Written test for *Information System Specialist* position

18 April 2022

First Name / Last Name

**Regarding multiple-choice questions, only one answer is possible for each, unless a contradictory instruction is explicitly mentioned.**

Test duration: 2h

# General questions (5 points)

1. Enumerate 6 points summing up the main responsibilities of the *Information System Specialist*? (3 points)
2. Enumerate 2 points summing up the required qualities in order to assume the *Information System Specialist* position? (2 points)

# IT technical questions (42 points)

**MS Office related questions**

1. What is the mandatory action to be applied in MS-Word to be able to generate the *Table of Contents* **automatically**? (1 point)
2. What are the parameters of VLOOKUP function in MS-Excel? (1 point)
3. Give two benefits of using *Pivot Tables* in MS-Excel. (1 point)

**Maintenance-related questions**

1. The different computer components (memory, CPU, peripherals, etc.) are connected via: (1 point)

|  |  |
| --- | --- |
| Put  beside answer(s) | Answer(s) |
|  | Registry |
|  | Pointers |
|  | Operating system |
|  | Bus |

1. What is the command, to be applied in Windows, in order to open the *Registry Editor*? (1 point)
2. What is a *System Restore Point* under Windows and what is its purpose? (1 point)
3. What is a *Ghost* *Image* of Windows and what is its purpose? (1 point)
4. Give three symptoms of failed RAM? (1 point)
5. Give two factors to be considered when adding/combining **extra** RAM sticks? (1 point)
6. Give three physical and logical means to protect user’s data. (3 points)

**Networking questions**

1. What is the command, to be applied in Windows, in order to get IP addresses of all *Network Interface Cards*? (1 point)
2. Give four protocols that are/could be used to receive emails? (2 points)
3. Which protocol is used to send emails? (1 point)

|  |  |
| --- | --- |
| Put  beside answer(s) | Answer(s) |
|  | NNTP |
|  | XDMA |
|  | SMTP |
|  | POP3 |
|  | FTP |

1. The following string “CC:B2:82:BG:53:B7” represents : (1 point)

|  |  |
| --- | --- |
| Put  beside answer(s) | Answer(s) |
|  | MAC address |
|  | Port number |
|  | IP address |
|  | SAP number |

1. Regarding Ethernet *Hubs* and *Switches*, which of the following statement is true? (1point)

|  |  |
| --- | --- |
| Put  beside answer(s) | Answer(s) |
|  | A *Hub* is faster than a *Switch* |
|  | Inbound data on one *Hub* port are broadcasted to all other Ports |
|  | A *Switch* has been originally designed to route traffic among different networks |
|  | 10, 100 mbps / 1gbps *Hubs* Ports function simultaneously which is not the case for *Switch* Ports |

1. Which *network service* allows to associate names to IP addresses? (1 point)

|  |  |
| --- | --- |
| Put  beside answer(s) | Answer(s) |
|  | DHCP |
|  | FQDN |
|  | BOOTP |
|  | WINS |
|  | DNS |

1. Which *network service* allows to automatically distribute IP addresses to network devices? (1 point)

|  |  |
| --- | --- |
| Put  beside answer(s) | Answer(s) |
|  | BOOTP |
|  | DHCP |
|  | TCP |
|  | UDP |
|  | IGMP |

1. What is a LAN? (1 point)

|  |  |
| --- | --- |
| Put  beside answer(s) | Answer(s) |
|  | Is a new standard to remotely access V92 Modems |
|  | Is a local network |
|  | Is a cable connecting two Ethernet cards |
|  | Is a remote access to Enterprise network |

1. Which server allows to store locally the visited web pages in order to provide them quickly for the users when these pages will be consulted again? (1 point)

|  |  |
| --- | --- |
| Put  beside answer(s) | Answer(s) |
|  | WINS |
|  | DNS |
|  | PROXY |
|  | WEB |

