

Technical Bulletin CS-19-12

Failover Configuration Using DNS

This technical bulletin explains how to setup your Windows DNS environment to support failover.

System Affected

Spectralink Versity Handsets

Description

Spectralink Handsets support failover between two or more SIP servers natively. However, if your SIP environment uses active-active failover, meaning that your SIP servers are aware of each other and keep track of client states, then you will want to use DNS to configure your failover. The default failover behavior for the handset assumes that the SIP servers are setup as active-passive, meaning that when one SIP server is active the other is in a standby state and unaware of the client registration of the other server.

You can use the default failover configuration for an active-active environment without configuring DNS but be aware that doing so means that the handset will attempt to register to both servers at the same time. Some SIP environments do not handle this well and can cause the SIP clients to flip-flop between the two servers constantly. This works fine for the active-passive environment as the passive server will accept the client registration but won't do anything else with it.

By using DNS to handle the failover you are allowing the handset to learn about an array of SIP servers that can be used for registration but you are also feeding it the information about which servers are considered primary, secondary, tertiary, etc.; along with the protocol and port information used for registration. This is important because it allows the phone to register to one server at a time instead of all of them at once.

This document will explain how to perform this setup with Windows DNS but it could be done with any DNS server of your choosing. Be aware that NAPTR records are not supported in all DNS servers and that may cause issues, but also know that NAPTR is essentially just another way of saying a sub-domain so don't get stuck on that topic. With Windows DNS, NAPTR records are only supported when using Windows 2008 R2 Server. Fortunately there are some alternative methods to make this work without NAPTR records which we'll describe. So let's get started!

DNS Configuration

Step 1

There are a couple ways to set up your DNS for failover support of the handsets. We'll document both here and you can decide which one you want to use. But here's a little background on how the phone handles DNS resolution for this process.

If a DNS name is given for a proxy/registrar address, the IP address(es) associated with that name will be discovered as specified in the RFC 3263. DNS record lookup behavior may additionally be influenced if the transport mechanism or port number are specified in the phone's configuration. If the phone is allowed to operate using the default configuration parameter combination of transport method (UDP or TCP) and port number (5060), the handset will attempt record lookups in the following order until it receives a successful lookup response; NAPTR, then SRV, followed by A record.

Option 1 – Using SRV records and A records only

This first option uses your existing domain as the root for server lookup of the required records. Using this option leverages the already existing NAPTR records that are created as part of an existing domain.

In the domain you wish to use for failover, you will need to open your DNS server management window and right-click to select "Other New Records". In the window that opens, scroll down until you find Service Location (SRV), note that the list is in alphabetical order.

Select the SRV record type and click the Create Record button. This will open another window where you can create the SRV record and enter the details as shown in the image to the right.

You will enter the Service field as `_sip` which will denote the service type being used is SIP. The Protocol will be either UDP or TCP, depending on what you're deploying. Note that you can create records for both protocol types if you like. Just repeat these steps and enter the appropriate protocol. The Protocol is entered as `_udp` or `_tcp`. Be aware that in new versions of Windows Server the Protocol field has become a free text field, and you **MUST** include the underscore before the protocol.

Next is the Priority and this one can be a little confusing at first. A lower priority number means the record has higher priority over other entries with the same name. For example, if I have two SIP server, which you should since you're doing this setup, you will need an SRV

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

- Service Location (SRV)
- Domain: eslab.local
- Service: _sip
- Protocol: _udp
- Priority: 0
- Weight: 10
- Port number: 5060
- Host offering this service: mysipserver.eslab.local
- Allow any authenticated user to update all DNS records with the same name. This setting applies only to DNS records for a new name. (unchecked)
- Buttons: OK, Cancel, Help

record for each of the servers. This means that the server you want to be server 1 should have a priority number that is lower than the value you give to server 2.

The Weight is similar to Priority but it uses of higher number to imply importance over another record. If you have two SRV records that have the same priority then the weight will be used to determine the server that gets used.

