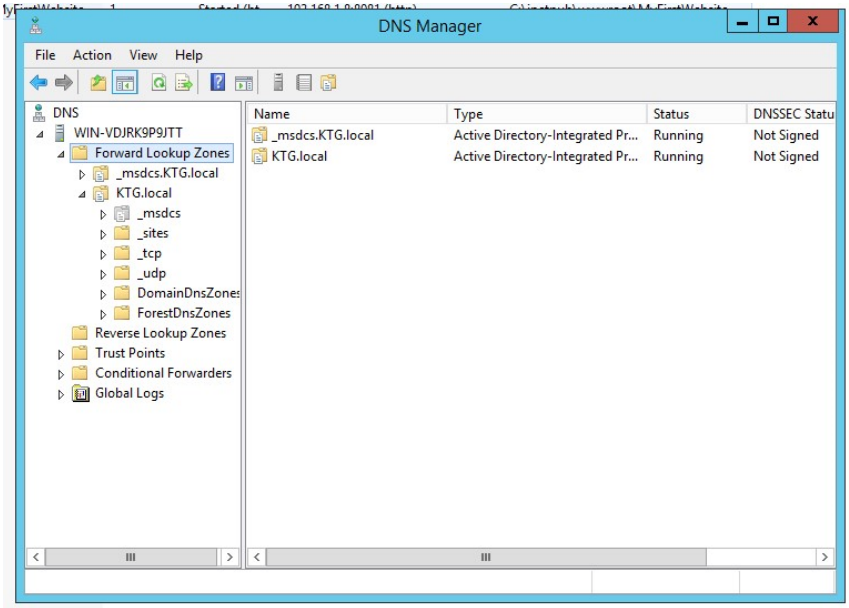
Forward look up zone and Reverse look up zone in DNS, DNS Records.

Date: 02-08-2023

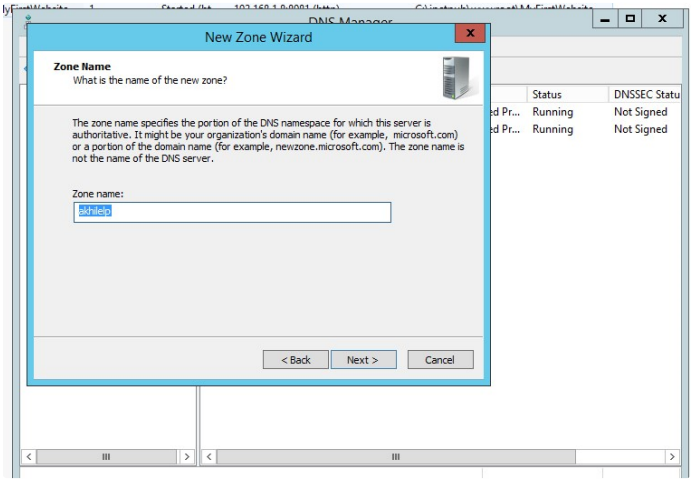
Forward lookup zones resolve names to IP addresses, **forward lookup zones will convert domain name into IP address** and Reverse lookup zones resolve IP addresses to names, **Reverse lookup converts IP address into domain name**. Forwarders can be used on your DNS server to forward requests for which your DNS server does not have an authoritative answer. Reverse DNS records are not required to be configured for DNS to function correctly. Forward and Reverse DNS record do not even have to agree with each other, but they do due to forward-confirmed reverse DNS.

To activate the process of forward lookup zone and reverse lookup zone in Windows Server 2012 R2:

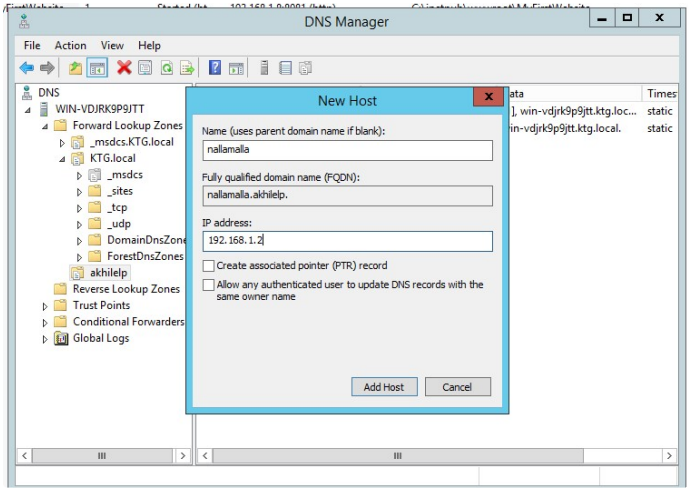
- As the first step we need to open server manager to enable DNS and IIS (Internet Information Services) by clicking the add roles and features.
- Now open DNS we get a left pannel there we can see forward lookup zone and reverse lookup zones.



