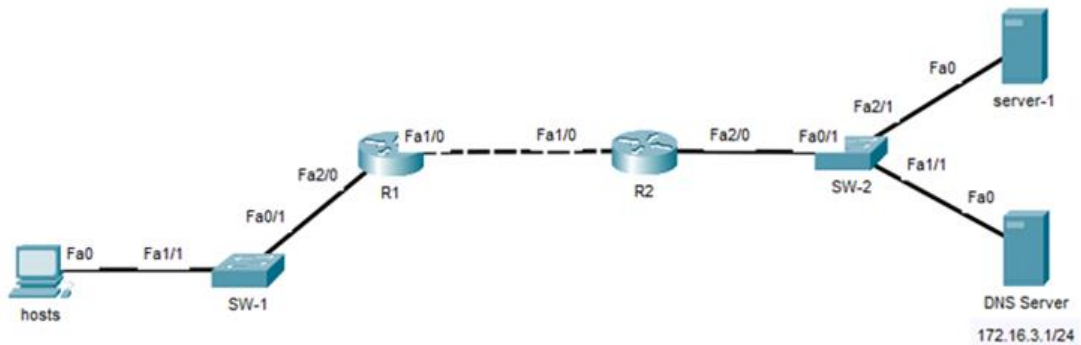


# Domain Name Services (DNS)

## Lab Summary

Enable DNS services on R1 to forward DNS requests originating from that device.

**Figure 1** Lab Topology



## Lab Configuration

Start Packet Tracer File: **dns.pkt**

Click on *R1* icon and select *CLI* folder.

Step 1: Enter global configuration mode

```
R1> enable
R1# configure terminal
```

Step 2: Enable DNS services on R1.

```
R1(config)# ip domain-lookup
```

Step 3: Configure an IP name server (DNS server) to forward DNS requests.

```
R1(config)# ip name-server 172.16.3.1
```

Step 4: Configure a domain name to generate Fully Qualified Domain Names (FQDN) for DNS requests.

```
R1(config)# ip domain-name ccna.com
R1(config)# end
R1# copy running-config startup-config
```

## Step 5: Verify Lab

Ping server-1 using the hostname instead of IP address and verify DNS server can resolve the IP address.

**R1# ping server-1**

Translating "server-1"...domain server (172.16.3.1)

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.16.3.2, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 11/17/27 ms

Ping R2 using the hostname instead of IP address and verify DNS server can resolve the IP address.

**R1# ping r2**

Translating "R2"...domain server (172.16.3.1)

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.16.2.2, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 0/7/16 ms

Disable DNS services on R1 and ping SW-2 hostname to verify DNS resolution.

**R1# conf t**

**R1(config)# no ip domain-lookup**

**R1(config)# end**

**R1# ping sw-2 (no)**

Translating "SW-2"

% Unrecognized host or address or protocol not running.

Ping R2 again and note that with DNS services disabled the hostname to IP address resolution for R2 still works.

**R1# ping r2**

Translating "R2"...domain server (172.16.3.1)

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.16.2.2, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 0/7/16 ms

The following command lists the DNS cache on R1. There is a local entry for R2 that was added after the first ping based on DNS server resolution. This explains how the DNS request was resolved for R2 when DNS service was disabled.

#### R1# **show hosts**

Default Domain is ccna.com

Name/address lookup uses domain service

Name servers are 172.16.3.1

Codes: UN - unknown, EX - expired, OK - OK, ?? - revalidate  
temp - temporary, perm - permanent  
NA - Not Applicable None - Not defined

Host	Port	Flags	Age	Type	Address(es)
r2	None	(temp, OK)	0	IP	172.16.3.3
server-1	None	(temp, OK)	0	IP	172.16.3.2

Enable DNS services on R1 and ping SW-2 hostname to verify DNS is working.

#### R1# **conf t**

R1(config)# **ip domain-lookup**

R1(config)# **end**

R1# **ping sw-2** (yes)

Translating "sw-2"...domain server (172.16.3.1)

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.16.3.4, timeout is 2 seconds:

..!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

This command lists the DNS cache on R1 after ping to R2, server-1, and SW-2.

#### R1#**show hosts**

Default Domain is ccna.com

Name/address lookup uses domain service

Name servers are 172.16.3.1

Codes: UN - unknown, EX - expired, OK - OK, ?? - revalidate  
temp - temporary, perm - permanent  
NA - Not Applicable None - Not defined

Host	Port	Flags	Age	Type	Address(es)
r2	None	(temp, OK)	0	IP	172.16.3.3
server-1	None	(temp, OK)	0	IP	172.16.3.2
sw-2	None	(temp, OK)	0	IP	172.16.3.4

Ping SW-1 using the hostname and verify DNS server can resolve the IP address.

R1#ping **sw-1** (no)

Translating "sw-1"...domain server (172.16.3.1)

% Unrecognized host or address or protocol not running.

This command will list the management VLAN interface on SW-1.

SW-1# **show ip interface brief**

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/1	unassigned	YES	manual	up	up
FastEthernet1/1	unassigned	YES	manual	up	up
<b>Vlan10</b>	<b>172.16.1.254</b>	YES	manual	up	up

Ping SW-1 using the IP address of management VLAN interface 10.

R1# **ping 172.16.1.254** (yes)

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.16.1.254, timeout is 2 seconds:

..!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

This command lists the DNS cache on R1 to verify that SW-1 is not listed.

R1# **show hosts**

Default Domain is ccna.com

Name/address lookup uses domain service

Name servers are 172.16.3.1

Codes: UN - unknown, EX - expired, OK - OK, ?? - revalidate

temp - temporary, perm - permanent

NA - Not Applicable None - Not defined

Host	Port	Flags	Age	Type	Address(es)
r2	None	(temp, OK)	0	IP	172.16.3.3
server-1	None	(temp, OK)	0	IP	172.16.3.2
sw-2	None	(temp, OK)	0	IP	172.16.3.4

Configure a static DNS A record on R1 with hostname sw-1 mapped to IP address 172.16.1.254 for local cache.

R1# **conf t**

R1(config)# **ip host sw-1 172.16.1.254**

R1(config)# **end**

Verify that DNS record for SW-1 is now listed in local DNS cache of R1 as a static DNS A record.

### R1# **show hosts**

Default Domain is ccna.com

Name/address lookup uses domain service

Name servers are 172.16.3.1

Codes: UN - unknown, EX - expired, OK - OK, ?? - revalidate

temp - temporary, perm - permanent

NA - Not Applicable None - Not defined

Host	Port	Flags	Age	Type	Address(es)
r2	None	(temp, OK)	0	IP	172.16.3.3
server-1	None	(temp, OK)	0	IP	172.16.3.2
sw-2	None	(temp, OK)	0	IP	172.16.3.4
<b>sw-1</b>	None	( <b>perm</b> , OK)	0	IP	172.16.1.254

Ping SW-1 using the hostname and verify that local DNS cache on R1 is used to resolve the IP address.

### R1# **ping sw-1**

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.16.1.254, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms