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**Level 3 Nationals
Information Technology**

**Unit 14
IT Service Delivery
(20161K)**

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What is a grade boundary?

A grade boundary is where we set the level of achievement required to obtain a certain grade for the externally assessed unit. We set grade boundaries for each grade, at Distinction, Merit and Pass.

Setting grade boundaries

When we set grade boundaries, we look at the performance of every learner who took the external assessment. When we can see the full picture of performance, our experts are then able to decide where best to place the grade boundaries – this means that they decide what the lowest possible mark is for a particular grade.

When our experts set the grade boundaries, they make sure that learners receive grades which reflect their ability. Awarding grade boundaries is conducted to ensure learners achieve the grade they deserve to achieve, irrespective of variation in the external assessment.

Variations in external assessments

Each external assessment we set asks different questions and may assess different parts of the unit content outlined in the specification. It would be unfair to learners if we set the same grade boundaries for each assessment, because then it would not take accessibility into account.

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Unit 14: IT Service Delivery

Grade	Unclassified	Level 3			
		N	P	M	D
Boundary Mark	0	12	23	34	46

Introduction

1906 is the third external assessment window for Level 3 BTEC Information Technology Unit 14: IT Service Delivery. This is an optional unit for learners studying the extended diploma.

The unit is a paper-based examination and is broken down into a two-part task. Part A contained material for the completion of the preparatory work for Part B and was to be taken over a maximum of 3 hours across a period of 2 weeks. No marks were awarded for Part A. Part B contained materials for the completion of the set task under supervised conditions, allowing a maximum two A4 sides hard copy research notes from Part A to be taken into the assessment.

Part B is broken down into five activities that cover different areas of the specification where learners are expected to apply knowledge and understanding of the IT service delivery requirements for the care home sector provided in the scenario.

The following section considers each activity on the paper, giving examples of responses and a brief commentary why the responses gained the marks. This section should be considered with the live external assessment and the corresponding mark scheme.

Introduction to the Overall Performance of the Unit

The overall performance of learners was significantly better than the two previous series, although 1806 had exceptionally low registrations so difficult to compare.

The performance for each Activity varied with a low number of blank responses, and some responses focusing mostly on the future developments rather than the system as a whole. Activities 4 (evaluation) and 5 (implications) performed the least best as in previous series.

Activity 4 – as in previous series, the learners attempted to evaluate the solution but mainly focused on future developments rather than the system as a whole. The inclusion of alternatives was considered with more learners including them within their reports.

Activity 5 – even though this activity is still poorly answered, centres have taken on board previous LE reports and it was found that more learners included implications to the organisation of introducing the IT systems.

Individual Questions

The following section considers each activity on the paper and provides examples of learner responses. A brief commentary is included giving reasons why the responses gained the marks they did. This section should be considered with the live external assessment and the corresponding mark scheme.

Activity 1

(Outline IT service strategy)

Overall this was answered well. Most of the candidates seen produced an accurate description of the IT service strategy for Cinnamon Agricultural Services. On occasions, some candidates did not link the IT service strategy to individual needs e.g., Manager, Office Manager, Administration etc. Some learners did not seem to use all the information provided in the scenario, as not all staff or current IT equipment was covered, and failed to include job roles, however most students accurately prioritised the IT service.

Response 1

Learner has provided relevant information from the scenario and to produce a comprehensive outline strategy that includes an accurate description of the IT service/process requirements for the organisation that meet their needs. Learner has appropriately prioritised IT service/process requirements with supported, clear rationale.

Learner has shown logical chains of reasoning and a full awareness of the scenario.

There is a discussion that includes hardware, software, communication requirements and some legislation. The learner work would fit into **Band Mark 3 (7 – 8)** in the mark scheme.

Organisation Cinnamon Agricultural Services	
Organisational Needs	
IT Service Requirements	Explanation of priority (high, medium or low)
Cinnamon Agricultural Services is a trade company who repairs and sells parts for agricultural machinery. They are based in Harrogate, Yorkshire and employ 10 staff who work across a workshop, a shop and an office. Repairs can take place on site or mechanics can be sent to customer premises to repair machinery. This means there will need to be a form of portable computer with a wireless internet connection to communicate with the main site and access machinery information such as parts. The shop will need a system in place to store and access stock information. For example, they can track stock levels and order in more stock when it gets low. The system will also be able to keep track of sales and product details. The system can also be accessed remotely using a wireless internet connection, this allows the staff to be able to access product and stock details from all around the shop and the site. Staff in the office will use the system to accurately provide product and stock details to customers, create and manage schedules and manage the budget of the business.	
PCs	High – This is the primary access point into the system. A desktop PC will allow staff to access different kinds of programs such as word processing software, the database and communication software. PCs are powerful and will allow staff to complete multiple tasks with ease.
Tablet PCs	Medium - Tablet PCs would be used to replace desktop PCs in places where portability could be very useful, such as in the shop or for mechanics off-site. It has the same functionality of a desktop PC, allowing users to access different software and communicate, but the advantage is that it is handheld. For example, if a shop assistant was helping a customer in the shop, they could check product information and stock availability on the network from anywhere on the shop floor, instead of having to navigate back to the desktop PC which may be in use by another member of staff. The disadvantage is that

	the connection needs to be wireless as it takes away the portability if the connection is wired, a powerful wireless network connection will be needed depending on the physical size of the shop floor.
Mobile Network	High – A mobile network allows mechanics to connect to the network when they are off-site doing jobs for customers. It isn't always guaranteed that the customer will have wireless internet available. It uses the same technology that allows mobile phones to connect to the internet using 3G or 4G from almost anywhere across the country. The mechanics will use the Tablet PCs to connect to the mobile network and access the database for part details and communication.
Wireless Network Connection	Medium - The wireless network will be used on-site and allows for a way for the Tablet PCs to connect to the businesses network and the internet. It allows the Tablet to be portable.
Communication Software	High – The communication software on the PCs and Tablets will allow the staff to communicate across the site. The communication will be a software program on the devices that allows the staff to communicate via email. Email is a superior form of communication as it has a real interface which is often simple to use, and it allows attachments such as images or documents to shared and comes with encryption for security. These features are especially useful for the Office Manager and Administrative Assistants who communicate with the customers, they may need to send photographs of the products or copies of invoices.
Server	High – The server will be the centralised storage and access point for all the devices on the network. On the server the staff can share and access files via the file server and will be able to access their files from any device on the network. The server will also house the database. Which will be used by all staff to access their relevant data.
Relational Database	High - The database will be the main platform for all data storage, management and processing. Databases allow data to be stored in large quantities on spreadsheets and processed using calculations and queries. Most database software such as Microsoft Access allows
	for user interfaces, which present data in forms and reports which can be easily printed and understood by the user making it very user friendly over basic spreadsheets that can't have a detailed user interface. Databases are also a very secure way of storing data, they allow features such as access levels that only allow authorised users to access specific data and passwords to lock different parts of the database. As the database would be Relational it means that data is linked across different tables enforcing referential integrity. This means that data isn't duplicated and cannot be deleted without the whole relationship being removed, thus further increasing the security of the database.
Microsoft Office Software	High – Microsoft offer cheap and reliable software for businesses that comes in the form of a software package called the Microsoft Office Suite. The package includes software such as databases, spreadsheets, word processing software and image editing software, all of which are useful for any business. The advantage of using package software by a large organisation such as Microsoft is that the software has been thoroughly tested for bugs and issues so it is reliable, and the software has been tailored to businesses so it includes everything a business would use.
Printer/Fax/Scanner	High – The Manage, Office Manager and Administrative Assistants all have access to their own dedicated printer, fax machine and scanner. The office staff use them to print invoices, reports and schedules. The shop staff also access the printer to produce customer receipts.
Electronic Card Machine	High – The electronic card machine is used by the shop staff to take card payments from customers. The machine is linked with the business network to store details about the payment. The card machine would also have a receipt printer built in so as soon as the payment goes through the customer can have their receipt instead of the shop staff going to the printer in the office.
Receipt Printer	Low – The shop staff use the printer in the office to print customer receipts. It would be more efficient for the shop staff to have their own dedicated printer that would be used to print off the receipts.

