

ФЕДЕРАЛЬНОЕ АГЕНТСТВО СВЯЗИ  
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ  
УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ  
«САНКТ-ПЕТЕРБУРГСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ  
ТЕЛЕКОММУНИКАЦИЙ ИМ. ПРОФ. М.А. БОНЧ-БРУЕВИЧА»  
(СПбГУТ)

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Факультет Инфокоммуникационных сетей и систем

Кафедра Защищенных систем связи

**Лабораторная работа №7**

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(подпись)

Проверил:

Скорых М.А.

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(уч. степень, уч. звание, Ф.И.О.)

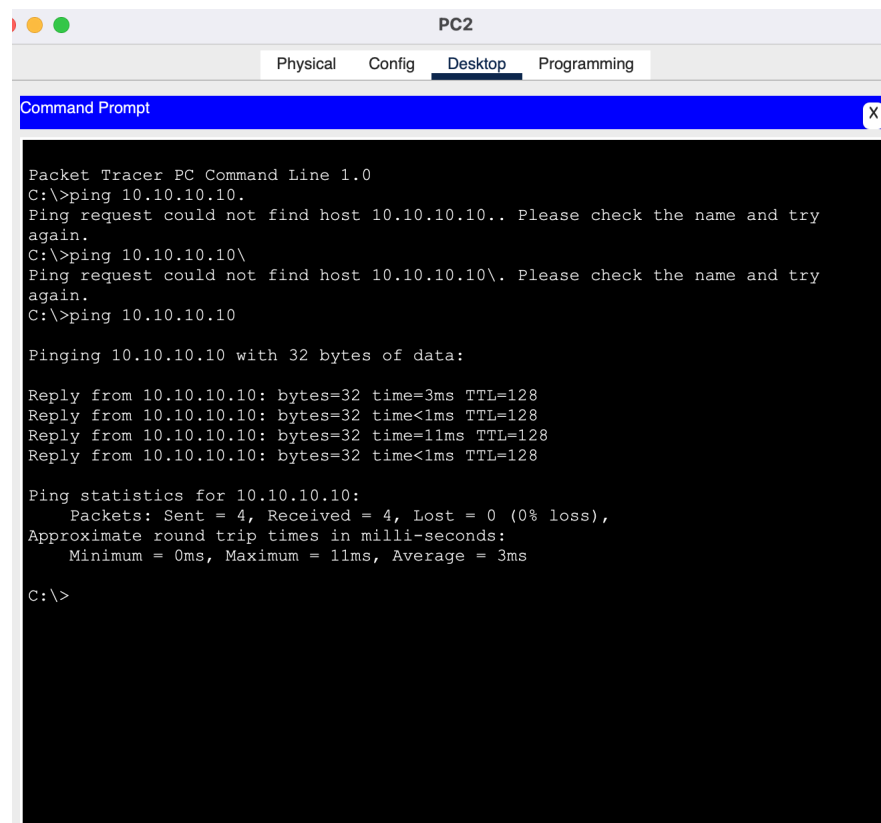
(подпись)

Санкт-Петербург

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## 1. 11.1.10 - Implement Port Security

- ПК 2 имеет возможность отправлять ping запросы в сети.



The screenshot shows a Packet Tracer PC window for PC2. The 'Desktop' tab is active, displaying a Command Prompt. The user has entered several ping commands for the IP address 10.10.10.10. The first two attempts fail with the message 'Ping request could not find host 10.10.10.10.. Please check the name and try again.' The third attempt is successful, showing four replies with 32 bytes of data, times of 3ms, 1ms, 11ms, and 1ms, and a TTL of 128. The ping statistics show 4 packets sent, 4 received, and 0% loss.

```
Packet Tracer PC Command Line 1.0
C:\>ping 10.10.10.10.
Ping request could not find host 10.10.10.10.. Please check the name and try again.
C:\>ping 10.10.10.10\
Ping request could not find host 10.10.10.10\. Please check the name and try again.
C:\>ping 10.10.10.10

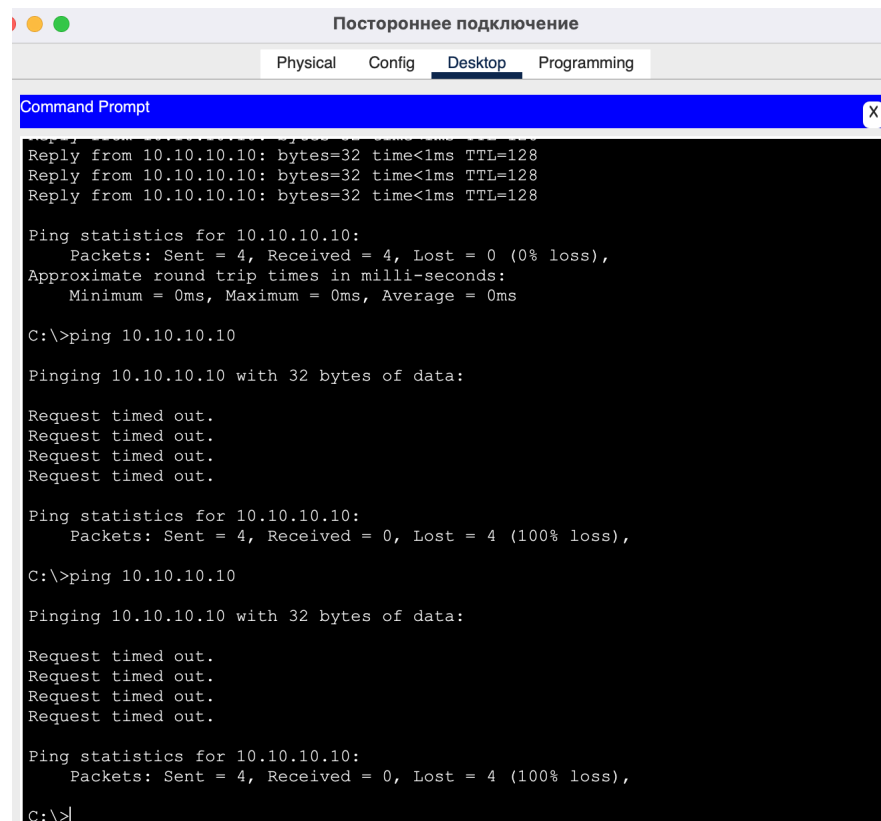
Pinging 10.10.10.10 with 32 bytes of data:

Reply from 10.10.10.10: bytes=32 time=3ms TTL=128
Reply from 10.10.10.10: bytes=32 time<1ms TTL=128
Reply from 10.10.10.10: bytes=32 time=11ms TTL=128
Reply from 10.10.10.10: bytes=32 time<1ms TTL=128

Ping statistics for 10.10.10.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 11ms, Average = 3ms

C:\>
```

