## **DHCP** Overview

Statically assigning IP address information to individual networked devices is often time-consuming, error-prone, and lacking scalability. Rather than static IP address assignments, many corporate networks dynamically set IP address parameters to their devices. An early option for performing this automatic assignment of IP addresses was Bootstrap Protocol (BOOTP for short). However, the foremost popular approach for dynamic IP address assignment is Dynamic Host Configuration Protocol (DHCP). DHCP offers a more robust solution to IP address assignment than the answer provided by BOOTP. DHCP doesn't require a statically configured database of MAC address to IP address, subnet mask, and default gateway parameters. For instance, a DHCP server can educate a DHCP client about the IP address of a WINS server, or maybe an administrator-defined parameter (for example, the IP address of a TFTP server from which a configuration file might be downloaded). A protocol rendered obsolete by BOOTP and DHCP is Reverse Address Resolution Protocol (RARP).



Figure 1: DHCP Request

## **Ping Overview**

Ping may be a command-line utility available on virtually any OS with network connectivity that tests to ascertain if a networked device is reachable. The ping command sends an invitation over the network to a selected device. A successful ping leads to a response from the pc that was pinged back to the originating computer. A ping is employed to verify connectivity at an IP level to a second TCP/IP device. It does this by transmitting Internet Control Message Protocol (ICMP) Echo Request messages and waits for a return message. Unless modified, the ping command will send 4 requests by default in Windows. What percentage of responses get returned and the way long it takes for the round-trip provide essential information, such as:

- Bytes sent and received
- Packets sent, received, and lost
- Approximate round-trip time (in milliseconds)

The ping is initiated several times to check consistency within the connection. Here's what a successful ping request would return when connecting to a router. A Ping measures the time it takes for packets sent from the local host to a destination computer and back. The Ping tool measures and records the round-trip time of the package and any losses along the way. DomainTools' Ping service offers Ping information to display in a graphical and arranged manner available directly from the DomainTools website. This tool tests the essential connectivity of domains and IP addresses. Use this tool for troubleshooting purposes and to check response times.

Windows\system32\cmd.exe - ping 192.168.1.1 -t
from 192.168.1.1: bytes=32 time=1ms TTL=100
from 192.168.1.1: bytes=32 time=1ms TTL=100
from 172.168.1.1: bytes=32 time=167ms TTL-100
fine 12.168.1.1: bytes=32 time=2pp TTI =100
from 12 160 -1.1: bytes=32 time=2mo TTL-100
from 192,168 1 to bytes=32 time=1es IIL=100
at timed out. If bytes=32 - MISCOMPANIE
TTOM 192.168.1 1. Law
Image out. hytes=32 tipe=de and the set 1 - time=2-
fran 12.168-1.1: hute a IIIL=100
frum 192 too + 1: hutes=32 time=5
Tran 192 168 1.1: bytes 32 time SAS TIL-100
The 192-168 1.1: bytes 32 time 387ns ITLeton
Tran 192 168 1 1: bytes 32 time 203 TTL 100
I ma 12.168.1.1. bytes 22 timests ITL the
Then 192 tes. 1.1: hytes 32 timest TIL stor
True 19:108 1 .1: bytes =32 time ins IIL =100
Tran 122-168 1.1: hytes=32 time=1 Ge TIL=1 Ge
Find 168.1.1: bytes 32 time The TTI
auton 192 list by the size and the size in TL size 100
Final out 1.1: the set of the set
i i i i i i i i i i i i i i i i i i i
111 192 162 1.1: hus 32 times 111 21 Dec
The start is the s
trun 190012-1-1: hytesa32 Cineaa
to by 100 1.1.1
1 100 1 160 1.1; hyt. 32 time 22 no 13100

Figure 2: Ping Request