	This printer would have a smaller paper size than a normal printer in the size that normal receipts are.
CCTV Camera	High - The CCTV camera is used to monitor the activity in the shop. The CCTV increase the security of the site and serves as a deterrent to prevent theft and is managed by the Office Manager.
Door Locks	Low - There is no mention of any form of physical security on the doors into the shop, workshop or the office. I can only assume that they use simple locks that require a key to open. Pin coded locks are more secure as keys can be easily lost and used by anyone whereas a code can only be known by an employee of the business. To further secure this the code could change every so often to ensure that no unauthorised person doesn't know the code.
GPS Vehicle Tracking System	Medium - The business will use a GPS vehicle tracking system to track the vehicles when they are being used by mechanics out on jobs. The tracking system ensures vehicle security and theft recovery of the vehicle as the location is real-time. The GPS system can also be used for route planning which results in lower fuel costs if they identify a shorter route.
Data Protection	High - The Data Protection Act 2018 controls how personal and customer data is used by businesses. It states that data should be fairly and lawfully processed, processed for limited purposes, data is relevant and not excessive, not kept for longer than necessary, processed in line with people's rights, secure and not transferred to other countries without adequate protection. As the business store their customer and staff data, they need to follow these rules. They also need to be careful with their social media sites not to break any of these rules.
Word Processing Software	High - Word processing software allows users to create documents to write reports, invoices and any kind of document they wish. This comes as part of a software package and has all the benefits that has such as the vigorous testing and reliability.
Computer Misuse	High - The Computer Misuse Act 1990 states that secure computer material shouldn't be accessed by an unauthorised user. The material shouldn't be accessed by an unauthorised user with the

	intent to commit or facilitate the destruction or modification of computer material. The business needs to ensure the correct measures are in place to secure PCs from unauthorised users.
Social Media Sites	Medium - In the modern age social media is a powerful tool for business promotion and building an online presence. It allows businesses to communicate with their customers answering queries and questions. It is also useful for showing your customers or potential customers new and existing products or services a business has to offer. The best social media sites for businesses are Twitter and Facebook. This is because they have the best features for promotion such as hashtags and share/retweet function.
Integrated Management Software	Medium - The business already has management software built in to the system on every PC. It is used to manage stock levels; create, allocate and store jobs for the workshop; record sales and payments; raising quotations and invoices and creating and sending reports. This system would be migrated over to the database as the database would be stored on a server meaning that it wouldn't need to be installed on every PC and would have the added security that the database comes with.
Ethernet Connection	High - The desktop PCs around the site will need to be connected to the network using an ethernet connection. This the best option for the business as the cables are cheap, reliable and can use data rapidly. This could be used instead of optic fibres as they are very powerful but also very expensive and use data at speeds that the business will never need.
Router	High - The router will be the access point from the network to the internet. The desktop PCs will access the router through the ports with an ethernet connection. The router will be connected to a wireless access point to allow the Tablet PCs to access the internet.
Cloud Backup	High - The server in the business will be used to store all the data the business needs, this makes it very important to keep safe and secure. The Cloud Backup service will be used to back up all the data from the server to the internet. This is because it takes physical space to store data and it is easier as the third-party service will

Website	have all the correct security measures in place. Medium – The website will be the main interface that customers and the public will see when interacting with the business. The website will show different products and services that the business offers and contact details. The website will be hosted by a third-party service.
Customer/Client Needs	
IT Service Requirements	Explanation of priority (high, medium or low)
Communication	High – The customers will need to communicate with the business to discuss products, services and queries. They can do this through the email service, the social media site or through the phone. The advantage with the email is both parties can send documents such as images, invoices and digital receipts, although email isn't real time as emails don't have to be responded to immediately, they could take up to a few days. Social Media sites almost always have a direct message feature that allows accounts to communicate with each other. This feature is real time as messages can be read and responded to immediately. The issues with this are that it isn't very professional or secure, messages aren't encrypted, and the feature should only be used for small queries. Telephones are real time communication and allow for fast and effective communication. The issue is that the phone lines can't be open 24 hours a day and won't always be answered.
Data Protection	High - The clients and customers will always want their data to be safe and secure. They aren't going to want their information being unfairly used or given to other companies. If the business is found to be doing these things or have found to have lost data, then they will be faced with the law as it breaks the Data Protection Act. Customers and clients may lose respect for the business and move on to another business.
Social Media	Medium - It is useful for the customers and clients to be able to keep up with products and services that the business is providing. On social media they can see the products before they buy them,
	and they can see other people's opinions on the business in the comments sections if the posts. They can also get into contact with the business over social media using the direct message feature, this may be faster and more effective than email or over the phone.
Website	Medium – The website will be the face of the business on the internet. It is a chance for the business to show off the products and services they have to offer. It is also a great platform for the customers and clients to find contact details and information about the business.

Response 2

An attempt has been made to provide a description of IT service/process requirements for the organisation but the information from the scenario is limited.

Learner has attempted to prioritise the IT service/process requirements but all mentioned are unsupported. No discussion on individual personnel needs for the company, and the information provided is in isolation, which shows a limited awareness of the scenario. The learner work would fit into **Band Mark 1 (1 – 3)** in the mark scheme.

Organisation	Cinnamon Agricultural Services.
Organisational Needs	
IT Service Requirements	Explanation of priority (high, medium or low)
E-POS system	Medium – for processing transactions in the shop
CCTV monitoring software	High – for being able to use the installed CCTV cameras.
CAD/Design software	High – for being able to model and design replacement parts
Database Management tool	Medium – be able to keep track of all customers and their requests more efficiently.
LAN connecting all devices	High – Ability for each staff members PC to connect to a central network – allowing the sharing of information
Website creation tools	Low – ability to create a website for the company if desired
Electronic locks	Low – increased security for the company
PCs for each member of staff	High – allows them to operate more efficiently than if they shared.
Agricultural Machinery parts/vehicles	High – required for the company to have stock/perform its intent.
Customer/Client Needs	
IT Service Requirements	Explanation of priority (high, medium or low)
E-POS System	High – to purchase items from shop
Website	Medium – ability to purchase items and request repairs without physically visiting the shop.

