

Презентация по лабораторной работе 1

Знакомство с Cisco Packet Tracer

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1. Информация
2. Вводная часть
3. Выполнение заданий
4. Выводы

Раздел 1

1. Информация

1.1 Докладчик

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1.1 Докладчик

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Раздел 2

2. Вводная часть

2.1 Цели и задачи

- ▶ Установка инструмента моделирования конфигурации сети Cisco Packet Tracer, знакомство с его интерфейсом.

Раздел 3

3. Выполнение заданий

3.1 слайд 1

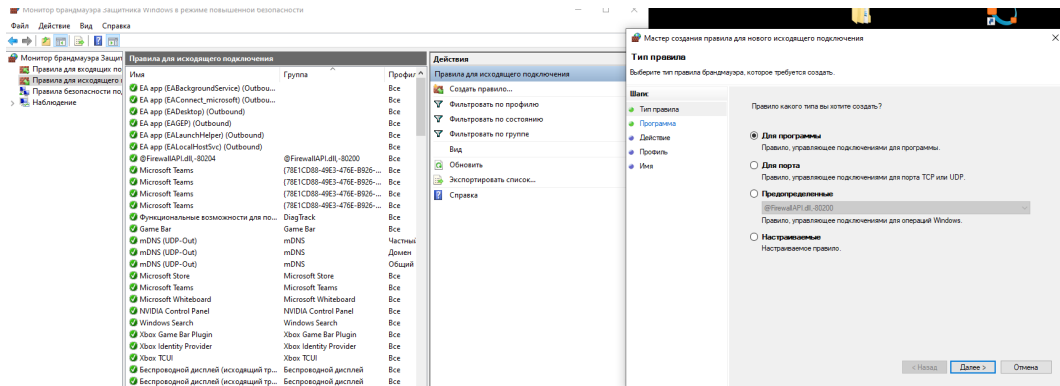
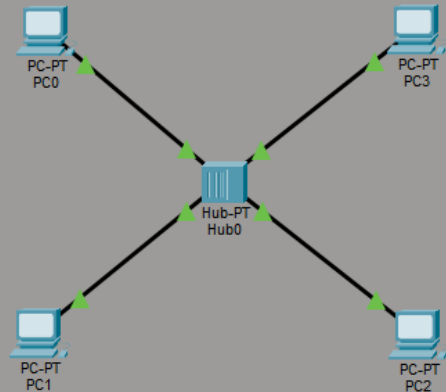
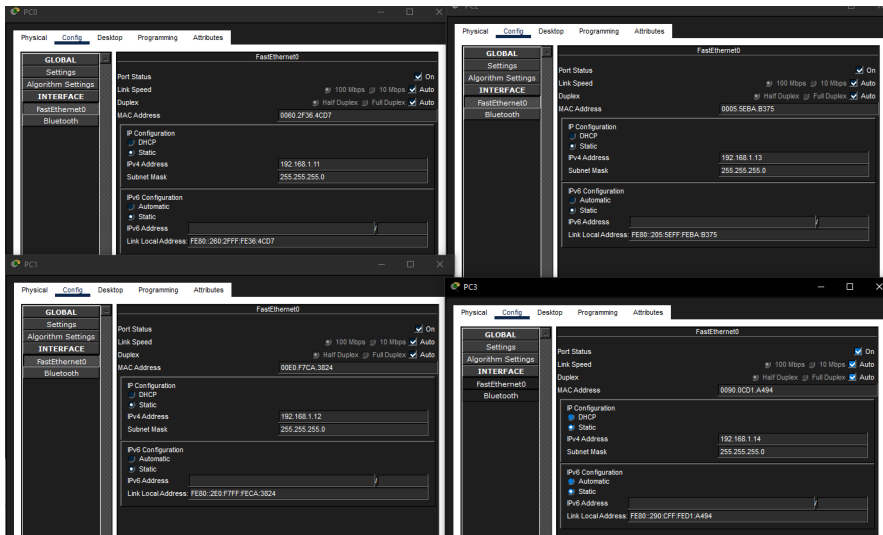


Рисунок 1: Установка Packet Tracer и блокировка для него доступа в Интернет

3.2 слайд 2



3.3 слайд 3



3.4 слайд 4

The screenshot displays the Cisco Packet Tracer interface. On the left, a network topology is shown with a central Hub-PT (Hub0) connected to four PCs (PC0, PC1, PC2, PC3). On the right, the 'Simulation Panel' is open, showing an 'Event List' table. The table has columns for 'Vts', 'Time(sec)', 'List Device', 'At Device', and 'Type'. The events listed are ICMP and ARP packets moving between the devices.

