Module 5 FTP and DHCP

Lab 5-1 Configuring FTP Services

Learning Objectives

As a result of this lab section, you should achieve the following tasks:

- Establishment of the FTP service.

- Configuration of FTP server parameters.

- Successful file transfer from an FTP server.

Topology

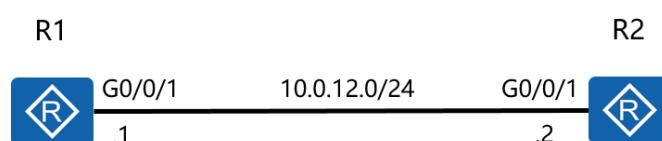

Figure 5.1 FTP topology

Scenario

As a network administrator of a company, you have been tasked with implementing FTP services on the network. You need to implement the FTP service on a router assigned to be an FTP server. The router should allow clients to successfully establish a TCP session to the FTP application and transfer files.

Tasks

Step 1 **Preparing the environment.**

If you are starting this section with a non-configured device, begin here and then move to step 2. For those continuing from previous labs, begin at step 2.

```
<Huawei>system-view
Enter system view, return user view with Ctrl+Z.
[Huawei]sysname R1
[R1]interface   GigabitEthernet 0/0/1
[R1-GigabitEthernet0/0/1]ip address 10.0.12.1 24

<Huawei>system-view
Enter system view, return user view with Ctrl+Z.
[Huawei]sysname R2
[R2]interface   GigabitEthernet 0/0/1
[R2-GigabitEthernet0/0/1]ip address 10.0.12.2 24
```

Verify that R1 can reach R2, and vice versa..

```
 [R1]ping 10.0.12.2
  PING 10.0.12.2: 56   data bytes, press CTRL_C to break
    Reply from 10.0.12.2: bytes=56 Sequence=1 ttl=255 time=10 ms
    Reply from 10.0.12.2: bytes=56 Sequence=2 ttl=255 time=1 ms
    Reply from 10.0.12.2: bytes=56 Sequence=3 ttl=255 time=1 ms
    Reply from 10.0.12.2: bytes=56 Sequence=4 ttl=255 time=10 ms
    Reply from 10.0.12.2: bytes=56 Sequence=5 ttl=255 time=1 ms

  --- 10.0.12.2 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 1/4/10 ms
```

Step 2 **Enable the FTP service on the router.**

The FTP service is disabled by default on the router. It must be enabled before FTP can be used. Configure an FTP server using R1 with R2 as the client. The same steps

can be reversed to enable R2 to also act as an FTP server.

[R1]ftp server enable
Info: Succeeded in starting the FTP server
[R1]set default ftp-directory flash:/

Configure user authorization for FTP users to access the server. Unauthorized users will not be able to access the FTP server, reducing security risks.

[R1]aaa
[R1-aaa]local-user huawei password   cipher   huawei123
Info: Add a new user.

[R1-aaa]local-user huawei service-type ftp

Info: The cipher password has been changed to an irreversible-cipher password.

Warning: The user access modes include Telnet, FTP or HTTP, and so security risks exist.

Info: After you change the rights (including the password, access type, FTP directory, and level) of a local user, the rights of users already online do not change. The change takes effect to users who go online after the change.

[R1-aaa]local-user huawei privilege level 15

Info: After you change the rights (including the password, access type, FTP directory, and level) of a local user, the rights of users already online do not change. The change takes effect to users who go online after the change.

[R1-aaa]local-user huawei ftp-directory flash:

Info: After you change the rights (including the password, access type, FTP directory, and level) of a local user, the rights of users already online do not change. The change takes effect to users who go online after the change.

[R1]display ftp-server

    FTP server is running

    Max user number   5

    User count   0

    Timeout value(in minute)   30

    Listening port   21

    Acl number   0

    FTP server's source address   0.0.0.0

The FTP server is running on R1 and listens on TCP port 21 by default.

