

Faculty of Computing, Engineering and Technology



Module Name: Networks and Protocols

Module Number : CE00997-3

Title of Assignment : "The International banking Organisation"

Module Learning Outcomes for This Assignment

1.	
2.	
3.	
4. DESIGN, IMPLEMENT AND INVESTIGATE NETWORKS USING APPROPRIATE SIMULATION SOFTWARE, INTERNETWORKING TOOLS AND TECHNOLOGY IN MULTI-PROTOCOL ENVIRONMENTS.	

Hand in deadline : Thursday 25th November 2010, 15:30hrs

Assignment description

Please see attached.

Assessment criteria

The International Banking Organisation

Scenario:

You are employed as the network manager for a large Bank that employs approximately 2500 employees across a number of sites. All sites are currently connecting using an ISDN BRI line.

The main HQ sites is situated in Geneva and it has a separated data/server farm (high level security protection) approximately 3.5km away in Plan-Les-Ouates, Switzerland, the server farm is managed by a dedicated in house team.

There is a UK branch office based in Birmingham as well as an admin office (this is 100m away from the branch office, separated by a two lane road).

The admin office contains a secure storage area that is EMI shielded. This chamber is EMI shielded, and is controlled in terms of temperature and humidity levels.

In Annecy (France) there is a French sales office which comprises of a three storey building. The data is commercially sensitive and must be protected (encrypted) between all sites.

Within the LANS at each site they are currently cabled using cat3 UTP and based around hub technology. You need to look at various technologies and derive a solution including a business plan to increase the bandwidth, the efficiency and overall quality of communications of the network. In the business plan you will need to describe, in a format suitable for the CEO (Chief Executive Officer) that explains the technology, and provides comment on the RoI (Return on Investment).

The brief that you have been given is that the large majority of the users are desk based, there are also nomadic users, i.e. ones that need might need connectivity in meeting rooms, manufacturing areas etc. Clients of the bank will need to be able to access their records via the internet using as high a level of security as possible. Finally you will need to provide internet access to corporate visitors. In terms of technology the company is also looking at potentially using VoIP as a solution to reducing international telephone call costs.

You are also required to produce a topology diagram showing the main LAN/WAN connections, you are not required to get a full quote for all of the network equipment but an approximate price for the hardware (assume PC's will not need replacing), software (for example do you need to update servers, or VPN clients etc.) and a cost for labour to implement the design. This can then be used to look at the RoI (Return on Investment), for example will implementing VoIP save the company money over a 5 year period when you look at the implementation costs? If you were to look at the cost of a telephone call between Switzerland and France (approx values can be gained from the web). A telephony consultant has carried out an investigation within the company and an approximate figure of each employee makes 15 minutes of international calls each working day.

You need to submit a report containing (limit 3500 words +/- 10%):

1. A topology diagram for each site, showing the new network hardware appliances, cabling and choice of inter building and inter site connectivity. (20% of marks)
2. A diagram show how you plan to connect the sites together. (20% of marks)
3. A narrative justifying your approach and selection of appliances and connectivity as an example if 2 sites were 1.5km apart would it be better to connect using WiMax or pay for a leased line? (20% of marks)
4. A financial justification looking at the RoI for upgrading the system, also comment on whether the upgrade would increase productivity and efficiency. (20% of marks)
5. A simulation of the existing network and of your solution to reinforce your narrative (section 3). (20% of marks)

The requirements for each site is shown in appendix 1.

The basic floor plan of the three sites is shown in appendix 2.

Appendix 1

Site 1: HQ - Geneva

Ground floor:

Room	Requirements	Misc
Reception	2 x PC Nomadic connectivity Internal/external telephony	
Meeting room 1	Nomadic connectivity Internal/external telephony 4 x PC	
Meeting room 2	Nomadic connectivity Internal/external telephony 4 x PC	
Admin Area	5 x PC Nomadic connectivity Internal/external telephony 5 spare network sockets Nomadic connectivity	

First floor:

Room	Requirements	Misc
Management team	4 x PC Nomadic connectivity Internal/external telephony	
Open Plan Office	Limited Nomadic connectivity Internal/external telephony 10 x PC	

