

L3 Lead Examiner Report 1806



Summer 2018

**Level 3 National in
Computing**

**Unit 2: Fundamentals of
Computer Systems (31769H)**

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Grade Boundaries

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, 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 should be 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 test, because then it would not take into account that a test might be slightly easier or more difficult than any other.

Grade boundaries for this, and all other papers, are on the website via this link:

<http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx>

Unit name of number of unit.

Grade	Unclassified	Level 3		
		P	M	D
Boundary Mark	0	25	39	53

Introduction

This is the third examination of Unit 2 (Fundamentals of Computer systems) for BTEC Level 3 National in computing which became available for first teaching in September 2016. Examination opportunities will continue to be available for this unit twice a year in January and May/June. This unit is a mandatory unit for all learners studying either the Extended Certificate (360 GLH), Foundation Diploma (510 GLH) or Extended Diploma (1080 GLH).

This unit, along with Unit 1 (Principles of Computer Science), are assessed through a written examination paper. The examination is designed to test learners' understanding of computer systems within a range of contexts. The paper is divided into four main questions, each with a number of sub parts. Each main question is based around a unique scenario; each scenario is outlined at the beginning of that question and additional information and/or stimulus is provided with individual parts as required.

While appropriate credit is given for learners who demonstrate appropriate 'stand-alone' knowledge, more successful learners can apply their understanding to the scenarios provided in the question.

The paper is designed to assess the full grade range of the qualification; as such the paper is ramped so that it gradually increases in difficulty as the questions progress with a higher percentage of 'Pass' targeted marks in the earlier parts of the paper and the higher-grade questions towards the end.

Introduction to the Overall Performance of the Unit

While detailed analysis of specific questions in the paper appears later in this report it should be noted that overall learner performance in this series improved slightly compared to the January 2018 series and performance was significantly better than the Summer 2017 series.

Understanding of the basic subject knowledge and vocabulary was an area identified as an area of concern following the Summer 2017 examination series and it is pleasing to see that progress has been made in both this (1806) and the previous (1801) examination series. That said, there is still room for improvement with many learners' responses showing significant gaps in knowledge from the core content of the specification.

A steady improvement has been noted in understanding of the requirements of different command verbs. However, many learners still do not demonstrate the depth of knowledge or application to make maximum benefit of more extended responses. In particular in response to the larger explain/describe questions (three or four marks) learners often do not provide sufficient detail or linked responses to gain maximum marks. This is something centres are encouraged to explore further with learners.

It was pleasing to see that in this series there was a significant improvement in the quality of response in the extended writing questions (6, 8, 10 and 12 marks), with a much greater range of responses seen that spanned the attainment range, where previously most responses met the descriptors for Mark band 1 only. Centres are advised that these extended questions are designed to differentiate across pass, merit and distinction learners. Therefore when preparing learners centres should be aware that in order to access the middle and top mark bands, responses should demonstrate good subject knowledge that is applied in context.

Centres are encouraged to look at the sample assessment materials, previous papers and sample marked learner work with learners and ensure that they are familiar with the design and expectation of the paper. Ensuring that learners are aware of the requirements of particular command verbs, definitions of which can be found in the specification for this unit, would greatly improve learner performance.

While it was clear that some centres have made use of a range of support materials, such as the sample assessment materials, there was still a pocket of learners repeated answers verbatim from sample materials/past papers when presented with similar topics. While these learners were able to demonstrate some understanding and were duly credited, these responses were often not applied to the given scenario and therefore often only demonstrated superficial understanding. Centres are encouraged to work with learners in exploring Computing use in a range of scenarios and adapting responses to suit these scenarios.

Individual Questions

Question 1a

Performance on this question varied significantly. While the majority of learners were able to gain one mark out of two, most learners provided a suitable linked response to gain both marks. However, a significant number of learners did not provide sufficient responses to gain marks here, in these cases the learners were usually not aware of the difference between a 'graphics tablet' and a tablet computer.

