

Technical Bulletin CS-14-12

Domain Requirements in Spectralink SIP Phones

This technical bulletin explains how to configure DNS domains to support Spectralink SIP Phones for failover and normal operation.

System Affected

Spectralink 87-Series (PIVOT)

Spectralink 84-Series

Description

Handling a SIP Domain in the Spectralink 8400

With the 8400 series phone there were several Call servers (The CS1k and the Avaya Aura specifically were examples of this) that required the use of a full SIP URI when registering and sending Invites. We would typically accomplish this by appending the SIP Domain name that the PBX required to the reg.1.address field. An example of the SIP registration parameters we might use to connect to a PBX like this using an 8400 series phone is shown below, and in this example the SIP domain defined in the Callserver is called *mydomain.local*:

```
reg.1.address=4572@mydomain.local  
reg.1.displayName="4572"  
reg.1.label="4572"  
reg.1.auth.userId="4572"  
reg.1.auth.password="9876"  
reg.1.server.1.address="172.29.102.92"  
reg.1.server.1.port="5070"
```

The result of the above parameters was that any SIP messages intended for the PBX would be sent to the Callserver address of 172.29.102.92, but the SIP Domain *mydomain.local* would be appended to our extension in registration requests (In the SIP From: and To: Fields) and would be appended to Invitations to other extensions. (i.e. if we dialed 8888 we would send an Invite To: 8888@mydomain.local and route the Invite to 172.29.102.92.

Handling a Domain in the Spectralink 8700

The Spectralink 8700 series phones use a different SIP stack, and we hand the SIP stack configuration information in a slightly different format. The 8700 series phones use the SIP Server field to deliver the Callserver address as well as the SIP domain. The result is that we may need to provide a DNS SRV record to resolve the SIP Domain name into an IP address to which SIP registration requests and Invitations will be sent, as well as to form the SIP Invitations and Registration requests with the Domain name included. This approach is only required in cases where a Domain name must be included in any SIP Invites or Registration requests (i.e. the CS1k or the Avaya Aura systems), otherwise we can simply provide an ip address or DNS A name record in the SIP Server field.

If we adapt the above 8400 series example of a Callserver at IP address 172.29.102.92, and requiring the Domain name of mydomain.local, there are two main tasks we will need to accomplish; first we need to configure the 8700 phone appropriately and then we need to create a DNS SRV record in a customer provided DNS server that will point requests to the SIP Domain name to the correct Callserver.

Configuring the 8700 phone

We must use the SIP Domain name as the SIP Server address. In the next section, we'll provide an example of how to create the DNS SRV record to support this.

SIP Server: mydomain.local

SIP Server port: Leave this blank when using SRV records – we will provide this from the DNS Server

Extension Number: 4572

Username: 4572

Password: 9876

That's all we should need from the phone side configuration. We now need to create a DNS record that will point requests for the Domain mydomain.local to the address of our Callserver.