Second floor:

Room	Requirements	Misc
MD	1 x PC Nomadic connectivity Internal/external telephony	
CEO	1 x PC Nomadic connectivity Internal/external telephony	
Open Plan Office	Limited Nomadic connectivity Internal/external telephony 10 x PC	

Site 1: HQ – Server/data farm at Plan-Les-Ouates

Ground floor:

Room	Requirements	Misc
Reception	2 x PC Nomadic connectivity Internal/external telephony	
Server Room	Internal/external telephony 10 x server class machines 8 x RAID array storage devices	

Site 2: French sales centry - Annecy

Ground floor:

Room	Requirements	Misc
Reception	2 x PC Nomadic connectivity Internal/external telephony	
Sales Area	Nomadic connectivity Internal telephony 4 x PC	

First floor:

Room	Requirements	Misc
Management team	4 x PC Nomadic connectivity Internal/external telephony	
Open Plan Office	Limited Nomadic connectivity Internal/external telephony 10 x PC	

Second floor:

Room	Requirements	Misc
Management team	1 x PC Nomadic connectivity Internal/external telephony	
Storage Area	Nomadic connectivity Internal/external telephony 5 x PC	

Site 3: Branch office, Birmingham

Ground floor:

Room	Requirements	Misc
Reception	2 x PC Nomadic connectivity Internal/external telephony	
Production Demonstartion Area	Nomadic connectivity Internal telephony 4 x PC	
Meeting room 1 & 2	1 x PC Internal/external telephony Nomadic connectivity	

First floor:

Room	Requirements	Misc
Management team	4 x PC Nomadic connectivity Internal/external telephony	
Open Plan Office	Limited Nomadic connectivity Internal/external telephony 10 x PC	

Site 3 cont.: Admin centre – Birmingham

Ground floor:

Room	Requirements	Misc
Reception	2 x PC Nomadic connectivity Internal/external telephony	
Secure storage Area (EMI shielded)	Internal/external telephony 5 x PC	

First floor:

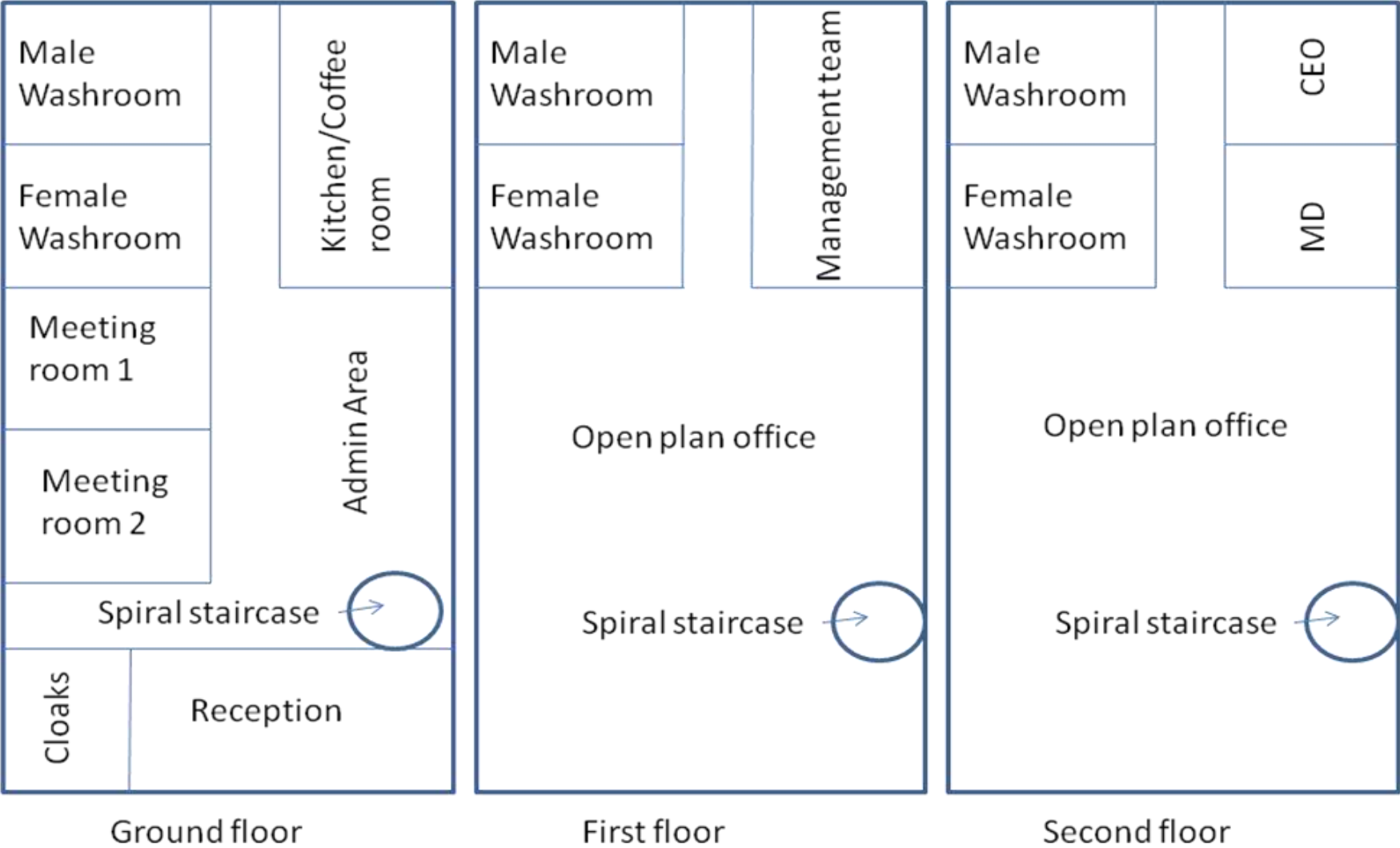
Room	Requirements	Misc
Open plan office	20 x PC Nomadic connectivity Internal/external telephony	