Question 1b

Learner performance on this question was quite disappointing, with many learners failing to demonstrate sufficient knowledge to gain marks. Where learners did gain marks, this was typically for identifying the GPU as responsible for 'rendering'. Very few learners provided a linked description of a function of the GPU. Many learners demonstrated only superficial knowledge of this areas of the specification.

Example response 1:

(b) Benjin has upgraded the Graphics Processing Unit (GPU) in his computer.
Describe **one** function of the GPU when the computer generates graphics. (2)

The GPU helps process graphics and removes this strain off the CPU. The graphics will be generated by the GPU and transferred into a format that can be displayed.

'removes the strain off the CPU' (1) - awarded against mark point 5.

'the graphics will be generated'- this is not enough to award mark point 1 (rendering) as this is included in the question. The response required should describe HOW this happens.

'transferred into a format that can be displayed' (1)- this was JUST enough to award mark point 1 as an alternative wording for performs rendering. However it is recommended, as a point of improvement for centres, that learners develop and use appropriate terminology so that they can more clearly express their understanding.

2 marks awarded

Example response 2:

GPU will carry out the rendering or a large amount of data processing, which will greatly increase the speed, depends on the memory of GPU got.

'carry out the rendering' (1)

'increase the speed' is not enough to award a mark for reducing load - this is an explanation of an outcome which does not address the question.

1 mark awarded.

Question 1c

The majority of learners were unable to demonstrate sufficient knowledge of the subject content on this question to gain marks. Typically answers failed to address the demands of the question mechanism, i.e. 'describe how'. Centres should note that 'describe how' questions will typically require a technical response and may refer to a particular process or series of actions. In this case the question, 'Describe how pipelining improves the speed at which graphics are generated', required a technical description of the process that occurs during pipelining

Example response 1:

(c) Describe how pipelining improves the speed at which graphics are generated.

(4)

Pipelining allows the graphics which are being processed to be processed at the same time or simultaneously which means the speed would increase as the graphics are being processed at the same time.

'...to be processed at the same time' (1)

'as the graphics are being processed at the same time' - although this is mark worthy it is a repeat of the point already made therefore a second mark cannot be awarded here. Learners are reminded that when responding to a 'describe' question additional points should expand upon previous points made or provide the next stage of a process.

1 mark awarded

Example response 2:

pipelining improves the speed at which graphics are generated because when one process is being fetched, another will be decoded and another will be executed meaning that multiple processes can be registered and processed faster because more processes are being put forward in a system which means multiple processes will be in various stages of completion rather than waiting for a single process

'...when one process is being fetched, another will be decoded' (1) - alternative wording for 'queueing instructions'

'multiple processes can be registered' (1) - alternative wording for 'more calculations can be performed at the same time'

'rather than waiting for a single process' (1) - alternative wording for 'reduces delay'.

3 marks awarded

Question1d

The majority of learners were able to provide sufficient responses to gain at least one mark out of a possible two. While most learners were able to identify that bitmap images are made up of pixels, many were unable to provide a suitable expansion.

Question 1e

The majority of learners were able to achieve at least one mark out of a possible two on this question. Typically learners were able to identify that altering the resolution resulted in the image containing fewer pixels; most however were unable to provide a suitable expansion to their response identifying that this results in less data in the image.

Question 1f

Performance on this question was generally poor with relatively few learners providing a suitable response. Many learners misinterpreted the question, providing an explanation of what compression is, or way it is used, rather than an example of an encoded string that would result from the compression process.

Question 1g

This question was generally answered well, with the majority of learners able to provide sufficient responses to gain at least three marks out of a possible six. Learners were generally able to identify two possible problems; usually security concerns and issues regarding data transfer speed. Where learners did not achieve higher marks this was usually due to poorly constructed responses that did not sufficiently link points or expand ideas. Centres are encouraged to work with learners on developing the depth of their responses.

The example shows a well-structured response that can be used to help model answers for learners.

Example Response:

1. The Hotel WIFI is open, which means insecure. hacker could monitor what Benjin is accessing and know the ip of the office server. This can be a hazard of data leak/breach in server which will cause trouble.
2. The hotel free Wifi usually share by many customers. this may cause a decrease of speed and become unstable, it will take longer to sync the file with server and may have a cost of connection which can make benjin's current work get lost.

