

College of Computer Training (CCT)

Assignment Cover Page

Module Title:

Computing Architecture / Networking

Programme Title / Year

BSc 1st year

Project Title:

Install Operating System // Configure Network

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Student Nos.:

2020311

Assignment Due Date:

Saturday 7 th November 2020 –11:00 pm (23:00)

Academic Year:

Year ☒ 1

☐ Year 2

☐

Year 3

DECLARATION

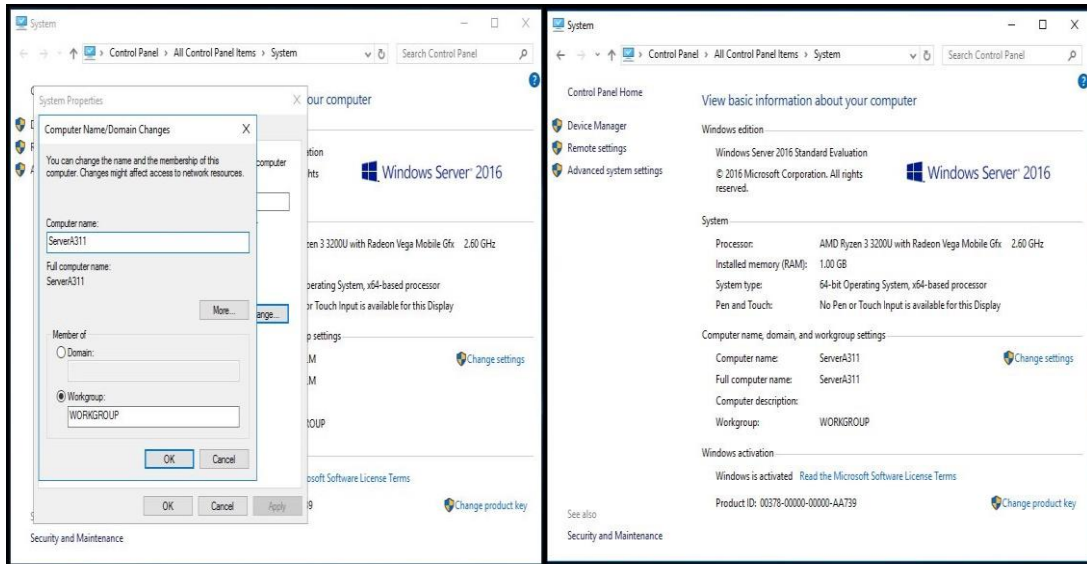
I, Lais Ferreira dos Santos, confirm that by submitting, or causing the attached assignment to be submitted, to CCT, I have not plagiarised any other person's work in this assignment and except where appropriately acknowledged, this assignment is my own work, has been expressed in my own words, and has not previously been submitted for assessment.

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TASK A:

○ Renaming the servers



A.1. Windows System (Server A):

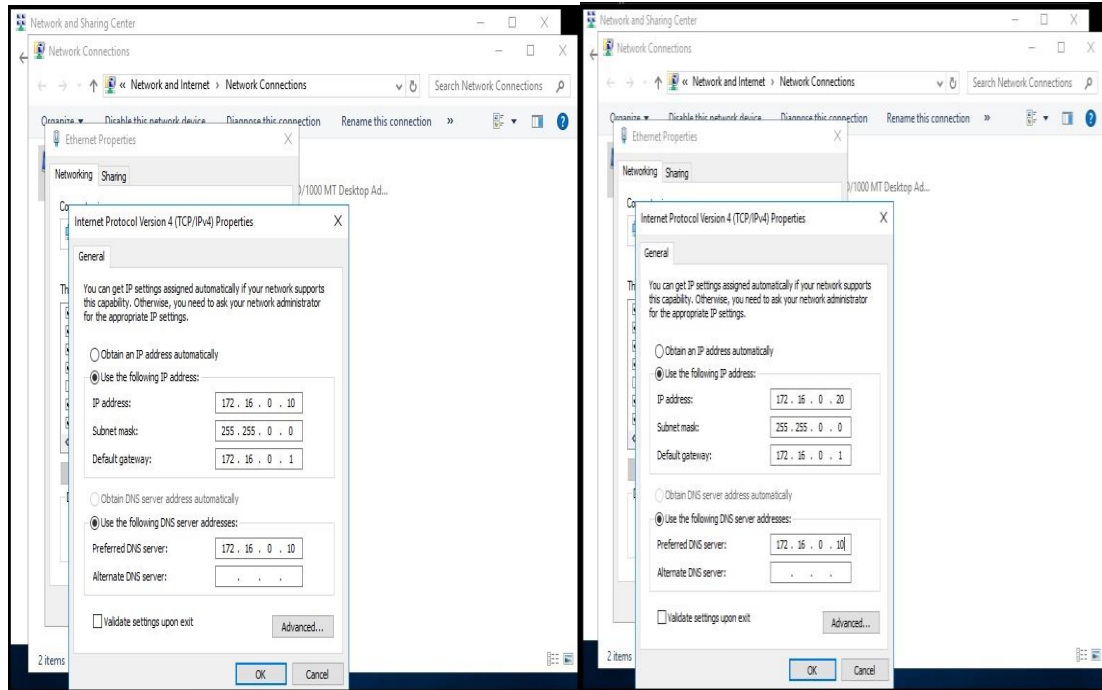
- A.1.1. Right click on start button;
- A.1.2. System;
- A.1.3. Change settings;
- A.1.4. Change;
- A.1.5. On computer name type "ServerA311".

