Laboratório 8.5.1: Identificação e solução de problemas de rede da empresa 1

Diagrama de topologia

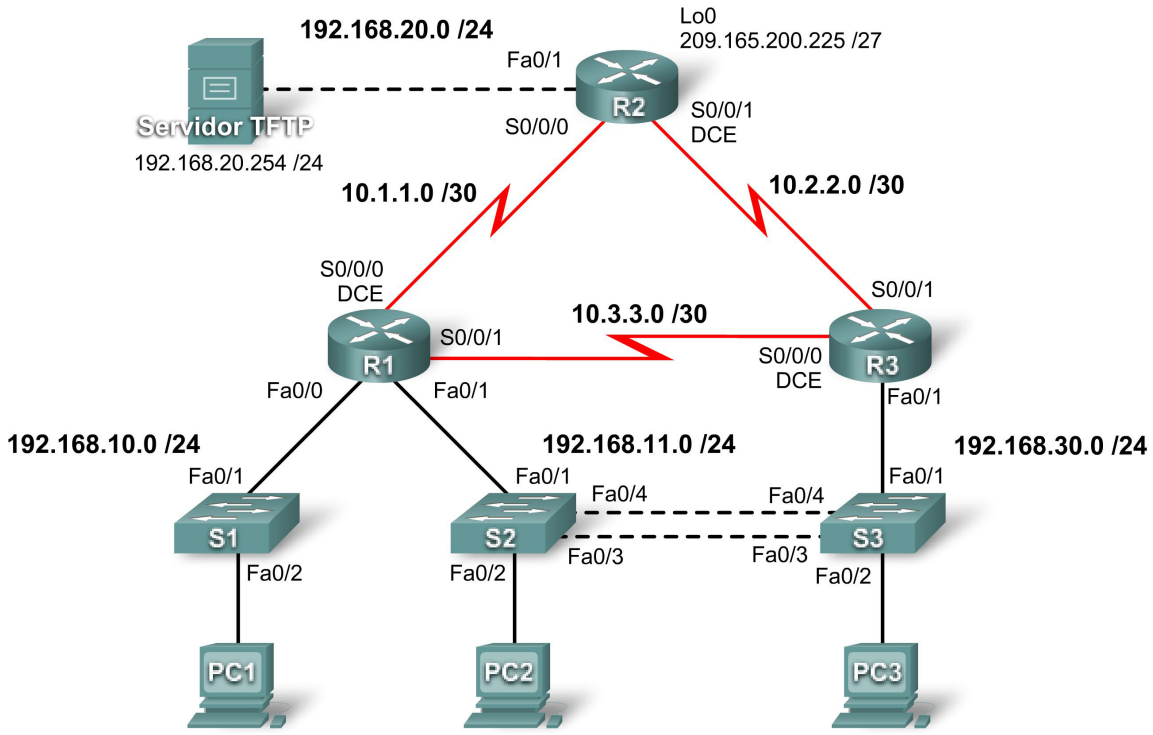

Tabela de endereçamento

Dispositivo	Interface	Endereço IP	Máscara de sub-rede	Gateway padrão
R1	**Fa0/0**	192.168.10.1	255.255.255.0	N/A
	Fa0/1	192.168.11.1	255.255.255.0	N/A
	S0/0/0	10.1.1.1	255.255.255.252	N/A
	S0/0/1	10.3.3.1	255.255.255.252	N/A
R2	**Fa0/1**	192.168.20.1	255.255.255.0	N/A
	S0/0/0	10.1.1.2	255.255.255.252	N/A
	S0/0/1	10.2.2.1	255.255.255.252	N/A
	Lo0	209.165.200.225	255.255.255.224	209.165.200.226
R3	**Fa0/1**	N/A	N/A	N/A
	Fa0/1.11	192.168.11.3	255.255.255.0	N/A
	Fa0/1.30	192.168.30.1	255.255.255.0	N/A
	S0/0/0	10.3.3.2	255.255.255.252	N/A
	S0/0/1	10.2.2.2	255.255.255.252	N/A
S1	**VLAN10**	DHCP	255.255.255.0	N/A
S2	**VLAN11**	192.168.11.2	255.255.255.0	N/A

S3	**VLAN30**	192.168.30.2	255.255.255.0	N/A
PC1	**Placa de rede**	192.168.10.10	255.255.255.0	192.168.10.1
PC2	**Placa de rede**	192.168.11.10	255.255.255.0	192.168.11.1
PC3	**Placa de rede**	192.168.30.10	255.255.255.0	192.168.30.1
Servidor TFTP	**Placa de rede**	192.168.20.254	255.255.255.0	192.168.20.1

Objetivos de aprendizagem

Após concluir este laboratório, você será capaz de:

- Cabo de rede de acordo com o diagrama de topologia
- Apagar a configuração de inicialização e recarregar o estado padrão de um roteador
- Carregar os roteadores e os switches com scripts fornecidos
- Localizar e corrigir todos os erros de rede
- Documentar a rede corrigida

Cenário

Foi solicitado que você corrija os erros de configuração na rede da empresa. Para este laboratório, não use a proteção por login ou senha em nenhuma linha de console para impedir o bloqueio acidental. Use **ciscoccna** para todas as senhas deste cenário.