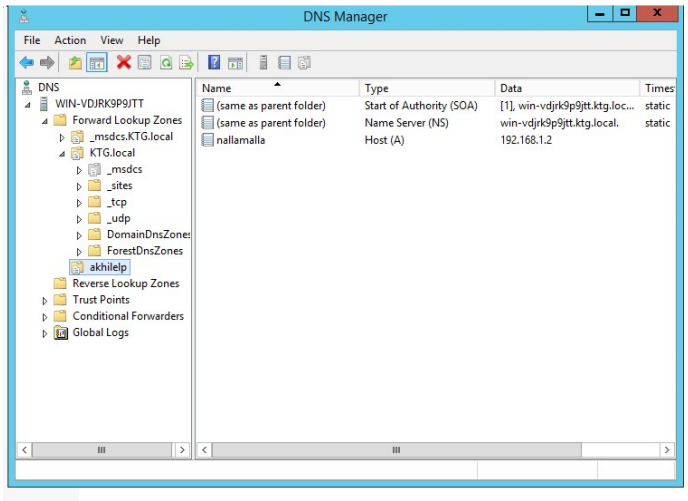
- Now we should create two zones, one in forward lookup zone and another in reverse lookup zone.
- I have created the forward lookup zone, where we have to mention the zone name.



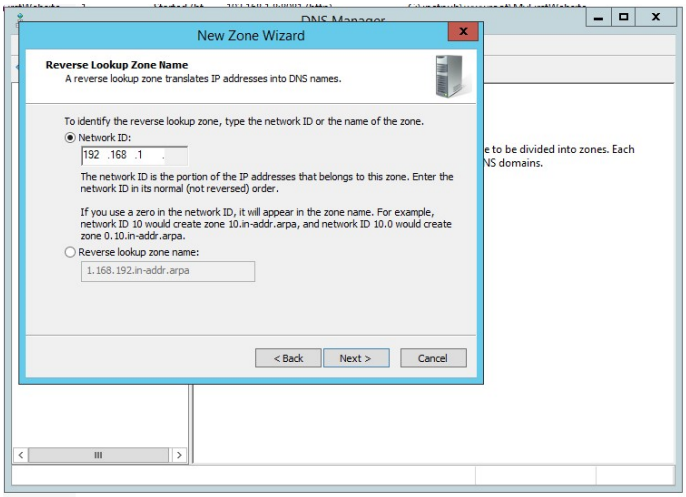
- After finishing the process of creating the forward lookup zone we have to create a new host.



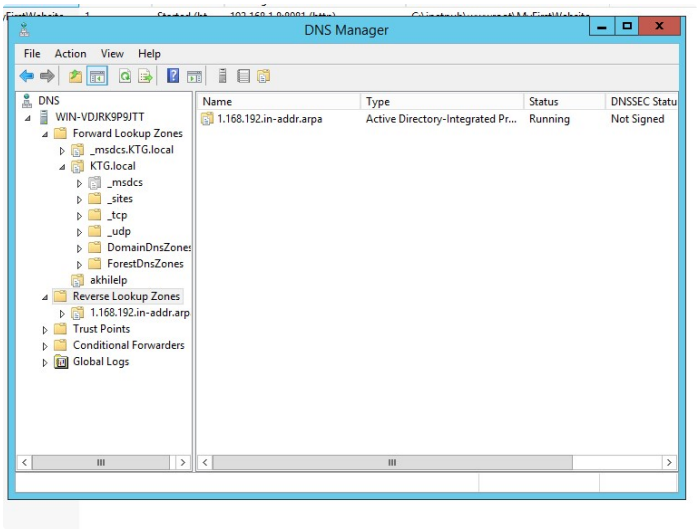
- By giving the details of new host we can see a zone with akhilelp and a file as nallamalla, host A and IP address 192.168.1.2.



