GCST

1.3 COMPUTER NETWORKS, CONNECTIONS AND PROTOCOLS

TOPIC WISE EXAM QUESTIONS

ANSWERS

GCSE OCR

GCST

2023

<table>
<tr><td>2</td><td>a</td><td>i</td><td>1 mark for each protocol
<table><tr><th>Task</th><th>Protocol</th></tr><tr><td>Requesting a webpage from a web server</td><td>HTTP // HTTPS</td></tr><tr><td>Entering a username and password to access their bank account</td><td>HTTPS</td></tr><tr><td>Downloading a text document from a web server</td><td>FTP // HTTP // HTTPS</td></tr><tr><td>Checking for new emails in their inbox</td><td>IMAP // POP</td></tr></table></td><td>4</td><td>Mark first answer in each box.

Allow full name to be written e.g. file transfer (protocol).

Accept POP3 or any other version</td></tr>
<tr><td>2</td><td>a</td><td>ii</td><td>1 mark each to max 2:
• Each layer is independent // layers are not reliant on other layers
• One layer can be changed without affecting the others // a layer can function without needing/changing/impacting any other layer // self-contained
• Separates tasks so they can be developed independently
• A developer can focus on only one layer // developer can specialise
• Allows for standards for individual tasks/layers to be developed // for compatibility
• Manufacturers can develop hardware to fit into one particular layer
• To group together similar protocols</td><td>2</td><td>Max 1 in each answer space</td></tr>
<tr><td>2</td><td>b</td><td>i</td><td>1 mark from:
• Uses dedicated/own/internal hardware // no external/third party hardware/infrastructure // computers use MAC addresses to communicate within the LAN</td><td>1</td><td></td></tr>
<tr><td>2</td><td>b</td><td>ii</td><td>1 mark each to max 4:
e.g.
• Allows more devices to connect …
• …for example televisions, mobile phones
• Easy to connect (devices) // Easier to setup (wireless connections) // By example e.g. easier for guests to connect their devices
• Home is likely small area
• … so short distance wireless is sufficient
• Devices can move around // can use devices in different areas // can connect from anywhere in the house // can use where wires don't reach // can access from a larger area (than wired)
• … by example e.g. student is using a laptop so does not need to be tied to one place // by example e.g. they don't have to disconnect before moving // e.g. they can stay connected whilst moving
• Cheaper to purchase/install/setup for new devices // no cost for (new/replacement) wires/hardware
• …because no additional/fewer wires are needed
• Fewer trip hazards from trailing wires // reduce risk of damage to cables // fewer cables to damage
• More compatible // some devices only have wireless connections</td><td>4</td><td>Easier/cheaper on their own is NE</td></tr>
<tr><td>2</td><td>b</td><td>iii</td><td>1 mark each to max 2:
e.g.
• Prone to interference // by example
• Limited range of signal
• Slower rate of transmission // less bandwidth // reduced network performance// increased latency // BOD slower connection // more users reduces rate of transmission / bandwidth /performance etc.
• Increased risk of security concerns // by example e.g. A hacker could connect to the wireless connection
• Less stable connection
• Higher chance of collisions // Higher error rate</td><td>2</td><td>MP3 needs to say what is slower / decreased e.g. It's slower, is NE

Mark first drawback in each answer space.

