

Basic system commands for analyzing network addresses

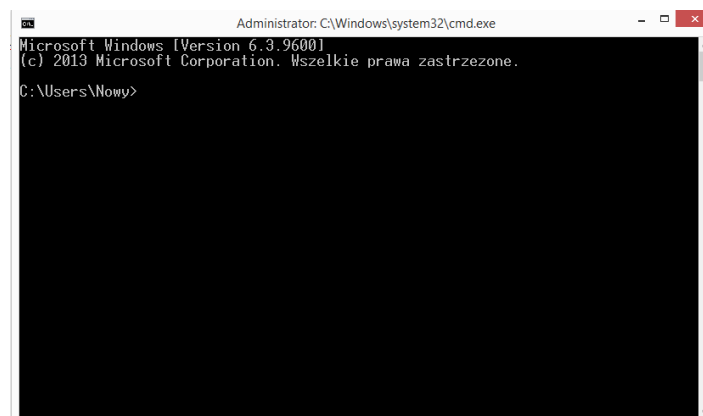
In the Internet, intranet, in case of problems with the connection to the server, it is recommended to check the **ping** or trace the packet route (**tracert**) and thus check the availability of the server.

Checking the resource with ping

To check if the remote host is available, we can use the ping command, which should be entered in the command line (cmd). The command line can be launched in the following ways:

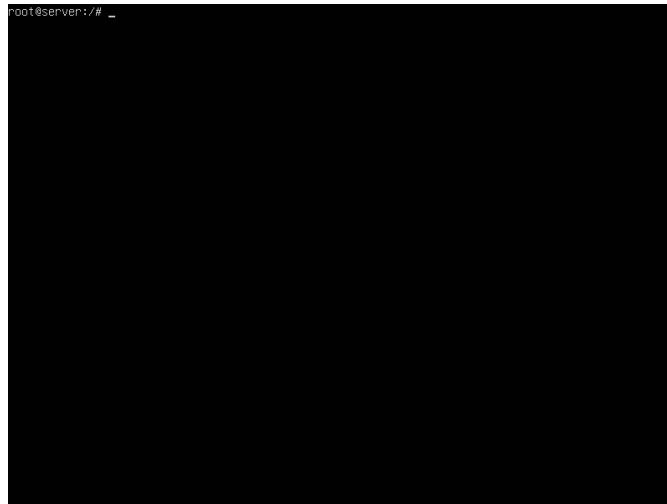
Windows:

Start->Run->cmd Linux:

A screenshot of a Windows command prompt window. The title bar reads "Administrator: C:\Windows\system32\cmd.exe". The window content shows the following text: "Microsoft Windows [Version 6.3.9600] (c) 2013 Microsoft Corporation. Wszelkie prawa zastrzeżone. C:\Users\Nowy>". The rest of the window is black with a white cursor at the end of the prompt.

Linux:

There are many terminals in Linux, so you can use any of the terminals installed on your computer to check the ping. Typically, a standard terminal can be started with the Ctrl+Alt+T key combination, or accessed in the case of a server installation:



To check a specific server, execute the command:

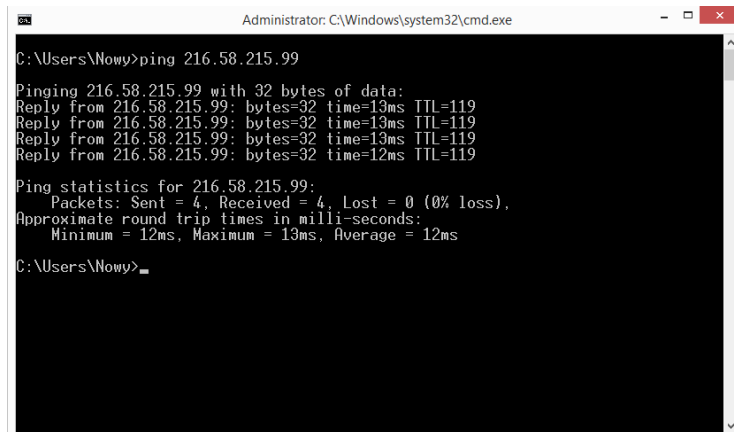
ping < IP or domain >

For example, to ping the address 22.222.22.11, execute the command:

ping 22.222.22.11

Example of use ping for a specific IP address (what is this address?),

Windows:



As can be seen from the results, 4 packets of 32 bytes were transmitted and received. The exchange time of one packet is about 13 ms.