Creating a DNS SRV record in a Windows Server

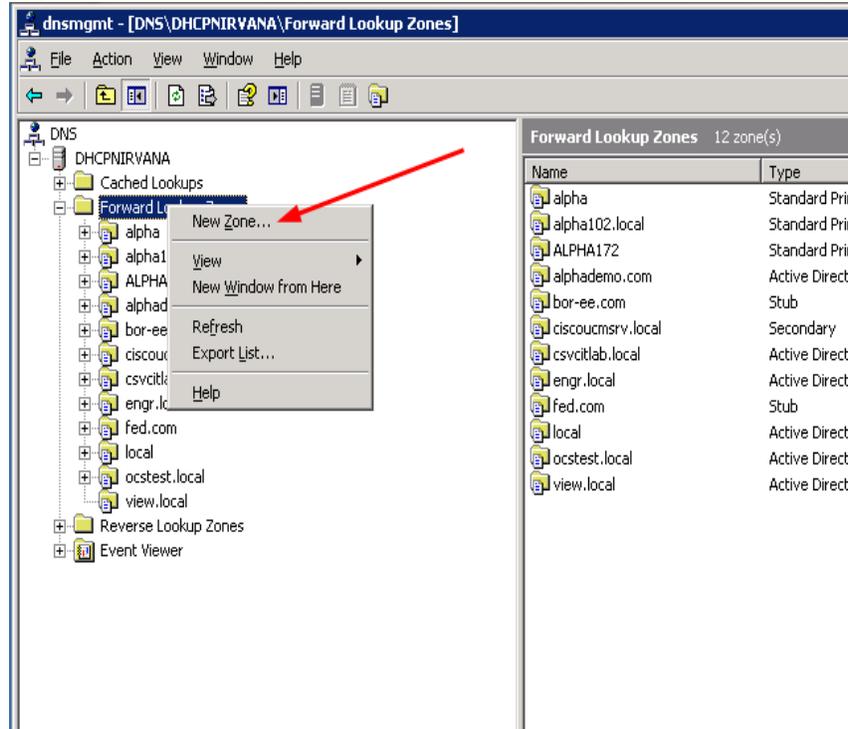
While we used a Windows 2003 Server for this example, the steps for a Windows 2008 Server would be very similar. There are MANY different settings and options we might set in a DNS server as we create a new SRV record that corresponds with our SIP Domain name. It is also possible that the customer may already have a DNS Forward Lookup Zone defined for their SIP Domain. We'll provide an example of creating a new SIP Domain (Forward Lookup Zone) in the DNS server from scratch, but if the Domain already exists you should be able to simply skip past the step where we create the original SIP Domain and follow the rest of the steps in sequence.

Create a New Forward Lookup Zone using the SIP Domain Name (or Verify a Zone Exists with your Domain name)

On the DNS Server, navigate to the Forward Lookup Zones and look for a Zone with the name of your SIP Domain, if it already exists, skip down to the "Create a DNS A Name record for the

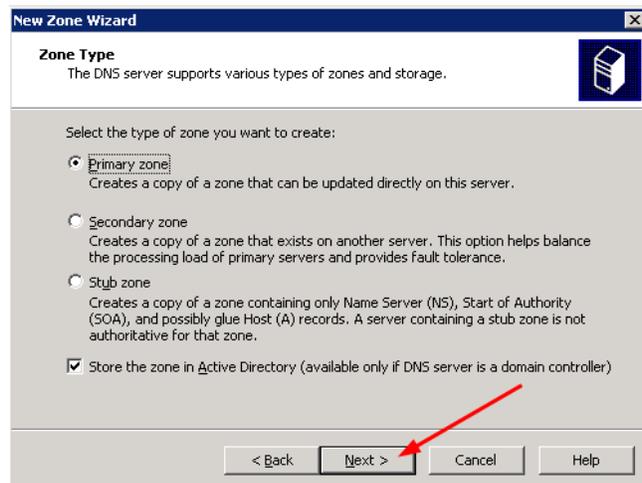
Callserver” section of this document. Otherwise follow the steps below to create a new Forward lookup zone using your SIP Domain name:

Right click on the Forward Lookup Zones field, and select New Zone

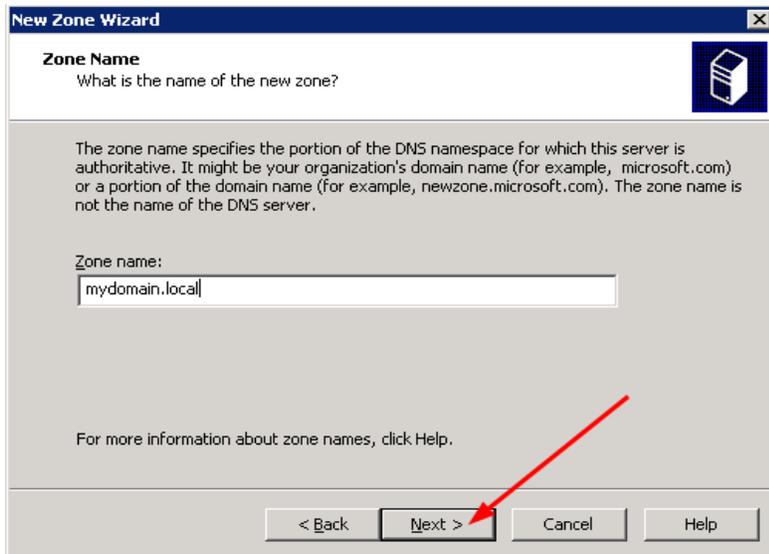


Select **Next** at the **Welcome to the New Zone Wizard** page

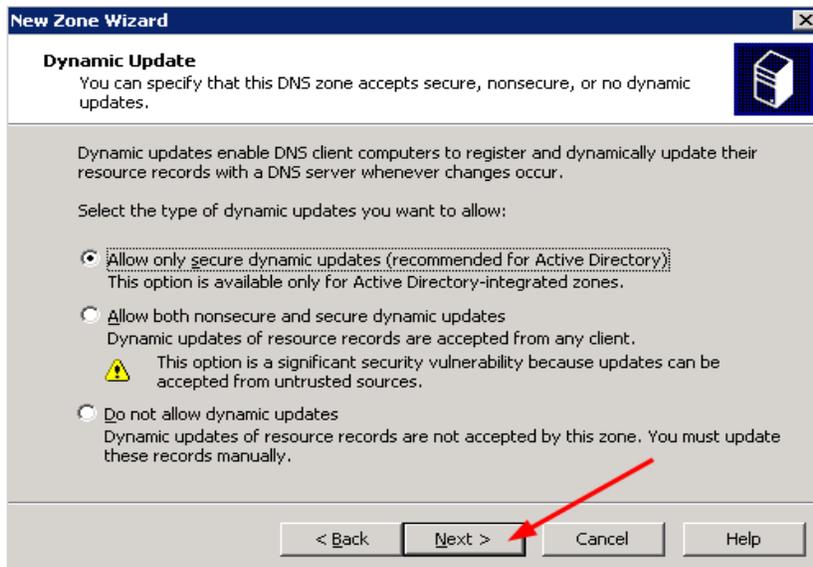
We chose to create a **Primary Zone**, and selected **Next**, and also selected **Next** on the following page, using the default of: **To all DNS servers in the Active Directory domain “specified Active Directory Domain”**.



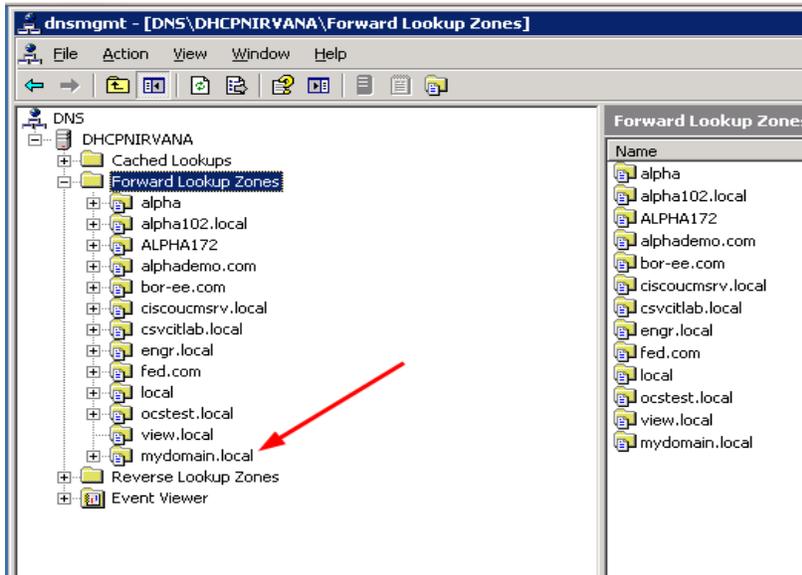
In the Zone Name field, type the name of your domain (In our example **mydomain.local**), and then select **Next** again:



On the **Dynamic Update** page, I chose to **allow only secure dynamic updates**, but you would need to do this in accordance with the customer's local policy. Then select **Next** again, and finally, select **Finish**.