Less reliable is TV on its own for MP 5</td></tr>
</table>

5	c	i	1 mark for identification: • Artist's computer // computer uploading the images // BOD The artist 1 mark each for justification to max 2: e.g. • Sends the files/data for storage/to the **host**/web **server** // the files are stored on the web **server** • Performs the user's actions … • .. and sends the results to the web **server** • Sends a **request** to the web **server**… • … to **store**/**upload** its files • It does not store data for others to access • Confirmation of upload/error is received (from server) for display	3	Incorrect computer, do not award justification. Be careful the justification is talking about the upload of images to the web server, not the download. Accept host for web server. If 'user's computer' is given for identification, this is NE – read on for justification. If 'user viewing the website' or similar is given this is incorrect.
5	c	ii	1 mark for identification: • Web server 1 mark each for justification to max 2: e.g. • The images/data are stored on / uploaded to / sent to / hosted on the web server • Web server receives a request (from the artist's computer to upload the images) • Web server executes/responds to the request // Web server is doing the processing/handling the (request to) upload • Web server returns confirmation/error of the processing/upload	3	If computer is incomplete or inaccurate e.g. server/website instead of web server. Do not award computer, but award justification. Allow FT in justification if the same inaccurate term is used, for example 'website' is given as computer (NE), but justification is: 'images are sent to the website' (FT for website instead of web server). Incorrect computer, do not award justification.

2022

3	(a)	(i)	1 mark each to max 3
			• Slower transmission of data // less data can be transmitted **at the same time** // the transmission rate decreases // time to send/receive increases
			• (More devices mean) more data is being transmitted (at a time)
			• **Bandwidth** will be split between all the devices (sending data) // each device uses some of the bandwidth
			• …this means that there is less **bandwidth for each device**
			• Devices have to wait **longer** before they can transmit // **increased** latency
			• If the maximum bandwidth is used then devices cannot transmit
			• Central device/switch/router has to handle more requests and may run slower
			• **More** collisions (likely) // **higher** error rate …
			• …more data has to be retransmitted
			• Loss of **more** packets …
			• …more data has to be retransmitted
				3	The question is why.
					
					More devices do not decrease the bandwidth of the network. They decrease the amount allocated/available to each device.
					
					Do not accept higher contention ratio. This term means the number of users on a connection, and is therefore repeating the question.

3	(a)	(ii)	1 mark e.g. • Bandwidth • Interference // by example • Wired // wireless // transmission medium • Type/amount of data being transmitted • Central hardware performance // by example e.g. router/switch • Error rate • Distance between nodes • Topology // physical layout • Wireless repeaters	1	Do not award the number of users. Question is performance of network as a whole, not an individual device.
3	(b)		1 mark for each completed term A website is hosted on a **web server**. The computers that access the websites are called **clients**. The user enters a **Uniform Resource Locator** into a web browser. The web browser sends a request to the **Domain Name Server** for the matching IP (Internet Protocol) address. If found the IP address is returned. A request is then sent to the IP address for the website. An IPv4 address is made of 4 groups of digits. Each group can be between **0** and **255**. The groups of digits are separated by a **full stop**	7	Words are given so must match, however accept domain name system for domain name server, URL, DNS. Accept 0 and 255 in either order Do not allow server for web server because file server is another option and it will be ambiguous.
3	(c)		1 mark each to max 2 • Ethernet is used by (mostly) all manufacturers // Ethernet is used in many devices • To allow **compatibility** with other devices • Ethernet has a high bandwidth • Ethernet has inbuilt security • Ethernet is a proven/reliable connection • Ethernet is low cost for **purchase/installation/maintenance** (compared to other wired connections)	2	Accept description of a standard, and/or benefits of Ethernet (i.e. why has this become a standard).
3	(d)		1 mark each to max 3 e.g. • Receive packets • Forward/sending/transmitting packets • Maintain a routing table // by description • Identify the most efficient path to the destination / correct IP / correct location • Assign IP addresses to nodes/devices • Converts packets from one protocol to another.	3	Question is tasks carried out by a router, not the use of a router in a network.

3	(e)		1 mark each to max 2 e.g. • Data cannot be **understood** if intercepted // The data will be meaningless • So that only authorised users can access the **confidential** material // protect **confidential/personal/user/library** data • To follow legislation/DPA	2	Question is transmission not storage Candidates might answer in terms of why encryption is good, or why the current system is not good. If the candidate has not clearly said which they are talking about (e.g. the current system ..... or encryption means ....) then the reverse of each mark point can be given.
3	(f)		1 mark each e.g. Send email: **SMTP** // simple mail transfer protocol Access website securely: **HTTPS** // hypertext transfer protocol secure	2	Mark first answer in each line. If abbreviation is inaccurate, check if written out (and vice-versa).