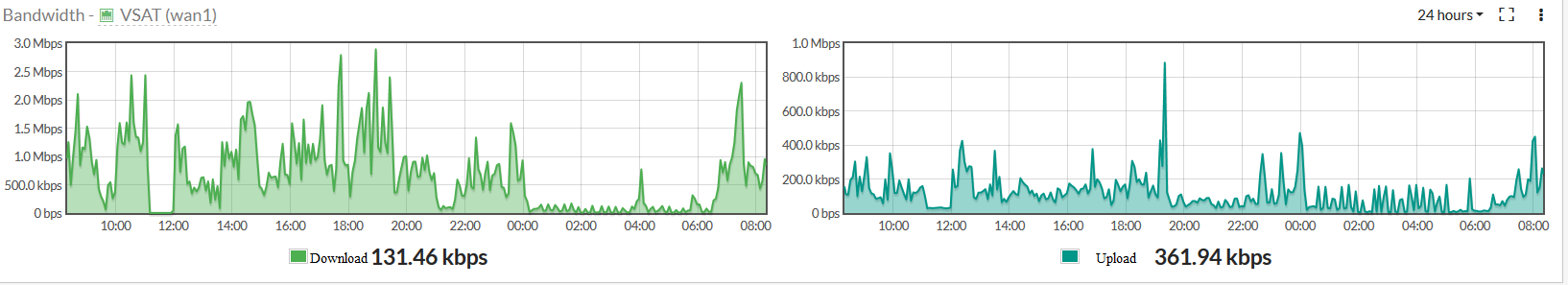
1. In a working environment where the use of the Internet connection is mainly done by Office applications (web browsing, email, Teams, videoconferencing, collaborative tools, shared folder via a Cloud service), what are the quotas that you dedicate for Download and Upload traffic assuming that the total bandwidth is 5 mbps? (1 point)

|  |  |
| --- | --- |
| Put  beside answer(s) | Answer(s) |
|  | 3.5 for Download and 1.5 for Upload |
|  | 1.5 for Download and 3.5 for Upload |
|  | 5 for Download and 0 for Upload |
|  | Others. Specify quotas: |

1. Regarding WAN connections, which of the following statements are true? **Multiple answers are possible**. (2 points)

|  |  |
| --- | --- |
| Put  beside answer(s) | Answer(s) |
|  | 3G/4G connections can only be dedicated connections |
|  | ADSL connections can only be asymmetric connections |
|  | VSAT connections could be dedicated and symmetric |
|  | VSAT connections could be shard and asymmetric |

1. Assuming a WAN connection with 3 mbps Download/1 mbps Upload, based on the following bandwidth charts which are produced by the Client Firewall regarding the concerned WAN, which of the following statement is true? (2 points)



|  |  |
| --- | --- |
| Put  beside answer(s) | Answer(s) |
|  | The ISP doesn’t respect its bandwidth engagement during the last 24 hours |
|  | The ISP respects its bandwidth engagement during the last 24 hours |
|  | The first two statements are not able to be verified with the following charts because they are produced by the Client Firewall and not the ISP one |
|  | The first two statements are not able to be verified based only on the following charts |

1. By analyzing the following ping results, which interpretation could you make, knowing that 151.101.52.81 is the IP address of the [www.bbc.com](http://www.bbc.com) site? (2 points)

|  |
| --- |
|  |
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1. Regarding VPN, which of the following statements are true? **Multiple answers are possible**. (1 point)

|  |  |
| --- | --- |
| Put  beside answer(s) | Answer(s) |
|  | A VPN is a tunnel to encrypt exchanged data between two points in a secure manner over a LAN |
|  | A VPN is a tunnel to encrypt exchanged data between two points in a secure manner over a non-secure network |
|  | A VPN allows mobiles users to access the internal IT resources of their Enterprise remotely |
|  | All previous statements are false |

**Data base-related questions**

Assume a *Customers* table being created using the following SQL statement and filled out as shown in Table 1.

CREATE TABLE Customers (

CustomerID int NOT NULL,

CustomerName varchar(255) NOT NULL,

City varchar(255) NOT NULL,

Country varchar(255) NOT NULL,

PRIMARY KEY (CustomerID)

);

Table 1 *Customers* Table

|  |  |  |  |
| --- | --- | --- | --- |
| CustomerID | CustomerName | City | Country |
| 1 | Maria Anders | Berlin | Germany |
| 2 | Ana Trujillo | México | Mexico |
| 3 | Antonio Moreno | México | Mexico |
| 4 | Thomas Hardy | London | UK |
| 5 | Christina Berglund | Lulea | Sweden |
| 6 | Hanna Moos | Mannheim | Germany |
| 7 | Frédérique Citeaux | Strasbourg | France |
| 8 | Martín Sommer | Madrid | Spain |
| 9 | Laurence Lebihans | Marseille | France |
| 10 | Elizabeth Lincoln | Tsawassen | Canada |

1. What is the result of applying the following SQL statement on the *Customers* table? (1 points)

INSERT INTO Customers (CustomerID, CustomerName, City, Country)

