МДК.01.01

Организация, принципы построения и функционирования компьютерных сетей

3-курс

Практические занятия

Занятие 04

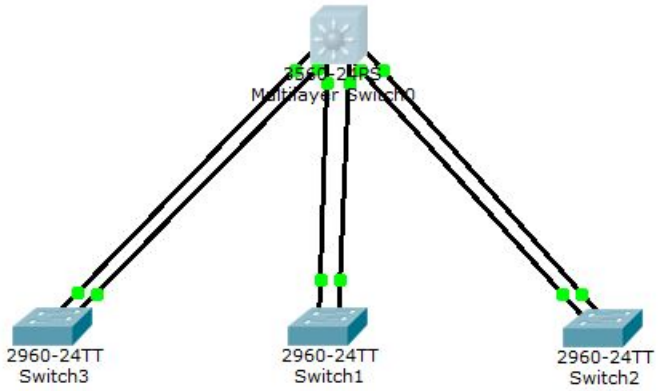
Cisco Packet Tracer - D:\Андрей\Компьютерные сети\МДК.01.01 Организация, принципы построения и функционирования компьютерных сетей\Практические работы\Работа 09.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

Организация отказоустойчивой сети.

Рассмотри топологию «звезда», когда коммутаторы 2-го уровня (2960) подключаются к коммутатору 3-го уровня (3560), например, при создании сети в многоэтажных зданиях.



Time: 79:06:38 Power Cycle Devices Fast Forward Time Realtime

Connections

Copper Straight-Through

Scenario 0 New Delete Toggle PDU List Window

Fire | Last Status | Source | Destination | Type | Color | Time (sec) | Periodic | Num | Edit | Delete

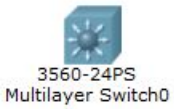
ENG 19:14 24.10.2019

Cisco Packet Tracer

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

Подсоединим каждый из коммутаторов (2960) к центральному коммутатору двумя портами, используя динамическое агрегирование.



Time: 00:16:12 Power Cycle Devices Fast Forward Time Realtime

Switches

2950-24 2950T 2960 Generic Generic 3560 24PS Generic

2960-24TT

Scenario 0 New Delete Toggle PDU List Window

Fire Last Status Source Destination Type Color Time (sec) Periodic Num Edit Delete

РУС 22:33 22.10.2019

Cisco Packet Tracer

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

Для этого зайдём в настройки 3560 в режим глобального конфигурирования.

Multilayer Switch0

Physical Config CLI

IOS Command Line Interface

```
System serial number            : CAT1037RJF7
Top Assembly Part Number        : 800-26380-04
Top Assembly Revision Number    : B0
Version ID                      : V06
CLEI Code Number                : COM1100ARC
Hardware Board Revision Number  : 0x01


Switch    Ports  Model              SW Version            SW Image
------    -----  -----              ----------            ----------
*    1    26     WS-C3560-24PS      12.2(37)SE1           C3560-ADVIPSERVICESK

Cisco IOS Software, C3560 Software (C3560-ADVIPSERVICESK9-M), Version 12.2(37)SE
1, RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Thu 05-Jul-07 22:22 by pt_team

Press RETURN to get started!


Switch>
Switch>
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#
```

Copy Paste

Time: 00:24:22 Power Cycle Devices Fast Forward Time Realtime

Switches

2950-24 2950T 2960 Generic Generic 3560 24PS Generic

Bridge-PT

Scenario 0 New Delete Toggle PDU List Window

Fire | Last Status | Source | Destination | Type | Color | Time (sec) | Periodic | Num | Edit | Delete

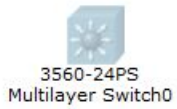
ENG 22:41 22.10.2019

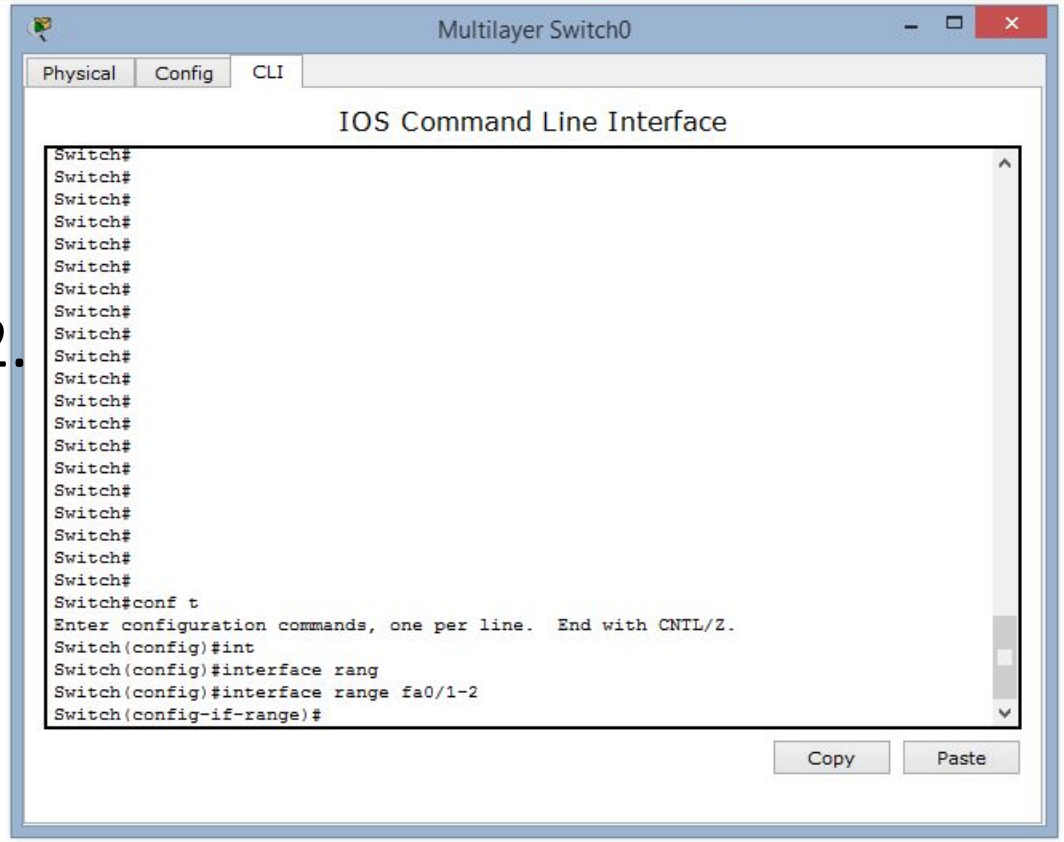
Cisco Packet Tracer

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

Создадим наш первый агрегированный канал, используя порты FastEthernet0/1, …0/2.





Выполним команду: «Interface range fa0/1-2».

Time: 00:30:30 Power Cycle Devices Fast Forward Time Realtime

Switches

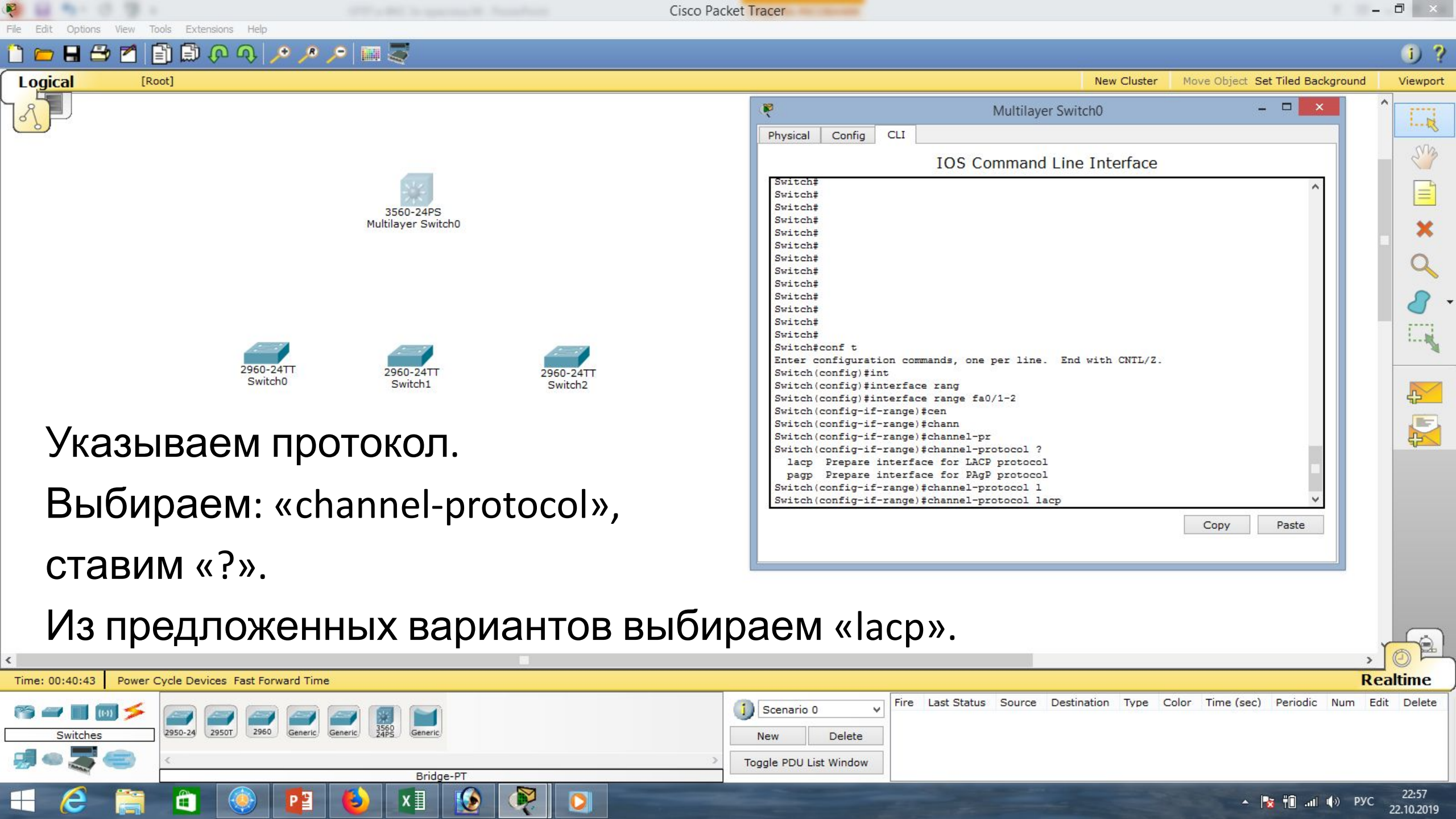
2950-24 2950T 2960 Generic Generic 3560 24PS Generic

Bridge-PT

Scenario 0 New Delete Toggle PDU List Window

Fire Last Status Source Destination Type Color Time (sec) Periodic Num Edit Delete

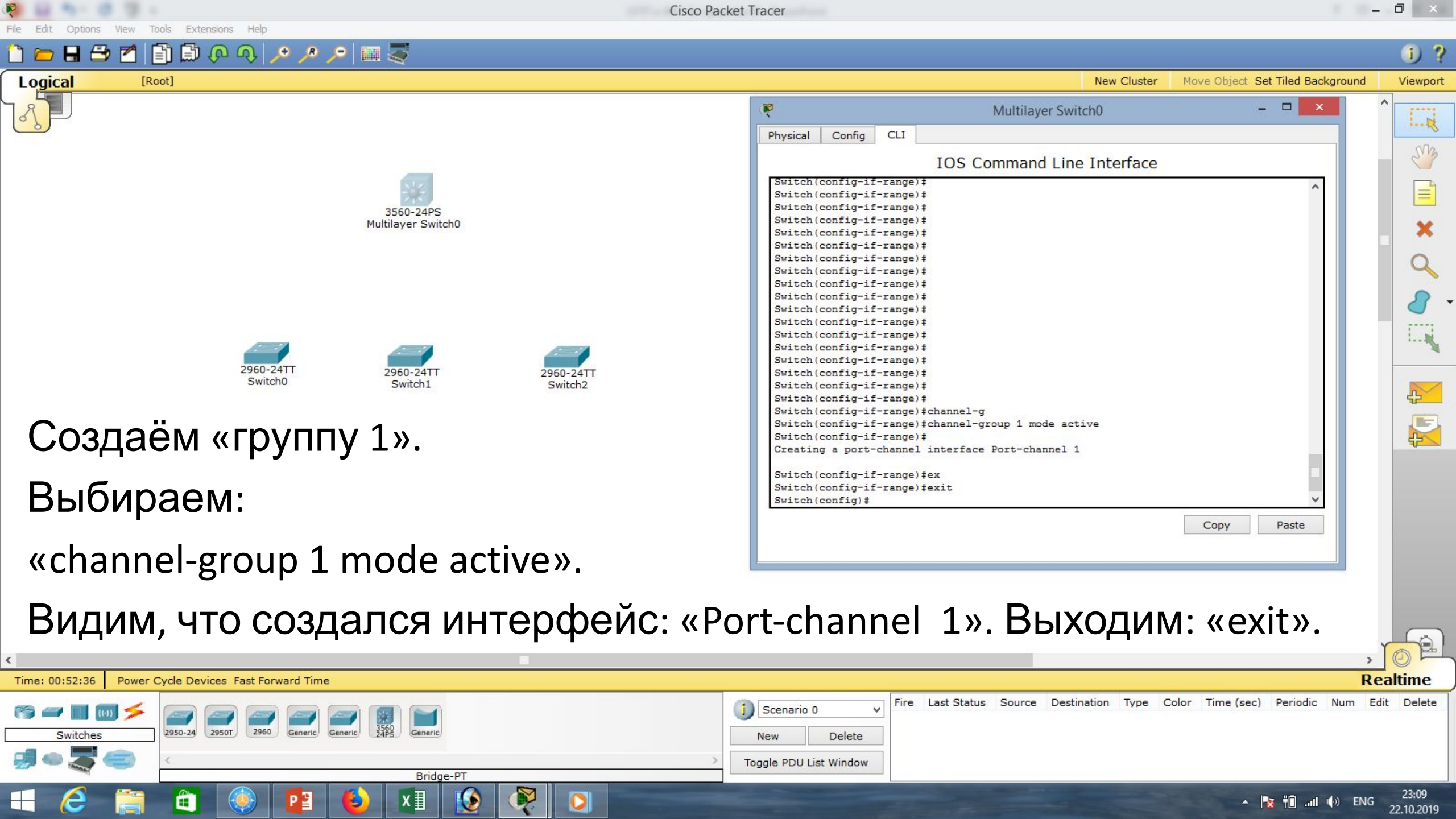
ENG 22:47 22.10.2019



Указываем протокол.

