

Sprawozdanie nr 1



Sieci Komputerowe

Temat: Polecenie netstat.

Informatyka (niestacjonarnie) -

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Polecenie „netstat” służy do wyświetlania informacji o połączeniach sieciowych oraz statystykach na komputerze. Działa ono na poziomie systemu operacyjnego i dostarcza informacje o aktywnych połączeniach sieciowych. Można polecenie modyfikować poprzez przekazanie mu różnych parametrów.

netstat -a: Wyświetla wszystkie połączenia i nasłuchujące porty na komputerze.

```
C:\Users\U530Touch>netstat -a
```

Active Connections

| Proto | Local Address | Foreign Address | State |
|-------|-----------------|-----------------------|-------------|
| TCP | 0.0.0.0:135 | 0:0 | LISTENING |
| TCP | 0.0.0.0:445 | 0:0 | LISTENING |
| TCP | 0.0.0.0:5040 | 0:0 | LISTENING |
| TCP | 0.0.0.0:5357 | 0:0 | LISTENING |
| TCP | 0.0.0.0:7680 | 0:0 | LISTENING |
| TCP | 0.0.0.0:8501 | 0:0 | LISTENING |
| TCP | 0.0.0.0:49664 | 0:0 | LISTENING |
| TCP | 0.0.0.0:49665 | 0:0 | LISTENING |
| TCP | 0.0.0.0:49666 | 0:0 | LISTENING |
| TCP | 0.0.0.0:49667 | 0:0 | LISTENING |
| TCP | 0.0.0.0:49669 | 0:0 | LISTENING |
| TCP | 0.0.0.0:49675 | 0:0 | LISTENING |
| TCP | 0.0.0.0:56016 | 0:0 | LISTENING |
| TCP | 0.0.0.0:57621 | 0:0 | LISTENING |
| TCP | 127.0.0.1:5939 | 0:0 | LISTENING |
| TCP | 127.0.0.1:5939 | DESKTOP-OC8LGER:60315 | ESTABLISHED |
| TCP | 127.0.0.1:12025 | 0:0 | LISTENING |
| TCP | 127.0.0.1:12110 | 0:0 | LISTENING |
| TCP | 127.0.0.1:12119 | 0:0 | LISTENING |
| TCP | 127.0.0.1:12143 | 0:0 | LISTENING |
| TCP | 127.0.0.1:12465 | 0:0 | LISTENING |
| TCP | 127.0.0.1:12563 | 0:0 | LISTENING |
| TCP | 127.0.0.1:12993 | 0:0 | LISTENING |
| TCP | 127.0.0.1:12995 | 0:0 | LISTENING |
| TCP | 127.0.0.1:27275 | 0:0 | LISTENING |
| TCP | 127.0.0.1:28385 | 0:0 | LISTENING |
| TCP | 127.0.0.1:28390 | 0:0 | LISTENING |
| TCP | 127.0.0.1:43227 | 0:0 | LISTENING |
| TCP | 127.0.0.1:49350 | 0:0 | LISTENING |
| TCP | 127.0.0.1:49351 | 0:0 | LISTENING |
| TCP | 127.0.0.1:50728 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50729 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50731 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50734 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50735 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50736 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50737 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50738 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50739 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50740 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50741 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50743 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:53562 | 0:0 | LISTENING |

Podanie opcji „**netstat -e**” w poleceniu powoduje wyświetlenie dodatkowych informacji o statystykach interfejsu sieciowego, takich jak liczba wysłanych i odebranych bajtów, liczba pakietów

multicastowych, liczba błędów protokołu IP itp.

```
C:\Users\U530Touch>netstat -e
Interface Statistics


```

| | Received | Sent |
|---------------------|-----------|----------|
| Bytes | 774482072 | 63791854 |
| Unicast packets | 760571 | 295155 |
| Non-unicast packets | 53774 | 29869 |
| Discards | 0 | 0 |
| Errors | 0 | 0 |
| Unknown protocols | 0 | |

```
C:\Users\U530Touch>
```

netstat -n: Wyświetla numery portów i adresy IP w formacie numerycznym, zamiast próbować przekonwertować je na nazwy.

```
C:\Users\U530Touch>netstat -n
```

