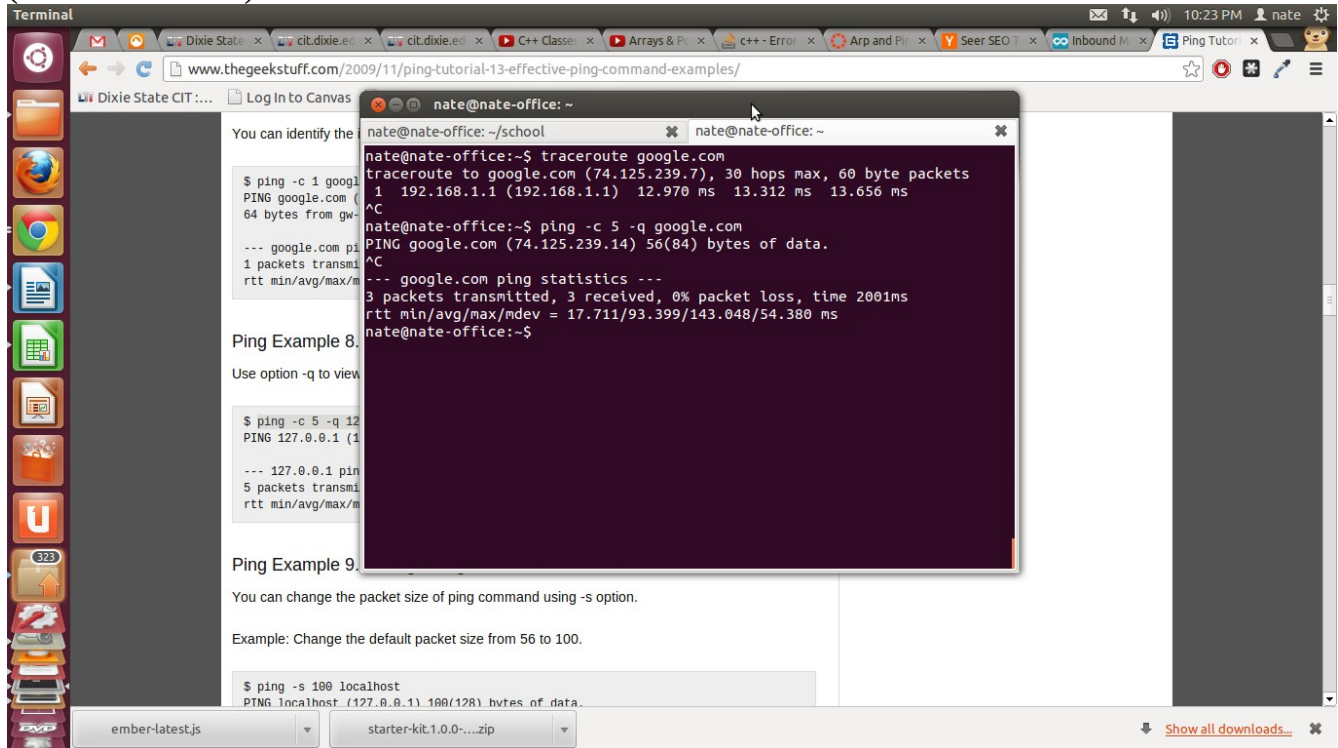


Nate Armstrong  
IT 2400 W, 5:30pm  
Arp and Ping

When I did a *traceroute* 'google.com' from the terminal, it returned 30 hops. A *ping* for the 'google.com' returned 56 hops.  
(Screenshot below)