Reason 1

'...open which means insecure' (1)

'hacker could monitor what Benjin is accessing' (1) - Suitable alternative wording for 'data can be intercepted'

'this can be a hazard of ...breach in server' (1)

Reason 2

'shared by many customers' (1)

'become unstable' (1)

'decrease of speeds...Will take longer to sync the file' (1) – alternative wording for slow data transfer speeds

6 marks awarded

Question 2a

Learner performance on this question was quite disappointing with a surprisingly large number of learners failing to gain any marks. Where learners did gain marks few were able to provide a suitably detailed answers i.e. correct communication channel. This question reflects a larger issue identified across the examination; while the general understanding of core content has improved, many learners are still not able to contextualise this understanding and apply it to a given situation.

Question 2b

The majority of learners were able to achieve at least one mark out of a possible three for this question. Typically learners were able to identify that the two-dimensional array allowed multiple (related) data sets to be stored, with higher attaining learners expanding their answer. While a number of learners provided suitable expansions to gain a second mark, very few learners provided a suitable expanded response to gain three marks. As in other areas of the examination, learners have made progress in in these style of questions but there is still work required. It should be noted that a 3 mark explain question, such as this, requires three clearly linked points that show a deeper understating of the specification content.

Example response 1:

(b) Explain why this type of array is used to store game data.

(3)
A two dimensional array allows for similar data to be stored in a correlated data structure. As all the data inside the array will be stored integers it means that an array is more suitable than a record due to storing only one data types. Arrays allow indexing 2D arrays also allow indexing based on two correlations.

'Similar data stored in a correlated data structures' (1) just enough to ward against 'data is separate but related'

1 mark awarded

Example response 2:

It is an array of arrays. Each player has their own array, which contains specific details. It is appropriate because it keeps all of the players data together and has ~~an organised~~ an organised data structure. Because it's an array, it is also very likely the data will be stored together, reducing load/ fetch/ ^{search} times.

'Each player has their own array' (1) - Awarded against 'Each players data can be stored in its own array'

'Because it's an array it is also very likely the data will be stored together' (1) - Enough to show the data will be grouped together in memory

'reducing fetch/search times (1) - alternative wording for 'data processed more quickly'.

3 marks awarded

Question 2c

Learner performance on this question was quite disappointing with most learners struggling to provide suitable validation checks. Incorrect answers here broadly fell into two categories:

1. This group of learners did not have the core understanding of 'validation' and instead provided descriptions of verification techniques or communication error checking techniques, such as parity bits.
2. A large group of learners again did not respond as was directed by the command word. Many learners provided explanations as to why validation is required, rather than a description of how could be applied in this situation.

Centers are again reminded to dedicate time to addressing the requirements of each of the command words.

Question 2d

Performance on this question was generally quite poor with the majority of learners unable to demonstrate sufficient understanding to gain credit. Where learners did gain credit, most were only able to gain one mark out of a possible two. Points were generally made in isolation with limited or no appropriate expansion.

Example response 1:

Explain **one** reason why the data array has to be converted.

(2)

The data type of the array may not be the same as the data type of the league tables. If they were merged, an error would be produced. The league tables can accept array data if it is in a recognisable format.

'may not be the same data type' (1) - although wording as a reverse argument, enough understanding is shown to award against mark point 3

'the league table can accept...if it is in a recognisable format' (1) - enough to award against the expansion point for mark point 3

2 marks awarded

Example response 2:

Explain **one** reason why the data array has to be converted.

(2)

the data has to be converted from an array because it will not be easily accessed to use to work out values such as the hit percentage because they will need the data ~~for~~ for each-player separated.

'to use to work out values such as hit percentage' (1) - awarded against 'so percentage calculation can be done.

1 mark awarded

Question 2e

Most learners were able to demonstrate some understanding of the scenario and produce some awardable constant with the majority for learners able to gain a minimum of three marks out of seven. Where learners did not perform well this was usually due to poorly constructed flow charts that demonstrated only limited understanding of logic. While, in this case marks were not deducted for poor layout, it was clear that those who achieved higher on this question generally had better, more accurately constructed flowcharts; showing that they were more familiar with using this mechanism to demonstrate how systems work.

