Dynamic DNS

This chapter describes how to configure dynamic DNS (DDNS) update methods.

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### About DDNS

DDNS update integrates DNS with DHCP. The two protocols are complementary: DHCP centralizes and automates IP address allocation; DDNS update automatically records the association between assigned addresses and hostnames at predefined intervals. DDNS allows frequently changing address-hostname associations to be updated frequently. Mobile hosts, for example, can then move freely on a network without user or administrator intervention. DDNS provides the necessary dynamic update and synchronization of the name-to-address mapping and address-to-name mapping on the DNS server.

The DDNS name and address mapping is held on the DHCP server in two resource records (RRs): the A RR includes the name-to-IP address mapping, while the PTR RR maps addresses to names. Of the two methods for performing DDNS updates—the IETF standard defined by RFC 2136 and a generic HTTP method—the ASA supports the IETF method.

### DDNS Update Configurations

The two most common DDNS update configurations are the following:

- The DHCP client updates the A RR, while the DHCP server updates the PTR RR.
- The DHCP server updates both the A RR and PTR RR.

In general, the DHCP server maintains DNS PTR RRs on behalf of clients. Clients may be configured to perform all desired DNS updates. The server may be configured to honor these updates or not. The DHCP server must know the fully qualified domain name (FQDN) of the client to update the PTR RR. The client provides an FQDN to the server using a DHCP option called Client FQDN.
**UDP Packet Size**

DDNS allows DNS requesters to advertise the size of their UDP packets and facilitates the transfer of packets larger than 512 octets. When a DNS server receives a request over UDP, it identifies the size of the UDP packet from the OPT RR and scales its response to contain as many resource records as are allowed in the maximum UDP packet size specified by the requester. The size of the DNS packets can be up to 4096 bytes for BIND or 1280 bytes for the Windows 2003 DNS Server. Several additional *message-length maximum* commands are available:

- The existing global limit: *message-length maximum 512*
- A client or server specific limit: *message-length maximum client 4096* and *message-length maximum server 4096*
- The dynamic value specified in the OPT RR field: *message-length maximum client auto*

If the three commands are present at the same time, the ASA allows the automatically configured length up to the configured client or server maximum. For all other DNS traffic, the *message-length maximum* is used.

**Guidelines for DDNS**

This section includes guidelines and limitations that you should check before configuring DDNS.

**Context Mode Guidelines**

Supported in transparent firewall mode only for the DNS Client pane.

**Configure DDNS**

This section describes how to configure DDNS.

**Update Both A and PTR RRs for Static IP Addresses**

To configure the client to request that it update both A and PTR RRs for static IP addresses, perform the following steps:

**Procedure**

1. **Step 1** Create a DDNS update method that dynamically updates DNS RRs.
   
   ```
   ddns update method name
   ```
   
   Example:
   ```
   ciscoasa(config)# ddns update method ddns-2
   ```

2. **Step 2** Specify that the client update both the DNS A and PTR RRs.
   ```
   ddns both
   ```
   
   Example:
Configure DDNS

Step 3 Configure an interface and enter interface configuration mode.

```
interface mapped_name
```

Example:
```
ciscoasa(DDNS-update-method)# interface eth1
```

Step 4 Associate the DDNS method with the interface and an update hostname.

```
ddns update [method-name | hostname hostname]
```

Example:
```
ciscoasa(config-if)# ddns update ddns-2
ciscoasa(config-if)# ddns update hostname asa.example.com
```

Step 5 Configure a static IP address for the interface.

```
ip address ip_address [mask] [standby ip_address]
```

Example:
```
ciscoasa(config-if)# ip address 10.0.0.40 255.255.255.0
```

Update Both the A and PTR RRs

To configure the DHCP client to request that it update both the A and PTR RRs and that the DHCP server honor these requests, perform the following steps:

Procedure

Step 1 Configure the DHCP client to request that the DHCP server perform no updates.

```
dhcp-client update dns [server {both | none}]
```

Example:
```
ciscoasa(config)# dhcp-client update dns server none
```

Step 2 Create a DDNS update method that dynamically updates DNS RRs.

```
ddns update method name
```

Example:
```
ciscoasa(config)# ddns update method ddns-2
```

Step 3 Specify that the client update both the DNS A and PTR RRs.

```
ddns both
```

Example:
```
ciscoasa(DDNS-update-method)# ddns both
```

Step 4 Configure an interface and enter interface configuration mode.

```
interface mapped_name
```
Configure DDNS

Step 5  Associate the DDNS method with the interface and an update hostname.

\[ \texttt{ddns update [method-name | hostname hostname]} \]

Example:
\[ \texttt{ciscoasa(config-if)# ddns update ddns-2} \]
\[ \texttt{ciscoasa(config-if)# ddns update hostname asa.example.com} \]

Step 6  Use DHCP to obtain an IP address for the interface.

\[ \texttt{ip address dhcp} \]

Example:
\[ \texttt{ciscoasa(if-config)# ip address dhcp} \]

