

College of Computer Training (CCT)

Assignment Cover Page

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Assignment Type:	Practical Project /Integrated Assessment
Assignment Title:	Install Operating System / Configure Network
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DECLARATION

I, the above named student, 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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Renaming the Servers.

Server A353

System Properties

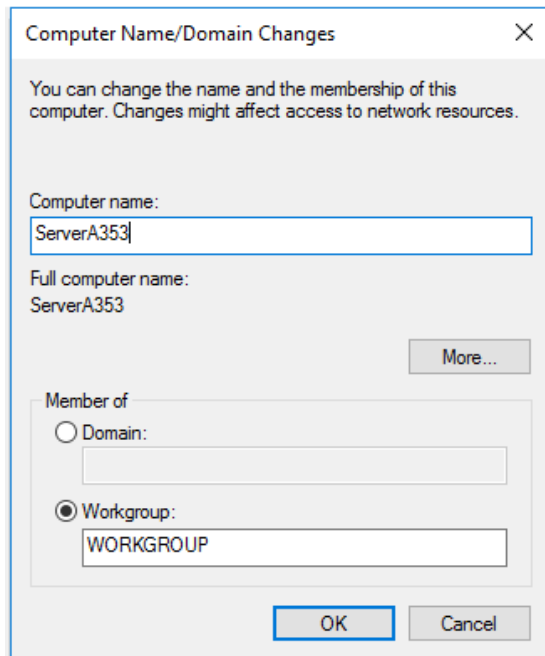


Photo of "Server A" being renamed.

Windows edition

Windows Server 2016 Standard Evaluation
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System

Processor: Intel(R) Core(TM) i5-1035G1 CPU @ 1.00GHz 1.19 GHz
Installed memory (RAM): 1.00 GB
System type: 64-bit Operating System, x64-based processor
Pen and Touch: No Pen or Touch Input is available for this Display

Computer name, domain, and workgroup settings

Computer name: ServerA353
Full computer name: ServerA353
Computer description:
Workgroup: WORKGROUP

[Change settings](#)

Windows activation

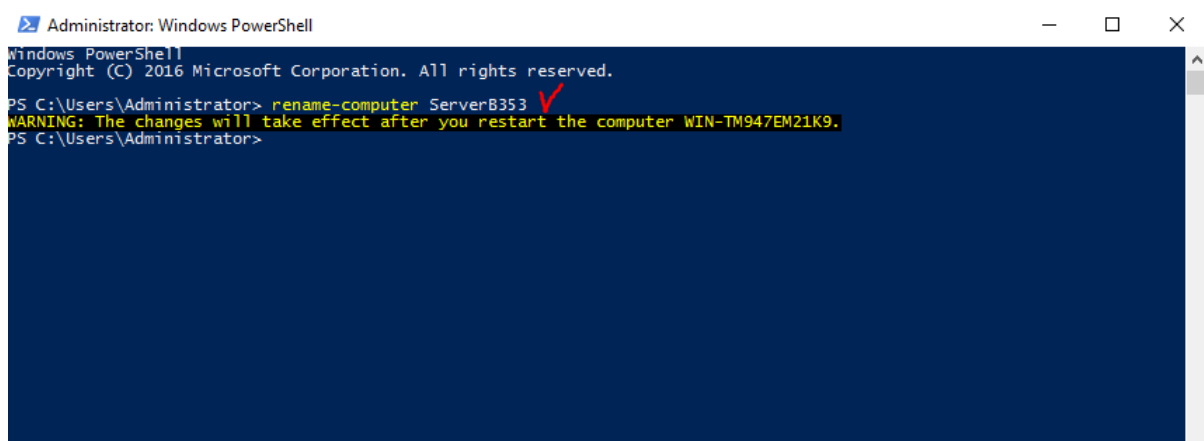
Windows is activated [Read the Microsoft Software License Terms](#)

Product ID: 00378-00000-00000-AA739

[Change product key](#)

Renamed "Sever A353" photo.

