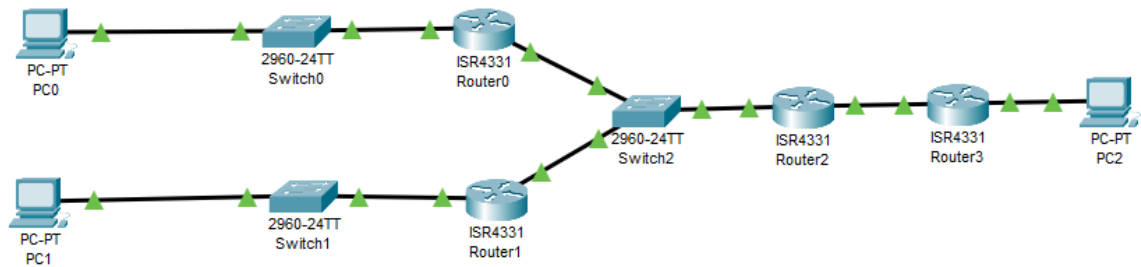


Лабораторная работа №13

- 1) Ибраев Ерлан 30.5.2000
- 2) Топология:



- 3) Switch0

```
Switch#show vlan
```

VLAN	Name	Status	Ports
1	default	active	Fa0/3, Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/8, Fa0/9, Fa0/10 Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/18 Fa0/19, Fa0/20, Fa0/21, Fa0/22 Fa0/23, Fa0/24, Gig0/1, Gig0/2
21	VLAN21	active	Fa0/1
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
21	enet	100021	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0
1004	fdnet	101004	1500	-	-	-	ieee	-	0	0
1005	trnet	101005	1500	-	-	-	ibm	-	0	0

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
------	------	------	-----	--------	--------	----------	-----	----------	--------	--------

```
Remote SPAN VLANs
```

```
Primary Secondary Type Ports
```

```
Switch#
```

```
Switch#show interfaces trunk
```

Port	Mode	Encapsulation	Status	Native vlan
Fa0/2	on	802.1q	trunking	1

```
Port Vlan allowed on trunk
Fa0/2 21
```

```
Port Vlan allowed and active in management domain
Fa0/2 21
```

```
Port Vlan in spanning tree forwarding state and not pruned
Fa0/2 21
```

```
Switch#
```

4) Router0

```
IbraevR1#show ipv6 interface brief
GigabitEthernet0/0/0      [up/up]
    unassigned
GigabitEthernet0/0/0.21    [up/up]
    FE80::20C:85FF:FED4:1
    2000:5:30::1
GigabitEthernet0/0/1      [up/up]
    FE80::20C:85FF:FED4:2
    2000:7:30::2
GigabitEthernet0/0/2      [administratively down/down]
    unassigned
Vlan1                     [administratively down/down]
    unassigned
IbraevR1#
```

```
IbraevR1#show ipv6 ospf
Routing Process "ospfv3 1" with ID 1.1.1.1
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
LSA group pacing timer 240 secs
Interface flood pacing timer 33 msecs
Retransmission pacing timer 66 msecs
Number of external LSA 1. Checksum Sum 0x00e603
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
Reference bandwidth unit is 100 mbps
  Area BACKBONE(0)
    Number of interfaces in this area is 2
    SPF algorithm executed 6 times
    Number of LSA 7. Checksum Sum 0x041135
    Number of DCbitless LSA 0
    Number of indication LSA 0
    Number of DoNotAge LSA 0
    Flood list length 0
IbraevR1#
```

```
IbraevR1#show ipv6 route
IPv6 Routing Table - 7 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
       U - Per-user Static route, M - MIPv6
       I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
       ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
       O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
       ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
       D - EIGRP, EX - EIGRP external
OE2 ::/0 [110/1]
    via FE80::2D0:97FF:FE5E:C501, GigabitEthernet0/0/1
C   2000:5:30::/64 [0/0]
    via GigabitEthernet0/0/0.21, directly connected
L   2000:5:30::1/128 [0/0]
    via GigabitEthernet0/0/0.21, receive
O   2000:6:30::/64 [110/2]
    via FE80::20A:F3FF:FEAC:702, GigabitEthernet0/0/1
C   2000:7:30::/64 [0/0]
    via GigabitEthernet0/0/1, directly connected
L   2000:7:30::2/128 [0/0]
    via GigabitEthernet0/0/1, receive
L   FF00::/8 [0/0]
    via Null0, receive
IbraevR1#
```

```

!
interface GigabitEthernet0/0/0
  no ip address
  duplex auto
  speed auto
!
interface GigabitEthernet0/0/0.21
  encapsulation dot1Q 21
  no ip address
  ipv6 address 2000:6:30::1/64
  ipv6 enable
  ipv6 ospf 1 area 0
!
interface GigabitEthernet0/0/1
  no ip address
  duplex auto
  speed auto
  ipv6 address 2000:7:30::2/64
  ipv6 ospf 1 area 0
!
interface GigabitEthernet0/0/2
  no ip address
  duplex auto
  speed auto
  shutdown
!
interface Vlan1
  no ip address
  shutdown
!
ipv6 router ospf 1
  router-id 1.1.1.1
  log-adjacency-changes
!

