Презентация по лабораторной работе 16

Администрирование локальных сетей

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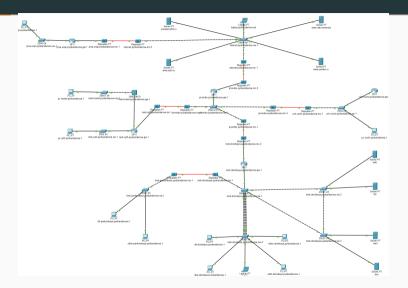
Вводная часть



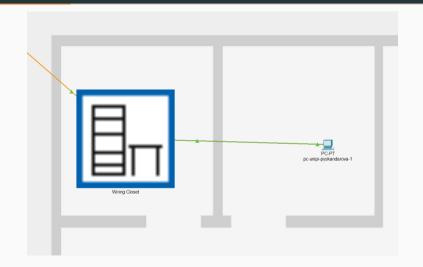
Получение навыков настройки VPN-туннеля через незащищённое Интернет-соединение.

Выполнение лабораторной работы

Разместить в рабочей области проекта в соответствии с модельными предположениями оборудование для сети Университета г. Пиза.



В физической рабочей области проекта создать город Пиза, здание Университета г. Пиза. Переместить туда соответствующее оборудование.



Сделать первоначальную настройку и настройку и настройку интерфейсов оборудования сети Университета г. Пиза. Первоначальная настройка маршрутизатора pisa-unipi-gw-1.

Router>enable Router#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Router(config) #hostname pisa-unipi-pyskandarova-gw-1 pisa-unipi-pyskandarova-gw-1(config)#line vtv 0 4 nisa-unini-pyskandarova-gw-1(config-line) #password cisco pisa-unipi-pyskandarova-gw-1(config-line)#login pisa-unipi-pyskandarova-gw-1(config-line)#exit pisa-unipi-pyskandarova-gw-1(config)#line console 0 pisa-unipi-pyskandarova-gw-1(config-line) #password cisco pisa-unipi-pyskandarova-gw-1(config-line)#login pisa-unipi-pyskandarova-gw-1(config-line) #exit pisa-unipi-pyskandarova-gw-1(config) #enable secret cisco pisa-unipi-pyskandarova-gw-1 (config) #service password-encryption pisa-unipi-pyskandarova-gw-1(config) #usernname admin privilege 1 secret cisco % Invalid input detected at '^' marker. pisa-unipi-pyskandarova-qw-1(confiq) #username admin privilege 1 secret cisco pisa-unipi-pyskandarova-gw-1(config)#ip domain-name unipi.edu pisa-unipi-pyskandarova-gw-1(config)#crypto key generate rsa The name for the keys will be: pisa-unipi-pyskandarova-qw-1.unipi.edu Choose the size of the key modulus in the range of 360 to 4096 for your General Purpose Keys. Choosing a key modulus greater than 512 may take a few minutes How many bits in the modulus [512]: % Generating 512 bit RSA kevs, keys will be non-exportable...[OK] pisa-unipi-pyskandarova-gw-1(config)#line vtv 0 4 *Mar 1 0:3:53.515: RSA key size needs to be at least 768 bits for ssh version 2 *Mar 1 0:3:53.536: %SSH-5-ENABLED: SSH 1.5 has been enabled pisa-unipi-pyskandarova-gw-1(config-line)#transport input ssh

Первоначальная настройка коммутатора pisa-unipi-sw-1.