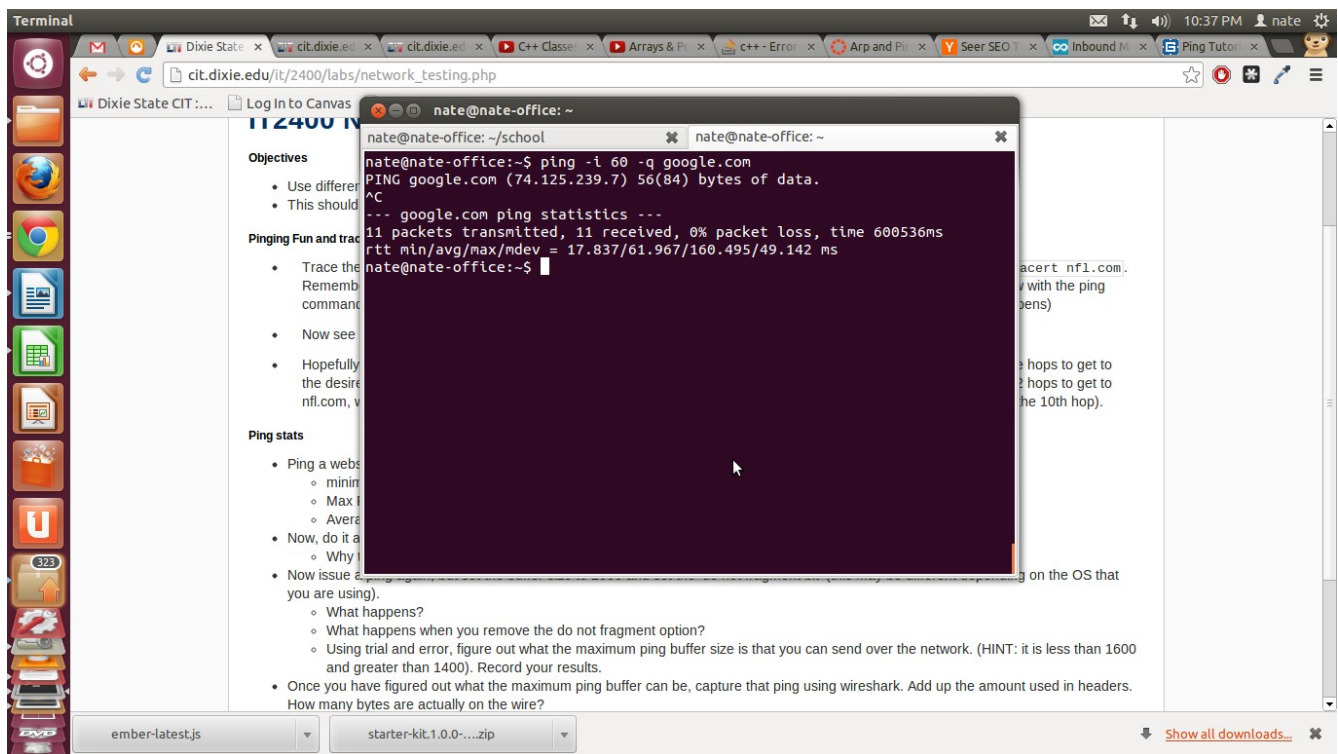


The screenshot shows a terminal window titled 'nate@nate-office: ~' with the following output:

```
nate@nate-office:~$ traceroute google.com
traceroute to google.com (74.125.239.7), 30 hops max, 60 byte packets
 1  192.168.1.1 (192.168.1.1)  12.970 ms  13.312 ms  13.656 ms
^C
nate@nate-office:~$ ping -c 5 -q google.com
PING google.com (74.125.239.14) 56(84) bytes of data:
^C
--- google.com ping statistics ---
 3 packets transmitted, 3 received, 0% packet loss, time 2001ms
rtt min/avg/max/mdev = 17.711/93.399/143.048/54.380 ms
nate@nate-office:~$
```

The background shows a web browser with the URL [www.thegeekstuff.com/2009/11/ping-tutorial-13-effective-ping-command-examples/](http://www.thegeekstuff.com/2009/11/ping-tutorial-13-effective-ping-command-examples/) and a sidebar with various icons.