Выбираем: «channel-protocol», ставим «?».

Из предложенных вариантов выбираем «lacp».

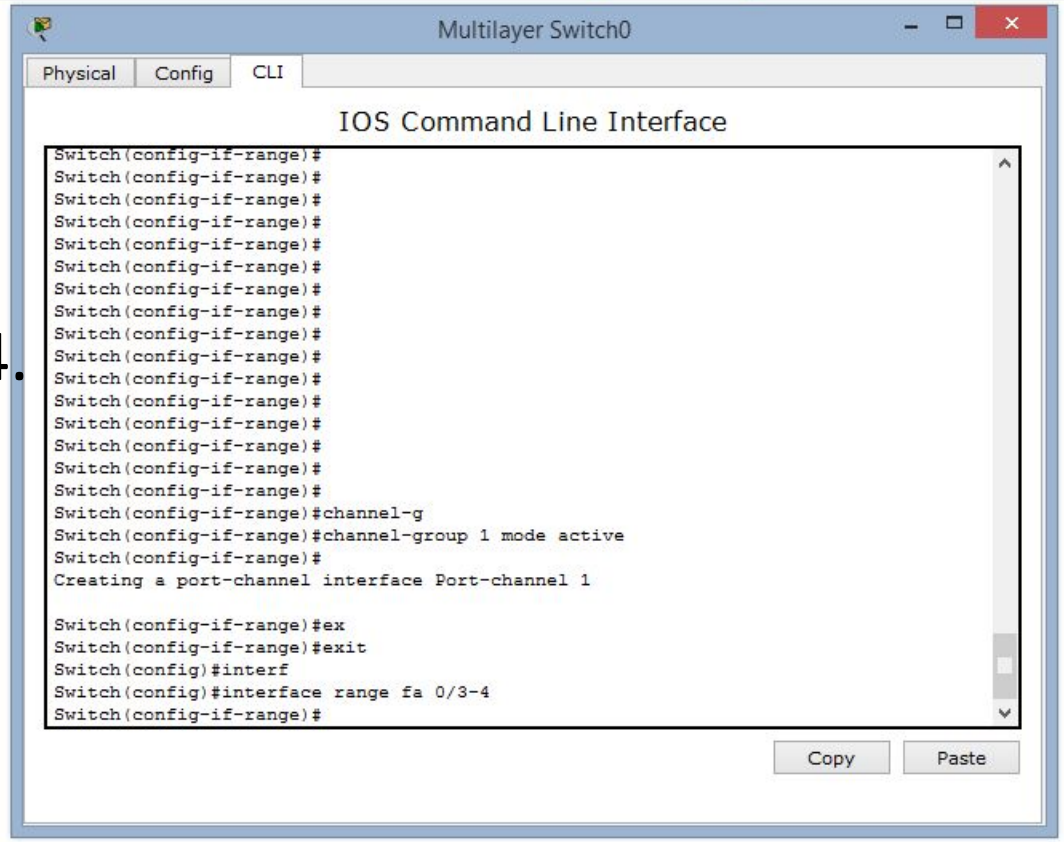

Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical [Root]
New Cluster Move Object Set Tiled Background Viewport
3560-24PS
Multilayer Switch0
2960-24TT
Switch0
2960-24TT
Switch1
2960-24TT
Switch2
Multilayer Switch0
Physical Config CLI
IOS Command Line Interface
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#channel-g
Switch(config-if-range)#channel-group 1 mode active
Switch(config-if-range)#
Creating a port-channel interface Port-channel 1
Switch(config-if-range)#ex
Switch(config-if-range)#exit
Switch(config)#
Copy
Paste
Создаём «группу 1».
Выбираем:
«channel-group 1 mode active».
Видим, что создался интерфейс: «Port-channel 1». Выходим: «exit».
Time: 00:52:36 Power Cycle Devices Fast Forward Time
Realtime
Switches
2950-24
2950T
2960
Generic
Generic
3560 24PS
Generic
Bridge-PT
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time (sec) Periodic Num Edit Delete
ENG
23:09
22.10.2019

Cisco Packet Tracer

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

Аналогично создадим второй агрегированный канал, используя порты FastEthernet0/3, …0/4.



Выполним команду: «Interface range fa0/3-4».

Time: 00:56:50 Power Cycle Devices Fast Forward Time Realtime

Switches

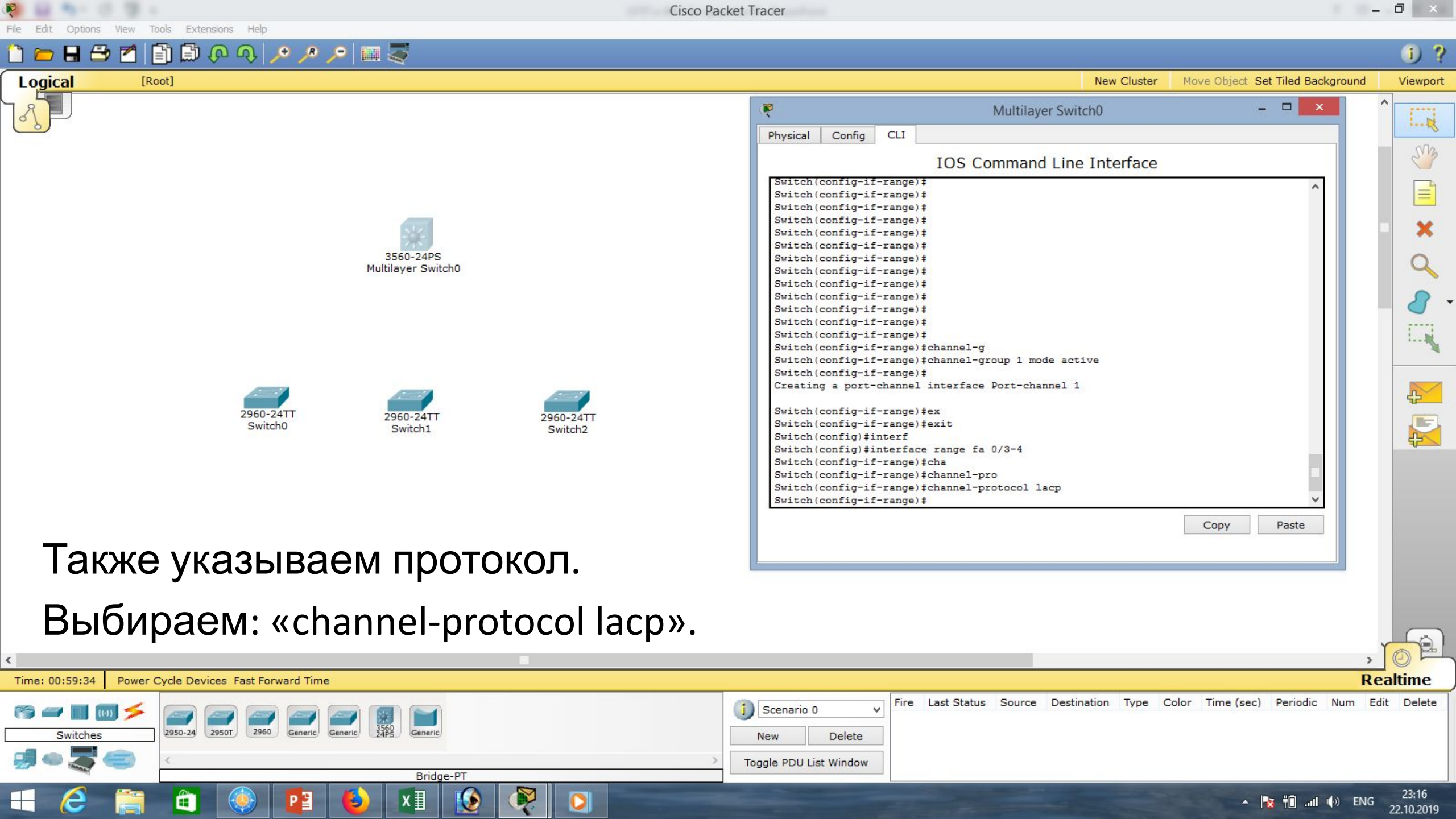
2950-24 2950T 2960 Generic Generic 3560 24PS Generic

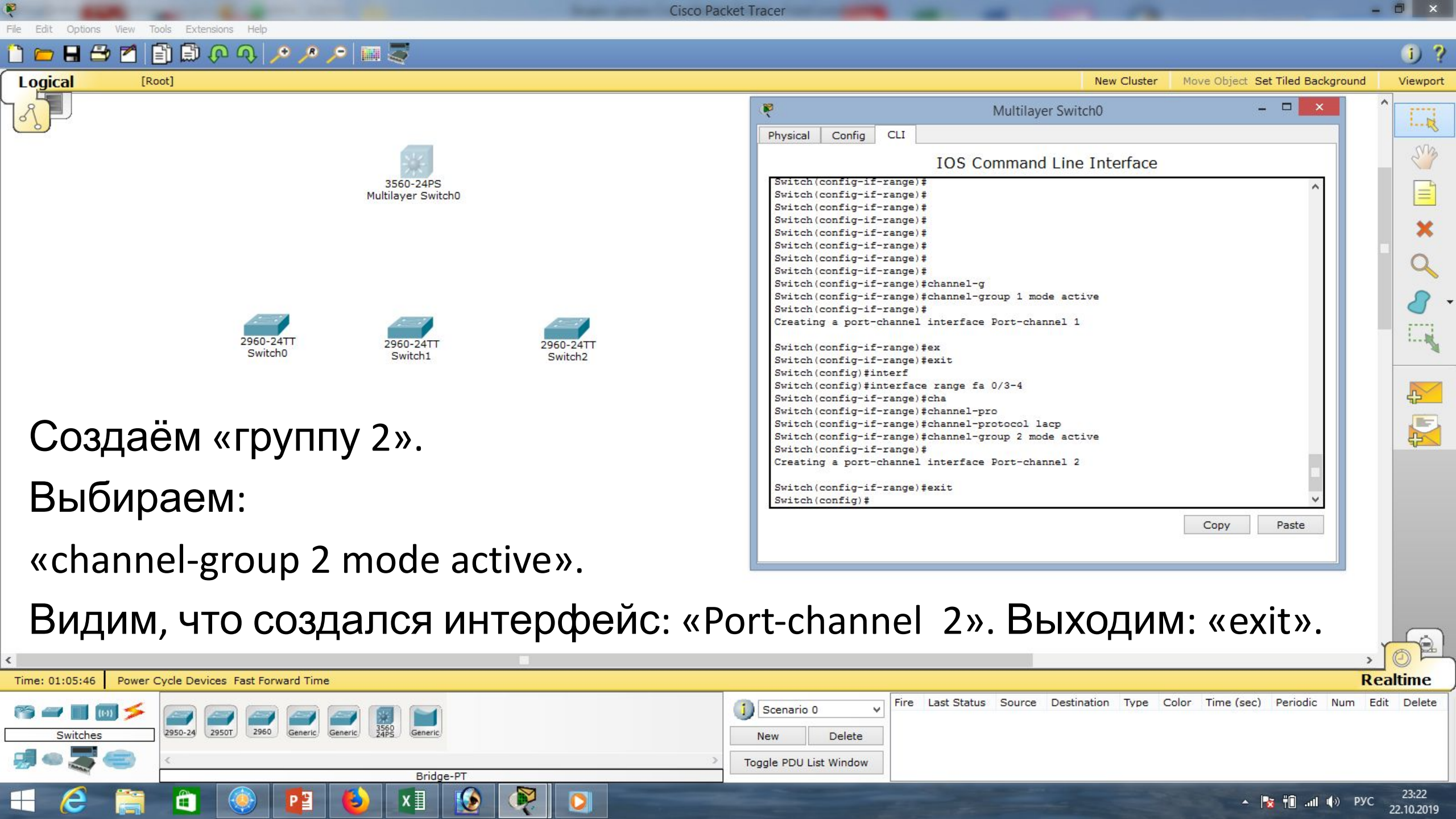
Bridge-PT

Scenario 0 New Delete Toggle PDU List Window

Fire Last Status Source Destination Type Color Time (sec) Periodic Num Edit Delete

