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Course/Section: CPE232/CPE42FC1	Instructor: Engr. Clifford Arambala
Activity 2 – Install and Configure Windows Server 2008 DNS Server	

- Intended Learning Outcomes

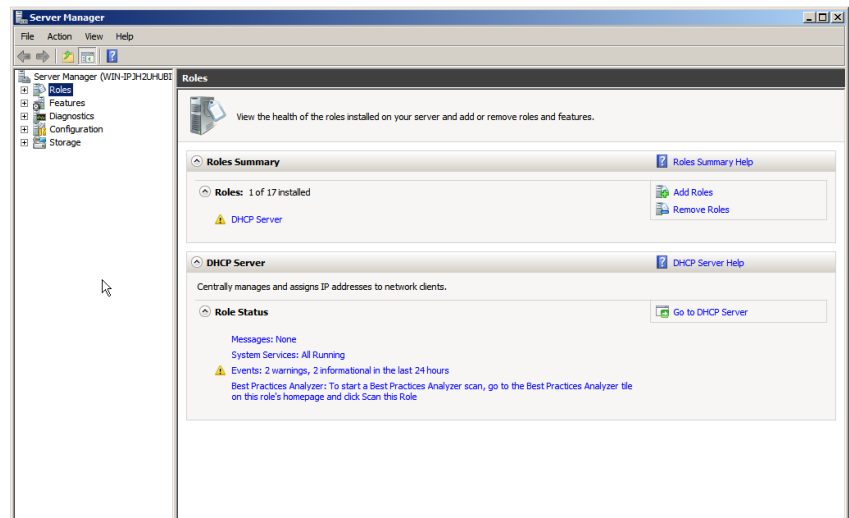
The student shall learn to install and configure in Windows Server 2008 the DNS Server and test it using client PC.

- Materials
 1. Personal computer
 2. Windows Server 2008 Standard and Windows 7 installed in VirtualBox.

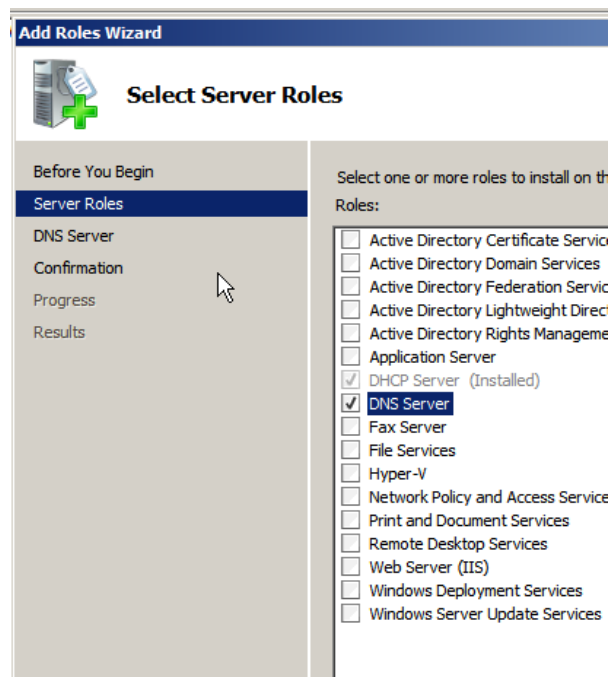
- Procedure

Installing DNS Server

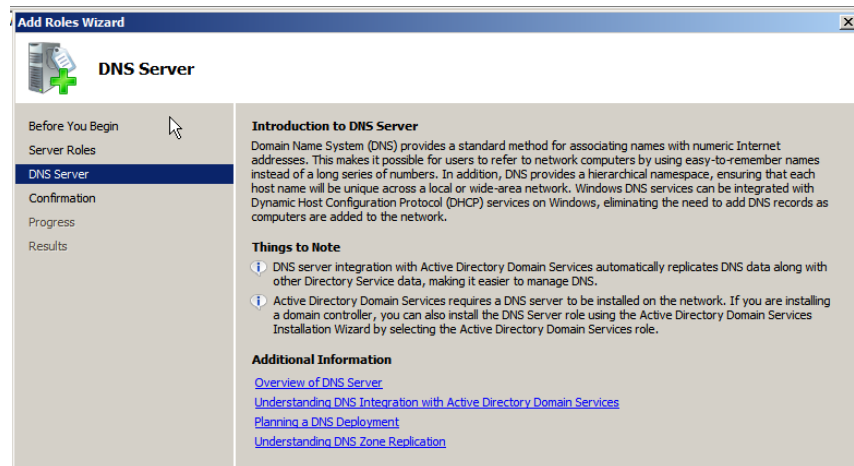
- 1) To install DNS server, go to Server Manager -> Add Roles.



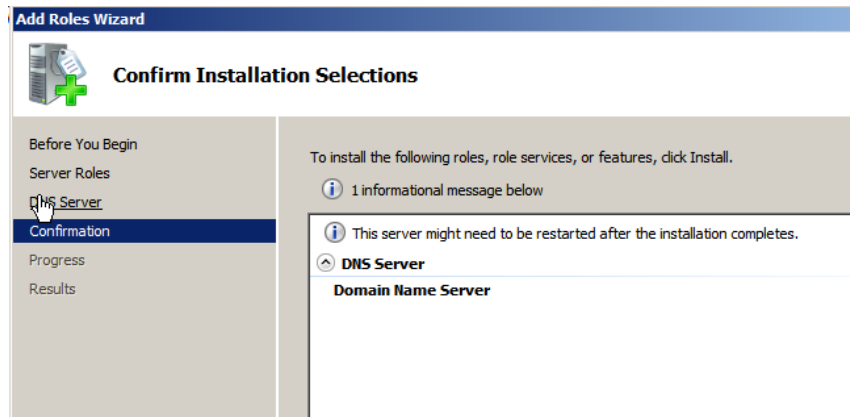
2) From Server Roles tab, check the DNS Server checkbox.



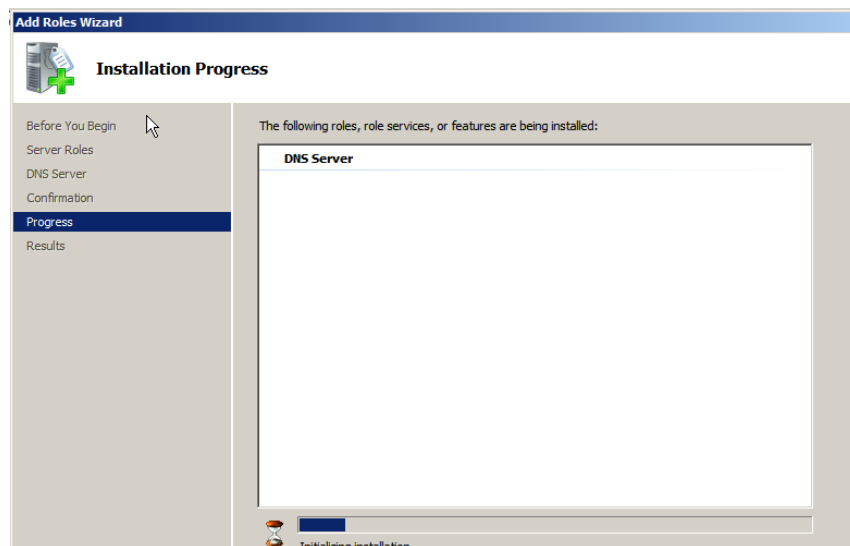
3) After clicking on next, an introduction to DNS server will pop out. Read carefully and click on next.



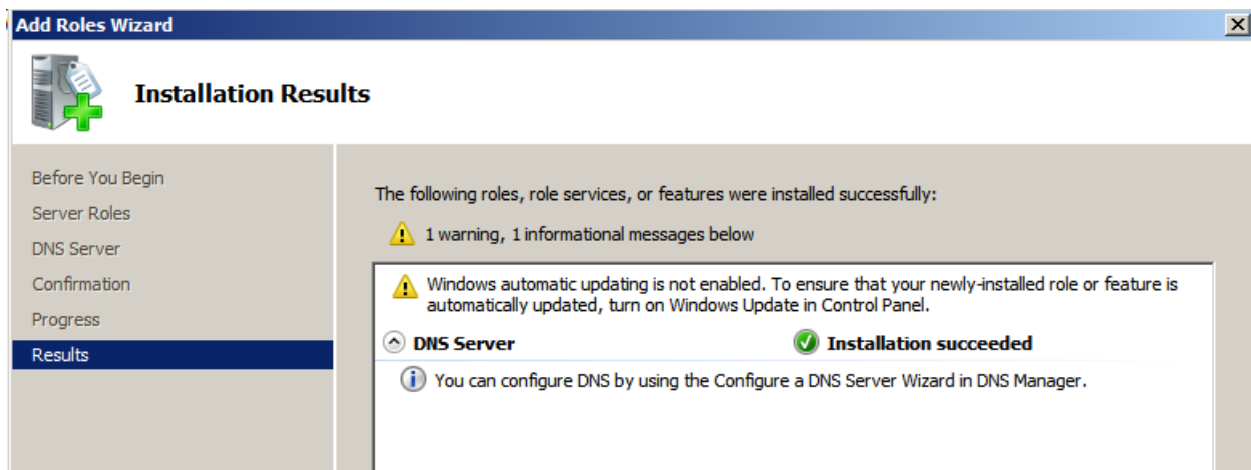
4) Confirm if DNS server is the pending role to install.