Nota: como este laboratório é cumulativo, você utilizará todo o conhecimento e as técnicas de identificação e solução de problemas aprendidas no material anterior para concluir este laboratório com êxito.

Requisitos

- S2 é a raiz de spanning tree para VLAN 11, e S3 é a raiz de spanning tree para VLAN 30.
- S3 é um servidor VTP com S2 como um cliente.
- O link serial entre R1 e R2 é Frame Relay. Verifique se todos os roteadores podem executar ping em suas interfaces Frame Relay.
- O link serial entre R2 e R3 usa encapsulamento HDLC.
- O link serial entre R1 e R3 usa PPP.
- O link serial entre R1 e R3 é autenticado com o uso de CHAP.
- R2 deve ter procedimentos de login seguros por ser o roteador de extremidade da Internet.
- Todas as linhas vty, exceto as pertencentes a R2, só permitem conexões das sub-redes mostradas no diagrama de topologia, excluindo-se o endereço público.

Dica:

R2# **telnet 10.1.1.1 /source-interface loopback 0**

Trying 10.1.1.1 ...

% Conexão recusada por host remoto

- O spoofing do endereço IP de origem deve ser impedido em todos os links que não se conectam a outros roteadores.
- Os protocolos de roteamento devem ser seguros. Todos os roteadores RIP devem utilizar autenticação MD5.
- R3 não deve ser capaz de executar telnet para R2 pelo link serial conectado diretamente.
- R3 tem acesso a VLANs 11 e 30 pela porta Fast Ethernet 0/0.

- O servidor TFTP não deve obter nenhum tráfego que possua endereço de origem fora da sub-rede. Todos os dispositivos têm acesso ao servidor TFTP.
- Todos os dispositivos na sub-rede 192.168.10.0 devem ser capazes de obter os endereços IP de DHCP em R1. Isso inclui o S1.
- R1 deve ser acessível via SDM.
- Todos os endereços mostrados no diagrama devem ser alcançáveis em todos os dispositivos.

