network operation centre staff (responsible for monitoring and managing cloud resources)	X	X	X	X	X
1.5.3 Organisational roles and responsibilities when using cloud technology - Vendor management staff (negotiate, service level contracts with the cloud vendor, update and extend them to meet changes over time)	X	X	X	X	X
1.5.4 Organisational roles and responsibilities when using cloud technology - support desk staff (aid users during transfer from traditional IT to cloud services, provide client support and manage incidents and problems)	X	X	X	X	X
1.5.5 Organisational roles and responsibilities when using cloud technology - cloud architect (expert responsible for the transition of organisations from using traditional IT to cloud technology, highly technical across several areas e.g. networking, virtualisation, sound understanding of legislation requirements)	X	X	X	X	X

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1.5.6 Organisational roles and responsibilities when using cloud technology - cloud service manager (involved in service retirement, renewal, ordering and requesting procedures as well as tracking total cost of cloud ownership)	X	X	X	X	X
2. Understand the business benefits of cloud services	X	X	X	X	X
2.1.1 Similarities and differences between cloud technology and outsourcing - ownership	X	X	X	X	X
2.1.2 Similarities and differences between cloud technology and outsourcing - usage	X	X	X	X	X
2.1.3 Similarities and differences between cloud technology and outsourcing - service levels	X	X	X	X	X
2.1.4 Similarities and differences between cloud technology and outsourcing - cost	X	X	X	X	X
2.2.1 Business considerations when implementing cloud services - scalability	X	X	X	X	X
2.2.2 Business considerations when implementing cloud services - security	X	X	X	X	X
2.2.3 Business considerations when implementing cloud services - hardware independence	X	X	X	X	X
2.2.4 Business considerations when implementing cloud services - variable cost	X	X	X	X	X
2.2.5 Business considerations when implementing cloud services - time to market	X	X	X	X	X

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	1.3.1 Describe the service/feature improvement process;	1.3.2 Monitor service health, service maintenance, and future roadmap publishing;	1.3.3 Identify guarantees, service level agreements (SLA), and capping of liability of the cloud service provider	1.4.1 Differentiate between types of cloud services and their characteristics, including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS);	1.4.2 Integrate the cloud with on-premises services in hybrid scenarios
2.2.6 Business considerations when implementing cloud services - distribution over the internet (ease of access)	X	X	X	X	X
2.3.1 How cloud technology enhances business value - Upfront (capital) expenditure is minimised	X	X	X	X	X
2.3.2 How cloud technology enhances business value - variable (operating) cost in predictable	X	X	X	X	X
2.3.3 How cloud technology enhances business value - reduces integrity risks- data backup is available	X	X	X	X	X
2.3.4 How cloud technology enhances business value - ability to monitor access and data usage	X	X	X	X	X
2.3.5 How cloud technology enhances business value - ease of providing access to users and partners to data in the cloud	X	X	X	X	X
2.3.6 How cloud technology enhances business value - redundancy links that will allow for increased availability	X	X	X	X	X
2.4.1 Business benefits of service models - improvement of speed of internal development and deployment (developers do not need to worry about the platform or infrastructure prior to development)	X	X	X	X	X
2.4.2 How cloud technology enhances business value - reduce reliance on internal technical skills (deployment is on demand and does not require consideration being given to procurement of hardware/software and instillation/commissioning)	X	X	X	X	X

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	1.3.1 Describe the service/feature improvement process;	1.3.2 Monitor service health, service maintenance, and future roadmap publishing;	1.3.3 Identify guarantees, service level agreements (SLA), and capping of liability of the cloud service provider	1.4.1 Differentiate between types of cloud services and their characteristics, including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS);	1.4.2 Integrate the cloud with on-premises services in hybrid scenarios
2.4.3 How cloud technology enhances business value - simplified interface for user groups	X	X	X	X	X
2.4.4 How cloud technology enhances business value - service design around the needs of users Self-dash service models enable user experience provision and use to be considered when determining which platform to adopt	X	X	X	X	X
3. Understand the requirements of cloud services	X	X	X	X	X
3.1.1 Cloud service models - software as a service (SaaS) (e.g. Microsoft Office 365, Google Apps for Work, Google Docs, Zoho, Microsoft Dynamics CRM)	X	X	X	X	X
3.1.2 Cloud service models - platform as a service (PaaS) (e.g. Google App engine, Force.com, Azure)	X	X	X	X	X
3.1.3 Cloud service models - Infrastructure as a service (IaaS) (e.g. Microsoft Azure, Amazon Web Services, Google Compute)	X	X	X	X	X
3.1.4 Cloud service models - Communication as a service (Caas) (e.g. Microsoft Skype, Google Voice)	X	X	X	X	X
3.1.5 Cloud service models - Anything (or everything) as a services (XaaS)	X	X	X	X	X