Step 3 **Establish an FTP client connection**

Establish a connection to the FTP Server from R2.

```
<R2>ftp 10.0.12.1
Trying 10.0.12.1 ...
Press CTRL+K to abort
Connected to 10.0.12.1.
220 FTP service ready.
User(10.0.12.1:(none)):huawei
331 Password required for huawei.
Enter password:
230 User logged in.


[R2-ftp]
```

Following entry of the correct user name and password, the FTP server can be successfully logged into.

Run the **dir** command before downloading a file or after uploading a file to view the detailed information of the file.

```
[R2-ftp]dir
200 Port command okay.
150 Opening ASCII mode data connection for *.
drwxrwxrwx   1 noone    nogroup          0 May 03 18:03 .
-rwxrwxrwx   1 noone    nogroup 114552448 Jan 19   2012 AR2220E-V200R006C10SPC300.cc
-rwxrwxrwx   1 noone    nogroup     159858 May 03 17:59 mon_file.txt
-rwxrwxrwx   1 noone    nogroup     304700 Mar 03 11:11 sacrule.dat
-rwxrwxrwx   1 noone    nogroup        783 Mar 03 11:12 default_local.cer
-rwxrwxrwx   1 noone    nogroup          0 Dec 20   2015 brdxpon_snmp_cfg.efs
-rwxrwxrwx   1 noone    nogroup        777 May 03 18:03 vrpcfg.zip
drwxrwxrwx   1 noone    nogroup          0 Mar 10 11:14 update
drwxrwxrwx   1 noone    nogroup          0 May 03 18:03 localuser
drwxrwxrwx   1 noone    nogroup          0 Mar 17 10:45 dhcp
-rwxrwxrwx   1 noone    nogroup        460 May 03 18:03 private-data.txt
-rwxrwxrwx   1 noone    nogroup  126352896 Mar 10 11:09 AR2220E-V200R007C00SPC600.cc
drwxrwxrwx   1 noone    nogroup          0 Mar 10 11:15 shelldir
-rwxrwxrwx   1 noone    nogroup      11606 May 03 18:00 mon_lpu_file.txt
drwxrwxrwx   1 noone    nogroup          0 Mar 18 14:45 huawei
-rwxrwxrwx   1 noone    nogroup        120 Mar 18 15:02 text.txt226 Transfer complete.
FTP: 836 byte(s) received in 0.976 second(s) 856.55byte(s)/sec.
```

Set the transfer mode for the files to be transferred.

```
[R2-ftp]binary
200 Type set to I.
```

Retrieve a file from the FTP server. Note: If the vrpcfg.zip file is not present in the sd1:

directory of R1, use the **save** command on R1 to create it.

```
[R2-ftp]get vrpcfg.zip vrpnew.zip
200 Port command okay.
150 Opening BINARY mode data connection for vrpcfg.zip.
226 Transfer complete.
FTP: 120 byte(s) received in 0.678 second(s) 176.99byte(s)/sec.
```

After downloading the file from FTP server, use the **bye** command to close the

connection

```
[R2-ftp]bye
221 Server closing.

<R2>dir
Directory of flash:/
```

Idx	Attr	Size(Byte)	Date	Time(LMT)	FileName
0	-rw-	114,552,448	Jan 19 2012	15:32:52	AR2220E-V200R006C10SPC300.cc
1	-rw-	270,176	Apr 30 2016	03:17:08	mon_file.txt
2	-rw-	304,700	Mar 03 2016	11:11:44	sacrule.dat
3	-rw-	783	Mar 03 2016	11:12:22	default_local.cer
4	-rw-	0	Dec 20 2015	00:06:14	brdxpon_snmp_cfg.efs
5	-rw-	775	Apr 29 2016	17:51:48	vrpcfg.zip
6	drw-	-	Mar 10 2016	11:28:46	update
7	drw-	-	Apr 23 2016	17:33:38	localuser
8	drw-	-	Mar 21 2016	20:59:46	dhcp
9	-rw-	394	Apr 29 2016	17:51:50	private-data.txt
10	-rw-	126,352,896	Mar 10 2016	11:14:40	AR2220E-V200R007C00SPC600.cc
11	drw-	-	Mar 10 2016	11:29:20	shelldir
12	-rw-	23,950	Apr 27 2016	16:06:06	mon_lpu_file.txt

| 13 | -rw- | 120 | Mar 24 2016 11:45:44 | huawei.zip |
| 14 | -rw- | 777 | May 10 2016 14:23:43 | vrpnew.zip |

A file can be uploaded to the FTP server by using the command **put**, for which a new file name can also be assigned.