A.2. Windows PowerShell (Server B):

- A.2.1. Search Windows;
- A.2.2. Command Prompt;
- A.2.3. Type "PowerShell";
- A.2.4. Type "Rename-Computer -NewName "ServerB322"";
- A.2.5. Restart the machine.

○ TASK B:

- Network the two servers and assign the following IP address settings



B.1. Setting IP address:

B.1.1. Control panel;

B.1.2. Network and sharing center;

B.1.3. Change adapter settings;

B.1.4. Right click on Ethernet (the first one);

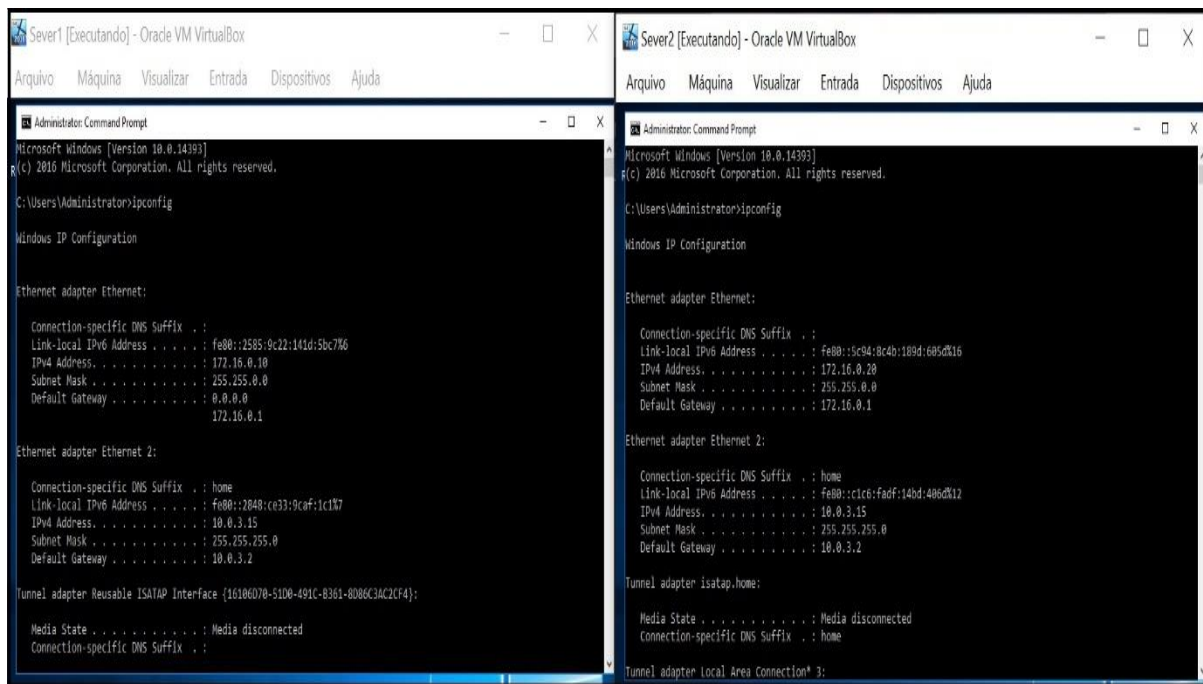
B.1.5. Properties;

B.1.6. Internet Protocol Version 4 (TCP/IPv4)

B.1.7. Properties;

B.1.8. Change IP address, Subnet Mask, Default gateways, Preferred DND server;

B.1.9. Click “ok”.