5) Click on next and wait to install.

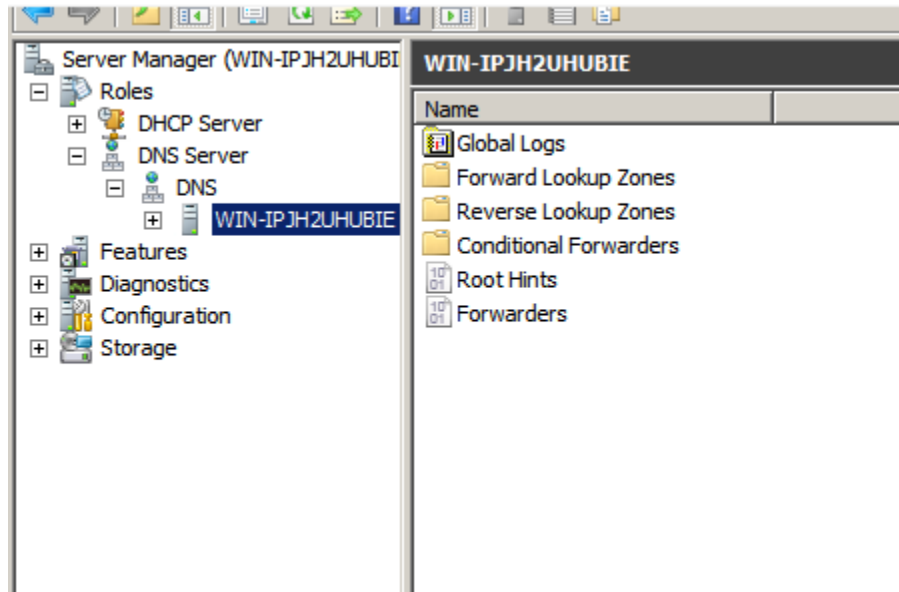


6) DNS server is now installed.

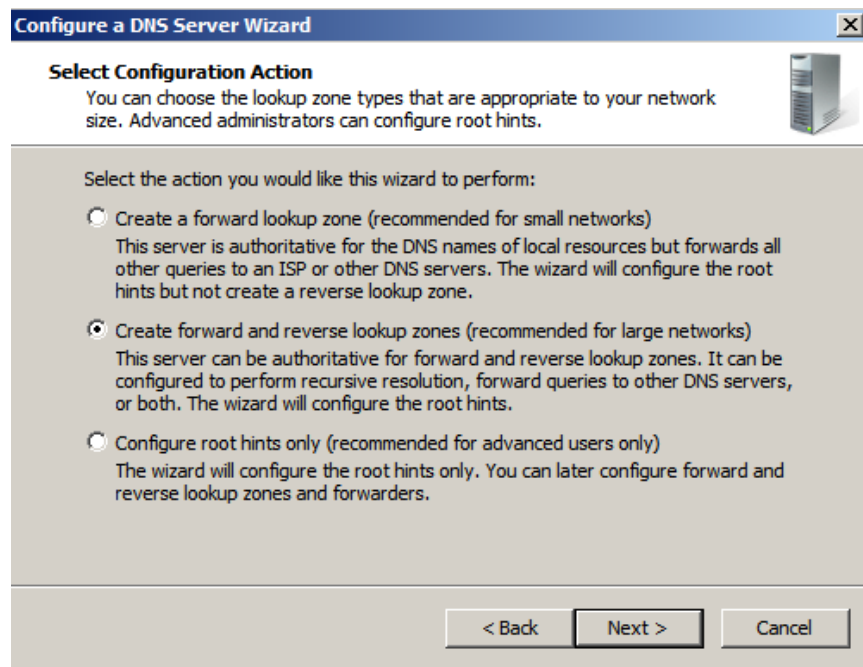


Configuring DNS Server

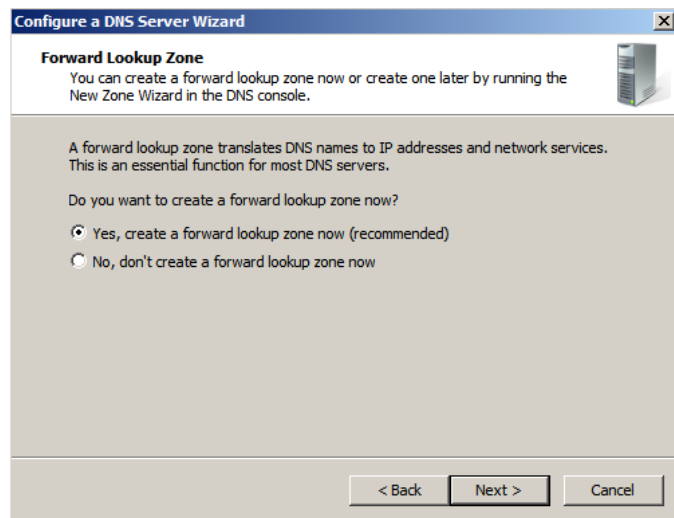
- 1) To configure DNS Server, go to Server Manager -> Roles -> DNS -> (name of server). Right Click the name of server name and click on Configure a DNS server.



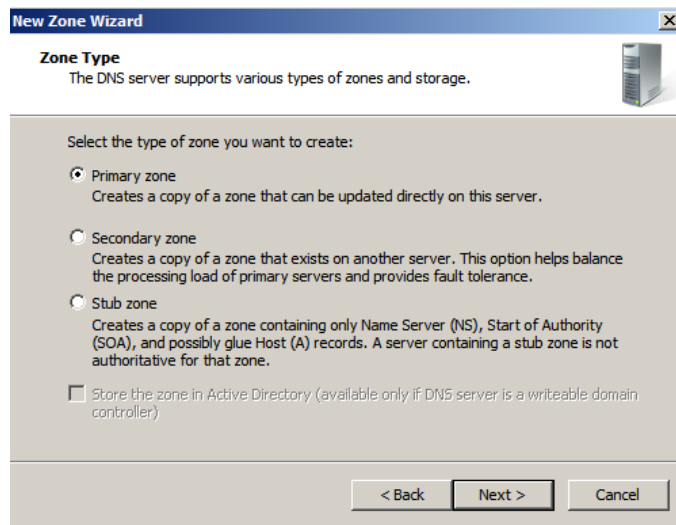
- 2) Choose the Create forward and reverse lookup zones and click on next.



- 3) The first to configure is the forward zone. Choose yes to create a forward lookup zone.



4) Choose Primary zone and click on next.



The screenshot shows the 'New Zone Wizard' window, specifically the 'Zone Type' step. The title bar reads 'New Zone Wizard'. Below the title bar, the text 'Zone Type' is followed by 'The DNS server supports various types of zones and storage.' To the right is a small server icon. The main area contains the instruction 'Select the type of zone you want to create:' followed by three radio button options: 'Primary zone' (selected), 'Secondary zone', and 'Stub zone'. Each option has a descriptive line of text below it. At the bottom left, there is a checkbox labeled 'Store the zone in Active Directory (available only if DNS server is a writeable domain controller)'. At the bottom right are three buttons: '< Back', 'Next >', and 'Cancel'.

Zone Type
The DNS server supports various types of zones and storage.