Second floor:

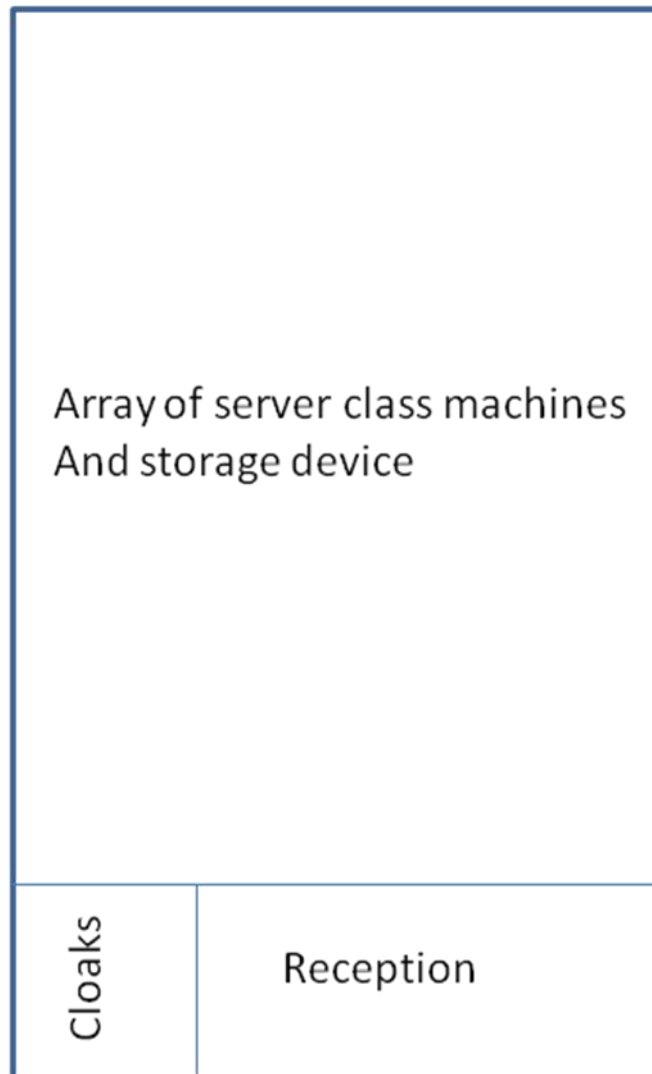
Room	Requirements	Misc
Management team	1 x PC Nomadic connectivity Internal/external telephony	
Storage Area	Nomadic connectivity Internal/external telephony 5 x PC	

Appendix 2.