Linux:

```
root@server:/# ping 216.58.215.99
PING 216.58.215.99 (216.58.215.99) 56(84) bytes of data.
64 bytes from 216.58.215.99: icmp_seq=1 ttl=118 time=14.0 ms
64 bytes from 216.58.215.99: icmp_seq=2 ttl=118 time=14.0 ms
64 bytes from 216.58.215.99: icmp_seq=3 ttl=118 time=13.7 ms
64 bytes from 216.58.215.99: icmp_seq=4 ttl=118 time=14.1 ms
64 bytes from 216.58.215.99: icmp_seq=5 ttl=118 time=14.0 ms
64 bytes from 216.58.215.99: icmp_seq=6 ttl=118 time=13.9 ms
64 bytes from 216.58.215.99: icmp_seq=7 ttl=118 time=14.0 ms
64 bytes from 216.58.215.99: icmp_seq=8 ttl=118 time=14.4 ms
^C
--- 216.58.215.99 ping statistics ---
8 packets transmitted, 8 received, 0% packet loss, time 7013ms
rtt min/avg/max/mdev = 13.796/14.067/14.402/0.210 ms
root@server:/# _
```

It's worth noting that on Windows, only 4 packets are sent by default. On Linux, packet exchange continues until the user stops the process with Ctrl+C. To run the ping command in a similar way on Windows, use the -t option.

For example:

```
ping -t 85.232.249.104
```

You can stop the packet exchange with the same Ctrl+C key combination.

Setting the number of packets to be sent

To specify the maximum number of packets to be sent, use the following command:

Windows:

```
ping -n <number_packets> <IP or domain>
```

For example: ping -n 5 85.232.249.104

Linux: ping -c <number_packets> <IP or domain >

For example: ping -c 5 85.232.249.104

Change size of packets for ping command

To ping packets of a specific size (in bytes), use the following command:

Windows:

```
ping -l < packet_size > < IP or domain >
```

For example: ping -l 64 85.232.249.104

Linux: ping -s <packet_size> <IP or domain>

For example: ping -s 64 85.232.249.104

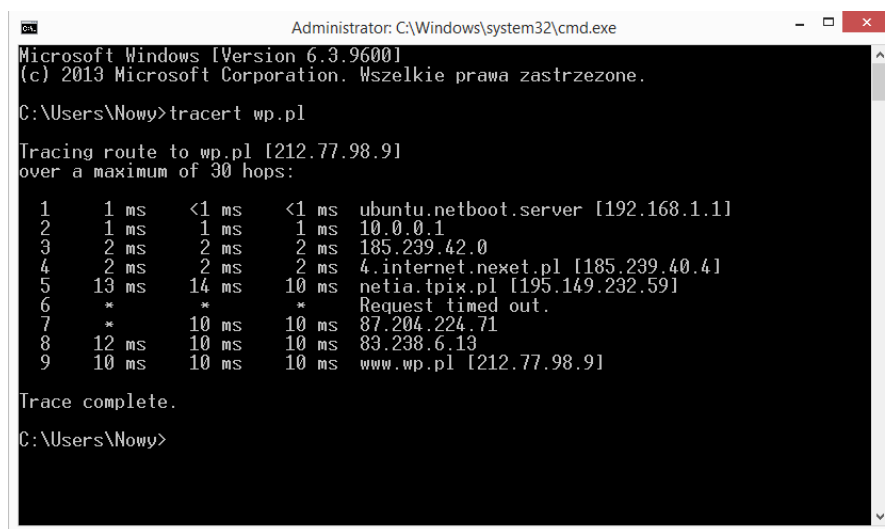
In this case, packets of 64 bytes were sent.

Packet route checking - traceroute

Packet route tracking can show how fast packets travel between routers. To trace the packet route, use the following command:

Windows: `tracert < IP or domain >`

For example: `tracert wp.pl`



```
Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. Wszelkie prawa zastrzeżone.

C:\Users\Nowy>tracert wp.pl

Tracing route to wp.pl [212.77.98.9]
over a maximum of 30 hops:

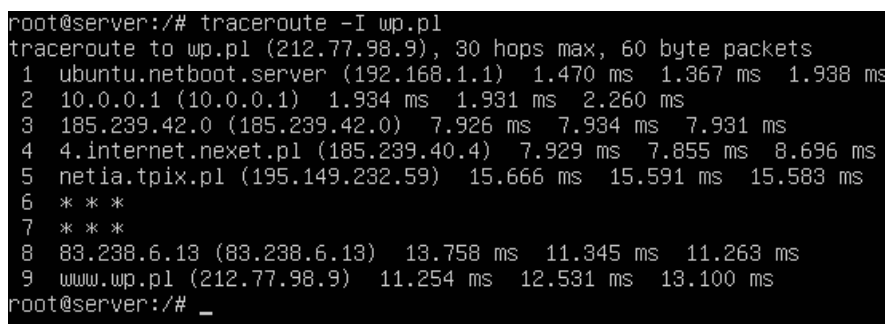
  0  1 ms  <1 ms  <1 ms  ubuntu.netboot.server [192.168.1.1]
  1  1 ms  1 ms  1 ms  10.0.0.1
  2  2 ms  2 ms  2 ms  185.239.42.0
  3  2 ms  2 ms  2 ms  4.internet.nexet.pl [185.239.40.4]
  4  13 ms 14 ms 10 ms  netia.tpix.pl [195.149.232.59]
  5  *      *      *      Request timed out.
  6  *      *      *      Request timed out.
  7  *      *      *      Request timed out.
  8  12 ms 10 ms 10 ms  83.238.6.13
  9  10 ms 10 ms 10 ms  www.wp.pl [212.77.98.9]

Trace complete.

C:\Users\Nowy>
```

Linux: `traceroute < IP or domain >` or `traceroute -I < IP or domain >`

For example: `traceroute wp.pl`



```
root@server:/# traceroute -I wp.pl
traceroute to wp.pl (212.77.98.9), 30 hops max, 60 byte packets
 0  ubuntu.netboot.server (192.168.1.1)  1.470 ms  1.367 ms  1.938 ms
 1  10.0.0.1 (10.0.0.1)  1.934 ms  1.931 ms  2.260 ms
 2  185.239.42.0 (185.239.42.0)  7.926 ms  7.934 ms  7.931 ms
 3  4.internet.nexet.pl (185.239.40.4)  7.929 ms  7.855 ms  8.696 ms
 4  netia.tpix.pl (195.149.232.59)  15.666 ms  15.591 ms  15.583 ms
 5  * * *
 6  * * *
 7  * * *
 8  83.238.6.13 (83.238.6.13)  13.758 ms  11.345 ms  11.263 ms
 9  www.wp.pl (212.77.98.9)  11.254 ms  12.531 ms  13.100 ms
root@server:/# _
```

It is worth noting that, by default, packet tracing also performs DNS queries, checking the IP addresses and domain name for each router that passes through. This option can be disabled by reducing server response time. To activate this option, use the following command:

Windows: `tracert -d wp.pl`

```
Administrator: C:\Windows\system32\cmd.exe
6 * * * Request timed out.
7 * * 10 ms 10 ms 87.204.224.71
8 12 ms 10 ms 10 ms 83.238.6.13
9 10 ms 10 ms 10 ms www.wp.pl [212.77.98.9]

Trace complete.
C:\Users\Nowy>tracert -d wp.pl

Tracing route to wp.pl [212.77.98.9]
over a maximum of 30 hops:

  1  1 ms  <1 ms  <1 ms  192.168.1.1
  2  1 ms  1 ms  1 ms  10.0.0.1
  3  3 ms  2 ms  2 ms  185.239.42.0
  4  3 ms  2 ms  3 ms  185.239.40.4
  5  11 ms  14 ms  10 ms  195.149.232.59
  6  * * * 10 ms  83.238.248.19
  7  * * 10 ms  9 ms  87.204.224.71
  8  10 ms  11 ms  10 ms  83.238.6.13
  9  10 ms  10 ms  10 ms  212.77.98.9

Trace complete.
C:\Users\Nowy>
```

Linux:

traceroute -n wp.pl or traceroute -n wp.pl or

```
root@server:/#
root@server:/#
root@server:/# traceroute -n -I wp.pl
traceroute to wp.pl (212.77.98.9), 30 hops max, 60 byte packets
 1 192.168.1.1 1.678 ms 1.598 ms 1.592 ms
 2 10.0.0.1 1.882 ms 5.514 ms 5.523 ms
 3 185.239.42.0 5.921 ms 5.919 ms 5.918 ms
 4 185.239.40.4 6.127 ms 6.405 ms 6.817 ms
 5 195.149.232.59 14.462 ms 14.468 ms 19.065 ms
 6 * * *
 7 87.204.224.71 13.506 ms 13.705 ms 10.651 ms
 8 83.238.6.13 13.910 ms 13.675 ms 13.597 ms
 9 212.77.98.9 13.499 ms 13.190 ms 13.112 ms
root@server:/#
```