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SAMPLE

7	a		• A set of rules for communication	1 (AO1 1a)	1 mark only to be awarded for a correct definition.
7	b	i	• A division of network functionality	1 (AO1 1a)	Candidate's responses may differ from the given answer but must represent conceptually the same thing. e.g. "a layer is where jobs/processes are split up" would receive the mark.
7	b	ii	• It is self-contained (1)… • …it allows different developers to concentrate on one aspect of the network (1) • A layer can be taken out and edited without affecting other layers (1)… • …it promotes interoperability between vendors and systems (1)	2 (AO1 1a)	1 mark to be awarded for the correct identification and 1 for a valid description up to a maximum of 2 marks.
7	c		• It is easy to add a new node or device	2	1 mark to be awarded for each correct

Question			Answer	Marks	Guidance
			• Fewer data collisions can occur • If a node or device fails it does not affect the rest of the network • A signal does not need to be transmitted to all computers in the network	(AO2 1b)	reason to a maximum of 2 marks. Any valid comparisons to other topologies can be awarded marks.

10	a		• The computers are geographically remote/ distanced/ more than a mile apart • Communication medium is not owned by the law firm	1 (AO1 1a)	1 mark only to be awarded for a correct definition. Accept responses such as the company doesn't own the infrastructure. Do not accept 'Network over a wide area' or similar arrangement of wording.
10	b		Two advantages from: • It would offer additional storage (1) so the company can take on more cases (1) • It is a very efficient method of backing up data (1) and so saves the firm time and money (1) • It would allow their employees to work from anywhere (1) so they can take cases from other countries (1) • It is environmentally friendly (1) • Easy to increase availability of storage (1) • You don't need specialist network skills (1) so the firm don't need to employ more staff (1) • The third party provides security (1) so the company saves money on staff and software/hardware (1) • The third party provides backup (1) so the company saves money on staff and software/hardware (1) • Cheaper as don't need own infrastructure (1) Each advantage needs to be contextualised to gain 2 marks.	4 (AO2 1b)	1 mark to be awarded for each correct advantage, with a mark for a discussion of the advantage related to the law firm. To a maximum of 2 advantages. The total number of marks to be awarded for this task is 4 marks. Responses which are not contextualised will gain a maximum of 1 mark per advantage (to a maximum of 2 advantages).

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2021

<table>
<tr><td>7</td><td>a</td><td></td><td>1 mark per bullet
either:
• LAN is small geographical area
• WAN is over a large geographical area
or
• LAN (usually) has own/dedicated infrastructure
• WAN uses external/shared infrastructure // by example (e.g. internet)</td><td>2</td><td>LAN is one building is NE - this does not make it a LAN.
WAN is multiple buildings - NE, a LAN can be multiple buildings.</td></tr>
<tr><td>7</td><td>b</td><td></td><td>1 mark per bullet
• Central switch labelled…
• …all devices connected to central switch only (BOD not labelled switch)</td><td>2</td><td>Ignore anything superfluous</td></tr>
<tr><td>7</td><td>c</td><td>i</td><td>1 mark per section

Wi-fi frequency
• 5GHz frequency can carry more data per second than a 2.4 GHz frequency // 5GHz frequency has can transfer data faster
• 5GHz frequency has a shorter range so access may be limited

Interference
• Causes errors which means signals need retransmitting which makes more traffic
• Objects may limit range // objects can block the signal

Number of current users
• more traffic means the same bandwidth is split // each user has less bandwidth // more collisions // more users = more traffic/data sent