Activity 2

(Produce an IT service strategy)

Overall this was answered well. Most of the candidates seen produced an IT service catalogue and included current and future IT requirements. Most candidates identified the IT services but some failed to identify the Integrated Management software and the GPS vehicle tracking system. This resulted in marks being lost with the responses being generic. Some learners did not mention all staff, and some software was missing with learners focusing on job management software as opposed to integrated management software.

Response 1

Learner has been produced an IT service catalogue that includes relevant information from the scenario. The learner has identified services that are appropriate for the business functions and has included accurate service names and descriptions. This learner shows a sound awareness of the company's requirements, with descriptions being clear and concise to enable a non-IT specialist to understand. The learner work would fit into **Band Mark 3 (7 – 8)** in the mark scheme.

Organisation		Cinnamon Agricultural Services
Function	Service Name	Service Description
Managing staff and IT systems Manager Responsibilities: <ul style="list-style-type: none"> Overseeing the running of the company Allocating jobs to mechanics Managing the IT system 	Hardware required: Desktop PC with built in Wi-Fi, Windows 10 operating system, monitor, keyboard and mouse	The manager will require access to a PC with the latest Windows operating system it needs to be fairly high-specification to enable the to manage the IT system. It should also be able to run the necessary software. They will need access to the internet, so built in Wi-Fi would be very beneficial.
	Laptop with built in Wi-Fi, Windows 10 Operating System	The manager will need a portable laptop to enable them to work remotely, it will need the latest operating system from windows and built in Wi-Fi for internet access.
	Server with Linux Operating System and a secure room	They will require a file and print server with a purpose-built server room. This will enable them to store data and applications in one location that can then be accessed using all computers on the network.
	Print Server	A print server will enable all the employees to be able to print from devices on the network.

	<p>Software Required:</p> <ul style="list-style-type: none"> Word processing PowerPoint Spreadsheet Database Communication Web Browser Accounting Software Job management software 	<p>They will require all the software that the staff have access to, so they can manage the IT system and have access to all the data stored on them. They will need job management and allocation software to enable them to allocate jobs to the mechanics. I would recommend buying a subscription Microsoft office which will provide word processing, PowerPoint, spreadsheet, database and email software all for one cost.</p>
<p>Finances and Monitoring Security Office Manager</p> <p>Responsibilities:</p> <ul style="list-style-type: none"> • Preparing Invoices • Processing Payroll • Managing Purchase and Sales ledger • Manage CCTV footage 	<p>Hardware Required:</p> <p>Desktop PC with built in Wi-Fi, Windows 10 operating system, monitor, keyboard and mouse</p> <p>Software Required:</p> <ul style="list-style-type: none"> Word processing PowerPoint Spreadsheet Database Communication Web browser Accounting Software CCTV monitoring software 	<p>The office manager will require access to a Desktop PC with the latest windows operating system it does not need to be of a particularly high specification but should be able to run the software then need to do their job. They will also need access to the internet.</p> <p>They will require accounting software to enable them to keep track of purchases and sales, invoices and to process payroll this can all be done in one application. I would recommend using QuickBooks. They will also need software to enable them to monitor the CCTV footage of the shop.</p>
<p>Finances and Stock Management Administration Assistants (2)</p> <p>Responsibilities:</p> <ul style="list-style-type: none"> • Enter purchase invoices onto the system • Carry out stock checks • Produce management reports 	<p>Hardware Required:</p> <p>Desktop PCs with built in Wi-Fi, Windows 10 operating system, monitor, keyboard and mouse</p>	<p>The administration assistants will require access to Desktop PCs with the latest windows operating system it does not need to be of that high specification but should be sufficient enough to run the software needed. They will need access to the internet and email for communication purposes.</p>
	<p>Software Required:</p> <ul style="list-style-type: none"> Word processing PowerPoint Spreadsheet Database Communication Web browser Accounting software Stock management software 	<p>They will need accounting software to be able to enter the invoices into. They will also need stock management software to enable them to carry out stock checks. They can use word processing software to produce management reports.</p>
<p>Sales, Stock Management and Customer Relations Shop Manager</p> <p>Responsibilities:</p> <ul style="list-style-type: none"> • Order stock online • Update social media sites • Manage shop sales 	<p>Hardware Required:</p> <p>Desktop PC with built in Wi-Fi, Windows 10 Operating system, monitor, keyboard and mouse</p> <p>Software Required:</p> <ul style="list-style-type: none"> Word processing PowerPoint Spreadsheet Database Communication Web browser Stock Management software 	<p>The shop manager will need access to a PC with the latest windows operating system to be able to run the relevant software to do their job. They will require internet access, so built in Wi-Fi would be recommended.</p> <p>They will require the intent to enable them to order stock online and update social media sites. They will also need stock management software to check stock levels and manage shop sales. They will require communication software such as email to communicate with other employees and customers.</p>
<p>Sales, Stock Management and Customer Relations Shop Assistant</p> <p>Responsibilities:</p> <ul style="list-style-type: none"> • Order stock online • Update social media sites • Manage shop sales 	<p>Hardware Required:</p> <p>Desktop PC with built in Wi-Fi, Windows 10 Operating system, monitor, keyboard and mouse</p> <p>Software Required:</p> <ul style="list-style-type: none"> Word processing PowerPoint Spreadsheet Database Communication 	<p>The shop assistant will need access to a PC with the latest windows operating system to be able to run the relevant software to do their job. They will require internet access, so built in Wi-Fi would be recommended.</p> <p>They will require the intent to enable them to order stock online and update social media sites. They will also need stock management software to check stock levels and manage shop sales.</p>

	Web browser Stock Management software	They will require communication software such as email to communicate with other employees and customers.
Providing services and Customer Relations Mechanics (4) Responsibilities: <ul style="list-style-type: none"> • Complete jobs and update job cards • Update stock records for any parts used • Carry out jobs on customer premises 	Hardware Required: Laptops with built in Wi-Fi, Windows 10 operating System Software Required: Word processing PowerPoint Spreadsheet Database Communication Web browser Job management software Stock management software	The mechanics will require a laptop each, so they can record and access data whilst on and off the business premises. They will require access to the internet so built in Wi-Fi would be useful. They will require job management software to enable them to update job cards. They will also require stock management software to enable them to update the stock records for parts they may have used. They will, need access to email and internet to be able to access data of premises and to communicate with management and customers.
Payments	Card Payment Machine	The company will need a card machine in the shop for the customers to be able to pay for purchases and services. They may even want to invest in a portable payment machine, so the customers can make a payment to the mechanics whilst they are off company premises.
Internet Access	Subscribe to a Wi-Fi provider	The company should subscribe to a Wi-Fi provider, who will give them a wireless connection device to enable all computers on the network access to the Wi-Fi.
Data Storage	File Server	The company will require a file server for centralised storage and to enable documents to be shared between employees. They will also need to back up the data stored on this server, which could be done using a cloud service provider. The server needs to be big enough to

		hold the current data, but it should also account for any storage upgrade that may be needs so it will need to be expandable for if the business grows and the data capacity increases.
Printing	Print Server Printers – Office, Shop and Workshop	The company should invest in a print server along with the file server so all devices on the network can print to one or more printer.
Security	Security of the office, shop and workshop Security when browsing the internet Security of IT Systems	They will need to ensure that there are security measures put into place to protect the IT systems on the premises. This could include physical door lock or key car, biometric or eye scanner entry, however a key lock would be less expensive. They can also secure the physical equipment such as Desktop PCs with Kensington locks. They will need to ensure that any confidential data that is being either transmitted over the network or the internet is encrypted, to reduce the risks of the data being intercepted by using a packet sniffer for example. There will need to be user logins set on the IT system, which will only give authorised users access to them and the data stored on them. Each use will have a username and password which is unique to them and this should be kept secure. The accounts for the different members of staff will have different permissions, for example the manager will have full control over the IT systems, but the mechanics may only be able to read and write data to files and folders. They will also need to ensure that data stored on either the computers or server is encrypted so if