```

5) Router1

```

IbraevR2#show ipv6 interface brief
GigabitEthernet0/0/0      [up/up]
    FE80::20A:F3FF:FEAC:701
    2000:6:30::1
GigabitEthernet0/0/1      [up/up]
    FE80::20A:F3FF:FEAC:702
    2000:7:30::3
GigabitEthernet0/0/2      [administratively down/down]
    unassigned
Vlan1                     [administratively down/down]
    unassigned
IbraevR2#

```

```

IbraevR2#show ipv6 ospf
Routing Process "ospfv3 1" with ID 3.3.3.3
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
LSA group pacing timer 240 secs
Interface flood pacing timer 33 msecs
Retransmission pacing timer 66 msecs
Number of external LSA 1. Checksum Sum 0x00e603
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
Reference bandwidth unit is 100 mbps
  Area BACKBONE(0)
    Number of interfaces in this area is 2
    SPF algorithm executed 2 times
    Number of LSA 7. Checksum Sum 0x041135
    Number of DCbitless LSA 0
    Number of indication LSA 0
    Number of DoNotAge LSA 0
    Flood list length 0
IbraevR2#

```

```

IbraevR2#show ipv6 route
IPv6 Routing Table - 7 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
        U - Per-user Static route, M - MIPv6
        I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
        ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
        O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
        ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
        D - EIGRP, EX - EIGRP external
OE2 ::/0 [110/1]
    via FE80::2D0:97FF:FE5E:C501, GigabitEthernet0/0/1
O   2000:5:30::/64 [110/2]
    via FE80::20C:85FF:FED4:2, GigabitEthernet0/0/1
C   2000:6:30::/64 [0/0]
    via GigabitEthernet0/0/0, directly connected
L   2000:6:30::1/128 [0/0]
    via GigabitEthernet0/0/0, receive
C   2000:7:30::/64 [0/0]
    via GigabitEthernet0/0/1, directly connected
L   2000:7:30::3/128 [0/0]
    via GigabitEthernet0/0/1, receive
L   FF00::/8 [0/0]
    via Null0, receive
IbraevR2#

interface GigabitEthernet0/0/0
no ip address
duplex auto
speed auto
ipv6 address 2000:6:30::1/64
ipv6 ospf 1 area 0
!
interface GigabitEthernet0/0/1
no ip address
duplex auto
speed auto
ipv6 address 2000:7:30::3/64
ipv6 ospf 1 area 0
!
interface GigabitEthernet0/0/2
no ip address
duplex auto
speed auto
shutdown
!
interface Vlan1
no ip address
shutdown
!
ipv6 router ospf 1
router-id 3.3.3.3
log-adjacency-changes
!