Type of network traffic
• transmitting videos/large files will take up more bandwidth than text files</td><td>4</td><td>Answer must be more than repeating the question, question is how</td></tr>
<tr><td>7</td><td>c</td><td>ii</td><td>1 mark e.g.
• If using wireless or wired
• Error rate
• Bandwidth</td><td>1</td><td>Accept others e.g.
Topology
Distance between nodes</td></tr>
<tr><td>7</td><td>e</td><td></td><td>1 mark for each row

<table><tr><th>Protocol</th><th>Email</th><th>Transferring files</th><th>Accessing websites</th></tr><tr><td>POP</td><td>✓</td><td></td><td></td></tr><tr><td>FTP</td><td></td><td>✓</td><td></td></tr><tr><td>SMTP</td><td>✓</td><td></td><td></td></tr><tr><td>HTTPS</td><td></td><td></td><td>✓</td></tr></table></td><td>4</td><td></td></tr>
</table>

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2020

2	a		1 mark for LAN 1 mark per bullet for justification to max 2 • Small geographic area • They will own the hardware // dedicated hardware // do not need to use outside hardware // controlled by Hope	3	
2	b		Modem // router	1	Mark first given
2	c	i	1 mark per bullet to max 2 • Wifi signal/bandwidth will be weaker/less because // 5GHz is only short range • …bedroom further away from WAP than kitchen • ….to get to bedroom has to go through floor/walls etc.	2	
2	c	ii	1 mark per way e.g. • Change to 2.4Ghz • Install a signal booster // another WAP // mesh wifi • Move WAP closer to the bedroom • Remove obstructions // by example • Reduce number of devices connected • Change channel to one not being used in locality	2	Reduce interference is NE - they need to say how this can be achieved
2	d		1 mark per bullet to max 3 e.g. • **No** server (required for client-server) • Computers are **directly** connected to each other • Computers are independent / equal • Decentralised • Computers will have software installed/updated individually // no central installation/updates • Computers will need own security // no central security • Computers will have their own files // no central file storage • Less initial cost / maintenance • Specialist required to setup client-server • Easier to add new devices • Lesser need for file sharing • If any device fails/is removed the remainder can continue	3	Be careful MP1 is not just saying it does not need to connect to the server - the MP is that there is no server. Accept reasonable points in reverse.

2	e		1 mark per benefit to max 4, 1 mark per drawback to max 4 e.g. Benefit • Can access files from any device • … e.g. they can instantly access the data from laptop and mobile phone • Can access files from anywhere // Can access from anywhere with access to the Internet • Can pay for auto-backups // don't have to backup manually • Security **may be higher** than at home • May be free of cost • … you do not need to buy more hardware • **Easier/quicker** to share files with others • More available storage space on her device • Easier to increase storage capacity (not memory) • Can be used a backup in case of data loss Drawback • Cannot access files if no Internet access • Not in control of security (bod less secure) • …data may be hacked/stolen • May cost monthly fee • … which could be more long term than buying hardware • May not be a backup // if cloud storage fails you have lost your data • Data must be transferred to computer to read • …. may be intercepted • Connection may be slow • … therefore takes time to upload/download • May be issues as to who owns the data • If stop paying / leave subscription other storage for files needs to be found • If login details are forgotten/lost may not have access to files	6	Mark breadth and depth of knowledge. 1 mark for each valid point/expansion. Allow specific examples as expansions for each point. Mark benefits to max 4 first, then look for max 4 from drawbacks

6	a		1 mark per bullet • All devices connected to at least one other component • All devices connected to all devices (individually or through another and not only through the printer)	2	
6	b		1 mark for each row. **Statement** / **True** / **False** Ethernet is a protocol — ✓ Ethernet uses wireless data transmission — ✓ Ethernet can transmit data up to 100Gbits per second — ✓ Ethernet is within the TCP/IP stack — ✓	4	2 ticks in 1 row = 0 mark
6	c	i	1 mark per bullet to max 3 • URL sent to DNS // request sent to DNS for/with URL • DNS **looks up/finds** to IP in its database • DNS returns IP • IF not found, DNS sends to higher level DNS	3	Request sent to DNS is NE without saying the URL is sent. Only penalise missing or incorrect term for DNS once then FT
6	c	ii	1 mark per bullet to max 3 e.g. • **Destination** IP/address • **Sender** IP/address • Packet Number • Packet size • Number of packets • Error detection method/value	3	Do not award MAC address