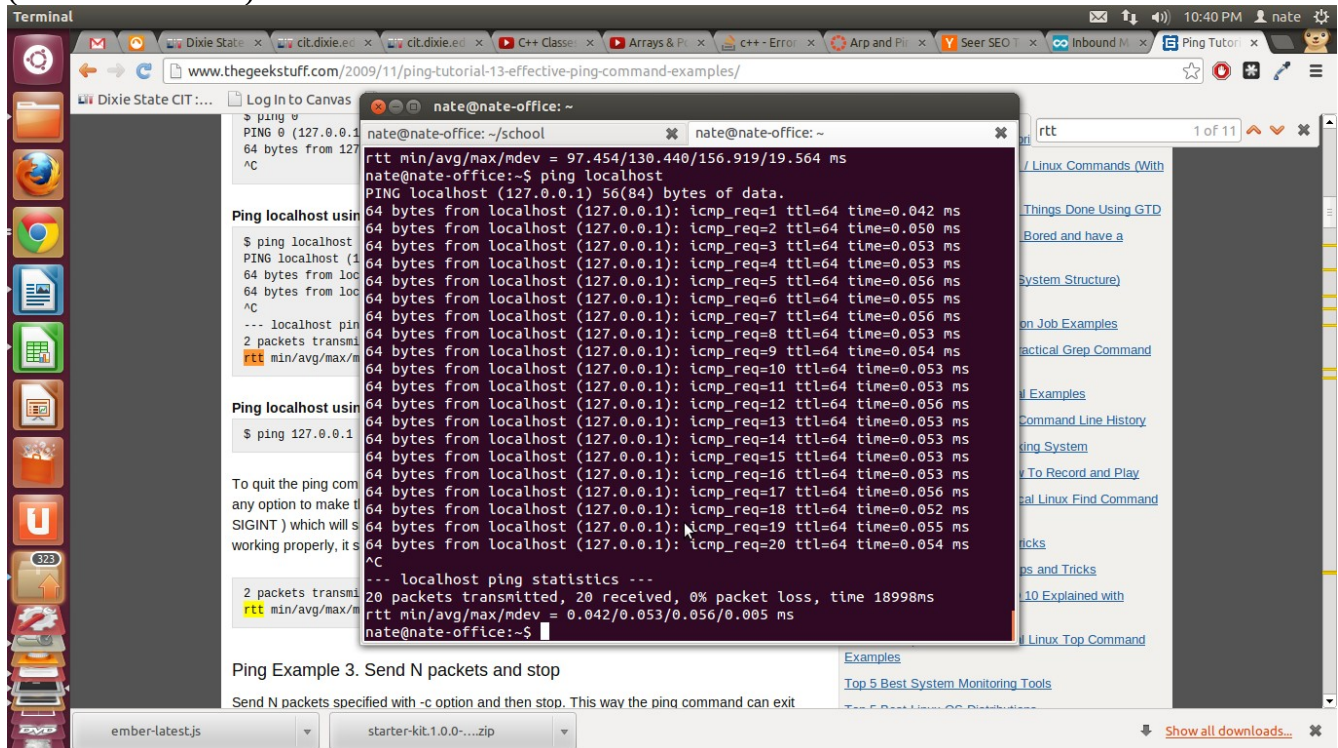
When I tried to ping it with more hops 56, it sent me into an infinite loop which means it was a bad request, as expected.  
(Screenshot below)



I pinged localhost 20 times and the rtt info was as follows:

**rtt min/avg/max/mdev = 0.042/0.053/0.056/0.005 ms**

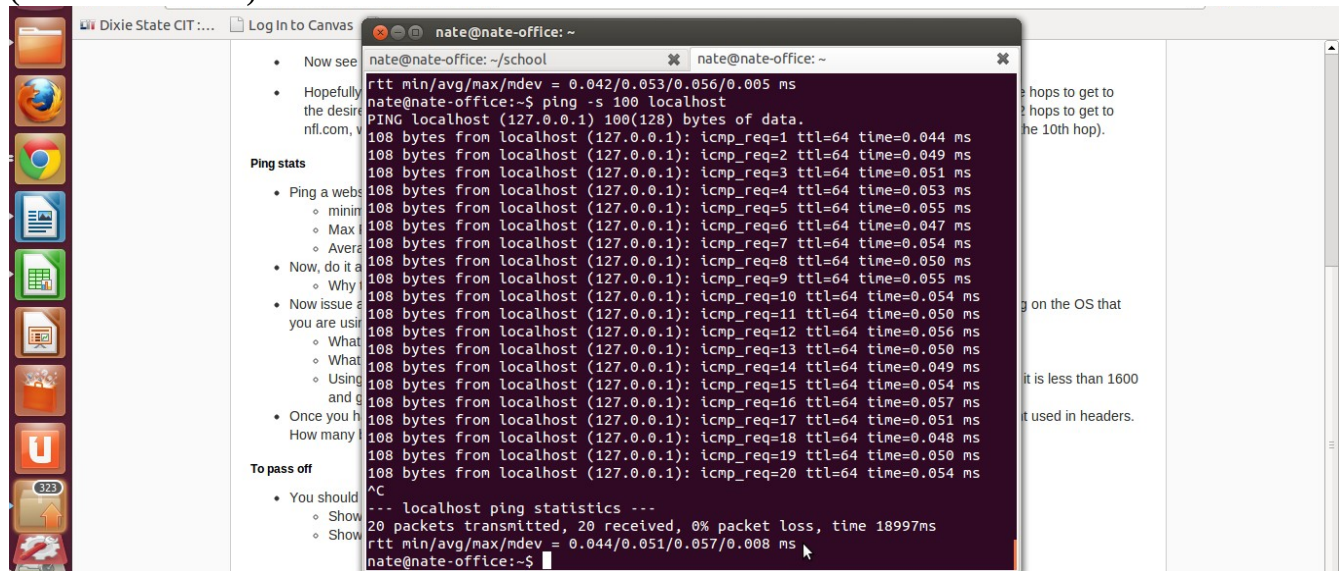
(Screenshot below)