Step 7  Configure the DHCP server to perform DDNS updates.

\[ \texttt{dhcpd update dns [both] [override] [interface srv_ifc_name]} \]

Example:
\[ \texttt{ciscoasa(if-config)# dhcpd update dns} \]

Ignore Updates to Either RR

To configure the DHCP client to include the FQDN option that instructs the DHCP server not to honor either the A or PTR updates, perform the following steps:

Procedure

Step 1  Create a DDNS update method that dynamically updates DNS RRs.

\[ \texttt{ddns update method name} \]

Example:
\[ \texttt{ciscoasa(config)# ddns update method ddns-2} \]

Step 2  Specify that the client updates both the DNS A and PTR RRs.

\[ \texttt{ddns both} \]

Example:
\[ \texttt{ciscoasa(DDNS-update-method)# ddns both} \]

Step 3  Configure an interface and enter interface configuration mode.

\[ \texttt{interface mapped_name} \]

Example:
\[ \texttt{ciscoasa(DDNS-update-method)# interface Ethernet0} \]

Step 4  Associate the DDNS method with the interface and an update hostname.

\[ \texttt{ddns update [method-name | hostname hostname]} \]
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Example:

ciscoasa(config-if)# ddns update ddns-2
ciscoasa(config-if)# ddns update hostname asa.example.com

Step 5  Configure the DHCP client to request that the DHCP server perform no updates.

dhcp-client update dns [server {both | none}]

Example:

ciscoasa(config)# dhcp-client update dns server none

Step 6  Use DHCP to obtain an IP address for the interface.

ip address dhcp

Example:

ciscoasa(config-if)# ip address dhcp

Step 7  Configure the DHCP server to override the client update requests.

dhcpd update dns [both] [override] [interface srv_ifc_name]

Example:

ciscoasa(config-if)# dhcpd update dns both override

Update the PTR RR Only

To configure the server to perform only PTR RR updates by default, perform the following steps:

Procedure

Step 1  Configure an interface.

interface mapped_name

Example:

ciscoasa(config)# interface Ethernet0

Step 2  Request that the DHCP server update both the DNS A and PTR RRs.

dhcp-client update dns [server {both | none}]

Example:

ciscoasa(config-if)# dhcp-client update dns both

Step 3  Configure the DHCP client on the configured interface.

ddns update [method-name | hostname hostname]

Example:

ciscoasa(config-if)# ddns update hostname asa

Step 4  Configure the DHCP server to perform DDNS updates.
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```
dhcpd update dns [both] [override] [interface srv_ifc_name]
```

Example:
ciscoasa(config-if)# dhcpd update dns

**Step 5** Define the DNS domain name for DHCP clients.
```
dhcpd domain domain_name [interface if_name]
```

Example:
ciscoasa(config-if)# dhcpd domain example.com

### Update a RR with the Client and a PTR RR with the Server

To configure the client to update the A resource record and to configure the server to update the PTR records, perform the following steps:

**Procedure**

1. **Step 1** Create a DDNS update method that dynamically updates DNS RRs.
   ```
   ddns update method name
   ```
   Example:
ciscoasa(config)# ddns update method ddns-2

2. **Step 2** Specify a DDNS update method.
   ```
   ddns both
   ```
   Example:
ciscoasa(DDNS-update-method)# ddns both

3. **Step 3** Configure an interface.
   ```
   interface mapped_name
   ```
   Example:
ciscoasa(DDNS-update-method)# interface Ethernet0

4. **Step 4** Configure the update parameters that the DHCP client passes to the DHCP server.
   ```
   dhcp-client update dns [server (both | none)]
   ```
   Example:
ciscoasa(config-if)# dhcp-client update dns

5. **Step 5** Associate the DDNS method with the interface and an update hostname.
   ```
   ddns update [method-name | hostname hostname]
   ```
   Example:
ciscoasa(config-if)# ddns update ddns-2
ciscoasa(config-if)# ddns update hostname asa
Step 6 Configure the DHCP server to perform DDNS updates.

dhcpd update dns [both] [override] [interface srv_ifc_name]

Example:
ciscoasa(if-config)# dhcpd update dns

Step 7 Define the DNS domain name for DHCP clients.

dhcpd domain domain_name [interface if_name]

Example:
ciscoasa(config-if)# dhcpd domain example.com

Monitoring DDNS

See the following commands for monitoring DDNS status:

- show running-config ddns
  
  This command shows the current DDNS configuration.

- show running-config dns server-group
  
  This command shows the current DNS server group status.

History for DDNS

Table 15-1 History for DDNS

<table>
<thead>
<tr>
<th>Feature Name</th>
<th>Releases</th>
<th>Description</th>
</tr>
</thead>
</table>
| DDNS         | 7.0(1)   | We introduced this feature.
|              |          | We introduced the following commands: ddns, ddns update, dhcp client update dns, dhcpd update dns, show running-config ddns, and show running-config dns server-group. |