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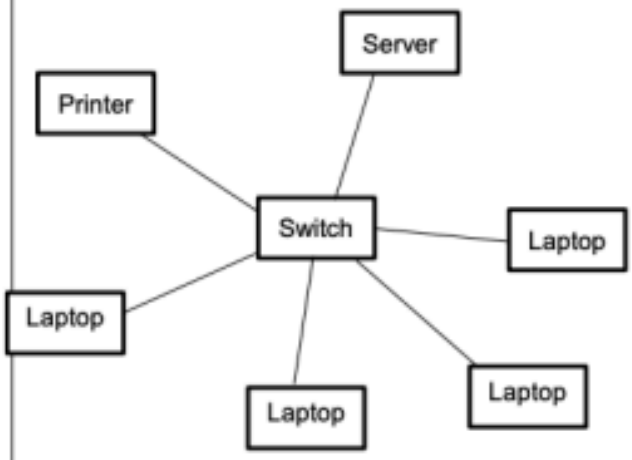
2019

4	a	i	1 mark per bullet • Four laptops/computers, a server and printer present and clearly identifiable (positions do not matter) • Switch as a device clearly identifiable… • …all devices directly connected to the switch and only the switch (FT from MP2) e.g.  	3 AO2 1a (3)	• Printer may be connected to the server or to the switch. • Accept PC for laptop • If the candidates has given server/switch or switch/server in the centre, mark the first one in their list. If they give server/switch, they do not get MP2, but allow access to MP3.
4	a	ii	1 mark per bullet to max • To connect the devices together • Receives data/packets/traffic • Direct/send data/packets/traffic **only** to its **destination** • Creates/generates a list of devices connected to it as it receives signals • Uses MAC addresses of devices connected to it	2 AO1 1a (1) AO2 1a (1)	• Do not award information, penalise once. • Do not award packet switching out of context. • Accept MP3 by example
4	b	i	1 mark per bullet to max 2 • Wireless transmission is slower **than cabled** • More devices/users could be connected e.g. mobile phones // increase in traffic • …reducing bandwidth available for each user // insufficient bandwidth for users/demand • Wireless can be limited by interference • …such as walls that disrupt the signal // from other wireless networks/users	2 AO1 1b (1) AO2 1b (1)	• Bod - wireless has less bandwidth
4	b	ii	1 mark per factor e.g. • Bandwidth available • Number of users (using the network at the same time) • (Number of) data collisions • Interference // by example e.g. walls • Distance data has to travel // signal strength • Amount of data being transferred • Applications being used • Server/CPU performance • Using a hub instead of a switch	2 AO1 1a (2)	• Do not accept wireless/wired connections • Bod answers such as cable length

