

The background features a close-up of a bundle of network cables on the left side, with a blue geometric pattern of overlapping triangles and trapezoids on the right side. The title 'Network programming' is written in a bold, yellow font with a black outline, positioned on a dark blue horizontal band.

# Network programming

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Telnet *vs* SSH

# telnet

## Telnet



# ❑telnet

- ❑ **Telnet** : Telnet is a network protocol that allows a user to communicate with a remote device.
- ❑ It is a virtual terminal protocol used mostly by network administrators to remotely access and manage devices.
- ❑ Administrator can access the device by "telnetting" to the IP address or hostname of a remote device.
- ❑ To use telnet, you must have a software (Telnet client) installed.
- ❑ On a remote device, a Telnet server must be installed and running. Telnet uses TCP port 23.
- ❑ One of the greatest disadvantages of this protocol is that all data, including **usernames and passwords**, is sent in clear text, which is a potential **security risk**

## telnet

- ❑ This is the main reason why Telnet is rarely used today and is being replaced by a much secure protocol called SSH.
- ❑ you can start a Telnet session by typing the telnet IP\_ADDRESS or HOSTNAME command

# □SSH

1. **SSH (Secure Shell)** : SSH is a network protocol used to remotely access and manage a device.

1. The key difference between **Telnet** and SSH is that **SSH uses encryption**, which means that all data transmitted over a network is secure from eavesdropping.

1. □ Like Telnet, a user accessing a remote device must **have an SSH client installed**.

1. □ On a remote device, an SSH server must be installed and running.

1. □ SSH uses TCP port 22 by default.

## ❑ SSH

- ❑ SSH relies on public key cryptography for its encryption.
- ❑ \_Here is an example of creating an SSH session using Putty, a free SSH client: NOTE - SSH is the most common way to remotely access a Cisco device.

# SSH







**PRIVATE  
IP ADDRESS**

**PUBLIC  
IP ADDRESS**



## How To Check Public IP Address

An IP address is used to identify a computer in a network. There are mainly two types of IP addresses:

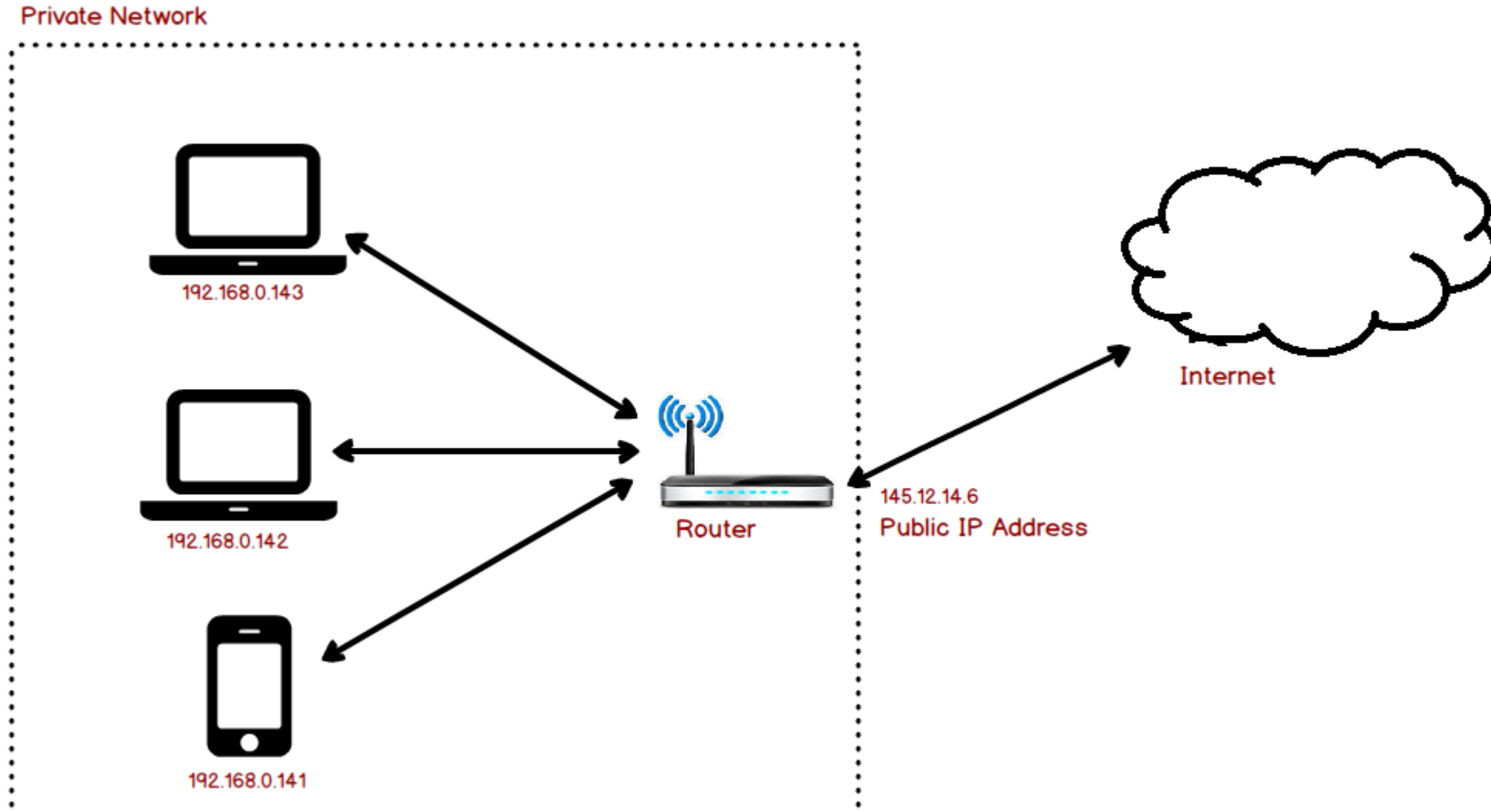
1. Local Network (LAN) IP address or Local IP address or Private IP address or Internal IP address.
2. The Public IP address or External IP address.

The private IP is the one that is used within a local area network. This IP is used to identify the computer within the LAN. This private IP can't be accessed directly from the Internet.

## How To Check Public IP Address

The **Public or External IP** address is the one which is provided by your Internet Service Provider (ISP). Multiple computers can have a single public IP if a network is set up using the technique called NAT (Network Address Translation). Since public IP is normally not provided free of cost, people use a mixture of private IP addresses that connect to a single public IP address to run the Internet on every network computer in a private network.

# How To Check Public IP Address

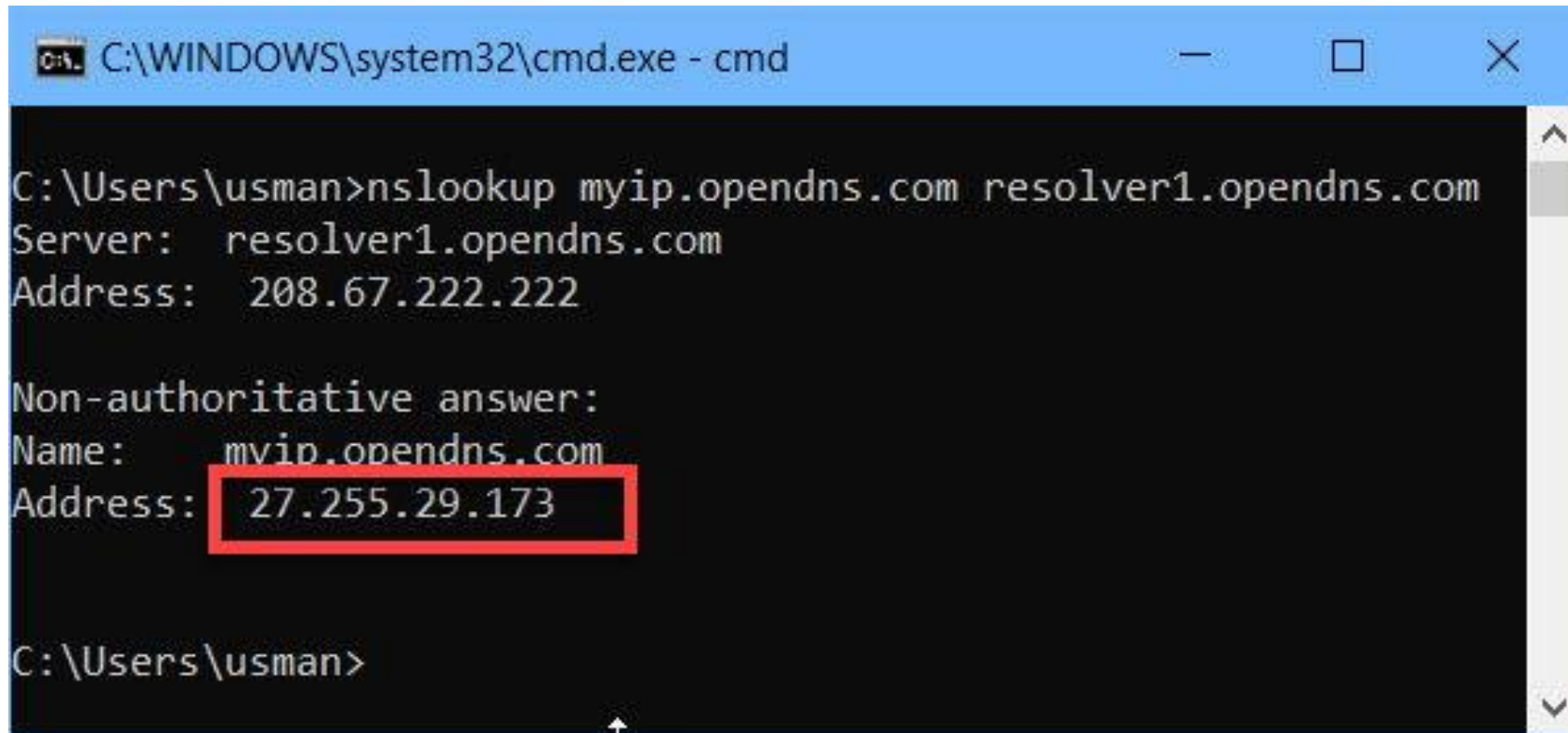


## Get my external IP address from command-line

- ❑ Let's see how we can get the public IP information using command-line in Windows. Please note that you need to be connected to the Internet for using the below-mentioned commands and services.
- ❑ If you have a home network, you can run these commands on one device even if multiple devices are connected to the Internet. They all should have the same public IP.