Increased the buffer size to 100 and got the following rtt results:

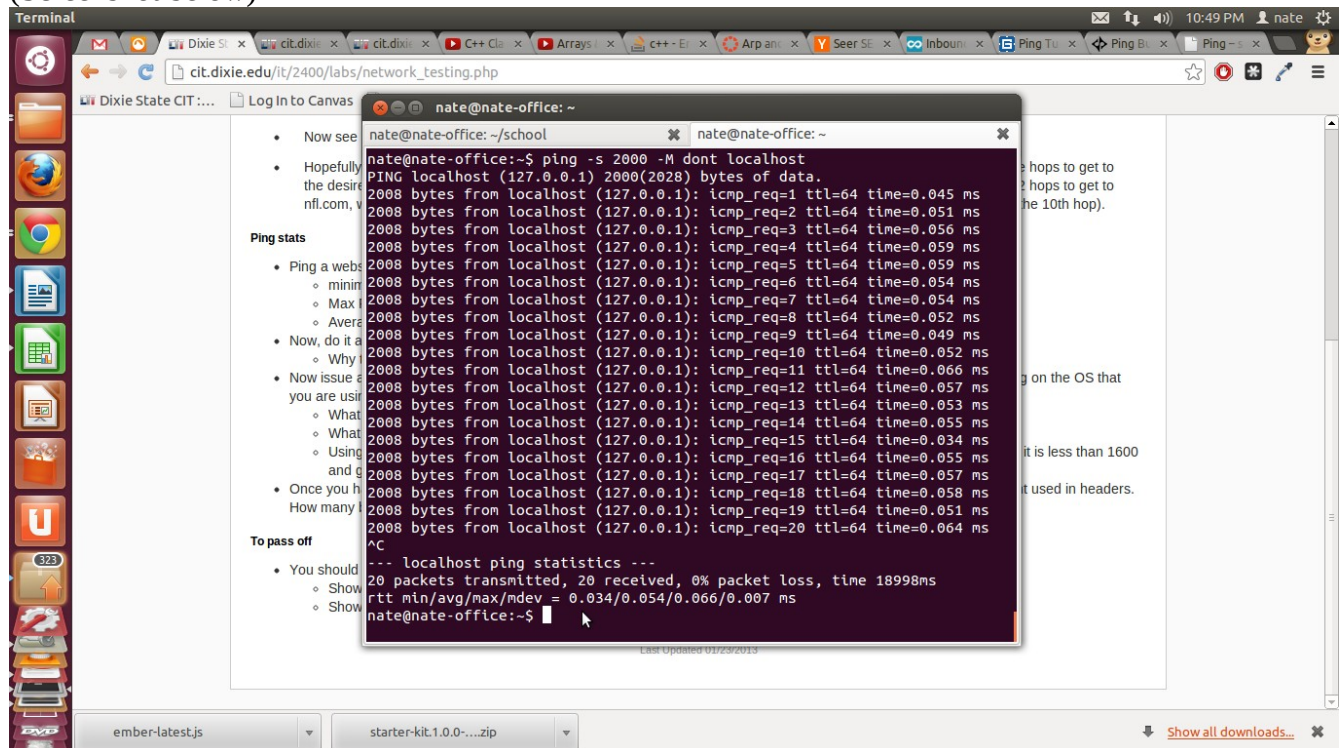
**rtt min/avg/max/mdev = 0.044/0.051/0.057/0.008 ms**

