

Universidade Federal de Uberlândia - UFU
Bacharelado em Sistemas de Informação - Campus Monte Carmelo
Ex.: GSI524 – Redes de Computadores – 2023/1
Eduardo dos Santos Rocha - 32111BSI007

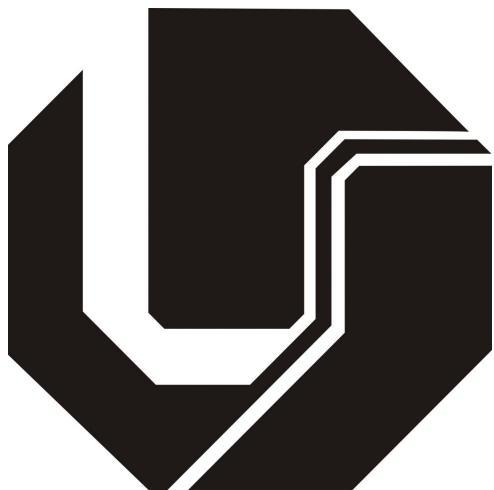


Figura 1: Logo da UFU.

Relatório 12 Redes - Atividade 12

Resposta das questões:

0.1 Exercícios realizados:

Para criar um novo arquivo, nomeie-o "atividade03.pkte" e projete a rede da UFU. Não é preciso inserir todas as máquinas e nem todos os laboratórios, porém, tente deixar o mais próximo da realidade. Lembre-se de realizar os testes de conexões e comunicação.

Neste exercício, você deverá criar os Campi: Monte Carmelo, Patos de Minas, Pontal, Santa Mônica, Umuarama, Educação Física e Glória. As faixas de IPs, para este exercício, deverão ser 152.X.Z.0, sendo X igual aos 2 últimos dígitos da sua matrícula, iniciando na sequência acima descrita e, para cada Campi, deverá ser adicionado 5 ao valor do X. O valor de Z deve ser igual aos 2 últimos dígitos da sua matrícula.

Em todos os Campi deverão ter:

- Pelo menos um roteador para a ligação entre os Campi;
- Pelo menos 10 PCs;
- Pelo menos 1 wifi;
- Pelo menos 3 laptops (conectados por wifi).

No campus Monte Carmelo, além do que já foi descrito anteriormente, deverá ter também:

- 1 laboratório com 35 PCs (Rede A);
- 1 laboratório com 35 PCs (Rede B);
- 1 laboratório com 20 PCs (Rede B);
- 1 laboratório com 10 laptops (conectados por wifi) (Rede A);
- 1 laboratório com 15 laptops (conectados por wifi) e 8 PCs (Rede B);
- 1 laboratório com 6 laptops (conectados por wifi) e 6 PCs (Rede A).

Note que os laboratórios de Monte Carmelo estão separados em 2 redes (A e B). Tente colocar os Campi distribuídos conforme o mapa de Minas Gerais. Lembre-se que cada Campus está em um local geograficamente diferente e, consequentemente, em racks diferentes!

0.2 Visão Logica e Física

0.2.1 Logica

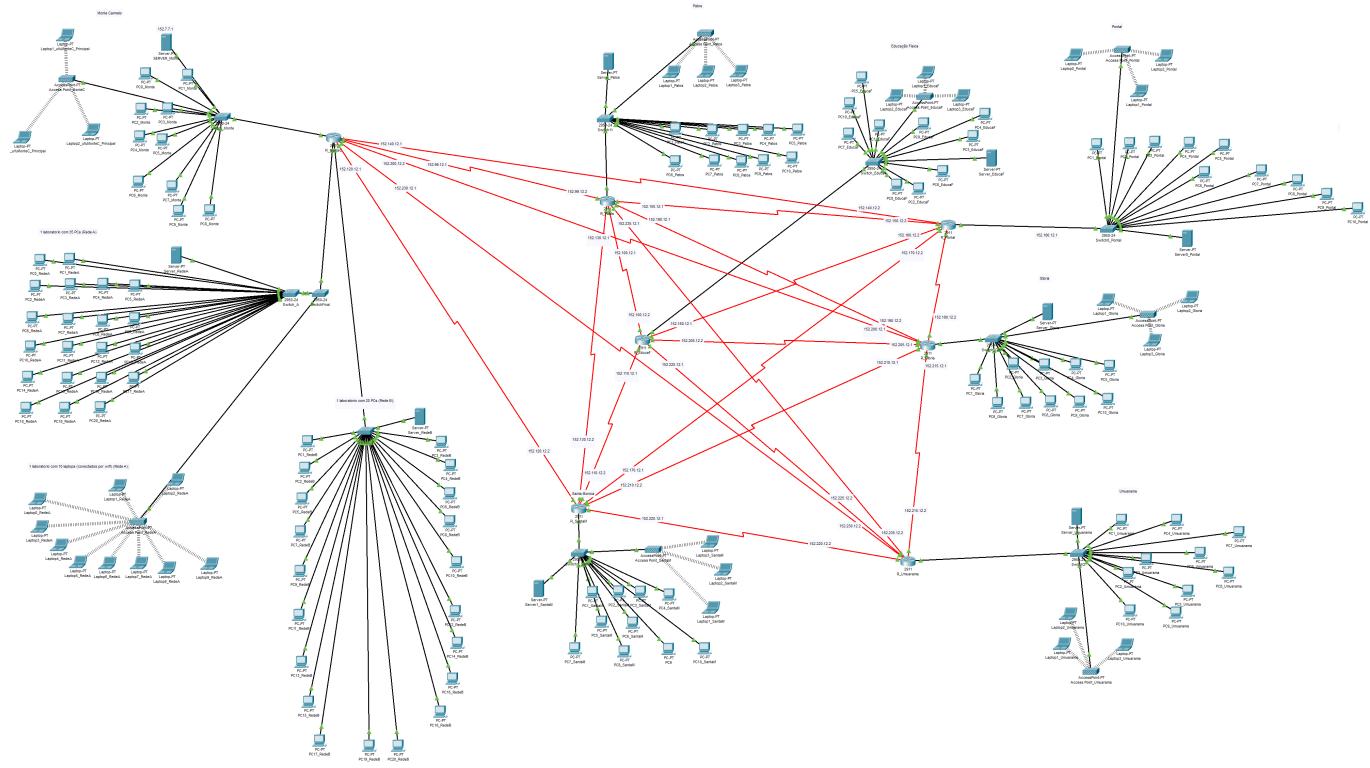


Figura 2: Visão Logica

0.2.2 Física



Figura 3: Visão Física estado Minas Gerais



Figura 4: Visão Física de Monte Carmelo



Figura 5: Visão Física de Patos

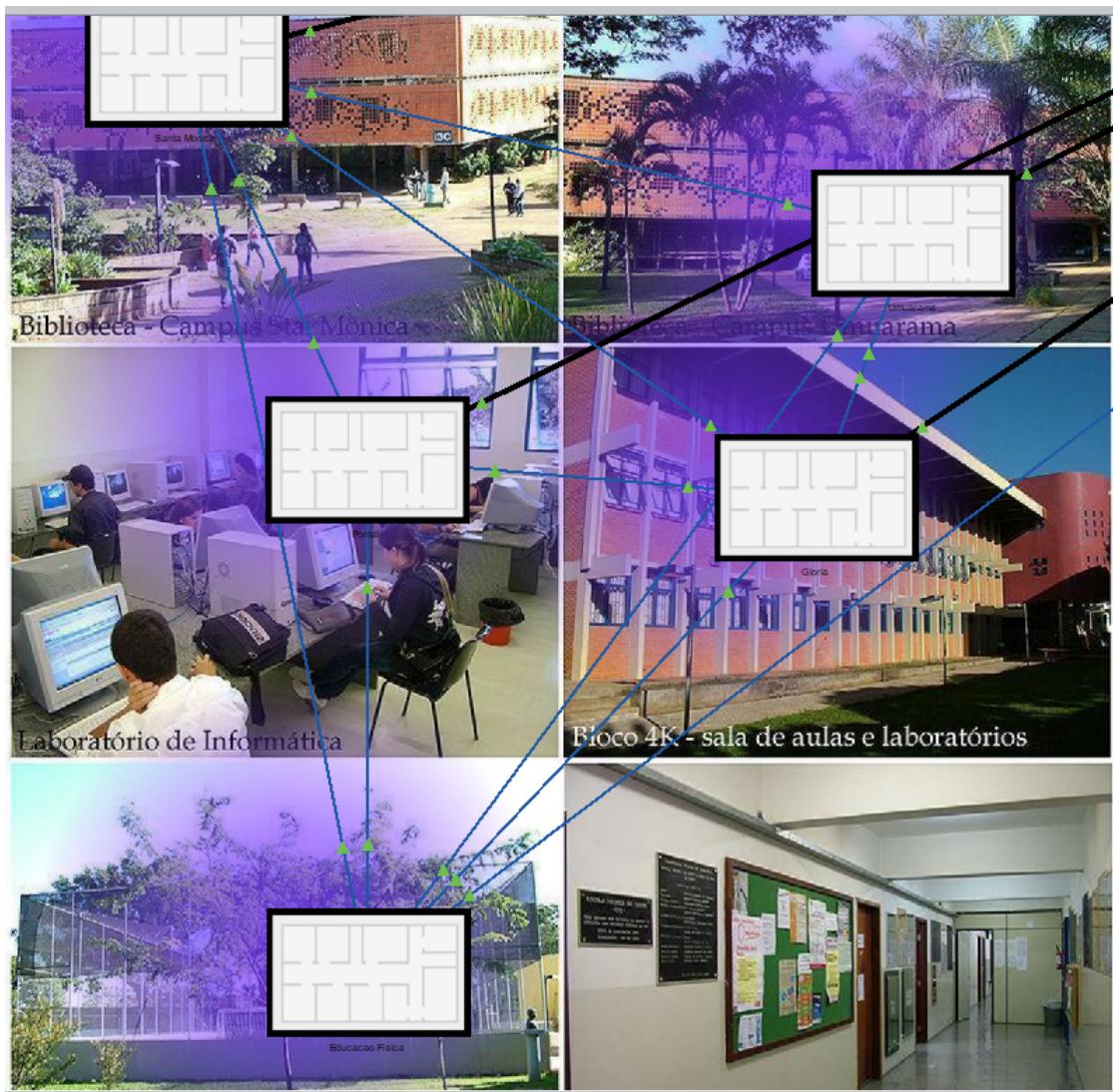


Figura 6: Visão Física de Uberlândia

0.3 Servidor DHCP Monte Carmelo

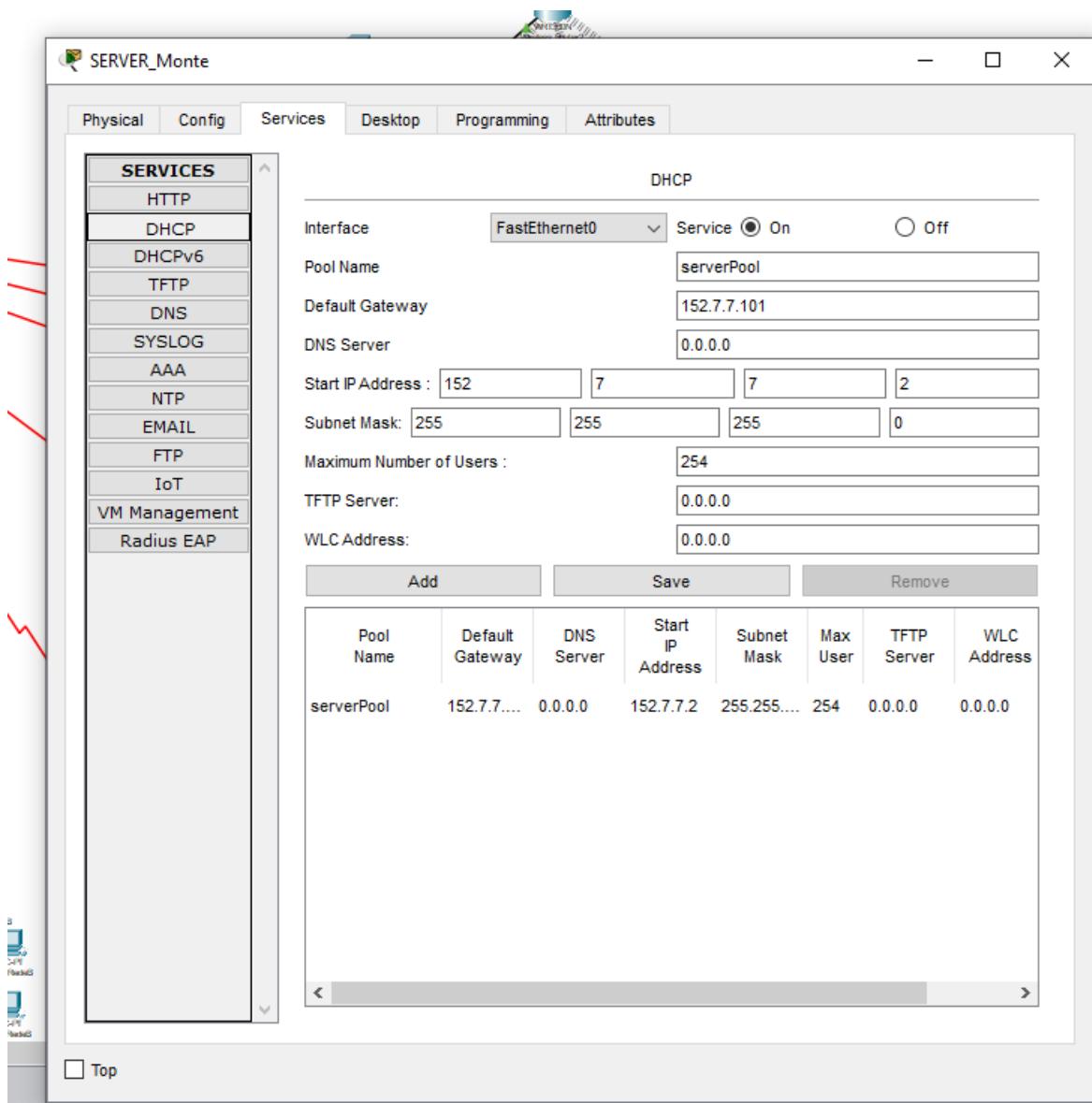


Figura 7: Servidor DHCP Monte Carmelo.