- ❑ We can get the external IP information using the command nslookup and the OpenDNS service. Just run the following command on your command prompt and you will get your external IP address

## Get my external IP address from command-line

`nslookup myip.opendns.com resolver1.opendns.com`



```
C:\WINDOWS\system32\cmd.exe - cmd

C:\Users\usman>nslookup myip.opendns.com resolver1.opendns.com
Server:  resolver1.opendns.com
Address:  208.67.222.222

Non-authoritative answer:
Name:     myip.opendns.com
Address:  27.255.29.173

C:\Users\usman>
```

The screenshot shows a Windows command prompt window titled "C:\WINDOWS\system32\cmd.exe - cmd". The user has entered the command `nslookup myip.opendns.com resolver1.opendns.com`. The output shows the DNS server used is `resolver1.opendns.com` at `208.67.222.222`. It then displays a "Non-authoritative answer:" for the name `myip.opendns.com`, with the IP address `27.255.29.173` highlighted by a red rectangle. The prompt returns to `C:\Users\usman>`.

## Get my external IP address from command-line

### ❑ PowerShell

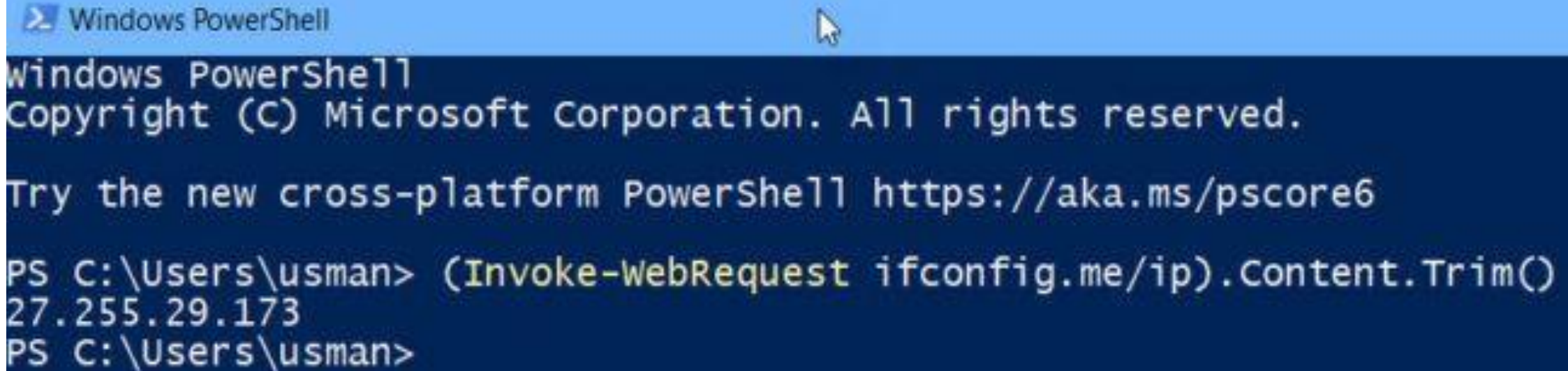
You can also use PowerShell command to get the external IP without using any third-party IP lookup tool.