[R2-ftp]put vrpnew.zip vrpnew2.zip

200 Port command okay.

150 Opening BINARY mode data connection for vrpnew2.zip.

226 Transfer complete.

FTP: 120 byte(s) sent in 0.443 second(s) 270.88byte(s)/sec.

After uploading the file, check for the presence of the file on FTP server.

<R1>dir

Directory of flash:/

Idx	Attr	Size(Byte)	Date	Time(LMT)	FileName
0	-rw-	286,620	Mar 14 2016	09:22:20	sacrule.dat
1	-rw-	512,000	Mar 28 2016	14:39:16	mon_file.txt
2	-rw-	1,738,816	Mar 17 2016	12:05:36	web.zip
3	-rw-	48,128	Mar 10 2016	14:16:56	ar2220E_v200r001sph001.pat
4	-rw-	120	Mar 28 2016	10:09:50	iascfg.zip
5	-rw-	699	Mar 28 2016	17:52:38	vrpcfg.zip
6	-rw-	93,871,872	Mar 14 2016	09:13:26	ar2220-V200R007C00SPC600.cc
7	-rw-	512,000	Mar 28 2016	14:40:20	mon_lpu_file.txt
8	-rw-	699	Mar 02 2016	15:44:16	vrpnew2.zip

Remove the created vrpnew.zip and vrpnew2.zip files on R1 and R2.

<R1>delete flash:/vrpnew2.zip

Delete flash:/vrpnew2.zip? (y/n)[n]:y

Info: Deleting file flash:/vrpnew2.zip...succeed.

<R2>delete flash:/vrpnew.zip

Delete flash:/vrpnew.zip? (y/n)[n]:y

Info: Deleting file flash:/vrpnew.zip...succeed.

Note: Please take extreme care when deleting the configuration files so to ensure that the entire flash:/ directory of R1 and R2 is not erased.

Final Configuration

```
<R1>display current-configuration
[V200R007C00SPC600]
#
 sysname R1
 ftp server enable
 set default ftp-directory flash:
#
aaa
 authentication-scheme default
 authorization-scheme default
 accounting-scheme default
 domain default
 domain default_admin
 local-user admin password cipher %$%$=i~>Xp&aY+*2cEVcS-A23Uwe%$%$
 local-user admin service-type http
 local-user huawei password cipher %$%$f+~&ZkCn]NUX7m.t;tF9R48s%$%$
 local-user huawei privilege level 15
 local-user huawei ftp-directory flash:/
 local-user huawei service-type ftp
#
interface GigabitEthernet0/0/1
 ip address 10.0.12.1 255.255.255.0
#
user-interface con 0
 authentication-mode password
 set authentication password cipher %$%$+L'YR&IZt'4,)>-*#IH",}%K-oJ_M9+'lOU~bD (\WTqB}%N,%$%$
user-interface vty 0 4
#
return

<R2>display current-configuration
[V200R007C00SPC600]
#
 sysname R2
 ftp server enable
 set default ftp-directory flash:
#
aaa
 authentication-scheme default
```

```
 authorization-scheme default
 accounting-scheme default
 domain default
 domain default_admin
 local-user admin password cipher %$%$=i~>Xp&aY+*2cEVcS-A23Uwe%$%$
 local-user admin service-type http
 local-user huawei password cipher %$%$<;qM3D/O;ZLqy/"&6wEESdg$%$%$
 local-user huawei privilege level 15
 local-user huawei ftp-directory flash:/
 local-user huawei service-type ftp
#
interface GigabitEthernet0/0/1
 ip address 10.0.12.2 255.255.255.0
#
user-interface con 0
 authentication-mode password
 set authentication password cipher %$%$1=cd%b%/O%Id-8X:by1N,+s}'4wD6TvO<I|/pd# #44C@+s#,%$%$
user-interface vty 0 4
#
return
```

Lab 5-2 Implementing DHCP

Learning Objectives

As a result of this lab section, you should achieve the following tasks:

- Configuration of a global DHCP pool.