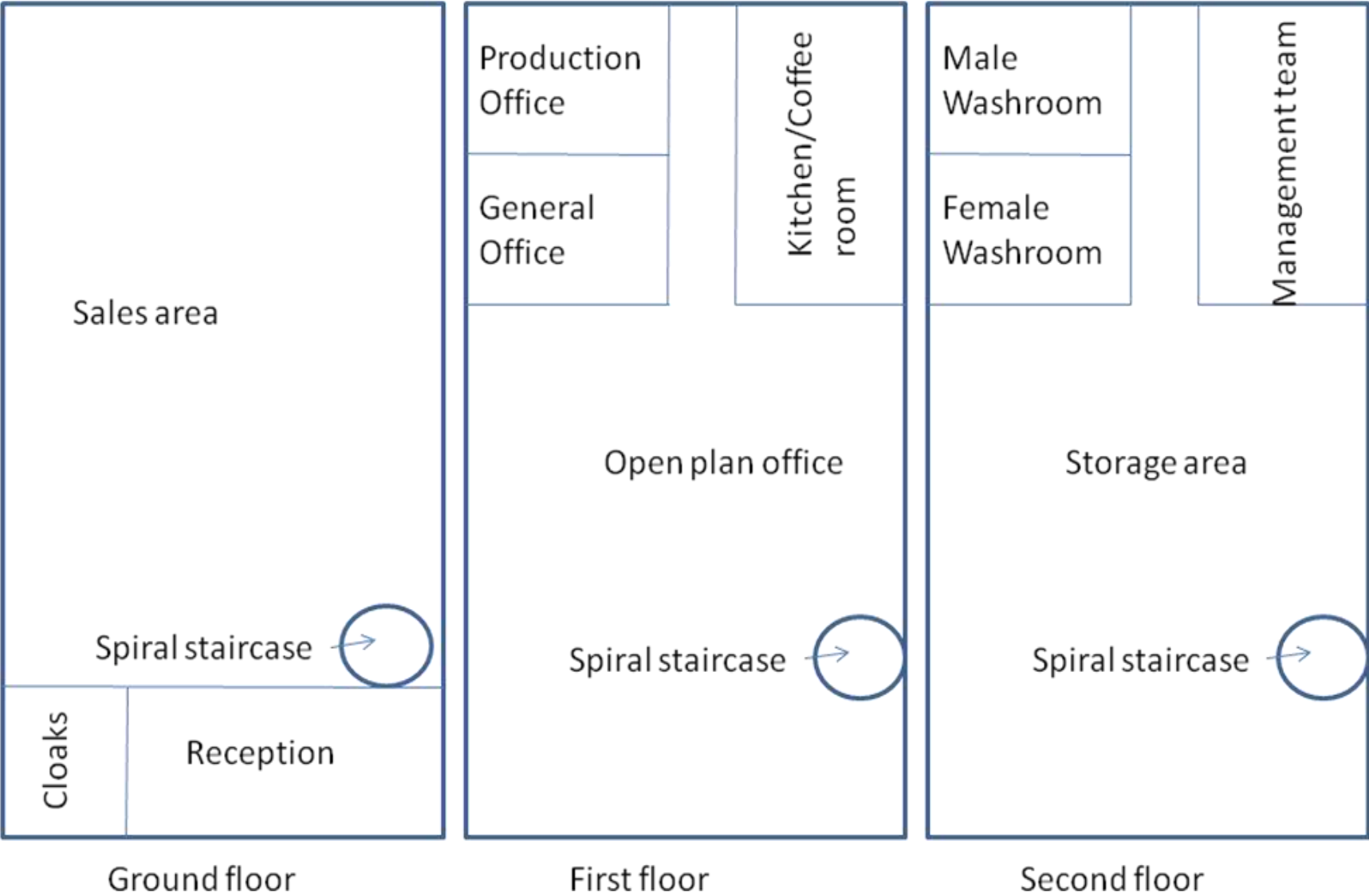
Site 1 – HQ (Geneva)