Active Connections

| Proto | Local Address | Foreign Address | State |
|-------|--------------------|---------------------|-------------|
| TCP | 127.0.0.1:5939 | 127.0.0.1:60315 | ESTABLISHED |
| TCP | 127.0.0.1:50779 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50789 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50790 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50791 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50792 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50793 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50794 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50795 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50801 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50804 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50805 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50806 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50807 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50808 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50809 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50810 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50811 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50815 | 127.0.0.1:49350 | TIME_WAIT |
| TCP | 127.0.0.1:60315 | 127.0.0.1:5939 | ESTABLISHED |
| TCP | 127.0.0.1:60321 | 127.0.0.1:60322 | ESTABLISHED |
| TCP | 127.0.0.1:60322 | 127.0.0.1:60321 | ESTABLISHED |
| TCP | 192.168.0.20:50492 | 64.233.165.188:5228 | ESTABLISHED |
| TCP | 192.168.0.20:50662 | 35.186.224.25:443 | CLOSE_WAIT |
| TCP | 192.168.0.20:50754 | 20.54.232.160:443 | TIME_WAIT |
| TCP | 192.168.0.20:50756 | 23.64.12.26:443 | CLOSE_WAIT |
| TCP | 192.168.0.20:50762 | 152.199.19.161:443 | CLOSE_WAIT |
| TCP | 192.168.0.20:50768 | 23.64.12.16:443 | CLOSE_WAIT |
| TCP | 192.168.0.20:50784 | 20.42.73.27:443 | TIME_WAIT |
| TCP | 192.168.0.20:50785 | 20.42.73.27:443 | TIME_WAIT |
| TCP | 192.168.0.20:50796 | 104.81.116.49:80 | ESTABLISHED |
| TCP | 192.168.0.20:50797 | 216.58.215.99:80 | ESTABLISHED |
| TCP | 192.168.0.20:50798 | 92.123.189.35:80 | ESTABLISHED |
| TCP | 192.168.0.20:50800 | 20.54.232.160:443 | ESTABLISHED |
| TCP | 192.168.0.20:50814 | 204.79.197.203:443 | ESTABLISHED |
| TCP | 192.168.0.20:55425 | 20.50.2.7:443 | CLOSE_WAIT |
| TCP | 192.168.0.20:56011 | 217.146.23.161:5938 | ESTABLISHED |
| TCP | 192.168.0.20:56019 | 34.158.0.131:80 | ESTABLISHED |
| TCP | 192.168.0.20:56020 | 35.186.224.47:443 | ESTABLISHED |
| TCP | 192.168.0.20:56033 | 40.115.3.253:443 | ESTABLISHED |
| TCP | 192.168.0.20:56034 | 35.186.224.47:443 | ESTABLISHED |
| TCP | 192.168.0.20:56042 | 35.174.127.31:443 | ESTABLISHED |
| TCP | 192.168.0.20:56051 | 35.247.108.235:7500 | ESTABLISHED |
| TCP | 192.168.0.20:56100 | 77.234.45.88:80 | ESTABLISHED |
| TCP | 192.168.0.20:56300 | 18.244.146.24:443 | CLOSE_WAIT |

Polecenie „**netstat -p**” zmienia działanie podstawowego polecenia poprzez wyświetlenie połączeń tylko dla wybranego protokołu.


```
C:\Users\U530Touch>netstat -p TCP
```

Active Connections

| Proto | Local Address | Foreign Address | State |
|-------|--------------------|----------------------------|-------------|
| TCP | 127.0.0.1:5939 | DESKTOP-OC8LGER:60315 | ESTABLISHED |
| TCP | 127.0.0.1:50793 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50794 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50795 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50801 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50804 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50805 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50806 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50807 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50808 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50809 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50810 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50811 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50815 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50816 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50817 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50820 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:60315 | DESKTOP-OC8LGER:5939 | ESTABLISHED |
| TCP | 127.0.0.1:60321 | DESKTOP-OC8LGER:60322 | ESTABLISHED |
| TCP | 127.0.0.1:60322 | DESKTOP-OC8LGER:60321 | ESTABLISHED |
| TCP | 192.168.0.20:50492 | lg-in-f188:5228 | ESTABLISHED |
| TCP | 192.168.0.20:50662 | 25:https | CLOSE_WAIT |
| TCP | 192.168.0.20:50754 | 20.54.232.160:https | TIME_WAIT |
| TCP | 192.168.0.20:50756 | a23-64-12-26:https | CLOSE_WAIT |
| TCP | 192.168.0.20:50762 | 152.199.19.161:https | CLOSE_WAIT |
| TCP | 192.168.0.20:50768 | a23-64-12-16:https | CLOSE_WAIT |
| TCP | 192.168.0.20:50796 | a104-81-116-49:http | TIME_WAIT |
| TCP | 192.168.0.20:50797 | waw02s17-in-f3:http | TIME_WAIT |
| TCP | 192.168.0.20:50798 | a92-123-189-35:http | TIME_WAIT |
| TCP | 192.168.0.20:50800 | 20.54.232.160:https | ESTABLISHED |
| TCP | 192.168.0.20:50814 | a-0003:https | ESTABLISHED |
| TCP | 192.168.0.20:50821 | dsde145-1:https | ESTABLISHED |
| TCP | 192.168.0.20:55425 | 20.50.2.7:https | CLOSE_WAIT |
| TCP | 192.168.0.20:56011 | DE-FRA-ANX-R050:5938 | ESTABLISHED |
| TCP | 192.168.0.20:56019 | 131:http | ESTABLISHED |
| TCP | 192.168.0.20:56020 | 47:https | ESTABLISHED |
| TCP | 192.168.0.20:56033 | 40.115.3.253:https | ESTABLISHED |
| TCP | 192.168.0.20:56034 | 47:https | ESTABLISHED |
| TCP | 192.168.0.20:56042 | ec2-35-174-127-31:https | ESTABLISHED |
| TCP | 192.168.0.20:56051 | 235:7500 | ESTABLISHED |
| TCP | 192.168.0.20:56100 | fra02-012:http | ESTABLISHED |
| TCP | 192.168.0.20:56300 | server-18-244-146-24:https | CLOSE_WAIT |

```
C:\Users\U530Touch>
```