- Configuration of an interface based DHCP pool.

- Enable DHCP discovery and IP allocation for switch interfaces.

- Method of global address pool configuration.

- Method of interface address pool configuration.
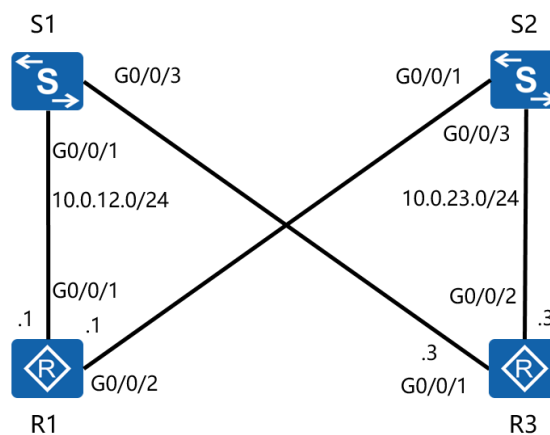
Topology

Figure 5.2 DHCP topology

Scenario

As the administrator of an enterprise you have been tasked with implementing DHCP application services within the network. The gateway router in the company network is to be configured as a DHCP server. IP addressing from an address pool are to be offered by the gateway(s) (R1 and R3) to respective access layer devices.

Tasks

Step 1 **Preparing the environment**

If you are starting this section with a non-configured device, begin here and then move to step 3. For those continuing from previous labs, begin at step 2.

Establish the addressing for the lab and temporarily shut down the interfaces Gigabit Ethernet 0/0/2 of R1 and GigabitGigabitEthernet 0/0/1 of R3.

```
<Huawei>system-view
Enter system view, return user view with Ctrl+Z.
[Huawei]sysname R1
[R1]interface GigabitEthernet 0/0/1
[R1-GigabitEthernet0/0/1]ip address 10.0.12.1 24
[R1-GigabitEthernet0/0/1]quit


<Huawei>system-view
Enter system view, return user view with Ctrl+Z.
[Huawei]sysname R3
[R3]interface GigabitEthernet 0/0/1
[R3-GigabitEthernet0/0/1]ip address 10.0.12.3 24
[R3-GigabitEthernet0/0/1]shutdown
[R3-GigabitEthernet0/0/1]quit
[R3]interface GigabitEthernet 0/0/2
[R3-GigabitEthernet0/0/2]ip address 10.0.23.3 24


<Quidway>system-view
Enter system view, return user view with Ctrl+Z.
[Quidway]sysname S1


<Quidway>system-view
Enter system view, return user view with Ctrl+Z.
[Quidway]sysname S2
```

Step 2 **Cleaning up the previous configuration**

Re-enable to Gigabit Ethernet 0/0/2 interface on R3.

[R3]interface GigabitEthernet 0/0/2
[R3-GigabitEthernet0/0/2]undo shutdown

Step 3 **Additional configuration**

Disable the port interfaces between S1 and S2 as well as other interfaces to prevent interference from other devices.

[S1]interface GigabitEthernet 0/0/9
[S1-GigabitEthernet0/0/9]shutdown
[S1-GigabitEthernet0/0/9]quit
[S1]interface GigabitEthernet 0/0/10
[S1-GigabitEthernet0/0/10]shutdown
[S1-GigabitEthernet0/0/10]quit
[S1]interface GigabitEthernet 0/0/13
[S1-GigabitEthernet0/0/13]shutdown
[S1-GigabitEthernet0/0/13]quit
[S1]interface GigabitEthernet 0/0/14
[S1-GigabitEthernet0/0/14]shutdown