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3.2.1 Accountabilities and responsibilities based on cloud service model - IaaS - Organisation is responsible for virtual server creation, deploying updates and managing the cloud infrastructure. Cloud vendor is responsible for underlying hardware and physical datacentre infrastructure. From this the organisation can create their applications and deploy related services	X	X	X	X	X
3.2.2 Accountabilities and responsibilities based on cloud service model - PaaS - The cloud vendor provides the platform to develop on and the organisation is responsible for developing their applications and deploying their services	X	X	X	X	X
3.2.3 Accountabilities and responsibilities based on cloud service model - SaaS - The cloud vendor provides the applications and services that the organisation consumes as is.	X	X	X	X	X
3.3.1 Organisations internal skills requirements to support their cloud model (SaaS, PaaS, IaaS) - technical skills	X	X	X	X	X
3.3.2 Organisations internal skills requirements to support their cloud model (SaaS, PaaS, IaaS) - project management skills	X	X	X	X	X
3.3.3 Organisations internal skills requirements to support their cloud model (SaaS, PaaS, IaaS) - vendor management skills	X	X	X	X	X
3.3.4 Organisations internal skills requirements to support their cloud model (SaaS, PaaS, IaaS) - data integration skills	X	X	X	X	X

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3.3.5 Organisations internal skills requirements to support their cloud model (SaaS, PaaS, IaaS) - business and financial skills	X	X	X	X	X
3.3.6 Organisations internal skills requirements to support their cloud model (SaaS, PaaS, IaaS) - security and compliance skills	X	X	X	X	X
3.4.1 Technology that make cloud services possible - hardware: servers	X	X	X	X	X
3.4.2 Technology that make cloud services possible - components: hard drive solid data drive (SSD)	X	X	X	X	X
3.4.3 Technology that make cloud services possible - components: central processing unit (CPU)	X	X	X	X	X
3.4.5 Technology that make cloud services possible - random access memory (RAM)	X	X	X	X	X
3.4.6 Technology that make cloud services possible - storage: network attached storage	X	X	X	X	X
3.4.7 Technology that make cloud services possible - storage: storage area network (SAN)	X	X	X	X	X
3.4.8 Technology that make cloud services possible - storage: just a bunch of disks (JBOD)	X	X	X	X	X
3.4.9 Technology that make cloud services possible - storage: redundant array of independent disk (RAID)	X	X	X	X	X
3.4.10 Technology that make cloud services possible - networking (allows cloud availability): devices - switch	X	X	X	X	X
3.4.11 Technology that make cloud services possible - networking (allows cloud availability): devices - router	X	X	X	X	X

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3.4.12 Technology that make cloud services possible - networking : protocols - internet protocol suite (TCP/IP)	X	X	X	X	X
3.4.13 Technology that make cloud services possible - networking : services - domain name system (DNS)	X	X	X	X	X
3.4.14 Technology that make cloud services possible - networking : dynamic host configuration protocol	X	X	X	X	X
3.4.15 Technology that make cloud services possible - networking (allows cloud availability): availability: bandwidth	X	X	X	X	X
3.4.16 Technology that make cloud services possible - networking (allows cloud availability): availability: internet access	X	X	X	X	X
3.4.17 Technology that make cloud services possible - networking (allows cloud availability): availability: quality of service (QOS)	X	X	X	X	X
3.4.17 Software (drives the cloud enabling users to access the services): operating systems (e.g. Linux, Windows)	X	X	X	X	X
3.4.18 Software (drives the cloud enabling users to access the services): databases (e.g. MySQL)	X	X	X	X	X
3.4.19 Software (drives the cloud enabling users to access the services): applications (e.g. web browser, word processing, graphic design, customer relationship manager (CRM))	X	X	X	X	X
3.4.20 Software (drives the cloud enabling users to access the services): authentication - user account credentials	X	X	X	X	X