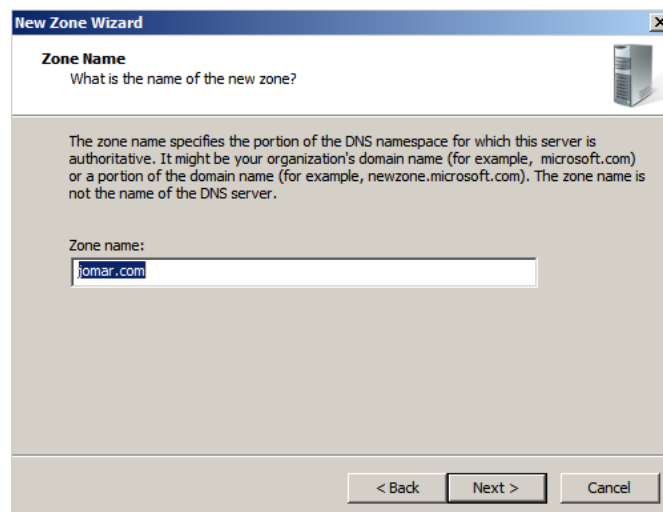
Select the type of zone you want to create:

- ☒ **Primary zone**
Creates a copy of a zone that can be updated directly on this server.
- ☐ **Secondary zone**
Creates a copy of a zone that exists on another server. This option helps balance the processing load of primary servers and provides fault tolerance.
- ☐ **Stub zone**
Creates a copy of a zone containing only Name Server (NS), Start of Authority (SOA), and possibly glue Host (A) records. A server containing a stub zone is not authoritative for that zone.

☐ Store the zone in Active Directory (available only if DNS server is a writeable domain controller)

< Back Next > Cancel

5) Fill up the zone name you want to have.



The screenshot shows the 'New Zone Wizard' window, specifically the 'Zone Name' step. The title bar reads 'New Zone Wizard'. Below the title bar, the text 'Zone Name' is followed by 'What is the name of the new zone?' To the right is a small server icon. The main area contains a paragraph explaining that the zone name specifies the portion of the DNS namespace for which this server is authoritative, with examples like 'microsoft.com' and 'newzone.microsoft.com'. Below this is a text input field labeled 'Zone name:' containing the text 'jamar.com'. At the bottom right are three buttons: '< Back', 'Next >', and 'Cancel'.

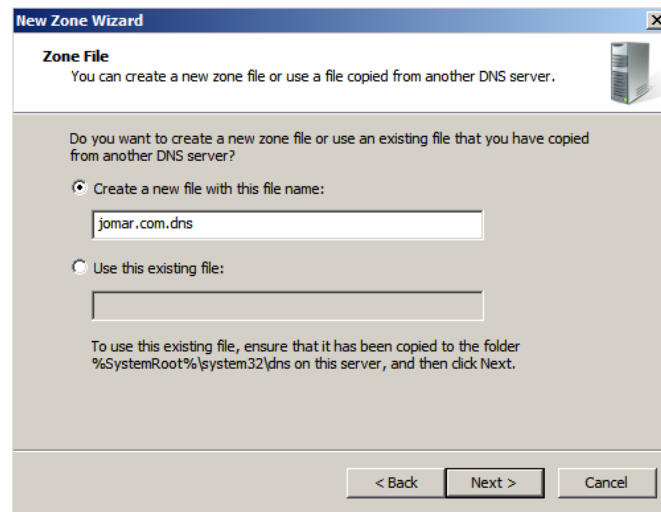
Zone Name
What is the name of the new zone?

The zone name specifies the portion of the DNS namespace for which this server is authoritative. It might be your organization's domain name (for example, microsoft.com) or a portion of the domain name (for example, newzone.microsoft.com). The zone name is not the name of the DNS server.

Zone name:
jamar.com

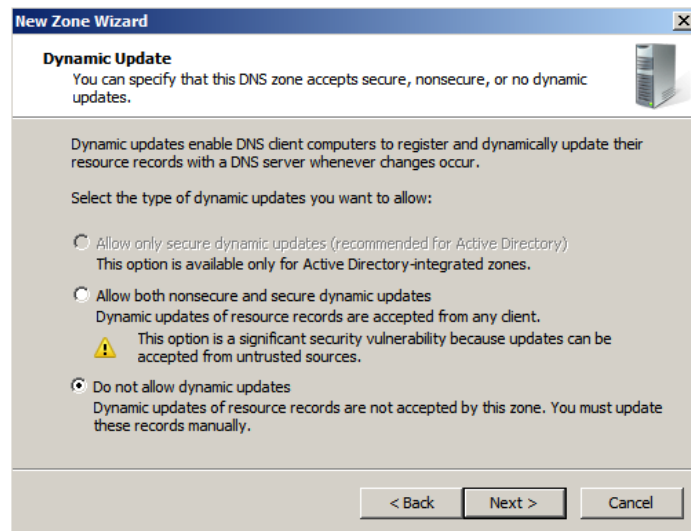
< Back Next > Cancel

6) Choose to create a new file for new zone. Click on next.



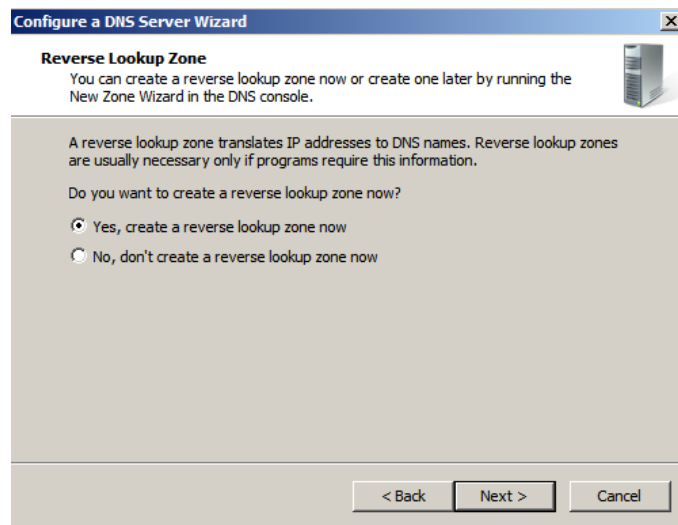
The screenshot shows the 'New Zone Wizard' window, specifically the 'Zone File' step. The title bar reads 'New Zone Wizard'. Below the title bar, the section is titled 'Zone File' with a subtext: 'You can create a new zone file or use a file copied from another DNS server.' The main area contains the question: 'Do you want to create a new zone file or use an existing file that you have copied from another DNS server?'. There are two radio button options: 'Create a new file with this file name:' (which is selected) and 'Use this existing file:'. The first option has a text box containing 'jomar.com.dns'. The second option has an empty text box. Below these options, a note states: 'To use this existing file, ensure that it has been copied to the folder %SystemRoot%\system32\dns on this server, and then click Next.' At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'.

7) Choose not to allow dynamic updates and click on next.

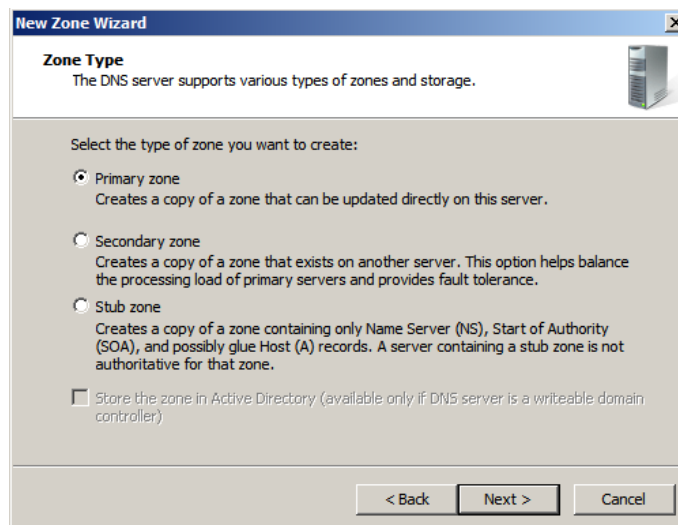


The screenshot shows the 'New Zone Wizard' window, specifically the 'Dynamic Update' step. The title bar reads 'New Zone Wizard'. Below the title bar, the section is titled 'Dynamic Update' with a subtext: 'You can specify that this DNS zone accepts secure, nonsecure, or no dynamic updates.' The main area contains the text: 'Dynamic updates enable DNS client computers to register and dynamically update their resource records with a DNS server whenever changes occur.' followed by 'Select the type of dynamic updates you want to allow:'. There are three radio button options: 'Allow only secure dynamic updates (recommended for Active Directory)' (with a note 'This option is available only for Active Directory-integrated zones.'), 'Allow both nonsecure and secure dynamic updates' (with a note 'Dynamic updates of resource records are accepted from any client. This option is a significant security vulnerability because updates can be accepted from untrusted sources.' and a yellow warning icon), and 'Do not allow dynamic updates' (which is selected, with a note 'Dynamic updates of resource records are not accepted by this zone. You must update these records manually.'). At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'.