B.2. Networking Server A and Server B:

B.2.1. Search Windows;

B.2.2. Command Prompt;

B.2.3. Type "ipconfig".

○ TASK C:

- Use networking best practices to configure the firewall to allow PING to pass through the ICMP port and show that the servers can PING each other by their IP addresses

The left screenshot shows the configuration of the 'Reusable ISATAP Interface' and the 'Isatap' adapter, both showing a 'Media disconnected' state. It then shows a successful ping from 172.16.0.20 to 172.16.0.10.

```

Administrator: Command Prompt
Connection-specific DNS Suffix  : home
Link-local IPv6 Address . . . . : fe80::2848:ce33:9caf:1c17
IPv4 Address. . . . . : 10.0.3.15
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 10.0.3.2

Tunnel adapter Reusable ISATAP Interface {16106D70-51D0-491C-B361-8086C3AC2CF4}:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix  :

Tunnel adapter Isatap. {C229F8CB-675A-4A75-BD9F-E986C93808AA}:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix  :

C:\Users\Administrator>ping 172.16.0.10

Pinging 172.16.0.10 with 32 bytes of data:
Reply from 172.16.0.10: bytes=32 time=128ms TTL=128
Reply from 172.16.0.10: bytes=32 time=128ms TTL=128
Reply from 172.16.0.10: bytes=32 time=128ms TTL=128
Reply from 172.16.0.10: bytes=32 time=128ms TTL=128

Ping statistics for 172.16.0.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\Users\Administrator>

```

The right screenshot shows the configuration of the 'Local Area Connection* 3' and the 'Isatap' adapter, both showing a 'Media disconnected' state. It then shows a successful ping from 172.16.0.10 to 172.16.0.20.

```

Administrator: Command Prompt
Tunnel adapter Isatap.home:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix  : home

Tunnel adapter Local Area Connection* 3:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix  :

Tunnel adapter Isatap. {ECF647B9-F65F-469E-BEF2-D8E57074FC2B}:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix  :

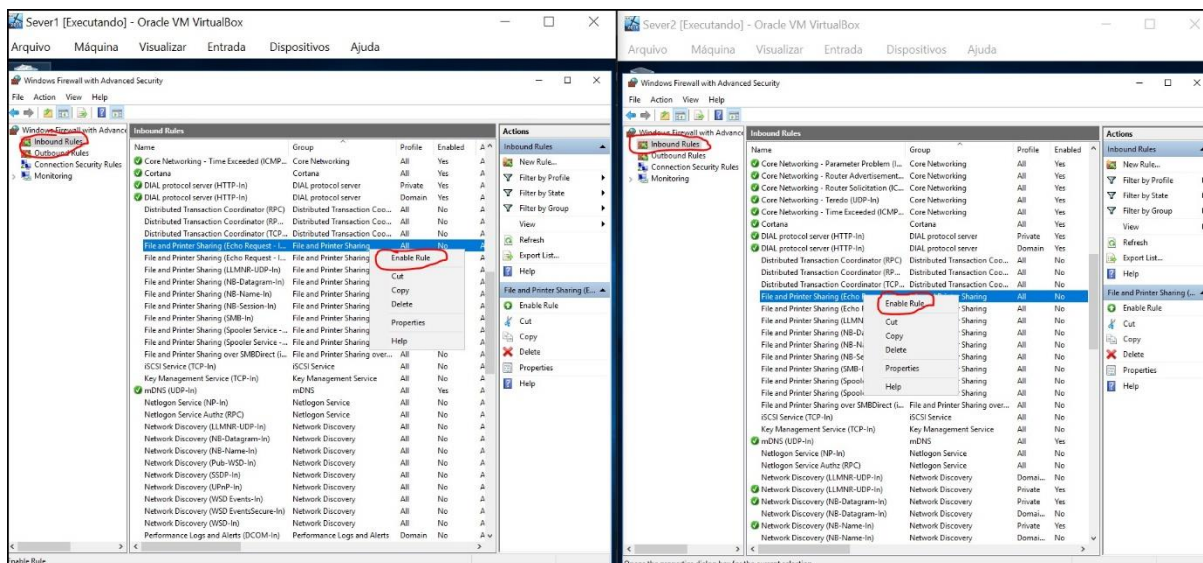
C:\Users\Administrator>ping 172.16.0.10

Pinging 172.16.0.10 with 32 bytes of data:
Reply from 172.16.0.10: bytes=32 time=63ms TTL=128
Reply from 172.16.0.10: bytes=32 time=128ms TTL=128
Reply from 172.16.0.10: bytes=32 time=128ms TTL=128
Reply from 172.16.0.10: bytes=32 time=128ms TTL=128

Ping statistics for 172.16.0.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 63ms, Average = 15ms
C:\Users\Administrator>

```

I did not find any technical issue, but If I would have found it, I could configure the firewall as the image below.



