

# COMPUTER NETWORKING

## ASSESSMENT 2

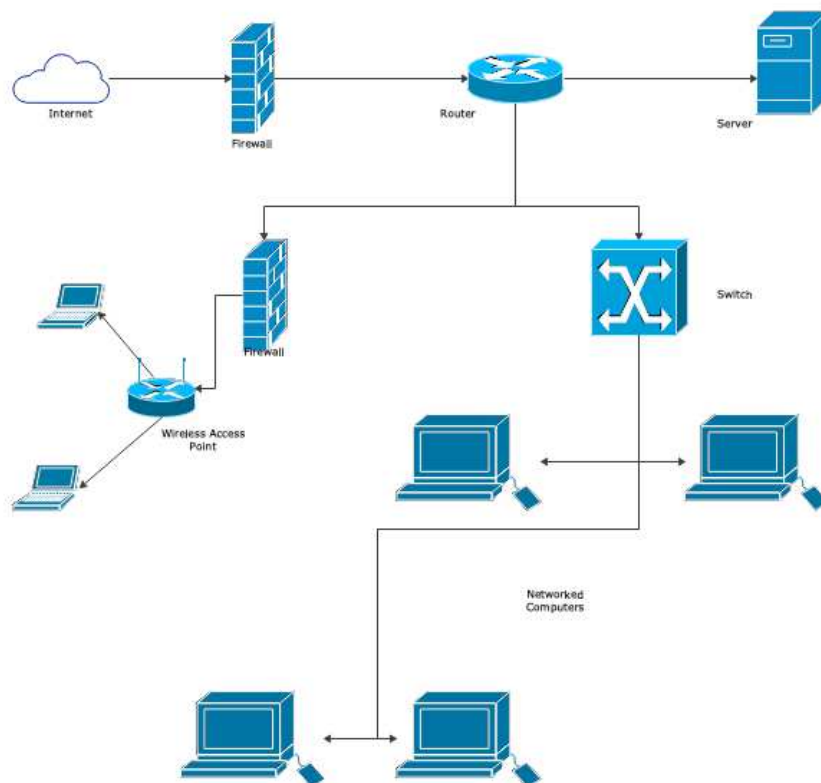
CREATE A CLIENT SERVER SWITCHED LOCAL AREA  
NETWORK, WITH SECURE ENDPOINTS

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**Scenario –** You have been tasked with the setting up and configuring of a small local area network. This network should be set up with an emphasis on securing the endpoints of the network. To comply with this requirement, you can choose any suitable network operating system. You should be provided with suitable working hardware to allow this task to be completed.

### Stage 1 – Select a suitable contemporary network topology

For this small network I have chosen to implement a star topology. The characteristics of this topology are flexibility, high speed, high reliability and high maintainability. It's easy to manage and maintain the network because each node require separate cable and easy to locate problems because cable failure only affect a single user. As I mentioned earlier it also provides very high speed of data transfer.



## Stage 2 – Devise a suitable naming convention for the network hosts/nodes

Network: EK  
Firewall: EK-FW-01  
Router: EK-RT-01  
Switch: EK-SW-01  
Server: EK-SV-01  
Computers: EK-PC-01

In cases where there are more than one equipment the name can be changed to 02, 03 etc.

## Stage 3 – Devise a suitable logical addressing structure for the network hosts/nodes

I implement two networks: an internal and a guest network.  
The internal network IP address is 192.168.62.0/24 and the guest network IP is 192.168.63.0/24.

## Stage 4 – Configure appropriate network authentication services and name resolution

After installing Windows Server I configure Active Directory, Domain Name Resolution and Dynamic Configuration Protocol.

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: 192 . 168 . 62 . 91

Subnet mask: 255 . 255 . 255 . 0

Default gateway: . . .

☐ Obtain DNS server address automatically

☒ Use the following DNS server addresses:

Preferred DNS server: 127 . 0 . 0 . 1

Alternate DNS server: . . .

☐ Validate settings upon exit

Advanced...

OK Cancel

I add a static IP then configure the other settings in the Server Manager where I choose the 'Add roles and features' option and follow the instructions.