Open PowerShell by going to Run → powershell

Run the following command:

**(Invoke-WebRequest ifconfig.me/ip).Content.Trim()**

## Get my external IP address from command-line



A screenshot of a Windows PowerShell terminal window. The title bar at the top is light blue and contains the text "Windows PowerShell" and a mouse cursor icon. The terminal background is dark blue with white text. The text in the terminal reads: "Windows PowerShell", "Copyright (C) Microsoft Corporation. All rights reserved.", "Try the new cross-platform PowerShell <https://aka.ms/pscore6>", "PS C:\Users\usman> (Invoke-WebRequest ifconfig.me/ip).Content.Trim()", "27.255.29.173", and "PS C:\Users\usman>".

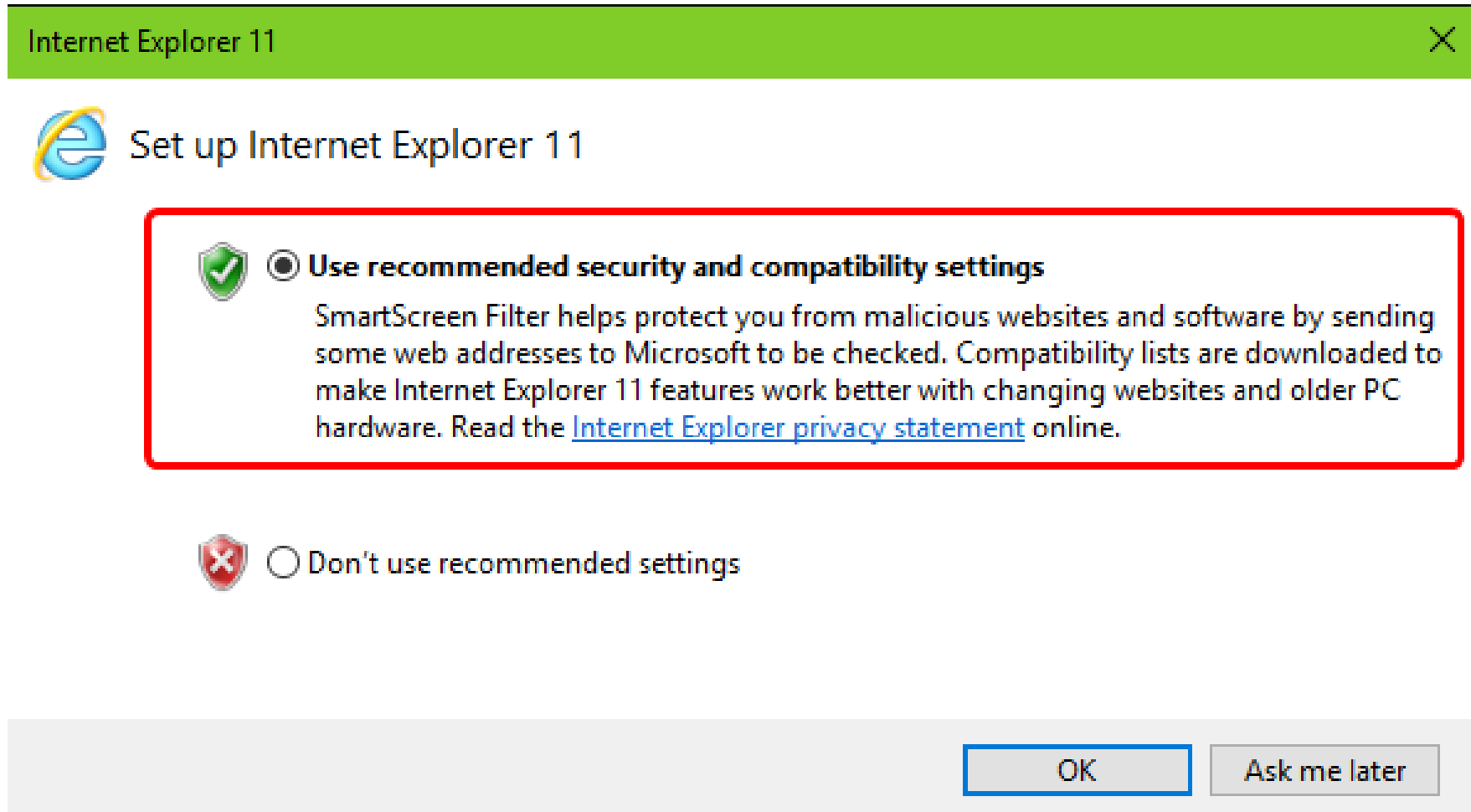
```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\usman> (Invoke-WebRequest ifconfig.me/ip).Content.Trim()
27.255.29.173
PS C:\Users\usman>
```



# Get my external IP address from command-line



## Get my external IP address with python

```
import requests

f = requests.request('GET', 'http://myip.dnsomatic.com')
ip = f.text
print(ip)
```

## Get my external IP address with python

```
from requests import get
public_ip=get('http://myip.dnsomatic.com').text

print(public_ip)
```





*Any questions?*