○ **TASK D:**

- **Network Technology research topics: Internet RFCs and RFC 1918**

D.1. Conduct research and explain how RFCs (Request for Comments) helped build the Internet:

In 1969, the first RFC's was written by Steve Croker. It started as Croker and other authors trying figure out how to connect different systems and devices. In doing this they unexpectedly developed the stands used to build the internet. RFC means Request for comments and they are maintained by the IETS (Internet Engineering Task Force), a kind of committee which approve and update the RFC's. Dan York (2019).

D.2. Conduct research and explain, in your own words, what RFC 1918 specifies regarding IP addresses for private networks:

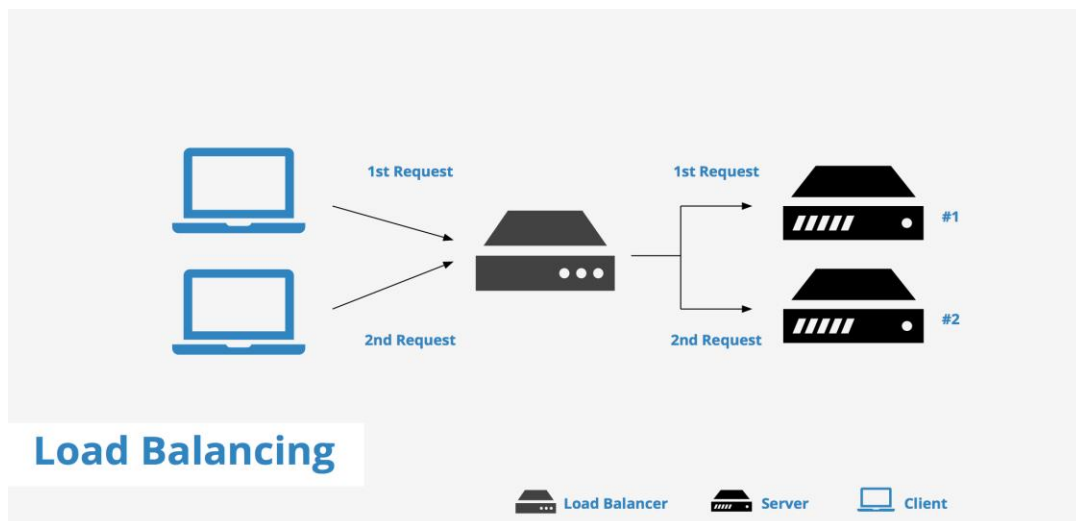
The private IP address is used when it is needed to keep the host off from the internet, for example, at schools or banks. Summarizing, a private IP can be routed between hosts in a LAN or WAN, but it can not be sent traffic on the internet.

TASK E:

- **Computer Architecture research topics: High Availability and Fault Tolerance**

E.1. Explain why servers need high availability and give two examples of servers that need to have maximum uptime:

High Availability is when a system can be recovered from a failure automatically, this is possible if the structure has the ability of being continuously operational. Availability describe the period when a service is available, and also, the time required by a system respond to a request made by the user. As example of high availability can be mentioned clusters an database.



E.2. Explain what fault tolerance is and specify three types of fault tolerance that might be used to provide high availability to a server.

Fault tolerance is the capacity of the system to support any failure of components within your architecture. The systems which can be mentioned are transports, medicine, and banks.

REFERENCES

Teofilo, L., Flack Box. [online] Available at: <https://www.flackbox.com/cisco-private-ip-addresses-rfc-1918#:~:text=%20%20%201%20RFC%201918%20Example%201.,the%20designers%20of%20IPv4%20did%20not...%20More%20> [Accessed 02 November 2020].

Roman Liru, 4 High availability and Fault Tolerance, https://www.youtube.com/watch?v=H-78F_BeE_w 2018. [Accessed 02 November 2020].

York, D, 2019. Internet Society. [online] Available at: <https://www.internetsociety.org/blog/2019/04/celebrating-50-years-of-the-rfcs-that-define-how-the-internet-works/> [Accessed 02 November 2020].