Active Directory Domain Services Configuration Wizard

Deployment Configuration

TARGET SERVER  
EK-SV-01

Deployment Configuration

Select the deployment operation

- ☐ Add a domain controller to an existing domain
- ☐ Add a new domain to an existing forest
- ☒ Add a new forest

Specify the domain information for this operation

Root domain name:

[More about deployment configurations](#)

< Previous Next > Install Cancel

Active Directory Domain Services Configuration Wizard

Additional Options

TARGET SERVER  
EK-SV-01

Additional Options

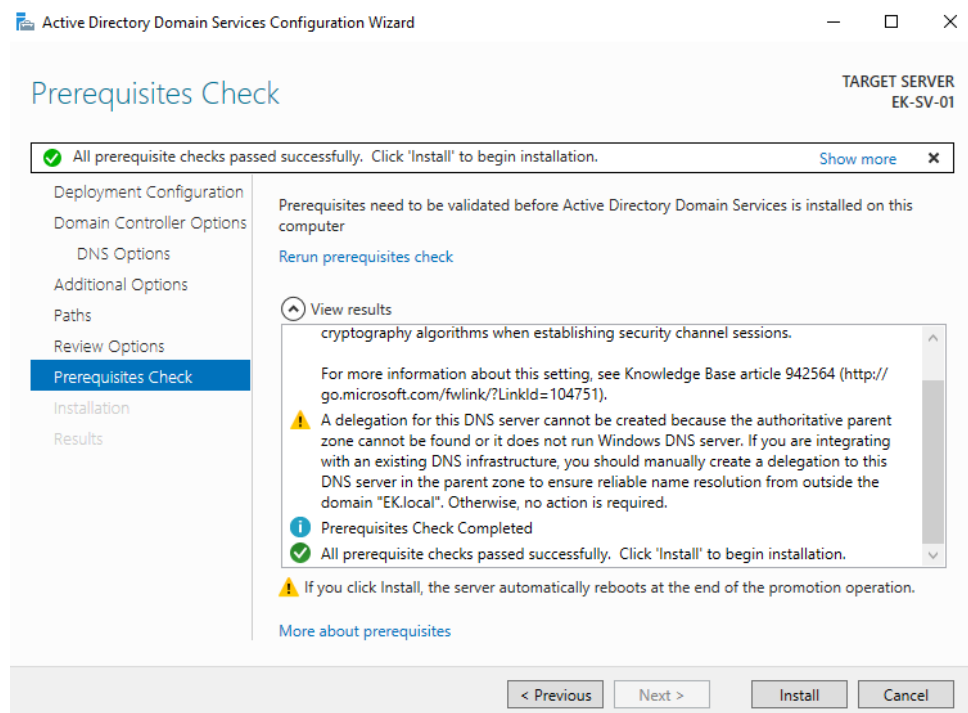
Verify the NetBIOS name assigned to the domain and change it if necessary

The NetBIOS domain name:

[More about additional options](#)