Tarefa 1: Carregar roteadores com os scripts fornecidos

```
!----------------------------------------
!                  R1
!----------------------------------------
no service password-encryption
!
hostname R1
!
boot-start-marker
boot-end-marker
!
security passwords min-length 6
enable secret 5 ciscoccna
!
ip cef
!
ip dhcp pool Access1
   network 192.168.10.0 255.255.255.0
   default-router 192.168.10.1
!
no ip domain lookup
!
username R3 password 0 ciscoccna
username ccna password 0 ciscoccna
!
interface FastEthernet0/0
 ip address 192.168.10.1 255.255.255.0
 ip rip authentication mode md5
 ip rip authentication key-chain RIP_KEY
 no shutdown
!
interface FastEthernet0/1
 ip address 192.168.11.1 255.255.255.0
 ip rip authentication mode md5
 ip rip authentication key-chain RIP_KEY
 no shutdown
!
interface Serial0/0/0
 ip address 10.1.1.1 255.255.255.252
 ip rip authentication mode md5
 ip rip authentication key-chain RIP_KEY
 encapsulation frame-relay

 clockrate 128000
 frame-relay map ip 10.1.1.1 201
```

```
 frame-relay map ip 10.1.1.2 201 broadcast
 no frame-relay inverse-arp
 no shutdown
!
interface Serial0/0/1
 ip address 10.3.3.1 255.255.255.252
 ip rip authentication mode md5
 ip rip authentication key-chain RIP_KEY
 encapsulation ppp
 ppp authentication chap
 no shutdown
!
!
router rip
 version 2
 passive-interface default
 network 192.168.10.0
 network 192.168.11.0
 no auto-summary
!
ip classless
!
no ip http server
!
ip access-list standard Anti-spoofing
 permit 192.168.10.0 0.0.0.255
 deny  any
ip access-list standard VTY
 permit 10.0.0.0 0.255.255.255
 permit 192.168.10.0 0.0.0.255
 permit 192.168.11.0 0.0.0.255
 permit 192.168.20.0 0.0.0.255
 permit 192.168.30.0 0.0.0.255
!
line con 0
 exec-timeout 0 0
 logging synchronous
line aux 0
line vty 0 4
 access-class VTY in
 login local
!
end
!----------------------------------------
!                  R2
!----------------------------------------
no service password-encryption
!
hostname R2
!
security passwords min-length 6
enable secret ciscoccna
!
aaa new-model
!
```

```
aaa authentication login LOCAL_AUTH local
aaa session-id common
!
ip cef
!
no ip domain lookup
!
key chain RIP_KEY
 key 1
  key-string cisco
username ccna password 0 ciscoccna
!
interface Loopback0
 description Simulated ISP Connection
 ip address 209.165.200.245 255.255.255.224
!
interface FastEthernet0/0
 ip address 192.168.20.1 255.255.255.0
 ip access-group TFTP out
 ip access-group Anti-spoofing in
 ip nat outside
 duplex auto
 speed auto
!
interface FastEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface Serial0/0/0
 ip address 10.1.1.2 255.255.255.0
 ip nat inside
 encapsulation frame-relay
 no keepalive
 frame-relay map ip 10.1.1.1 201 broadcast
 no frame-relay inverse-arp
!
interface Serial0/0/1
 ip address 10.2.2.1 255.255.255.0
 ip access-group R3-telnet in
 ip nat inside
 ip rip authentication mode md5
 ip rip authentication key-chain RIP_KEY
 clockrate 128000
!
!
router rip
 version 2
 passive-interface default
 no passive-interface Serial0/0/0
 no passive-interface Serial0/0/1
 network 10.0.0.0
 network 192.168.20.0
 default-information originate
```

```
 no auto-summary
!
ip classless
ip route 0.0.0.0 0.0.0.0 209.165.200.226
!
no ip http server
ip nat inside source list NAT interface FastEthernet0/0 overload
!
ip access-list standard Anti-spoofing
 permit 192.168.20.0 0.0.0.255
 deny  any
ip access-list standard NAT
 permit 10.0.0.0 0.255.255.255
 permit 192.168.0.0 0.0.255.255
!
ip access-list extended R3-telnet
 deny   tcp host 10.2.2.2 host 10.2.2.1 eq telnet
 deny   tcp host 10.3.3.2 host 10.2.2.1 eq telnet
 deny   tcp host 192.168.11.3 host 10.2.2.1 eq telnet
 deny   tcp host 192.168.30.1 host 10.2.2.1 eq telnet
 permit ip any any
!
ip access-list standard TFTP
 permit 192.168.20.0 0.0.0.255
!
control-plane
!
line con 0
 exec-timeout 0 0
 logging synchronous
line aux 0
 exec-timeout 15 0
 logging synchronous
 login authentication local_auth
 transport output telnet
line vty 0 4
 exec-timeout 15 0
 logging synchronous
 login authentication local_auth
 transport input telnet
!
end
!----------------------------------------
!                  R3
!----------------------------------------
no service password-encryption
!
hostname R3
!
security passwords min-length 6
enable secret ciscoccna
!
no aaa new-model
!
ip cef
```

```
!
no ip domain lookup
!
key chain RIP_KEY
 key 1
  key-string cisco
username R1 password 0 ciscoccna
username ccna password 0 ciscoccna
!
interface FastEthernet0/1
 no shutdown
!
interface FastEthernet0/1.11
 encapsulation dot1Q 11
 ip address 192.168.11.3 255.255.255.0
 no snmp trap link-status
!
interface FastEthernet0/1.30
 encapsulation dot1Q 30
 ip address 192.168.30.1 255.255.255.0
 ip access-group Anti-spoofing in
 no snmp trap link-status
!
!
interface Serial0/0/0
 ip address 10.3.3.2 255.255.255.252
 encapsulation ppp
 clockrate 125000
 ppp authentication chap
!
interface Serial0/0/1
 ip address 10.2.2.2 255.255.255.252