[S2]interface GigabitEthernet 0/0/9
[S2-GigabitEthernet0/0/9]shutdown
[S2-GigabitEthernet0/0/9]quit
[S2]interface GigabitEthernet 0/0/10
[S2-GigabitEthernet0/0/10]shutdown
[S2-GigabitEthernet0/0/10]quit
[S2]interface GigabitEthernet 0/0/7
[S2-GigabitEthernet0/0/7]shutdown
[S2-GigabitEthernet0/0/23]quit
[S2]interface GigabitEthernet 0/0/6
[S2-GigabitEthernet0/0/6]shutdown

[R1]interface GigabitEthernet 0/0/2

[R1-GigabitEthernet0/0/2]ip address 10.0.23.1 24
[R1-GigabitEthernet0/0/2]shutdown

Verify that Gigabit Ethernet interfaces 0/0/9, 0/0/10, 0/0/13 and 0/0/14, have been shut down on S1 and that Gigabit Ethernet interfaces 0/09, 0/0/10, 0/0/6 and 0/0/7 have been shut down on S2.

```
<S1>display interface brief
...output omitted...
Interface            PHY     Protocol InUti OutUti   inErrors  outErrors
GigabitEthernet0/0/1   up      up       0.01%  0.01%     0         0
GigabitEthernet0/0/2   up      up       0.01%  0.01%     0         0
GigabitEthernet0/0/3   down    down     0%     0%        0         0
GigabitEthernet0/0/4   up      up       0%     0.01%     0         0
GigabitEthernet0/0/5   up      up       0%     0.01%     0         0
GigabitEthernet0/0/6   down    down     0%     0%        0         0
GigabitEthernet0/0/7   down    down     0%     0%        0         0
GigabitEthernet0/0/8   down    down     0%     0%        0         0
GigabitEthernet0/0/9   *down   down     0%     0%        0         0
GigabitEthernet0/0/10  *down   down     0%     0%        0         0
GigabitEthernet0/0/11  down    down     0%     0%        0         0
GigabitEthernet0/0/12  down    down     0%     0%        0         0
GigabitEthernet0/0/13  *down   down     0%     0%        0         0
GigabitEthernet0/0/14  *down   down     0%     0%        0         0
...output omitted...

<S2>display interface brief
...output omit...
GigabitEthernet0/0/1        up    up         0%   4.06%      0          0
GigabitEthernet0/0/2        up    up         0%   4.06%      0          0
GigabitEthernet0/0/3        up    up         0%   4.06%      0          0
GigabitEthernet0/0/4        up    up         0%  20.40%      0          0
GigabitEthernet0/0/5        up    up         0%  20.40%      0          0
GigabitEthernet0/0/6        *down down       0%   2.04%      0          0
GigabitEthernet0/0/7        *down down     2.03%  2.03%      0          0
```

GigabitEthernet0/0/8	down	down	0%	0%	0	0
GigabitEthernet0/0/9	*down	down	1.91%	1.91%	0	0
GigabitEthernet0/0/10	*down	down	3.95%	0.12%	0	0
GigabitEthernet0/0/11	up	up	0%	4.06%	0	0
GigabitEthernet0/0/12	up	up	0%	4.06%	0	0

...output omit...

Verify that only interface Gigabit Ethernet 0/0/2 is disabled on R1 and that only interface GigabitGigabitEthernet 0/0/1 is disabled on R3.

```
<R1>display ip interface brief
...output omitted...
GigabitEthernet0/0/1          10.0.12.1/24       up        up
GigabitEthernet0/0/2          10.0.23.1/24       *down     down
...output omitted...

<R3>display ip interface brief
...output omitted...
GigabitEthernet0/0/1          10.0.12.3/24       *down     down
GigabitEthernet0/0/2          10.0.23.3/24       up        up
...output omitted...
```

Step 4 **Enable the DHCP function.**

The DHCP service is not enabled by default, enable the DHCP service on the router(s).

```
[R1]dhcp enable
```

```
[R3]dhcp enable
```

Step 5 **Create a global IP address pool**

Create an address pool named **pool1** for R1 and **pool2** for R3. Configure attributes for **pool1** and **pool2**, including address range, egress gateway, and IP address lease period.

```
[R1]ip pool pool1
Info: It's successful to create an IP address pool.
[R1-ip-pool-pool1]network 10.0.12.0 mask 24
```