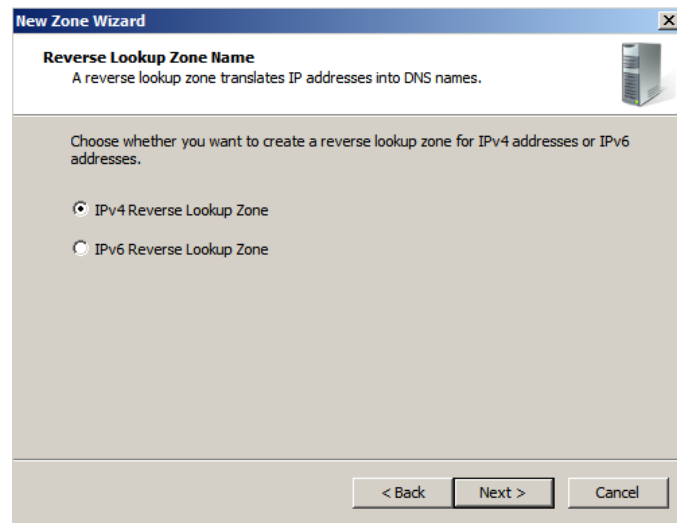
8) Second to configure is the Reverse zone. Choose yes to create a reverse lookup zone.



9) Choose primary zone and click on next.

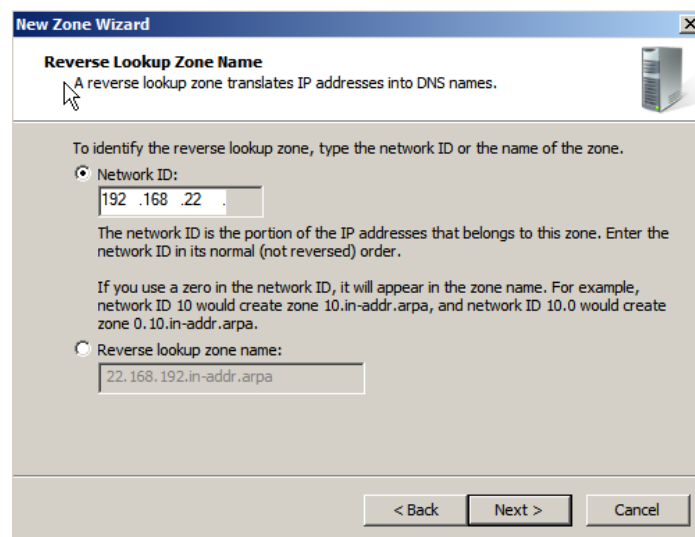


10) Choose the IPv4 Reverse Lookup Zone then click on next.



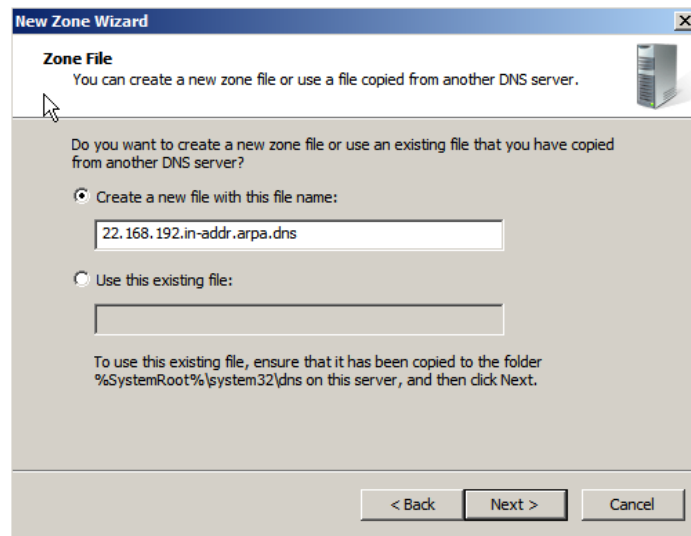
The screenshot shows the 'New Zone Wizard' window with the title bar 'New Zone Wizard' and a close button. The main heading is 'Reverse Lookup Zone Name' with a subtext 'A reverse lookup zone translates IP addresses into DNS names.' Below this, there is a section titled 'Choose whether you want to create a reverse lookup zone for IPv4 addresses or IPv6 addresses.' with two radio button options: 'IPv4 Reverse Lookup Zone' (which is selected) and 'IPv6 Reverse Lookup Zone'. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

11) Fill up the Network ID. Type the 3 first octets of the IP address and click on next.



The screenshot shows the 'New Zone Wizard' window with the title bar 'New Zone Wizard' and a close button. The main heading is 'Reverse Lookup Zone Name' with a subtext 'A reverse lookup zone translates IP addresses into DNS names.' Below this, there is a section titled 'To identify the reverse lookup zone, type the network ID or the name of the zone.' with two radio button options: 'Network ID:' (which is selected) and 'Reverse lookup zone name:'. Under 'Network ID:', there is a text input field containing '192.168.22'. Below this field, there is explanatory text: 'The network ID is the portion of the IP addresses that belongs to this zone. Enter the network ID in its normal (not reversed) order.' and 'If you use a zero in the network ID, it will appear in the zone name. For example, network ID 10 would create zone 10.in-addr.arpa, and network ID 10.0 would create zone 0.10.in-addr.arpa.' Under 'Reverse lookup zone name:', there is a text input field containing '22.168.192.in-addr.arpa'. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

12) Choose create a new file for the new zone and click on next.



The screenshot shows the 'New Zone Wizard' window with the 'Zone File' tab selected. The window title is 'New Zone Wizard'. The tab is 'Zone File'. The text says: 'You can create a new zone file or use a file copied from another DNS server.' Below this, it asks: 'Do you want to create a new zone file or use an existing file that you have copied from another DNS server?'. There are two radio buttons. The first is selected: 'Create a new file with this file name:'. Below it is a text box containing '22.168.192.in-addr.arpa.dns'. The second radio button is 'Use this existing file:'. Below it is an empty text box. At the bottom, there is a note: 'To use this existing file, ensure that it has been copied to the folder %SystemRoot%\system32\dns on this server, and then click Next.' At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'.

Zone File
You can create a new zone file or use a file copied from another DNS server.

Do you want to create a new zone file or use an existing file that you have copied from another DNS server?

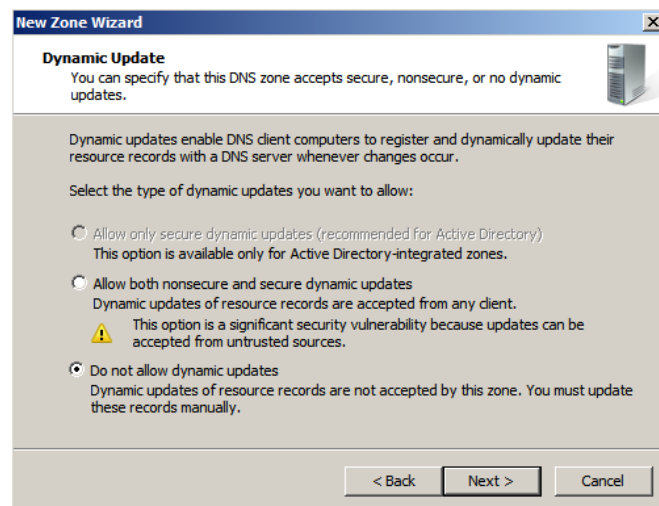
☒ Create a new file with this file name:
22.168.192.in-addr.arpa.dns

☐ Use this existing file:

To use this existing file, ensure that it has been copied to the folder %SystemRoot%\system32\dns on this server, and then click Next.

< Back Next > Cancel

13) Choose not to allow dynamically updates.




The screenshot shows the 'New Zone Wizard' window with the 'Dynamic Update' tab selected. The window title is 'New Zone Wizard'. The tab is 'Dynamic Update'. The text says: 'You can specify that this DNS zone accepts secure, nonsecure, or no dynamic updates.' Below this, it says: 'Dynamic updates enable DNS client computers to register and dynamically update their resource records with a DNS server whenever changes occur.' Then it asks: 'Select the type of dynamic updates you want to allow:'. There are three radio buttons. The first is 'Allow only secure dynamic updates (recommended for Active Directory)'. Below it is a note: 'This option is available only for Active Directory-integrated zones.' The second is 'Allow both nonsecure and secure dynamic updates'. Below it is a note: 'Dynamic updates of resource records are accepted from any client.' and a warning icon with the text: 'This option is a significant security vulnerability because updates can be accepted from untrusted sources.' The third is selected: 'Do not allow dynamic updates'. Below it is a note: 'Dynamic updates of resource records are not accepted by this zone. You must update these records manually.' At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'.