VALUES ('2', 'Maria Anders', 'Berlin', 'Germany');

|  |  |
| --- | --- |
| Put  beside answer(s) | Answer(s) |
|  | |  |  |  |  | | --- | --- | --- | --- | | CustomerID | CustomerName | City | Country | | 1 | Maria Anders | Berlin | Germany | | 2 | Maria Anders | Berlin | Germany | | 3 | Antonio Moreno | México | Mexico | | 4 | Thomas Hardy | London | UK | | 5 | Christina Berglund | Lulea | Sweden | | 6 | Hanna Moos | Mannheim | Germany | | 7 | Frédérique Citeaux | Strasbourg | France | | 8 | Martín Sommer | Madrid | Spain | | 9 | Laurence Lebihans | Marseille | France | | 10 | Elizabeth Lincoln | Tsawassen | Canada | |
|  | |  |  |  |  | | --- | --- | --- | --- | | CustomerID | CustomerName | City | Country | | 1 | Maria Anders | Berlin | Germany | | 2 | Ana Trujillo | México | Mexico | | 3 | Antonio Moreno | México | Mexico | | 4 | Thomas Hardy | London | UK | | 5 | Christina Berglund | Lulea | Sweden | | 6 | Hanna Moos | Mannheim | Germany | | 7 | Frédérique Citeaux | Strasbourg | France | | 8 | Martín Sommer | Madrid | Spain | | 9 | Laurence Lebihans | Marseille | France | | 10 | Elizabeth Lincoln | Tsawassen | Canada | |
|  | |  |  |  |  | | --- | --- | --- | --- | | CustomerID | CustomerName | City | Country | | 1 | Maria Anders | Berlin | Germany | | 2 | Ana Trujillo | México | Mexico | | 2(1) | Maria Anders | Berlin | Germany | | 3 | Antonio Moreno | México | Mexico | | 4 | Thomas Hardy | London | UK | | 5 | Christina Berglund | Lulea | Sweden | | 6 | Hanna Moos | Mannheim | Germany | | 7 | Frédérique Citeaux | Strasbourg | France | | 8 | Martín Sommer | Madrid | Spain | | 9 | Laurence Lebihans | Marseille | France | | 10 | Elizabeth Lincoln | Tsawassen | Canada | |

1. What is the result of applying the following SQL statement on the *Customers* table? (2 points)

SELECT COUNT( "CustomerID" ), "Country"

FROM "Customers"

GROUP BY "Country"

HAVING COUNT( "CustomerID" ) > 1

**Virtualization-related questions**

1. Which of the following statements are true? **Multiple answers are possible**. (1 point)

|  |  |
| --- | --- |
| Put  beside answer(s) | Answer(s) |
|  | The Virtualization is a Windows simulation |
|  | The Virtualization is a Linux simulation |
|  | The Virtualization is running a Guest OS on top of a Hypervisor |
|  | The Virtualization reduces costs linked to the Hardware investments |

1. Gives 3 softwares that allow us to make hypervisor (1 point)

## Use case

**Network description**

MSF network is extended over two sites: *Office* and *Hospital*. Both sites are interconnected via a WIFI bridge using Ubiquiti Nano Stations.

*Office* segment is constituted of a **dual WAN** Firewall (where the WAN connection is plugged), a Switch (SW\_01), a network printer (Print\_01), WIFI Access Point (AP\_01), four computers (COMP[01-04]) and a Nano Station (NS\_01).

*Hospital* segment is constituted of a Switch (SW\_02), a network printer (Print\_02), WIFI Access Point (AP\_02), three computers (COMP[05-07]) and a Nano Station (NS\_02).

WIFI Access Points, printers and Nano Stations have fixed IP addresses and don’t belong to the IP range of the DHCP Server. Contrariwise, computers IP addresses have to be distributed by the DHCP Server.

The IP range of the DHCP Server is between 10.234.1.30.and 10.234.1.254

Both segments belong to one subnet (10.234.1.0/24); no VLAN should be used in the corrective actions.

**Questions (see appendix page 14)**

1. There is a problem regarding the applied DHCP configuration. Identify the problem and enumerate the corrective action(s) to resolve it. (2 points)
2. In order to restrict the access to the *Office* and *Hospital* network, a MAC Filtering is applied on the Firewall. There are two problems regarding the applied MAC Filtering configuration. Identify both problems and enumerate the corrective actions to resolve them. (3 points)
3. Assuming that there is a good 4G coverage in the Office/Hospital neighborhood, and in order to provide a backup connection for the whole network, how many 4G subscriptions would you subscribe for? Where would you connect your 4G routers? (2 points)

**Additonal questions (5 points)**

1. Which class of IP address does the following address belong to ?: 129.192.168.2 (1 point)

C.

D.

1. How can you force a client to give up a DHCP lease IP, provided you have access to the machine? What command do you then run to get a new IP address? And what command can you use to remove saved DNS cache (1 point)
2. What do you know about Microsoft Azure? (1 point)
3. Which command allows to modify the access rights on files or directories Linux ? (1 point)
4. Chown
5. Mod
6. Chmod
7. Att[options]

|  |
| --- |
|  |

1. The **Sudo** command Lunix allows you to : (1 point)
2. enables users to Change directory
3. enables users to Create directory
4. enables users to run programs with the security privileges
5. enables users to have access to directory

# Appendix: MSF network Topology