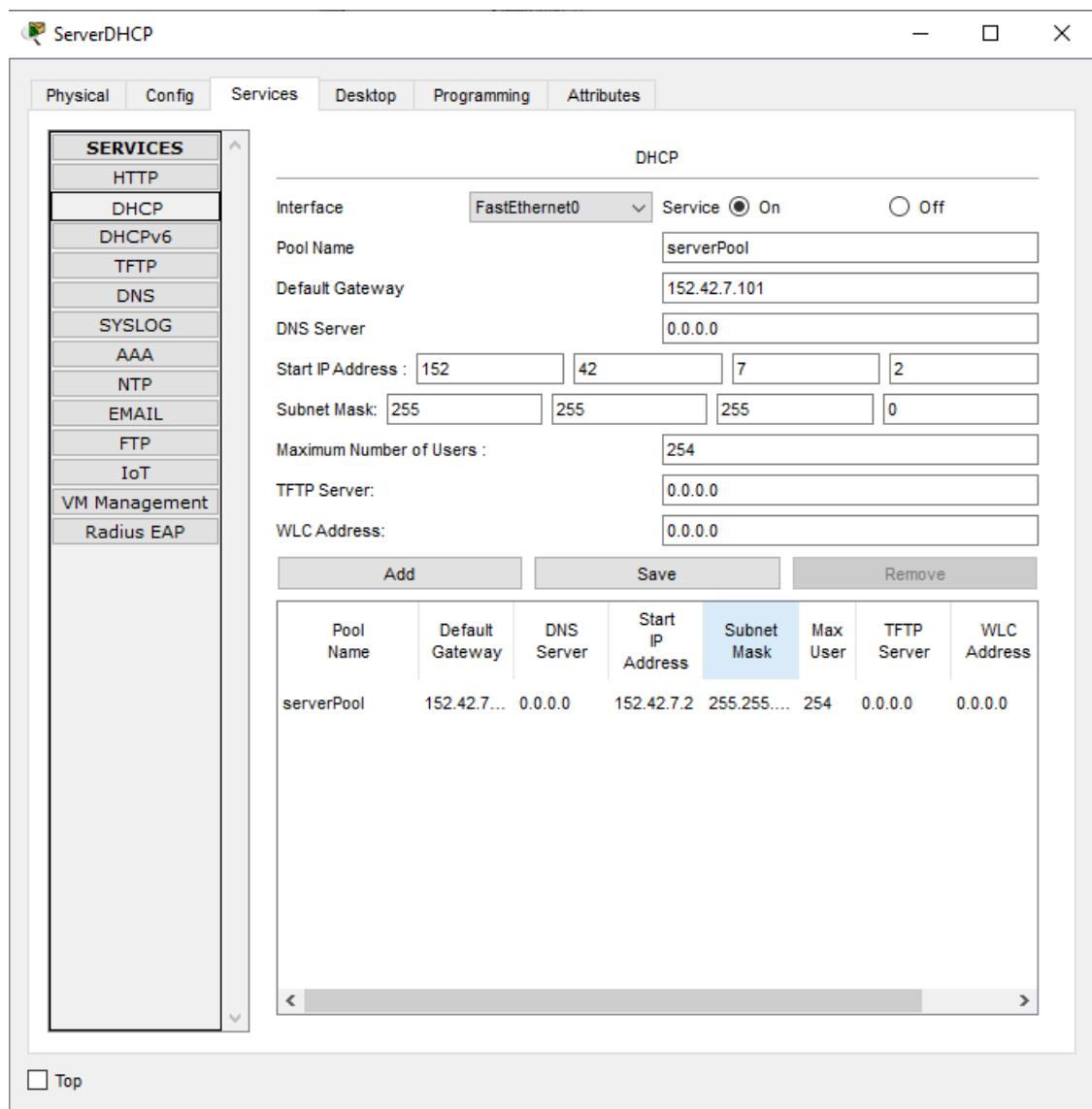


Figura 8: Servidor DHCP Monte Carmelo REDE A.

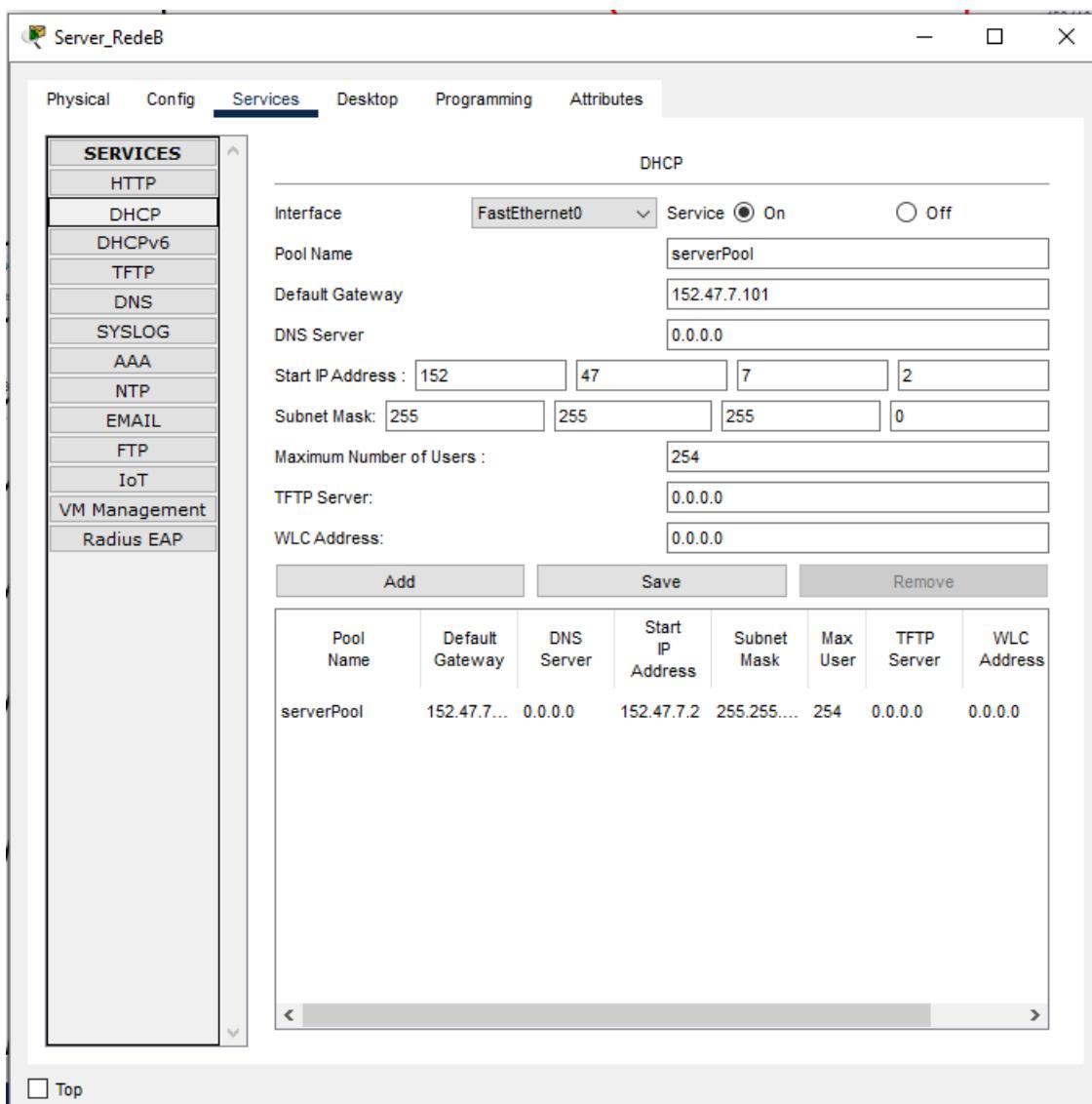


Figura 9: Servidor DHCP Monte Carmelo REDE B.

0.3.1 Servidor DHCP Patos:

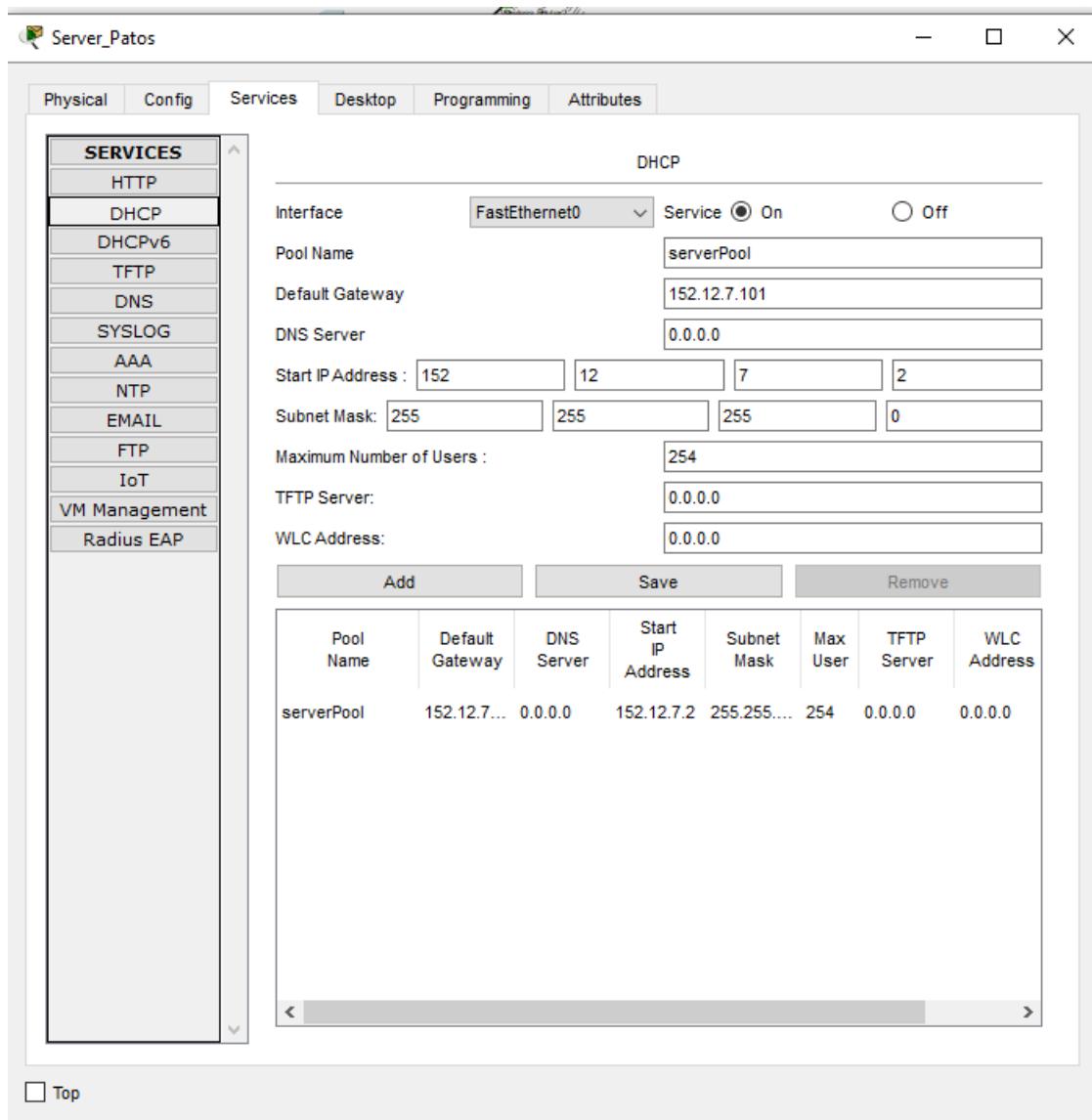


Figura 10: Servidor DHCP Patos.

0.3.2 Servidor DHCP Pontal:

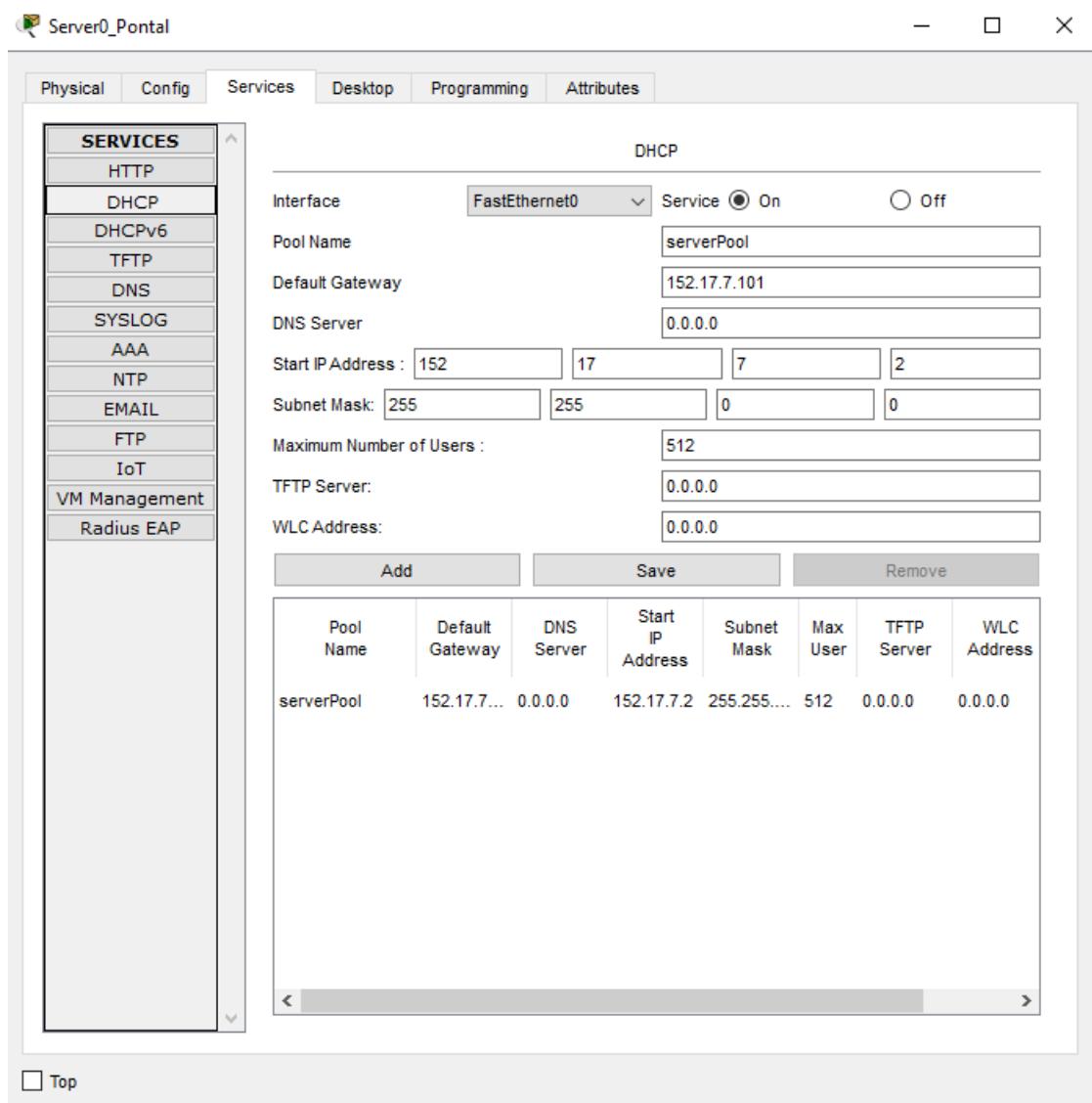


Figura 11: Servidor DHCP Pontal.

0.3.3 Servidor DHCP Santa Monica:

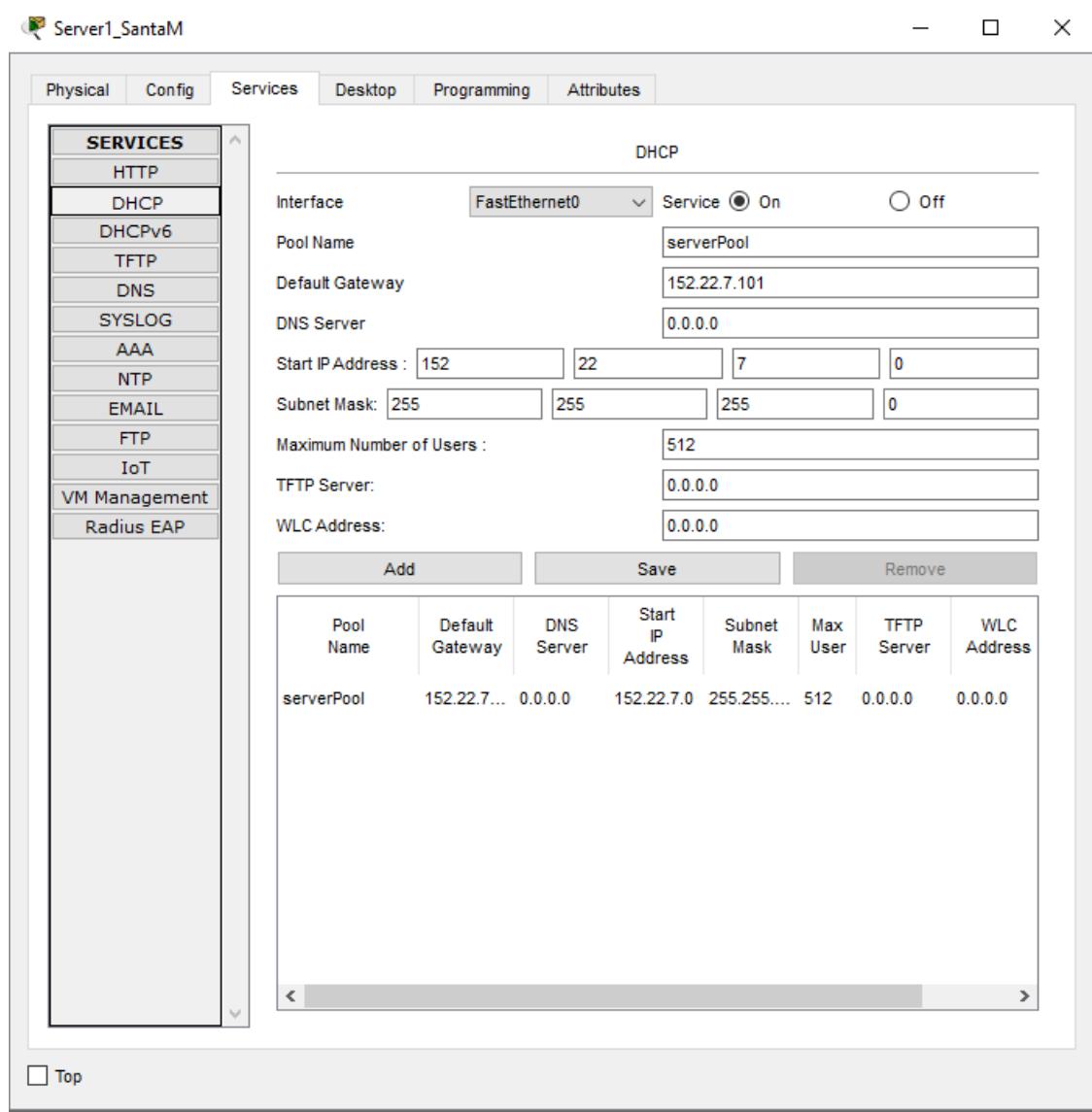


Figura 12: Servidor DHCP Santa Monica.

0.3.4 Servidor DHCP Umuarama:

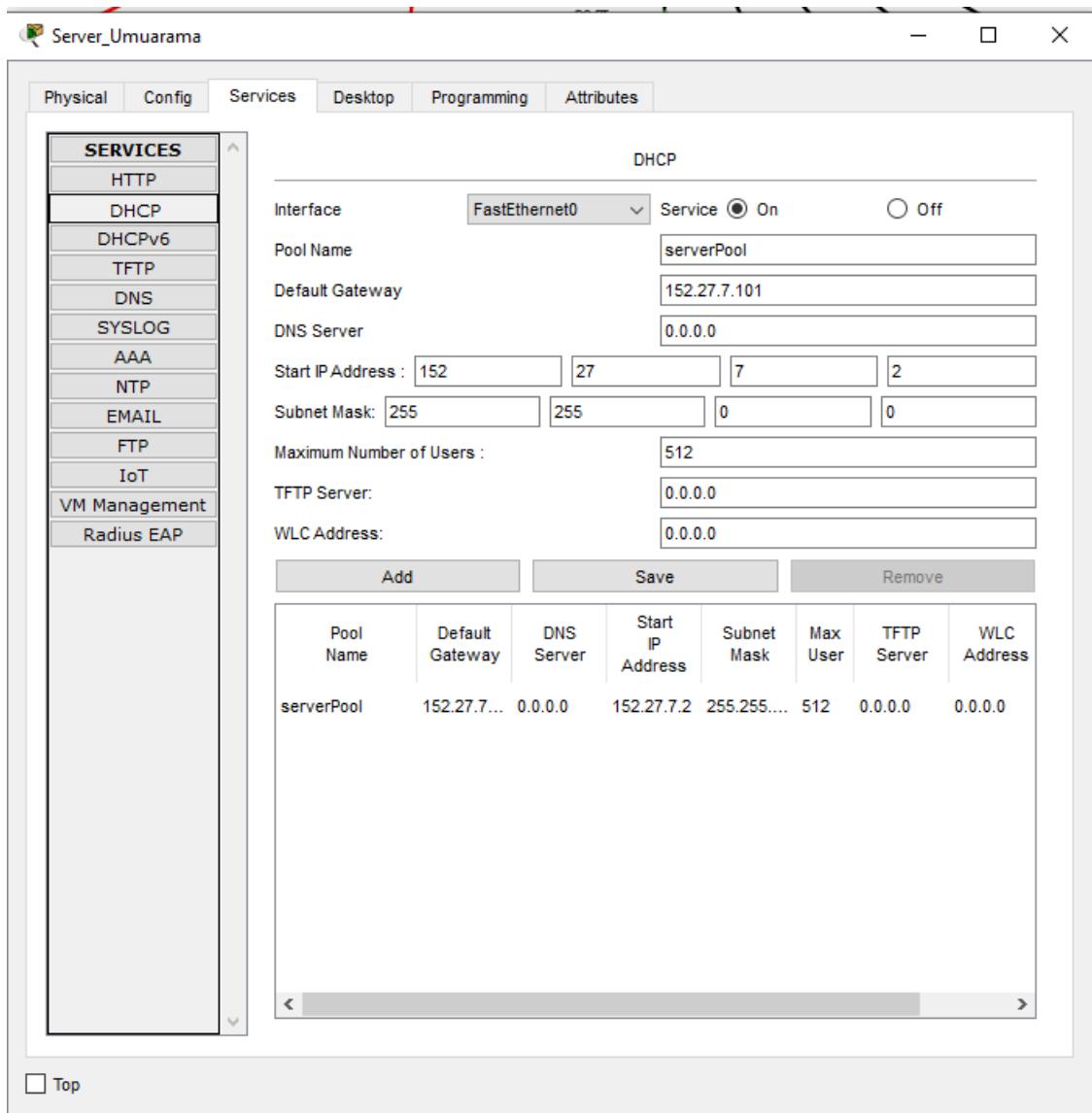


Figura 13: Servidor DHCP Umuarama.

0.3.5 Servidor DHCP Educação Física:

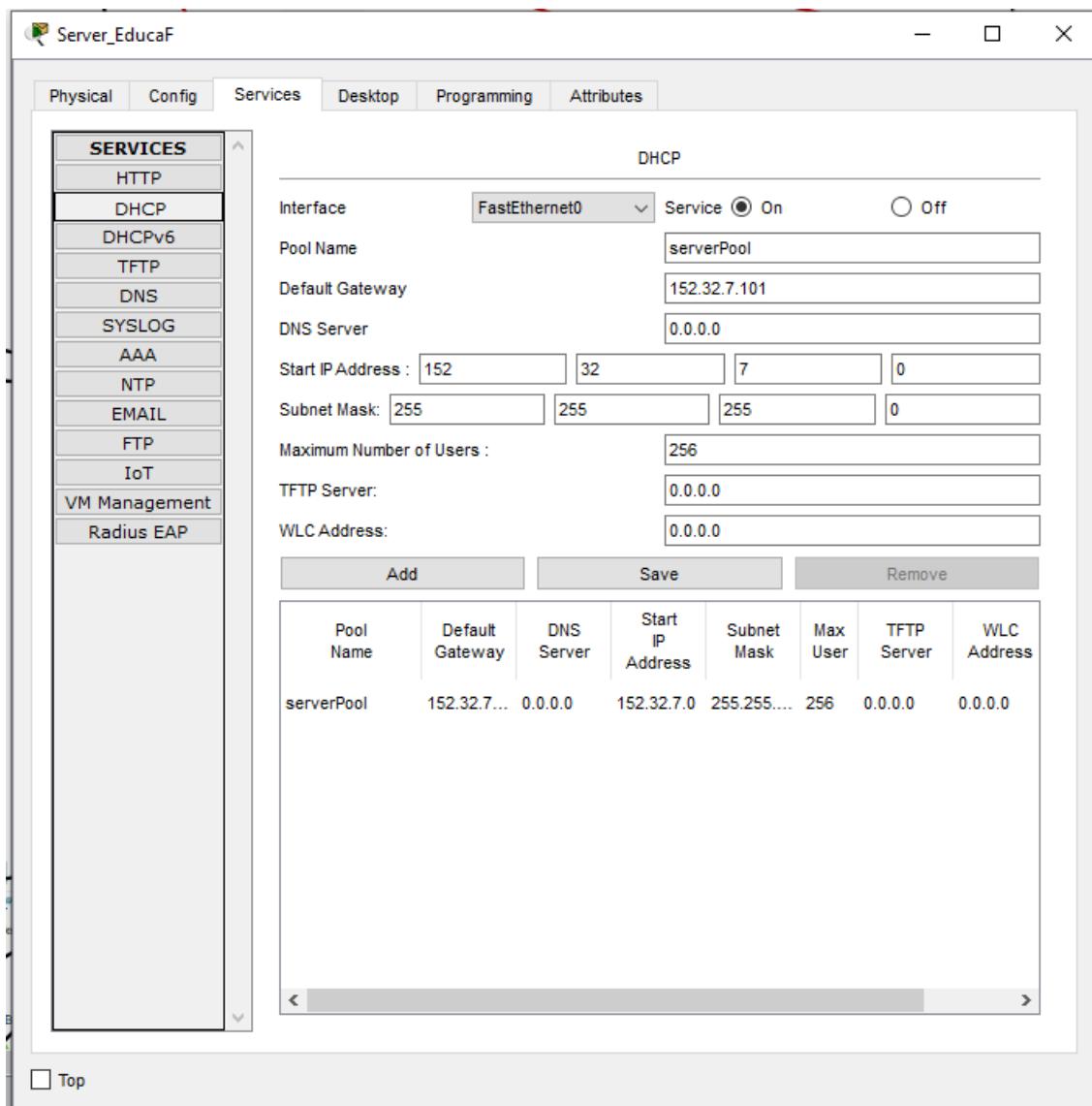


Figura 14: Servidor DHCP Educação Física.

0.3.6 Servidor DHCP Gloria:

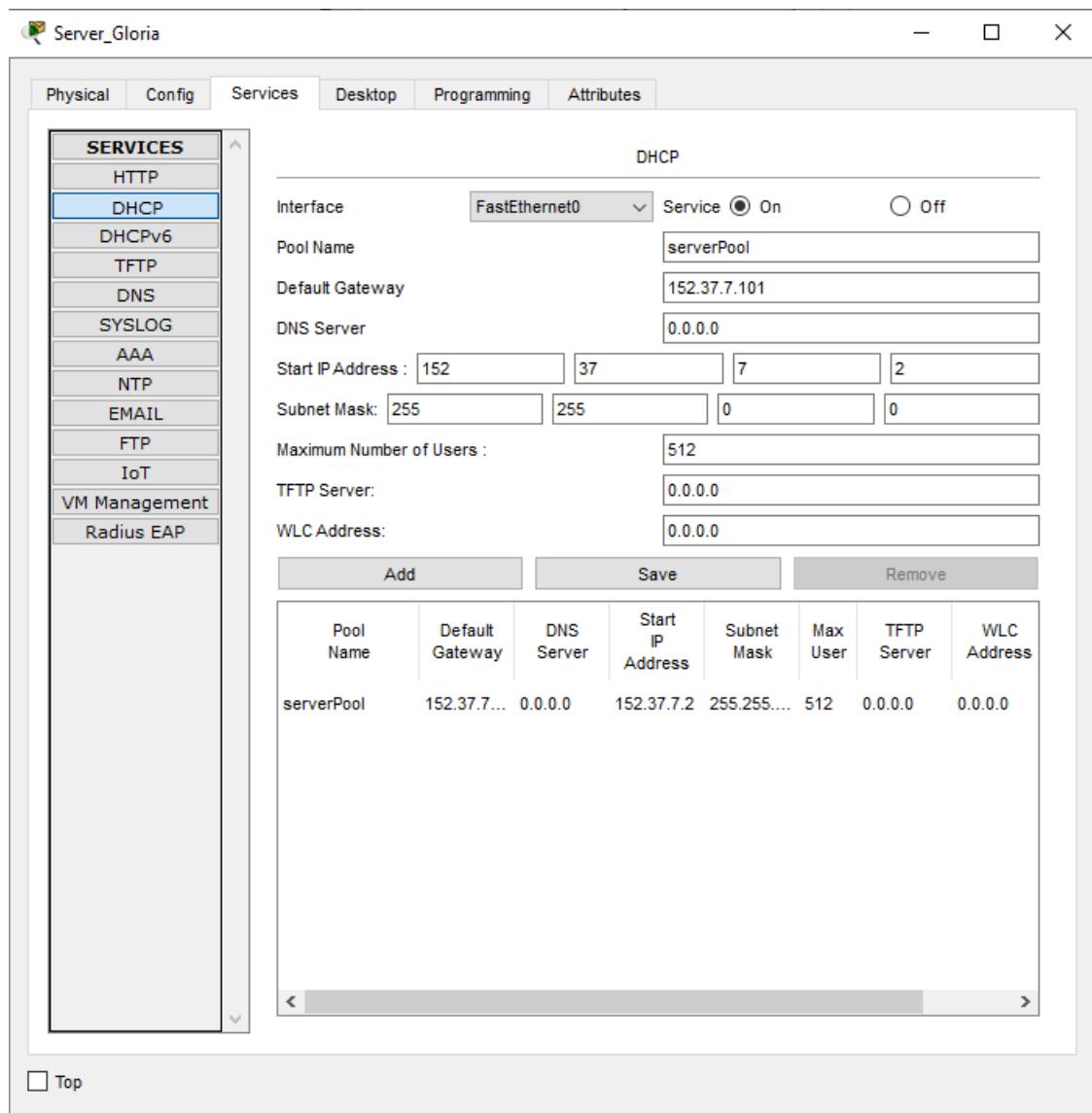


Figura 15: Servidor DHCP Gloria.

