



CHAPTER 9

Configuring Dynamic DNS

This chapter describes how to configure DDNS update methods, and includes the following topics:

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Information 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. To configure the DNS server for other uses, see the “[Configuring the DNS Server](#)” section on page 7-11. To configure DHCP, see the “[Configuring a DHCP Server](#)” section on page 8-2.

EDNS 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 resource record (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**
- 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 adaptive security appliance enforces the minimum of the three specified values.

Licensing Requirements for DDNS

Table 9-1 shows the licensing requirements for DDNS.

Table 9-1 *Licensing Requirements*

Model	License Requirement
All models	Base License.

Guidelines and Limitations

Failover Guidelines

Supports Active/Active and Active/Standby failover.

Firewall Mode Guidelines

Supported in routed firewall mode.

Context Mode Guidelines

Supported in single and multiple context modes.

Supported in transparent mode for the DNS Client pane.

IPv6 Guidelines

Supports IPv6.

Configuring DDNS

This section describes examples for configuring the adaptive security appliance to support Dynamic DNS. DDNS update integrates DNS with DHCP. The two protocols are complementary—DHCP centralizes and automates IP address allocation, while dynamic DNS update automatically records the association between assigned addresses and hostnames. When you use DHCP and dynamic DNS update, this configures a host automatically for network access whenever it attaches to the IP network. You can locate and reach the host using its permanent, unique DNS hostname. Mobile hosts, for example, can move freely without user or administrator intervention.

DDNS provides address and domain name mapping so that hosts can find each other, even though their DHCP-assigned IP addresses change frequently. The DDNS name and address mapping is held on the DHCP server in two resource records: 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 adaptive security appliance supports the IETF method in this release.

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. To update the PTR RR, the DHCP server must know the FQDN of the client. The client provides an FQDN to the server using a DHCP option called Client FQDN.

Configuration Examples for DDNS

The following examples present five common scenarios:

- [Example 1: Client Updates Both A and PTR RRs for Static IP Addresses, page 9-3](#)
- [Example 2: Client Updates Both A and PTR RRs; DHCP Server Honors Client Update Request; FQDN Provided Through Configuration, page 9-3](#)
- [Example 3: Client Includes FQDN Option Instructing Server Not to Update Either RR; Server Overrides Client and Updates Both RRs., page 9-4](#)
- [Example 4: Client Asks Server To Perform Both Updates; Server Configured to Update PTR RR Only; Honors Client Request and Updates Both A and PTR RR, page 9-5](#)
- [Example 5: Client Updates A RR; Server Updates PTR RR, page 9-5](#)

Example 1: Client Updates Both A and PTR RRs for Static IP Addresses

The following example shows how to configure the client to request that it update both A and PTR resource records for static IP addresses.

To configure this scenario, perform the following steps:

-
- Step 1** To define a DDNS update method called `ddns-2` that requests that the client update both the A RR and PTR RR, enter the following commands:
- ```
hostname(config)# ddns update method ddns-2
hostname(DDNS-update-method)# ddns both
```
- Step 2** To associate the method `ddns-2` with the `eth1` interface, enter the following commands:
- ```
hostname(DDNS-update-method)# interface eth1
hostname(config-if)# ddns update ddns-2
hostname(config-if)# ddns update hostname asa.example.com
```
- Step 3** To configure a static IP address for `eth1`, enter the following command:
- ```
hostname(config-if)# ip address 10.0.0.40 255.255.255.0
```
- 

### Example 2: Client Updates Both A and PTR RRs; DHCP Server Honors Client Update Request; FQDN Provided Through Configuration

The following example shows how to configure the DHCP client to request that it update both the A and PTR RRs, and the DHCP server to honor these requests.