	CCTV	<p>it is stolen then it will be encoded data that cannot be decoded.</p> <p>There will be CCTV cameras to monitor activity in the shop. This will be monitored by the office manager.</p>
Legislation to be followed	<p>Computer Misuse Act</p> <p>General Data Protection Regulations 2018 or Data Protection Act</p> <p>Health and safety in the workplace</p>	<p>Cinnamon agricultural services' employees will need to ensure that they are complying to the computer misuse act, by not gaining any unauthorised access to a computer system. This will also mean if someone gains unauthorised access to the company's IT systems, they will face prosecution.</p> <p>Cinnamon Agricultural services need to ensure that they are following the rules of the data protection act when dealing with confidential data. This means the data should not be given to third parties without the permission of whose data it is, also they should not hold the data for longer than the time it is needed. They also should only take the amount of data needed to do the job and no more. Employees will need to be aware of this legislation, as they will be dealing with customers' personal details and maybe confidential information such as bank details.</p> <p>Cinnamon Agricultural Services need to ensure that they are keeping their employees safe. This can include carrying out Portable Appliance Testing (PAT) to ensure IT equipment is working</p>
	The Health and Safety (Display Screen Equipment) Regulations 1992	<p>correctly and is not going to be dangerous. They will also need to ensure that they follow the manual handling rules, so employees should not be lifting heavy equipment as this can cause injury.</p> <p>Cinnamon Agricultural services need to ensure they are complying to the Display Screen equipment regulations. They need to ensure that they are carrying out regular workstation tests to ensure the equipment is comfortable to use for the user. Employees that use display screens on a regular basis will need to take regular breaks from using a screen. The company should also provide employees that use Display Screens regularly with free eyesight tests.</p>
Software Licensing	Application software and Operating System	All applications and operating systems software need to be licensed, which gives the permission for the user to use it. It is best to buy software from a trusted supplier to ensure the software is the official version and not an illegal duplicate. If the company has subscribed to software, they may pay a monthly fee to have access to the software and will also have access to regular updates to the software.
Future Services	GPS Vehicle Tracking system for Cinnamon Agricultural Services' Vehicles	This will enable the company to keep track of their vehicles if they are ever stolen. Also, this could be provided as an additional service to customers purchasing the vehicles. However, this might have extra costs to the company.
	<p>Mobile Technology that will allow the manager to work remotely</p> <p>Mobile job management software for mechanics when visiting customers' premises</p>	<p>The manager would be able to use the mobile technology to enable them to work remotely, such as working at home. This could be done with the use of the VPN that will allow the manager to access the data from the company's server remotely.</p> <p>Mobile job management software will enable the mechanics to find and record details about a job when they are on customer premises.</p>

Response 2

An attempt has been made to produce an IT service catalogue, however there is limited information to show individual IT services for each function of the company. An attempt to identify IT service names and service descriptions, showing a limited understanding of the agricultural company's requirements. Learner work would fit into **Band Mark 1 (1 – 3)** in the mark scheme.

Organisation Cinnamon Agricultural Services		
Function	Service name	Service description
Manager	PC, Keyboard, Mouse, Monitor	This will be needed to carry out different tasks within the business, like parts control, workshop control, job costing, point of sale, accounting and payroll, management reporting.
	IMS	This is needed to carry out the previously stated tasks within the business.
	Printer	A printer is needed to print out order forms, invoices and emails.
	Windows 10 OS	An operating system helps execute and carry out tasks on the computer.
	Microsoft Office 365	This can be used almost any where and there is a lot of things that can be done on it, it also supports cooperative working and data is saved securely on servers that are owned by Microsoft.
Office manager	PC, Keyboard, mouse, monitor	This is needed to carry out different tasks within the business.
	Windows 10 OS	An operating system helps carry out tasks on a computer
	Microsoft Office 365	Cloud software can be used almost anywhere, and it improves security of data as it is not saved on site, instead it is saved in a storage facility owned by Microsoft.
	CCTV Software	The office manager manages CCTV footage so that means that CCTV software is needed for this.
Administration assistants	PC, Keyboard, Mouse, Monitor	These will be needed to carry out tasks such as entering purchase invoices into the system, carry out stock checks and produce management reports.
	Microsoft Office 365	This can be used almost anywhere, and it promotes cooperative working which will increase productivity between the two administrations assistants.
	Windows 10 OS	This software is currently still supported by Microsoft, so it is safe and secure, and it improves productivity while working.
Shop manager and shop assistant	2 x PC, keyboard, mouse, monitor	A PC will be needed to carry out tasks like ordering stock online, updating social media pages and managing shop sales.
	Windows 10 OS	This software is currently supported by Microsoft, so it is safe and secure, and it improves productivity while working.