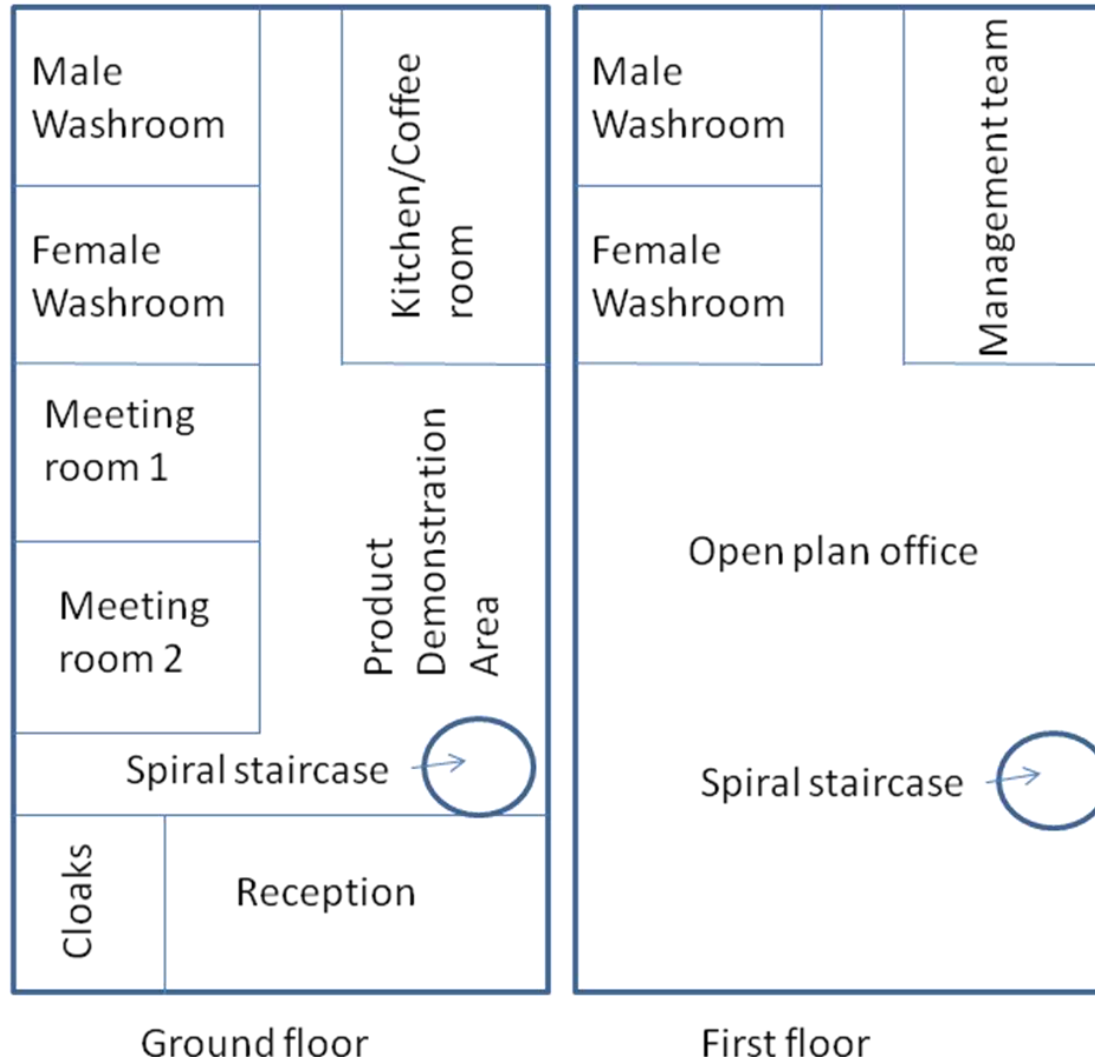
Site 1 cont. – Server/data farm



Site 2 - French Sales office (Annecy)



Site 3 – Branch office(Birmingham)



Site 3 Admin site (Birmingham)