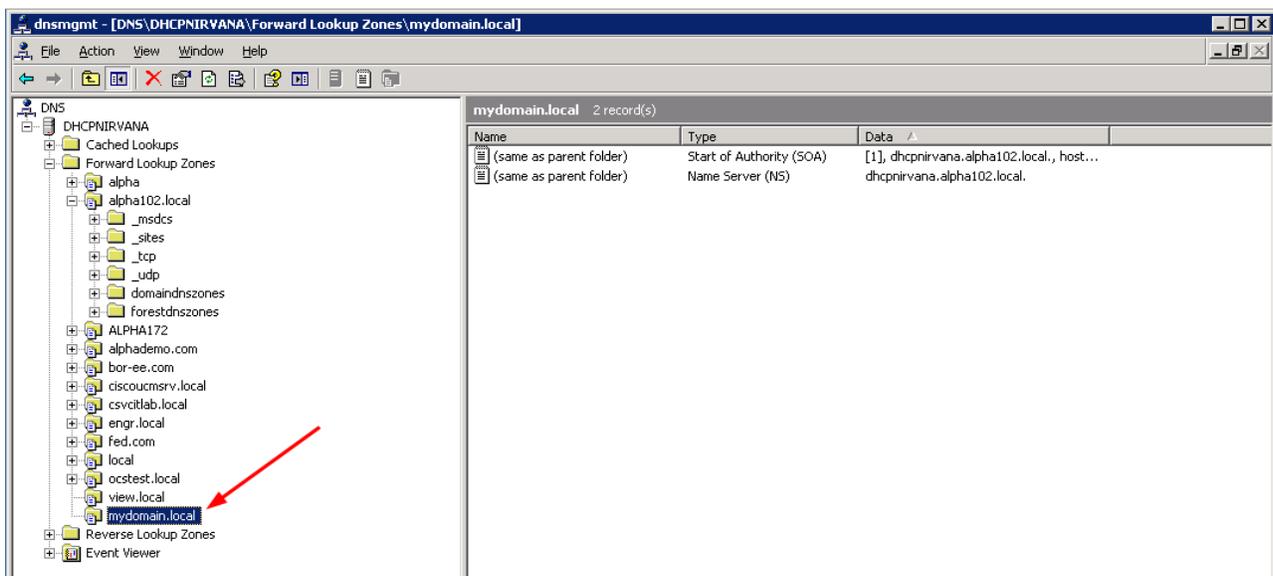


Now, you should see the domain name you just created (i.e. mydomain.local) appear as a Forward Lookup Zone:

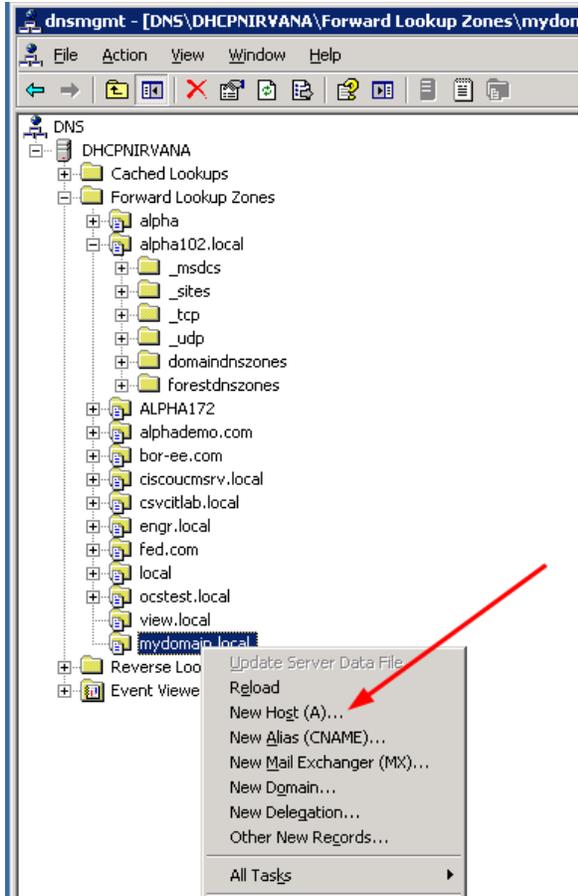


Create a DNS A Name record for the Callserver (or Verify an A name record already exists for the Callserver)