Dynamic Update
You can specify that this DNS zone accepts secure, nonsecure, or no dynamic updates.

Dynamic updates enable DNS client computers to register and dynamically update their resource records with a DNS server whenever changes occur.

Select the type of dynamic updates you want to allow:

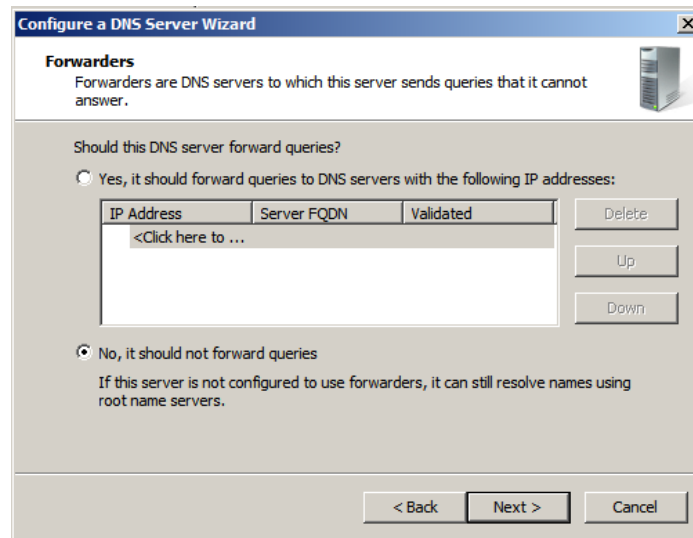
☐ Allow only secure dynamic updates (recommended for Active Directory)
This option is available only for Active Directory-integrated zones.

☐ Allow both nonsecure and secure dynamic updates
Dynamic updates of resource records are accepted from any client.
 This option is a significant security vulnerability because updates can be accepted from untrusted sources.

☒ Do not allow dynamic updates
Dynamic updates of resource records are not accepted by this zone. You must update these records manually.

< Back Next > Cancel

14) Choose not to send the queries if it fails to send queries to server.



The screenshot shows the 'Configure a DNS Server Wizard' window, specifically the 'Forwarders' tab. The window title is 'Configure a DNS Server Wizard'. Below the title bar, there is a section titled 'Forwarders' with a sub-header 'Forwarders are DNS servers to which this server sends queries that it cannot answer.' To the right of this text is a small icon of a server. Below this, a question is posed: 'Should this DNS server forward queries?'. There are two radio button options: 'Yes, it should forward queries to DNS servers with the following IP addresses:' and 'No, it should not forward queries'. The 'No' option is selected. Below the 'Yes' option is a table with three columns: 'IP Address', 'Server FQDN', and 'Validated'. The table is currently empty, with a placeholder text '<Click here to ...' in the first row. To the right of the table are three buttons: 'Delete', 'Up', and 'Down'. Below the 'No' option, there is a note: 'If this server is not configured to use forwarders, it can still resolve names using root name servers.' At the bottom of the window are three buttons: '< Back', 'Next >', and 'Cancel'.

Configure a DNS Server Wizard

Forwarders
Forwarders are DNS servers to which this server sends queries that it cannot answer.

Should this DNS server forward queries?

☐ Yes, it should forward queries to DNS servers with the following IP addresses:


IP Address	Server FQDN	Validated
<Click here to ...		

☒ No, it should not forward queries

If this server is not configured to use forwarders, it can still resolve names using root name servers.

< Back Next > Cancel

15) Click finish.



The screenshot shows the 'Completing the Configure a DNS Server Wizard' screen of the 'Configure a DNS Server Wizard' window. The window title is 'Configure a DNS Server Wizard'. On the left side, there is a small icon of a server. The main text area contains the following information: 'Completing the Configure a DNS Server Wizard', 'You have successfully completed the Configure a DNS Server Wizard. When you click Finish, the following settings will be saved.', 'Settings:', and a list of settings: 'DNS server to configure: WIN-IPJH2UHUBIE' and 'Forward lookup zone to create: jomar.com'. Below this list, there is a paragraph of instructions: 'Configure the hosts that will use this DNS server to point to this DNS server for name resolution, and then verify name resolution using nslookup. If you added a new primary zone, add resource records to it for the hosts whose names need to be resolved by this DNS server.' At the bottom, there is a note: 'To close this wizard, click Finish.' At the bottom of the window are three buttons: '< Back', 'Finish', and 'Cancel'.

Configure a DNS Server Wizard

Completing the Configure a DNS Server Wizard

You have successfully completed the Configure a DNS Server Wizard. When you click Finish, the following settings will be saved.

Settings:

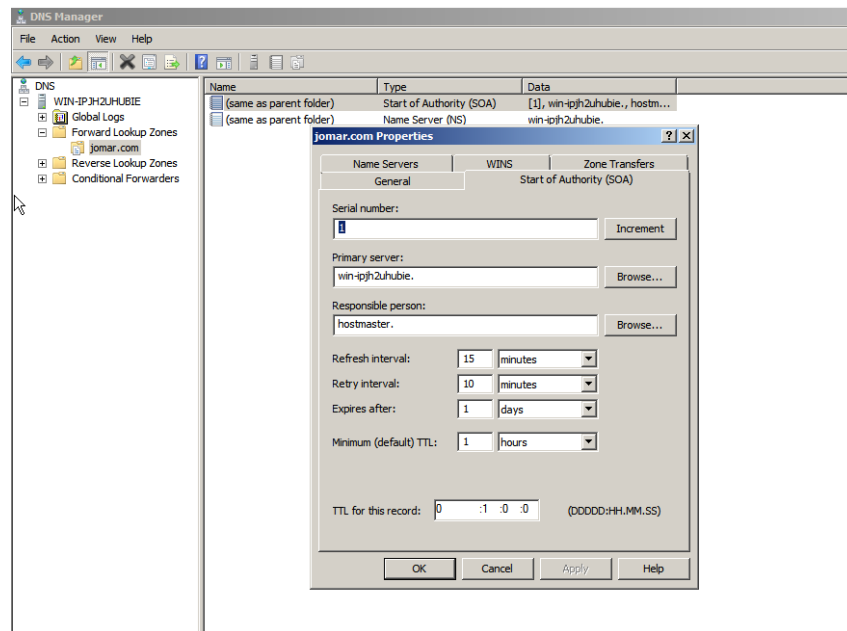
DNS server to configure: WIN-IPJH2UHUBIE
Forward lookup zone to create: jomar.com

Configure the hosts that will use this DNS server to point to this DNS server for name resolution, and then verify name resolution using nslookup. If you added a new primary zone, add resource records to it for the hosts whose names need to be resolved by this DNS server.

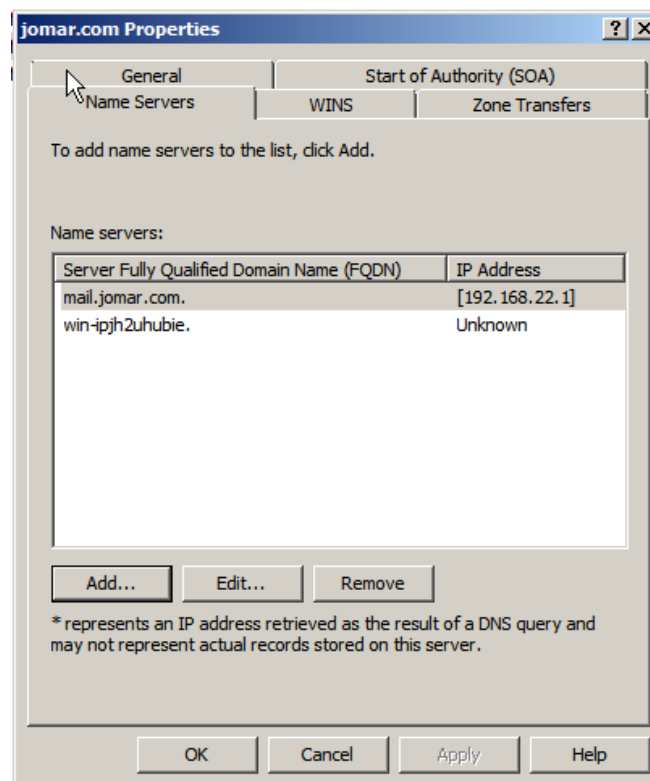
To close this wizard, click Finish.