Vts	Time(sec)	List Device	At Device	Type
0.000	—	PC0	PC0	ICMP
0.000	—	PC0	PC0	ARP
0.001	0.001	PC0	Hub0	ARP
0.002	0.002	Hub0	PC1	ARP
0.002	0.002	Hub0	PC2	ARP
0.002	0.002	Hub0	PC3	ARP
0.003	0.003	PC2	Hub0	ARP
0.004	0.004	Hub0	PC0	ARP
0.004	0.004	Hub0	PC1	ARP
0.004	0.004	Hub0	PC3	ARP
0.004	—	PC0	PC0	ICMP
0.005	0.005	PC0	Hub0	ICMP
0.006	0.006	Hub0	PC1	ICMP
0.006	0.006	Hub0	PC2	ICMP
0.006	0.006	Hub0	PC3	ICMP
0.007	0.007	PC2	Hub0	ICMP
0.008	0.008	Hub0	PC0	ICMP
0.008	0.008	Hub0	PC1	ICMP
0.008	0.008	Hub0	PC3	ICMP

Рисунок 4: Просмотр путей движения пакетов ARP и ICMP от PC0 до PC2 и обратно

PDU Information at Device: Hub0

OSI Model

Inbound PDU Details

Outbound PDU Details

Layer7

Layer6

Layer5

Layer4

Layer3

Layer2

Layer 1: Port FastEthernet0

Layer7

Layer6

Layer5

Layer4

Layer3

Layer2

Layer 1: Port(s): FastEthernet1, FastEthernet2, FastEthernet3

1. FastEthernet1 sends out the frame.

2. FastEthernet2 sends out the frame.

3. FastEthernet3 sends out the frame.

4. The Hub forwards the frame to all ports except FastEthernet0.

3.6 слайд 6

PDU Information at Device: Hub0

OSI Model Inbound PDU Details Outbound PDU Details

EthernetII

0 4 8 Bytes

PREAMBLE: 101010...10		DEST ADDR:FFFF.FFF F.FFFF	
SRC ADDR:0 060.2F36.4C	TY PE:	DATA (VARI ABLE LENG	FCS:0x0000 0000

Arp

0 8 16 Bits

HARDWARE TYPE:0x0001		PROTOCOL TYPE:0x0800
HLEN:0x06	PLEN:0x04	OPCODE:0x0001
SOURCE MAC :0060.2F36.4CD7		
		SOURCE IP :192.168.1.11
TARGET MAC:0000.0000.0000		
TARGET IP:192.168.1.13		

3.7 слайд 7

Cisco Packet Tracer

File Edit Options View Tools Extensions Window Help

Logical Physical x: 1081, y: 102 Root 10:50:00

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.000	--	PC0	ICMP
	0.000	--	PC2	ICMP
	0.001	PC0	Hub0	ICMP
	0.001	PC2	Hub0	ICMP
	0.001	--	PC0	ICMP
	0.001	PC0	Hub0	ICMP

PC-PT PC0

PC-PT PC3

Hub0

PC-PT PC1

PC-PT PC2

3.8 слайд 8

The screenshot displays a network simulation interface with two main panels. The left panel, titled 'PDU Information at Device: Hub0', shows the details of an incoming PDU. It is divided into two sections: Ethernet II and ICMP. The Ethernet II section shows a preamble, destination address (0060.2F36.4CD7), source address (0005.5EBA), data length (0000), and various control fields. The ICMP section shows a type (0x08), code (0x00), and sequence number (1). The right panel, titled 'Simulation Panel', contains an 'Event List' table showing a sequence of events over time.