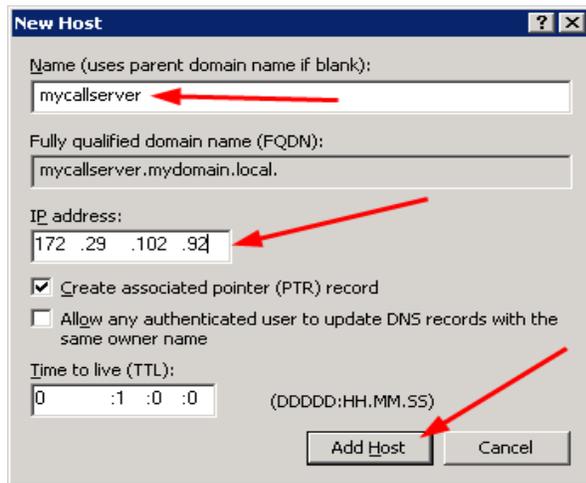
On the DNS Server, navigate to the Forward Lookup Zone that corresponds to your SIP Domain and highlight it. Now look for an A name record that corresponds to the Callserver the phones will point to (one does not exist in the example shown below). If a host A Name record already exists, skip down to the "Create a SRV record for the Callserver" section of this document. Otherwise follow the steps below to create a new DNS A name record for your Callserver.



Right click on the Forward Lookup Zone you just created and select New Host (A)

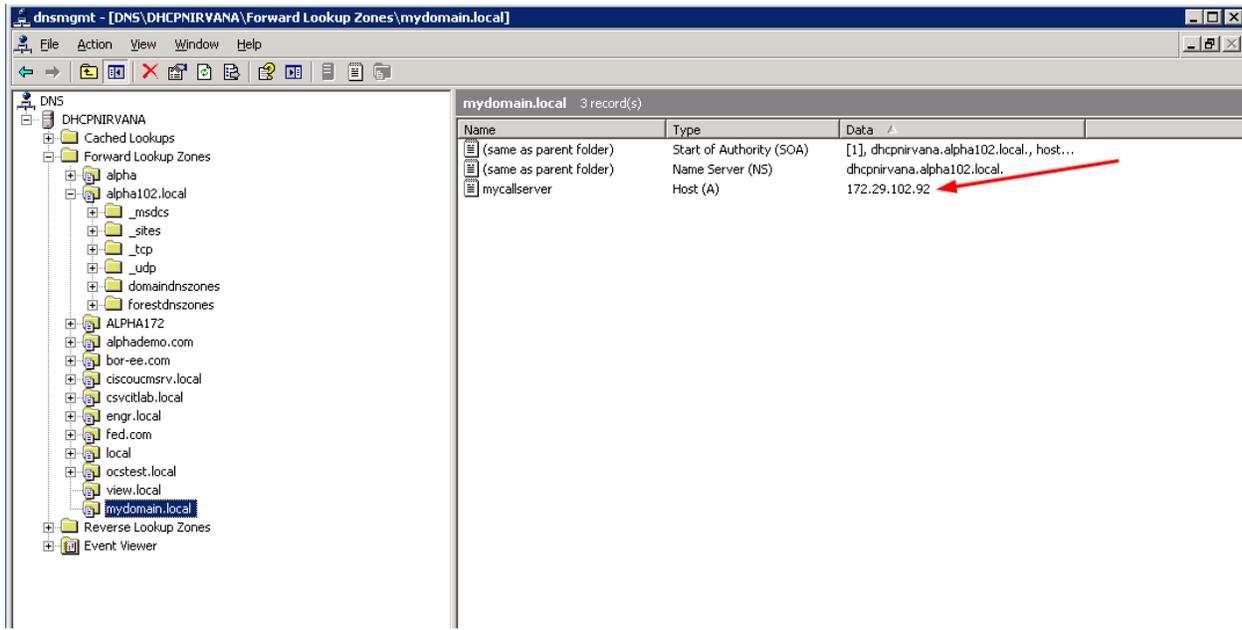


Now enter the callserver's name in the name field. If the customer is not particular about the name it can be named anything that would help to identify it as the SIP PBX. We will simply use this record to help us DNS resolve the Callserver's IP Address so you should not need to worry about giving it the "wrong" name. For our example, we called the PBX *mycallserver*. You must also provide the PBX's IP address. This is the address SIP Registrations and Invites should be directed to. Then select **Add Host**.