ENG 23:13 22.10.2019


Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical [Root]
New Cluster Move Object Set Tiled Background Viewport
3560-24PS
Multilayer Switch0
2960-24TT
Switch0
2960-24TT
Switch1
2960-24TT
Switch2
Multilayer Switch0
Physical Config CLI
IOS Command Line Interface
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#channel-g
Switch(config-if-range)#channel-group 1 mode active
Switch(config-if-range)#
Creating a port-channel interface Port-channel 1
Switch(config-if-range)#ex
Switch(config-if-range)#exit
Switch(config)#interf
Switch(config)#interface range fa 0/3-4
Switch(config-if-range)#cha
Switch(config-if-range)#channel-pro
Switch(config-if-range)#channel-protocol lacp
Switch(config-if-range)#
Copy
Paste
Также указываем протокол.
Выбираем: «channel-protocol lacp».
Time: 00:59:34 Power Cycle Devices Fast Forward Time
Realtime
Switches
2950-24
2950T
2960
Generic
Generic
3560 24PS
Generic
Bridge-PT
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time (sec) Periodic Num Edit Delete
ENG
23:16
22.10.2019


Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical [Root]
New Cluster Move Object Set Tiled Background Viewport
3560-24PS
Multilayer Switch0
2960-24TT
Switch0
2960-24TT
Switch1
2960-24TT
Switch2
Multilayer Switch0
Physical Config CLI
IOS Command Line Interface
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#channel-g
Switch(config-if-range)#channel-group 1 mode active
Switch(config-if-range)#
Creating a port-channel interface Port-channel 1
Switch(config-if-range)#ex
Switch(config-if-range)#exit
Switch(config)#interf
Switch(config)#interface range fa 0/3-4
Switch(config-if-range)#cha
Switch(config-if-range)#channel-pro
Switch(config-if-range)#channel-protocol lacp
Switch(config-if-range)#channel-group 2 mode active
Switch(config-if-range)#
Creating a port-channel interface Port-channel 2
Switch(config-if-range)#exit
Switch(config)#
Copy
Paste
Создаём «группу 2».
Выбираем:
«channel-group 2 mode active».
Видим, что создался интерфейс: «Port-channel 2». Выходим: «exit».
Time: 01:05:46
Power Cycle Devices Fast Forward Time
Realtime
Switches
2950-24
2950T
2960
Generic
Generic
3560 24PS
Generic
Bridge-PT
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time (sec) Periodic Num Edit Delete
РУС
23:22
22.10.2019

Cisco Packet Tracer

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

Создадим последний агрегированный канал, используя порты FastEthernet0/5, …0/6.

3560-24PS
Multilayer Switch0

2960-24TT
Switch0

2960-24TT
Switch1

2960-24TT
Switch2

Multilayer Switch0

Physical Config CLI

IOS Command Line Interface

```
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#channel-g
Switch(config-if-range)#channel-group 1 mode active
Switch(config-if-range)#
Creating a port-channel interface Port-channel 1

Switch(config-if-range)#ex
Switch(config-if-range)#exit
Switch(config)#interf
Switch(config)#interface range fa 0/3-4
Switch(config-if-range)#cha
Switch(config-if-range)#channel-pro
Switch(config-if-range)#channel-protocol lacp
Switch(config-if-range)#channel-group 2 mode active
Switch(config-if-range)#
Creating a port-channel interface Port-channel 2

Switch(config-if-range)#exit
Switch(config)#int
Switch(config)#interface ran
Switch(config)#interface range fa0/5-6
Switch(config-if-range)#
```

Copy Paste

Выполним команду: «Interface range fa0/5-6».

Time: 01:12:12 Power Cycle Devices Fast Forward Time Realtime

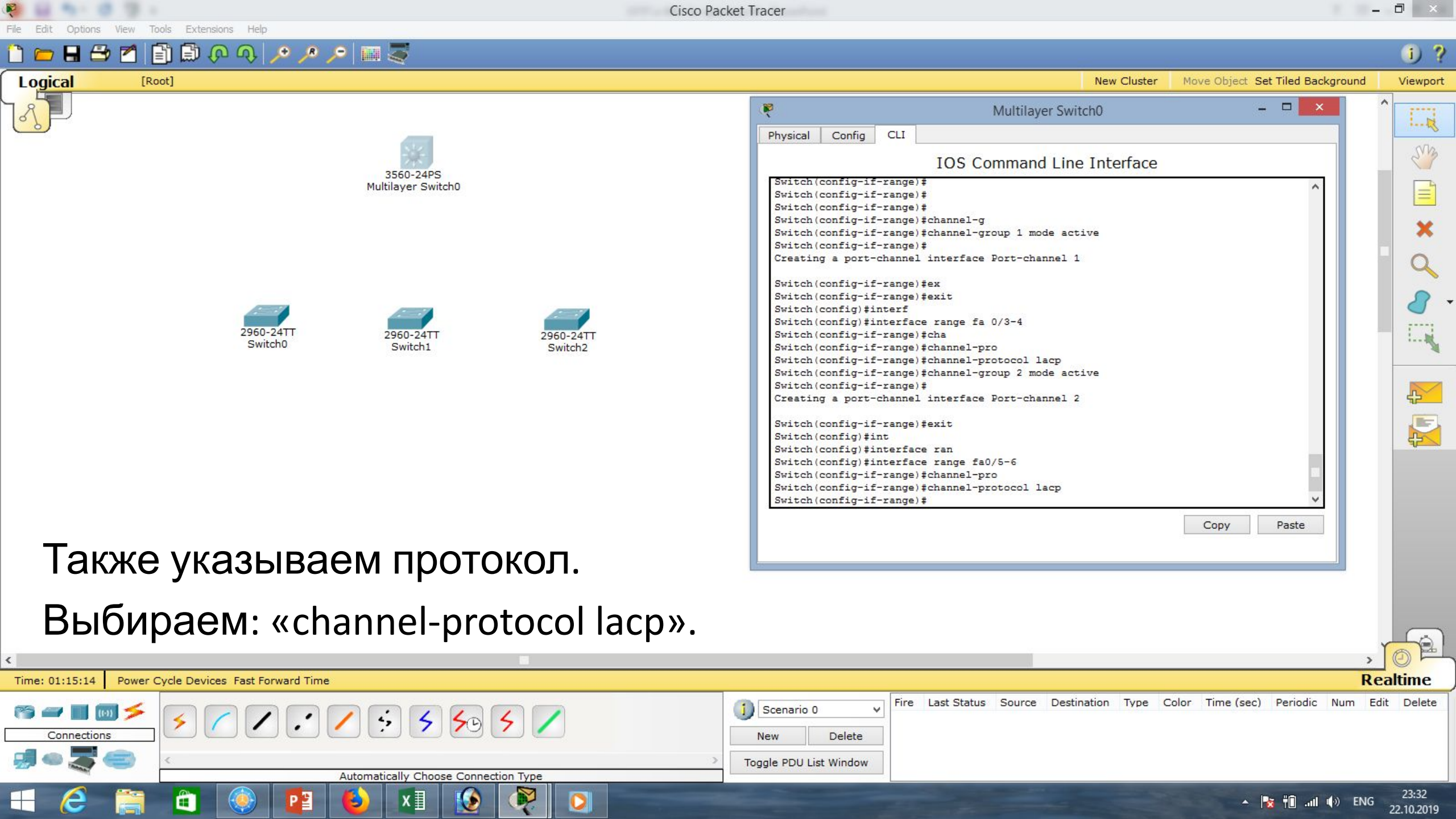
Connections

Automatically Choose Connection Type

Scenario 0 New Delete Toggle PDU List Window

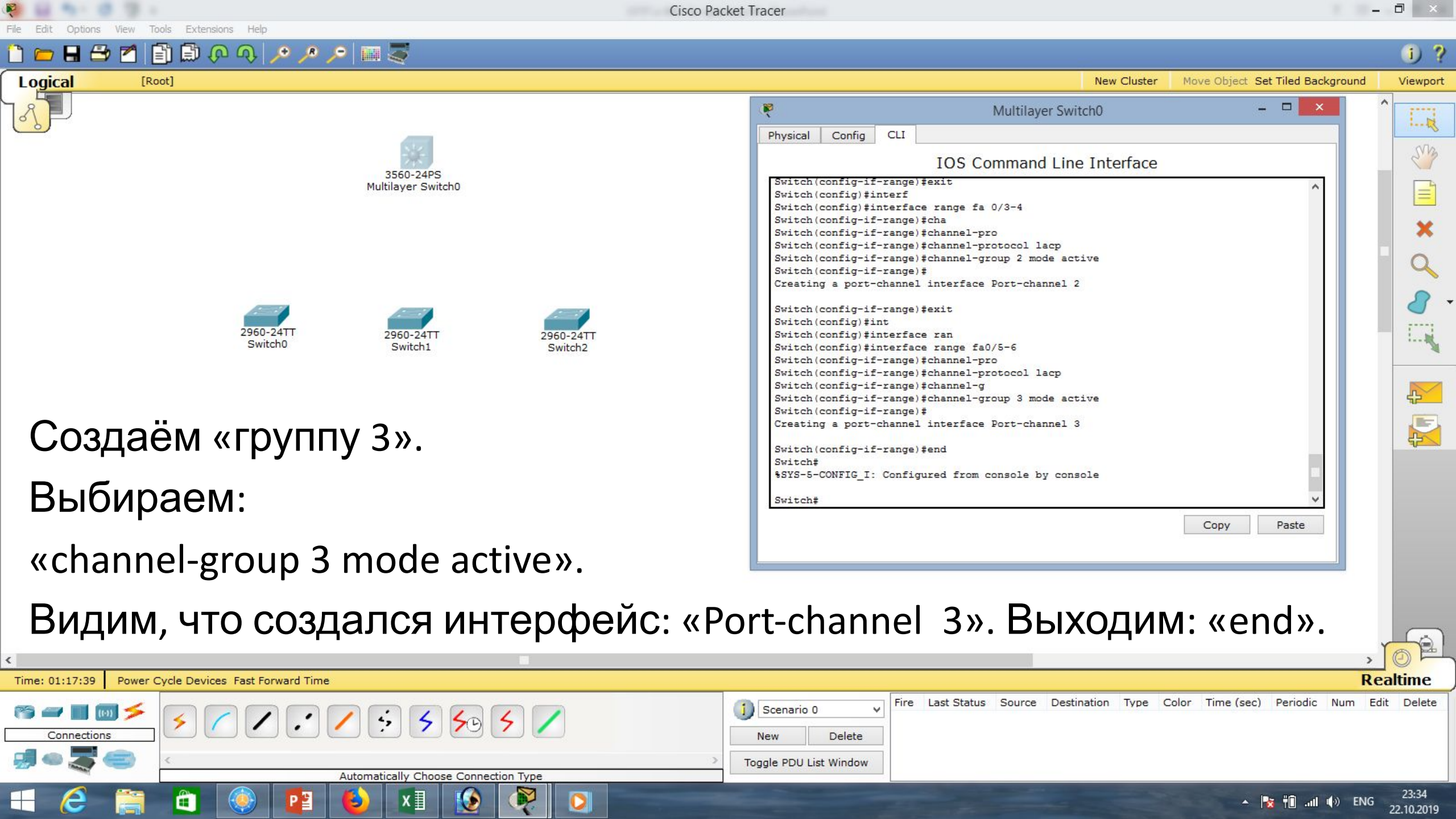
Fire | Last Status | Source | Destination | Type | Color | Time (sec) | Periodic | Num | Edit | Delete

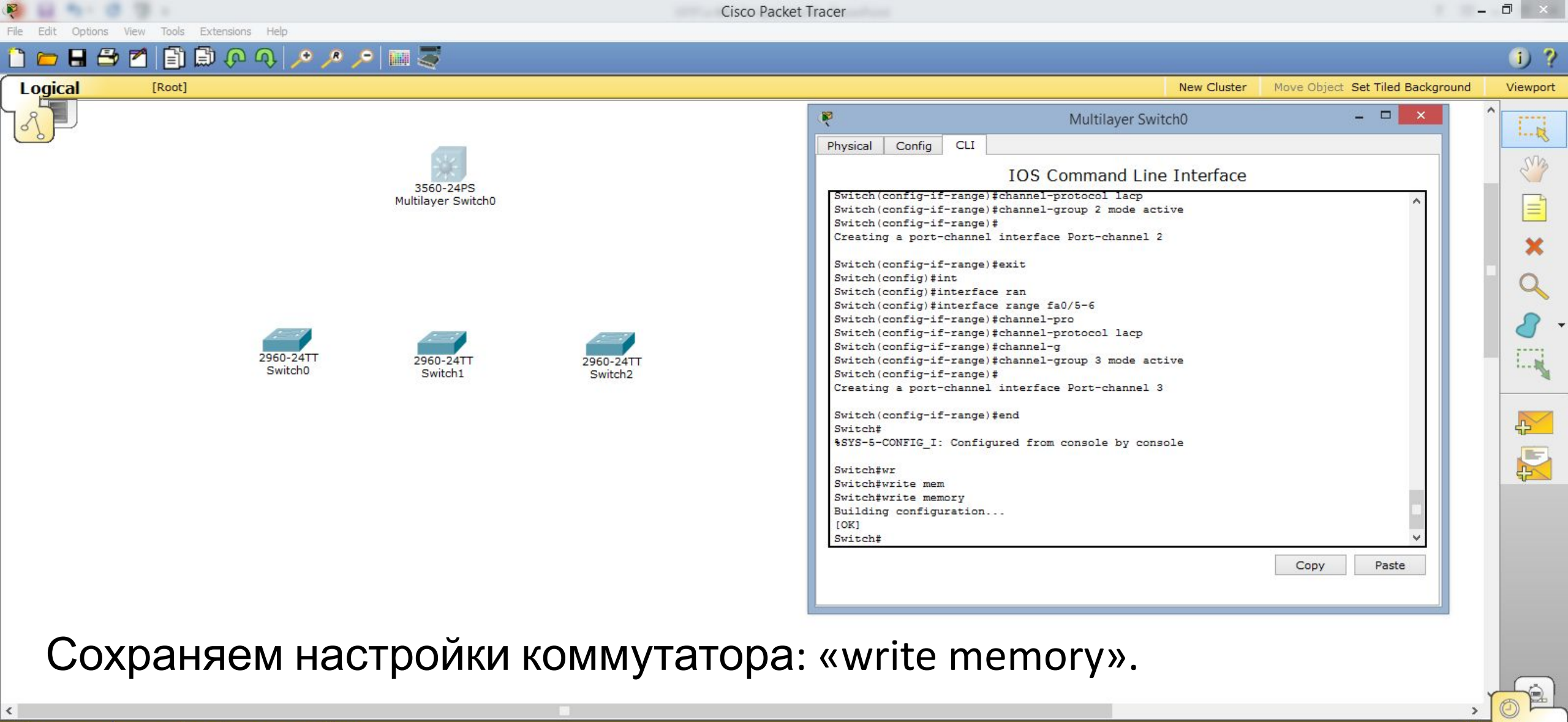
РУС 23:29 22.10.2019



Также указываем протокол.

Выбираем: «channel-protocol lacp».


Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical [Root]
New Cluster Move Object Set Tiled Background Viewport
3560-24PS
Multilayer Switch0
2960-24TT
Switch0
2960-24TT
Switch1
2960-24TT
Switch2
Multilayer Switch0
Physical Config CLI
IOS Command Line Interface
Switch(config-if-range)#exit
Switch(config)#interf
Switch(config)#interface range fa 0/3-4
Switch(config-if-range)#cha
Switch(config-if-range)#channel-pro
Switch(config-if-range)#channel-protocol lacp
Switch(config-if-range)#channel-group 2 mode active
Switch(config-if-range)#
Creating a port-channel interface Port-channel 2
Switch(config-if-range)#exit
Switch(config)#int
Switch(config)#interface ran
Switch(config)#interface range fa0/5-6
Switch(config-if-range)#channel-pro
Switch(config-if-range)#channel-protocol lacp
Switch(config-if-range)#channel-g
Switch(config-if-range)#channel-group 3 mode active
Switch(config-if-range)#
Creating a port-channel interface Port-channel 3
Switch(config-if-range)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#
Copy
Paste
Создаём «группу 3».
Выбираем:
«channel-group 3 mode active».
Видим, что создался интерфейс: «Port-channel 3». Выходим: «end».
Time: 01:17:39
Power Cycle Devices Fast Forward Time
Realtime
Connections
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time (sec) Periodic Num Edit Delete
ENG
23:34
22.10.2019



Сохраняем настройки коммутатора: «write memory».

Cisco Packet Tracer

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

3560-24PS
Multilayer Switch0

2960-24TT
Switch0

2960-24TT
Switch1

2960-24TT
Switch2

Switch0

Physical Config CLI

IOS Command Line Interface

```
Version ID                      : V02
CLEI Code Number                : COM3K00BRA
Hardware Board Revision Number  : 0x01


Switch    Ports  Model              SW Version            SW Image
------    -----  -----              ----------            ----------
*    1    26     WS-C2960-24TT      12.2                  C2960-LANBASE-M

Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version 12.2(25)FX, RELEAS
E SOFTWARE (fc1)
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Wed 12-Oct-05 22:05 by pt_team

Press RETURN to get started!



Switch>en
Switch>enable
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int
Switch(config)#interface rang
Switch(config)#interface range fa0/1-2
Switch(config-if-range)#
```

Copy Paste

Перейдём в настройки 2960 в режим глобального конфигурирования и создадим агрегированный канал, используя порты FastEthernet0/1, 0/2.

Выполним команду: «Interface range fa0/1-2».

Time: 01:24:04 Power Cycle Devices Fast Forward Time Realtime

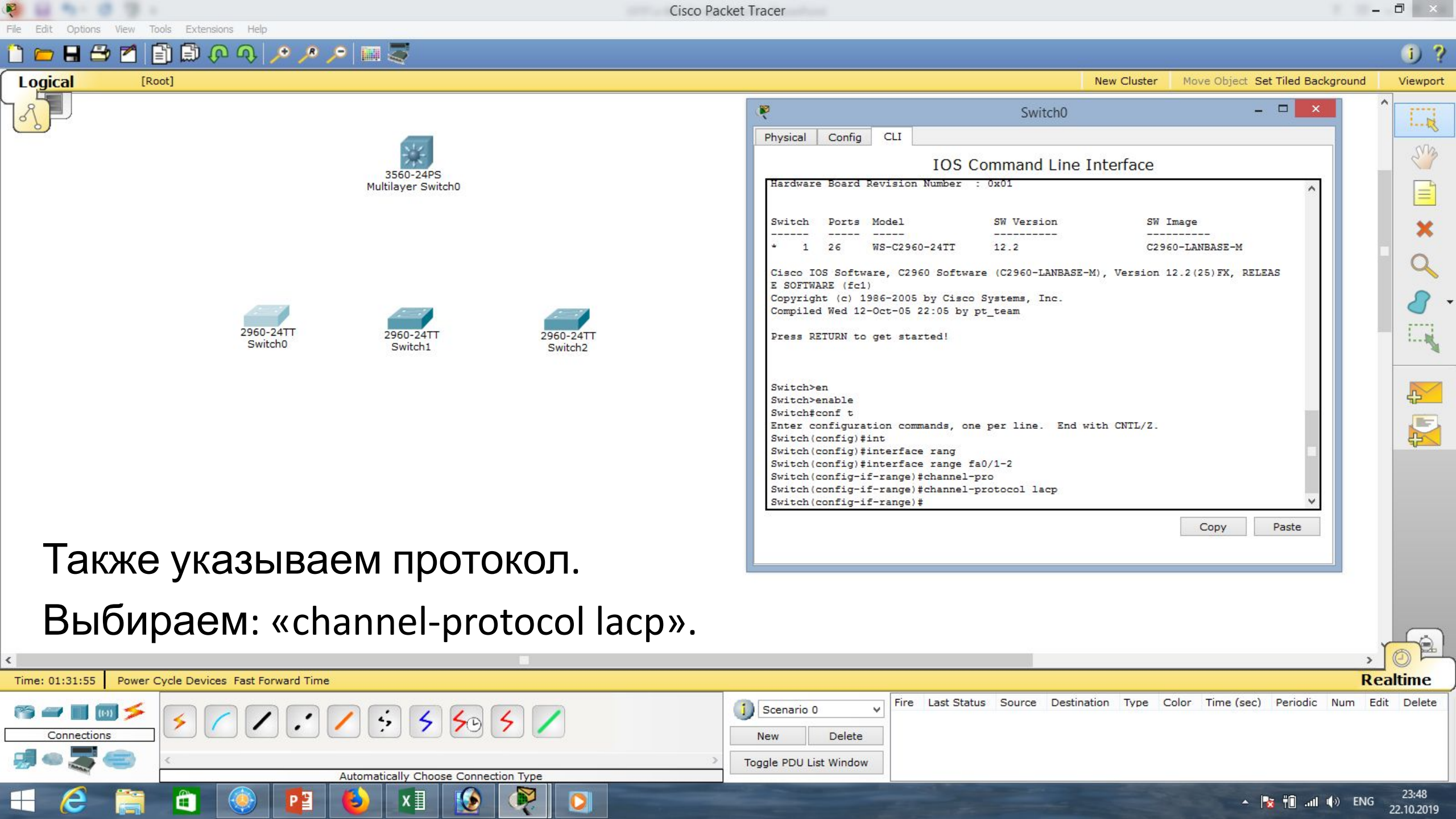
Connections

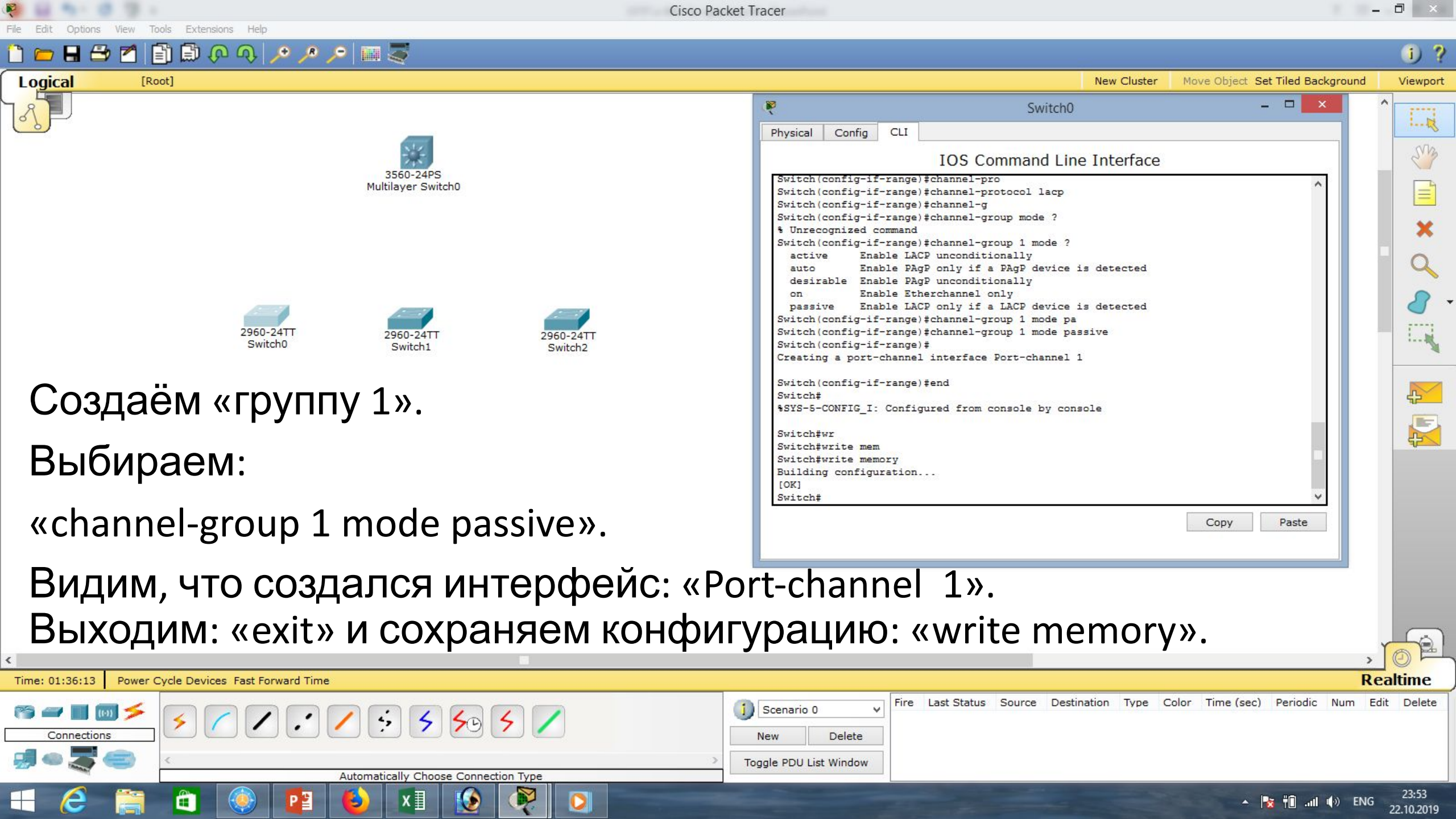
Automatically Choose Connection Type

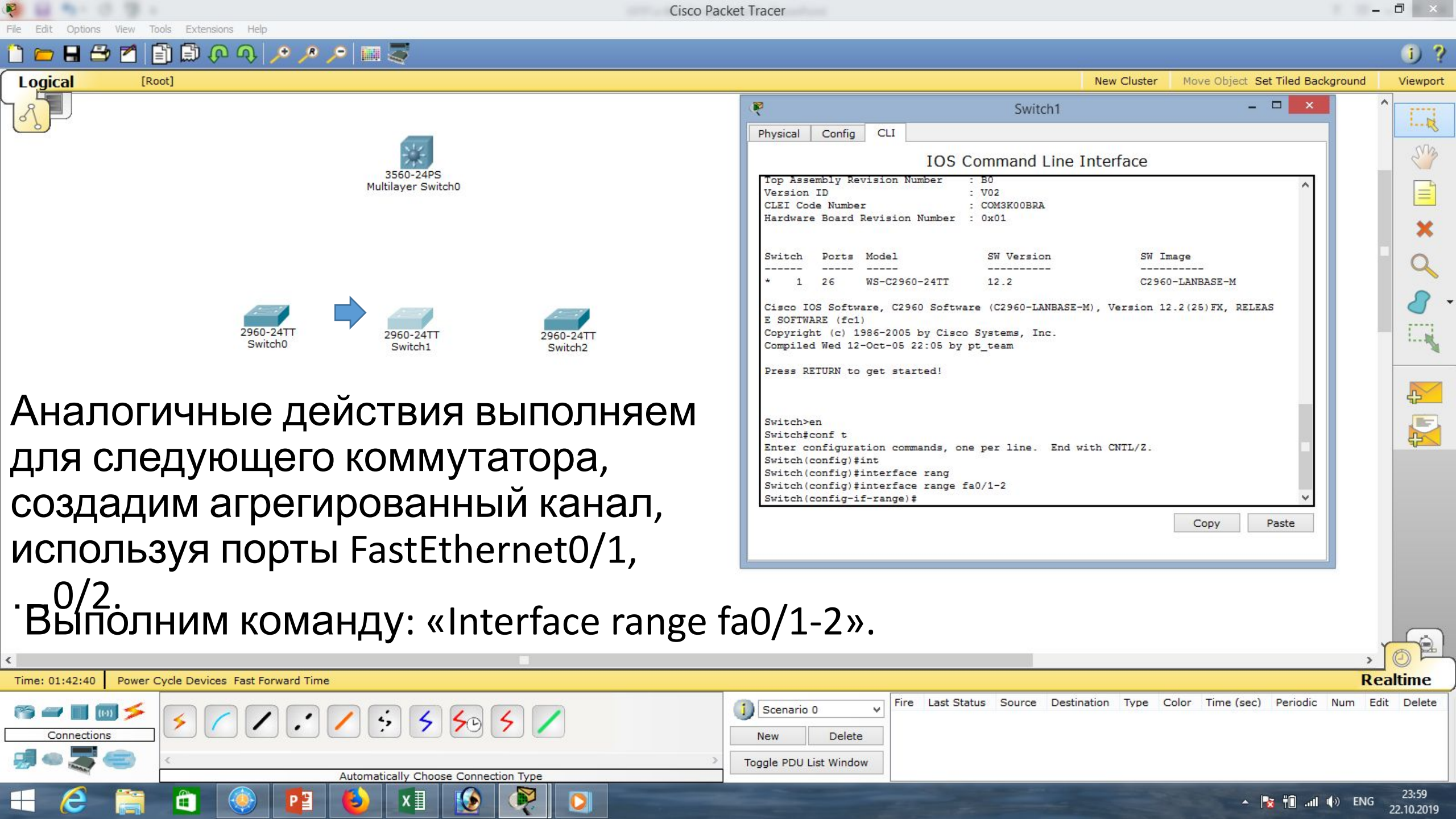
Scenario 0 New Delete Toggle PDU List Window

Fire | Last Status | Source | Destination | Type | Color | Time (sec) | Periodic | Num | Edit | Delete

ENG 23:41 22.10.2019

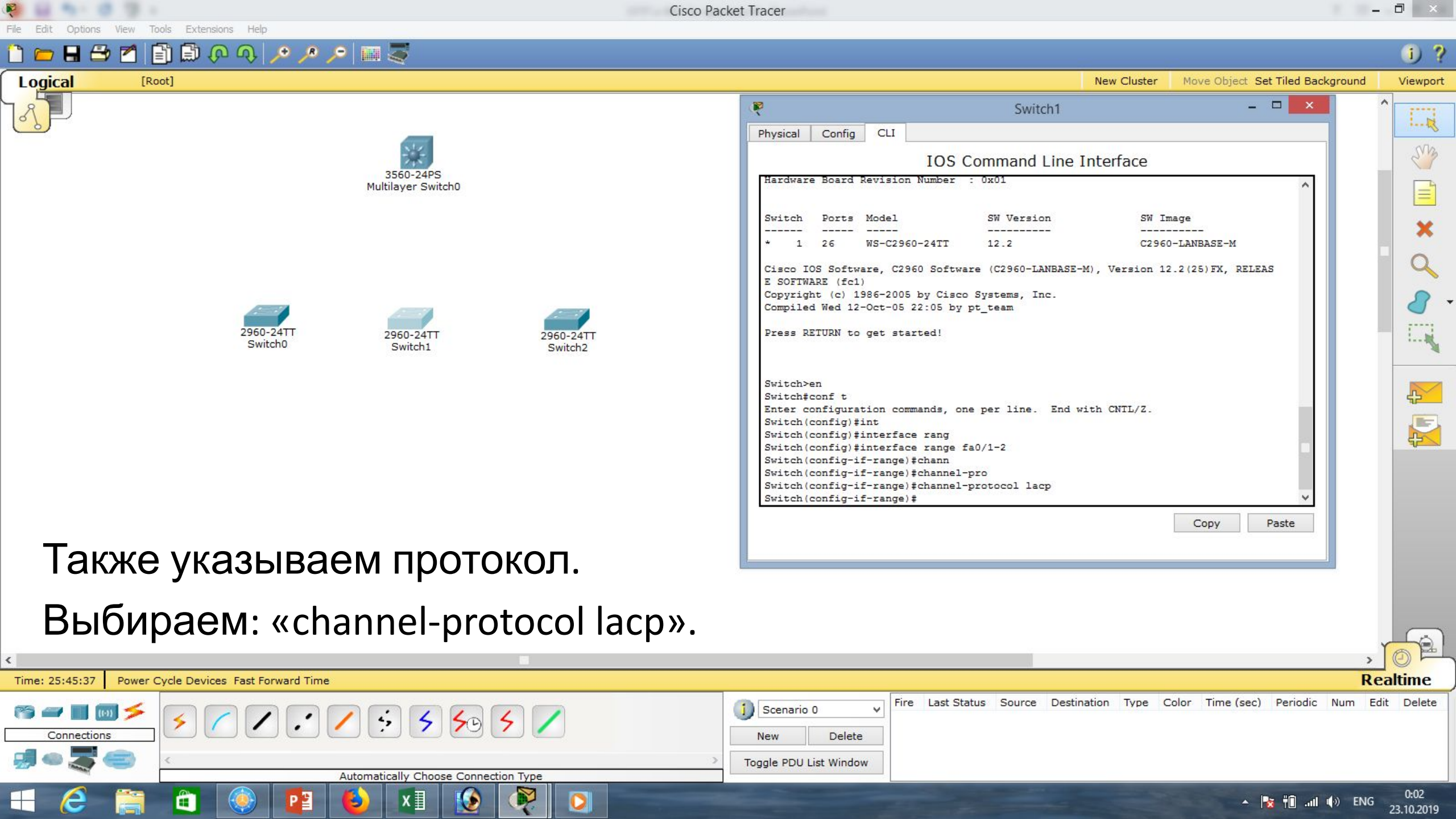

Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
3560-24PS
Multilayer Switch0
2960-24TT
Switch0
2960-24TT
Switch1
2960-24TT
Switch2
Switch0
Physical
Config
CLI
IOS Command Line Interface
Hardware Board Revision Number : 0x01
Switch Ports Model SW Version SW Image
------ ----- ----- ---------- ----------
* 1 26 WS-C2960-24TT 12.2 C2960-LANBASE-M
Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version 12.2(25)FX, RELEAS
E SOFTWARE (fc1)
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Wed 12-Oct-05 22:05 by pt_team
Press RETURN to get started!
Switch>en
Switch>enable
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int
Switch(config)#interface rang
Switch(config)#interface range fa0/1-2
Switch(config-if-range)#channel-pro
Switch(config-if-range)#channel-protocol lacp
Switch(config-if-range)#
Copy
Paste
Также указываем протокол.
Выбираем: «channel-protocol lacp».
Time: 01:31:55
Power Cycle Devices
Fast Forward Time
Realtime
Connections
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time (sec)
Periodic
Num
Edit
Delete
ENG
23:48
22.10.2019

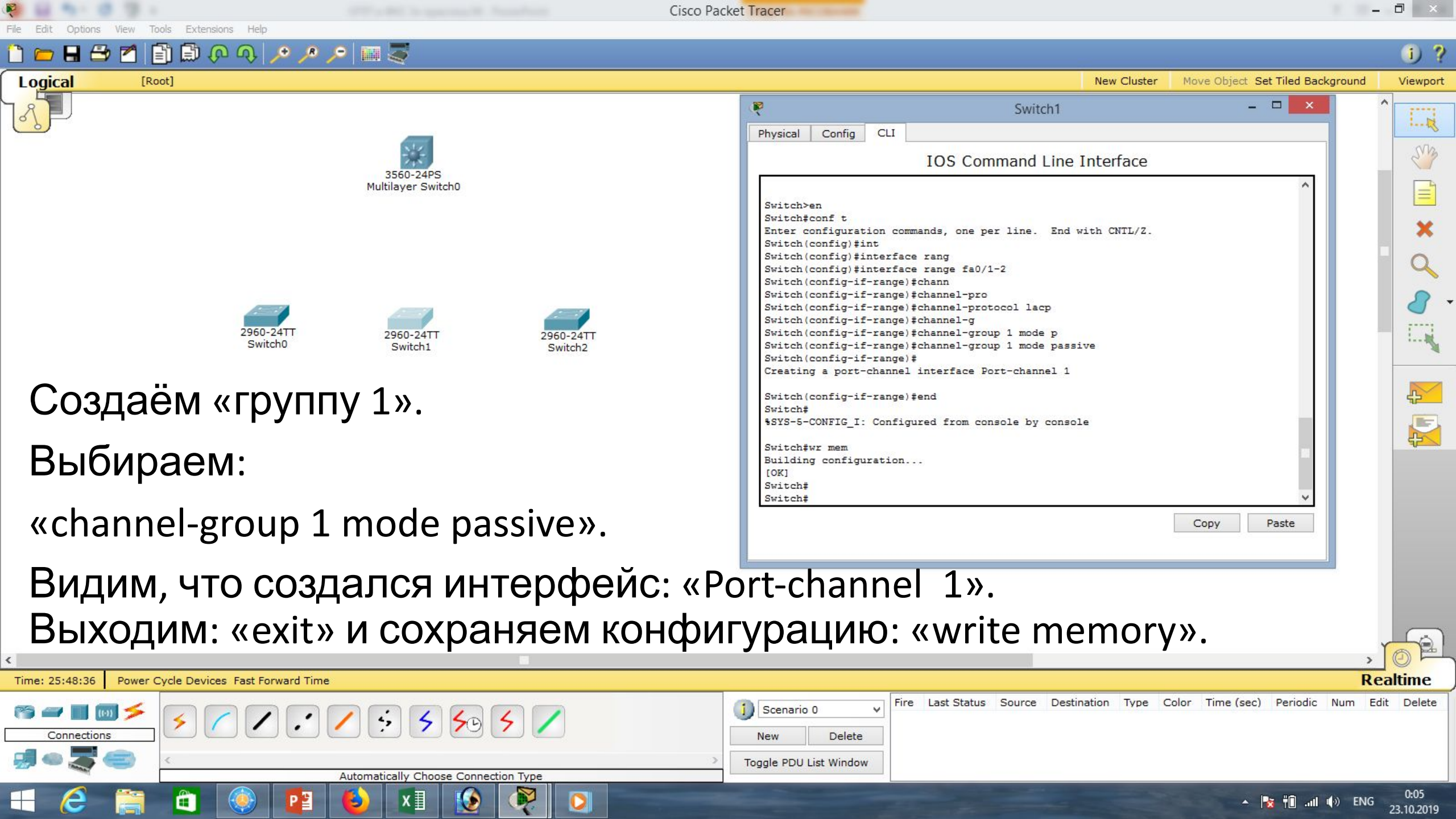

Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
3560-24PS
Multilayer Switch0
2960-24TT
Switch0
2960-24TT
Switch1
2960-24TT
Switch2
Switch0
Physical
Config
CLI
IOS Command Line Interface
Switch(config-if-range)#channel-pro
Switch(config-if-range)#channel-protocol lacp
Switch(config-if-range)#channel-g
Switch(config-if-range)#channel-group mode ?
% Unrecognized command
Switch(config-if-range)#channel-group 1 mode ?
active Enable LACP unconditionally
auto Enable PAgP only if a PAgP device is detected
desirable Enable PAgP unconditionally
on Enable Etherchannel only
passive Enable LACP only if a LACP device is detected
Switch(config-if-range)#channel-group 1 mode pa
Switch(config-if-range)#channel-group 1 mode passive
Switch(config-if-range)#
Creating a port-channel interface Port-channel 1
Switch(config-if-range)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#wr
Switch#write mem
Switch#write memory
Building configuration...
[OK]
Switch#
Copy
Paste
Создаём «группу 1».
Выбираем:
«channel-group 1 mode passive».
Видим, что создался интерфейс: «Port-channel 1».
Выходим: «exit» и сохраняем конфигурацию: «write memory».
Time: 01:36:13
Power Cycle Devices Fast Forward Time
Realtime
Connections
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time (sec)
Periodic
Num
Edit
Delete
ENG
23:53
22.10.2019