Example response:



Gun is unarmed for first minute of the game (1) –Mark awarded

Decision box showing correct logic for if sensor is triggered with labelled 'yes' and 'no' routes leading to correct logical processes (1) – Mark awarded

Gun fires 5 shots after being triggered AND then recharges for 45 seconds (1) – Mark awarded

Decision box showing correct logic for if gun is shot by player with labelled 'yes' and 'no' routes leading to correct logical processes – (1) Mark awarded

Correct logic for checking if recharging/not allowing the gun to be hit when recharging – (1) Mark awarded –the wait function ensures no other actions can take place

Correct logic for checking if game has ended (with appropriate outcomes) (1) - Mark awarded- the learner has used a while loop rather than a decision box the logic is correct. Accept any appropriate way of demonstrating this type of check.

Use of suitable looping structure to keep gun operating for whole game – (1) mark awarded

Although poorly presented, the response shows appropriate/correct logic throughout.

7 marks awarded

Question 3a

Learner performance on this question was often hampered by poor examination technique. While it was clear that most learners knew the purpose of device drivers, as evidenced by the majority of learners gaining at least 1 mark here, few learners were able to gain three and four marks from their responses. Often responses focused on the device driver enabling communication between devices and computers or working as a form of 'translator'. However, as in other areas of the examination, learners regularly did not expand or develop the points they made and answers were often repetitive.

Example response 1:

Describe how device drivers support the use of different equipment.

(4)

Drivers are used to help make hardware and certain features more compatible. They give instructions to the OS on how to full use the hardware or features. For example, Most PCs know the basic operations of a mouse, but drivers allow the OS to understand and recognise mouse gestures.

'more compatible' (1)

'give instructions to the OS' (1) - enables devices to communicate

'Allow the OS to understand and recognise mouse gestures' (1) provide control codes

3 marks awarded

Example response 2:

The device drivers are probably very generic, and ⁽⁴⁾ simply convey the sound from the instruments transmit to the computer. These drivers will, however, make sure that only the best quality sound is going to the computer, otherwise there might be a loose cable or it is not set up properly. The drivers also allow for many different types of equipment because all they have to do is receive the data which the equipment transmits and relay it inside the computer.

'...do is receive the data which the equipment transmits and relay it inside the computer' (1) - the learner has shown just enough understanding to award MKPT 2 (enable devices to communicate with the operating system)

1 mark awarded

Question 3b

Learners generally performed very poorly on this question with few learners demonstrating an understanding of files systems beyond a very superficial level. Most responses relied on generic references to compatibility and performance but very little core understanding was demonstrated by learners.

Example Response 1:

Analyse how the choice of file system would affect the use of a computer system.

(6)

The two most common choices for file types are NTFS and FAT32. Both of them will work for the install of a new OS. However NTFS would be ~~more~~ recommended as it will take up less space on the hard drives as the instruction set is smaller. Also it is a secure file system. FAT32 is an older file system and is no longer standard.

Knowledge and understanding

There is some knowledge of file systems demonstrated (FAT32, NTFS). The learner shows an understanding that the file system dictates how and where files are stored.

Breaking down the situation

There is an attempt to break the problem down into some smaller parts (filing, size, load speeds).

Analysis

There is an attempt at analysis here, for example, the learner links the filing system with load time.

The response is placed in mark band 2.

4 marks awarded

Example Response 2:

If the chosen file system doesn't support the new or current operating system then the computer system will fail to do ^{basic} tasks such as ~~man~~ allowing people to share files, managing, renaming, editing files etc. This will lead to an inefficient computer system as the operating system will not be able to do basic file management tasks. Therefore a file system that is up to date and fits the requirements of the operating system will provide users to access files and basic file management tasks, that will lead to a more reliable computer system as user needs may be met.

Knowledge and understanding

Some limited understanding is demonstrated but the response is generally quite superficial.

Breaking down the situation

There is an attempt to break the problem down into some smaller parts, however only one point made is fully relevant (compatibility).