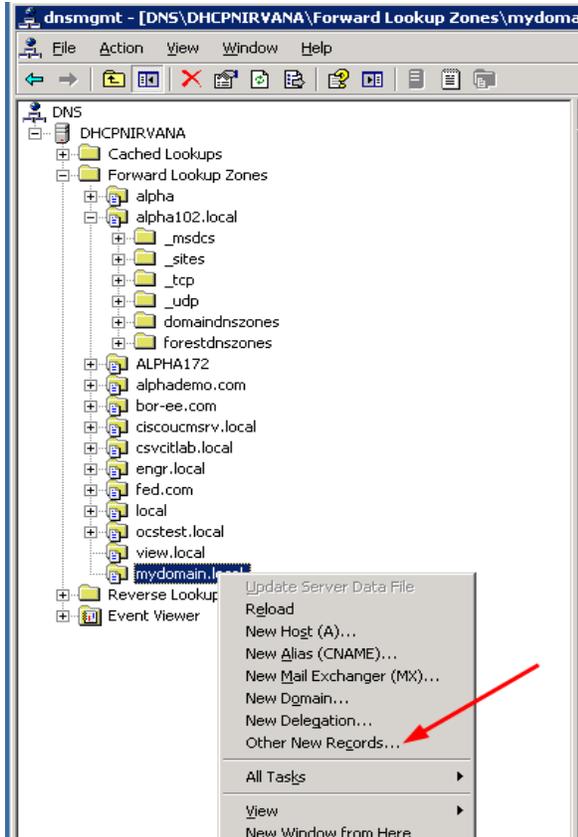
Note: If you receive an error message about the associated PTR record NOT being created, it simply means the reverse lookup zone is not specified. If the customer is not familiar with how to resolve this error or is not concerned about it, it can be safely ignored.

Select **Done** to finish creating A name Host records. You should now see an A name record linking the callservers' name to its IP address:

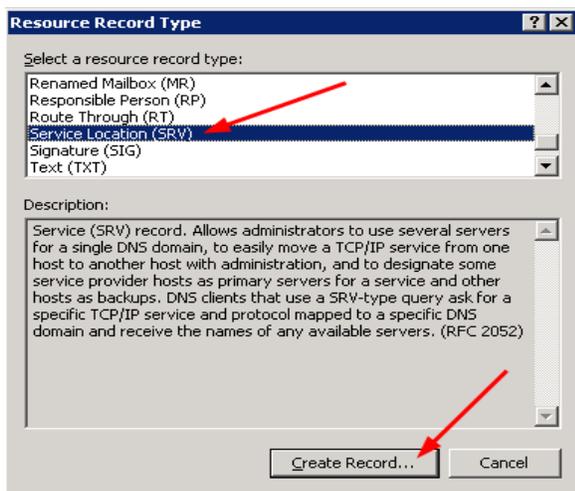


Create a SRV Record for the Callserver

Right click on the forward lookup zone you created that corresponds to the SIP Domain and select **Other New Records**



In the Resource Record Type window, scroll down to the **Service Location (SRV)** field and highlight it, then select **Create Record**



In the New Resource Record Window, we will create a record that will point to our server, **mycallserver**, and program it to use the udp protocol, on port 5070. To do so, modify the following fields:

Service: **_sip** (you will need to type this in.....it is not available in the pull-down)

Protocol: **_udp**

Priority: **1** (This tells us that this server will be the first item in the list, we may implement support for more than one server / failover in the future)

Port Number: **5070** (*Recall we did NOT specify this in the 8700 port field*)

Host Offering This Service: **mycallserver.mydomain.local**

Select the **OK** key

The screenshot shows a 'New Resource Record' dialog box with the following fields and values:

- Domain: mydomain.local
- Service: _sip
- Protocol: _udp
- Priority: 1
- Weight: 0
- Port number: 5070
- Host offering this service: mycallserver.mydomain.local