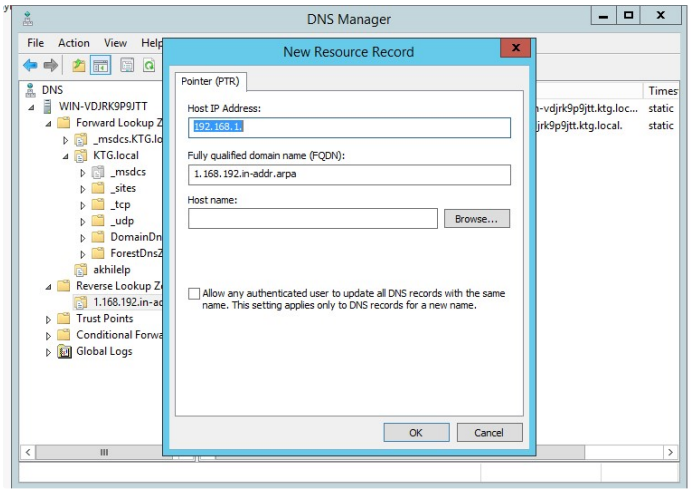
- Now we need to create a reverse lookup zone follow the same steps which are used for forward lookup zone. But give the network ID of our IP address.



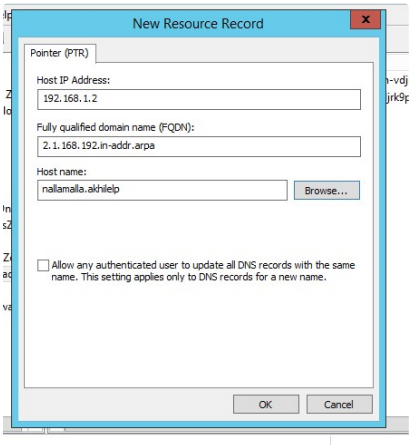
- Now we can see the folder of the zone we created in reverse lookup zone.



- Now we need to create a pointer in reverse lookup zone by giving the mentioned details.



- After browsing in the hostname column we will move to the further process and we get the hostname as follows.



- By clicking Ok the process of creating the forward look up zone and reverse lookup zone in windows server 2012 R2 is finished, and we can check it in the system by opening DNS.

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Task:

DNS Records:

- **It is an automatic process that converts the domain name into its corresponding IP address so that web browser can understand which webpage you want to access on the internet. It has two types of modes, iterative mode and recursive mode. Example: Phonebook.**
- Domain Name System resolves domain name into IP address. Computers don't understand names they only understand numbers.
- In DNS hierarchy (member of organization) we have three main servers.
- Root server, Top level domain, Authoritative name server.
- The process of DNS goes through Root server. It will look at domain name example.com and will forward the query to correct top level domain.
- Top level domain is responsible for top level domain such as .org, .com, .net etc.
- Top level domain forward the query to Name server responsible for example.com domain. Once the query reaches the name server example.com will resolve to IP address and website will be released.
- In DNS database we have zone file, zone file which contains the DNS records.

DNS Records:

- **A record:**
  It is the first record known to be Address record which is most commonly used. The A record resolves **domain into IP address (IPv4)**. We have TTL, time to live this will tells us how long each record is valid until the next update.
- **AAAA Record:**
  The quad AAAA record works as same as the A record but the difference is it resolves **domain name into IP address (IPv6).**
- **CNAME Record:**
  CNAME/Canonical record resolves **domain name into another domain name.** Computers read the domain names from right to left. (www.example.com. here www is a sub-domain, example is a second level domain, .com is a top-level domain, '.'is a root domain.). Because of CNAME record we can search www.example.com/example.com we get same results. Sub domains also use often used when a website has different services running on same server and are using same IP address. So as an example.com has FTP services running.
- **MX (Mail Exchange) Record:**
  MX is used for email exchange. **The MX record simply points to the server where emails should be delivered for the domain name.** For example, if we are sending an email the (MTA) mail transfer agent will query the MX record for example.com because it's looking for an email server and then DNS will respond back telling the MTA which server to send the email to. MX has two priority numbers. Primary with lower number 10, secondary with number 20.
- **Start of Authority (SOA) Record:**
  SOA record **stores administrative information about a DNS zone.** A DNS zone is a section of domain name space that a certain administrator has been delegated control over. DNS zones are created for **manageability purposes,** and each will have their own DNS zone file which contains an SOA record.
- **Name Server (NS) Record:**
  It provides the **name of the authoritative name server with a domain.**
- **Service (SRV) Record:**
  SRV record points to a server and a service by including a port number.
- **Pointer (PTR) Record:**
  PTR record resolves **IP address to domain names. These are attached to emails and used to prevent email spam.**
- **Text (TXT) Record:**
  Text Record contains miscellaneous which means **general/contact information about domain.**