< Back Finish Cancel

- 16) To have a Start of Authority (SOA), go to Server Manager -> Roles -> DNS -> (name of server computer) -> Forward Lookup Zones -> (zone name). Expand and double click the file which has the type of Start of Authority and fill up the necessary information.



- 17) To create new name server, click on Name Servers tab and click on add.



- 18) A New Name Server Record dialogue box will appear. Fill up the necessary information and click Ok.

New Name Server Record

Enter a server name and one or more IP addresses. Both are required to identify the name server.

Server fully qualified domain name (FQDN):

Resolve

IP Addresses of this NS record:

IP Address	Validated
<Click here to add an IP Address>	

Delete

Up

Down

OK Cancel

New Name Server Record

Enter a server name and one or more IP addresses. Both are required to identify the name server.

Server fully qualified domain name (FQDN):

Resolve

IP Addresses of this NS record:

IP Address	Validated
<Click here to add an IP Address>	
✓ 192.168.22.1	OK

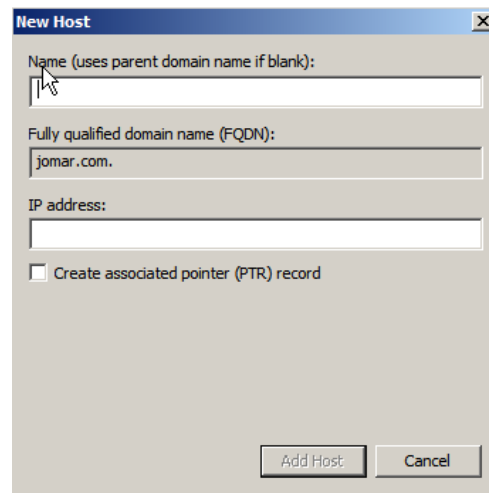
Delete

Up

Down

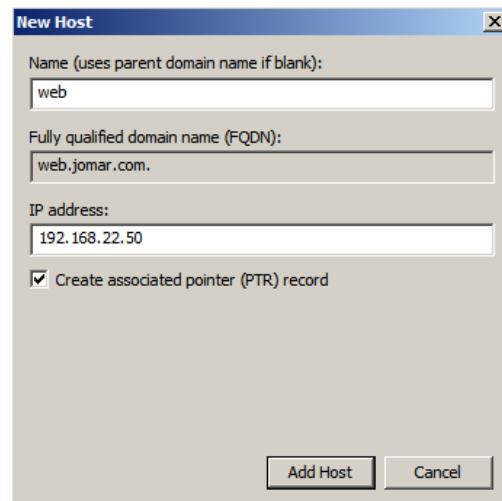
OK Cancel

- 19) To create a new host, right click the zone folder and choose New Host. This will map a host name to an IP address.



The 'New Host' dialog box is shown with the following fields and options:

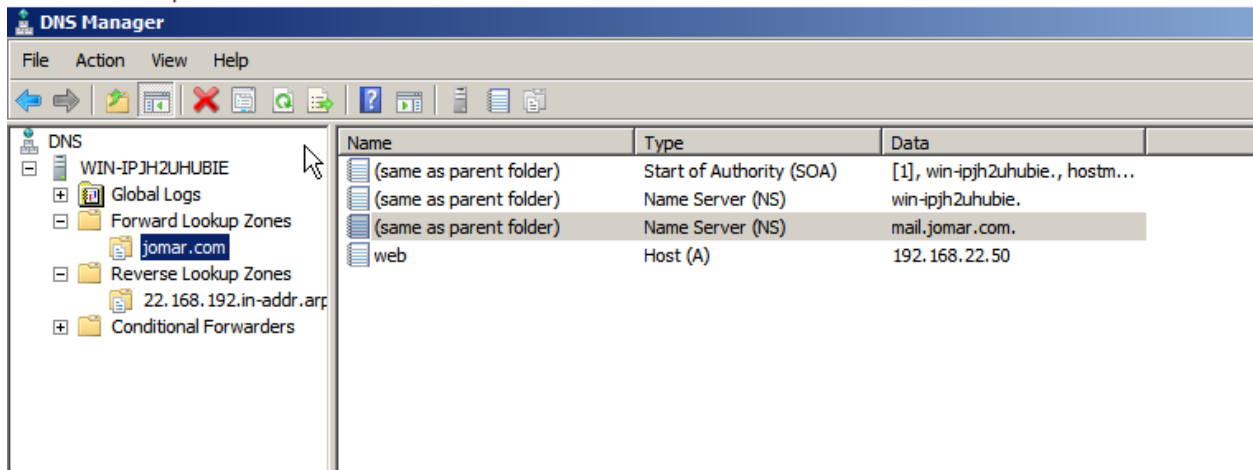
- Name (uses parent domain name if blank):** An empty text box.
- Fully qualified domain name (FQDN):** A text box containing 'jomar.com'.
- IP address:** An empty text box.
- ☐ Create associated pointer (PTR) record
- Buttons:** 'Add Host' and 'Cancel' at the bottom right.



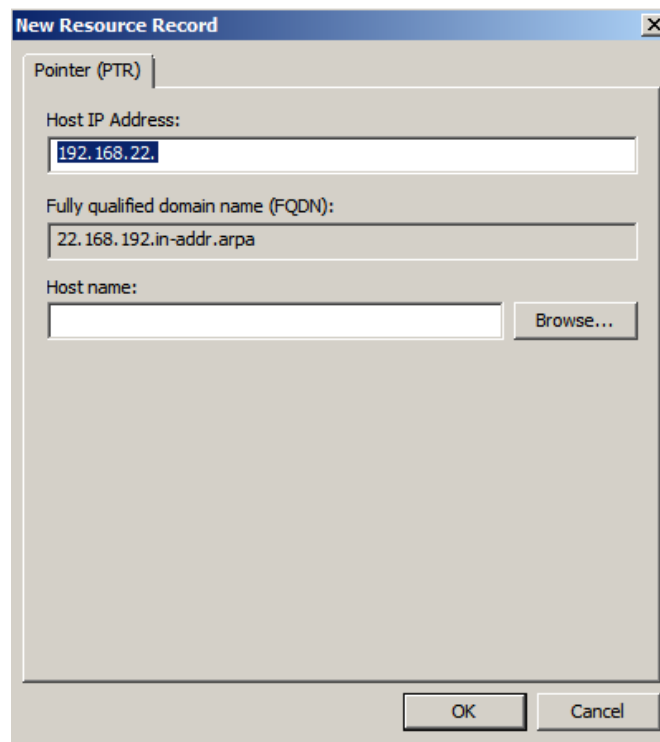
The 'New Host' dialog box is shown with the following fields and options:

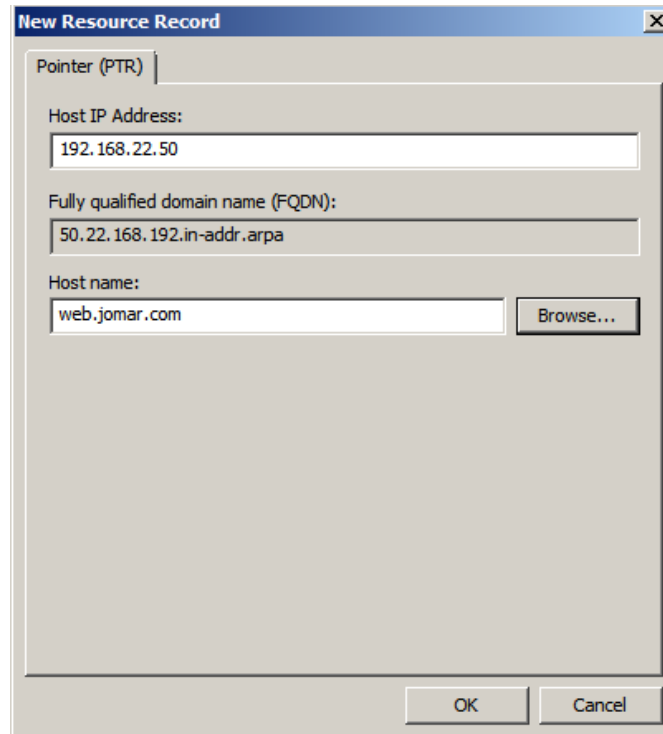
- Name (uses parent domain name if blank):** A text box containing 'web'.
- Fully qualified domain name (FQDN):** A text box containing 'web.jomar.com'.
- IP address:** A text box containing '192.168.22.50'.
- ☒ Create associated pointer (PTR) record
- Buttons:** 'Add Host' and 'Cancel' at the bottom right.