PDU Information at Device: Hub0

Ethernet II

PREAMBLE: 101010...10 DEST ADDR: 0060.2F36.4CD7

SRC ADDR: 0005.5EBA... DATA (VARIABLE LENGTH) FCS: 0x0000

IP

VER: 4 IHL: 5 DSCP: 0x00 TL: 28

ID: 0x0004 FRAG OFFSET: 0x000

TTL: 255 PRO: 0x01 CHKSUM

SRC IP: 192.168.1.13

DST IP: 192.168.1.11

DATA (VARIABLE LENGTH)

ICMP

TYPE: 0x08 CODE: 0x00 CHECKSUM

ID: 0x0002 SEQ NUMBER: 1

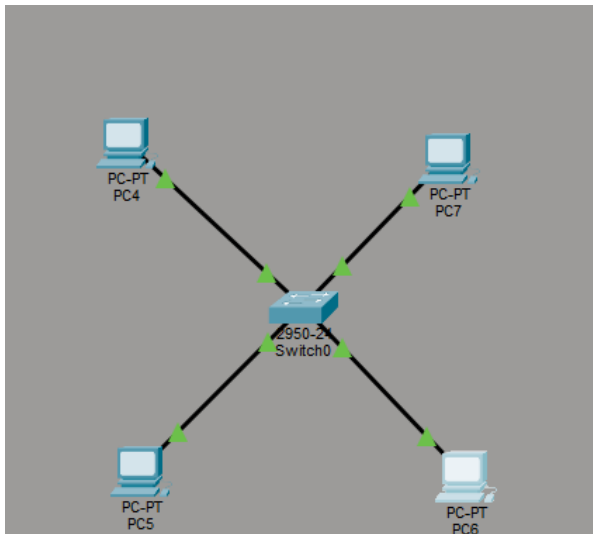
Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.000	--	PC0	ICMP
	0.000	--	PC2	ICMP
	0.001	PC0	Hub0	ICMP
	0.001	PC2	Hub0	ICMP
	0.001	--	PC0	ICMP
	0.001	PC0	Hub0	ICMP
	0.002	Hub0	PC0	ICMP
	0.002	Hub0	PC1	ICMP
	0.002	Hub0	PC2	ICMP
	0.002	Hub0	PC3	ICMP
	0.004	--	PC0	ICMP
	0.005	PC0	Hub0	ICMP
	0.006	Hub0	PC1	ICMP
	0.006	Hub0	PC2	ICMP
	0.006	Hub0	PC3	ICMP
	0.007	PC2	Hub0	ICMP
	0.008	Hub0	PC0	ICMP
	0.008	Hub0	PC1	ICMP
	0.008	Hub0	PC3	ICMP

Рисунок 8: Просмотр информации о PDU

3.9 слайд 9



3.10 слайд 10

ни (Realtime). В рабочем пространстве
Cisco 2950-24) и 4 оконечных устройства

TI PDU Information at Device: Switch0

OSI Model Inbound PDU Details Outbound PDU Details

Ethernet II

0 4 8 Bytes

PREAMBLE: 101010...10 DEST ADDR: 0000.FF AA.2490

SRC ADDR: 0010.11D9... SRC TY: PE DATA (VARIABLE LENGTH) FCS: 0x0000 00000

IP

0 4 8 16 20 24 Bits

VER: 4 IHL: 5 DSCP: 0x00 TL: 28

ID: 0x0002 FRAG OFFSET: 0x000

TTL: 255 PRO: 0x01 CHKSUM

SRC IP: 192.168.1.21

DST IP: 192.168.1.24

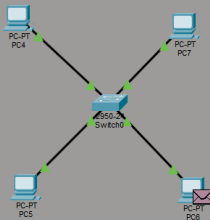
DATA (VARIABLE LENGTH)

ICMP

0 8 16 Bits

TYPE: 0x08 CODE: 0x00 CHECKSUM

ID: 0x0003 SEQ NUMBER: 2



Simulation Panel

Vis.	Time(sec)	Last Device	At Device
	0.000	--	PC0
	0.000	--	PC0
	0.000	--	PC2
	0.000	--	PC4
	0.001	PC4	Switch0
	0.001	PC0	Hub0
	0.001	PC2	Hub0
	0.001	--	PC0
	0.001	PC0	Hub0
	0.002	Switch0	PC6
	0.002	Hub0	PC0
	0.002	Hub0	PC1
	0.002	Hub0	PC2
	0.002	Hub0	PC3
	0.002	--	PC0

Reset Simulation ☒ Constant Delay

Play Controls



Captured to:
0.002 s

3.11 слайд 11

Logical Physical x: 1084, y: 717

Root

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device
	0.000	--	PC4
	0.000	--	PC6
	0.001	PC4	Switch0
	0.001	PC6	Switch0
	0.002	Switch0	PC6
	0.002	Switch0	PC4
	0.003	PC6	Switch0
	0.003	PC4	Switch0

PC-PT PC4

PC-PT PC7

2950 Switch0

PC-PT PC5

PC-PT PC6

3.12 слайд 12

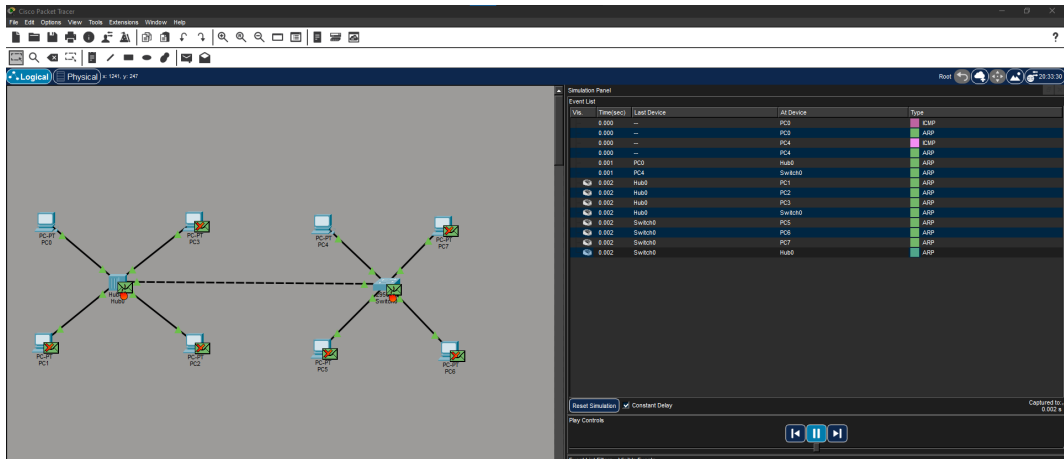


Рисунок 12: Видоизменение топологии сети и повторный сценарий с возникновением коллизии

3.13 слайд 13

PDU Information at Device: PC7

OSI Model [Inbound PDU Details](#)

Ethernet II

PREAMBLE: 101010...10 DEST ADDR: 0180.C200.0000 SRC ADDR: 000C.CF61 LEN: 3 DATA (VARIABLE LENGTH) FCS: 0x00000000

LLC

DSAP: 0x42 SSAP: 0x42 CONTROL BYTE: 3

STP PDU

PROTOCOL ID: 0 VERSION: 0 MESSAGE TYPE: 0

ROOT ID: 32769 / 00E0.F933.9CED

ROOT PATH COST: 0

BRIDGE ID: 32769 / 00E0.F933.9CED

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.911	--	Switch0	STP
	0.912	Switch0	PC6	STP
	0.912	Switch0	PC7	STP
	0.912	Switch0	Hub0	STP
	0.912	Switch0	PC4	STP
	0.912	Switch0	PC5	STP
	0.913	Hub0	PC0	STP
	0.913	Hub0	PC1	STP
	0.913	Hub0	PC2	STP
	0.913	Hub0	PC3	STP
	2.909	--	Switch0	STP
	2.910	Switch0	PC6	STP
	2.910	Switch0	PC7	STP
	2.910	Switch0	Hub0	STP
	2.910	Switch0	PC4	STP
	2.910	Switch0	PC5	STP

Рисунок 13: Просмотр структуры пакетов STP

3.14 слайд 14

Router0

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/0

FastEthernet0/1

FastEthernet0/0

Port Status ☒ On

Link Speed 100 Mbps 10 Mbps ☒ Auto

Duplex Half Duplex Full Duplex ☒ Auto

MAC Address 0003.E478.2801

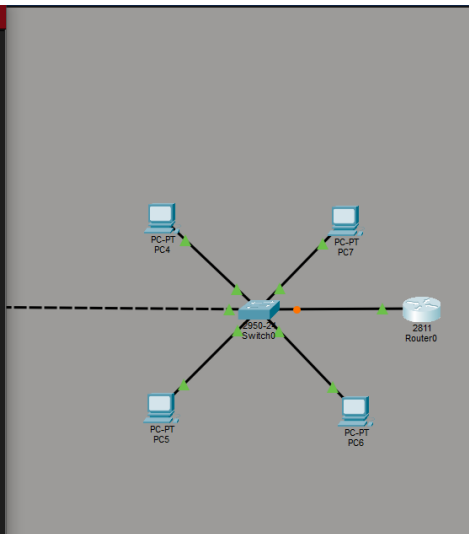
IP Configuration

IPv4 Address 192.168.1.254

Subnet Mask 255.255.255.0

Tx Ring Limit 10

```
Router0>configure terminal
Router0(config)#interface FastEthernet0/0
Router0(config-if)#
Router0(config-if)#exit
Router0(config)#interface FastEthernet0/1
Router0(config-if)#
Router0(config-if)#exit
Router0(config)#interface FastEthernet0/0
Router0(config-if)#ip address 192.168.1.254 255.255.255.0
Router0(config-if)#no shutdown
Router0(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
```