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch (config) #hostname pisa-unipi-pyskandarova-sw-1
pisa-unipi-pyskandarova-sw-1(config) #line vtv 0 4
pisa-unipi-pyskandarova-sw-1(config-line) #password cisco
pisa-unipi-pyskandarova-sw-1(config-line) #login
pisa-unipi-pyskandarova-sw-1(config-line) #exit
pisa-unipi-pyskandarova-sw-1(config)#line console 0
pisa-unipi-pyskandarova-sw-1(config-line) #password
% Incomplete command.
pisa-unipi-pyskandarova-sw-1(config-line) #password cisco
pisa-unipi-pyskandarova-sw-1(config-line) #login
pisa-unipi-pyskandarova-sw-1(config-line)#exit
pisa-unipi-pyskandarova-sw-1(config) #enable secret cisco
pisa-unipi-pyskandarova-sw-1 (config) #service password-encryption
pisa-unipi-pyskandarova-sw-1(config) #username admin privilege 1 secret cisco
pisa-unipi-pyskandarova-sw-1(config)#ip_domain-name_unipi.edu
pisa-unipi-pyskandarova-sw-1(config)#crvpto kev generate rsa
The name for the keys will be: pisa-unipi-pyskandarova-sw-1.unipi.edu
Choose the size of the key modulus in the range of 360 to 4096 for your
  General Purpose Keys. Choosing a key modulus greater than 512 may take
  a few minutes.
How many bits in the modulus [512]:
% Generating 512 bit RSA keys, keys will be non-exportable...[OK]
pisa-unipi-pyskandarova-sw-1(config)#line vtv 0 4
*Mar 1 0:8:45.42: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 0:8:45.42: %SSH-5-ENABLED: SSH 1.5 has been enabled
pisa-unipi-pyskandarova-sw-1(config-line) #transport input ssh
```

Настройка интерфейсов маршрутизатора pisa-unipi-gw-1.

```
pisa-unipi-pyskandarova-gw-1(config-if)#no shutdown
pisa-unipi-pyskandarova-gw-1(config-if)#
ALINE-5-CHANGED: Interface FastEthernet0/0, changed state to up
$1.TMFDBCFD-5-HDDCWN: Line protocol on Interface EastEthernet(/), channel state to up
pisa-unipi-pyskandarova-gw-1(config-if)#exit
nisa-unini-nyskandarova-ov-1 (config) #interface f0/0.401
pisa-unipi-pyskandarova-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.401, changed state to up
ALINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.401, changed state to up
pisa-unipi-pyskandarova-gw-1(config-subif)#encapsulation dot10 401
pisa-unipi-pyskandarova-gw-1(config-subif) #ip address 10.301.0.1 255.255.255.0
% Invalid input detected at '^' marker.
pisa-unipi-pyskandarova-gw-1(config-subif)#ip address 10.131.0.1 255.255.255.0
pisa-unini-pyskandarova-gy-1 (config-subif) #description unini-main
pisa-unipi-pyskandarova-gw-1(config-subif) #exit
pisa-unipi-pyskandarova-gw-1(config)#interface f0/1
pisa-unipi-pyskandarova-gw-1(config-if) #no shutdown
pisa-unipi-pyskandarova-gw-1(config-if)#
ALINE-5-CHANGED: Interface FastEthernetO/1, changed state to up
%LINEPRO70-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
nisa-unini-nyskandarova-m-1 (config-if) fin address 192.0.2
pisa-unipi-pyskandarova-gw-1 con0 is now available
Press BETURN to get started.
User Access Verification
pisa-unipi-pyskandarova-gw-1>enable
pisa-unipi-pyskandarova-gw-l#configure terminal
Enter configuration commands, one per line. End with CMTL/2
pisa-unipi-pyskandarova-gw-1(confiq) # interface f0/1
nisa-unini-nyekandaroya-gw-1 (config-if) ino shutdown
pisa-unipi-pyskandarova-gw-1(config-if)#ip address 192.0.2.20 255.255.255.0
nisa-unini-nyskandarova-ow-1(config-if)#description internet
nisa-unini-nyskandarova-ow-1(config-if) fexit
pisa-unipi-pyskandarova-gw-1(config) #ip rout 0.0.0.0 0.0.0.0 192.0.2.1
```

Ambiguous command: "ip rout 0.0.0.0 0.0.0 192.0.2.1"
pisa-unioi-pyskandarova-ow-1(config)#ip route 0.0.0.0 0.0.0.192.0.2.1

pisa-unipi-pyskandarova-gw-1(config)#interface f0/0

Настройка интерфейсов коммутатора pisa-unipi-sw-1