- Ноутбук злоумышленника не имеет возможность отправлять ping запросы в локальной сети.



The screenshot shows the same Packet Tracer PC window for PC2. The 'Desktop' tab is active, displaying a Command Prompt. The user has entered several ping commands for the IP address 10.10.10.10. The first three attempts are successful, showing four replies with 32 bytes of data, times of 1ms, 1ms, and 1ms, and a TTL of 128. The ping statistics show 4 packets sent, 4 received, and 0% loss. The fourth attempt fails with the message 'Request timed out.' The fifth attempt also fails with the message 'Request timed out.' The ping statistics show 4 packets sent, 0 received, and 100% loss.

```
Packet Tracer PC Command Line 1.0
C:\>ping 10.10.10.10.
Ping request could not find host 10.10.10.10.. Please check the name and try again.
C:\>ping 10.10.10.10\
Ping request could not find host 10.10.10.10\. Please check the name and try again.
C:\>ping 10.10.10.10

Pinging 10.10.10.10 with 32 bytes of data:

Reply from 10.10.10.10: bytes=32 time<1ms TTL=128
Reply from 10.10.10.10: bytes=32 time<1ms TTL=128
Reply from 10.10.10.10: bytes=32 time<1ms TTL=128

Ping statistics for 10.10.10.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 10.10.10.10

Pinging 10.10.10.10 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.10.10.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 10.10.10.10

Pinging 10.10.10.10 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.10.10.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

- Вывод количества нарушений безопасности.

```

S1
  Physical  Config  CLI
IOS Command Line Interface

S1(config-if)#do sh port
Secure Port MaxSecureAddr CurrentAddr SecurityViolation Security Action
      (Count)      (Count)      (Count)
-----
Fa0/1      1      1      0      Restrict
Fa0/2      1      1      5      Restrict
-----

S1(config-if)#do sh port
Secure Port MaxSecureAddr CurrentAddr SecurityViolation Security Action
      (Count)      (Count)      (Count)
-----
Fa0/1      1      1      0      Restrict
Fa0/2      1      1      6      Restrict
-----

S1(config-if)#do sh port
Secure Port MaxSecureAddr CurrentAddr SecurityViolation Security Action
      (Count)      (Count)      (Count)
-----
Fa0/1      1      1      0      Restrict
Fa0/2      1      1      7      Restrict
-----

S1(config-if)#
%LINK-3-UPDOWN: Interface FastEthernet0/2, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to
down

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to
up

Command+F6 to exit CLI focus
Copy Paste

```

## 2. 11.6.1 - Switch Security Configuration

- Список команд на sw-1

```

1 en
2 conf t
3 int range g0/1-2
4 switchport mode trunk
5 switchport nonegotiate
6 exit
7 vlan 100
8 name Native
9 exit
10 int range g0/1-2
11 switchport trunk native vlan 100
12 exit
13 int range f0/3-9, f0/11-23
14 shutdown
15 exit
16 vlan 999
17 name BlackHole
18 int range f0/3-9, f0/11-23
19 switchport mode access

```

```

20 switchport access vlan 999
21 exit
22 int range f0/1-2, f0/10, f0/24
23 switchport port-security
24 switchport port-security maximum 4
25 switchport port-security mac-address sticky
26 switchport port-security violation restrict
27 exit
28 int f0/1
29 switchport port-security mac-address 0010.11E8.3CBB
30 exit
31 int range g0/1-2
32 ip dhcp snooping trust
33 int range f0/1-24
34 ip dhcp snooping limit rate 5
35 exit
36 int range f0/1-2, f0/10, f0/24
37 spanning-tree portfast
38 spanning-tree bdpuguard enable
39

```

## • Список команд на sw-2

```

1 en
2 conf t
3 int range g0/1-2
4 switchport mode trunk
5 switchport nonegotiate
6 exit
7 vlan 100
8 name Native
9 exit
10 int range g0/1-2
11 switchport trunk native vlan 100
12 exit
13 ip dhcp snooping vlan 10, 20, 99
14 int range f0/1-2, f0/10, f0/24
15 spanning-tree portfast
16

```