```

6) Router2

```
IbraevR3#show ipv6 ospf
Routing Process "ospfv3 1" with ID 2.2.2.2
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
LSA group pacing timer 240 secs
Interface flood pacing timer 33 msecs
Retransmission pacing timer 66 msecs
Number of external LSA 1. Checksum Sum 0x00e603
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
Reference bandwidth unit is 100 mbps
  Area BACKBONE(0)
    Number of interfaces in this area is 1
    SPF algorithm executed 4 times
    Number of LSA 7. Checksum Sum 0x041135
    Number of DCbitless LSA 0
    Number of indication LSA 0
    Number of DoNotAge LSA 0
    Flood list length 0
```

```
IbraevR3#
```

```
IbraevR3#show ipv6 interface brief
GigabitEthernet0/0/0      [up/up]
    FE80::2D0:97FF:FE5E:C501
    2000:7:30::1
GigabitEthernet0/0/1      [up/up]
    FE80::2D0:97FF:FE5E:C502
    2000:8:30:0:2D0:97FF:FE5E:C502
GigabitEthernet0/0/2      [administratively down/down]
    unassigned
Vlan1                     [administratively down/down]
    unassigned
IbraevR3#
```

```
IbraevR3#show ipv6 route
IPv6 Routing Table - 8 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
       U - Per-user Static route, M - MIPv6
       I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
       ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
       O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
       ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
       D - EIGRP, EX - EIGRP external
S   ::/0 [1/0]
    via FE80::205:5EFF:FE6E:3601, GigabitEthernet0/0/1
O   2000:5:30::/64 [110/2]
    via FE80::20C:85FF:FED4:2, GigabitEthernet0/0/0
O   2000:6:30::/64 [110/2]
    via FE80::20A:F3FF:FEAC:702, GigabitEthernet0/0/0
C   2000:7:30::/64 [0/0]
    via GigabitEthernet0/0/0, directly connected
L   2000:7:30::1/128 [0/0]
    via GigabitEthernet0/0/0, receive
NDp 2000:8:30::/64 [2/0]
    via GigabitEthernet0/0/1, directly connected
L   2000:8:30:0:2D0:97FF:FE5E:C502/128 [0/0]
    via GigabitEthernet0/0/1, receive
L   FF00::/8 [0/0]
    via Null0, receive
IbraevR3#
```

```

interface GigabitEthernet0/0/0
no ip address
duplex auto
speed auto
ipv6 address 2000:7:30::1/64
ipv6 ospf 1 area 0
!
interface GigabitEthernet0/0/1
no ip address
duplex auto
speed auto
ipv6 address autoconfig
ipv6 enable
!
interface GigabitEthernet0/0/2
no ip address
duplex auto
speed auto
shutdown
!
interface Vlan1
no ip address
shutdown
!
ipv6 router ospf 1
router-id 2.2.2.2
default-information originate
log-adjacency-changes
!

```

7) Router3

```

IbraevISP#show ipv6 interface brief
GigabitEthernet0/0/0      [up/up]
    FE80::205:5EFF:FE6E:3601
    2000:8:30::2
GigabitEthernet0/0/1      [up/up]
    FE80::205:5EFF:FE6E:3602
    2000:5:30:2000::1
GigabitEthernet0/0/2      [administratively down/down]
    unassigned
Vlan1                     [administratively down/down]
    unassigned
IbraevISP#

```

```

IbraevISP#show ipv6 dhcp pool
DHCPv6 pool: dhcp_pool
  Address allocation prefix: 2000:8:30::/64 valid 172800 preferred 86400 (0 in use, 0
conflicts)
  Domain name: Ibraev
  Active clients: 0
IbraevISP#

```

```

IbraevISP#show ipv6 route
IPv6 Routing Table - 8 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
        U - Per-user Static route, M - MIPv6
        I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
        ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
        O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
        ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
        D - EIGRP, EX - EIGRP external
S   2000:5:30::/64 [1/0]
    via 2000:8:30:0:2D0:97FF:FE5E:C502
C   2000:5:30:2000::/64 [0/0]
    via GigabitEthernet0/0/1, directly connected
L   2000:5:30:2000::1/128 [0/0]
    via GigabitEthernet0/0/1, receive
S   2000:6:30::/64 [1/0]
    via 2000:8:30:0:2D0:97FF:FE5E:C502
S   2000:7:30::/64 [1/0]
    via 2000:8:30:0:2D0:97FF:FE5E:C502
C   2000:8:30::/64 [0/0]
    via GigabitEthernet0/0/0, directly connected
L   2000:8:30::2/128 [0/0]
    via GigabitEthernet0/0/0, receive
L   FF00::/8 [0/0]
    via Null0, receive
IbraevISP#

ipv6 dhcp pool dhcp_pool
 address prefix 2000:8:30::/64 lifetime 172800 86400
 domain-name ibraev.ru
!

interface GigabitEthernet0/0/0
 no ip address
 duplex auto
 speed auto
 ipv6 address 2000:8:30::2/64
 ipv6 enable
 ipv6 dhcp server dhcp_pool
!
interface GigabitEthernet0/0/1
 no ip address
 duplex auto
 speed auto
 ipv6 address 2000:5:30:2000::1/64
!
interface GigabitEthernet0/0/2
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
ip classless
!
ip flow-export version 9
!
ipv6 route 2000:7:30::/64 2000:8:30:0:2D0:97FF:FE5E:C502
ipv6 route 2000:5:30::/64 2000:8:30:0:2D0:97FF:FE5E:C502
ipv6 route 2000:6:30::/64 2000:8:30:0:2D0:97FF:FE5E:C502
,

```

8) PC0

PC0

Physical Config Desktop Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address:

Subnet Mask:

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: 2000:5:30::2 / 64

Link Local Address: FE80::202:16FF:FE2D:8D7B

Default Gateway: 2000:5:30::1

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

☐ Top

9) PC1

PC1

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address

Subnet Mask

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☒ Automatic ☐ Static IPv6 request successful.