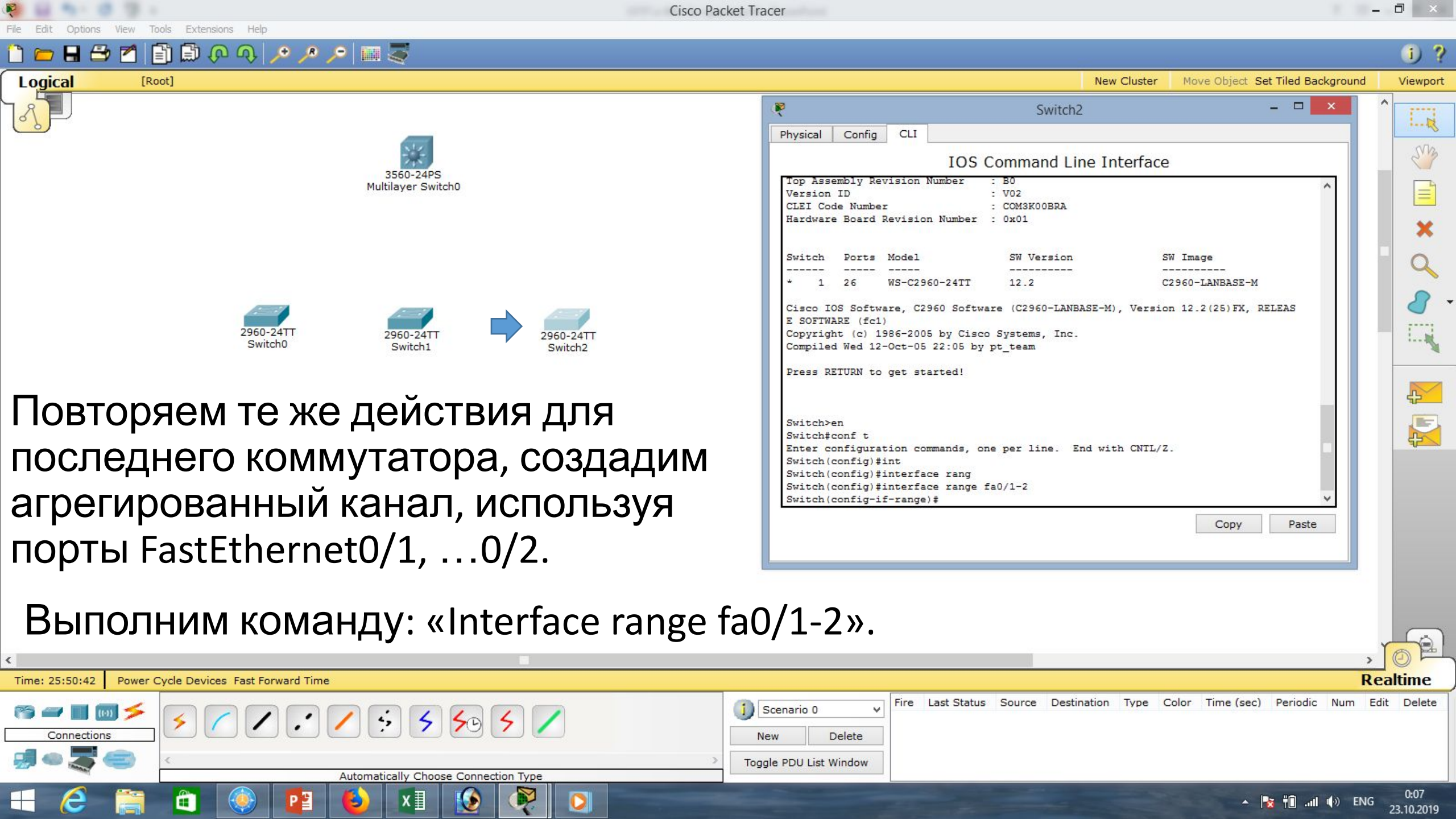


Аналогичные действия выполняем для следующего коммутатора, создадим агрегированный канал, используя порты FastEthernet0/1, 0/2.

Выполним команду: «Interface range fa0/1-2».


Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
3560-24PS
Multilayer Switch0
2960-24TT
Switch0
2960-24TT
Switch1
2960-24TT
Switch2
Switch1
Physical
Config
CLI
IOS Command Line Interface
Hardware Board Revision Number : 0x01
Switch Ports Model SW Version SW Image
* 1 26 WS-C2960-24TT 12.2 C2960-LANBASE-M
Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version 12.2(25)FX, RELEAS
E SOFTWARE (fc1)
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Wed 12-Oct-05 22:05 by pt_team
Press RETURN to get started!
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int
Switch(config)#interface rang
Switch(config)#interface range fa0/1-2
Switch(config-if-range)#chann
Switch(config-if-range)#channel-pro
Switch(config-if-range)#channel-protocol lacp
Switch(config-if-range)#
Copy
Paste
Также указываем протокол.
Выбираем: «channel-protocol lacp».
Time: 25:45:37
Power Cycle Devices Fast Forward Time
Realtime
Connections
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time (sec) Periodic Num Edit Delete
ENG
0:02
23.10.2019


Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
3560-24PS
Multilayer Switch0
2960-24TT
Switch0
2960-24TT
Switch1
2960-24TT
Switch2
Switch1
Physical
Config
CLI
IOS Command Line Interface
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int
Switch(config)#interface rang
Switch(config)#interface range fa0/1-2
Switch(config-if-range)#chann
Switch(config-if-range)#channel-pro
Switch(config-if-range)#channel-protocol lacp
Switch(config-if-range)#channel-g
Switch(config-if-range)#channel-group 1 mode p
Switch(config-if-range)#channel-group 1 mode passive
Switch(config-if-range)#
Creating a port-channel interface Port-channel 1
Switch(config-if-range)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#wr mem
Building configuration...
[OK]
Switch#
Switch#
Copy
Paste
Создаём «группу 1».
Выбираем:
«channel-group 1 mode passive».
Видим, что создался интерфейс: «Port-channel 1».
Выходим: «exit» и сохраняем конфигурацию: «write memory».
Time: 25:48:36
Power Cycle Devices
Fast Forward Time
Realtime
Connections
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time (sec)
Periodic
Num
Edit
Delete
ENG
0:05
23.10.2019


Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
3560-24PS
Multilayer Switch0
2960-24TT
Switch0
2960-24TT
Switch1
2960-24TT
Switch2
Switch2
Physical
Config
CLI
IOS Command Line Interface
Top Assembly Revision Number : B0
Version ID : V02
CLEI Code Number : COM3K00BRA
Hardware Board Revision Number : 0x01
Switch Ports Model SW Version SW Image
* 1 26 WS-C2960-24TT 12.2 C2960-LANBASE-M
Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version 12.2(25)FX, RELEAS
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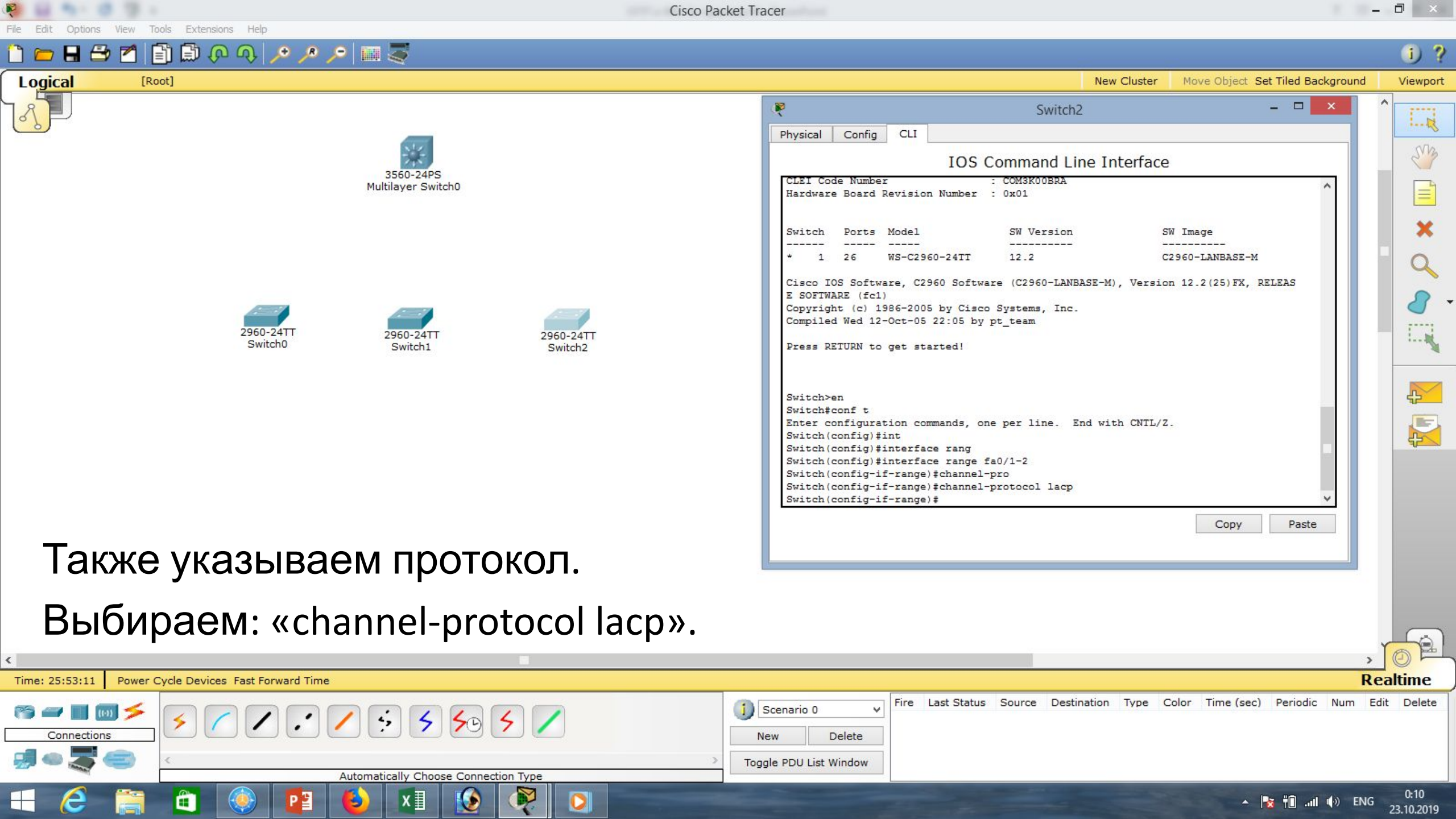
Compiled Wed 12-Oct-05 22:05 by pt_team
Press RETURN to get started!
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int
Switch(config)#interface rang
Switch(config)#interface range fa0/1-2
Switch(config-if-range)#
Copy
Paste
Повторяем те же действия для последнего коммутатора, создадим агрегированный канал, используя порты FastEthernet0/1, …0/2.
Выполним команду: «Interface range fa0/1-2».
Time: 25:50:42
Power Cycle Devices Fast Forward Time
Realtime
Connections
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time (sec) Periodic Num Edit Delete
ENG
0:07
23.10.2019


Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
3560-24PS
Multilayer Switch0
2960-24TT
Switch0
2960-24TT
Switch1
2960-24TT
Switch2
Switch2
Physical
Config
CLI
IOS Command Line Interface
CLEI Code Number : COM3K00BRA
Hardware Board Revision Number : 0x01
Switch Ports Model SW Version SW Image
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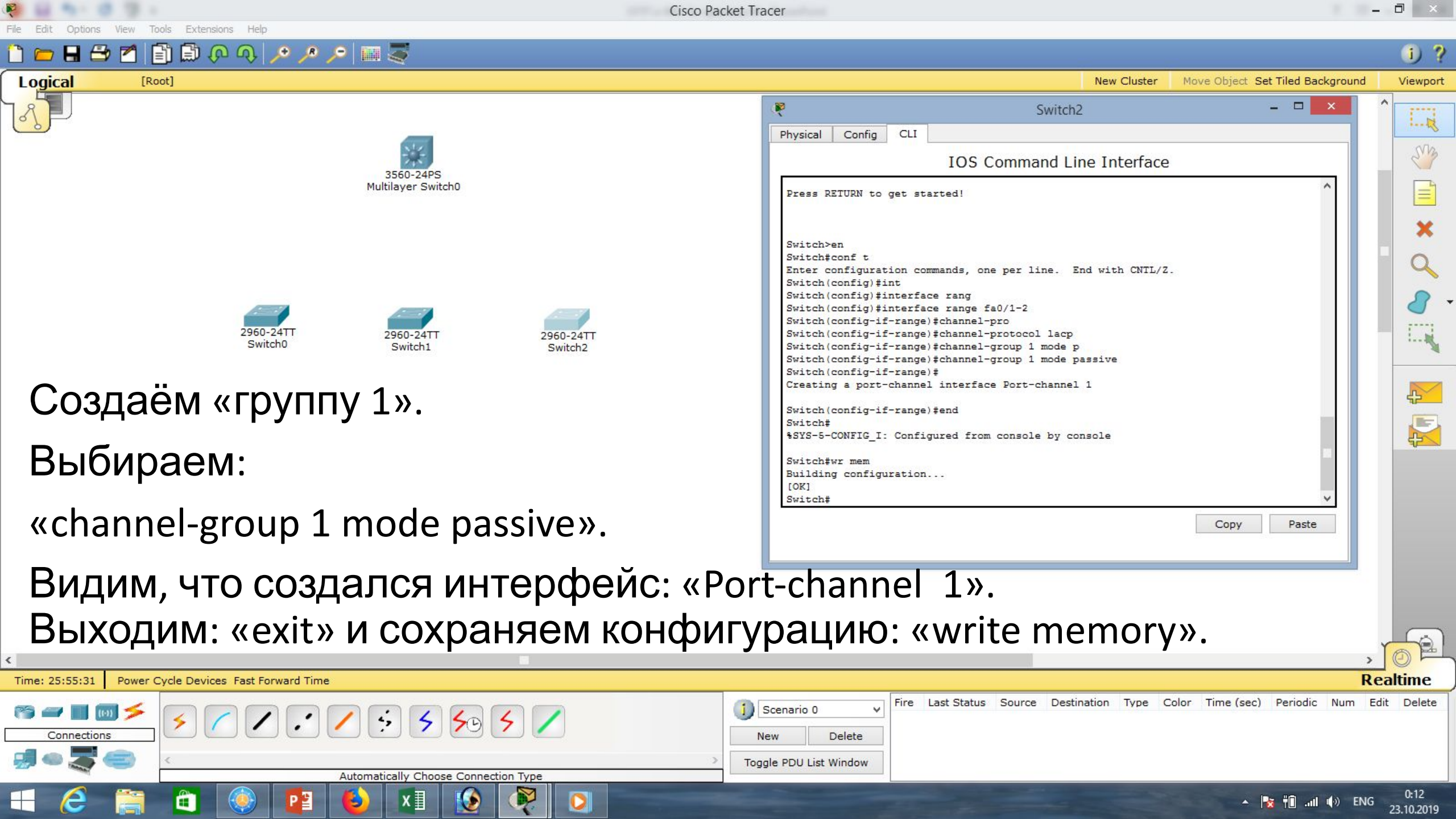
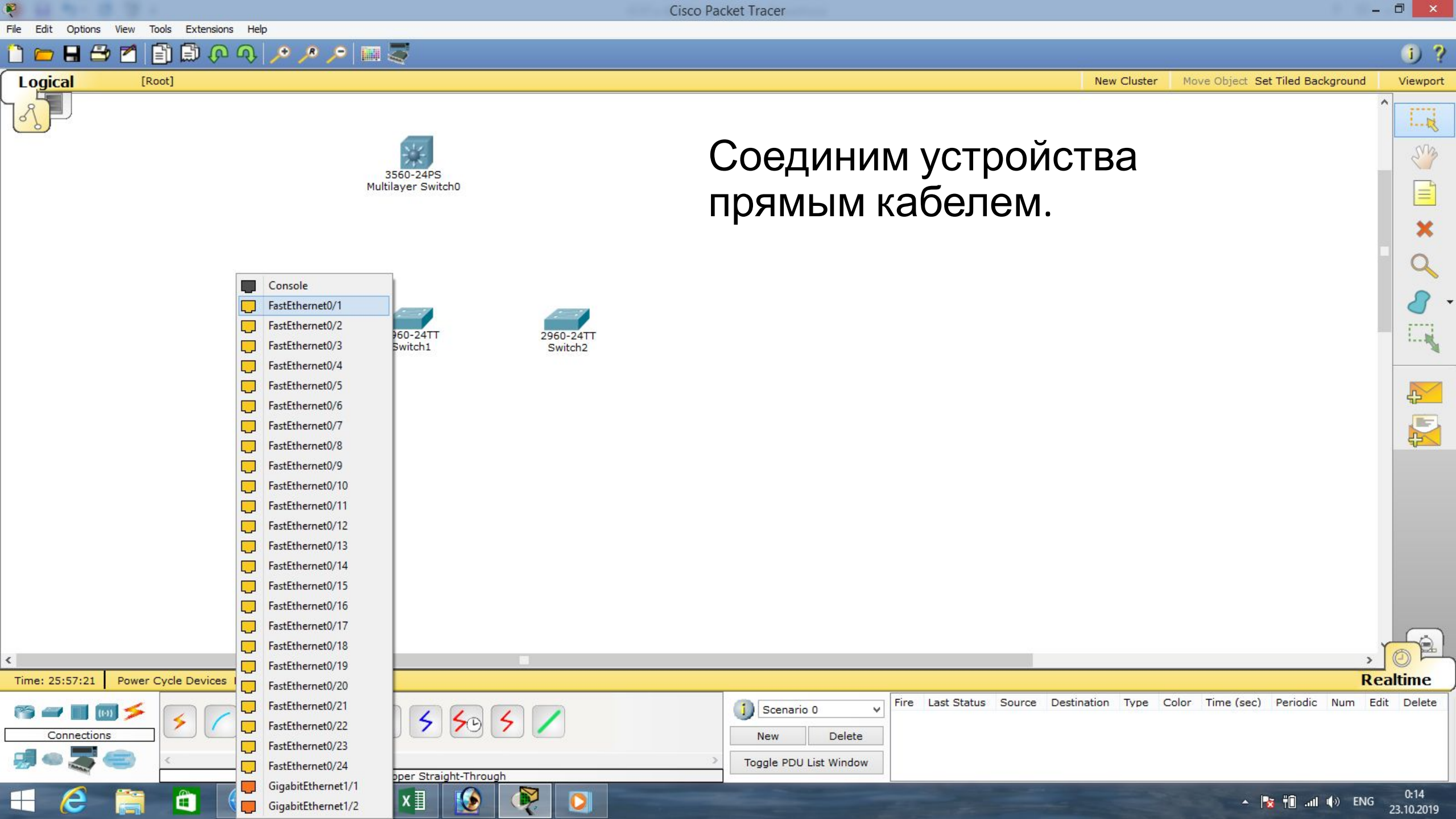
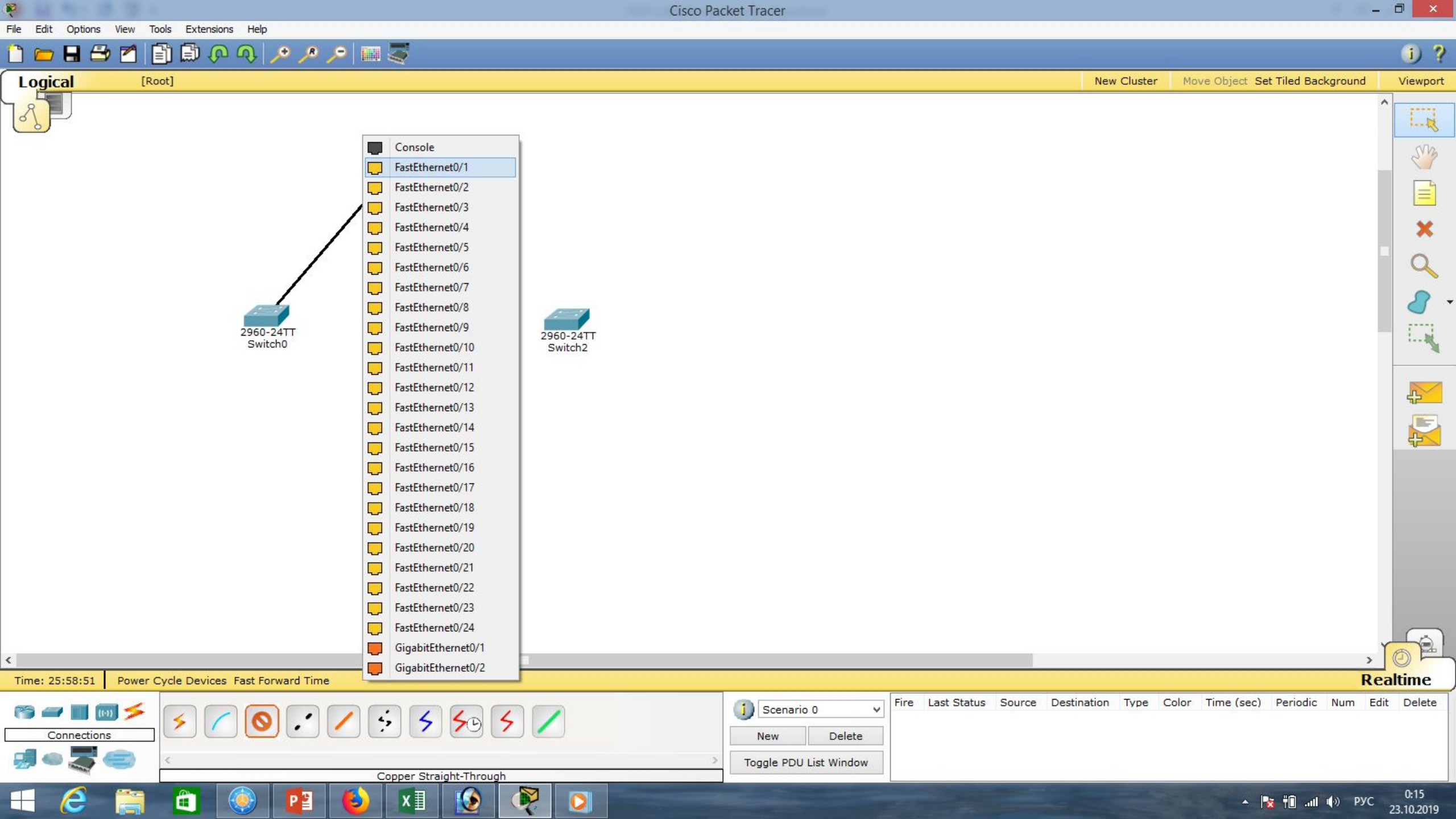
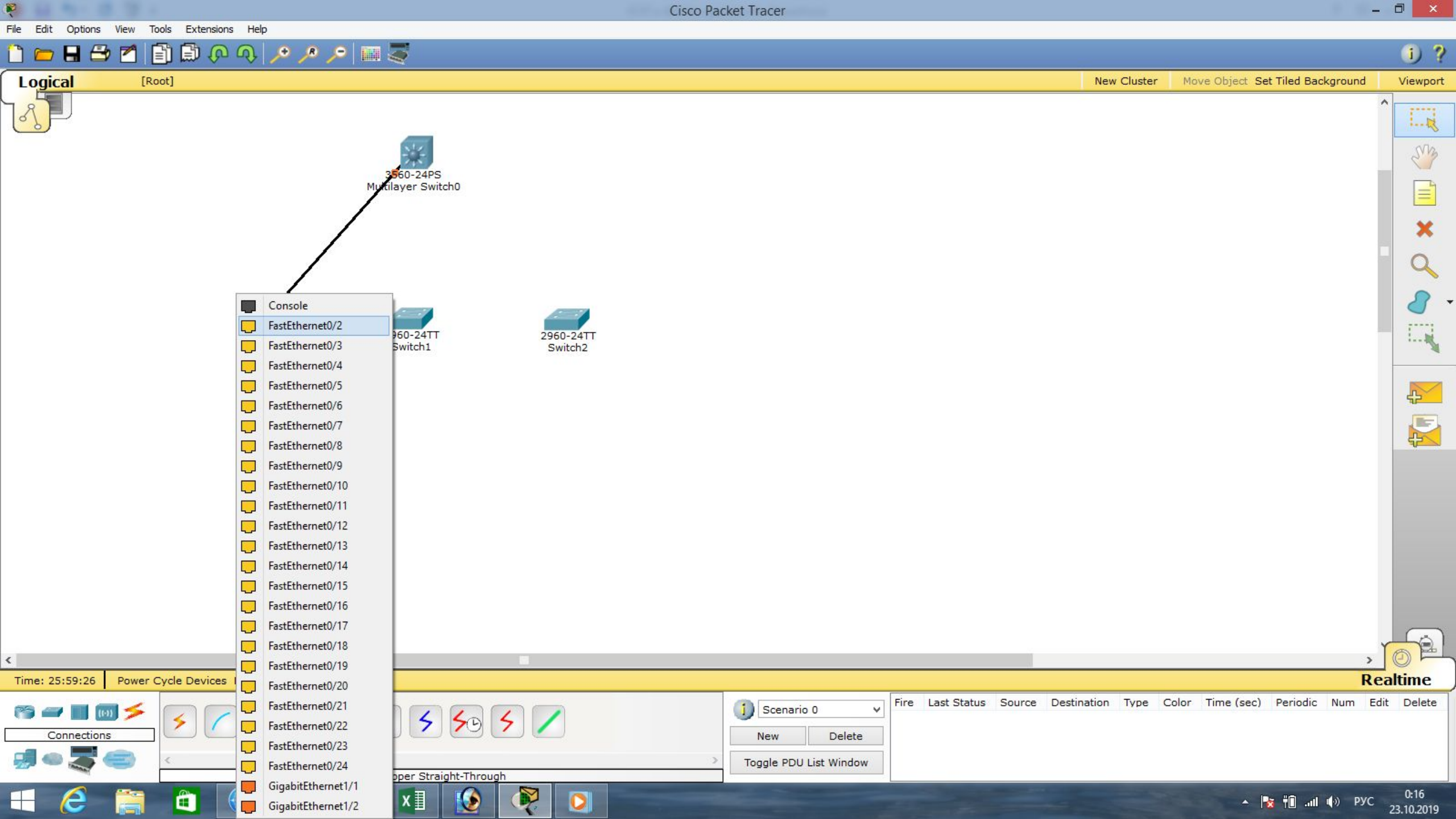
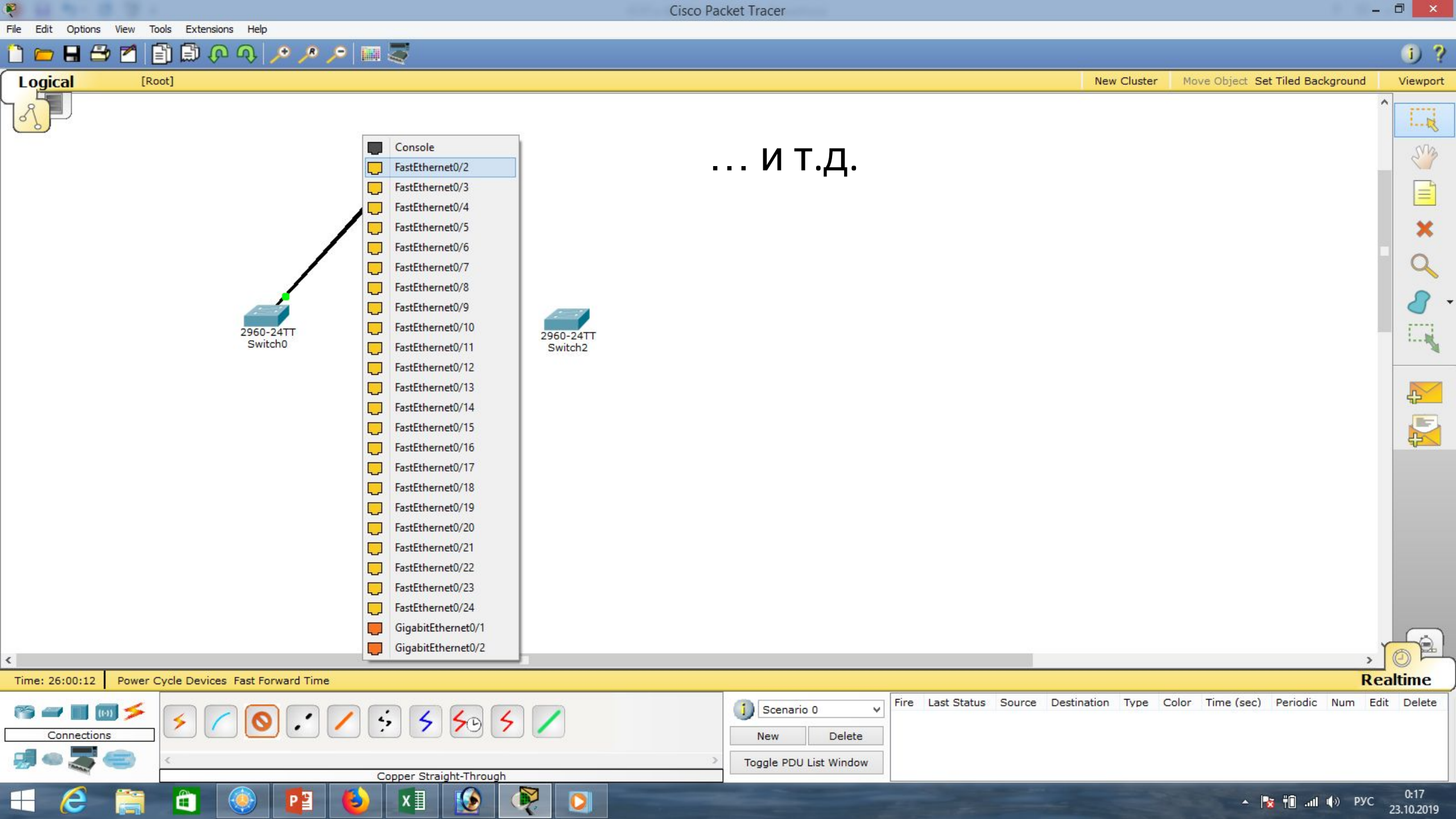
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Wed 12-Oct-05 22:05 by pt_team
Press RETURN to get started!
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int
Switch(config)#interface rang
Switch(config)#interface range fa0/1-2
Switch(config-if-range)#channel-pro
Switch(config-if-range)#channel-protocol lacp
Switch(config-if-range)#
Copy
Paste
Также указываем протокол.
Выбираем: «channel-protocol lacp».
Time: 25:53:11
Power Cycle Devices Fast Forward Time
Realtime
Connections
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time (sec) Periodic Num Edit Delete
ENG
0:10
23.10.2019


Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
3560-24PS
Multilayer Switch0
2960-24TT
Switch0
2960-24TT
Switch1
2960-24TT
Switch2
Switch2
Physical
Config
CLI
IOS Command Line Interface
Press RETURN to get started!
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int
Switch(config)#interface rang
Switch(config)#interface range fa0/1-2
Switch(config-if-range)#channel-pro
Switch(config-if-range)#channel-protocol lacp
Switch(config-if-range)#channel-group 1 mode p
Switch(config-if-range)#channel-group 1 mode passive
Switch(config-if-range)#
Creating a port-channel interface Port-channel 1
Switch(config-if-range)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#wr mem
Building configuration...
[OK]
Switch#
Copy
Paste
Создаём «группу 1».
Выбираем:
«channel-group 1 mode passive».
Видим, что создался интерфейс: «Port-channel 1».
Выходим: «exit» и сохраняем конфигурацию: «write memory».
Time: 25:55:31
Power Cycle Devices
Fast Forward Time
Realtime
Connections
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time (sec)
Periodic
Num
Edit
Delete
ENG
0:12
23.10.2019


Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
3560-24PS
Multilayer Switch0
Соединим устройства прямым кабелем.
960-24TT
Switch1
2960-24TT
Switch2
Console
FastEthernet0/1
FastEthernet0/2
FastEthernet0/3
FastEthernet0/4
FastEthernet0/5
FastEthernet0/6
FastEthernet0/7
FastEthernet0/8
FastEthernet0/9
FastEthernet0/10
FastEthernet0/11
FastEthernet0/12
FastEthernet0/13
FastEthernet0/14
FastEthernet0/15
FastEthernet0/16
FastEthernet0/17
FastEthernet0/18
FastEthernet0/19
FastEthernet0/20
FastEthernet0/21
FastEthernet0/22
FastEthernet0/23
FastEthernet0/24
GigabitEthernet1/1
GigabitEthernet1/2
Time: 25:57:21
Power Cycle Devices
Realtime
Connections
oper Straight-Through
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time (sec)
Periodic
Num
Edit
Delete
ENG
0:14
23.10.2019


Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical [Root]
New Cluster Move Object Set Tiled Background Viewport
Console
FastEthernet0/1
FastEthernet0/2
FastEthernet0/3
FastEthernet0/4
FastEthernet0/5
FastEthernet0/6
FastEthernet0/7
FastEthernet0/8
FastEthernet0/9
FastEthernet0/10
FastEthernet0/11
FastEthernet0/12
FastEthernet0/13
FastEthernet0/14
FastEthernet0/15
FastEthernet0/16
FastEthernet0/17
FastEthernet0/18
FastEthernet0/19
FastEthernet0/20
FastEthernet0/21
FastEthernet0/22
FastEthernet0/23
FastEthernet0/24
GigabitEthernet0/1
GigabitEthernet0/2
2960-24TT
Switch0
2960-24TT
Switch2
Time: 25:58:51
Power Cycle Devices Fast Forward Time
Realtime
Connections
Copper Straight-Through
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time (sec)
Periodic
Num
Edit
Delete
РУС
0:15
23.10.2019

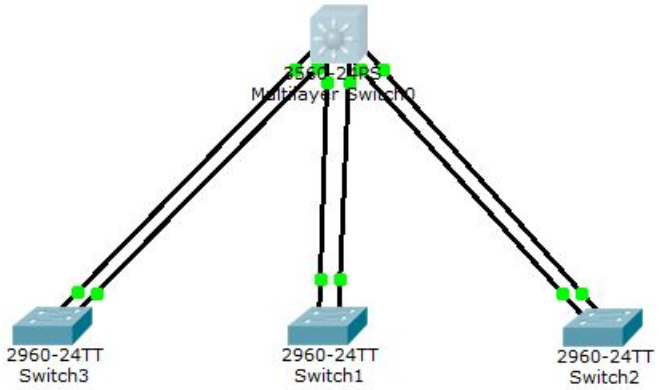

Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical [Root]
New Cluster Move Object Set Tiled Background Viewport
3560-24PS
Multilayer Switch0
960-24TT
Switch1
2960-24TT
Switch2
Console
FastEthernet0/2
FastEthernet0/3
FastEthernet0/4
FastEthernet0/5
FastEthernet0/6
FastEthernet0/7
FastEthernet0/8
FastEthernet0/9
FastEthernet0/10
FastEthernet0/11
FastEthernet0/12
FastEthernet0/13
FastEthernet0/14
FastEthernet0/15
FastEthernet0/16
FastEthernet0/17
FastEthernet0/18
FastEthernet0/19
FastEthernet0/20
FastEthernet0/21
FastEthernet0/22
FastEthernet0/23
FastEthernet0/24
GigabitEthernet1/1
GigabitEthernet1/2
Time: 25:59:26
Power Cycle Devices
Realtime
Connections
pper Straight-Through
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time (sec)
Periodic
Num
Edit
Delete
РУС
0:16
23.10.2019


Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical [Root]
New Cluster Move Object Set Tiled Background Viewport
Console
FastEthernet0/2
FastEthernet0/3
FastEthernet0/4
FastEthernet0/5
FastEthernet0/6
FastEthernet0/7
FastEthernet0/8
FastEthernet0/9
FastEthernet0/10
FastEthernet0/11
FastEthernet0/12
FastEthernet0/13
FastEthernet0/14
FastEthernet0/15
FastEthernet0/16
FastEthernet0/17
FastEthernet0/18
FastEthernet0/19
FastEthernet0/20
FastEthernet0/21
FastEthernet0/22
FastEthernet0/23
FastEthernet0/24
GigabitEthernet0/1
GigabitEthernet0/2
2960-24TT
Switch0
2960-24TT
Switch2
. . . и т.д.
Time: 26:00:12 Power Cycle Devices Fast Forward Time
Realtime
Connections
Copper Straight-Through
Scenario 0
New Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time (sec) Periodic Num Edit Delete
РУС
0:17
23.10.2019

Cisco Packet Tracer

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport



Multilayer Switch0

Physical Config CLI

IOS Command Line Interface

```
o up

Switch#
Switch#en
Switch#show eth
Switch#show etherchannel summ
Flags:  D - down        P - in port-channel
        I - stand-alone s - suspended
        H - Hot-standby (LACP only)
        R - Layer3      S - Layer2
        U - in use      f - failed to allocate aggregator
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port


Number of channel-groups in use: 3
Number of aggregators:           3

Group  Port-channel  Protocol    Ports
------+-------------+-----------+-----------------------------------------------

1      Po1(SU)           LACP   Fa0/1(P) Fa0/2(P)
2      Po2(SU)           LACP   Fa0/3(P) Fa0/4(P)
3      Po3(SU)           LACP   Fa0/5(P) Fa0/6(P)
Switch#
```

Copy Paste

Зайдём в настройки 3560 в режим глобального конфигурирования. Выполним команду: «show etherchannel summary», видим наши порты и протокол «LACP».

Time: 26:15:07 Power Cycle Devices Fast Forward Time Realtime

Connections

Copper Straight-Through

Scenario 0 New Delete Toggle PDU List Window

Fire	Last Status	Source	Destination	Type	Color	Time (sec)	Periodic	Num	Edit	Delete

ENG 0:32 23.10.2019

Маска подсети	Маска в двоичной системе	Префикс	Количество адресов	Обратная маска
255.255.255.255	11111111.11111111.11111111.11111111	/32	1	0.0.0.0
255.255.255.254	11111111.11111111.11111111.11111110	/31	2	0.0.0.1
255.255.255.252	11111111.11111111.11111111.11111100	/30	4	0.0.0.3
255.255.255.248	11111111.11111111.11111111.11111000	/29	8	0.0.0.7
255.255.255.240	11111111.11111111.11111111.11110000	/28	16	0.0.0.15
255.255.255.224	11111111.11111111.11111111.11100000	/27	32	0.0.0.31
255.255.255.192	11111111.11111111.11111111.11000000	/26	64	0.0.0.63
255.255.255.128	11111111.11111111.11111111.10000000	/25	128	0.0.0.127
255.255.255.0	11111111.11111111.11111111.00000000	/24	256	0.0.0.255
255.255.254.0	11111111.11111111.11111110.00000000	/23	512	0.0.1.255
255.255.252.0	11111111.11111111.11111100.00000000	/22	1024	0.0.3.255
255.255.248.0	11111111.11111111.11111000.00000000	/21	2048	0.0.7.255
255.255.240.0	11111111.11111111.11110000.00000000	/20	4096	0.0.15.255
255.255.224.0	11111111.11111111.11100000.00000000	/19	8192	0.0.31.255
255.255.192.0	11111111.11111111.11000000.00000000	/18	16384	0.0.63.255
255.255.128.0	11111111.11111111.10000000.00000000	/17	32768	0.0.127.255
255.255.0.0	11111111.11111111.00000000.00000000	/16	65536	0.0.255.255
255.254.0.0	11111111.11111110.00000000.00000000	/15	131072	0.1.255.255
255.252.0.0	11111111.11111100.00000000.00000000	/14	262144	0.3.255.255
255.248.0.0	11111111.11111000.00000000.00000000	/13	524288	0.7.255.255
255.240.0.0	11111111.11110000.00000000.00000000	/12	1048576	0.15.255.255

Список литературы:

1. Компьютерные сети. Н.В. Максимов, И.И. Попов, 4-е издание, переработанное и дополненное, «Форум», Москва, 2010.
2. Компьютерные сети. Принципы, технологии, протоколы, В. Олифер, Н. Олифер (5-е издание), «Питер», Москва, Санк-Петербург, 2016.
3. Компьютерные сети. Э. Таненбаум, 4-е издание, «Питер», Москва, Санк-Петербург, 2003.

Список ссылок:

https://studfiles.net/html/2706/610/html_1t7827cn0P.AOQ6/htmlconvd-5FjQl116x1.jpg

https://bigslide.ru/images/51/50961/960/img12.jpg

https://bigslide.ru/images/51/50961/960/img11.jpg

https://1.bp.blogspot.com/-qptz15WfEJE/XDoN736gSvI/AAAAAAAAAU8/ESDrBE1iP-0vt5keIdxrnh_Y6ZpF2_2tQCLcBGAs/s1600/Hybrid-Network.jpg

http://www.klikglodok.com/toko/19948-thickbox_default/jual-harga-allied-telesis-switch-16-port-gigabit-10-100-1000-unmanaged-at-gs900-16.jpg

http://900igr.net/up/datas/221400/029.jpg

Спасибо за внимание!

Преподаватель: Солодухин Андрей Геннадьевич

Электронная почта: asoloduhin@kait20.ru