Analysis

The analysis is quite limited. The explanation/exploration of points made is generic.

The response is placed in mark band 1.

2 marks awarded

Question 3c

The extended questions are designed to differentiate across the attainment levels. Therefore it is expected that fewer learners will access the higher mark bands. Generally, here and in other extended questions on this paper, learner's performance has improved significantly from previous series. The performance of learners on this question was in line with expectations with a natural spread of marks across the mark bands.

While there was improvements there are still areas of focus that centres should address with learners.

1. The extended questions are an opportunity to demonstrate deeper knowledge. Centres should work with learners to develop ideas and expand on points made. Using examples and reasons where appropriate
2. More successful learners make use of the context provided. To access the higher mark bands knowledge from the specifications core concepts should be considered and applied to the give scenario.

Example response 1:

Discuss the **benefits** of using GUI and CLI for these activities.

(8)

GUI are a lot easier to learn how to use, especially for less technical users such as children. GUI's are often laid out clearly and direct users where to go, this will be helpful for children wanting to find the programs they want to use. A child would find it difficult to use command line and a GUI is far more attractive and attention grabbing. CLI would be much better for Carl to use as it allow save for easy maintenance and admin tasks given that knows the commands.

Knowledge and understanding

The response shows only a limited technical understanding.

Context

There is little use of the context to provide expansion/examples to the points made.

Discussion

The learner makes only limited points in reference to GUI and CLI – the points made focus on ease of use and there is little or no expansion to show deeper understanding of the points made.

The response is placed in mark band 1.

3 marks awarded

Example response 2:

(8)

GUIs are easy to use inputs that display menus to access features. This is beneficial as children will struggle to understand the system without sign posted features. GUIs do not require specific knowledge of the system which is also very useful when teaching children who will likely have no prior knowledge of the system. CHIs allows for direct access to the system, and with administrative privileges, on all levels meaning Carl will have access to all ~~areas~~ aspects of the system. CHIs without having to go through several menus. CHIs also are much faster to access and affect the system or data due to the lack of extensive menus. GUIs can also be very restrictive of user access this is important for situations when children are given access.

Knowledge and understanding

The response shows a sound understanding of GUI and CLI.

Context

There is effective use of the context (Adult and Child users) for all of the points made. The response could however make greater use of the 'education' part of the context.

Discussion

The learner expands on most points that they make. The expansions are logical and well explained. Where appropriate, they are supported with suitable examples that relate to the context.

The response is placed in mark band 3. The link to the context could be improved so it is placed at the bottom of the mark band.

7 marks awarded

Question 4a

As with other areas of the paper, this extended questions performed better than questions of comparable challenge in the 1801 and 1706 series, with almost half of the learners able to provide a response that was of sufficient quality to make at least mark band 2. In particular, where learners performed less well, they tended to focus on one very narrow aspect of security concerns (hacking). While this is a valid concern in the context given, the points were often not expanded appropriately and were regularly repeated with little or now further development. The more successful learners carefully select 2 or 3 key points (e.g. security, connection methods) and provided detailed developments of the key areas.

Example response 1:

(10)

Security

- As the server contains Confidential data it is crucial that none of the staff present an easy gain for hackers.
- This can be done by encrypting all communications between the server, company laptops and company smart phone.
- Passwords, ensure employees have secure passwords for both their devices.
- Open networks, employees should not connect to open open networks on their company devices, this reduces the chance of an attacker gaining access.
- Social Engineering, train staff so that they can detect and avoid social engineers.
- Lost devices, as the company travels a lot, it might mean devices get left behind and somebody with the right tools could access these devices.

Knowledge and understanding

The learner demonstrates a good level of subject knowledge. Their response covers:

- Encryption
- Strong passwords
- Danger of open networks
- Social engineering
- Lost devices

Context

There is some link to the scenario – the points made are relevant to the context but the learners does not always explore the points made in relation to the scenario

Discussion

There is some attempt to explain points made but there is only limited discussion and development these points in relation to the given scenario.