[R1-ip-pool-pool1]gateway-list 10.0.12.1
[R1-ip-pool-pool1]lease day 1 hour 12
[R1]interface GigabitEthernet 0/0/1
[R1-GigabitEthernet0/0/1]dhcp select global

[R3]ip pool pool2
Info: It's successful to create an IP address pool.
[R3-ip-pool-pool2]network 10.0.23.0 mask 24
[R3-ip-pool-pool2]gateway-list 10.0.23.3
[R3-ip-pool-pool2]lease day 1 hour 12
[R3]interface GigabitEthernet 0/0/2
[R3-GigabitEthernet0/0/2]dhcp select global

Run the **display ip pool name <name>** command on the router to view the assigned IP address pool configuration parameters.

<R1>display ip pool name pool1

Pool-name	: pool1		
Pool-No	: 0		
Lease	: 1 Days 12 Hours 0 Minutes		
Domain-name	: -		
DNS-server0	: -		
NBNS-server0	: -		
Netbios-type	: -		
Position	: Local	Status	: Unlocked
Gateway-0	: 10.0.12.1		
Network	: 10.0.12.0		
Mask	: 255.255.255.0		
VPN instance	: --		

```
------------------------------------------------------------------      Start        End         Total
Used   Idle(Expired)   Conflict   Disable
------------------------------------------------------------------
   10.0.12.1        10.0.12.254    253      0        253(0)        0          0
------------------------------------------------------------------
```

Configure the default management interface for S1 to request an IP address from the DHCP server (R1). Perform the same steps on S2 for R3.

[S1]dhcp enable

```
[S1]interface Vlanif 1
[S1-Vlanif1]ip address dhcp-alloc

<S1>display ip interface brief
...output omitted...
Interface              IP Address/Mask    Physical    Protocol
MEth0/0/1                    unassigned        down        down
NULL0                       unassigned        up          up(s)
Vlanif1                      10.0.12.254/24    up          up
```

Verify that this address was taken from the DHCP pool named pool1 on R1,

and for S2, from the DHCP pool named pool2 on R3.

```
<R1>display ip pool name pool1
  Pool-name       : pool1
  Pool-No         : 0
  Lease           : 1 Days 12 Hours 0 Minutes
  Domain-name     : -
  DNS-server0     : -
  NBNS-server0    : -
  Netbios-type    : -
  Position        : Local            Status           : Unlocked
  Gateway-0       : 10.0.12.1
  Network         : 10.0.12.0
  Mask            : 255.255.255.0
  VPN instance    : --

--------------------------------------------------------------------------------
    Start           End        Total   Used  Idle(Expired)  Conflict  Disable
--------------------------------------------------------------------------------
   10.0.12.1    10.0.12.254    253      1       252(0)          0         0
--------------------------------------------------------------------------------


 <R3>display ip pool name pool2
  Pool-name       : pool2
  Pool-No         : 0
  Lease           : 1 Days 12 Hours 0 Minutes
```

```
Domain-name    : -
DNS-server0    : -
NBNS-server0   : -
Netbios-type   : -
Position       : Local            Status           : Unlocked
Gateway-0      : 10.0.23.3
Network        : 10.0.23.0
Mask           : 255.255.255.0
VPN instance   : --

-------------------------------------------------------------------------
      Start         End        Total  Used  Idle(Expired)  Conflict  Disable
-------------------------------------------------------------------------
    10.0.23.1   10.0.23.254    253     1       252(0)         0         0
-------------------------------------------------------------------------
```

Ensure that global pool configuration has been completed for both R1 and R3 before continuing!

Step 6 **Create an interface based IP address pool**

Disable the interface GigabitGigabitEthernet 0/0/1 R1. For R3 disable interface Gigabit Ethernet 0/0/2.

[R1]interface GigabitEthernet 0/0/1
[R1-GigabitEthernet0/0/1]shutdown

[R3]interface GigabitEthernet 0/0/2
[R3-GigabitEthernet0/0/2]shutdown

Configure an interface address pool to allow the clients connected via Gigabit Ethernet 0/0/2 of R1 to obtain IP addresses. Perform the same operation for GigabitGigabitEthernet 0/0/1 of R3. Do not enable these interfaces, as we do not yet wish to activate the DHCP service on the network.