Polecenie **netstat -r**: Wyświetla tablicę trasowania (routing table), która pokazuje, jakie adresy IP są dostępne poprzez jakie interfejsy sieciowe.

```

C:\Users\U530Touch>netstat -r

=====
Interface List
  4...2c 60 0c 28 f7 13 .....Realtek PCIe GbE Family Controller
 16...0a 00 27 00 00 10 .....VirtualBox Host-Only Ethernet Adapter
   2...48 51 b7 7d ec 28 .....Microsoft Wi-Fi Direct Virtual Adapter
 13...4a 51 b7 7d ec 27 .....Microsoft Wi-Fi Direct Virtual Adapter #2
   6...48 51 b7 7d ec 27 .....Intel(R) Wireless-N 7260
 20...48 51 b7 7d ec 2b .....Bluetooth Device (Personal Area Network)
   1.....Software Loopback Interface 1
=====

IPv4 Route Table
=====
Active Routes:
Network Destination        Netmask          Gateway          Interface        Metric
    0.0.0.0                0.0.0.0         192.168.0.1      192.168.0.20      40
    127.0.0.0             255.0.0.0           On-link          127.0.0.1        331
    127.0.0.1       255.255.255.255           On-link          127.0.0.1        331
  127.255.255.255  255.255.255.255           On-link          127.0.0.1        331
    192.168.0.0           255.255.255.0           On-link          192.168.0.20      296
    192.168.0.20       255.255.255.255           On-link          192.168.0.20      296
    192.168.0.255     255.255.255.255           On-link          192.168.0.20      296
    192.168.56.0           255.255.255.0           On-link          192.168.56.1      281
    192.168.56.1       255.255.255.255           On-link          192.168.56.1      281
    192.168.56.255   255.255.255.255           On-link          192.168.56.1      281
    224.0.0.0             240.0.0.0           On-link          127.0.0.1        331
    224.0.0.0             240.0.0.0           On-link          192.168.56.1      281
    224.0.0.0             240.0.0.0           On-link          192.168.0.20      296
    255.255.255.255  255.255.255.255           On-link          127.0.0.1        331
    255.255.255.255  255.255.255.255           On-link          192.168.56.1      281
    255.255.255.255  255.255.255.255           On-link          192.168.0.20      296
=====
Persistent Routes:
    None

IPv6 Route Table
=====

```

```

IPv6 Route Table
=====
Active Routes:
If Metric Network Destination      Gateway
  1    331  ::1/128                On-link
 16    281 fe80::/64                On-link
   6    296 fe80::/64                On-link
   6    296 fe80::42d9:ba17:99ee:942a/128
                                On-link
 16    281 fe80::bd6f:f354:a632:f86/128
                                On-link
   1    331 ff00::/8                On-link
 16    281 ff00::/8                On-link
   6    296 ff00::/8                On-link
=====
Persistent Routes:
    None

C:\Users\U530Touch>

```

Polecenie **netstat -s**: Wyświetla szczegółowe statystyki protokołów sieciowych(TCP,UDP i IP), takie jak liczba wysłanych i odebranych pakietów, błędy, odrzuty itp.

```
C:\Users\U530Touch>netstat -s
```

