Configuring DNS

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About DNS Client

If your network devices require connectivity with devices in networks for which you do not control name assignment, you can assign device names that uniquely identify your devices within the entire internetwork using the domain name server (DNS). DNS uses a hierarchical scheme for establishing hostnames for network nodes, which allows local control of the segments of the network through a client-server scheme. The DNS system can locate a network device by translating the hostname of the device into its associated IP address.

On the Internet, a domain is a portion of the naming hierarchy tree that refers to general groupings of networks based on the organization type or geography. Domain names are pieced together with periods (.) as the delimiting characters. For example, Cisco is a commercial organization that the Internet identifies by a com domain, so its domain name is cisco.com. A specific hostname in this domain, the File Transfer Protocol (FTP) system, for example, is identified as ftp.cisco.com.

Name Servers

Name servers keep track of domain names and know the parts of the domain tree for which they have complete information. A name server may also store information about other parts of the domain tree. To map domain names to IP addresses in Cisco NX-OS, you must first identify the hostnames, then specify a name server, and enable the DNS service.

Cisco NX-OS allows you to statically map IP addresses to domain names. You can also configure Cisco NX-OS to use one or more domain name servers to find an IP address for a hostname.

DNS Operation

A name server handles client-issued queries to the DNS server for locally defined hosts within a particular zone as follows:

- An authoritative name server responds to DNS user queries for a domain name that is under its zone of authority by using the permanent and cached entries in its own host table. If the query is for a domain name that is under its zone of authority but for which it does not have any configuration information, the authoritative name server replies that no such information exists.
- A name server that is not configured as the authoritative name server responds to DNS user queries by using information that it has cached from previously received query responses. If no router is configured as the authoritative name server for a zone, queries to the DNS server for locally defined hosts receive nonauthoritative responses.

Name servers answer DNS queries (forward incoming DNS queries or resolve internally generated DNS queries) according to the forwarding and lookup parameters configured for the specific domain.

High Availability

Cisco Nexus 3600 platform switches supports stateless restarts for the DNS client. After a reboot or supervisor switchover, Cisco NX-OS applies the running configuration.

Prerequisites for DNS Clients

The DNS client has the following prerequisites:

- You must have a DNS name server on your network.

Default Settings for DNS Clients

The following table shows the default settings for DNS client parameters.

Parameter	Default
DNS client	Enabled

Configuring the DNS Source Interface

You can configure DNS to use a specific interface.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **ip dns source-interface** *type slot/port*
3. switch(config)# **show ip dns source-interface**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **ip dns source-interface** *type slot/port*	Configures the source interface for all DNS packets. The following list contains the valid values for *interface*. • ethernet • loopback • mgmt • port-channel • vlan **Note** When you, configure the source interface for DNS, SCP copy operations intiated from the server fail. To perform an SCP copy operation from the server, remove the DNS source interface configuration.
Step 3	switch(config)# **show ip dns source-interface**	Displays the configured DNS source interface.

Example

This example shows how to configure the DNS source interface:

```
switch(config)# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
switch(config)# ip dns source-interface ethernet 1/8
switch(config)# show ip dns source-interface
VRF Name                                Interface
default                                 Ethernet1/8
```

Configuring DNS Clients

You can configure the DNS client to use a DNS server on your network.

Before you begin

- Ensure that you have a domain name server on your network.

SUMMARY STEPS

1. switch# **configuration terminal**

2. switch(config)# vrf context managment
3. switch(config)# **{ip | ipv6} host** *name ipv/ipv6 address1 [ip/ipv6 address2... ip/ipv6 address6]*
4. (Optional) switch(config)# **ip domain name** *name* [**use-vrf** *vrf-name*]
5. (Optional) switch(config)# **ip domain-list** *name* [**use-vrf** *vrf-name*]
6. (Optional) switch(config)# **ip name-server** *ip/ipv6 server-address1 [ip/ipv6 server-address2... ip/ipv6 server-address6]* **[use-vrf** *vrf-name*]
7. (Optional) switch(config)# **ip domain-lookup**
8. (Optional) switch(config)# **show hosts**
9. switch(config)# **exit**
10. (Optional) switch# **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	switch# **configuration terminal**	Enters global configuration mode.
Step 2	switch(config)# vrf context managment	Specifies a configurable virtual and routing (VRF) name.
Step 3	switch(config)# **{ip | ipv6} host** *name ipv/ipv6 address1 [ip/ipv6 address2... ip/ipv6 address6]*	Defines up to six static hostname-to-address mappings in the host name cache.
Step 4	(Optional) switch(config)# **ip domain name** *name* [**use-vrf** *vrf-name*]	Defines the default domain name server that Cisco NX-OS uses to complete unqualified hostnames. You can optionally define a VRF that Cisco NX-OS uses to resolve this domain name server if it cannot be resolved in the VRF that you configured this domain name under. Cisco NX-OS appends the default domain name to any host name that does not contain a complete domain name before starting a domain-name lookup.
Step 5	(Optional) switch(config)# **ip domain-list** *name* [**use-vrf** *vrf-name*]	Defines additional domain name servers that Cisco NX-OS can use to complete unqualified hostnames. You can optionally define a VRF that Cisco NX-OS uses to resolve this domain name server if it cannot be resolved in the VRF that you configured this domain name under. Cisco NX-OS uses each entry in the domain list to append that domain name to any hostname that does not contain a complete domain name before starting a domain-name lookup. Cisco NX-OS continues this for each entry in the domain list until it finds a match.
Step 6	(Optional) switch(config)# **ip name-server** *ip/ipv6 server-address1 [ip/ipv6 server-address2... ip/ipv6 server-address6]* **[use-vrf** *vrf-name*]	Defines up to six name servers. The address can be either an IPv4 address or an IPv6 address. You can optionally define a VRF that Cisco NX-OS uses to reach this name server if it cannot be reached in the VRF that you configured this name server under.

	Command or Action	Purpose
Step 7	(Optional) switch(config)# **ip domain-lookup**	Enables DNS-based address translation. This feature is enabled by default.
Step 8	(Optional) switch(config)# **show hosts**	Displays information about DNS.
Step 9	switch(config)# **exit**	Exits configuration mode and returns to EXEC mode.
Step 10	(Optional) switch# **copy running-config startup-config**	Copies the running configuration to the startup configuration.

Example

The following example shows how to configure a default domain name and enable DNS lookup:

```
switch# config t
switch(config)# vrf context management
switch(config)# ip domain-name mycompany.com
switch(config)# ip name-server 172.68.0.10
switch(config)# ip domain-lookup
```