Each ping took longer than before probably because the buffer was bigger.  
(Screenshot below)



```
nate@nate-office: ~  
nate@nate-office: ~/school  
nate@nate-office:~$ ping -s 100 localhost  
PING localhost (127.0.0.1) 100(128) bytes of data.  
108 bytes from localhost (127.0.0.1): icmp_req=1 ttl=64 time=0.044 ms  
108 bytes from localhost (127.0.0.1): icmp_req=2 ttl=64 time=0.049 ms  
108 bytes from localhost (127.0.0.1): icmp_req=3 ttl=64 time=0.051 ms  
108 bytes from localhost (127.0.0.1): icmp_req=4 ttl=64 time=0.053 ms  
108 bytes from localhost (127.0.0.1): icmp_req=5 ttl=64 time=0.055 ms  
108 bytes from localhost (127.0.0.1): icmp_req=6 ttl=64 time=0.047 ms  
108 bytes from localhost (127.0.0.1): icmp_req=7 ttl=64 time=0.054 ms  
108 bytes from localhost (127.0.0.1): icmp_req=8 ttl=64 time=0.050 ms  
108 bytes from localhost (127.0.0.1): icmp_req=9 ttl=64 time=0.055 ms  
108 bytes from localhost (127.0.0.1): icmp_req=10 ttl=64 time=0.054 ms  
108 bytes from localhost (127.0.0.1): icmp_req=11 ttl=64 time=0.050 ms  
108 bytes from localhost (127.0.0.1): icmp_req=12 ttl=64 time=0.056 ms  
108 bytes from localhost (127.0.0.1): icmp_req=13 ttl=64 time=0.050 ms  
108 bytes from localhost (127.0.0.1): icmp_req=14 ttl=64 time=0.049 ms  
108 bytes from localhost (127.0.0.1): icmp_req=15 ttl=64 time=0.054 ms  
108 bytes from localhost (127.0.0.1): icmp_req=16 ttl=64 time=0.057 ms  
108 bytes from localhost (127.0.0.1): icmp_req=17 ttl=64 time=0.051 ms  
108 bytes from localhost (127.0.0.1): icmp_req=18 ttl=64 time=0.048 ms  
108 bytes from localhost (127.0.0.1): icmp_req=19 ttl=64 time=0.050 ms  
108 bytes from localhost (127.0.0.1): icmp_req=20 ttl=64 time=0.054 ms  
^C  
--- localhost ping statistics ---  
20 packets transmitted, 20 received, 0% packet loss, time 18997ms  
rtt min/avg/max/mdev = 0.044/0.051/0.057/0.008 ms  
nate@nate-office:~$
```

With the 'dont fragment' bit set, the rtt results were:  
**rtt min/avg/max/mdev = 0.034/0.054/0.066/0.007 ms**  
Nothing crazy happened, results were between the two results above.  
(Screenshot below)



```
nate@nate-office: ~  
nate@nate-office: ~/school  
nate@nate-office:~$ ping -s 2000 -M dont localhost  
PING localhost (127.0.0.1) 2000(2028) bytes of data.  
2008 bytes from localhost (127.0.0.1): icmp_req=1 ttl=64 time=0.045 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=2 ttl=64 time=0.051 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=3 ttl=64 time=0.056 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=4 ttl=64 time=0.059 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=5 ttl=64 time=0.059 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=6 ttl=64 time=0.054 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=7 ttl=64 time=0.054 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=8 ttl=64 time=0.052 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=9 ttl=64 time=0.049 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=10 ttl=64 time=0.052 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=11 ttl=64 time=0.066 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=12 ttl=64 time=0.057 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=13 ttl=64 time=0.053 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=14 ttl=64 time=0.055 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=15 ttl=64 time=0.034 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=16 ttl=64 time=0.055 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=17 ttl=64 time=0.057 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=18 ttl=64 time=0.058 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=19 ttl=64 time=0.051 ms  
2008 bytes from localhost (127.0.0.1): icmp_req=20 ttl=64 time=0.064 ms  
^C  
--- localhost ping statistics ---  
20 packets transmitted, 20 received, 0% packet loss, time 18998ms  
rtt min/avg/max/mdev = 0.034/0.054/0.066/0.007 ms  
nate@nate-office:~$
```

When I didn't set the 'don't defrag' bit it still worked but took longer than any of the other tests but I did read that the maximum buffer is 65,535 bytes.



Couldn't get Wireshark to capture on my home machine.. Not sure how to run it on Ubuntu.