20) Forward Lookup Zones files will add file if you have configure the SOA, Name Servers and Hosts.



21) To configure PTR, click on Reverse Lookup zones -> reverse zone folder. Right Click the folder and click New Pointer. This will create appropriate entry in the reverse lookup zone for reverse queries. Fill up the necessary info and click ok.





The image shows a 'New Resource Record' dialog box with the 'Pointer (PTR)' tab selected. It contains three text input fields: 'Host IP Address' with the value '192.168.22.50', 'Fully qualified domain name (FQDN)' with the value '50.22.168.192.in-addr.arpa', and 'Host name' with the value 'web.jomar.com'. There is a 'Browse...' button next to the 'Host name' field. At the bottom are 'OK' and 'Cancel' buttons.

New Resource Record

Pointer (PTR)

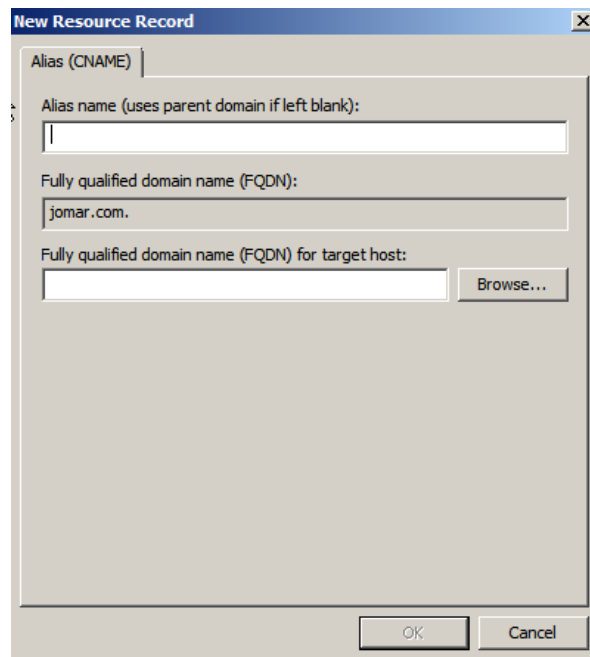
Host IP Address:
192.168.22.50

Fully qualified domain name (FQDN):
50.22.168.192.in-addr.arpa

Host name:
web.jomar.com Browse...

OK Cancel

- 22) To create alias, click on Reverse Lookup zones -> reverse zone folder. Right Click the folder and click New Alias. This will create multiple names of your single host. Fill up the necessary information and click OK.



The image shows a 'New Resource Record' dialog box with the 'Alias (CNAME)' tab selected. It contains three text input fields: 'Alias name (uses parent domain if left blank)' which is empty, 'Fully qualified domain name (FQDN)' with the value 'jomar.com.', and 'Fully qualified domain name (FQDN) for target host' which is empty. There is a 'Browse...' button next to the 'Fully qualified domain name (FQDN) for target host' field. At the bottom are 'OK' and 'Cancel' buttons.

New Resource Record

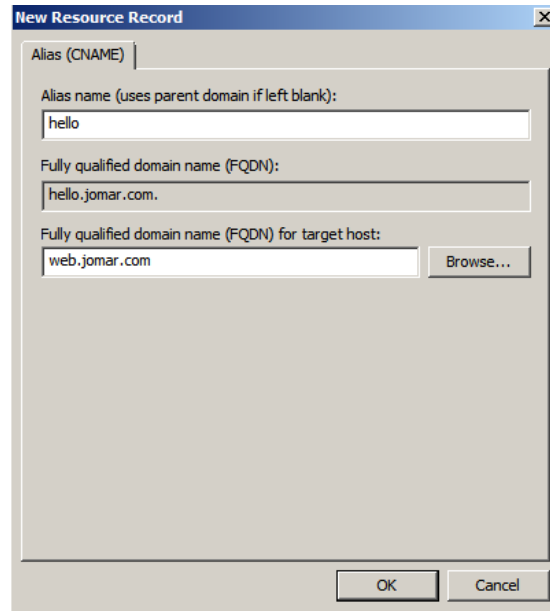
Alias (CNAME)

Alias name (uses parent domain if left blank):
|

Fully qualified domain name (FQDN):
jomar.com.

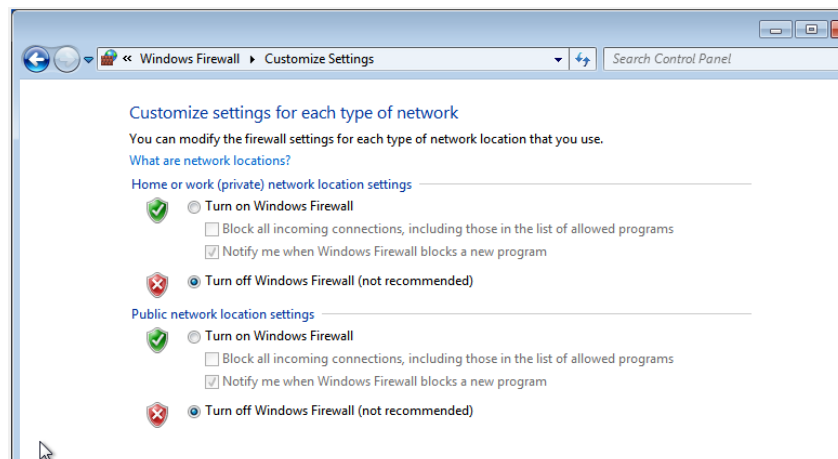
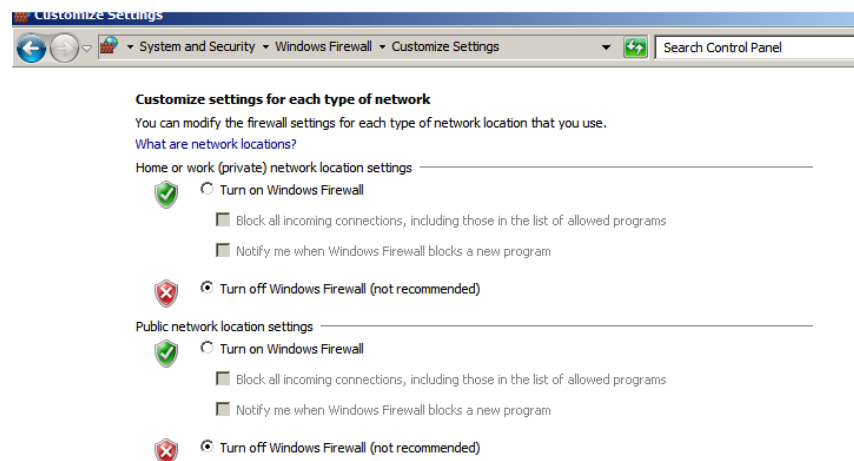
Fully qualified domain name (FQDN) for target host:
Browse...