```
Password:
pisa-unipi-pyskandarova-sw-1>enable
Password:
pisa-unipi-pyskandarova-sw-1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
pisa-unipi-pyskandarova-sw-1(config)#interface f0/24
pisa-unipi-pyskandarova-sw-1 (config-if) #switchport mode trunk
pisa-unipi-pyskandarova-sw-1(config-if)#exit
pisa-unipi-pyskandarova-sw-1(config)#interface f0/1
pisa-unipi-pyskandarova-sw-1(config-if) #switchport mode access
pisa-unipi-pyskandarova-sw-1(config-if) #switchport access vlan 401
% Access VLAN does not exist. Creating vlan 401
pisa-unipi-pyskandarova-sw-1(config-if)#exit
pisa-unipi-pyskandarova-sw-1(config)#vlan 401
pisa-unipi-pyskandarova-sw-1(config-vlan) #name unipi-main
pisa-unipi-pyskandarova-sw-1(config-ylan)#exit
pisa-unipi-pyskandarova-sw-1(config)#interface vlan401
pisa-unipi-pyskandarova-sw-1(config-if)#
%LINK-5-CHANGED: Interface Vlan401, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan401, changed state to up
pisa-unipi-pyskandarova-sw-1(config-if)#no shutdown
pisa-unipi-pyskandarova-sw-1(config-if)#exit
```

Настроить VPN на основе протокола GRE [25]. Настройка маршрутизатора msk-donskaya-gw-1.

```
Password:
msk-donskava-pvskandarova-gw-1>enable
Password:
msk-donskava-pvskandarova-gw-1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskava-pvskandarova-gw-1(config)#interface Tunnel0
msk-donskava-pvskandarova-gw-1(config-if)#
%LINK-5-CHANGED: Interface TunnelO, changed state to up
msk-donskaya-pyskandarova-gw-1(config-if) #ip address 10.128.255.253 255.255.255.252
msk-donskava-pyskandarova-gw-1(config-if) #tunnel source f0/1.4
msk-donskaya-pyskandarova-gw-1(config-if) #tunnel destination 192.0.2.20
msk-donskava-pvskandarova-gw-1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface TunnelO, changed state to up
msk-donskava-pvskandarova-gw-1(config-if)#exit
msk-donskava-pvskandarova-gw-1(config)#interface loopback0
msk-donskava-pyskandarova-gw-1(config-if)#
%LINK-5-CHANGED: Interface LoopbackO, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface LoopbackO, changed state to up
msk-donskava-pvskandarova-gw-1(config-if)#ip address 10.128.254.1 255.255.255.255
msk-donskava-pvskandarova-gw-1(config-if) #exit
msk-donskaya-pyskandarova-gw-1(config) #ip route 10.128.254.5 255.255.255.255 10.128.255.254
msk-donskaya-pyskandarova-gw-1(config)#
```

Настройка маршрутизатора pisa-unipi-gw-1.

```
pisa-unipi-pyskandarova-gw-1(config)#interface Tunnel0
pisa-unipi-pyskandarova-gw-1(config-if)#
%LINK-5-CHANGED: Interface TunnelO, changed state to up
pisa-unipi-pyskandarova-gw-1(config-if)#ip address 10.128.255.254 255.255.255.252
pisa-unipi-pyskandarova-gw-1(config-if) #tunnel source f0/1
pisa-unipi-pyskandarova-gw-1(config-if) #tunnel destination 198.51.100.2
pisa-unipi-pyskandarova-gw-1(config-if)#
*LINEPROTO-5-UPDOWN: Line protocol on Interface TunnelO, changed state to up
pisa-unipi-pyskandarova-gw-1(config-if) #exit
pisa-unipi-pyskandarova-gw-1(config)#interface loopback0
pisa-unipi-pvskandarova-gw-1(config-if)#
%LINK-5-CHANGED: Interface LoopbackO, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface LoopbackO, changed state to up
pisa-unipi-pyskandarova-gw-1(config-if) #ip address 10.128.254.5 255.255.255.255
pisa-unipi-pyskandarova-gw-1(config-if)#exit
pisa-unipi-pyskandarova-gw-1(config) #ip route 10.128.254.1 255.255.255.255
% Incomplete command.
pisa-unipi-pyskandarova-gw-1(config)#ip route 10.128.254.1 255.255.255.255 10.128.255.253
pisa-unipi-pyskandarova-gw-1(config) #router ospf 1
pisa-unipi-pyskandarova-gw-1(config-router) #router-id 10.128.254.5
pisa-unipi-pyskandarova-gw-1(config-router)#network 10.0.0.0 0.255.255.255 area 0
pisa-unipi-pvskandarova-gw-1(config-router) #exit
```

Результаты



Получены навыки настройки VPN-туннеля через незащищённое Интернет-соединение.