IPv4 Statistics

| | |
|-----------------------------------|-----------|
| Packets Received | = 2327808 |
| Received Header Errors | = 0 |
| Received Address Errors | = 61 |
| Datagrams Forwarded | = 0 |
| Unknown Protocols Received | = 0 |
| Received Packets Discarded | = 58856 |
| Received Packets Delivered | = 2466372 |
| Output Requests | = 648068 |
| Routing Discards | = 0 |
| Discarded Output Packets | = 752 |
| Output Packet No Route | = 94 |
| Reassembly Required | = 54 |
| Reassembly Successful | = 27 |
| Reassembly Failures | = 0 |
| Datagrams Successfully Fragmented | = 0 |
| Datagrams Failing Fragmentation | = 0 |
| Fragments Created | = 0 |

IPv6 Statistics

| | |
|-----------------------------------|---------|
| Packets Received | = 24712 |
| Received Header Errors | = 0 |
| Received Address Errors | = 3 |
| Datagrams Forwarded | = 0 |
| Unknown Protocols Received | = 0 |
| Received Packets Discarded | = 15364 |
| Received Packets Delivered | = 31580 |
| Output Requests | = 8600 |
| Routing Discards | = 0 |
| Discarded Output Packets | = 9 |
| Output Packet No Route | = 0 |
| Reassembly Required | = 52 |
| Reassembly Successful | = 26 |
| Reassembly Failures | = 0 |
| Datagrams Successfully Fragmented | = 0 |
| Datagrams Failing Fragmentation | = 0 |
| Fragments Created | = 0 |

ICMPv4 Statistics

| | Received | Sent |
|----------|----------|------|
| Messages | 1004 | 925 |
| Errors | 0 | 0 |

Polecenie **netstat [odstęp]** :wyswietla wybraną statystykę co określona ilość sekund.

```
C:\Users\U530Touch>netstat 5
```

Active Connections

| Proto | Local Address | Foreign Address | State |
|-------|--------------------|----------------------------|-------------|
| TCP | 127.0.0.1:5939 | DESKTOP-OC8LGER:60315 | ESTABLISHED |
| TCP | 127.0.0.1:50993 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50994 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50996 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:50997 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:51000 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:51002 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:51005 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:51006 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:51007 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:51008 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:51010 | DESKTOP-OC8LGER:49350 | TIME_WAIT |
| TCP | 127.0.0.1:60315 | DESKTOP-OC8LGER:5939 | ESTABLISHED |
| TCP | 127.0.0.1:60321 | DESKTOP-OC8LGER:60322 | ESTABLISHED |
| TCP | 127.0.0.1:60322 | DESKTOP-OC8LGER:60321 | ESTABLISHED |
| TCP | 192.168.0.20:50756 | a23-64-12-26:https | CLOSE_WAIT |
| TCP | 192.168.0.20:50762 | 152.199.19.161:https | CLOSE_WAIT |
| TCP | 192.168.0.20:50768 | a23-64-12-16:https | CLOSE_WAIT |
| TCP | 192.168.0.20:50851 | 20.50.2.7:https | CLOSE_WAIT |
| TCP | 192.168.0.20:50920 | lq-in-f188:5228 | ESTABLISHED |
| TCP | 192.168.0.20:50950 | 25:https | ESTABLISHED |
| TCP | 192.168.0.20:50955 | dsde115-1:https | CLOSE_WAIT |
| TCP | 192.168.0.20:50968 | 92.223.20.11:http | TIME_WAIT |
| TCP | 192.168.0.20:50969 | 25:https | ESTABLISHED |
| TCP | 192.168.0.20:50972 | server-18-244-146-24:https | ESTABLISHED |
| TCP | 192.168.0.20:50995 | fra02-006:http | ESTABLISHED |
| TCP | 192.168.0.20:51001 | 52.143.84.45:https | ESTABLISHED |
| TCP | 192.168.0.20:51012 | 20.54.232.160:https | ESTABLISHED |
| TCP | 192.168.0.20:56011 | DE-FRA-ANX-R050:5938 | ESTABLISHED |
| TCP | 192.168.0.20:56019 | 131:http | ESTABLISHED |
| TCP | 192.168.0.20:56020 | 47:https | ESTABLISHED |
| TCP | 192.168.0.20:56033 | 40.115.3.253:https | ESTABLISHED |
| TCP | 192.168.0.20:56034 | 47:https | ESTABLISHED |
| TCP | 192.168.0.20:56042 | ec2-35-174-127-31:https | ESTABLISHED |
| TCP | 192.168.0.20:56051 | 235:7500 | ESTABLISHED |

Active Connections

| Proto | Local Address | Foreign Address | State |
|-------|-----------------|-----------------------|-------------|
| TCP | 127.0.0.1:5939 | DESKTOP-OC8LGER:60315 | ESTABLISHED |
| TCP | 127.0.0.1:49350 | DESKTOP-OC8LGER:51016 | CLOSE_WAIT |