Activity 3

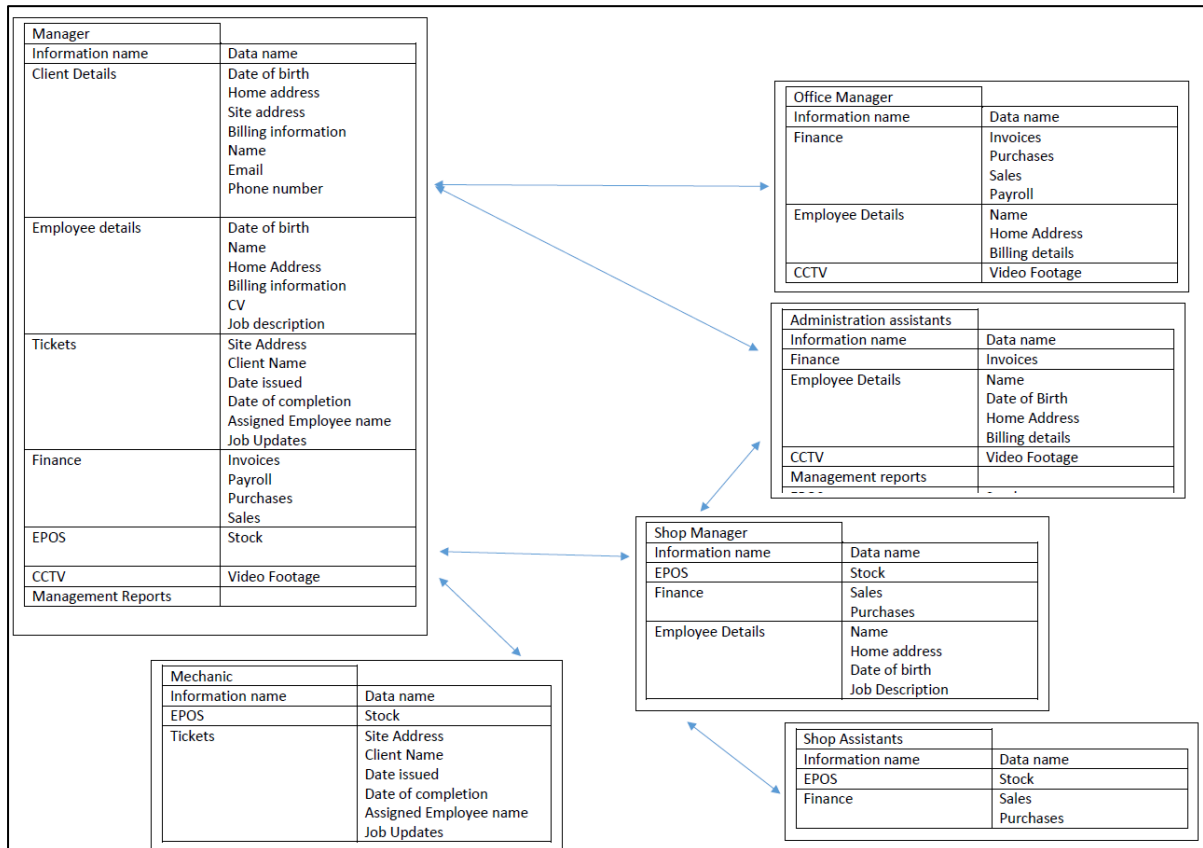
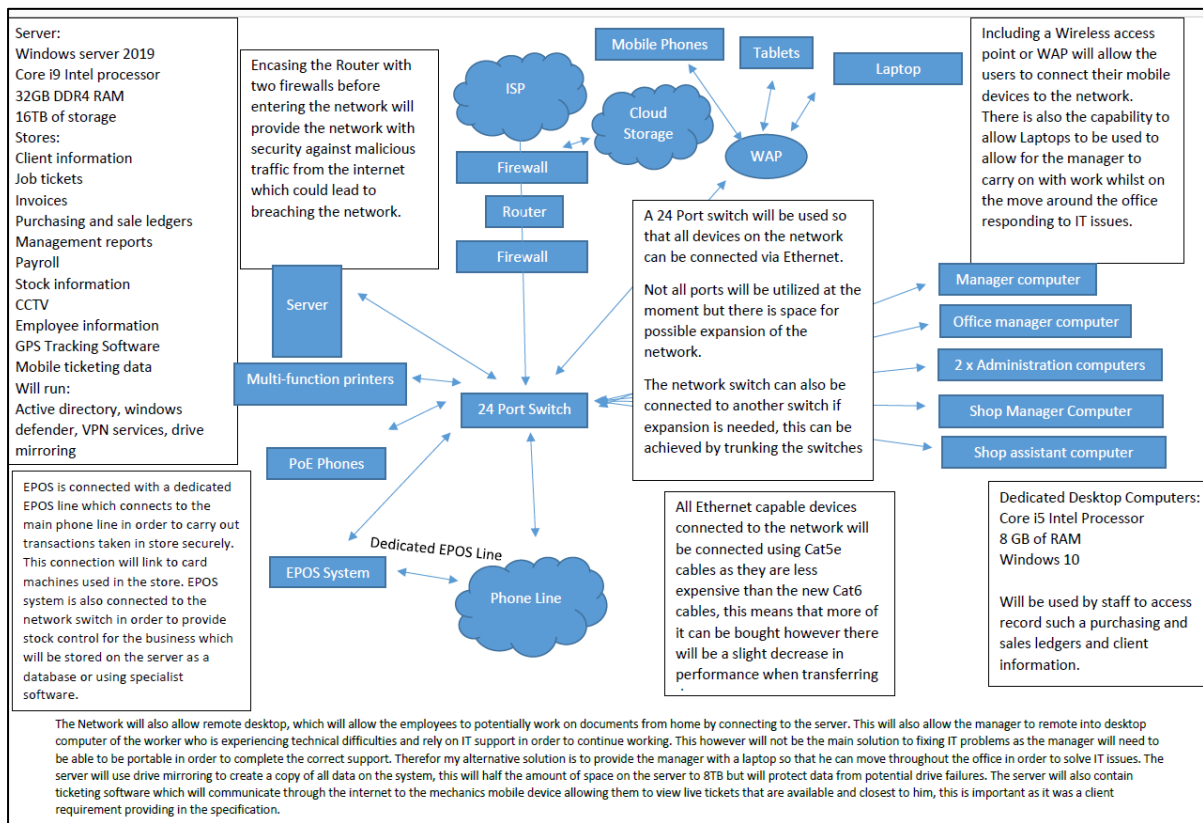
(Design an IT service delivery solution)

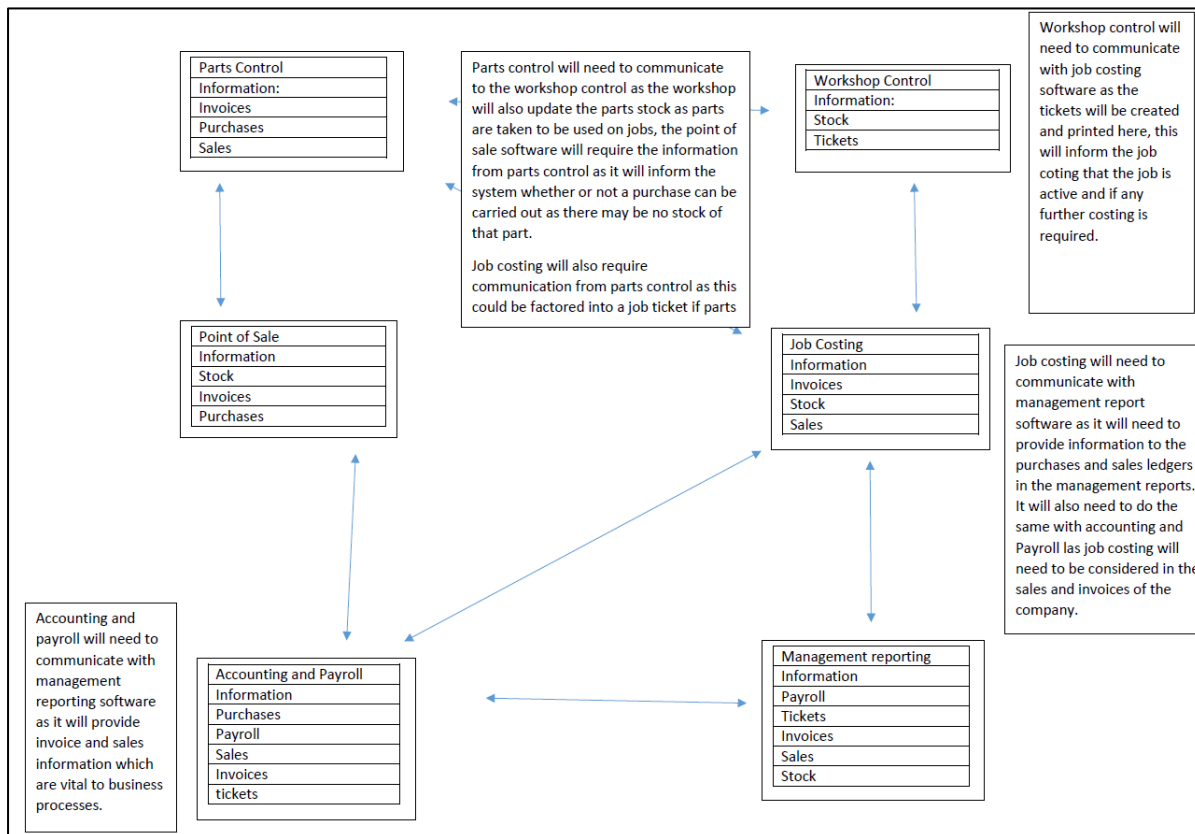
This was answered well. The diagrams produced included clear and accurate in-depth technical understanding on how the solution will work. Clear data flow diagrams and appropriate hardware and software required implementing the solution. Most of the learners achieved mark bands 2, 3 or 4. The learners had more knowledge and understanding of the data and information requirements, lost marks by having an inefficient hardware/software solution. The weaker learners failed to include all the hardware and software that was required.