5	a		1 mark per bullet to max 5 • The website is hosted on a webserver • The website/webserver has an IP address • (Browser) sends URL to DNS • URL has a linked IP • DNS finds IP • If DNS cannot find the IP it passes request to higher DNS • …if not found return error • IP address sent back to the browser/computer • (Browser) sends request to IP/webserver • Webserver processes request for the website/webpage • …webserver sends the webpage/file/data to the user	5 AO1 1b (3) AO2 1b (2)	• Do not award 'the IP goes to the webserver' • Allow domain name in place of URL • 'DNS finds the IP of the URL it is given' gets 2 marks, 1 for URL has linked IP and 1 for DNS finds the IP • MP 11 do not accept webserver *loads* the webpage on the user's computer
5	b	i	1 mark per bullet to max 2 • A layer can be removed/changed etc. • …without affecting any other layers • Each layer has its own purpose // separates the purposes // self-contained • ...so it does not need to consider what the other layers do • …so it can be programming individually • Individual protocols are each smaller/simpler to manage • Different layers can interface with different hardware	2 AO1 1a (1) AO1 1b (1)	• Do not award descriptions of what the layers do - the question asks why layers are used. • Do not award vague answers e.g. layers make it easier to work with
5	b	ii	1 mark for each protocol. **Task** / **Protocol** Sending an email from one mail server to another — SMTP // Simple Mail Transfer Protocol Transmitting a file from a client to a server — FTP // File Transfer Protocol Viewing a website using a web browser — HTTP // Hypertext Transfer Protocol HTTPS // Hypertext Transfer Protocol Secure Downloading an email to your computer — IMAP // Internet Message Access Protocol POP(3) // Post Office Protocol	4 AO2 1a (4)	• Mark first answer in each box

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2018

2	(a)		1 mark for LAN 1 mark per bullet for justification to max 2 • Small distance/geographical area by example e.g. same building/house • Connected by own hardware/infrastructure // not connecting through Internet // no hired/third-party infrastructure // dedicated connection	3 AO2 1a (2) AO2 1b (1)	Do not allow – in a local area, local needs to be quantified in some way. No marks for WAN.
2	(b)		1 mark per row **Description** / **Ethernet** / **Wifi** A wired connection: ✓ More likely to be affected by interference: ✓ Data can be transmitted at a faster speed: ✓ Wireless transmission: ✓ Shorter transmission range before data is lost: ✓	5 AO1 1a (5)	0 mark for row with >1 tick
2	(c)	i	1 mark per bullet to max 2 • Directs packets/data to destination // directs packets/data in a network • Receives packets/data from the network/Internet • Forwards packets/data to other computers on the network/Internet • Connects (different) networks together // e.g. joins home network to Internet • Has (public) IP address for LAN • Designates (private) IP addresses to network nodes	2 AO1 1a (1) AO1 1b (1)	Controls flow of data as BOD for bullet 1. Bullet 1 needs to refer to the router directing the destination e.g. it is making a decision/choice on where to send it. Bullet 4 - it has to be referring to the connection between the Internet and home network, or forwarding of data between them. Just referring to accessing Internet is not enough. Do not allow information for data/packets
2	(c)	ii	1 mark per item to max 2 e.g. • Network Interface card / NIC • Wireless access point / WAP • Wireless network interface card / WNIC / wi-fi card • Bridge • Switch • Hub • Repeater // wireless extender/booster • Server	2 AO1 1a (2)	Accept modem, power line adapter, Ethernet **jack** Must be an item of network hardware
2	(d)	i	Domain Name Server // DNS.	1 AO1 1a (1)	Allow Server/service/system

5	(a)		• An agreement / set of rules / standard • …for how computers should communicate // how data is sent/received/transmitted on a network • Example of what could be agreed in the protocol (e.g. speed / error checking / etc.)	2 AO2 1b (2)	Do not award set of instructions for bullet 1
5	(b)	(i)	1 mark for protocol, 1 mark for description • FTP / file transfer protocol • Uses a client-server model // sends from client to server // sends from server to client	2 AO2 1b (2)	If protocol wrong, no mark for description
5	(b)	(ii)	1 mark for protocol, 1 mark for description e.g. • HTTPS / hyper text transfer protocol secure • **Encrypts** the connection/data // Uses SSL/secure socket layer	2 AO2 1b (2)	If protocol wrong, no mark for description
5	(c)		1 mark for IMAP, 1 mark for SMTP. IMAP • Retrieves/accesses/downloads (a copy of an) e-mail • Allows synchronisation/management of account SMTP: • Sends/forwards/transmits e-mail	2 AO1 1b (2)	Marks are for IMAP retrieving, SMTP sending. At this stage do not worry about where they are going. Question does not refer to email, so response must in some way refer to email/message. Sends/receives data is not enough.