0.4 TABELAS DE ROTEAMENTO

0.4.1 Monte Carmelo

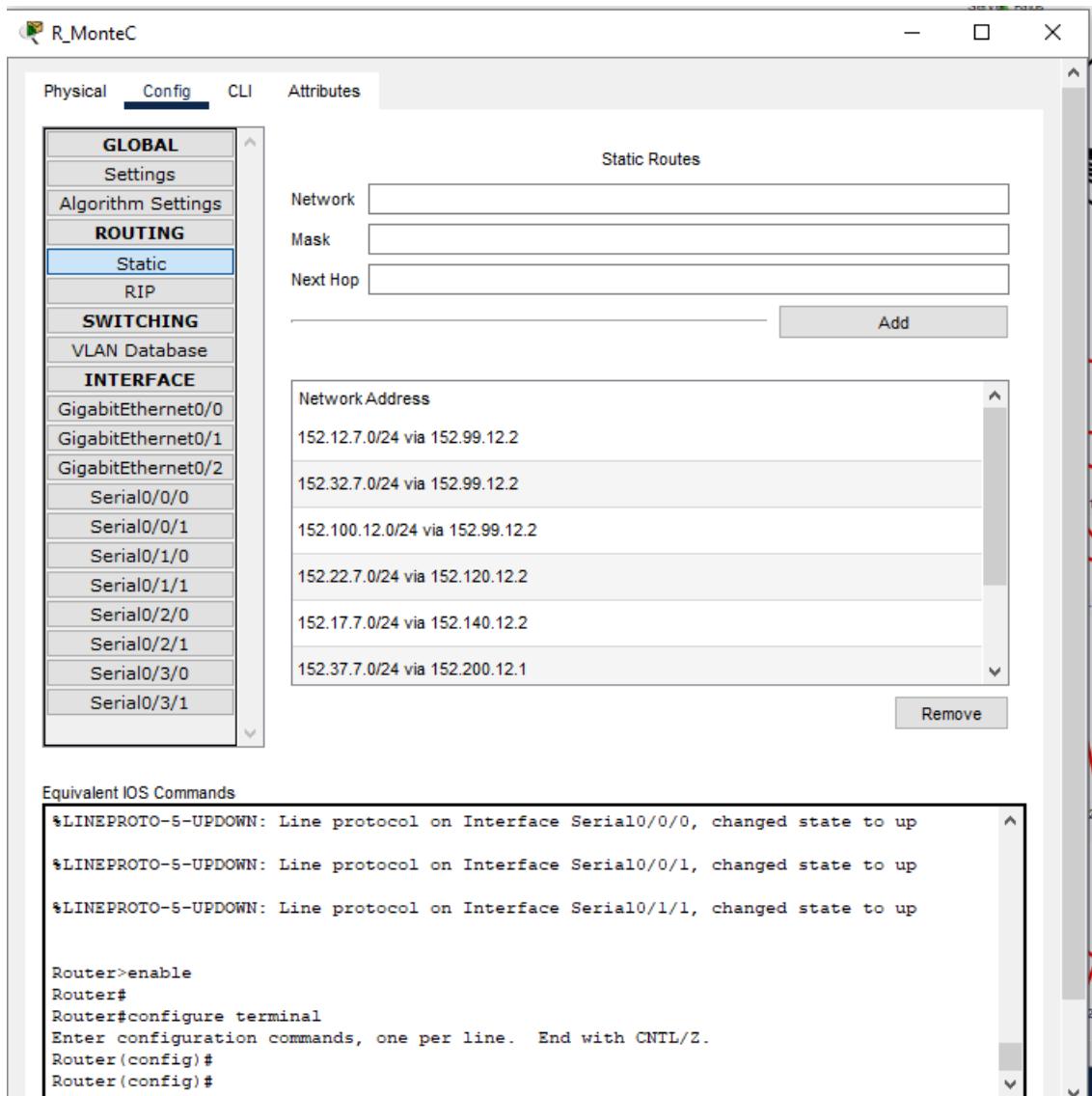


Figura 16: Tabela Roteamento Monte Carmelo.

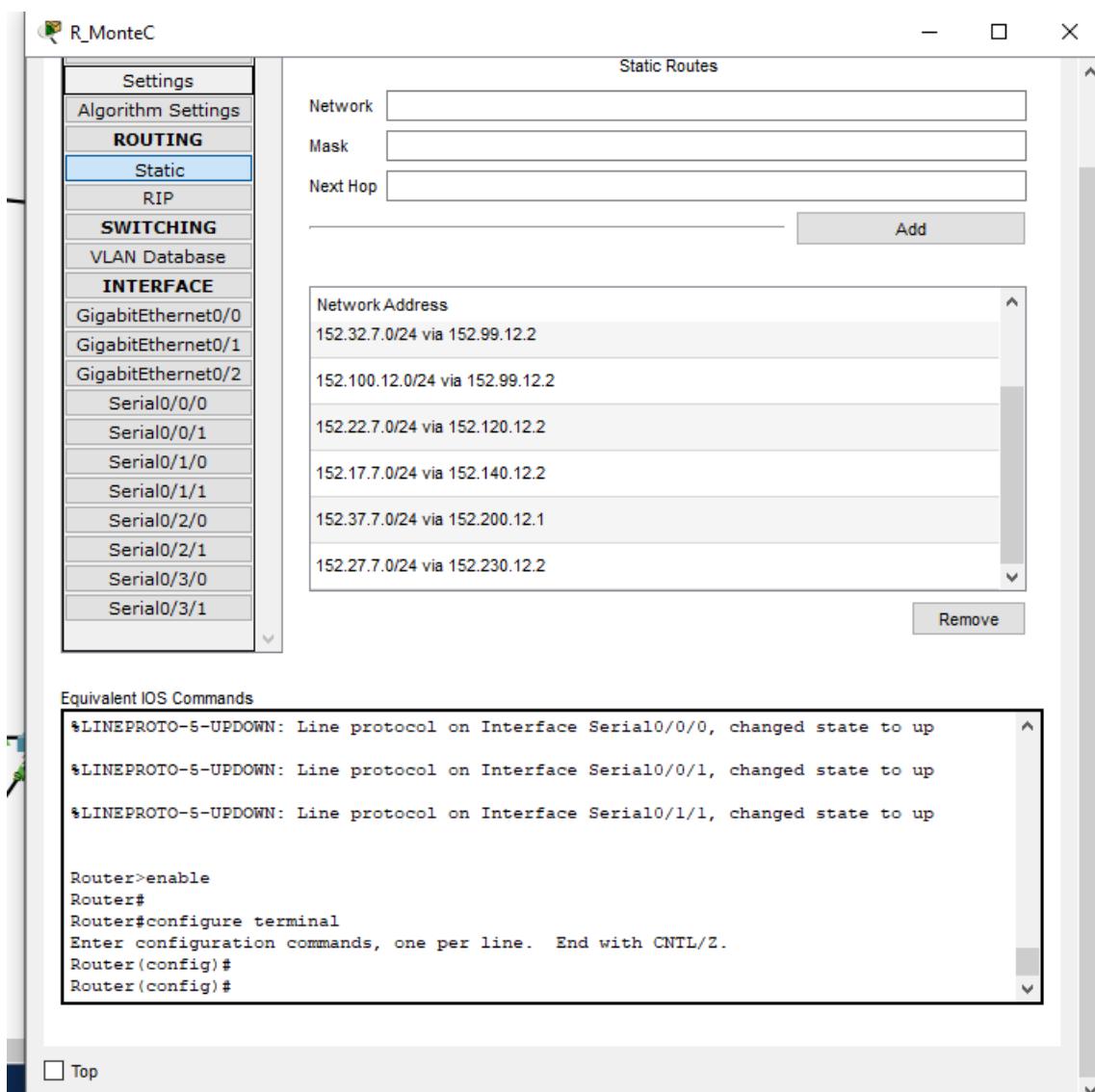


Figura 17: Tabela Roteamento Monte Carmelo.

0.4.2 Patos

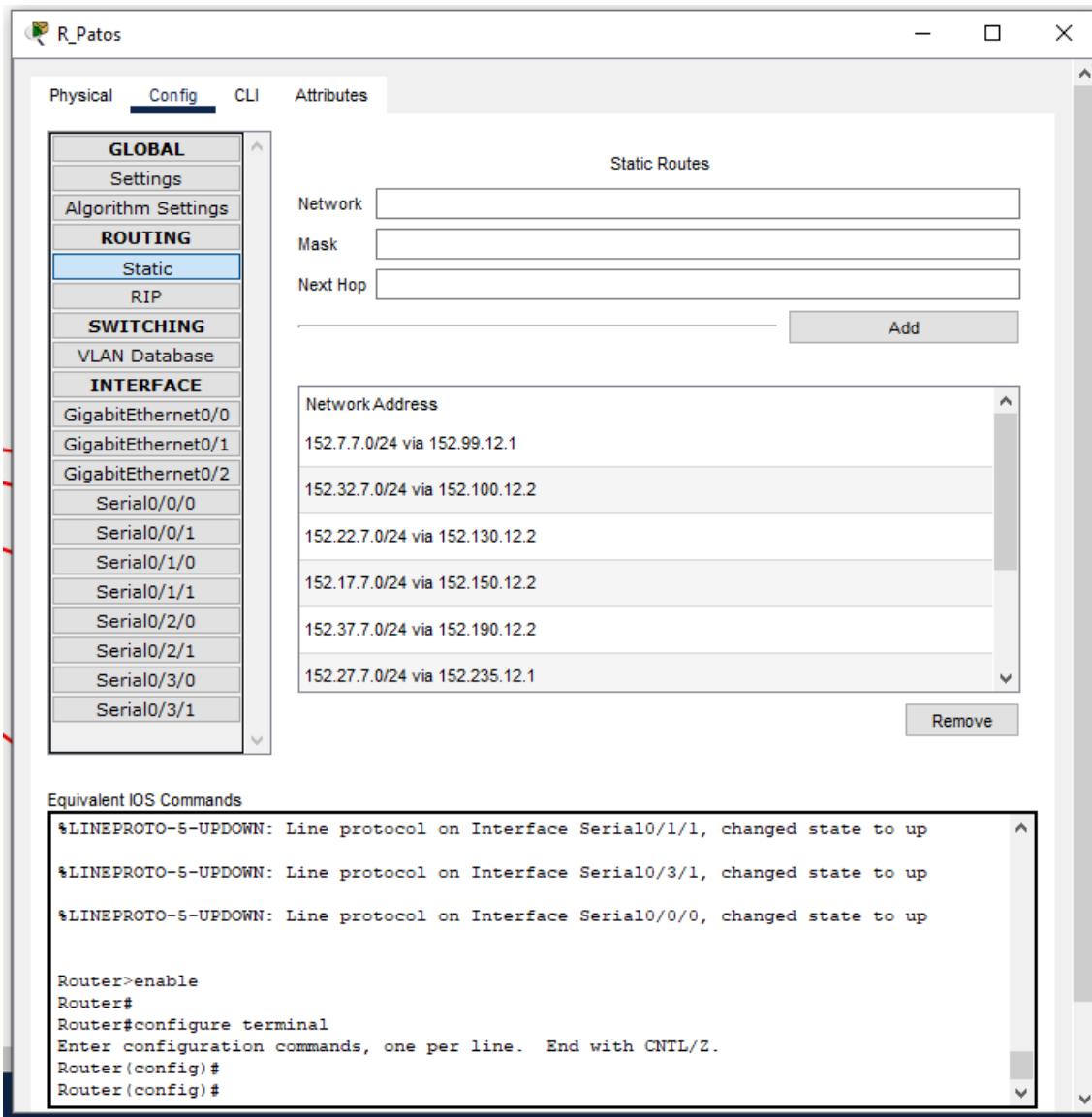


Figura 18: Tabela Roteamento Patos.

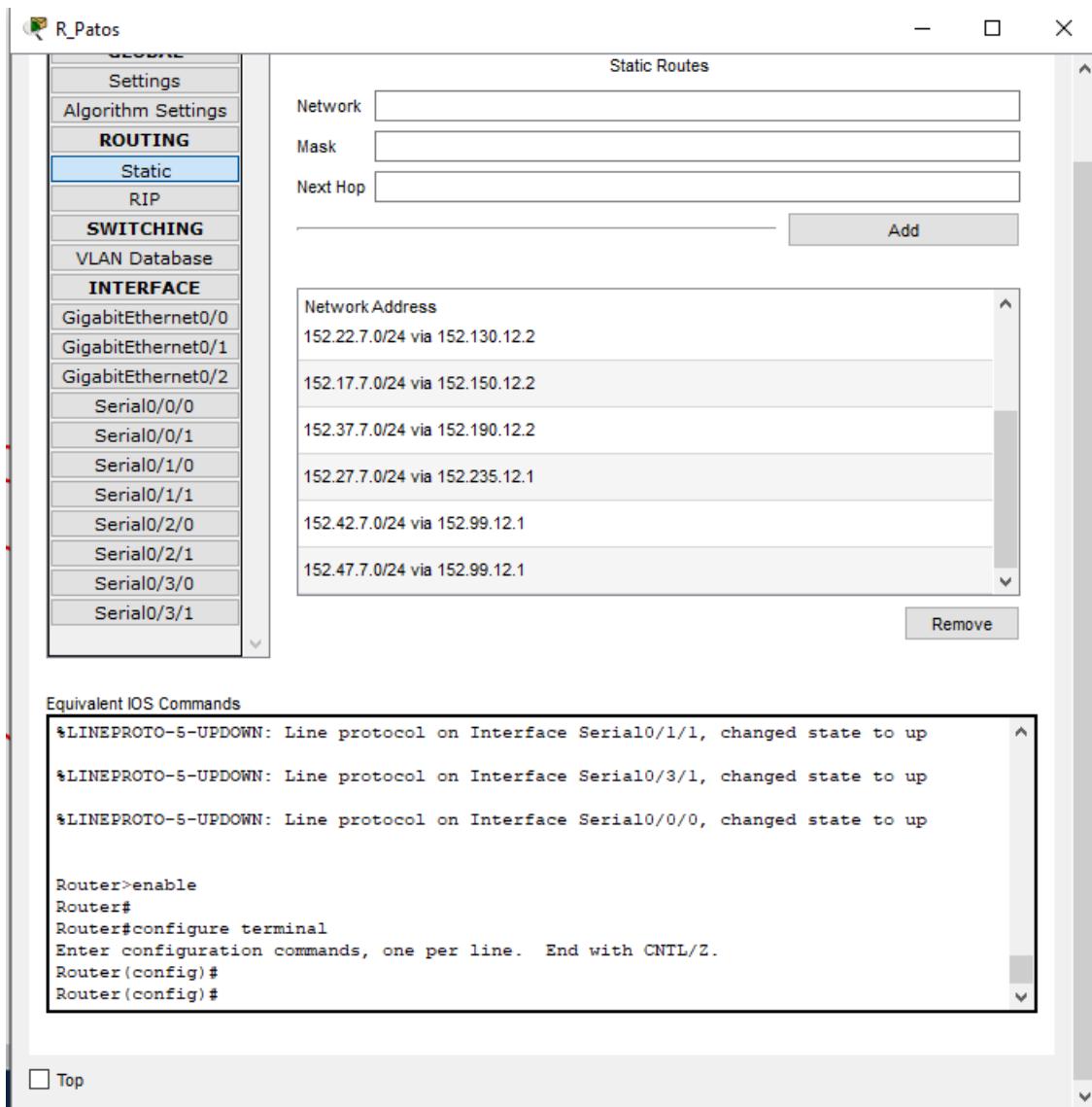


Figura 19: Tabela Roteamento Patos.