Response 1

The learner has included effective and comprehensive information and data requirements that meet the IT requirements. Learner has provided adequate coverage of how hardware and software can be used to implement the solution and support users (generalization of PCs).

Learner has shown a sound awareness of the scenario with minor inaccuracies. The learner work would fit into **Band Mark 4 (16 – 20)** in the mark scheme.



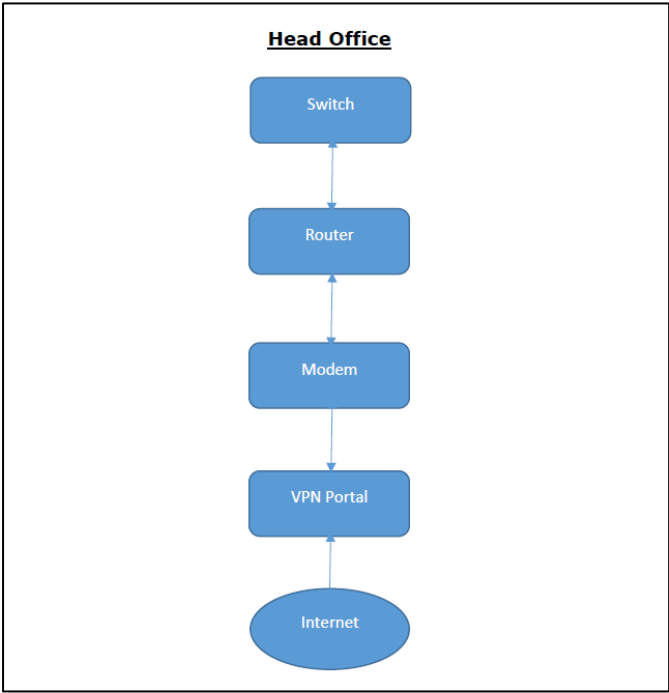


Response 2

An attempt has been made to include information and data requirements but the information covers basic requirements and demonstrates a limited technical understanding of how the solution works with omissions.

The diagram only partially covers the solution and not indication of any hardware or software on the premises has been included.

Data and information has been included but there is no indication of the flows between personnel / tables. The learner work would fit into **Band Mark 1 (1 – 5)** in the mark scheme.



Manager	
Information	Data
Employees	Employee name Employee contact details Employee Date of Birth Employee Salary Employee contracted hours Employee break/lunch time allocation
IT System Management	System model Operating system Current hardware Security

Office Manager	
Information	Data
Employees	Name Contact details Date of Birth Salary Contracted hours Break/lunch time allocation

Administration Assistants	
Information	Data
Stock Orders	Order Date Purchase Receipt Current count
Reports	

Shop Manager	
Information	Data
Employees	Name Date of birth Contracted hours Salary Break/lunch hours

Shop Assistant	
Information	Data
Employees	

Mechanic	
Information	Data
Job Cards	Location Time Client Parts Required Repair Type
Stock	Current stock Orders

Activity 4

(Management report evaluating the solution)

Learners are required to evaluate the appropriateness of their IT service delivery solution for the requirements of Cinnamon Agricultural, by reviewing requirements and making recommendations. They need to discuss if the system recommended is effective and appropriate for the needs of the organisation.

The learners should compare the recommended system to the initial organisation requirements, will it enable all staff to undertake their job roles more effectively, and are there any limitations.

Learners should ensure they evaluate the complete solution and not just future developments.

The evaluation report should recommend solutions to any limitations and include alternatives with a rationale.

Response 1

Learner has provided a developed and convincing justification of the appropriateness of the solution and has outlined appropriate alternatives for a range of aspects. Valid and supported rationales have been provided for alternatives discussed, and the report demonstrates coherent and logical chains of reasoning, that show a full awareness of the scenario. The learner work would fit into **Band Mark 4 (10 – 12)** in the mark scheme.

Activity 4 – Evaluation Report:

In this Report, I will review each part of the Catalogue and Strategy that I have made, discussing why I have chosen each device/piece of software, I will explain any short comings of them, aswell as include alternative solutions for some. I will then review my network diagram, explaining why I chose the solution I chose over alternatives, then I will discuss how the future improvement can be added into my solution.

For Hardware, I chose to give every member of the office and shop new computers, I did this so that every computer is as secure as possible, and can in future always be able to update to the latest version of the Operating System (OS)/Anti-Virus, and this means that the computers are kept as secure as possible. This might be quite costly but is a worthwhile investment that means that Cinnamon Agricultural Services (CAS) will have computers that will last a long time. An alternative solution that I could have chosen for this, was to instead give every member of staff in the office and shop a Laptop, or other portable computer. This wouldn't be a good choice as it would have meant that members of staff would have to plug everything into their Laptop at the beginning of each day, especially because I am using Cat6 wired connections, meaning that the Laptops won't be able to be moved, if at all, before being unplugged and put away at the end of each day.

Another solution I chose was to give the Mechanics a Personal Digital Assistant (PDA) each, this means that when they are at Customer's Premises doing jobs, they can easily gain access to the network, to gain information about the job, aswell as to provide updates back to the office. This can be costly to do, and CAS would need to ensure that every device is looked after and is returned to the Workshop at the end of every day, however it would increase make it easier for the Mechanic to do their job and would increase their workflow tremendously. An alternate solution I could have chosen instead of providing PDAs to the Mechanics, is to let the Mechanics bring and use their own devices, such as Mobile phones or tablets. This would be a lot cheaper as CAS wouldn't have to pay for the devices, however it does pose a security risk. Moreover, if the Mechanic doesn't have proper Anti-Virus/Firewall software on their device and accidentally downloads a virus, they can not only spread that virus to customer's networks when they connect to them, but also to CASs network, which can compromise all data on it, effectively shutting down the company until they can clean the network and recover the data. It would be much better to instead provide the devices, this way the company can make sure that they each have the proper amount of security on them.