The port number is required and will typically be 5060 unless you've configured your SIP environment to use a non-default port. An Avaya CS1K SIP environment uses a default of port of 5070, for example. Just know that the Versity handset always uses port 5070 as it's local port when communicating outwardly, which can cause issues when the PBX wants to receive on port 5070. But this tends to vary depending on your PBX, so please test for your specific environment.

The Host Offering This Service field is where you will enter the FQDN of the SIP server. This means you must have the domain name appended to the end of the server name you enter. If you haven't created an A record for your SIP server yet, don't worry, we're getting to that bit.

Once you're done, just click OK to save the record. You will need to repeat these steps to add any additional SRV records for other SIP servers. You **MUST** have one SRV record per SIP server.

Now, what you would put into the handset for the SIP server address would just be the domain name. I know this seems a little odd but what happens is the phone will use this information to do a lookup for NAPTR records and it knows how to find the SRV and A records from there.

You'll need to replace the SIP server address with your appropriate domain address and depending on how you've chosen to deploy, using NAPTR records or SRV and A records only, will determine what the transport type will be. Your options are: UDP or TCP.

Here's an example of SAM configuration:

Server Address	<input type="text" value="eslab.local"/>
SIP Server Port	<input type="text" value="5060"/>
Transport:	<input type="text" value="UDP"/>

Option 2 – Creating a New Sub-Domain

To utilize this option, you will be creating a new sub-domain within your existing DNS server environment. Some customers may wish to use this approach to keep the configuration separate from their primary domain and make it more obvious how things are setup at a glance. The procedure for doing this is pretty simple.

In the domain you want to create your sub-domain, right click and choose New Domain from the list. This will open a new window where you can enter the name you want to use for your new sub-domain. Enter whatever you want this name to be but if you want to make it meaningful or useful for anyone to see what it's for then enter something like, *sipserver*. Click OK when you're done.

You should now see a new folder in your DNS view with the name you just entered. This folder is a new sub-domain under whichever domain you chose to use. Click on the folder and you will see a new NAPTR record has been automatically created in this folder. Next we need to create the SRV records for your failover setup. This process is identical to what we've described above in Option 1 so please refer back to that section starting at paragraph 2.

When configuring the handset for the SIP Server you will enter the sub-domain. Per the example we used above, this might be *sipserver.mydomain.local*, as an example. The phone would then use this information to locate the SRV and A records to perform the server registration.

You'll need to replace the SIP server address with your appropriate sub-domain address and depending on how you've chosen to deploy, using NAPTR records or SRV and A records only, will determine what you'll set the transport type will be. Your options are: UDP or TCP

Here's an example of SAM configuration:

Server Address	<input type="text" value="subdomain.eslab.local"/>
SIP Server Port	<input type="text" value="5060"/>
Transport:	<input type="text" value="UDP"/>

Step 2

Next we need to make sure the A records exist for our SIP servers. Without the A records the handsets will not be able to locate the appropriate IP address to be able to register. An A record is just a hostname entry in your DNS that points to an IP address. Regardless of which option you chose in Step 1 above, you will enter A records the same way.

To create an A record simply right click in the domain you wish to create the record and choose New Host (A or AAAA) from the list. You will enter only the hostname for the SIP server in the Name field and then the server's IP address in the IP Address field. Be sure you click the check box next to Create Associated Pointer (PTR) Record as well so that the reverse lookup works. This allows you to lookup the IP address and get the hostname.

Perform this step for both, or all, of your SIP servers so there is a relevant hostname for each of them. What you call each of them is entirely up to you but you might consider something

descriptive such as, avayasipprimary for an Avaya SIP server. Or something like SIPPrimary or SIPSecondary.

So at this point you should now have created SRV records and A records in your DNS server and entered the domain or sub-domain into your SAM server for the Versity handsets to use for registration. What you should now see in the BizPhone SIP Status view is all the SIP servers that resolved out of DNS in the order of priority you entered. There will be an asterisk "*" next to the line for the server that is currently registered and active. Any server that is up and available will show that it is "Up". Should the server be offline then this will change to "Down". You're on your own to figure out a way to test your failover configuration but as long as you can see multiple servers listed in the SIP Status the phone will be able to failover properly.

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