0.4.3 Pontal

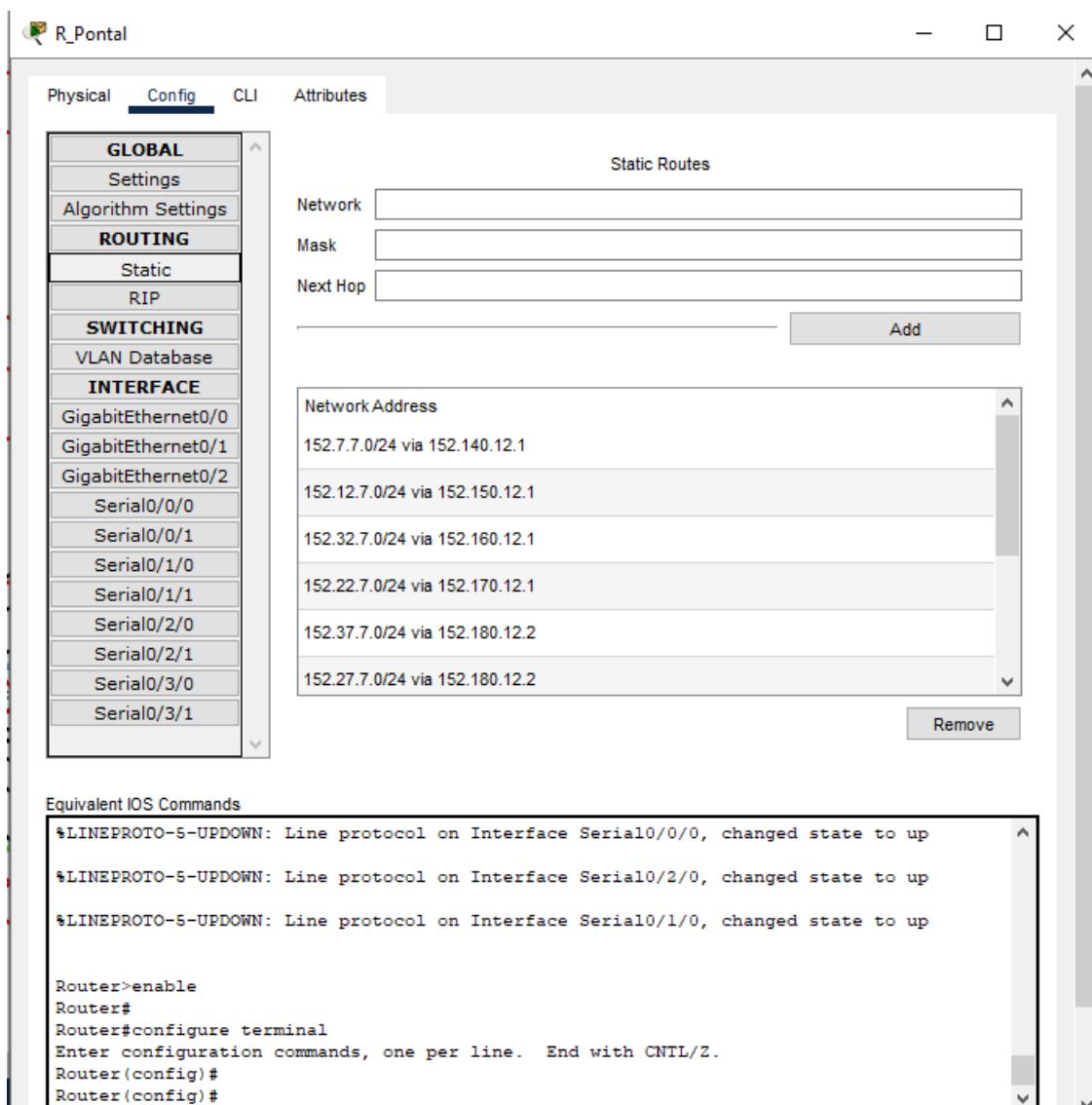


Figura 20: Tabela Roteamento Pontal.

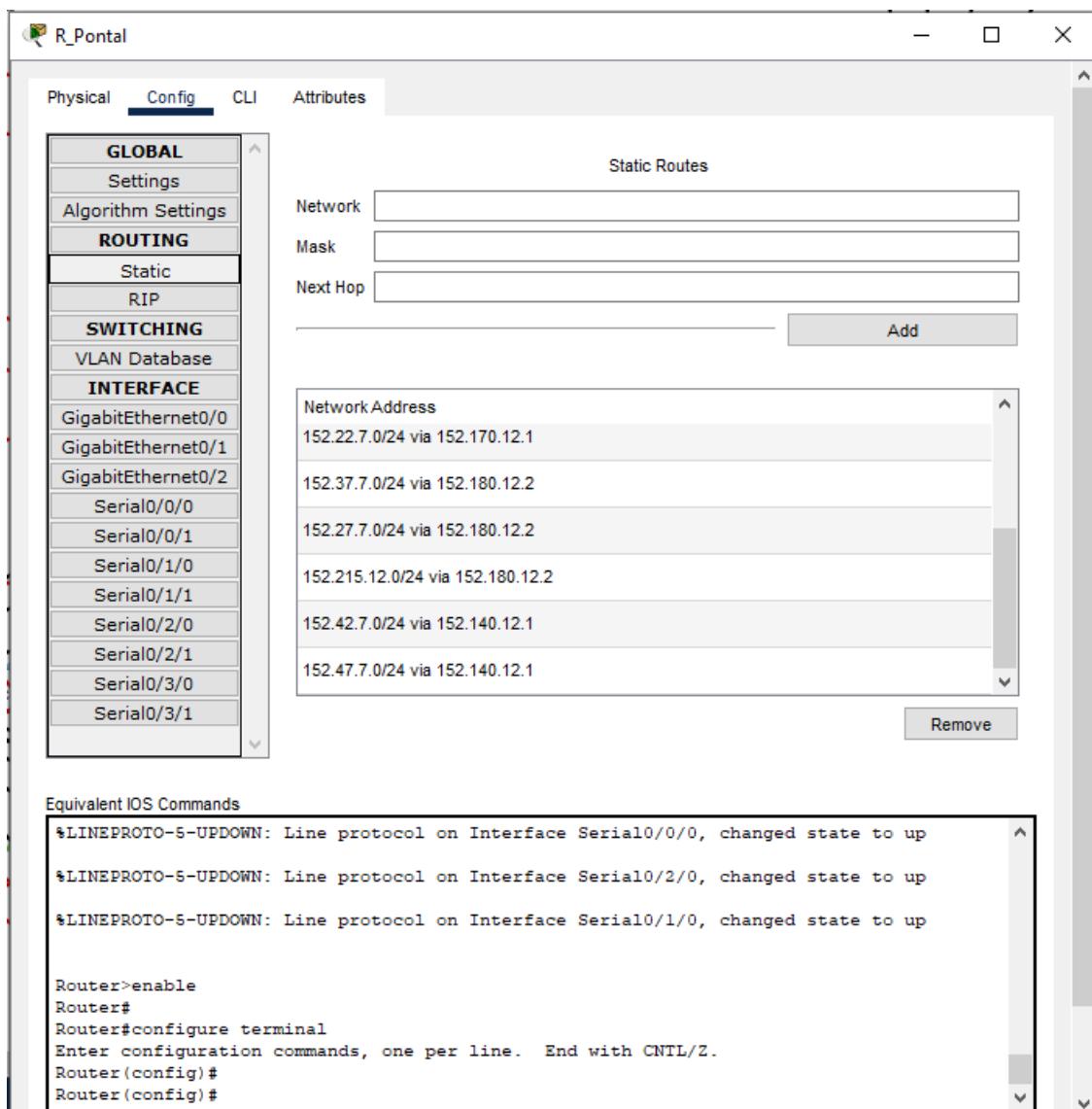


Figura 21: Tabela Roteamento Pontal.

0.4.4 Santa Mônica

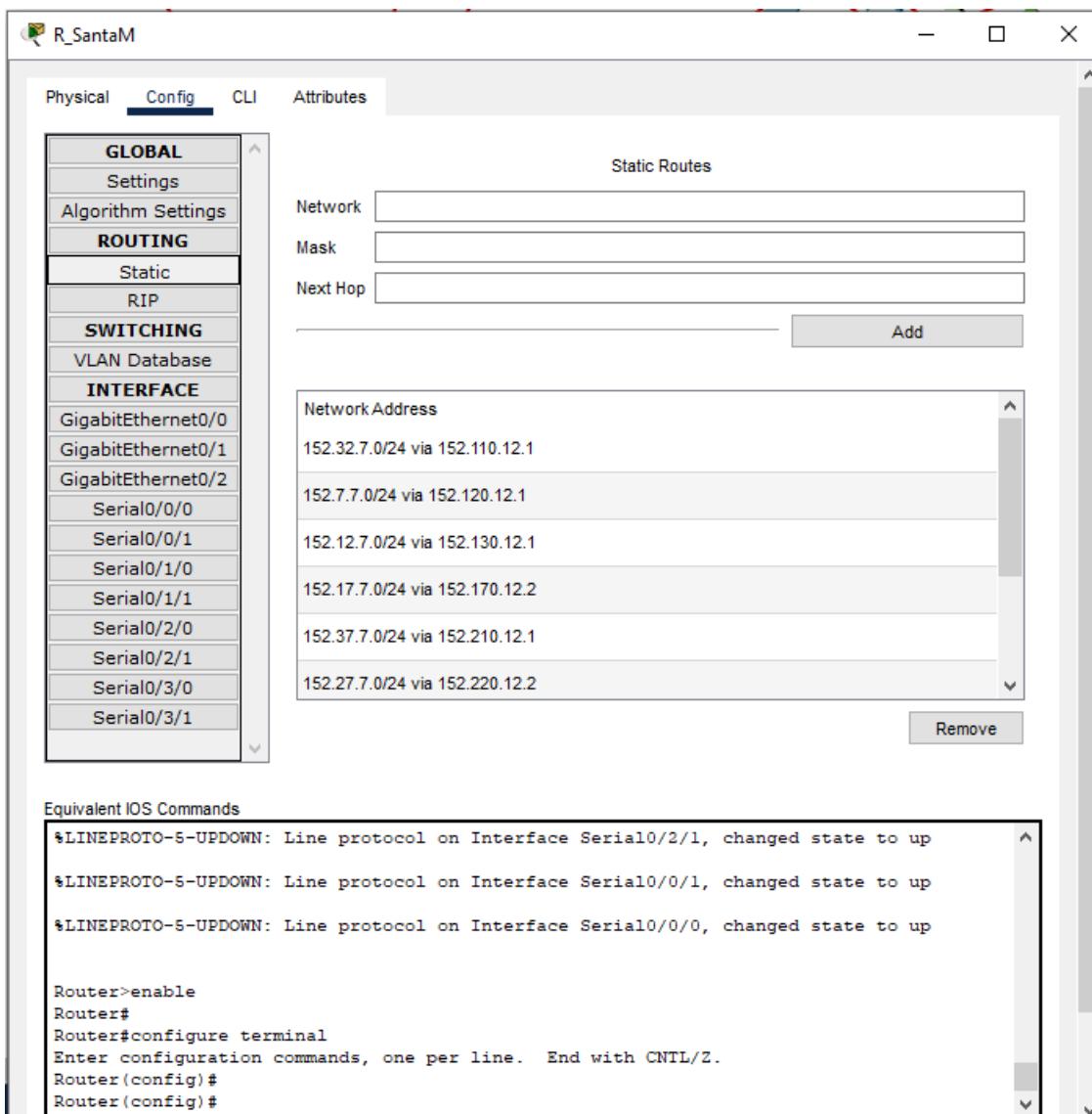


Figura 22: Tabela Roteamento Santa Mônica.

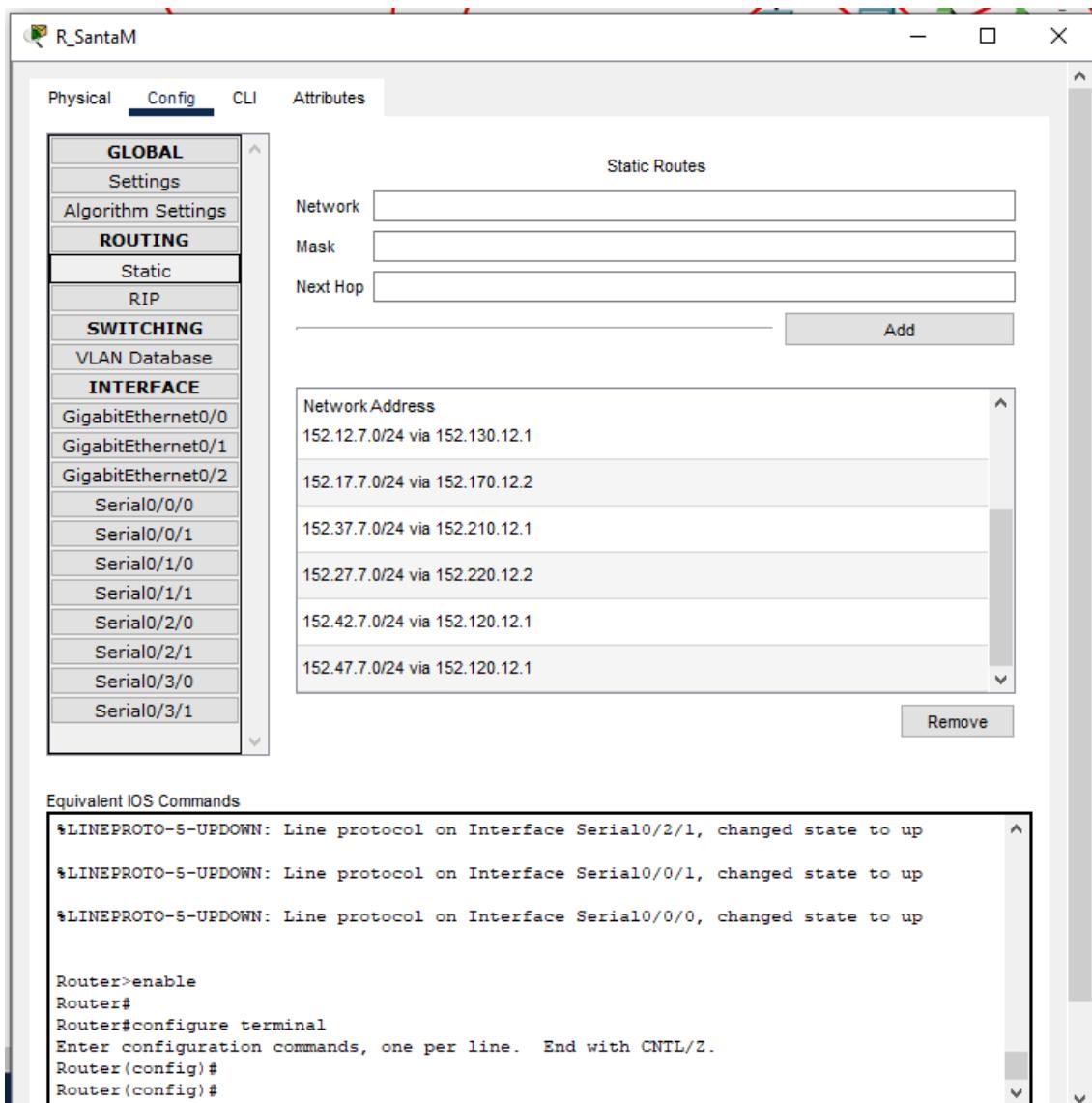


Figura 23: Tabela Roteamento Santa Mônica.

0.4.5 Umuarama

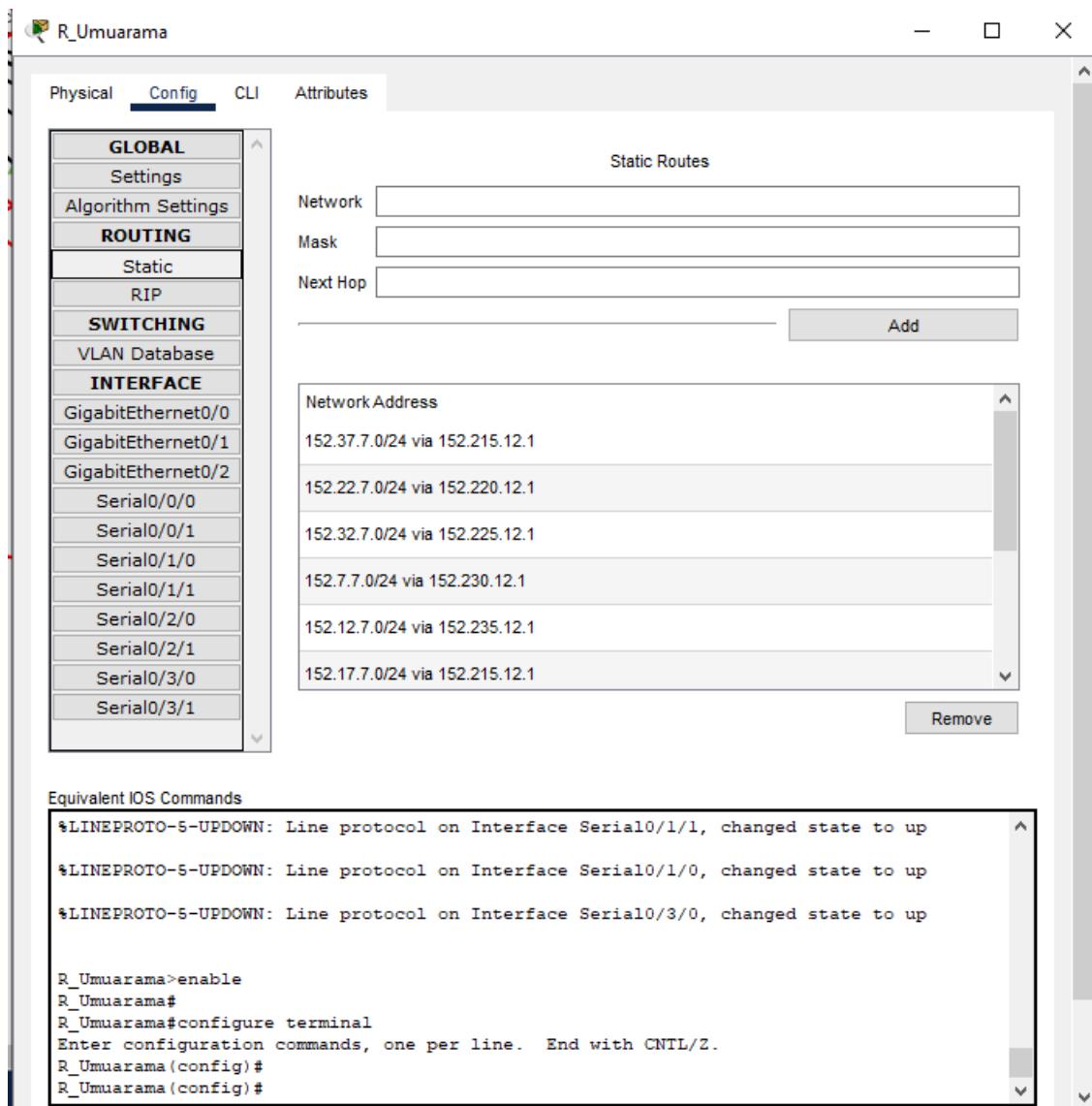


Figura 24: Tabela Roteamento Umuarama.

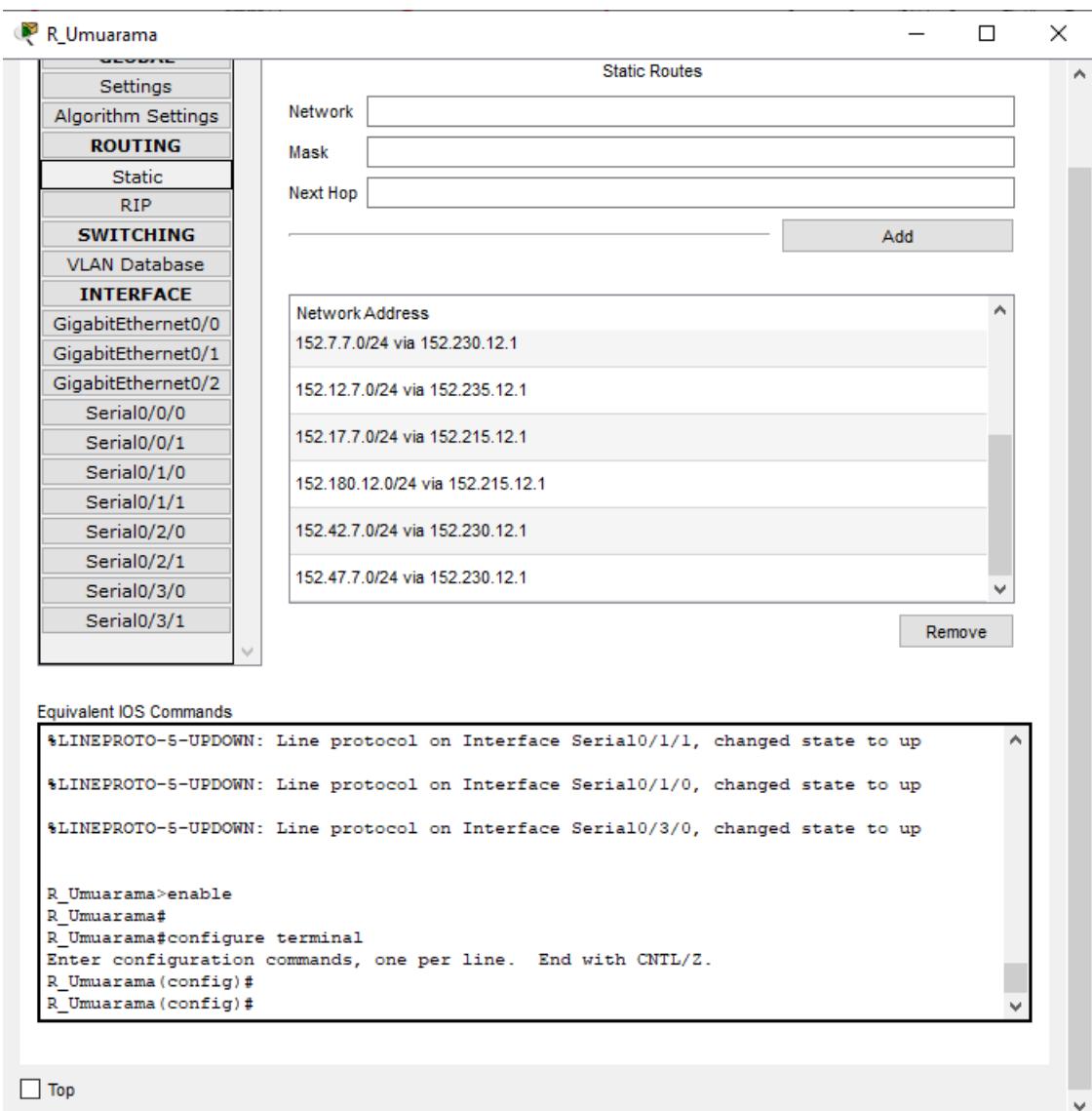


Figura 25: Tabela Roteamento Umuarama.

0.4.6 Educação Física

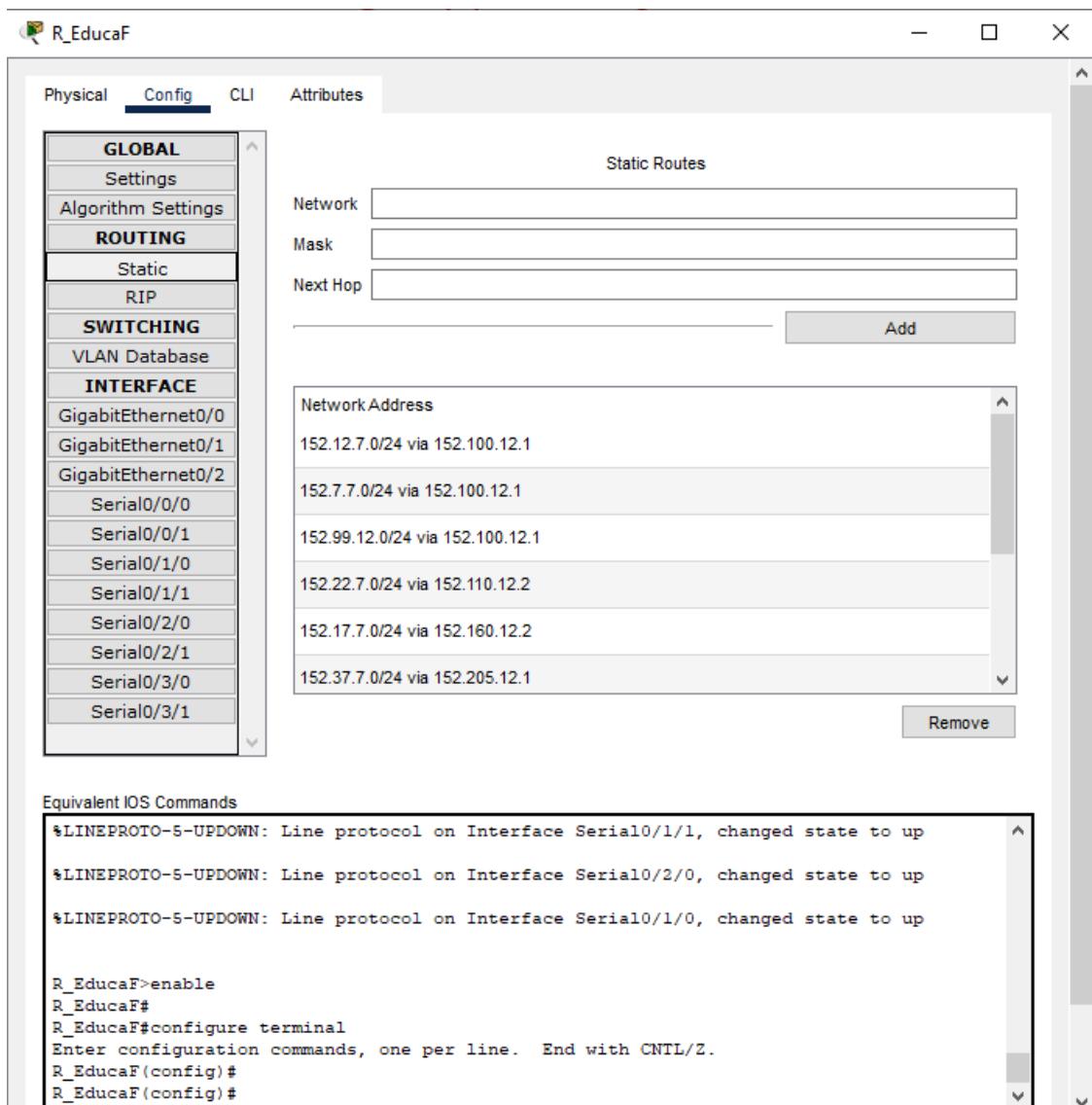


Figura 26: Tabela Roteamento Educação Física.

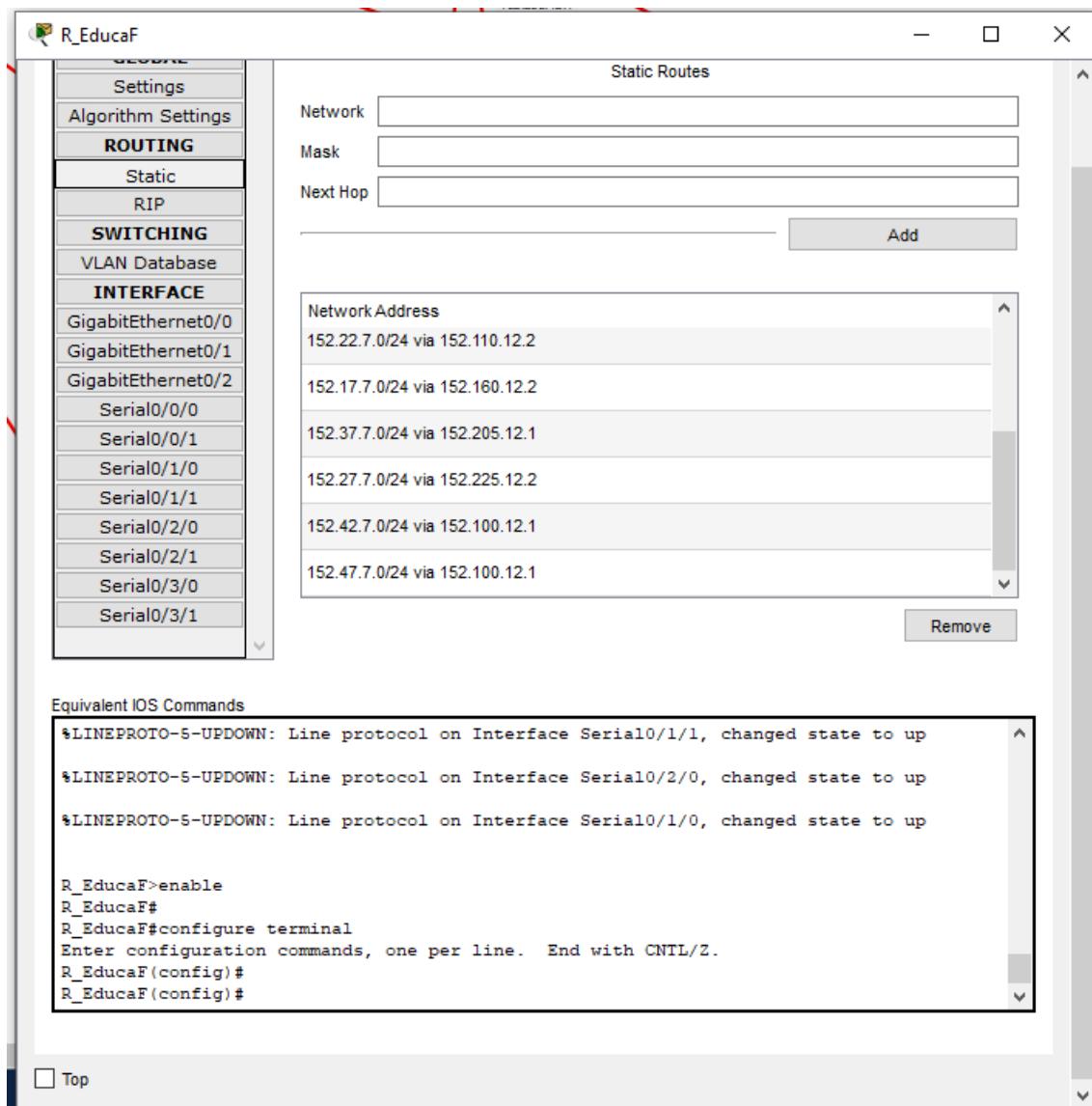


Figura 27: Tabela Roteamento Educação Física.

0.4.7 Gloria

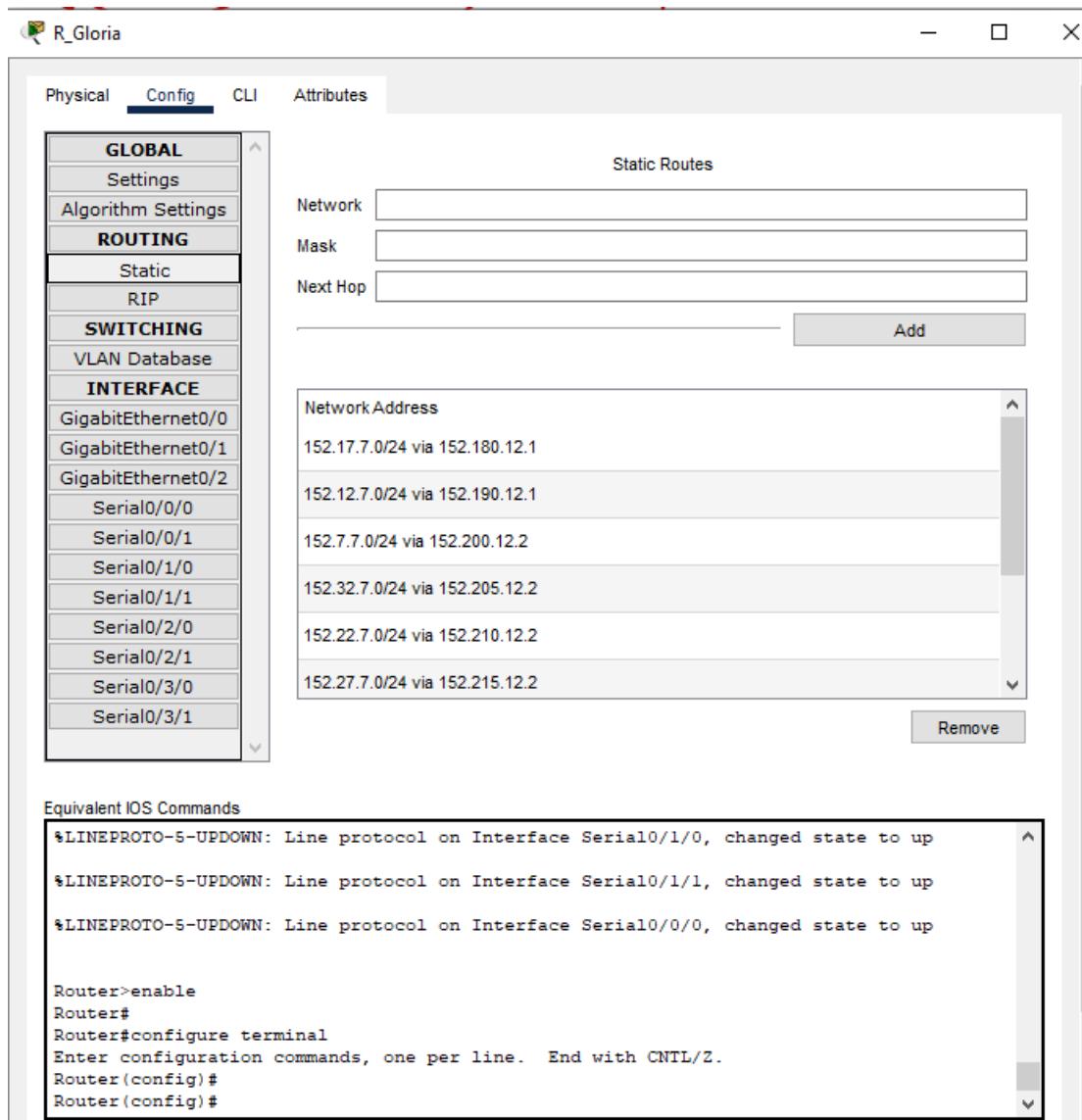


Figura 28: Tabela Roteamento Gloria.

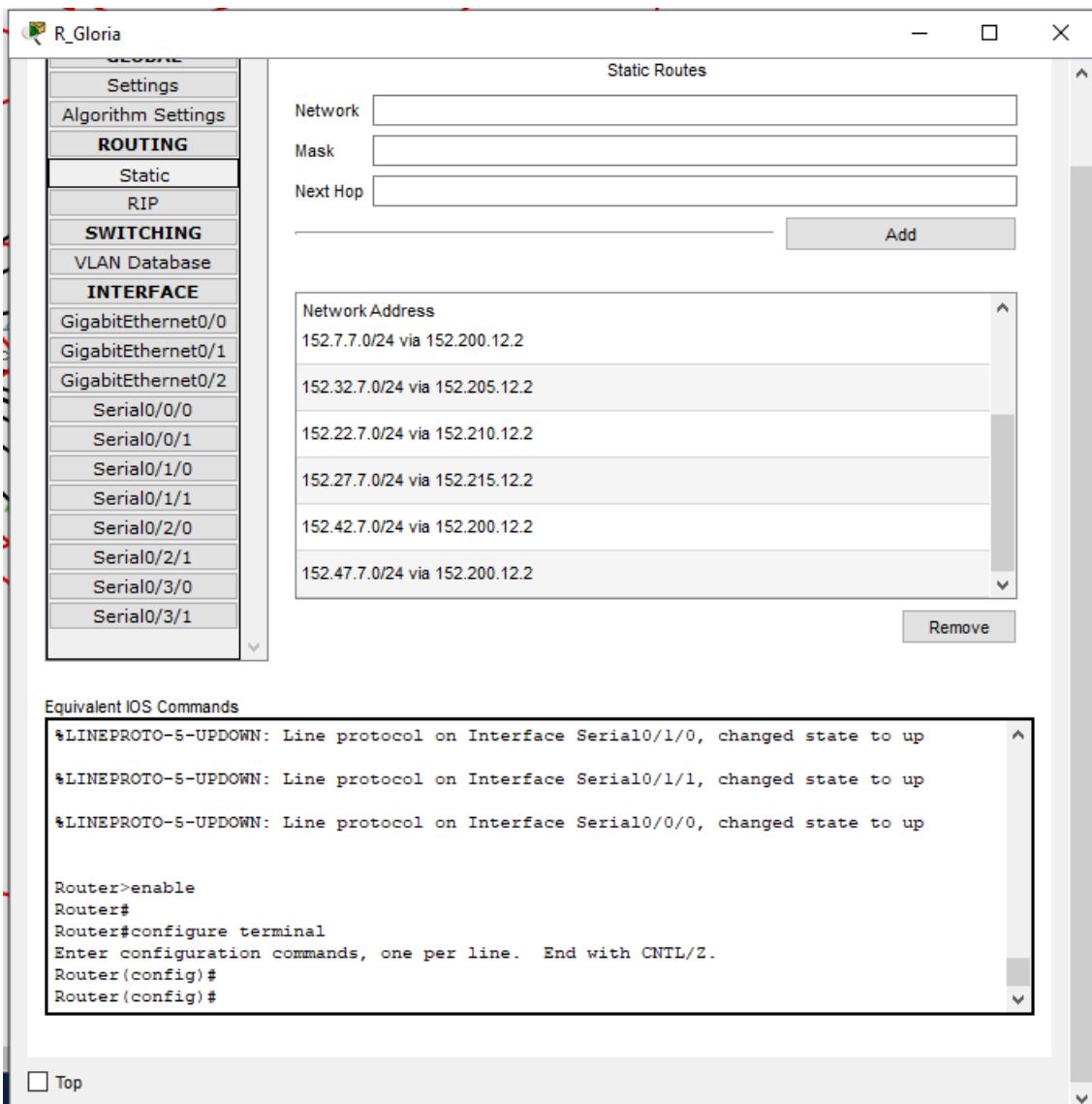


Figura 29: Tabela Roteamento Gloria.

0.5 Resumindo todas as tabelas e explicando as rotas

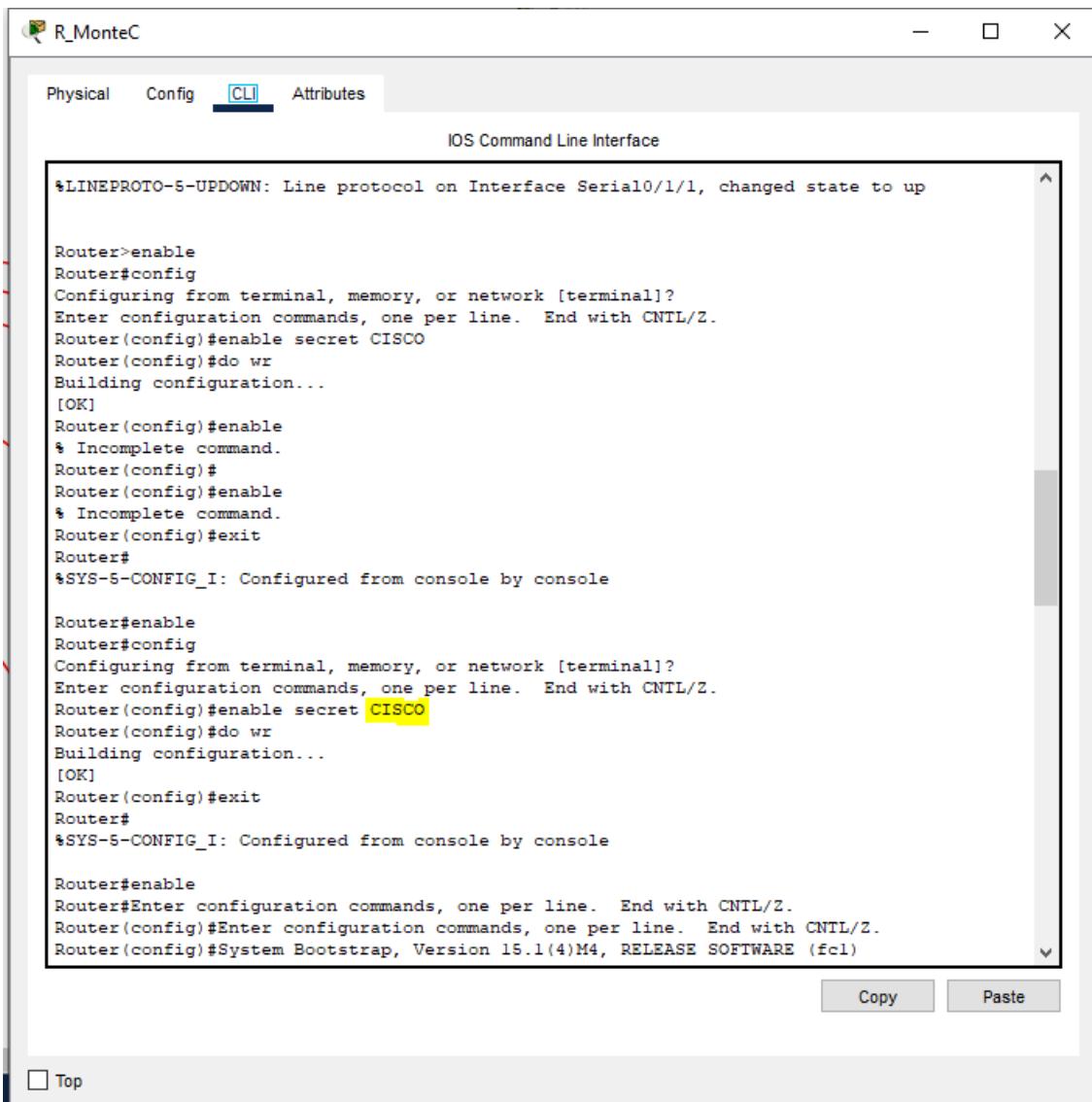
Bom, para simular a realidade alguns pontos não existem rota direta, sendo ele campus Monte Carmelo para campus Educação Física e campus Pontal para campus Umuarama. Portanto, esses que não possuem tem que passar por um roteador que "conecta" os dois, no caso do campus Monte Carmelo e campus Educação Física passa pelo roteador do campus Patos e no caso de campus Pontal com campus Umuarama passa pelo campus Gloria.

	Monte C	Patos	Pontal	Santa M	Umuarama	Educa F	Gloria
MonteC	null	152.99.12.2	152.140.12.2	152.120.12.2	152.230.12.2	sem rota	152.200.12.1
Patos	152.99.12.2	null	152.150.12.2	152.130.12.2	152.235.12.2	152.100.12.2	152.190.12.2
Pontal	152.140.12.1	152.150.12.1	null	152.170.12.1	sem rota	152.160.12.1	152.180.12.2
Santa M	152.120.12.1	152.130.12.1	152.170.12.2	null	152.220.12.2	152.110.12.1	152.210.12.1
Umuarama	152.230.12.1	152.235.12.1	sem rota	152.220.12.1	null	152.225.12.1	152.215.12.1
Educa F	sem rota	152.100.12.1	152.160.12.2	152.110.12.2	152.225.12.2	null	152.205.12.1
Gloria	152.200.12.2	152.190.12.1	152.180.12.1	152.210.12.2	152.215.12.2	152.205.12.2	null

Figura 30: Tabela Roteamento Total.

0.6 Senha dos Roteadores

0.6.1 Monte Carmelo



The screenshot shows a Cisco IOS Command Line Interface (CLI) window titled "R_MonteC". The window has tabs for "Physical", "Config", "CLI" (which is selected), and "Attributes". The main area displays the following configuration session:

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up

Router>enable
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#enable secret CISCO
Router(config)#do wr
Building configuration...
[OK]
Router(config)#enable
% Incomplete command.
Router(config)#
Router(config)#enable
% Incomplete command.
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#enable
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#enable secret CISCO
Router(config)#do wr
Building configuration...
[OK]
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#enable
Router#Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#System Bootstrap, Version 15.1(4)M4, RELEASE SOFTWARE (fc1)
```

At the bottom of the window, there are "Copy" and "Paste" buttons, and a checkbox labeled "Top".

Figura 31: Senha do Roteador do campus Monte Carmelo.

0.6.2 Patos

The screenshot shows a Windows application window titled "R_Patos". The tab bar at the top has four tabs: "Physical", "Config", "CLI" (which is selected), and "Attributes". The main area is labeled "IOS Command Line Interface". It displays the following text:

```
*LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
*LINK-5-CHANGED: Interface Serial0/3/1, changed state to up
*LINK-5-CHANGED: Interface Serial0/2/0, changed state to up
*LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
*LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
*LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/0, changed state to up
*LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/3/1, changed state to up
*LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up
*LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up
*LINK-3-UPDOWN: Interface Serial0/0/0, changed state to down
*LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down

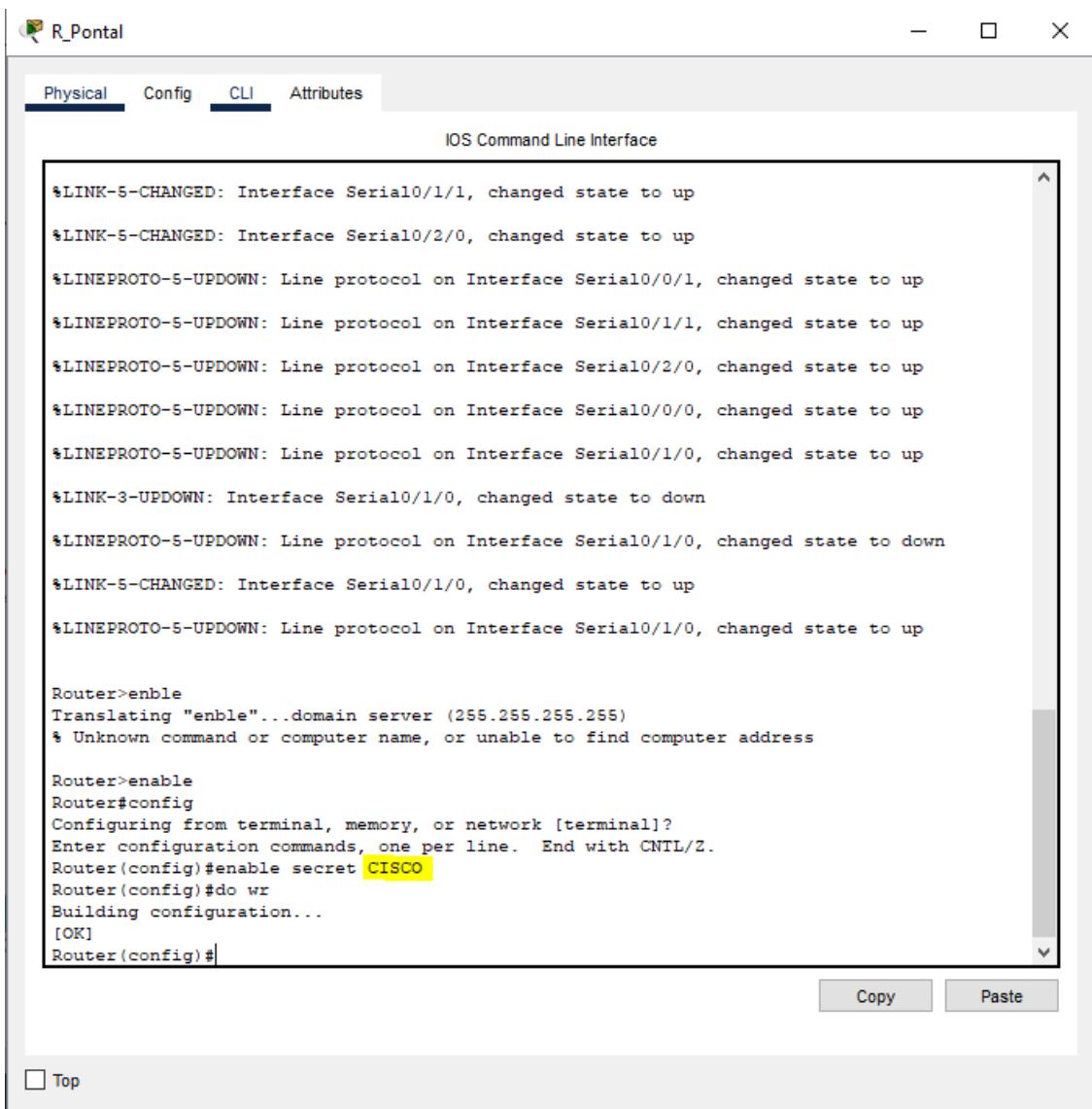
Router>
*LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
*LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
enable
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#enable secret CISCO
Router(config)#do wr
Building configuration...
[OK]
Router(config)#
Router(config)#

```

At the bottom right of the CLI window, there are "Copy" and "Paste" buttons. Below the window, there is a small toolbar with a "Top" button.

Figura 32: Senha do Roteador do campus Patos.

0.6.3 Pontal



The screenshot shows a Windows application window titled "R_Pontal". The window has tabs at the top: "Physical", "Config", "CLI" (which is selected), and "Attributes". Below the tabs is a title bar "IOS Command Line Interface". The main area contains the following text:

```
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to up
%LINK-5-CHANGED: Interface Serial0/2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up
%LINK-3-UPDOWN: Interface Serial0/1/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to down
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

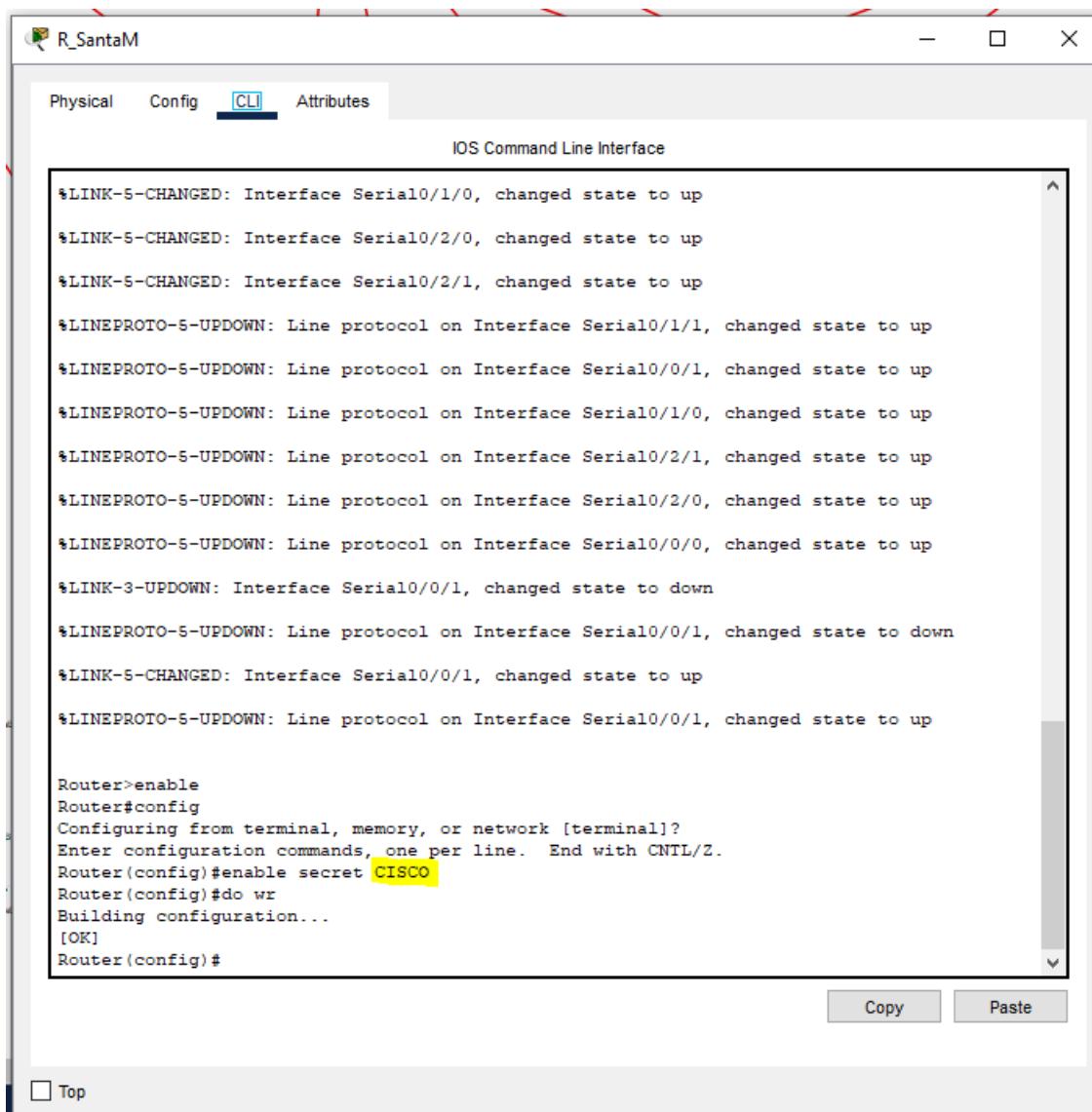
Router>enable
Translating "enable"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address

Router>enable
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#enable secret CISCO
Router(config)#do wr
Building configuration...
[OK]
Router(config)#[
```

At the bottom right of the main window are "Copy" and "Paste" buttons. At the bottom left is a checkbox labeled "Top".

Figura 33: Senha do Roteador do Pontal.

0.6.4 Santa Mônica



The screenshot shows a Cisco IOS Command Line Interface (CLI) window titled "R_SantaM". The window has tabs for "Physical", "Config", "CLI" (which is selected), and "Attributes". The main area displays the following text:

```
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
%LINK-5-CHANGED: Interface Serial0/2/0, changed state to up
%LINK-5-CHANGED: Interface Serial0/2/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
%LINK-3-UPDOWN: Interface Serial0/0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to down
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

Router>enable
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#enable secret CISCO
Router(config)#do wr
Building configuration...
[OK]
Router(config)#

```

At the bottom right of the CLI window, there are "Copy" and "Paste" buttons. At the bottom left, there is a "Top" button.

Figura 34: Senha do Roteador do campus Santa Mônica.

0.6.5 Umuarama

The screenshot shows a Windows application window titled "R_Umuarama". The tab bar at the top has four tabs: "Physical", "Config", "CLI" (which is selected), and "Attributes". Below the tabs is a title bar "IOS Command Line Interface". The main area contains the following text:

```
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up  
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up  
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up  
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/3/0, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up  
%LINK-3-UPDOWN: Interface Serial0/1/0, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to down  
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up  
  
R_Umuarama>enable  
R_Umuarama#config  
Configuring from terminal, memory, or network [terminal]?  
Enter configuration commands, one per line. End with CNTL/Z.  
R_Umuarama(config)#enable secret CISCO  
R_Umuarama(config)#do wr  
Building configuration...  
[OK]  
R_Umuarama(config)#
```

At the bottom right of the text area are two buttons: "Copy" and "Paste". At the bottom left is a checkbox labeled "Top".

Figura 35: Senha do Roteador do campus Umuarama.

0.6.6 Educação Física

The screenshot shows a Windows application window titled "R_EducaF". The tab bar at the top has "Physical", "Config", "CLI" (which is selected), and "Attributes". The main area is labeled "IOS Command Line Interface". It displays the following text:

```
245808 Bytes of ATA System compactflash 0 (read/write)

Press RETURN to get started!

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
%LINK-5-CHANGED: Interface Serial0/2/0, changed state to up
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

R_EducaF>enable
R_EducaF#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R_EducaF(config)#enable secret CISCO
R_EducaF(config)#do wr
Building configuration...
[OK]
R_EducaF(config)#

```

At the bottom of the window, there are "Copy" and "Paste" buttons. Below the window, there is a small checkbox labeled "Top".

Figura 36: Senha do Roteador do campus Educação Física.

0.6.7 Gloria

The screenshot shows a Windows application window titled "R_Gloria". The tab bar at the top has four tabs: "Physical", "Config", "CLI" (which is selected), and "Attributes". Below the tabs is a title bar "IOS Command Line Interface". The main area contains the following text:

```
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up  
%LINK-5-CHANGED: Interface Serial0/2/1, changed state to up  
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/1, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/3/0, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/3/1, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up  
%LINK-3-UPDOWN: Interface Serial0/3/0, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/3/0, changed state to down  
%LINK-5-CHANGED: Interface Serial0/3/0, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/3/0, changed state to up  
  
Router>enable  
Router#config  
Configuring from terminal, memory, or network [terminal]?  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#enable secret CISCO  
Router(config)#do wr  
Building configuration...  
[OK]  
Router(config)#[
```

At the bottom right of the text area are two buttons: "Copy" and "Paste". At the bottom left is a checkbox labeled "Top".

Figura 37: Senha do Roteador do campus Gloria.

0.7 Lembrete

Caso o envio de PDU falhe na primeira tentativa, tente novamente, ou seja, envie novamente e daria certo. Abaixo está a explicação do problema.

0.7.1 Explicação do motivo do primeiro PDU falhar

The screenshot shows a forum post from community.cisco.com. The URL in the address bar is community.cisco.com/t5/other-network-architecture-subjects/first-simple-pdu-fail/td-p/4515616. The post has 1 response. The user 'mlund' (Estrela em ascensão) posted on 09/12/2021 at 01:56. The message content is as follows:

Oi
Não li o seu projeto, então vou apenas apresentar um motivo comum para a falha do primeiro pacote.
Quando o pacote chega ao roteador, o roteador o encaminhará para o destino.
Para isso é necessário reescrever os cabeçalhos, com um novo endereço MAC para o destino.
Caso o roteador não possua esta informação em sua tabela arp, ele deverá fazer uma solicitação arp para descobrir o endereço mac do destino.
Quando esse processo arp está em andamento, o roteador descarta o pacote que deveria ser enviado.
Na próxima vez que um pacote chegar ao roteador, ele procurará novamente em sua tabela arp e agora haverá uma entrada para o destino. Assim, o roteador pode construir com êxito um cabeçalho correto para o pacote de saída e enviá-lo.
/Mikael

Below the message are two buttons: a blue thumbs-up icon labeled '0 Útil' and a blue 'Responder' button.

Figura 38: Primeiro PDU sempre falha.