

Настройка NAT.

Лабораторная работа № 12

Шулуужук А. В.

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Российский университет дружбы народов, Москва, Россия

Приобретение практических навыков по настройке доступа локальной сети к внешней сети посредством NAT.

Выполнение лабораторной работы

```
Router(config)#hostname provider-avshuluuzhuk-gw-1
provider-avshuluuzhuk-gw-1(config)#line vty 0 4
provider-avshuluuzhuk-gw-1(config-line)#password cisco
provider-avshuluuzhuk-gw-1(config-line)#login
provider-avshuluuzhuk-gw-1(config-line)#exit
provider-avshuluuzhuk-gw-1(config)#line console 0
provider-avshuluuzhuk-gw-1(config-line)#password cisco
provider-avshuluuzhuk-gw-1(config-line)#login
provider-avshuluuzhuk-gw-1(config-line)#exit
provider-avshuluuzhuk-gw-1(config)#enable secret cisco
provider-avshuluuzhuk-gw-1(config)#service password-encryption
provider-avshuluuzhuk-gw-1(config)#username admin privilege 1 secret cisco
provider-avshuluuzhuk-gw-1(config)#^Z
provider-avshuluuzhuk-gw-1#
%SYS-5-CONFIG_I: Configured from console by console
wr m
Building configuration...
[OK]
provider-avshuluuzhuk-gw-1#
```

Рис. 1: Первоначальная настройка маршрутизатора provider-gw-1

```
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname provider-avshuluuzhuk-sw-1
provider-avshuluuzhuk-sw-1(config)#line vty 0 4
provider-avshuluuzhuk-sw-1(config-line)#password cisco
provider-avshuluuzhuk-sw-1(config-line)#login
provider-avshuluuzhuk-sw-1(config-line)#exit
provider-avshuluuzhuk-sw-1(config)#line console 0
provider-avshuluuzhuk-sw-1(config-line)#password cisco
provider-avshuluuzhuk-sw-1(config-line)#login
provider-avshuluuzhuk-sw-1(config-line)#exit
provider-avshuluuzhuk-sw-1(config)#enable secret cisco
provider-avshuluuzhuk-sw-1(config)#service password-encryption
provider-avshuluuzhuk-sw-1(config)#username admin privilege 1 secret cisco
provider-avshuluuzhuk-sw-1(config)#^Z
provider-avshuluuzhuk-sw-1#
%SYS-5-CONFIG_I: Configured from console by console
wr m
Building configuration...
[OK]
provider-avshuluuzhuk-sw-1#
```

Рис. 2: Первоначальная настройка коммутатора provider-sw-1

```
provider-avshaluuzhuk-gw-1#conf t
Enter configuration commands, one per line. End with CHTL/Z.
provider-avshaluuzhuk-gw-1(config)#interface f0/0
provider-avshaluuzhuk-gw-1(config-if)#no shutdown

provider-avshaluuzhuk-gw-1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
exit
provider-avshaluuzhuk-gw-1(config)#interface f0/0.4
provider-avshaluuzhuk-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.4, changed state to up

provider-avshaluuzhuk-gw-1(config-subif)#encapsulation dot1Q 4
provider-avshaluuzhuk-gw-1(config-subif)#ip address 198.51.100.1 255.255.255.240
provider-avshaluuzhuk-gw-1(config-subif)#description mak-donskaya
provider-avshaluuzhuk-gw-1(config-subif)#exit
provider-avshaluuzhuk-gw-1(config)#interface f0/1
provider-avshaluuzhuk-gw-1(config-if)#no shutdown

provider-avshaluuzhuk-gw-1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

provider-avshaluuzhuk-gw-1(config-if)#ip address 192.0.2.1 255.255.255.0
provider-avshaluuzhuk-gw-1(config-if)#description internet
provider-avshaluuzhuk-gw-1(config-if)#exit
provider-avshaluuzhuk-gw-1(config)#Z
provider-avshaluuzhuk-gw-1#
%SYS-5-CONFIG_I: Configured from console by console
vr #
Building configuration...
[OK]
provider-avshaluuzhuk-gw-1#
```

Рис. 3: Настройка интерфейсов маршрутизатора provider-gw-1

```
provider-avshuluzhuk-sw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
provider-avshuluzhuk-sw-1(config)#interface f0/1
provider-avshuluzhuk-sw-1(config-if)#switchport mode trunk

provider-avshuluzhuk-sw-1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
exit
provider-avshuluzhuk-sw-1(config)#interface f0/2
provider-avshuluzhuk-sw-1(config-if)#switchport mode trunk

provider-avshuluzhuk-sw-1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
exit
provider-avshuluzhuk-sw-1(config)#vlan
% Incomplete command.
provider-avshuluzhuk-sw-1(config)#vlan 4
provider-avshuluzhuk-sw-1(config-vlan)#name nat
provider-avshuluzhuk-sw-1(config-vlan)#exit
provider-avshuluzhuk-sw-1(config)#interface vlan4
provider-avshuluzhuk-sw-1(config-if)#
%LINE-5-CHANGED: Interface Vlan4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan4, changed state to up

provider-avshuluzhuk-sw-1(config-if)#no shutdown
provider-avshuluzhuk-sw-1(config-if)#exit
provider-avshuluzhuk-sw-1(config)#2
provider-avshuluzhuk-sw-1#
%SYS-5-CONFIG_I: Configured from console by console
wr n
Building configuration...
[OK]
provider-avshuluzhuk-sw-1#
```