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3.4.21 Software: (drives the cloud enabling users to access the services): authentication - multifactor authentication (MFA)	X	X	X	X	X
3.4.22 Virtualisation (the building block of cloud services enabling scale and growth): hypervisor	X	X	X	X	X
3.4.23 Virtualisation (the building block of cloud services enabling scale and growth): virtual machines (VM)	X	X	X	X	X
3.4.24 Virtualisation (the building block of cloud services enabling scale and growth): network virtualisation	X	X	X	X	X
3.4.25 Orchestration (ensures continuation of services): managing the starting and stopping of server clusters	X	X	X	X	X
3.4.26 Datacentre components - power	X	X	X	X	X
3.4.27 Datacentre components - cooling	X	X	X	X	X
4. Understand the features of cloud storage	X	X	X	X	X
4.1.1 Cloud storage services - Consumer storage service options: OneDrive	X	X	X	X	X
4.1.2 Cloud storage services - Consumer storage service options: Dropbox	X	X	X	X	X
4.1.3 Cloud storage services - Consumer storage service options: Google Drive	X	X	X	X	X
4.1.4 Cloud storage services - corporate storage services: OneDrive for business	X	X	X	X	X

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4.1.5 Cloud storage services - Consumer storage service options: Box.com	X	X	X	X	X
4.1.6 Synchronisation/uploads tools - desktop downloads	X	X	X	X	X
4.1.7 Synchronisation/uploads tools - dedicated app on mobile device	X	X	X	X	X
4.1.8 Benefits - ability to roll back to previous version	X	X	X	X	X
4.1.9 Benefits - track editing access	X	X	X	X	X
4.2.1 Integration of SaaS with storage - Cloud vendor services are often integrated with their SaaS productivity suite, which allows the file to be edited via the browser version or the desktop/mobile application	X	X	X	X	X
4.2.2 Integration of SaaS with storage - If the provider does not have its own productivity suite, it may have an add-on that allows you to use another vendor's SaaS application	X	X	X	X	X
4.3.1 Permission levels - none (private)	X	X	X	X	X
4.3.2 Permission levels - public	X	X	X	X	X
4.3.3 Permission levels - shared - edit	X	X	X	X	X
4.3.4 Permission levels - shared - view	X	X	X	X	X

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4.4 Data deduplication to reduce capacity usage - a lot of data on cloud services is replicated, such as emails that have been forwarded to several people in an organisation; data deduplication enables the removal of duplicated files and thus decreases storage space needed	X	X	X	X	X
4.5.1 Migrating/integrating data hosted in-house to a cloud based service - software tools: command line utilities (requires expertise) (e.g. AzCopy)	X	X	X	X	X
4.5.2 Migrating/integrating data hosted in-house to a cloud based service - software tools: command line interfaces (CLI) (can be automated and highly repeatable) (e.g. PowerShell cmdlets/scripts)	X	X	X	X	X
4.5.3 Migrating/integrating data hosted in-house to a cloud based service - software tools: file transfer protocol (FTP)	X	X	X	X	X
4.5.4 Migrating/integrating data hosted in-house to a cloud based service - software tools: graphical utilities (e.g. storage explorer)	X	X	X	X	X
4.5.6 Migrating/integrating data hosted in-house to a cloud based service - software tools: cloud portal site (can be cumbersome and is a manual task) (e.g. Azure portal page)	X	X	X	X	X
4.5.7 Migrating/integrating data hosted in-house to a cloud based service - software tools: Send hard drive/data physically to the cloud vendor's local data centre (used when an organisation wishes to absolve themselves of the responsibility of uploading their own data): Azure import export service	X	X	X	X	X

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4.5.8 Migrating/integrating data hosted in-house to a cloud based service - software tools: Send hard drive/data physically to the cloud vendor's local data centre (used when an organisation wishes to absolve themselves of the responsibility of uploading their own data): AWS import/export snowball	X	X	X	X	X
5. Understanding the deployment requirements for the cloud-based services for organisations	X	X	X	X	X
5.1.1 Considerations for adopting cloud services - whether or not the service is appropriate for the organisations needs	X	X	X	X	X
5.1.2 Considerations for adopting cloud services - whether or not the vendor's cloud deployment model meets the organisation's needs and regulatory requirements	X	X	X	X	X
5.1.3 Considerations for adopting cloud services - whether or not change in security/from organisational to cloud data centre hosting has any impact on legal or regulatory requirements	X	X	X	X	X
5.1.4 Considerations for adopting cloud services - whether or not the cloud vendor has an established track record in providing the service with a guaranteed uptime	X	X	X	X	X
5.1.5 Considerations for adopting cloud services - can the cloud service scale to meet the organisations future expansion plans	X	X	X	X	X
5.1.6 Considerations for adopting cloud services - whether or not the cloud vendor has sufficient redundancy	X	X	X	X	X