For the OS on the new PCs I chose to have Windows 10 Pro installed on each one. This is the most suited to the company as it is one of the most secure OSs, and even comes with its own Firewall and Anti-Virus Software, it is also the newest OS by Microsoft, meaning that it will be supported by them for a long time to come, meaning that the OS will not have to be upgraded down the line, instead just kept up-to-date ensuring it stays secure. Windows 10 Pro can, however, be quite costly, especially for a business, it one the most expensive OSs to date, however the amount of security and usability it provides is well worthwhile and hugely out-ways the cost. An alternate solution that could have been chosen would be to install the OS Windows 7 onto the new PCs, which is a very secure and usable OS, however due to its age, has quite a few security risks and exploits, and is also not supported by Microsoft anymore, meaning that it would probably have to be upgraded to Windows 10 anyway to get support from Microsoft.

For Cabling, I chose to use Cat6 Ethernet cables to connect the network together. These are the most cost-effective solution for CAS, this is because they are extremely fast at transferring data, and is incredibly stable. They are not as fast and stable as Fibre Optics, however Fibre Optics are a lot more expensive and not worth the extra money for the amount of speed and stability they provide.

I also chose to create a VPN for the network, this is so that the Mechanics can connect to the network from their PDAs securely, no matter where they are. A VPN is definitely the most secure way for them to access as data transmitted between the PDA and the network is transferred through what is called a 'virtual tunnel'. This means that the data being transferred is almost impossible to intercept, and even if it is intercepted the data is encrypted and would be able to be seen by anyone without the encryption key. An alternate solution would be to use remote access, where data transferred between the network and the device is encrypted, this is cheaper than a VPN as VPN are generally subscription based, however the data can still be very easily intercepted and is nowhere near as secure as it would be with a VPN.

For the Mechanics' PDAs I decided to use iPads, which would use the IOS OS that comes with all Apple Products, this is because it is the most well-known OSs for mobile devices such as tablets and phones. It is also one of the most secure. It is generally more expensive than buying other devices such as Android tablets with AndroidOS, however Android is less secure and is less common, meaning that it might take a while for the Mechanics to become familiar with the software, which would impact their workflow.

When making my Network Diagram, I chose to use wired connections over Wireless, this is because Wired is much more secure and stable than Wireless, as transmissions can be easily intercepted wirelessly, and anyone in the area can gain access through Wireless. Wired is also much faster than Wireless, and is definitely needed in a company using this many computers in multiple rooms like CAS. It is going to be more expensive than Wireless, however it is the most cost-effective choice for the speed and stability gained from connecting every device to the network using wires over having them all connect to a Wireless Access Point (WAP). It is also best suited for the company's layout, as everyone in the office and shop will be using Desktop PCs, which aren't portable, meaning that once they are connected, they don't need to be unplugged as they won't be moved around throughout the day.

When implementing the Switches onto the network Diagram, I chose to have one Switch in each section of the business, which means that it would be very easy to connect new devices in future in any room without having to wire each one to the Router in the Office, which also means that it would be more cost-effective as there won't need to be as long wires. It also plans for the future as the amount of connection a Switch can have, not one room is currently using up them all, meaning that in future if more staff are hired and PCs or other devices are installed for them, they simply have to be connected to the Switch in that room and no extra devices will need to be bought for a long time.

I also chose to have the Server in the Office, this is because this is where the Manager is located, who is responsible for managing the IT systems. Due to how essential a Server is to running the company, the Manager will need easy access to it so they can fix any problems as quick as possible.

Moreover, I chose to install Firewalls on the network as hardware, rather than software on every device, this means the Firewall intercepts every transmission going in and out of the network, scanning each one for threats, performing its job in the most effective and efficient way possible. An alternative would have been to install the Firewall as software on the Router and other devices on the network, this wouldn't be as efficient as having it as Hardware as it means all the other devices need to waste processing power checking each data packet that enters the device, rather than using a separate piece of hardware, freeing space to perform other tasks on the other devices. It is also better when it comes to updating the Firewall, rather than trying to update it on every single device, it only has to be done once on one piece of hardware, rather than all of them.

For the Mechanic's PDAs, I chose to have the Firewall as software on the device, this is because the PDAs will be out of the office and connecting to many different networks not owned by CAS, meaning there is no way of knowing how secure each one is, so this is the most effective way of keeping the PDAs secure.

I also chose to give every staff member in the office a telephone each, as well as one in the shop, this means that each staff member can easily get in contact with each other, as well as with clients.

CAS also mentioned some future improvements they might want to put onto the network later down the line, these are: A GPS vehicle tracking system for CASs' vehicles; mobile technology that will allow the Manager to work remotely; and mobile job management software for Mechanics when visiting customers' premises. These would be very easy to install onto the system and would provide quite a lot of benefits for CAS. To install the GPS vehicle tracking system, a tracking chip would be placed inside of each vehicle, which would be connected to the car's electrics, meaning that the company could even monitor the status of the vehicles and easily perform any maintenance needed on them. These would then have to be monitored by a staff member, either the Manager or the Office Manager, as both would be spending most of a working day at their computer meaning it would be convenient for them to monitor the system. To implement the Mobile technology for office and shop employees, WAPs would need to be installed inside of each room, so that the staff can access the network from their mobile devices when they are in the office. They would also need to register themselves on the VPN, so that they can securely access the network when connecting through the internet at another location. The company would also have to decide whether they will allow staff to bring their own devices, in which case they will need to be trained on keeping their phone secure and how to avoid downloading any malware on their computer. Or CAS can provide the staff with company devices, meaning that the company can ensure that the right amount of security is installed onto the devices to keep the data on them secure.

Benefits of installing a GPS tracking system for CASs' vehicles would be: it means the company can inform customers of arrival times, improve Driver behaviour, due to them being monitored at all times and ensuring that none of the vehicles are used for anything other than company business. It would also mean that theft of the vehicles would pretty much not exist anymore as the vehicles would be tracked down almost immediately.

Benefits of using Mobile technology is that it would keep businesses and employees connected with each other and customers both at the office and elsewhere. It would give staff the ability to instantly communicate with each other and respond quickly to business situations.

Benefits of installing Mobile Job Management Software for Mechanics is that it enables the Mechanics to easily access client data from their PDAs. This would be a major convenience for them as it means they would have access to crucial customer data and would hugely increase the efficiency of the Mechanics work.

Response 2

Learner has partially justified the appropriateness of the solution, with most of their focus being on security and storage.

Report demonstrates limited reasoning and shows minimal awareness of the scenario.

The learner work would fit into **Band Mark 1 (1 – 3)** in the mark scheme.

CCTV

CCTVs recordings will be saved on the server as saving long hours of videos may take a lot of disk space therefore saving it on the server would be a lot better as the organisation would be able to keep many recordings saved until it is not needed. The recordings will also be backed up on the cloud storage which means that if anything happened to the server or if the recordings were deleted they would be able to retrieve it back using the external drive or the cloud storage however it would take a while if they were to retrieve it back from the cloud storage depending on the transfer speed however they would still be able to retrieve it back.

External Drive

Anything that is on the server would be backed up using this external drive and the transfer speed will also be a lot faster compared to the cloud storage however the disk space would be consumed by the recordings however they could save the old recordings on the cloud storage and delete it from the external drive to saved disk space.

Cloud Storage

They would also be using cloud storage as a 2nd back up as it is free and it is always accessible but it needs access to the internet for them to be able to access this.

Cloud storage is a great back up as they would be able to save anything without consuming disk space however there are still risk of using this as a backup as others would still be able to gain access to this online if they were somehow able to find out their log in details.