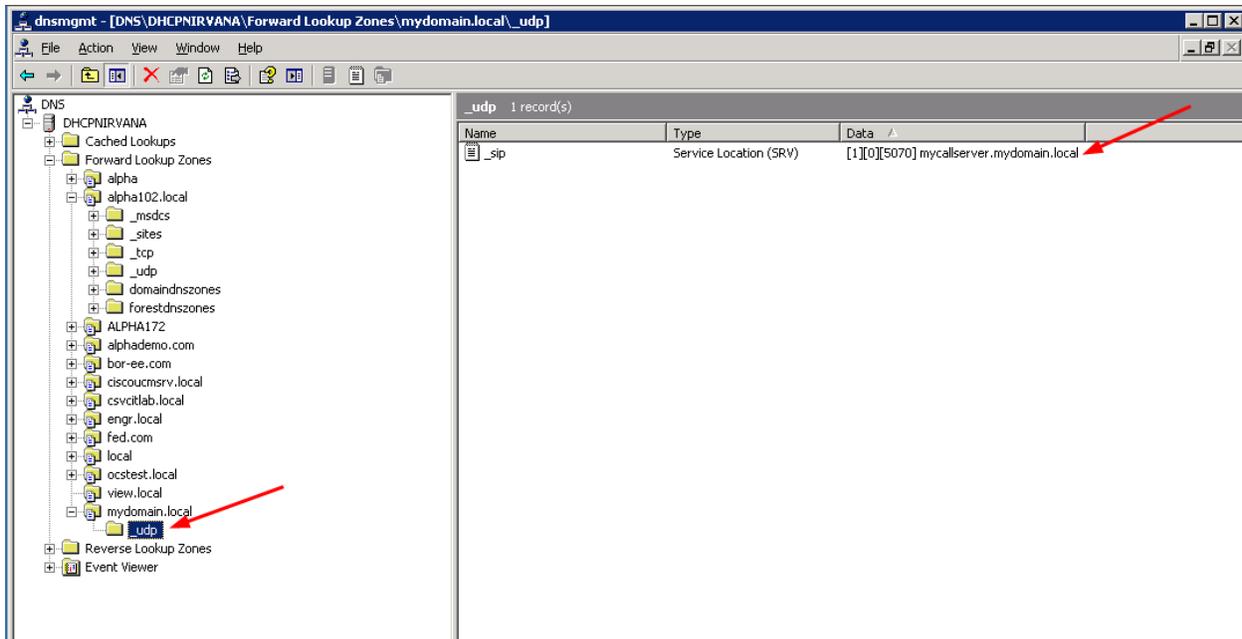
Additional options include:

- Delete this record when it becomes stale
- Record time stamp: [empty field]
- Allow any authenticated user to update all DNS records with the same name. This setting applies only to DNS records for a new name.
- Time to live (TTL): 0 :1 :0 :0 (DDDD:HH:MM:SS)

Buttons: OK, Cancel

Select **Done** to close the Resource Record Type Window that remains.

Now, we should see a SRV record that points to our callserver's name using port 5070 in the Forward Lookup Zone that corresponds to our SIP Domain.



DNS Verification and Troubleshooting

Once you've built the SRV record and A name record on the DNS server, you might want to ensure that you can query them. You can use a regular Windows machine to do this, but remember, it must be pointed to the DNS server (or have access to the DNS Server) where you created the records.

To Verify the A Record for mycallserver.mydomain.local

- From a Command Prompt type: ***nslookup mycallserver.mydomain.local***
- To Verify the SRV record for mydomain.local
 - Type ***nslookup*** and press ***return***
 - Type: ***set type=svr***
 - Type: ***_sip._udp.mydomain.local***
 - The Output from the above tests should look something like the below. If not, the phone won't work either:

```
C:\WINDOWS\system32\cmd.exe - nslookup
C:\Documents and Settings\Administrator>nslookup mycallserver.mydomain.local
Server: dhcpnirvana.alpha102.local
Address: 172.29.66.1

Name:    mycallserver.mydomain.local
Address: 172.29.102.92

C:\Documents and Settings\Administrator>nslookup
Default Server: dhcpnirvana.alpha102.local
Address: 172.29.66.1

> set type=srv
> _sip._udp.mydomain.local
Server: dhcpnirvana.alpha102.local
Address: 172.29.66.1

_sip._udp.mydomain.local      SRV service location:
      priority      = 1
      weight        = 0
      port          = 5070
      svr hostname  = mycallserver.mydomain.local
mycallserver.mydomain.local  internet address = 172.29.102.92
>
```

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