A holistic view is taken when levelling extended reponses. As such, although there is limited discussion/exploration, the level of subject knowledge demonstrated means that Mark band 2 is the 'best fit' for this response.

5 marks awarded

Example response 2:

(10)
When the Sales and management Staff travel they use their Connected network to connect to the Company's main Server or some of the Staff's devices.

The main implication is at the Security of the Server, or it has to protect Classified and Confidential information and is being accessed from all around the globe on some networks which may be unsafe, unprotected or monitored. An unsafe network brings all kinds of Security issues for the Sales and management Staff. Things like Confidential information or Security keys can be viewed by just about anyone when they are out communicating on these networks. Because of this, the company needs to put in place a system that verifies the IP address of the person requesting that information so that she knows who is accessing what and will see if anyone else is viewing their data.

Another issue is that the constantly travelling employees in sales and management are carrying valuable items which contain even more valuable information. These items can be stolen and with each stolen item the company loses a fortune because they know how to reproduce or change the information that was lost along with the product which was stolen. For this problem, Griffin needs to centralise all office data onto the company server, as then anyone in the server can make copies without losing the only copy of valuable information.

Knowledge and understanding

The learner demonstrates a good level of subject knowledge. Their response identifies a number of relevant knowledge areas.

Context

There is some link to the scenario:

- Need to protect the information
- Potentially providing access to confidential information
- Information held on the employee's devices

Discussion

the points made are expanded and discussed, the learners covers:

'accessing the information all around the globe'

'...need to put in place a system that will verify Mac address'

'..knows who is accessing what..'

'...items can be stolen and with each stolen item the company loses a fortune...replace or change the information'

'...centralise data'

The response is placed in mark band 3

10 marks awarded

Question 4b

Again, there was much improvement in the quality of responses when compared to similar style questions (12 mark 'evaluate' questions) in 1706 and 1801. Learners showed improvement in their ability to present their understanding and start to make reasoned justifications. The use, and presence of, a conclusion was improved but there is still some work to do on this. To further develop performance on this style of question centres should work with learners to:

1. Make more 'evaluative' comments. Often learners' responses here do not vary in style from 'Analyse' or 'Discuss'. When answering an evaluation question learners should not just try to consider the positive and/or negative aspects of a given technology but consider the impact/implications in particular reference to the given scenario. They should 'evaluate' the appropriateness in relation to the individuals, tasks etc. in the given scenario.
2. Conclusions should be used to draw a learner's thoughts together. The conclusion should reach a judgment that summarises their opinion and justifies this using aspects of their response to support this judgment.

Example response 1:

Evaluate how his decision will impact on the company's backup and data recovery procedures.

(12)

> local storage will be more manual, so physical staff will need to be there and trained for backups and recovery.

↳ Since it is not completely automatic, it will be slower to restore.

↳ It can also be limited on physical space, as ~~external~~ physical sources will be used.

This physical backup will need physical storage and have multiple versions.

↳ This makes it vulnerable to natural disasters and physical disasters.

> However, since it is local, you do not need to wait for a backup to arrive.

↳ With cloud-based services, recovery speed is dependant on connection speed and bandwidth.

With a physical backup if someone trained is on site ~~at the site~~ then they can instantly start recovering.

↳ Can also be cheaper due to not needing large bandwidths and ~~on large~~ expensive.

^{subscriptions}
~~subscriptions~~ that would overall be more expensive than training staff.

↳ Having it local also means it's available if the company's internet is down or the cloud-based ~~company~~ service goes down.

Overall cloud based is more convenient, simple and quick but local is more available, cheaper and usually faster.

Technical language and arguments

There is some use of technical language although there are occasionally some errors in technical understanding e.g. local storage is not automatic.

Relevance to Context

The points made show partial relevance to the scenario in that all the points made are appropriate for the given context of local back up vs cloud. However the points made are quite generic and could apply to any situation. There is little attempt to make it appropriate to Gwyn's business.

Evaluation

There are some evaluative comments in relation to the identified points such as:

- Can be limited on physical space
- Recovery speed of cloud is based dependent on connection speed
- Loss of internet connection impacts on use of cloud-based service

Conclusion

A generic summary is provided; no real conclusion is reached.