OK Cancel



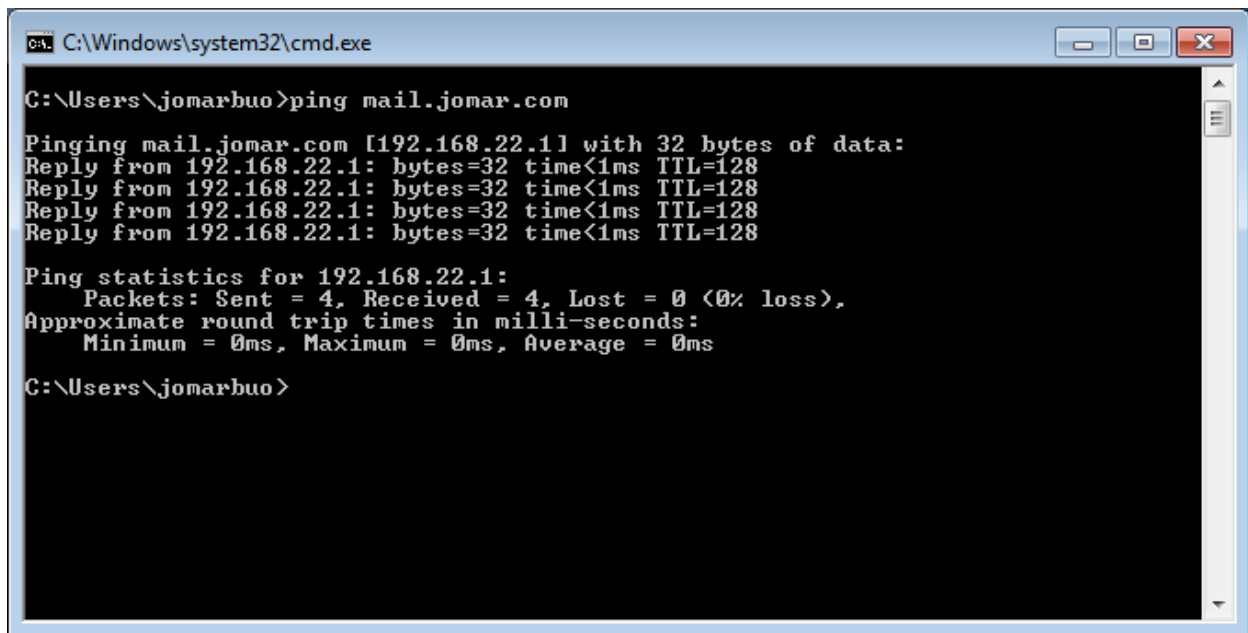
Testing the DNS Server

- 1) To test the created DNS server, the firewalls of both server and client must be off.



- 2) Go to cmd and try to ping the created DNS.

Using mail.jomar.com



```
C:\Windows\system32\cmd.exe

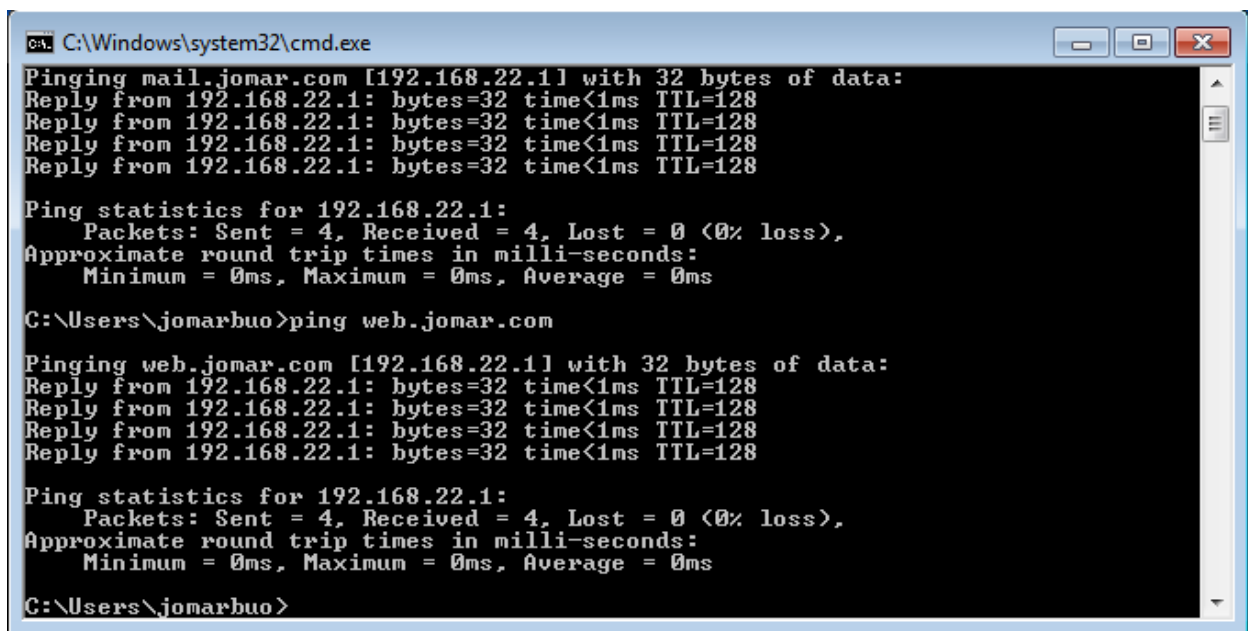
C:\Users\jomarbuo>ping mail.jomar.com

Pinging mail.jomar.com [192.168.22.1] with 32 bytes of data:
Reply from 192.168.22.1: bytes=32 time<1ms TTL=128
Reply from 192.168.22.1: bytes=32 time<1ms TTL=128
Reply from 192.168.22.1: bytes=32 time<1ms TTL=128
Reply from 192.168.22.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.22.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\jomarbuo>
```

Using web.jomar.com



```
C:\Windows\system32\cmd.exe

Pinging mail.jomar.com [192.168.22.1] with 32 bytes of data:
Reply from 192.168.22.1: bytes=32 time<1ms TTL=128
Reply from 192.168.22.1: bytes=32 time<1ms TTL=128
Reply from 192.168.22.1: bytes=32 time<1ms TTL=128
Reply from 192.168.22.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.22.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

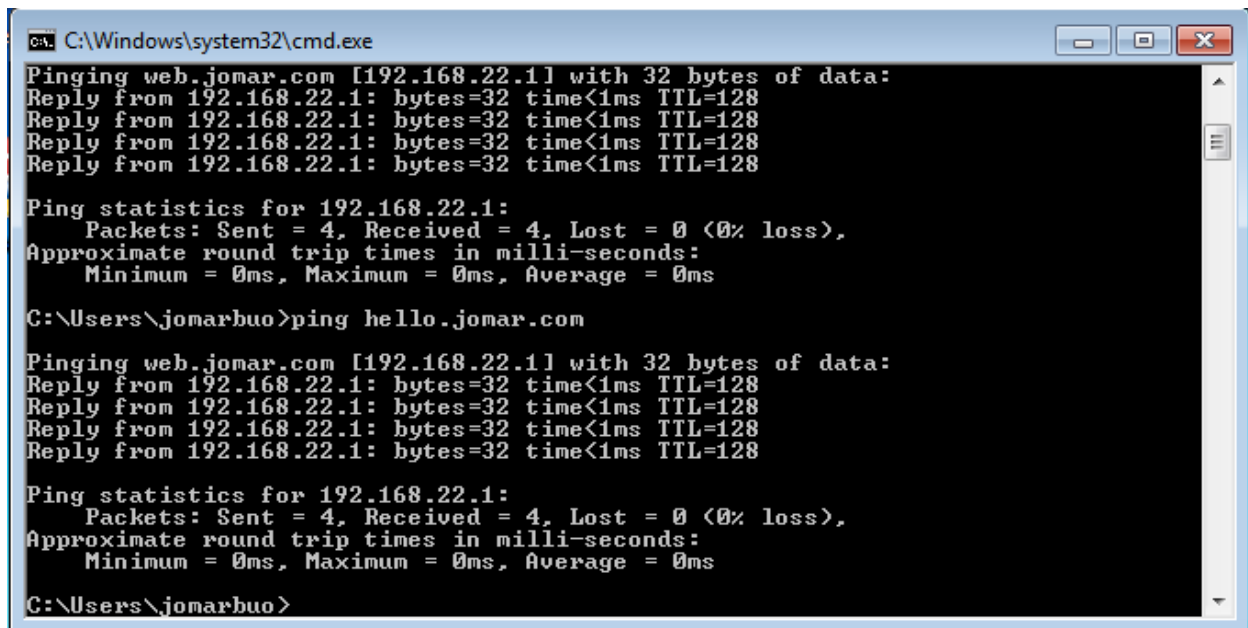
C:\Users\jomarbuo>ping web.jomar.com

Pinging web.jomar.com [192.168.22.1] with 32 bytes of data:
Reply from 192.168.22.1: bytes=32 time<1ms TTL=128
Reply from 192.168.22.1: bytes=32 time<1ms TTL=128
Reply from 192.168.22.1: bytes=32 time<1ms TTL=128
Reply from 192.168.22.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.22.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\jomarbuo>
```

Using hello.jomar.com



```
C:\Windows\system32\cmd.exe

Pinging web.jomar.com [192.168.22.1] with 32 bytes of data:
Reply from 192.168.22.1: bytes=32 time<1ms TTL=128
Reply from 192.168.22.1: bytes=32 time<1ms TTL=128
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C:\Users\jomarbuo>
```

- Reflection

Unlike in the Ubuntu server, installing and configuring DNS server in Windows 2008 is in graphical user interface. But it is easier to configure in Ubuntu server because all the necessary information to configure DNS server is in one file unlike Windows Server, there are one file for every important information in DNS.