

Ping, Traceroute, and DNS Lookup on the RV160 and RV260

Objective

This article highlights impactful methods of verifying network connectivity - ping, traceroute, and DNS lookup on the RV160 and RV260 series routers.

Introduction

Your device provides several diagnostic tools to help you with troubleshooting network issues. If you are looking for a more structured approach than tool review, check out this great document: [Troubleshooting on RV160 and RV260 Routers](#). This troubleshooting document will cover some of the areas to analyze when troubleshooting connectivity.

Method #1 - Ping

The first one is **Ping**. The ping command is a common method used when troubleshooting the accessibility of devices. Ping is used so frequently because its simplicity and speed in determining connectivity between two points on a network. It uses Internet Control Message Protocol (ICMP) echo messages to determine if the remote host is active or inactive. It can also tell you the round-trip delay in communicating with the host and packet loss. First, the source would send an echo request packet to an address and wait for a reply. If the echo request gets to the destination and the destination is able to send an echo reply back to the source before the timeout occurs, then the ping is successful.

Method #2 - Traceroute

The second diagnostic tool is **Traceroute**. Traceroute is used to find the routes that the packets actually take when traveling to their destination. The purpose behind this is to use each ICMP Time Exceeded Message to find the path that the packet took to reach the destination. The router would send out a sequence of User Datagram Protocol (UDP) datagrams to an invalid port address at the remote host. Three datagrams are sent with a Time-To-Live (TTL) field value set to 1, the TTL value of 1 will cause the datagram to "timeout" as soon as it hits the first router in the path. The first router will then respond with an ICMP Time Exceeded Message indicating that the datagram has expired. After that, another three UDP messages are sent to the next router and the TTL value is increased by 1. The TTL value is now set to 2, which causes the second router to return ICMP Time Exceeded Message. This process will continue until the packets reach the destination. Once the datagram reaches the destination host and tries to access an invalid port, the ICMP Port Unreachable Message (unreachable port) is returned, telling the traceroute that it has reached its destination and stops there.

Method #3 - DNS Lookup

The third diagnostic tool is **DNS Lookup**. Domain Name System (DNS) is a distributed database in which you can map hostnames to IP addresses through the DNS protocol from a DNS server. Each unique IP address can have an associated hostname. DNS lookup is a diagnostic tool that will help find DNS records of a domain name. It can help find the IP

address of the domain name and also do a reverse search to find the domain name associated with the IP address.

Here's a quick 2-minute tech talk about ping, traceroute, and DNS lookup:

Applicable Devices

RV160

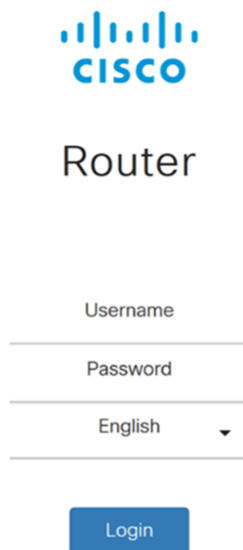
RV260

Software Version

1.0.00.15

Ping, Traceroute, and DNS Lookup

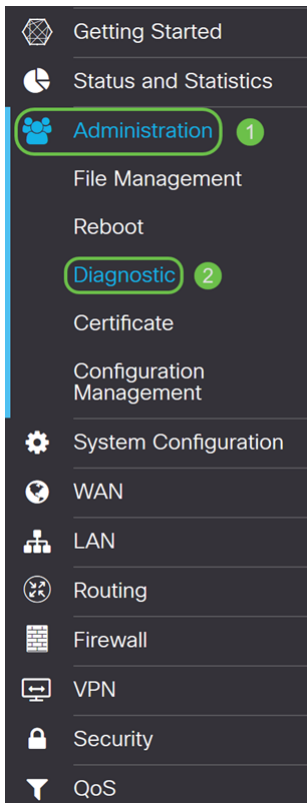
Step 1. Log in to the web configuration page of your router.