[R1]interface GigabitEthernet 0/0/2
[R1-GigabitEthernet0/0/2]dhcp select interface

[R3]interface GigabitEthernet 0/0/1
[R3-GigabitEthernet0/0/1]dhcp select interface

Isolate addresses from the pool GigabitEthernet0/0/2 for R1, and the pool GigabitEthernet0/0/1 for R3, for DNS services. Additionally, set the IP address lease

period for the interface address pool.

```
[R1-GigabitEthernet0/0/2]dhcp server dns-list 10.0.23.254
[R1-GigabitEthernet0/0/2]dhcp server excluded-ip-address 10.0.23.254
[R1-GigabitEthernet0/0/2]dhcp server lease day   1 hour 12


[R3-GigabitEthernet0/0/1]dhcp server dns-list 10.0.12.254
[R3-GigabitEthernet0/0/1]dhcp server excluded-ip-address 10.0.12.254
[R3-GigabitEthernet0/0/1]dhcp server lease day 1 hour 12
```

Run the **display ip pool interface** command on the router to view the configured parameters of the interface address pool. For R3 the interface is GigabitGigabitEthernet 0/0/1.

```
<R1>display ip pool interface GigabitEthernet0/0/2
  Pool-name        : GigabitEthernet0/0/2
  Pool-No          : 1
  Lease            : 1 Days 12 Hours 0 Minutes
  Domain-name      : -
  DNS-server0      : 10.0.23.254
  NBNS-server0     : -
  Netbios-type     : -
  Position         : Interface        Status           : Unlocked
  Gateway-0        : 10.0.23.1
  Network          : 10.0.23.0
  Mask             : 255.255.255.0
  VPN instance     : --
 -----------------------------------------------------------------------
       Start         End        Total  Used  Idle(Expired)  Conflict  Disable
 -----------------------------------------------------------------------
     10.0.23.1    10.0.23.254    253    0        252(0)         0         1
 -----------------------------------------------------------------------
```

Flush the existing Vlanif1 address from S2 to allow for dynamic allocation of a   new

IP address from the interface GigabitEthernet0/0/2 pool.

```
[S2]interface Vlanif 1
[S2-Vlanif1]shutdown
[S2-Vlanif1]undo shutdown
```

Enable interface Gigabit Ethernet 0/0/2 to allow the DHCP server to become active on the network and to begin sending DHCP discover messages.

```
[R1]interface GigabitEthernet0/0/2
[R1-GigabitEthernet0/0/2]undo shutdown
```

```
<R1>display ip pool interface GigabitEthernet0/0/2
  Pool-name        : GigabitEthernet0/0/2
  Pool-No          : 1
  Lease            : 1 Days 12 Hours 0 Minutes
  Domain-name      : -
  DNS-server0      : 10.0.23.254
  NBNS-server0     : -
  Netbios-type     : -
  Position         : Interface        Status            : Unlocked
  Gateway-0        : 10.0.23.1
   Network         : 10.0.23.0
  Mask             : 255.255.255.0
  VPN instance     : --

  ----------------------------------------------------------------------------
       Start          End      Total  Used  Idle(Expired)  Conflict  Disable
  ----------------------------------------------------------------------------
     10.0.23.1   10.0.23.254    253     1       251(0)         0         1
  ----------------------------------------------------------------------------
<S2>display ip interface brief
...output omitted...
Interface                   IP Address/Mask    Physical    Protocol
MEth0/0/1                      unassigned       down        down
NULL0                          unassigned       up          up(s)
Vlanif1                        10.0.23.253/24   up          up
```

The interface Vlanif1 shows to have been allocated an address from the GigabitEthernet0/0/2 address pool of R1.