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5.1.7 Considerations for adopting cloud services - can the performance metric of the cloud service be monitored by the business	X	X	X	X	X
5.1.8 Considerations for adopting cloud services - will the cloud service be affordable during both peak and off-peak hours	X	X	X	X	X
5.1.9 Considerations for adopting cloud services - whether or not the cloud vendor's systems are protected in a secure and stable facility	X	X	X	X	X
5.1.10 Considerations for adopting cloud services - whether or not the organisations infrastructure is suitable to allow reliable access to cloud based services	X	X	X	X	X
5.1.11 Considerations for adopting cloud services - whether or not there is a sound exit plan if the cloud vendor fails to uphold the correct contract	X	X	X	X	X
5.2.1 Cloud readiness assessment - set up a pilot programme	X	X	X	X	X
5.2.2 Cloud readiness assessment - identify cloud service opportunities based on business needs	X	X	X	X	X
5.2.3 Cloud readiness assessment - review results from pilot	X	X	X	X	X
5.2.4 Cloud readiness assessment - modify any technical and financial elements to enable adoption	X	X	X	X	X
5.3.1 Role of IT department when choosing cloud services - advise on application lifecycle	X	X	X	X	X

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5.3.2 Role of IT department when choosing cloud services - help to understand performance metrics	X	X	X	X	X
5.3.3 Role of IT department when choosing cloud services - help to understand the provider's quality of service	X	X	X	X	X
5.4.1 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: cost of services	X	X	X	X	X
5.4.2 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: duration of the agreement	X	X	X	X	X
5.4.3 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: responsibilities of the customer and the service provider	X	X	X	X	X
5.4.4 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: availability and performance requirements	X	X	X	X	X
5.4.5 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: service monitoring and reporting	X	X	X	X	X
5.4.6 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: remediation and reliability for service disruption	X	X	X	X	X
5.4.7 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: dispute resolution procedures	X	X	X	X	X

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5.4.8 Service Level Agreements (SLA) - A breakdown of services provided and excluded, and it should include: a mechanism for reviewing and updating the SLA, including a change control process	X	X	X	X	X
5.4.9 Service Level Agreements (SLA) - cloud SLA should also include: data location	X	X	X	X	X
5.4.10 Service Level Agreements (SLA) - cloud SLA should also include: service multitenancy	X	X	X	X	X
5.4.11 Service Level Agreements (SLA) - cloud SLA should also include: transparency (data breach notifications)	X	X	X	X	X
5.4.12 Service Level Agreements (SLA) - cloud SLA should also include: disaster process recovery notification	X	X	X	X	X
5.4.13 Service Level Agreements (SLA) - cloud SLA should also include: legal data release notification	X	X	X	X	X
5.4.14 Service Level Agreements (SLA) - cloud SLA should also include: data ownership	X	X	X	X	X
6. Know regulatory issues that impact cloud technology	X	X	X	X	X
6.1.1 Data transference - Data Protection Act and its bearing on the cloud technology	X	X	X	X	X
6.1.2 Data transference - transfer of data within the European Economic Area (EEA)	X	X	X	X	X
6.1.3 Data transference - transfer of data to the US	X	X	X	X	X

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6.1.4 Data transference - transfer of data to other parts of the world	X	X	X	X	X
6.1.5 Data transference - subject to local regulations	X	X	X	X	X
6.1.6 Data transference - privacy and electronic communications regulations	X	X	X	X	X
6.1.7 Data transference - consequences of a data breach	X	X	X	X	X
6.2.1 Information Security - Computer Misuses Act	X	X	X	X	X
6.2.2 Information Security - Official Secrets Act	X	X	X	X	X
7. Know about impact, risks and security issues related to cloud technology	X	X	X	X	X
7.1.1 Impact of cloud adoption on business processes - Financial model transition from capital expenditure (CapEx) to operating expenditure (OpEx)	X	X	X	X	X
7.1.2 Impact of cloud adoption on business processes - data ownership	X	X	X	X	X
7.1.3 Impact of cloud adoption on business processes - skills required within the organisation (potential for employee redundancies)	X	X	X	X	X
7.1.4 Impact of cloud adoption on business processes - responsibility when outages are experienced	X	X	X	X	X
7.1.5 Impact of cloud adoption on business processes - protection against external exposure	X	X	X	X	X