Server B353



```
Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) 2016 Microsoft Corporation. All rights reserved.

PS C:\Users\Administrator> rename-computer ServerB353
WARNING: The changes will take effect after you restart the computer WIN-TM947EM21K9.
PS C:\Users\Administrator>
```

Photo of "Server B" being renamed.

View basic information about your computer

Windows edition

Windows Server 2016 Standard Evaluation
© 2016 Microsoft Corporation. All rights reserved.




System

Processor: Intel(R) Core(TM) i5-1035G1 CPU @ 1.00GHz 1.19 GHz
Installed memory (RAM): 1.00 GB
System type: 64-bit Operating System, x64-based processor
Pen and Touch: No Pen or Touch Input is available for this Display

Computer name, domain, and workgroup settings


Computer name: ServerB353
Full computer name: ServerB353
Computer description:
Workgroup: WORKGROUP

 [Change settings](#)

Windows activation

Windows is activated [Read the Microsoft Software License Terms](#)

Product ID: 00378-00000-00000-AA739

 [Change product key](#)

Renamed "Sever B353" photo.

Networking the two servers and assigning as requested

Server A353

The screenshot shows the 'Internet Protocol Version 4 (TCP/IPv4) Properties' dialog box. The 'General' tab is selected. It contains instructions about automatic IP assignment. Two radio buttons are present: 'Obtain an IP address automatically' (unselected) and 'Use the following IP address:' (selected). Below the selected option are three text boxes: 'IP address:' with '172 . 16 . 0 . 10', 'Subnet mask:' with '255 . 255 . 0 . 0', and 'Default gateway:' with '172 . 16 . 0 . 1'. Another set of radio buttons is for DNS: 'Obtain DNS server address automatically' (unselected) and 'Use the following DNS server addresses:' (selected). Below are 'Preferred DNS server:' with '172 . 16 . 0 . 10' and 'Alternate DNS server:' with ' . . .'. At the bottom left is a checkbox 'Validate settings upon exit' (unchecked), and at the bottom right is an 'Advanced...' button. The 'OK' and 'Cancel' buttons are at the very bottom.

Internet Protocol Version 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

☐ Obtain an IP address automatically

☒ Use the following IP address:

IP address: 172 . 16 . 0 . 10

Subnet mask: 255 . 255 . 0 . 0

Default gateway: 172 . 16 . 0 . 1

☐ Obtain DNS server address automatically

☒ Use the following DNS server addresses:

Preferred DNS server: 172 . 16 . 0 . 10

Alternate DNS server: . . .

☐ Validate settings upon exit

Advanced...

OK Cancel

Setting up the A353 Server.

Server B353

This screenshot is identical to the one for Server A353, but the 'IP address' field is set to '172 . 16 . 0 . 20'.

Internet Protocol Version 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

☐ Obtain an IP address automatically

☒ Use the following IP address:

IP address: 172 . 16 . 0 . 20

Subnet mask: 255 . 255 . 0 . 0

Default gateway: 172 . 16 . 0 . 1

☐ Obtain DNS server address automatically

☒ Use the following DNS server addresses:

Preferred DNS server: 172 . 16 . 0 . 10

Alternate DNS server: . . .

☐ Validate settings upon exit

Advanced...

OK Cancel

Setting up the B353 Server.

PING passing through the ICMP port

```
Administrator: Command Prompt

Ethernet adapter Ethernet 2:

    Connection-specific DNS Suffix  . : station
    Link-local IPv6 Address . . . . . : fe80::500:417:d485:323f%10
    IPv4 Address. . . . . : 10.0.3.15
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.0.3.2

Tunnel adapter isatap.station:

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

Tunnel adapter isatap.{DDEAD7CE-0F26-4E0C-AA34-3640A2DDF12D}:

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

C:\Users\Administrator>ping 172.16.0.20 ✓

Pinging 172.16.0.20 with 32 bytes of data:
Reply from 172.16.0.20: bytes=32 time<1ms TTL=128
Reply from 172.16.0.20: bytes=32 time<1ms TTL=128
Reply from 172.16.0.20: bytes=32 time<1ms TTL=128
Reply from 172.16.0.20: bytes=32 time<1ms TTL=128

Ping statistics for 172.16.0.20:
    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>
```

