

THE BCS PROFESSIONAL EXAMINATION

The Professional Graduate Diploma

April 2000

EXAMINERS' REPORT

Network Information Systems

Question 1

Answer Pointers

Broadly, the degradation in performance is likely to be due to one of the following:

- shortage of capacity in the network;
- shortage of capacity in the server;
- errors or malfunctioning devices;
- misconfiguration;
- large oscillations in the load.

Candidates were expected to say how they would systematically go about identifying which of these was the cause of the problem. Having done that, they needed to describe how they would home in on the specific problem before offering a solution.

Many candidates assumed that the problem was due to the first or second of these and failed to consider the other three. In practice, the last three are much more likely to be the cause of the problem - and are cheaper to fix! (The question is based on a real situation in which the problem proved to be due to misconfiguration.)

Candidates were asked to 'discuss the steps you might take to identify the reason...'; some of them simply guessed at a reason (always shortage of capacity in one form or another) and said how they would fix it. Such answers earned few marks.

Question 1

Answer Pointers

There were two attempts at this question, both weak. Neither candidate seemed to be familiar with CD-ROM databases. They confused a CD-ROM database with a database management system distributed on CD-ROM and with database services that are provided on a central machine and charged for by the number of accesses.

One of the candidates raised the question of data protection. This is not an issue here. Data protection legislation protects only data about natural persons not legal persons. In any case, information about the business will probably have been provided by the businesses themselves for the express purpose of having it included on the CD; indeed, they may well have paid for the privilege.

The main issues that candidates were expected to address are:

Liability

The vendor will probably wish to limit his liability to the price charged for the CD-ROM. If the purchaser then shows that the disc is not of merchantable quality, all he can recover is the purchase price. 'Not of merchantable quality' would include not being readable and having lots of errors in the data.

There is a slight danger that such a clause would breach the Unfair Contract Terms Act, because, although there are quite a lot of CD-ROMS that cover a similar area, all suppliers probably exclude liability in this way. In practice, it is probably not a serious danger because it is unlikely that a claim for substantial damages would be tenable – the damages would almost certainly be too indirect.

IPRs and copying

The sale of the CD-ROM does not affect the ownership of the IPRs in the material recorded on it. In the case of a CD-ROM it would be normal to prohibit all copying, since security back-ups are unnecessary.

Networking

The licence must make it clear whether the purchaser is allowed to mount the CD-ROM on a single server from which it can be accessed by multiple clients. If this is forbidden, it may put some customers off buying it, because no single person can justify the cost. If networking is allowed, you may lose potential revenue. A possible solution is to sell two versions, one with a licence that allows networking, and one that doesn't; obviously you charge more for the former.

Update procedures

The licence agreement will need to spell out the rights of the licensee to receive updates, what action he must take in order to receive them, and what charges are involved.

Many customers may not want monthly updates but may prefer them quarterly or annually. A typical arrangement might be that regular monthly or quarterly must be agreed and paid for one year in advance, starting from the purchase date. The customer may purchase the latest version at, say 20% of the original cost, at any time within 12 months of purchasing the original or another update. Thereafter the full cost is payable.

Selling-on

Is the licence transferable, that is, purchaser allowed to sell the CD-ROM to someone else?

Question 3

Answer Pointers

The question leaves many things open and (deliberately) allows the possibility of a wide range of answers. A good answer would contain the following elements:

- a description of the current hypothetical situation (e.g. SNA and IBM token ring in the US, TCP/IP and Ethernet in the UK);
- assessment of the weaknesses and loss of opportunities in the present situation;
- proposal for phased replacement;

- assessment of the benefits and risks of the proposed replacement.

Many candidates were clearly knowledgeable about current developments in the technology and wrote about them at some length. They did not, however, know which of them were currently available as reliable products nor were they able to relate their knowledge to the scenario in the question.

The attempts at a SWOT analysis were weak. Most of the proposals were vulnerable either to the threat that the technology proposed will become rapidly obsolete or to the threat that it will never work satisfactorily. Candidates, however, only identified minor operational threats.

Question 4

Answer Pointers

The question is deliberately vague about what the Minister of Justice has in mind but transmission of legal documents is the most obvious application. A good answer would first have explained clearly the candidate's view of what was required, for example, that it should be possible for a legal document requiring the signature of several parties to be circulated electronically, with each party adding a signature in a way that would satisfy the other parties that the signature was authentic. It would then have explained, in terms simple enough for a non-specialist to understand, what mechanisms are available for doing this, how easy to use they are, and how effective they are. Particularly perceptive answers might have pointed out a possible need for changes to the rules of evidence and other procedural matters.

The commonest weaknesses were:

- describing e-commerce at great length;
- describing the technical details of authentication procedures at length;
- failing to consider how effective or easy to use these procedures might be.

Question 5

Answer Pointers

It was clear that some of the candidates did not understand what the question was about; some answers dealt with fire walls, passwords, and so on, while others dealt with security and integrity of databases. Some candidates seemed to assume that 'network' implied 'client/server'.

The phrase 'critically evaluate' does not mean 'describe loosely' but most candidates thought it did.

Even the best candidates did not seem to be aware of the range of tools available and often wrote 'wouldn't it be nice if we had a tool that did X', apparently unaware that several such tools are available.

The following indicates the sort of answer expected.

- (a) The tools available to the network administrator can be grouped by function into the following classes:
 1. tools that maintain an essentially static picture of the network;

2. monitoring tools, which keep track of the performance of the network. These may operate at the application level or at the network level (or, more precisely, OSI levels 5 to 7 or 1 to 4);
3. diagnostic tools intended for use when the network fails or when its performance falls.

This question was intended to be primarily about tools in the first category but credit was given for material about the other categories.

The best tools in category 1 maintain a logical model of the network in the form of a graph; they regularly monitor the network to maintain up-to-date information about connectivity and the nodes on the network. If a new node is installed, for example, the tool will locate it and incorporate it in the model.

These tools, at best, have a very limited facility for recording other information about nodes and connections, such as supplier, model, data of purchase, cost, and physical location.

These tools are not well integrated with the tools in the second and third category. It is not usually possible, for example, to point at a managed node on the network diagram and ask for statistics in its throughput in the last hour.

- (b) The most obvious way of tackling the weaknesses identified above would be to model the network using an object-oriented database. The different tools would then be driven by data from this database.