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7.1.6 Impact of cloud adoption on business processes - employee access and storage of company data on personal devices, including use of MDM (Mobile Device Management)	X	X	X	X	X
7.1.7 Impact of cloud adoption on business processes - managing cloud service providers, including the use of SSO (Single-Sign-On)	X	X	X	X	X
7.1.8 Impact of cloud adoption on business processes - managing users and their rights across services	X	X	X	X	X
7.1.9 Impact of cloud adoption on business processes - privacy	X	X	X	X	X
7.2.1 Performance of services - network latency	X	X	X	X	X
7.2.2 Performance of services - available bandwidth	X	X	X	X	X
7.2.3 Performance of services - user access method (wireless)	X	X	X	X	X
7.3.1 Risks - customer data being exposed	X	X	X	X	X
7.3.2 Risks - data integrity (e.g. data that is transmitted down a channel can sometimes be corrupted; this could be due to incomplete transmission, y accident or maliciously	X	X	X	X	X
7.3.3 Risks - lock in with a cloud provider (e.g. there could be increased reliance and if the vendor increases prices the organisation may feel obliged to pay it as they don't think they can leave)	X	X	X	X	X
7.3.4 Risks - providers going out of business	X	X	X	X	X

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7.3.5 Risks - data ownership (e.g. it needs to be made clear in the SLA that the data, although hosted by a cloud vendor, belongs entirely to the organisation)	X	X	X	X	X
7.3.6 Risks - Service Level Agreements	X	X	X	X	X
7.3.8 Risks - interfaces change (e.g. cloud services are in constant flux so there is a risk that the interface could change on a daily basis; having a clear road map from the vendor and a transitional phase (both are available simultaneously) between the transitional interfaces can help to alleviate the issue)	X	X	X	X	X
7.3.9 Risks - availability (unforeseen downtime)	X	X	X	X	X
7.3.10 Risks - lack of internet connection	X	X	X	X	X
7.3.11 Risks - Insider threats (e.g. disgruntled or opportunistic employees (that may be leaving the organisation) who can access and download data from the cloud service from anywhere)	X	X	X	X	X
7.3.12 Risks - external threats (hacking)	X	X	X	X	X
7.3.13 Risks - accidental exposure via multitenancy (e.g. hacking or data leaks via multitenancy issues)	X	X	X	X	X
7.3.14 Risks - shadow It (departments within a business bypass their IT department and use cloud based services instead)	X	X	X	X	X
7.4.1 Security - data encryption (in transit/in rest)	X	X	X	X	X
7.4.2 Security - under account management	X	X	X	X	X

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7.4.3 Security - under permissions management	X	X	X	X	X
7.4.4 Security - user device/points of access	X	X	X	X	X
7.4.5 Security - validating security of provider	X	X	X	X	X
7.4.6 Security - multiple data access points (i.e. mobile devices)	X	X	X	X	X
7.4.7 Security - user accessing organisational services using public places/public Wi-Fi	X	X	X	X	X
7.4.8 Security - shoulder surfing when users are accessing data from the cloud	X	X	X	X	X
7.4.9 Security differences between cloud models (public, private, hybrid, community) - multitenancy issues	X	X	X	X	X
7.4.10 Security differences between cloud models (public, private, hybrid, community) - data segregation	X	X	X	X	X
7.4.11 Security differences between cloud models (public, private, hybrid, community) - network isolation	X	X	X	X	X
7.4.12 Security differences between cloud models (public, private, hybrid, community) - laws and regulation	X	X	X	X	X
7.5.1 Incident management principles - first response	X	X	X	X	X

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7.5.2 Incident management principles - identity	X	X	X	X	X
7.5.3 Incident management principles - report to responsible person	X	X	X	X	X
7.5.4 Incident management principles - data/device preservation	X	X	X	X	X
7.5.4 Incident management principles - documentation	X	X	X	X	X



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