Flush the existing Vlanif1 address from S1 to allow for dynamic allocation of a   new IP address from the interface GigabitEther0/0/1 pool.

```
[S1]interface Vlanif 1
[S1-Vlanif1]shutdown
[S1-Vlanif1]undo shutdown
```

Enable interface GigabitGigabitEthernet 0/0/1 to allow the DHCP server to become

active on the network and to begin sending DHCP discover messages.

```
[R3]interface GigabitEthernet 0/0/1
[R3-GigabitEthernet0/0/1]undo shutdown
```

Verify that the new IP address as been allocated from the interface pool.

```
<R3>display ip pool interface GigabitEthernet0/0/1
  Pool-name         : GigabitEthernet0/0/1
  Pool-No           : 1
  Lease             : 1 Days 12 Hours 0 Minutes
  Domain-name       : -
  DNS-server0       : 10.0.12.254
  NBNS-server0      : -
  Netbios-type      : -
  Position          : Interface        Status          : Unlocked
  Gateway-0         : 10.0.12.3
  Network           : 10.0.12.0
  Mask              : 255.255.255.0
  VPN instance      : --
  --------------------------------------------------------------------
       Start          End        Total  Used  Idle(Expired)  Conflict  Disable
  --------------------------------------------------------------------
     10.0.12.1    10.0.12.254    253     1       251(0)          0        1
  --------------------------------------------------------------------
<S1>display ip interface brief
...output omitted...
Interface                     IP Address/Mask    Physical    Protocol
MEth0/0/1                       unassigned         down        down
NULL0                           unassigned         up          up(s)
Vlanif1                        10.0.12.253/24      up          up
```

It should also be noted that a default static route pointing to the DHCP server is automatically generated by the switch, as seen in the final configuration below.

Final Configuration

```
[R1]display current-configuration
[V200R007C00SPC600]
#
```

```
 sysname R1
#
dhcp enable
#
ip pool pool1
 gateway-list 10.0.12.1
 network 10.0.12.0 mask 255.255.255.0
 lease day 1 hour 12 minute 0
#
interface GigabitEthernet0/0/1
 shutdown
 ip address 10.0.12.1 255.255.255.0
 dhcp select global
#
interface GigabitEthernet0/0/2
 ip address 10.0.23.1 255.255.255.0
 dhcp select interface
 dhcp server excluded-ip-address 10.0.23.254
 dhcp server lease day 1 hour 12 minute 0
 dhcp server dns-list 10.0.23.254
#
user-interface con 0
 authentication-mode password
 set authentication password cipher %$%$+L'YR&IZt'4,)>-*#lH",}%K-oJ_M9+'lOU~bD(\WTqB}%N,%$%$user-i
nterface vty 0 4
#
return

[R3]dis current-configuration
[V200R007C00SPC600]
#
 sysname R3
#
dhcp enable
#
ip pool pool2
 gateway-list 10.0.23.3
 network 10.0.23.0 mask 255.255.255.0
 lease day 1 hour 12 minute 0
#
interface GigabitEthernet0/0/1
 ip address 10.0.12.3 255.255.255.0
```

```
  dhcp select interface
  dhcp server excluded-ip-address 10.0.12.254
  dhcp server lease day 1 hour 12 minute 0
  dhcp server dns-list 10.0.12.254
#
interface GigabitEthernet0/0/2
  shutdown
  ip address 10.0.23.3 255.255.255.0
  dhcp select global
#
user-interface con 0
  authentication-mode password
  set  authentication  password  cipher  %$%$ksXDMg7Ry6yUU:63:DQ),#/sQg"@*S\U#.s.bHWxQ,y%#/v,%$%$
user-interface vty 0 4
#
return

 <S1>dis current-configuration
#
!Software Version V200R008C00SPC500
  sysname S1
#
  dhcp enable
#
interface Vlanif1
  ip address dhcp-alloc
#
  ip route-static 0.0.0.0 0.0.0.0 10.0.12.3
#
user-interface con 0
user-interface vty 0 4
#
return

 <S2>display current-configuration
#
!Software Version V200R008C00SPC500
  sysname S2
#
  dhcp enable
#
interface Vlanif1
```

```
 ip address dhcp-alloc
#
 ip route-static 0.0.0.0 0.0.0.0 10.0.23.1
#
user-interface con 0
user-interface vty 0 4
#
return
```