3.15 слайд 15

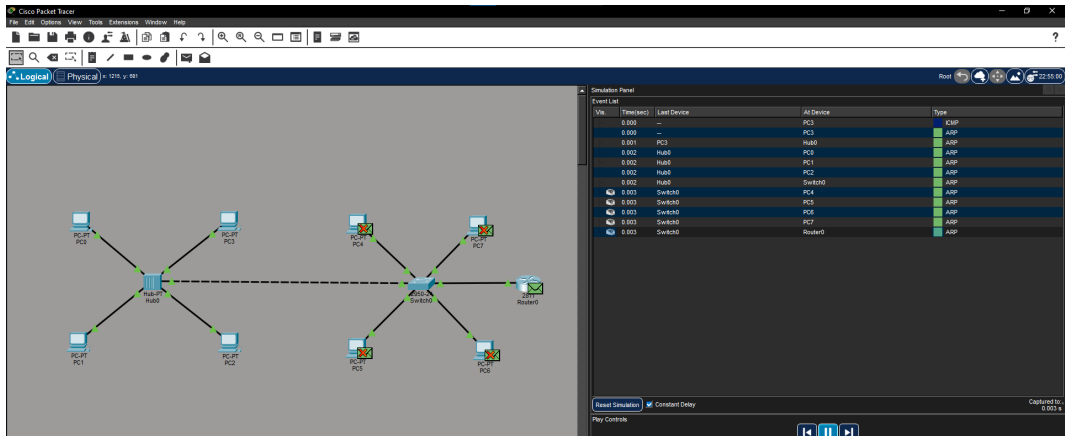


Рисунок 15: Просмотр пути движения пакетов ARP, ICMP, STP и CDP

3.16 слайд 16

PDU Information at Device: PC4

OSI Model: [Inbound PDU Details](#)

Ethernet II

PREAMBLE: 101010...10 DEST ADDR: 0100.0 CCC.CCCC

SRC ADDR: 000C.CF61 LEN: 8 DATA (VARIABLE LENGTH)

FCS: 0x000 00000

SNAP

DSAP: 0xaa SSAP: 0xaa CONTROL BYTE: 3

Out: 0x00000c PID: 0x2000

CDP

VER: 2 TTL CHECKSUM: 0

TYPE LENGTH

VALUE (VARIABLE LENGTH)

PROTOCOL LENGTH PROTOCOL (VARIABLE LENGTH)

ADDRESS LENGTH ADDRESS (VARIABLE LENGTH)

Vis.	Time(sec)	Last Device	All Device	Type
24.611	—	Switch0	Switch0	DTP
—	—	Router0	Router0	DTP
—	—	Switch0	Switch0	CDP
—	—	Switch0	Switch0	CDP
—	—	Switch0	Switch0	CDP
—	—	Switch0	Switch0	CDP
—	—	Switch0	Switch0	CDP
—	—	Switch0	Switch0	CDP
—	—	Switch0	PC4	CDP
—	—	Switch0	PC5	CDP
—	—	Switch0	PC6	CDP
—	—	Switch0	PC7	CDP
—	—	Switch0	Hub0	CDP
—	—	Switch0	Router0	CDP
—	—	Hub0	PC0	CDP
—	—	Hub0	PC1	CDP
—	—	Hub0	PC2	CDP
—	—	Hub0	PC3	CDP
—	—	—	Router0	CDP
—	—	Router0	Switch0	CDP
—	—	—	Switch0	STP
—	—	Switch0	PC6	STP
—	—	Switch0	PC7	STP
—	—	Switch0	Hub0	STP
—	—	Switch0	PC4	STP
—	—	Switch0	PC5	STP
—	—	Switch0	Router0	STP
—	—	—	Constant Delay	

Рисунок 16: Просмотр структуры пакетов CDP

Раздел 4

4. Выводы

4.1 слайд 1

Я установил инструмент моделирования конфигурации сети Cisco Packet Tracer, ознакомился с его интерфейсом