!
router rip
 version 2
 passive-interface default
 no passive-interface FastEthernet0/0.11
 no passive-interface FastEthernet0/0.30
 no passive-interface Serial0/0/0
 no passive-interface Serial0/0/1
 network 10.0.0.0
 network 192.168.11.0
 network 192.168.30.0
 no auto-summary
!
ip classless
!
ip http server
!
ip access-list standard Anti-spoofing
 permit 192.168.30.0 0.0.0.255
 deny  any
ip access-list standard VTY
 permit 10.0.0.0 0.255.255.255
 permit 192.168.10.0 0.0.0.255
```

```
 permit 192.168.11.0 0.0.0.255
 permit 192.168.20.0 0.0.0.255
 permit 192.168.30.0 0.0.0.255
!
control-plane
!
line con 0
 exec-timeout 0 0
 logging synchronous
line aux 0
 exec-timeout 15 0
 logging synchronous
line vty 0 4
 access-class VTY in
 exec-timeout 15 0
 logging synchronous
 login local
!
end
!----------------------------------------
!                S1
!----------------------------------------
no service password-encryption
!
hostname S1
!
security passwords min-length 6
enable secret ciscoccna
!
no aaa new-model
vtp domain CCNA_Troubleshooting
vtp mode transparent
vtp password ciscoccna
ip subnet-zero
!
no ip domain-lookup
!
no file verify auto
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
vlan 10
!
interface FastEthernet0/1
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/2
 switchport access vlan 10
 switchport mode access
!
interface range FastEthernet0/3-24
!
```

```
interface GigabitEthernet0/1
 shutdown
!
interface GigabitEthernet0/2
 shutdown
!
interface Vlan1
 no ip address
 no ip route-cache
!
interface Vlan10
 ip address dhcp
 no ip route-cache
!
ip default-gateway 192.168.10.1
ip http server
!
control-plane
!
line con 0
 exec-timeout 0 0
 logging synchronous
line vty 0 4
 password ciscoccna
 login
line vty 5 15
 no login
!
end
!----------------------------------------
!                S2
!----------------------------------------
no service password-encryption
!
hostname S2
!
security passwords min-length 6
enable secret ciscoccna
!
no aaa new-model
vtp domain CCNA_Troubleshooting
vtp mode transparent
vtp password ciscoccna
ip subnet-zero
!
no ip domain-lookup
!
no file verify auto
!
spanning-tree mode rapid-pvst
spanning-tree extend system-id
spanning-tree vlan 11 priority 24576
spanning-tree vlan 30 priority 28672
!
vlan internal allocation policy ascending
```

```
!
interface FastEthernet0/1
 switchport access vlan 11
 switchport mode access
!
interface FastEthernet0/2
 switchport access vlan 11
 switchport mode access
!
interface FastEthernet0/3
 switchport trunk native vlan 99
 switchport trunk allowed vlan 11,30
 switchport mode trunk
!
interface FastEthernet0/4
 switchport trunk native vlan 99
 switchport trunk allowed vlan 11,30
 switchport mode trunk
!
interface range FastEthernet0/5-24
 shutdown
!
interface GigabitEthernet0/1
 shutdown
!
interface GigabitEthernet0/2
 shutdown
!
interface Vlan1
 no ip address
 no ip route-cache
!
interface Vlan11
 ip address 192.168.11.2 255.255.255.0
 no ip route-cache
!
ip http server
!
control-plane
!
line con 0
 exec-timeout 0 0
 logging synchronous
line vty 0 4
 password ciscoccna
 login
line vty 5 15
 no login
!
end
!----------------------------------------
!                S3
!----------------------------------------
no service password-encryption
!
```

```
hostname S3
!
security passwords min-length 6
enable secret ciscoccna
!
no aaa new-model
vtp domain CCNA_troubleshooting
vtp mode server
vtp password ciscoccna
ip subnet-zero
!
no ip domain-lookup
!
no file verify auto
!
spanning-tree mode rapid-pvst
spanning-tree extend system-id
spanning-tree vlan 11 priority 28672
spanning-tree vlan 30 priority 24576
!
vlan internal allocation policy ascending
!
!
interface FastEthernet0/1
 switchport trunk allowed vlan 30
 switchport mode trunk
!
interface FastEthernet0/2
 switchport access vlan 30
 switchport mode access
!
interface FastEthernet0/3
 switchport trunk native vlan 99
 switchport trunk allowed vlan 11,30
 switchport mode trunk
!
interface FastEthernet0/4
 switchport trunk native vlan 99
 switchport trunk allowed vlan 11,30
 switchport mode trunk
!
interface range FastEthernet0/5-24
 shutdown
!
interface GigabitEthernet0/1
 shutdown
!
interface GigabitEthernet0/2
 shutdown
!
interface Vlan1
 no ip address
 no ip route-cache
!
interface Vlan30
```

```
 ip address 192.168.30.2 255.255.255.0
 no ip route-cache
!
ip default-gateway 192.168.30.1
ip http server
!
control-plane
!
line con 0
 exec-timeout 5 0
 logging synchronous
line vty 0 4
 password ciscoccna
 login
line vty 5 15
 no login
!
end
```

Tarefa 2: Localizar e corrigir todos erros de rede

Tarefa 3: Verificar se os requisitos foram totalmente atendidos

Tarefa 4: Documentar a rede corrigida

Tarefa 5: Limpar

Apague as configurações e recarregue os roteadores. Desconecte e guarde o cabeamento. Para PC normalmente conectados a outras redes (como a rede local escolar ou a Internet), reconecte o cabeamento apropriado e restaure as configurações TCP/IP.