AVALIAÇÃO - Projetos de Redes de Computadores

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Descrição do projeto

Objetivo

Elaborar um projeto de redes de computadores para as unidades da instituição e a comunicação entre elas,

O projeto deve conter um planejamento lógico e ao final ser capaz de possibilitar o aumento da qualidade de serviços e da produtividade dos usuários, assim como oferecer maiores facilidades de operação e manutenção

Requisitos

- 2 comutadores (Cisco 2960)
- 8 PCs (Windows com um programa de emulador de terminal, como o Tera Term)
- 2 Roteadores (Cisco 2911)
- Cabos de console para configurar os dispositivos Cisco IOS por meio das portas de console Cabos ethernet conforme mostrado na topologia

Escopo

O Escopo do projeto prevê:

- **Duas Unidades** que se comunicam por roteadores.
- Comunicação dentro das unidades deve ser feita por **switches**.
- Expectativa de 500 alunos e 100 funcionários em cada unidade.
- Criação de uma VLAN para unidade de Medicina e computação.
- Criação de uma VLAN adm dentro de cada unidade.
- **Uso e configuração de 2 roteadores** para a comunicação entre as duas unidades.

Descrição da implementação

Segmentação da estrutura lógica da rede

Unidade 1:
PC0, PC1 conectados ao Switch0 dentro da VLAN med
PC2, PC3 conectados ao Switch0 dentro da VLAN adm

PC0 - Fa0 na porta Fa/1 do Switch0
PC1 - Fa0 na porta Fa/2 do Switch0
PC2 - Fa0 na porta Fa/3 do Switch0
PC3 - Fa0 na porta Fa/4 do Switch0

Switch0 - Fa0/5 na porta Gig0/0 do Router0

Router0 conectado ao Router1 pelas portas Gig0/1

Unidade 2:
PC4, pc5 conectados ao Switch1 dentro da VLAN comp
PC6, pc7 conectados ao Switch1 dentro da VLAN adm

PC4 - Fa0 na porta Fa/1 do Switch1
PC5 - Fa0 na porta Fa/2 do Switch1
PC6 - Fa0 na porta Fa/3 do Switch1
PC7 - Fa0 na porta Fa/4 do Switch1

Switch1 - Fa0/5 na porta Gig0/0 do Router1

Router1 conectado ao Router0 pelas portas Gig0/1

Planejamento do Endereçamento IP

Dispositivo	Interface	Endereço IP	Máscara de subrede	Gateway padrão
Switch0	VLAN 10 VALAN 30	192.168.200.1	255.255.255.192	N/D
Switch1	VLAN 20 VLAN 30	192.168.200.65	255.255.255.192	N/D
PC0	N/D	192.168.200.2	255.255.255.192	192.168.200.1
PC1	N/D	192.168.200.3	255.255.255.192	192.168.200.1
PC2	N/D	192.168.200.4	255.255.255.192	192.168.200.1
PC3	N/D	192.168.200.5	255.255.255.192	192.168.200.1
PC4	N/D	192.168.200.66	255.255.255.192	192.168.200.65
PC5	N/D	192.168.200.67	255.255.255.192	192.168.200.65
PC6	N/D	192.168.200.68	255.255.255.192	192.168.200.65
PC7	N/D	192.168.200.69	255.255.255.192	192.168.200.65
Router0	N/D	192.168.200.1 192.168.200.129	255.255.255.192 255.255.255.252	N/D
Router1	N/D	192.168.200.65 192.168.200.130	255.255.255.192 255.255.255.252	N/D

Listagem dos comandos utilizados na configuração dos ativos

CONFIGURANDO AS VLANs

Switch0 - VLAN med

1. *en*
2. *conf t*
3. *vlan 10*
4. *name med*
5. *vlan 30*

6. *name adm*
7. *int range f0/1-2*
8. *swi access vlan 10*
9. *exit*

VLAN adm

1. *int range f0/3-4*
2. *swi access vlan 30*
3. *end*

Switch1 - VLAN comp

1. *en*
2. *conf t*
3. *vlan 20*
4. *name comp*
5. *vlan 30*
6. *name adm*
7. *int range f0/1-2*
8. *swi access vlan 20*
9. *exit*

VLAN adm

1. *int range f0/3-4*
2. *swi access vlan 30*
3. *end*

Router0 - CONFIGURANDO ROTEADOR

1. *en*
2. *conf t*
3. *int gig0/0*
4. *ip add 192.168.200.1 255.255.255.192*
5. *no shut*
6. *end*
7. *conf t*
8. *int gig0/1*
9. *ip add 192.168.200.129 255.255.255.252*
10. *no shut*
11. *end*

ROUTER 2

1. *en*
2. *config t*
3. *int gig0/0*
4. *ip add 192.168.200.65 255.255.255.192*
5. *no shut*
6. *end*
7. *config t*
8. *int gig0/1*
9. *ip add 192.168.200.130 255.255.255.252*
10. *no shut*
11. *end*

ALOCANDO IPS PARA OS COMPUTADORES

VLAN med

PC0 (interface FastEthernet: Fa0):
• [Desktop > IP Configuration] IP Address: 192.168.200.2, Subnet Mask: 255.255.255.192
• [Gateway] IPv4: 192.168.200.1

PC1 (interface FastEthernet: Fa0):
• [Desktop > IP Configuration] IP Address: 192.168.200.3, Subnet Mask: 255.255.255.192
• [Gateway] IPv4: 192.168.200.1

VLAN comp

PC4 (interface FastEthernet: Fa0):
• [Desktop > IP Configuration] IP Address: 192.168.200.66, Subnet Mask: 255.255.255.192
• [Gateway] IPv4: 192.168.200.65

PC5 (interface FastEthernet: Fa0):
• [Desktop > IP Configuration] IP Address: 192.168.200.67, Subnet Mask: 255.255.255.192
• [Gateway] IPv4: 192.168.200.65

VLAN adm

PC2 (interface FastEthernet: Fa0):
• [Desktop > IP Configuration] IP Address: 192.168.200.4, Subnet Mask: 255.255.255.192
• [Gateway] IPv4: 192.168.200.1

PC3 (interface FastEthernet: Fa0):
• [Desktop > IP Configuration] IP Address: 192.168.200.5, Subnet Mask: 255.255.255.192
• [Gateway] IPv4: 192.168.200.1

PC6 (interface FastEthernet: Fa0):
• [Desktop > IP Configuration] IP Address: 192.168.200.68, Subnet Mask: 255.255.255.192
• [Gateway] IPv4: 192.168.200.65

PC7 (interface FastEthernet: Fa0):
• [Desktop > IP Configuration] IP Address: 192.168.200.69, Subnet Mask: 255.255.255.192
• [Gateway] IPv4: 192.168.200.65

CONFIGURANDO ROTAS ESTÁTICAS PARA OS ROTEADORES

ROUTER 0

1. *en*
2. *conf t*
3. *ip route 192.168.200.64 255.255.255.192 192.168.200.130*
4. *end*

ROUTER 1

1. en
2. conf t
3. ip route 192.168.200.0 255.255.255.192 192.168.200.129
4. end

CONFIGURANDO AS PORTAS TRUNK

SWITCH0

1. *conf t*
2. *int f0/3*
3. *swi mode trunk*
4. *end*
5. *int f0/4*
6. *swi mode trunk*
7. *end*
8. *int f0/5*
9. *swi mode trunk*
10. *end*

SWITCH1

11. *conf t*
12. *int f0/3*
13. *swi mode trunk*
14. *end*
15. *int f0/4*
16. *swi mode trunk*
17. *end*
18. *int f0/5*
19. *swi mode trunk*
20. *end*

CONFIGURANDO IPS DAS VLANS

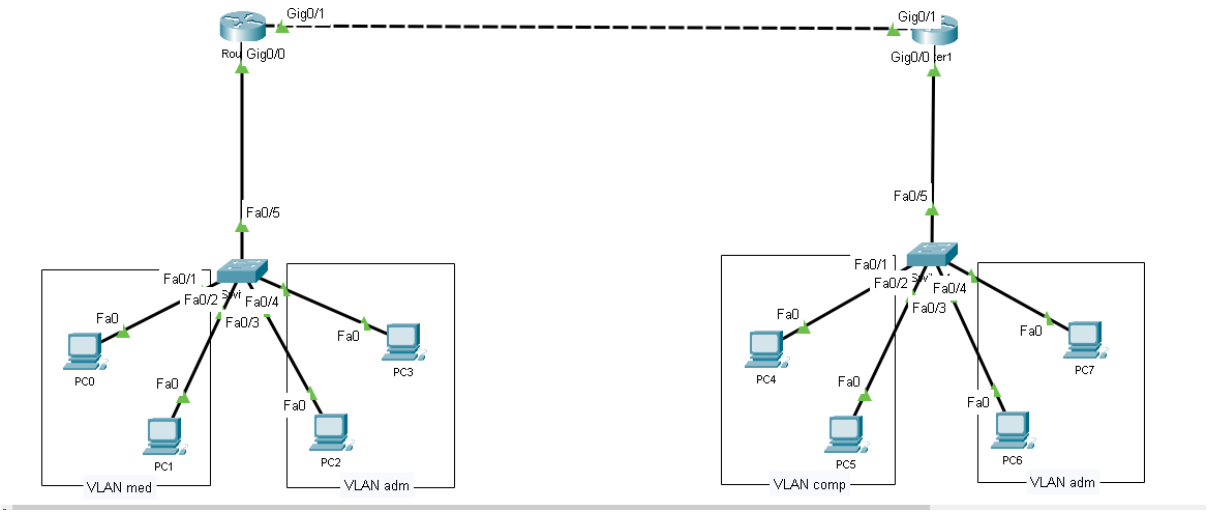
SWITCH0

1. *interface vlan 10*
2. *ip address 192.168.200.1 255.255.255.192*
3. *end*
4. *interface vlan 30*
5. *ip address 192.168.200.1 255.255.255.192*
6. *end*

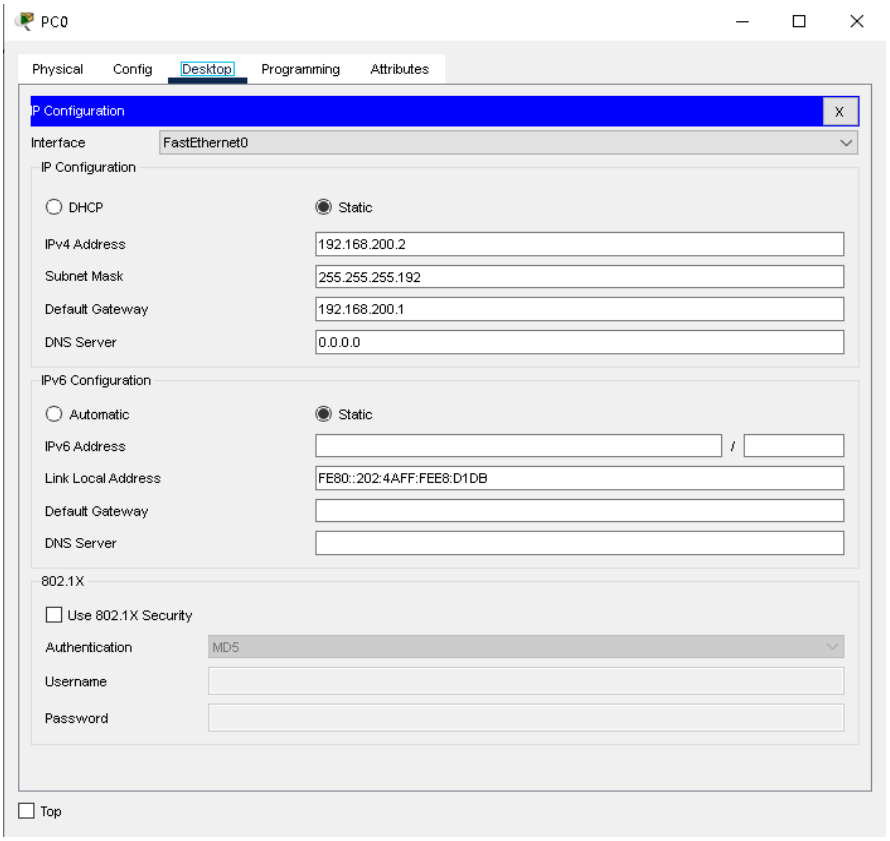
SWITCH1

1. *interface vlan 20*
2. *ip address 192.168.200.65 255.255.255.192*
3. *end*
4. *interface vlan 30*
5. *ip address 192.168.200.65 255.255.255.192*
6. *end*

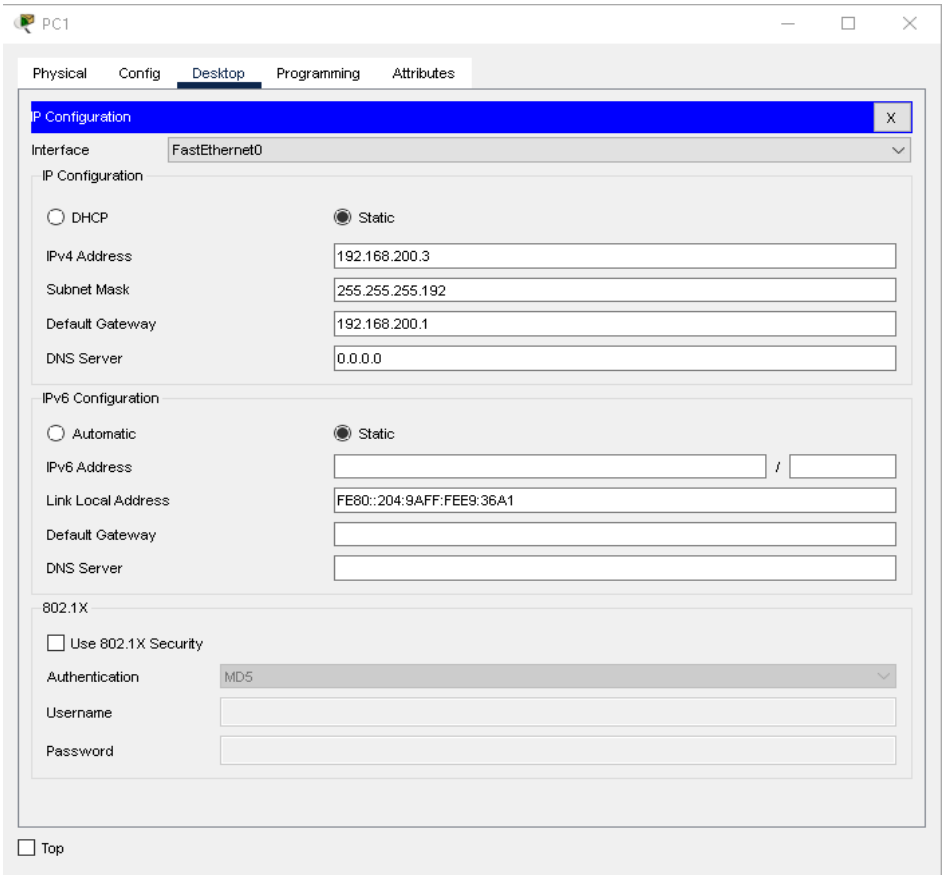
Captura de telas no Cisco Packet Tracer



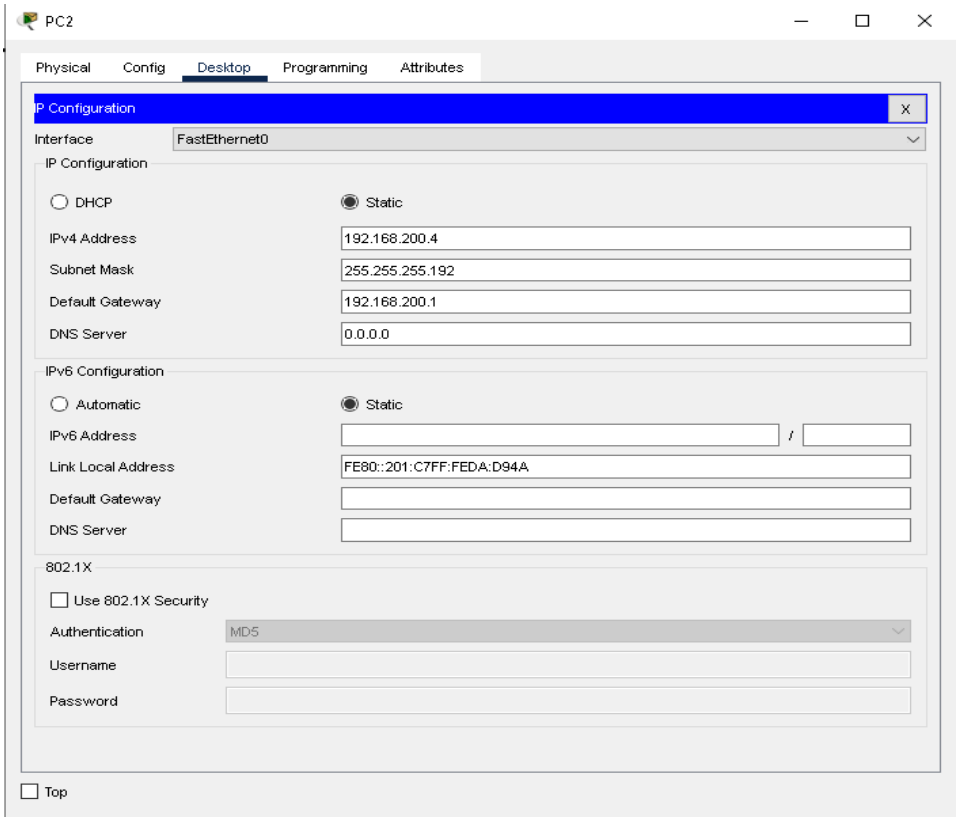
Projeto Lógico


PC0
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.200.2
Subnet Mask
255.255.255.192
Default Gateway
192.168.200.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::202:4AFF:FEE8:D1DB
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top

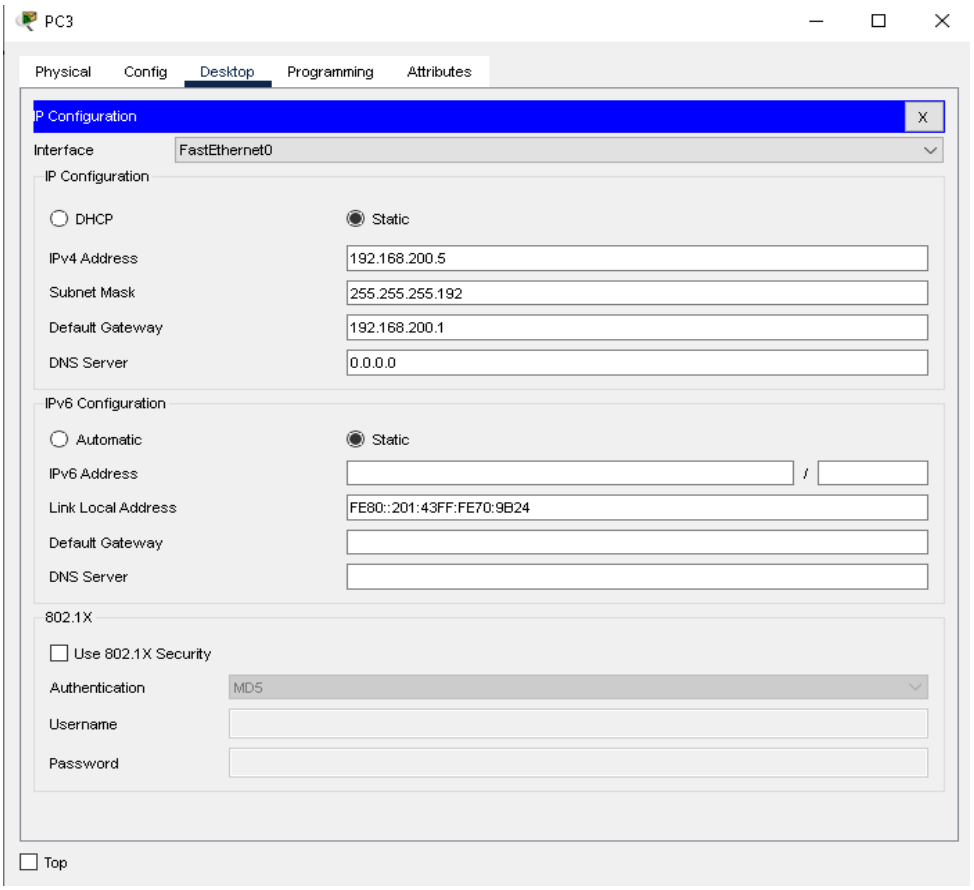
PC0


PC1
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.200.3
Subnet Mask
255.255.255.192
Default Gateway
192.168.200.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::204:9AFF:FEE9:36A1
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top

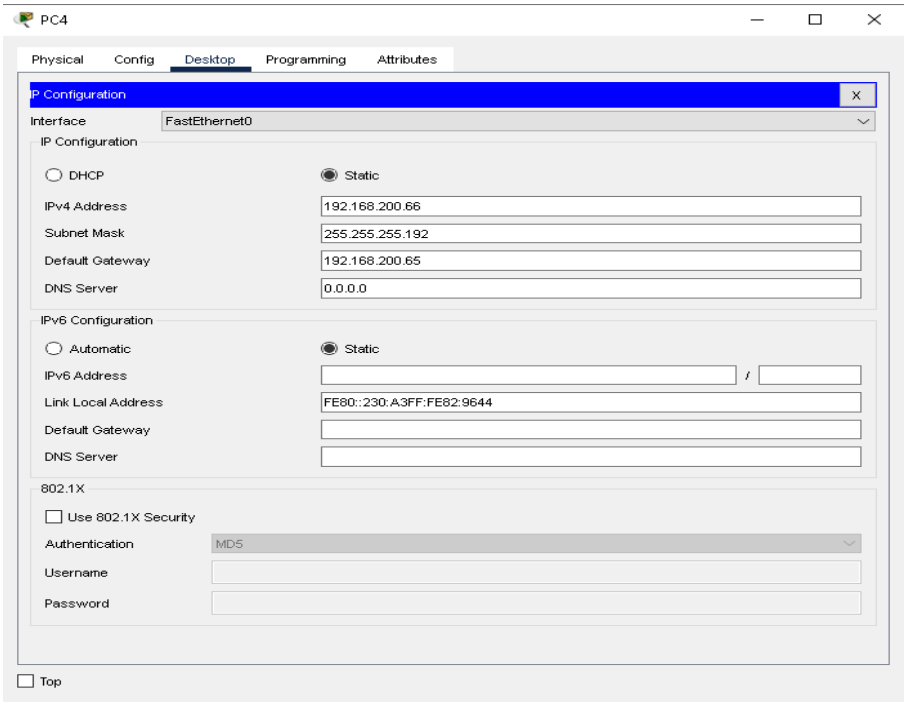
PC1


PC2
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.200.4
Subnet Mask
255.255.255.192
Default Gateway
192.168.200.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::201:C7FF:FEDA:D94A
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top

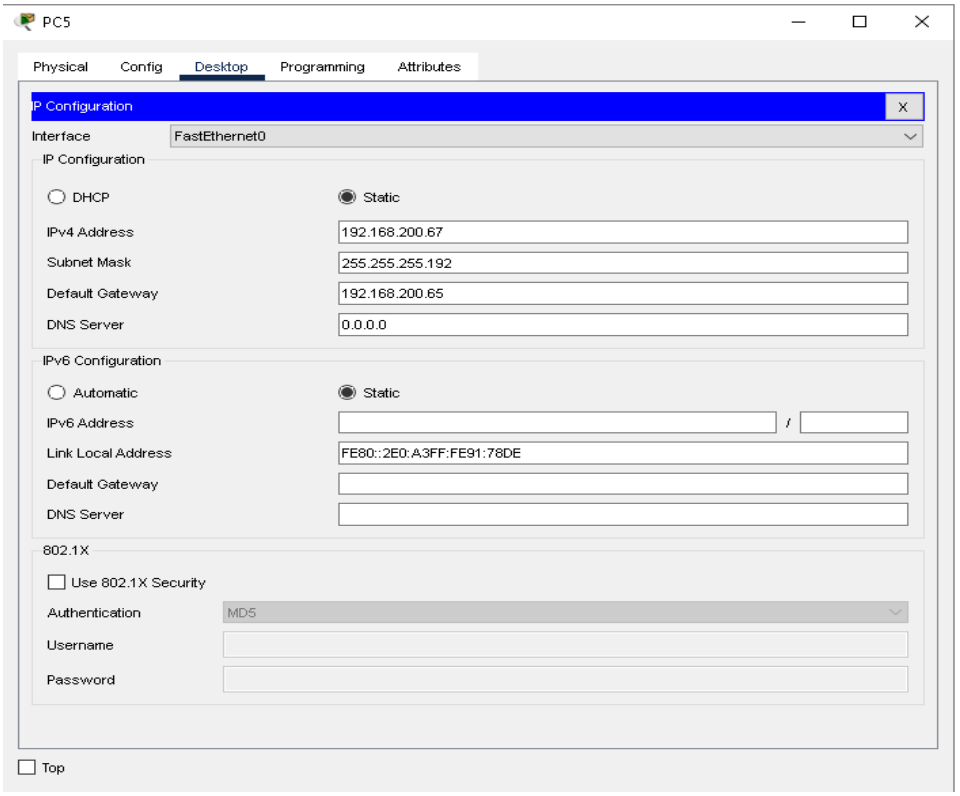
PC2


PC3
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.200.5
Subnet Mask
255.255.255.192
Default Gateway
192.168.200.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::201:43FF:FE70:9B24
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top

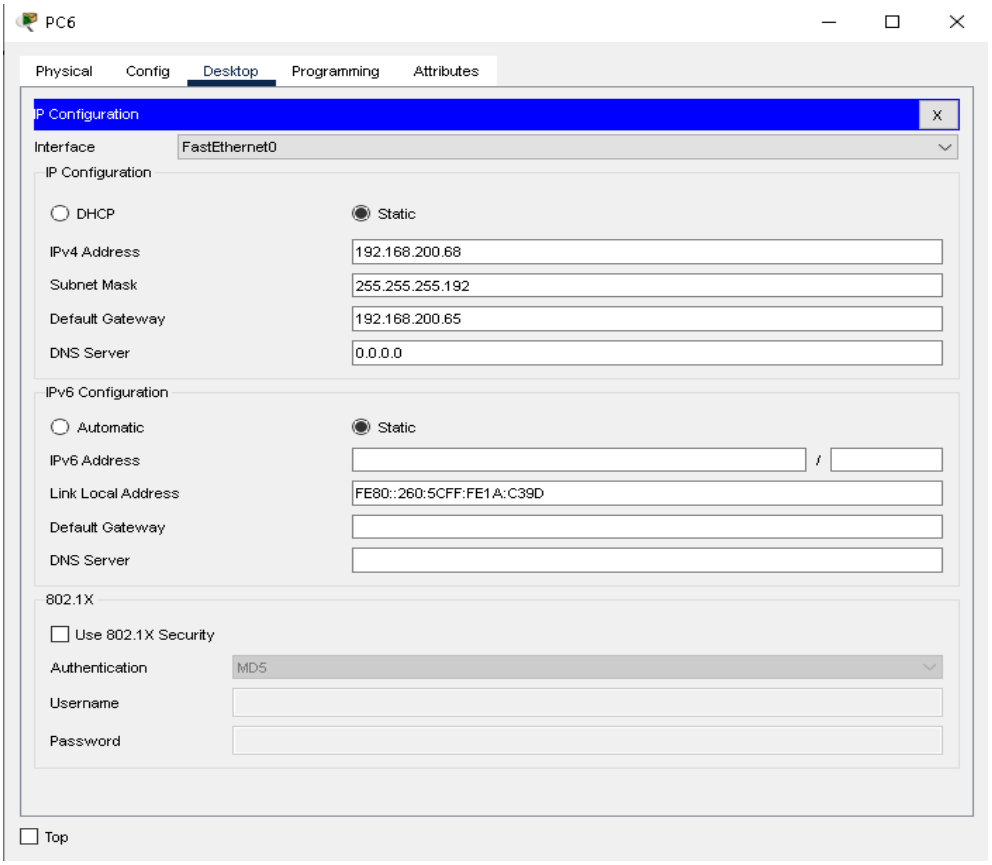
PC3


PC4
Physical
Config
Desktop
Programming
Attributes
IP Configuration
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.200.66
Subnet Mask
255.255.255.192
Default Gateway
192.168.200.65
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::230:A3FF:FE82:9644
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top

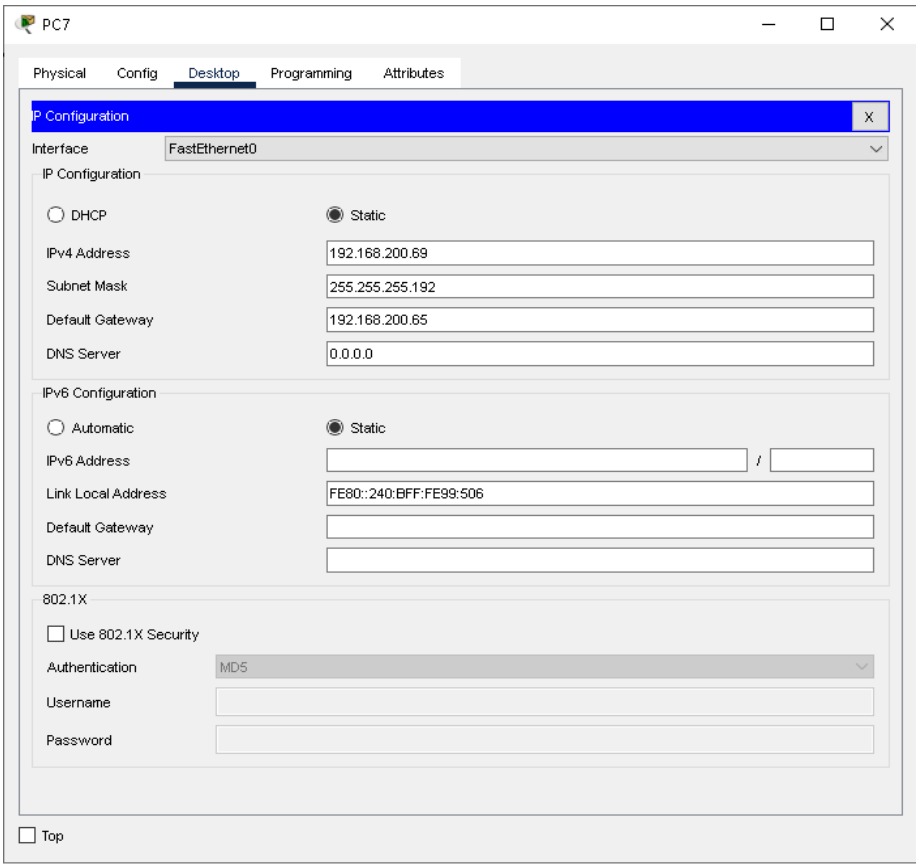
PC4


PC5
Physical
Config
Desktop
Programming
Attributes
IP Configuration
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.200.67
Subnet Mask
255.255.255.192
Default Gateway
192.168.200.65
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::2E0:A3FF:FE91:78DE
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top

PC5


PC6
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.200.68
Subnet Mask
255.255.255.192
Default Gateway
192.168.200.65
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::260:5CFF:FE1A:C39D
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top

PC6


PC7
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.200.69
Subnet Mask
255.255.255.192
Default Gateway
192.168.200.65
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::240:BFF:FE99:506
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top

PC7

```
Switch#show vlan brief

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/6, Fa0/7, Fa0/8, Fa0/9
                                                 Fa0/10, Fa0/11, Fa0/12, Fa0/13
                                                 Fa0/14, Fa0/15, Fa0/16, Fa0/17
                                                 Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                                 Fa0/22, Fa0/23, Fa0/24, Gig0/1
                                                 Gig0/2
10   med                               active    Fa0/1, Fa0/2
30   adm                               active    Fa0/3, Fa0/4
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
Switch#
```

SWITCH0

```
VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/6, Fa0/7, Fa0/8, Fa0/9
                                                 Fa0/10, Fa0/11, Fa0/12, Fa0/13
                                                 Fa0/14, Fa0/15, Fa0/16, Fa0/17
                                                 Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                                 Fa0/22, Fa0/23, Fa0/24, Gig0/1
                                                 Gig0/2
20   comp                              active    Fa0/1, Fa0/2
30   adm                               active    Fa0/3, Fa0/4
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
```

SWITCH1

```
Device Name: Switch0
Custom Device Model: 2960 IOS15
Hostname: Switch

Port                  Link   VLAN   IP Address          MAC Address
FastEthernet0/1       Up     10     --                  00E0.8F49.8501
FastEthernet0/2       Up     10     --                  00E0.8F49.8502
FastEthernet0/3       Up     30     --                  00E0.8F49.8503
FastEthernet0/4       Up     30     --                  00E0.8F49.8504
FastEthernet0/5       Up     --     --                  00E0.8F49.8505
FastEthernet0/6       Down   1      --                  00E0.8F49.8506
FastEthernet0/7       Down   1      --                  00E0.8F49.8507
FastEthernet0/8       Down   1      --                  00E0.8F49.8508
FastEthernet0/9       Down   1      --                  00E0.8F49.8509
FastEthernet0/10      Down   1      --                  00E0.8F49.850A
FastEthernet0/11      Down   1      --                  00E0.8F49.850B
FastEthernet0/12      Down   1      --                  00E0.8F49.850C
FastEthernet0/13      Down   1      --                  00E0.8F49.850D
FastEthernet0/14      Down   1      --                  00E0.8F49.850E
FastEthernet0/15      Down   1      --                  00E0.8F49.850F
FastEthernet0/16      Down   1      --                  00E0.8F49.8510
FastEthernet0/17      Down   1      --                  00E0.8F49.8511
FastEthernet0/18      Down   1      --                  00E0.8F49.8512
FastEthernet0/19      Down   1      --                  00E0.8F49.8513
FastEthernet0/20      Down   1      --                  00E0.8F49.8514
FastEthernet0/21      Down   1      --                  00E0.8F49.8515
FastEthernet0/22      Down   1      --                  00E0.8F49.8516
FastEthernet0/23      Down   1      --                  00E0.8F49.8517
FastEthernet0/24      Down   1      --                  00E0.8F49.8518
GigabitEthernet0/1    Down   1      --                  00E0.8F49.8519
GigabitEthernet0/2    Down   1      --                  00E0.8F49.851A
Vlan1                 Down   1      <not set>           0001.4339.321E
Vlan10                Up     10     192.168.200.1/26    0001.4339.3201
Vlan30                Up     30     192.168.200.1/26    0001.4339.3202

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > Switch2
```

SWITCH0

```
Device Name: Switch1
Custom Device Model: 2960 IOS15
Hostname: Switch

Port                  Link   VLAN   IP Address          MAC Address
FastEthernet0/1       Up     20     --                  00D0.5846.D8CE
FastEthernet0/2       Up     20     --                  0005.5E13.CB52
FastEthernet0/3       Up     30     --                  000B.BE89.07BA
FastEthernet0/4       Up     30     --                  0002.16ED.BE7C
FastEthernet0/5       Up     --     --                  0001.97A9.BC01
FastEthernet0/6       Down   1      --                  0090.0CE3.25B6
FastEthernet0/7       Down   1      --                  00D0.BC39.BA06
FastEthernet0/8       Down   1      --                  0009.7C5E.18A3
FastEthernet0/9       Down   1      --                  0002.163E.956C
FastEthernet0/10      Down   1      --                  0001.9660.A75E
FastEthernet0/11      Down   1      --                  00D0.5882.3B61
FastEthernet0/12      Down   1      --                  00D0.BC1B.1D02
FastEthernet0/13      Down   1      --                  00D0.BCBE.7CA1
FastEthernet0/14      Down   1      --                  0005.5E61.9A65
FastEthernet0/15      Down   1      --                  0006.2A63.C896
FastEthernet0/16      Down   1      --                  0005.5EBD.71AC
FastEthernet0/17      Down   1      --                  00E0.B0AB.0EE0
FastEthernet0/18      Down   1      --                  0060.5C43.D2A6
FastEthernet0/19      Down   1      --                  0005.5E5D.19D0
FastEthernet0/20      Down   1      --                  00D0.FF44.417B
FastEthernet0/21      Down   1      --                  0004.9AC1.5683
FastEthernet0/22      Down   1      --                  0050.0F49.01CD
FastEthernet0/23      Down   1      --                  0001.97A1.7086
FastEthernet0/24      Down   1      --                  0010.11DD.7272
GigabitEthernet0/1    Down   1      --                  0001.9669.8EA4
GigabitEthernet0/2    Down   1      --                  0001.97E3.B02A
Vlan1                 Down   1      <not set>           0060.4704.DD5B
Vlan20                Up     20     192.168.200.65/26   0060.4704.DD01
Vlan30                Up     30     192.168.200.65/26   0060.4704.DD02

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > Switch1
```

SWITCH1

```
Device Name: Router0
Device Model: 2911
Hostname: Router

Port                  Link   VLAN   IP Address          IPv6 Address                              MAC Address
GigabitEthernet0/0    Up     --     192.168.200.1/26    <not set>                                 0004.9AAE.E301
GigabitEthernet0/1    Up     --     192.168.200.129/30  <not set>                                 0004.9AAE.E302
GigabitEthernet0/2    Down   --     <not set>           <not set>                                 0004.9AAE.E303
Vlan1                 Down   1      <not set>           <not set>                                 0040.0BE5.3037

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > Router0
```

ROUTER0

```
Device Name: Router1
Device Model: 2911
Hostname: Router

Port                  Link   VLAN   IP Address          IPv6 Address                              MAC Address
GigabitEthernet0/0    Up     --     192.168.200.65/26   <not set>                                 0090.2B74.E672
GigabitEthernet0/1    Up     --     192.168.200.130/30  <not set>                                 0006.2A52.0D56
GigabitEthernet0/2    Down   --     <not set>           <not set>                                 0001.C7AC.B75A
Vlan1                 Down   1      <not set>           <not set>                                 0090.2B36.3DB0

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > Router1
```

ROUTER1

Arquivo do projeto. (Cisco Packet Tracer – pkt)

https://github.com/Geckkou/Projeto-de-Redes.git