Command PING - Server A353.

```
Administrator: Command Prompt

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::9089:e9f8:27bf:2b00%6
    IPv4 Address. . . . . : 172.16.0.20
    Subnet Mask . . . . . : 255.255.0.0
    Default Gateway . . . . . : 172.16.0.1

Ethernet adapter Ethernet 2:

    Connection-specific DNS Suffix  . : station
    Link-local IPv6 Address . . . . . : fe80::2402:4d3b:63ec:fff8%10
    IPv4 Address. . . . . : 10.0.3.15
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.0.3.2

Tunnel adapter isatap.station:

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

Tunnel adapter isatap.{EC13911E-0F27-4BC0-8D36-B446B4BA6EBD}:

    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<1ms TTL=128
Reply from 172.16.0.10: bytes=32 time<1ms TTL=128
Reply from 172.16.0.10: bytes=32 time<1ms TTL=128
Reply from 172.16.0.10: bytes=32 time<1ms TTL=128
```

Command PING - Server B353.

Internet RFCs and RFC 1918

How RFCs helped build the Internet?

In 1969 the first RFC has been created by Steve Crocker to document how packets would be sent from computer to computer to ARPA ((U.S.) Advanced Research Projects Agency). The ARPA has created a new project for the interconnection of computers. This distributed communication and control system was for a military and research centre called ARPANET.

The RFC is an acronym for “Request for comments” and when it was created the purpose was to write some specifications that would help to connect the computers. Thenceforth RFCs are being used until now and the first form it was named IPv4. Today there are more than 8.500 RFCs which is managed by an RFC Editor team.

RFC 1918 and its specifications

An RFC 1918 is an IP address that is designated by an enterprise organization to an internal host. It has been used to create standards by which networking equipment assigns IP addresses in a private network. A private network can only use a single public IP address. In truth, it is been required by the Internet that each host has a unique IP address, but the RFC removes this requirement.

We can see below the ranges of IP that can not be routed on the Internet:

10.0.0.0 - 10.255.255.255 (10/8 prefix)

172.16.0.0 - 172.31.255.255 (172.16/12 prefix)

192.168.0.0 - 192.168.255.255 (192.168/16 prefix)

Each address will be unique on that network but not outside of it, the address inside those ranges can be assigned in a private network. The private IP cannot have direct communication with external computers because they are not globally exclusive, and they cannot have an address on the public Internet.

High Availability and Fault Tolerance

What is high availability?

It is a system that aims to guarantee the continuity of the service in case of failure, without data loss and, often, without any perception on the part of the user that something wrong has happened. These systems are solutions that have redundancy against Hardware, Software, and energy failure.

Two examples of servers that need to have maximum uptime

In large companies, a small interruption in the operation can cause great financial and operational losses, to ensure that this does not happen, you must invest in high quality hardware combined with robust and modern software. Some HA Systems need to operate with an uptime of more than 99.9% working 24/7 Usually telecommunication service, Database Servers, email, web and others.

What is fault tolerance?

Fault tolerance is a technique that ensures correct functioning of the system even in the event of failures and is all based on redundancy, requiring additional components or special algorithms. Consequently, failure prevention and removal are not enough when the system discharge availability or high availability.

Three types of fault tolerance that might be used to provide high availability to a server

There are more than three types of fault tolerance to provide high availability there are masking, which the failures are not manifested as errors due to it is masked at the source. This one is included in a first class whichever generally employs more redundancy than the second.

The second class spends time on tasks of detection location and configuration, it is usually preferred for critical real-time systems. Below we can see some of the types:

Type	mechanism
error detection	duplication and comparison time limit tests watchdog timers reverse tests
error recovery	Backward error recovery forward error recovery

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