

**FAESA  
SYSTEMS ANALYSIS AND DEVELOPMENT  
FUNDAMENTALS OF COMPUTER NETWORKS**

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**Immersion to Computer Networks**

Vitória/ES

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## **Immersion to Computer Networks**

Work of the discipline Fundamentals of Computer Networks presented by Matheus Dias Tecchio as part of the curricular grid of the Technologist in System Analysis and Development.

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## **1. My way of connecting to the Internet**

### **1.1 Which transmission medium is used for data to be transported from the access provider to the computer**

In my personal computer, I use a twisted pair cable type Cat-5e 3 meters, which connects to my router, which is in my room. Already in my mobile phone, I use the Wi-Fi connection of this same router to connect to the Internet.

This router is connected by a twisted pair cable type Cat-5e 20 meters to the modem, which is in the living room of my house. And this modem connects to the access provider, which is on the street pole, by means of a coaxial cable.

### **1.2 My ISP**

My ISP is NET.

### **1.3 Other equipment used for connection**

The list of equipment to carry my transmission to my ISP is:

- Host's Network Card;
- Router;
- Modem;
- Access Point.

### **1.3 How fast is my connection**

I contracted my plan for a 100 Mb speed and I have identified in a test that I am receiving 94 Mbps Download, and sent 62 Mbps Upload.

### **1.4 Output of the "ipconfig" command on my personal machine**

My computer connects to the Internet using the Ethernet standard.

```

C:\> Prompt de Comando
Microsoft Windows [versão 10.0.19044.2006]
(c) Microsoft Corporation. Todos os direitos reservados.

C:\Users\mathe>ipconfig

Configuração de IP do Windows

Adaptador de Rede sem Fio Conexão Local* 2:

    Estado da mídia. . . . . : mídia desconectada
    Sufixo DNS específico de conexão. . . . . :

Adaptador de Rede sem Fio Conexão Local* 3:

    Estado da mídia. . . . . : mídia desconectada
    Sufixo DNS específico de conexão. . . . . :

Adaptador Ethernet Ethernet:

    Sufixo DNS específico de conexão. . . . . :
    Endereço IPv6 de link local . . . . . : fe80::a14e:f3b2:f2a9:fa1e%3
    Endereço IPv4. . . . . : 192.168.0.104
    Máscara de Sub-rede . . . . . : 255.255.255.0
    Gateway Padrão. . . . . : 192.168.0.1

Adaptador de Rede sem Fio Wi-Fi:

    Estado da mídia. . . . . : mídia desconectada
    Sufixo DNS específico de conexão. . . . . :

Adaptador Ethernet Conexão de Rede Bluetooth:

    Estado da mídia. . . . . : mídia desconectada
    Sufixo DNS específico de conexão. . . . . :

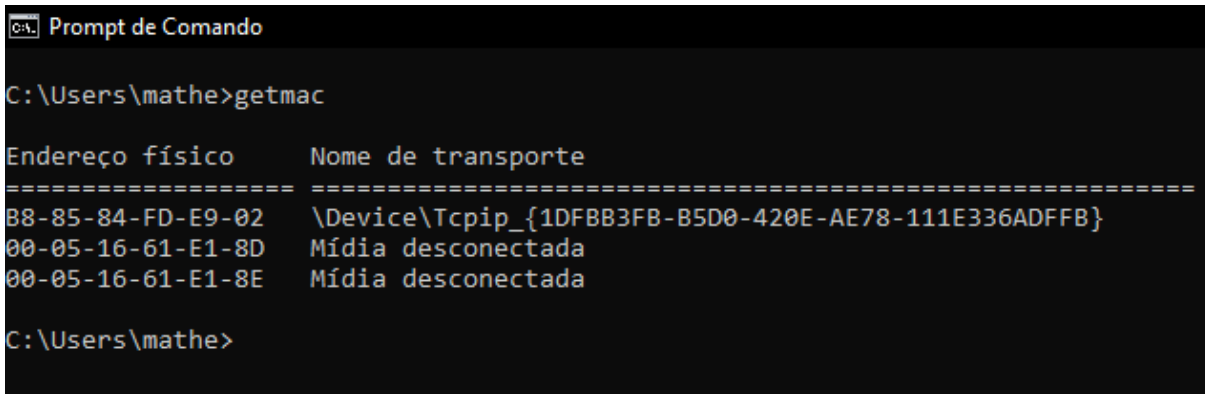
C:\Users\mathe>

```

## 2. What is the Getmac command used for

Returns the MAC address and the list of network protocols associated with each address for all network cards on each computer, either locally or over a network. This command is particularly useful when you want to enter the MAC address into a network analyzer, or when you need to know which protocols are currently in use on each network adapter on a computer.

### 2.1 Output of the "getmac" command on my personal machine



```

C:\Users\mathe>getmac

Endereço físico      Nome de transporte
=====
B8-85-84-FD-E9-02    \Device\Tcpip_{1DFBB3FB-B5D0-420E-AE78-111E336ADFFB}
00-05-16-61-E1-8D    Mídia desconectada
00-05-16-61-E1-8E    Mídia desconectada

C:\Users\mathe>

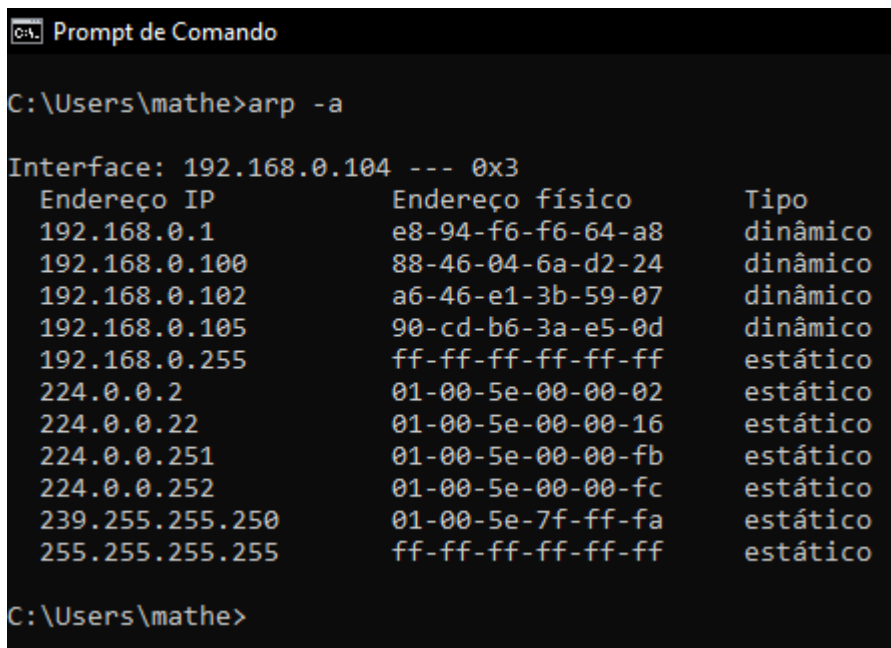
```

### 3. What is the ARP Protocol

ARP is a question and answer protocol used to dynamically map layer 3 (network) addresses to layer 2 (link) addresses. Typically, it is used to map IP addresses (Internet Protocol) addresses into MAC addresses (Media Access Control).

To control this mapping, the ARP protocol maintains a table called the ARP Table. Whenever a new packet with MAC or IP addresses appears and is not yet in the ARP Table or needs to be updated, the protocol modifies the table with the new data.

#### 3.1 Output of the "arp -a" command on my personal machine



```

C:\Users\mathe>arp -a

Interface: 192.168.0.104 --- 0x3
Endereço IP      Endereço físico      Tipo
192.168.0.1      e8-94-f6-f6-64-a8    dinâmico
192.168.0.100    88-46-04-6a-d2-24    dinâmico
192.168.0.102    a6-46-e1-3b-59-07    dinâmico
192.168.0.105    90-cd-b6-3a-e5-0d    dinâmico
192.168.0.255    ff-ff-ff-ff-ff-ff    estático
224.0.0.2        01-00-5e-00-00-02    estático
224.0.0.22       01-00-5e-00-00-16    estático
224.0.0.251      01-00-5e-00-00-fb    estático
224.0.0.252      01-00-5e-00-00-fc    estático
239.255.255.250  01-00-5e-7f-ff-fa    estático
255.255.255.255  ff-ff-ff-ff-ff-ff    estático

C:\Users\mathe>

```

## REFERENCES

Getmac. Microsoft, 2022. Available at:

<<https://learn.microsoft.com/pt-br/windows-server/administration/windows-commands/getmac>>. Accessed on: 24, September 2022.

Gustavo Pantuza. THE ARP PROTOCOL - ADDRESS RESOLUTION PROTOCOL. Pantuza's Blog, 2022. Available at: <<https://blog.pantuza.com/artigos/o-protocolo-arp-address-resolution-protocol>>. Accessed on: 24, September 2022.