2017

6	b	i	Modem/Router	1	

6	b	ii	max 2 marks per hardware device e.g. • NIC… • …to connect Ethernet cable to computer • Router… • …to receive and transmit data within the network/to send data around a network/to join networks together/to connect to the Internet • Bridge… • …connect networks together • Switch… • …to connect multiple devices together / directs traffic to its destination. • Hub… • …to connect multiple devices together. • Server… • …to store the data/manage the network/store backups • Wireless Access Point/WAP… • …to allow for wireless transmission of data • Cables… • …to connect devices together • Modem… • …to connect computers via telephone lines // to covert digital data to analogue / to convert analogue data to digital.	4	Accept any hardware device that can be used to create/set up/produce a network. Device must be different than answer given in 6bi Accept repeater / range extender / powerline adaptor etc.

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2016

Question			Answer/Indicative Content	Marks	Guidance
7	a		• WAN is over a large geographical area/needs to transmit over a large distance // a LAN is over a small geographical area. • WAN uses external hardware/infrastructure/cables/network // LAN has its own infrastructure/cables/network/hardware due to distance/practicalities	2	NB Examples of infrastructure/hardware are allowed for WAN e.g. satellite, phone lines, Internet Allow LAN as Ethernet for second bullet NOT wide area for WAN
7	b		2 marks per benefit E.g. • All files can be stored centrally • …so workers can access files from any computer • …all computers can update the central database/file • …Peer-to-peer files might be stored on their own computers/spread across many computers • Backups are central • …all data is backed up each time • …individual computers do not need to backup their own data • …Peer-to-peer may need to perform their own backups. • Monitor clients • …to ensure they are working correctly • Upgrade software centrally • …so you do not have to install on each computer individually • Central security (antivirus/firewall) • …do not need to install protection on all computers • …Peer-to-peer individual security may need to be installed on individual computers	4	Do not allow: -easy to share data -"more secure"
7	c		• WWW is the web pages (that are stored on servers) • Internet is the infrastructure // collection of networks	2	

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2015

9	a		e.g. • record log on / log off times • remote access / view users' screens • audit printing • keylogging • monitor internet usage / downloads • monitoring emails / files sent / copied • inspect files in users' areas	2	*Accept answers which show how the LAN is used to monitor the work of employees rather than advantages of using a LAN in general*
	b		• IP addresses can be changed / are allocated as needed • MAC addresses can't be changed / every device has a fixed MC address • IP(v4) addresses are 4 bytes long • MAC addresses are 6 bytes long • IP(v4) addresses are normally written in denary • MAC addresses are normally written in Hex • IP addresses are configured by software • MAC addresses are configured in hardware • IP addresses are used for routing across a WAN/internet • MAC addresses are only used within the LAN [marks in pairs, maximum 2 pairs]	4	For bullets 3 and 4, accept answers where candidates refer to IPv6 being 16 bytes(128 bits). Award one mark if candidates state that IP addresses and MAC addresses are of different size.

2014

1	a		• Computers are connected to each other • Restricted to a small geographical area/site/other suitable example • Dedicated wired or WiFi connections	2	For the first bullet point candidates should be describing a network – just the idea that computers are connected to "something" is not enough. For the third bullet point, just "connected by cables" is not enough as there is no indication these are dedicated cables for the network.
	b		• One central hub/switch/router/server/connection point • All computers/devices connected to this central point	2	Accept diagram which shows the points in the mark scheme. Note that if the diagram is not annotated or described one mark can still be given for the second bullet point.
	c		• bus • ring	2	Accept other standard names of topologies that are not on the specification: - line, linear (only as an alternative for bus) - tree/hierarchical, mesh - hybrid - loop(only as an alternative to ring Do not accept serial or circle

If you found this useful, drop a follow to help me out!

THANK YOU!

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