VPN

I added VPN as this is beneficial to the organisation however the VPN has to be their own other than a 3rd party VPN as the others would still be able to see what they are doing rather than only the organisation would be able to see what they are doing. This is why I have suggested them to create their own VPN network to be properly secured

Security

I have said that if there are users logged onto a device and they have been idle for a certain amount of time their accounts would be locked out. This is to prevent any unauthorised access to the users account and gain access to private data's

Each user must also have different accessibility on the network as they would not need to have access to everything on the network as this could be dangerous as the others may gain access to confidential information of their customer/clients or staffs.

Both of these are beneficial to the organisation as it adds an extra layer of security by not allowing unauthorised access to other users accounts or sensitive data's that may affect the organisation.

Activity 5

(IT service delivery implications report)

Learners are required to analyse the implications of managing IT service delivery for the requirements of the organisation, by considering how the implications will affect the agricultural company.

The majority of the learners seen in this task produced generic reports and did not analyse the implications of managing IT service delivery to meet the company's requirements. The majority seen discussed the changes, that included cost and time it would take to implement, but did not discuss why.

Response 1

The implications report demonstrates appropriate consideration of the implications of the solution, giving an understanding of the agricultural company's capacity to respond to change. The report demonstrates logical chains of reasoning that shows an awareness of the implications for the organisation. The learner work would fit into Band Mark 3 (9 – 12) in the mark scheme.

Implementing your solution and delivering the organisation's services and products

Downtime

During the transition from the current system to the new system there will be downtime. This means that the network and all files stored on it will be inaccessible for the transition time. Therefore the business will not be able to operate as booking won't be possible and customer information inaccessible. So to combat this as Cinnamon Agricultural Services is only a small company the process can be completed over a weekend. This would disrupt some of Cinnamon Agricultural Services customer but most of the business is shut down over the weekend and it would cause the least customer disruption.

3rd party cloud services

As Cinnamon Agricultural Services will use 3rd party cloud services for many functions of the business it will mean that the cloud services will need at least some access to customer data for the service to be effective. Therefore if one of the cloud services was to have a data breach it would be of Cinnamon Agricultural Services customer's data. So under GDPR this would be considered the fault of Cinnamon Agricultural Services even though it wasn't their systems breached. So to protect themselves Cinnamon Agricultural Services need to check all the cloud services they will use to make sure they won't be comprised.

Managing and supporting staff

Unlimited Data

The mechanics will require unlimited data for their tablets so that they can always access the job management software so that it can be updated when at the jobsite. However this means that the mechanics will use up a substantial amount of mobile data. Unless the mechanics are on an unlimited data plan would be an expensive bill. Being that the mechanics would have unlimited data is means that they can take photo/videos and send them back to Cinnamon Agricultural Services if required and will always be able to access Cinnamon Agricultural Services as they won't be able to run out of mobile data.

Remote Access Policy

A remote access policy means that is how the manager and any other staff should connect to the internet and subsequently connect to the VPN. This means that it is a list of best practises that staff should do to connect to Cinnamon Agricultural Services network. Such as don't access using free WIFI useless using another VPN to secure the connection. This is because free WIFI is

notorious place for attackers to snoop on peoples devices. This is required as the cloud services have personal data. So if an attacker was able to sniff a password to a service it could result in a data breach.

Managing and supporting the organisation's clients

FAQ on Website

The website will have an FAQ so that it helps customers that are in the process of booking a service/repair. This helps the customer see what they need to do to complete the booking. This contributes towards the WCAG guidelines which make a website accessible so that it complies with the equality act. This means that the website is the most accessible for everybody so that anyone who wants to use the website will have the easiest opportunity.

Managing the organisation's IT assets

Mobile Devices get lost or stolen

Due to Cinnamon Agricultural Services' mechanics using mobile devices the risk of the devices being lost or stolen increases as they are smaller which means they are easier to be lost or stolen and the mobile devices are being taken out of Cinnamon Agricultural Services' network. Then if a device is stolen any information stored on the device might be taken and sold. This would cause a data breach.

Single Point of failure

Cinnamon Agricultural Services' network has a single point of failure that means if the central switch that link is to all areas so the business were to fail then the whole business wouldn't be able to access both the internet and the onsite servers which control the businesses data. The only way that Cinnamon Agricultural Services can get around this is to have multiple switches from the internet connection. This would cost more but also provide redundancy. However to the small size of the company I deemed it not worth doing this. As well the mechanics aren't relying on servers stored at Cinnamon Agricultural Services office premise.

Password Policy

As Cinnamon Agricultural Services uses mobile devices a password policy must be ensured so that the passwords aren't easily guessed. This is because the mechanic's tablets and the manager's laptop will be used in public. Therefore the chance that the device is stolen or lost is higher. However with a complex password which is ensured by a password policy the device would be more difficult to access. If done for all cloud services accounts as well it would mean that the customer's data is very secure so that it doesn't break GDPR. This is because by having a weak password which let an attacker access customer records would be considered negligence by the EU. This would result in a large fine for the data breach and not taking precautions for data breaches.

Extended Star Network Topology

An Extended Star Network topology allows Cinnamon Agricultural Services to grow with them just needing to add more staff and devices. This is done by using a star network topology of switches that allow for more switches to be added when new devices are required to be added to the network. However this isn't as important for Cinnamon Agricultural services as it is a small business without the need to expand yet.

Cloud Services

I have recommended that Cinnamon Agricultural Services uses a range of cloud services. This means that when new members of staff need to be added it will be simple as a new user has to be added to the flexible policies. This is because none of the content is hosted on Cinnamon Agricultural Services servers. Therefore it is simply adding a user to the policy and assigning them to the right group. This means that the cloud service company has to allocate the right permissions and all the more difficult setup process.

Response 2

The report demonstrates limited reasoning that shows minimal awareness of the implications for the organisation; the learner has discussed the changes rather than any implications. The learner work would fit into **Band Mark 1 (1 – 4)** in the mark scheme.

Implementing your solution and delivering the organisation's services and products

I will be implementing my solution by ensuring that all the relevant software and hardware has been installed in all the relevant devices. When these changes are made, delivering the organisation's services and products should be more efficient as the organisation will have improved communication between employees.

Managing and supporting staff

During the implementation of my solution I will support the staff by ensuring that they have received the relevant training to operate the new software that will be implemented.

Managing and supporting the organisation's clients

During the implementation of my solution I will support the organisation's clients by informing them over email/letter about the changes that will be made to the organisation's services and how it will affect the customer.

Managing the organisation's IT assets

The organisation's IT assets during the implementation of my solution should be managed by using a firewall to make sure that the new software hasn't made any changes to the security settings of the network and that they are not at risk of getting infected by a virus or other forms of malware that could be dangerous for the organisation.

Summary

Based on performance on this paper learners should:

- Ensure they cover all aspects of the scenario; such as Cinnamon's personnel and software requirements, to enable them achieve marks in the higher mark band ranges.
- Apply knowledge and understanding to a variety of sectors. The paper will always contain the same five activities with just a different sector.
- Learners should be encouraged to practice writing evaluative reports for other areas of study.
- Learners should develop a better understanding of 'implications' to ensure they do produce an evaluation instead.

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