The image shows the login page for a Cisco Router. At the top is the Cisco logo, which consists of a stylized bridge icon above the word "CISCO" in blue. Below the logo is the word "Router" in a large, black, sans-serif font. Underneath "Router" are three input fields: "Username", "Password", and a language dropdown menu currently set to "English". Below these fields is a blue "Login" button.

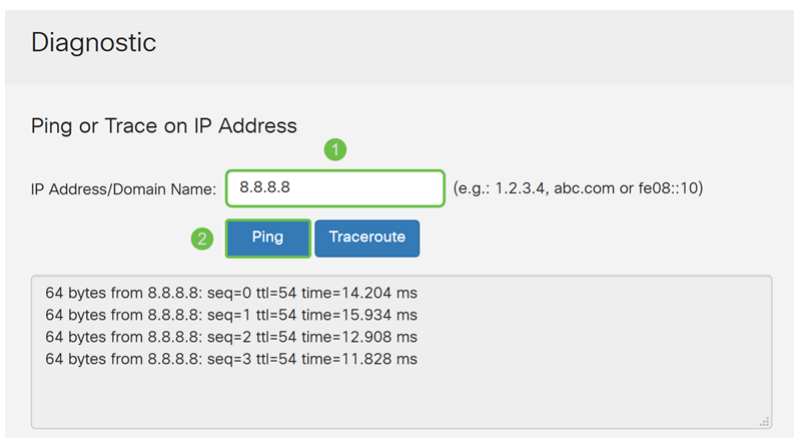
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Step 2. Navigate to **Administration > Diagnostic**.



Step 3. In the *Ping or Trace on IP Address* section, enter the **IP Address** or **Domain Name** that you want to ping. Click the **Ping** button.

In this example, **8.8.8.8** was entered in. 8.8.8.8 is the public DNS server at Google.



Note: You can also ping private IP addresses on your network.



Step 4. To find the route to the destination, enter the **IP Address** or **Domain Name** that you want to trace, and then click **Traceroute**. You should be able to see the path that packets take when traveling to google.com.

Note: Public IP addresses to the destination have been blurred.

Ping or Trace on IP Address

IP Address/Domain Name: (e.g.: 1.2.3.4, abc.com or fe08::10)

```
1 192.168.86.1 (192.168.86.1) 3.473 ms 0.885 ms 1.958 ms
2 96. (96. ) 11.038 ms 13.057 ms 14.752 ms
3 68. (68. ) 12.801 ms 12.378 ms 13.286 ms
4 162. (162. ) 15.526 ms 14.491 ms 14.232 ms
5 68. (68. ) 13.933 ms 14.774 ms 13.912 ms
6 96. 13.869 ms 96. 14.467 ms 96. 14.224 ms
7 () * * *
8 108. 15.377 ms 209. 15.45 ms 108. 13.324 ms
9 108. 14.425 ms 108. 13.446 ms 108. 14.453 ms
10 216. 16.575 ms 74. 14.242 ms 74. 14.749 ms
```

Step 5. In the *Perform a DNS Lookup* section, enter the **IP Address** or **Domain Name** that you want to find information about. Click **Lookup** to start the lookup process.

In this example, we have entered in google.com.

Perform a DNS Lookup

IP Address/Domain Name: (e.g.: yahoo.com)

```
Server: 192.168.86.1
Address 1: 192.168.86.1

Name: google.com
Address 1: 216.58.194.174
Address 2: 2607:f8b0:4005:808::200e
```

Note: You can also perform a reverse DNS lookup by entering an IP address instead of a domain name.

Perform a DNS Lookup

IP Address/Domain Name: (e.g.: yahoo.com)

```
Server: 192.168.86.1
Address 1: 192.168.86.1

Name: google-public-dns-a.google.com
Address 1: 8.8.8.8
```

Conclusion

You should now know how to use ping, traceroute, and DNS lookup on the RV160 and RV260 series routers.