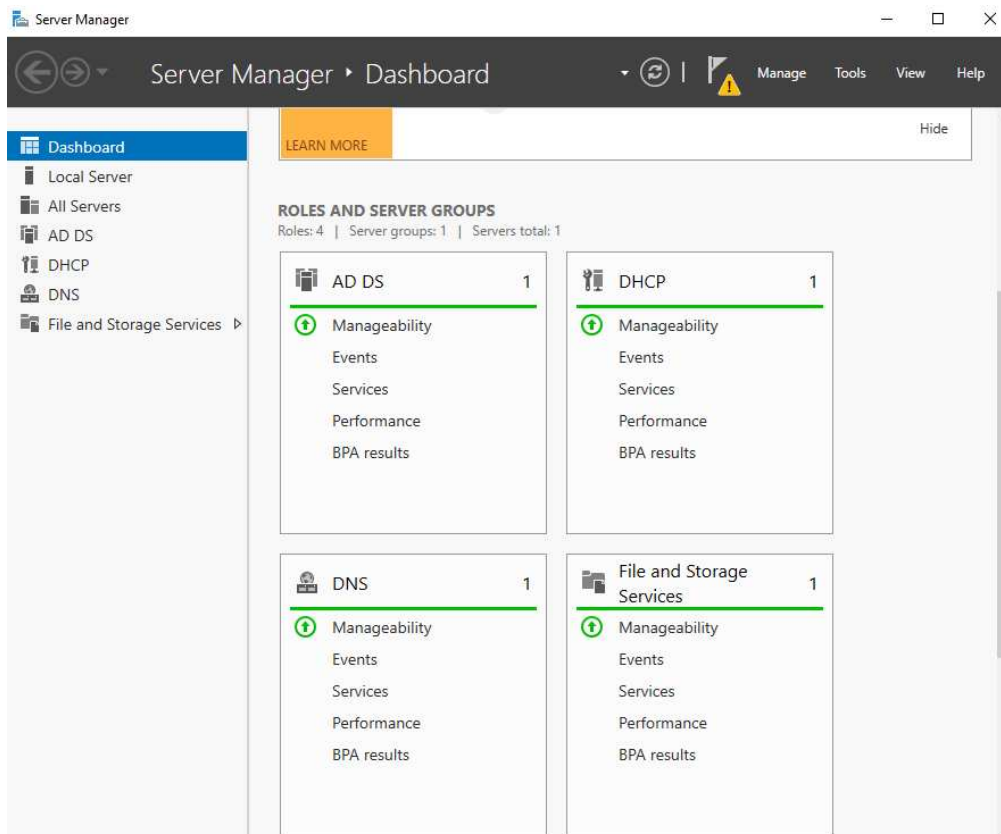
< Previous Next > Install Cancel

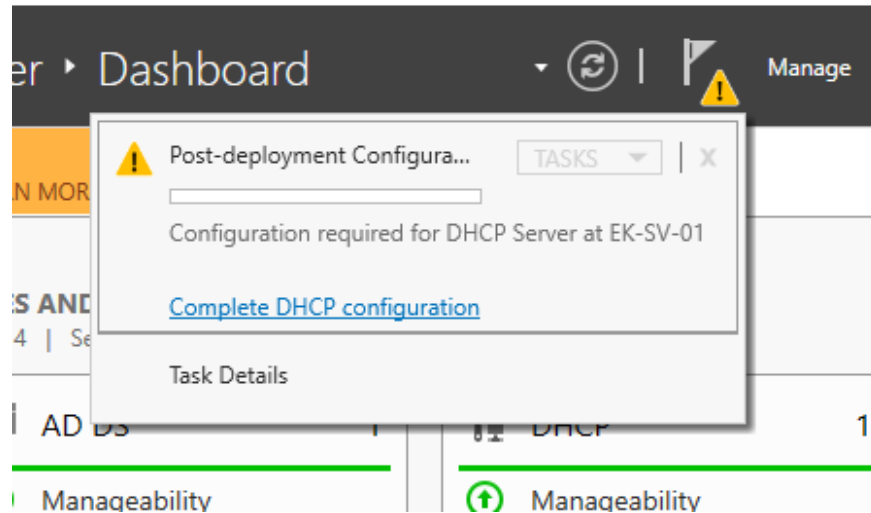
The prerequisite checks pass so I go ahead and click install.



**Stage 5 – Using the addressing scheme provided at stage 3, implement network DHCP services within the LAN**

After opening the DHCP panel I configure the service in the post install wizard.





## New Scope Wizard

## Scope Name

You have to provide an identifying scope name. You also have the option of providing a description.



Type a name and description for this scope. This information helps you quickly identify how the scope is to be used on your network.

Name:

Description:

&lt; Back

Next &gt;

Cancel



I also configure a DHCP scope and I set up the exceptions.

New Scope Wizard

**IP Address Range**  
You define the scope address range by identifying a set of consecutive IP addresses.

Configuration settings for DHCP Server

Enter the range of addresses that the scope distributes.