Рис. 4: Настройка интерфейсов коммутатора provider-sw-1

```
msk-donskaya-avshuluuzhuk-gw-1(config)#interface f0/1
msk-donskaya-avshuluuzhuk-gw-1(config-if)#no shutdown

msk-donskaya-avshuluuzhuk-gw-1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
exit
msk-donskaya-avshuluuzhuk-gw-1(config)#interface f0/1.4
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/1.4, changed state to up

msk-donskaya-avshuluuzhuk-gw-1(config-subif)#encapsulation dot1Q 4
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#ip address 198.51.100.2 255.255.255.240
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#description internet
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#^Z
msk-donskaya-avshuluuzhuk-gw-1#
%SYS-5-CONFIG_I: Configured from console by console
wr m
Building configuration...
[OK]
msk-donskaya-avshuluuzhuk-gw-1#conf t
^
% Invalid input detected at '^' marker.

msk-donskaya-avshuluuzhuk-gw-1#conf t
^
% Invalid input detected at '^' marker.

msk-donskaya-avshuluuzhuk-gw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-avshuluuzhuk-gw-1(config)#ip route 0.0.0.0 0.0.0.0 198.51.100.1
msk-donskaya-avshuluuzhuk-gw-1(config)#exit
msk-donskaya-avshuluuzhuk-gw-1#
%SYS-5-CONFIG_I: Configured from console by console
wr m
Building configuration...
[OK]
msk-donskaya-avshuluuzhuk-gw-1#
```

Рис. 5: Настройка интерфейсов маршрутизатора msk-donskaya-gw-1


```
msk-donskaya-avshuluuzhuk-gw-1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-donskaya-avshuluuzhuk-gw-1(config)#ip nat pool main-pool 198.51.100.2 198.51.100.14 netmask
255.255.255.240
msk-donskaya-avshuluuzhuk-gw-1(config)#^Z
msk-donskaya-avshuluuzhuk-gw-1#
%SYS-5-CONFIG_I: Configured from console by console
wr m
Building configuration...
```

Рис. 6: Настройка пула адресов для NAT

```
msk-donskaya-avshuluuzhuk-gw-1(config)#ip access-list extended natinet
msk-donskaya-avshuluuzhuk-gw-1(config-ext-nacl)#ip access-list extended nat-inet
msk-donskaya-avshuluuzhuk-gw-1(config-ext-nacl)#remark dk
msk-donskaya-avshuluuzhuk-gw-1(config-ext-nacl)#permit tcp 10.128.3.0 0.0.0.255 host 192.0.2.11 eq
80
msk-donskaya-avshuluuzhuk-gw-1(config-ext-nacl)#permit tcp 10.128.3.0 0.0.0.255 host 192.0.2.12 eq
80
msk-donskaya-avshuluuzhuk-gw-1(config-ext-nacl)#remark departments
msk-donskaya-avshuluuzhuk-gw-1(config-ext-nacl)#permit tcp 10.128.4.0 0.0.0.255 host 192.0.2.13 eq
80
msk-donskaya-avshuluuzhuk-gw-1(config-ext-nacl)#remark adm
msk-donskaya-avshuluuzhuk-gw-1(config-ext-nacl)#permit tcp 10.128.5.0 0.0.0.255 host 192.0.2.14 eq
80
msk-donskaya-avshuluuzhuk-gw-1(config-ext-nacl)#remark admin
msk-donskaya-avshuluuzhuk-gw-1(config-ext-nacl)#permit ip host 10.128.6.200 any
msk-donskaya-avshuluuzhuk-gw-1(config-ext-nacl)#
```

Рис. 7: Настройка списка доступа для NAT

```
msk-donskaya-avshuluuzhuk-gw-1(config)#ip nat inside source list nat-inet pool main-pool overload
msk-donskaya-avshuluuzhuk-gw-1(config)#int f0/0.3
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#ip nat inside
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#interface f0/0.101
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#ip nat inside
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#exit
msk-donskaya-avshuluuzhuk-gw-1(config)#interface f0/0.102
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#ip nat inside
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#exit
msk-donskaya-avshuluuzhuk-gw-1(config)#interface f0/0.103
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#ip nat inside
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#exit
msk-donskaya-avshuluuzhuk-gw-1(config)#interface f0/0.104
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#ip nat inside
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#exit
msk-donskaya-avshuluuzhuk-gw-1(config)#interface f0/1.4
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#ip nat outside
msk-donskaya-avshuluuzhuk-gw-1(config-subif)#exit
msk-donskaya-avshuluuzhuk-gw-1(config)#^Z
msk-donskaya-avshuluuzhuk-gw-1#
%SYS-5-CONFIG_I: Configured from console by console
wr m
Building configuration...
[OK]
msk-donskaya-avshuluuzhuk-gw-1#
```

Рис. 8: Настройка NAT

```
msk-donskaya-avshuluuzhuk-gw-1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-donskaya-avshuluuzhuk-gw-1(config)#ip nat inside source static tcp 10.128.0.2 80 198.51.100.2
80
msk-donskaya-avshuluuzhuk-gw-1(config)#ip nat inside source static tcp 10.128.0.3 20 198.51.100.3
20
msk-donskaya-avshuluuzhuk-gw-1(config)#ip nat inside source static tcp 10.128.0.3 21 198.51.100.3
21
msk-donskaya-avshuluuzhuk-gw-1(config)#ip nat inside source static tcp 10.128.0.4 25 198.51.100.4
25
msk-donskaya-avshuluuzhuk-gw-1(config)#ip nat inside source static tcp 10.128.0.4 110 198.51.100.4
110
msk-donskaya-avshuluuzhuk-gw-1(config)#ip nat inside source static tcp 10.128.6.200 3389
198.51.100.10 3389
msk-donskaya-avshuluuzhuk-gw-1(config)#
```

Рис. 9: Настройка доступа из Интернета

Выводы

В результате выполнения лабораторной работы были приобретены практические навыки по настройке доступа локальной сети к внешней сети посредством NAT.