When making a judgement the response is considered as a whole and a judgment made on 'best fit' – using this approach the response has done enough to be placed in to mark band 2.

5 marks awarded

Evaluate how his decision will impact on the company's backup and data recovery procedures.

(12)

Choosing local storage or cloud storage for backup device is a really often argued topic and both options have its own benefits. I shall analyse the benefits and drawbacks on using a local storage in this case.

To recover the data, after there is a fail in disks or system, the RTO is a key factor ^{that worth to} consider. In hardware level, the theoretical speed could be up to 250MB/s or more, depends on what hardware that business chosen, this is an advantage of choosing local storage rather than cloud service because usually the internet speed can't match the hardware transfer speed. For a company that works on researching, the experiments have to be stopped if the previous data is gone during the recovery time.

~~However~~ Another advantage is by using local storage, there are less to worry about a data breach. As long as the physical ~~security~~ security is well prepared and hardware is safe, it's nearly impossible for a data leak to happen. Compare to put a company information on cloud service, which already had many negative news already (cloud data breach etc.). Keep it on a local storage is a ~~safer~~ safer option.

However, on the money wise, the local storage will cost more than cloud service. A 1TB SSD can be priced between £100-300. In this case, Gwynn is backing all the data in the local storage, the price of purchase these is going to be high. More to consider, the company is going to need a place to store the backup

etc.).

Another important drawback on using a local storage is if one of the backup device failed the whole backup chain can be no longer used. Different to local backup, the data in cloud service are usually copied into a few different servers, which is fault tolerant. If one server is down the data is still stored in an alternative server safely and ready to use. This is a vital problem for Gwynn to think about, because if he decide to have a second backup, the price on hardware going to be doubled.

In my opinion, local storage isn't the best decision on backing up the whole company's data, especially the importance of those data can be ~~valued~~ really valuable. I reckon he should select the data which are basic and not important, to back them up on cloud service, and purchase the ~~hardware~~ ^{backup storage} for those confidential and vital data.

Technical language and arguments

There is very good use of technical vocabulary here which is used to support arguments throughout the response. There are some minor inconsistencies in knowledge such as the cost of local back up compared to cloud-based backup. A common misconception is that cloud-based backup is cheaper than local. This is not always the case especially for industry level services. However, the learner has provided further development of their point.

Relevance to Context

There is a detailed exploration of local vs cloud-based backup and while all points are relevant in his context there is little attempt to relate it to the business/scenario provided

Evaluation

There are some excellent evaluative points made and a detailed exploration of positive and negative points of both local and cloud-based backup. The points made are expanded and supported by examples which, in the most part, are technically correct.

Conclusion

A final conclusion is presented, as well as a number of smaller conclusions which are reached throughout.

A holistic view should be taken, and although there is little reference to the business/scenario, the technical exploration and accuracy of the response is enough to place it in the top mark band.

9 marks awarded

Summary

Overall learners' performance has improved in this series both in terms of level of knowledge and examination preparation.

Based on performance in this examination series, learners are offered the following advice to help continue this improvement:

- Continue to develop understanding of key terminology used in the unit so that you are able to access the context of the question.
- Ensure that when providing answers/information your response is applied to the given context.
- Continue to develop understating of the requirements of the different command verbs used in the unit so that you can structure your response appropriately and maximise the marks you achieve.
- Further support on the requirements of command verbs can be found in the specification and in training materials published on the Pearson website.
- For shorter response questions (5 marks or less), make note of the number of marks available this will help you identify the number of points you need to make. For example, a 4 mark 'Explain one...' style question would need to make at least four linked points, three of which expand/exemplify understating of a single point.
- When producing extended writing responses (6 marks or more) ensure you consider a range of points, each of which should be expanded or supported with examples and applied to the given context.
- Centres are encouraged to consult the 'Technology Update' which will be published on the BTEC website ready for the start of the academic year beginning September 2018. This document defines the scope of the technologies that may be used in examinations such as defining the range of 'common protocols', 'Input devices' 'utility software' etc. and should be used in conjunction with the specification when planning and delivering content.

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