Start IP address: 192 . 168 . 62 . 92

End IP address: 192 . 168 . 62 . 254

Configuration settings that propagate to DHCP Client

Length: 24

Subnet mask: 255 . 255 . 255 . 0

< Back   Next >   Cancel

DHCP

File   Action   View   Help

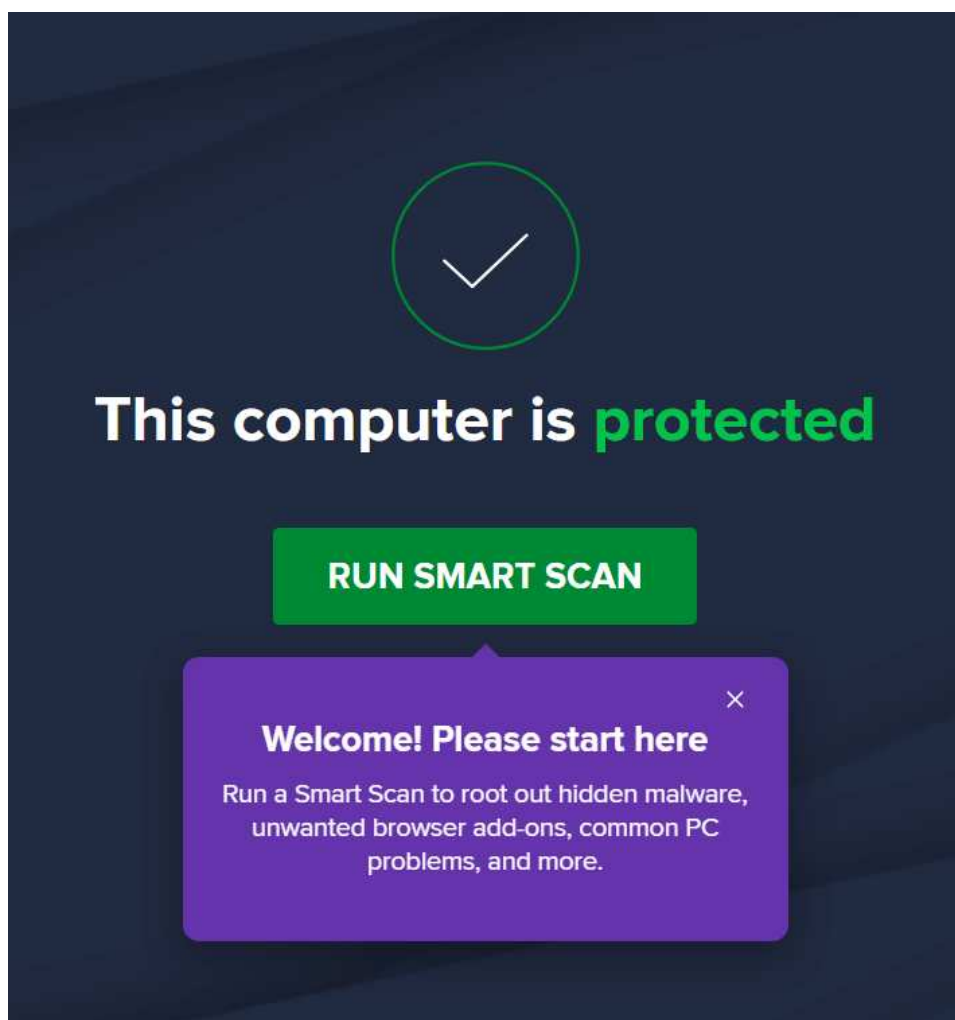
	Start IP Address	End IP Address	Description
ek-sv-01.ek.local	192.168.62.92	192.168.62.254	Address range for distribution
IPv4	192.168.62.92	192.168.62.112	IP Addresses excluded from distribution
Scope [192.168.62.0] EK-guest			
Address Pool			
Address Leases			

## Stage 6 – Harden the endpoint devices/hosts by installing virus checking software

Products and services related to endpoint protection found on the market can be placed in these groups:

- Antivirus software or malware protection packages
- Fleet management solutions
- Remote imaging software
- HD encryption
- Display filters
- Smart browsers/browsing protection
- SaaS (Security as a Service)

In this particular case I install the Avast antivirus software.



## Stage 7 – Configure endpoint devices' firewalls to allow network hosts to ping each other

After navigating to Windows Defender Firewall and Advanced Security I make sure the network hosts can ping each other. I choose Enable Rule to change the ICMP configuration.