To configure this scenario, perform the following steps:

- 
- Step 1** To configure the DHCP client to request that the DHCP server perform no updates, enter the following command:

```
hostname(config)# dhcp-client update dns server none
```

- Step 2** To create a DDNS update method named ddns-2 on the DHCP client that requests that the client perform both A and PTR updates, enter the following commands:

```
hostname(config)# ddns update method ddns-2
hostname(DDNS-update-method)# ddns both
```

- Step 3** To associate the method named ddns-2 with the adaptive security appliance interface named Ethernet0, and enable DHCP on the interface, enter the following commands:

```
hostname(DDNS-update-method)# interface Ethernet0
hostname(if-config)# ddns update ddns-2
hostname(if-config)# ddns update hostname asa.example.com
hostname(if-config)# ip address dhcp
```

- Step 4** To configure the DHCP server, enter the following command:

```
hostname(if-config)# dhcpd update dns
```

---

## Example 3: Client Includes FQDN Option Instructing Server Not to Update Either RR; Server Overrides Client and Updates Both RRs.

The following example shows how to configure the DHCP client to include the FQDN option that instruct the DHCP server not to honor either the A or PTR updates. The example also shows how to configure the server to override the client request. As a result, the client does not perform any updates.

To configure this scenario, perform the following steps:

- 
- Step 1** To configure the update method named ddns-2 to request that it make both A and PTR RR updates, enter the following commands:

```
hostname(config)# ddns update method ddns-2
hostname(DDNS-update-method)# ddns both
```

- Step 2** To assign the DDNS update method named ddns-2 on interface Ethernet0 and provide the client hostname (asa), enter the following commands:

```
hostname(DDNS-update-method)# interface Ethernet0
hostname(if-config)# ddns update ddns-2
hostname(if-config)# ddns update hostname asa.example.com
```

- Step 3** To enable the DHCP client feature on the interface, enter the following commands:

```
hostname(if-config)# dhcp client update dns server none
hostname(if-config)# ip address dhcp
```

- Step 4** To configure the DHCP server to override the client update requests, enter the following command:

```
hostname(if-config)# dhcpd update dns both override
```

---

## Example 4: Client Asks Server To Perform Both Updates; Server Configured to Update PTR RR Only; Honors Client Request and Updates Both A and PTR RR

The following example shows how to configure the server to perform only PTR RR updates by default. However, the server honors the client request that it perform both A and PTR updates. The server also forms the FQDN by appending the domain name (example.com) to the hostname that the client (asa) has provided.

To configure this scenario, perform the following steps:

---

**Step 1** To configure the DHCP client on interface Ethernet0, enter the following commands:

```
hostname(config)# interface Ethernet0
hostname(config-if)# dhcp client update dns both
hostname(config-if)# ddns update hostname asa
```

**Step 2** To configure the DHCP server, enter the following commands:

```
hostname(config-if)# dhcpd update dns
hostname(config-if)# dhcpd domain example.com
```

---

## Example 5: Client Updates A RR; Server Updates PTR RR

The following example shows how to configure the client to update the A resource record and how to configure the server to update the PTR records. Also, the client uses the domain name from the DHCP server to form the FQDN.

To configure this scenario, perform the following steps:

---

**Step 1** To define the DDNS update method named ddns-2, enter the following commands:

```
hostname(config)# ddns update method ddns-2
hostname(DDNS-update-method)# ddns
```

**Step 2** To configure the DHCP client for interface Ethernet0 and assign the update method to the interface, enter the following commands:

```
hostname(DDNS-update-method)# interface Ethernet0
hostname(config-if)# dhcp client update dns
hostname(config-if)# ddns update ddns-2
hostname(config-if)# ddns update hostname asa
```

**Step 3** To configure the DHCP server, enter the following commands:

```
hostname(config-if)# dhcpd update dns
hostname(config-if)# dhcpd domain example.com
```

---

# DDNS Monitoring Commands

To monitor DDNS, enter one of the following commands:

| Command                                           | Purpose                                    |
|---------------------------------------------------|--------------------------------------------|
| <code>show running-config ddns</code>             | Shows the current DDNS configuration.      |
| <code>show running-config dns server-group</code> | Shows the current DNS server group status. |

## Feature History for DDNS

Table 9-2 lists the release history for this feature.

**Table 9-2** Feature History for DDNS

| Feature Name | Releases | Feature Information                                                                                                                                                                                                                                      |
|--------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DDNS         | 7.0(1)   | This feature was introduced.<br>The following commands were introduced: <b>ddns</b> , <b>ddns update</b> , <b>dhcp client update dns</b> , <b>dhcpd update dns</b> , <b>show running-config ddns</b> , and <b>show running-config dns server-group</b> . |