IPv6 Address 2000:6:30:0:200:CFF:FEC9:7AA1 / 64

Link Local Address FE80::200:CFF:FEC9:7AA1

Default Gateway FE80::20A:F3FF:FEAC:701

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

10) PC2

PC2

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address

Subnet Mask

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address 2000:5:30:2000::2 / 64

Link Local Address FE80::260:3EFF:FE6B:94A7

Default Gateway 2000:5:30:2000::1

DNS Server

802.1X

☐ Use 802.1X Security

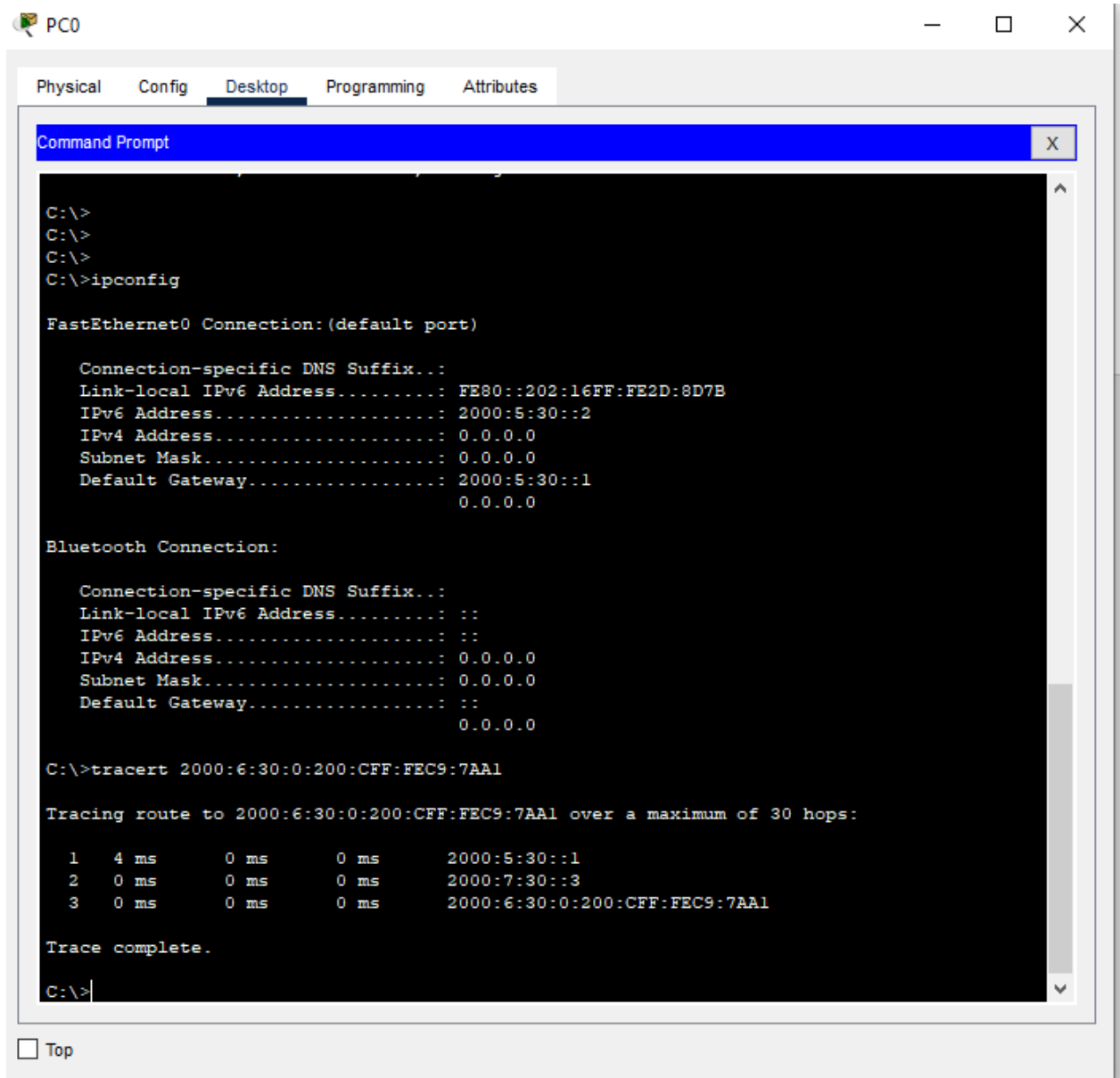
Authentication MD5

Username

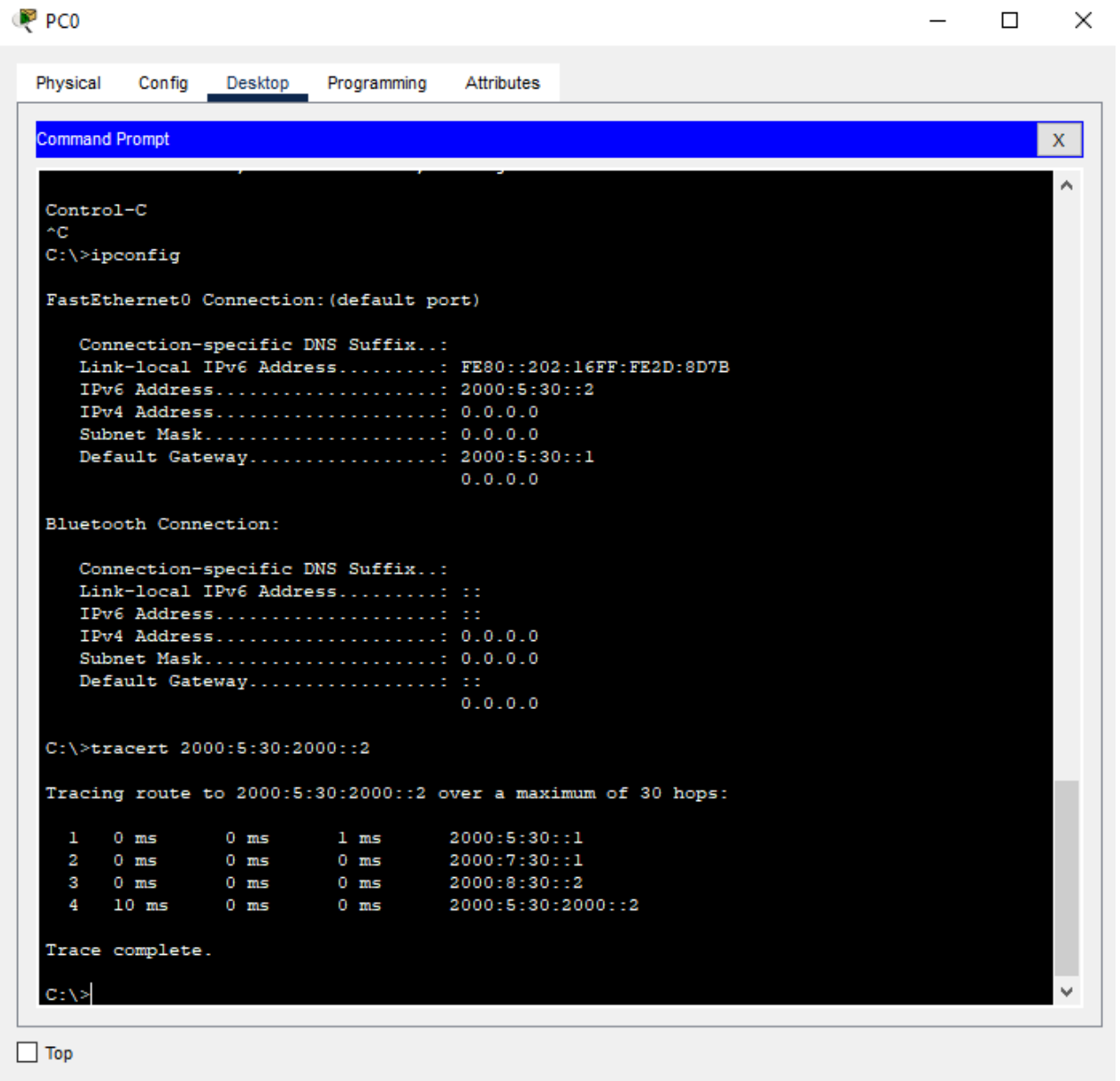
Password

☐ Top

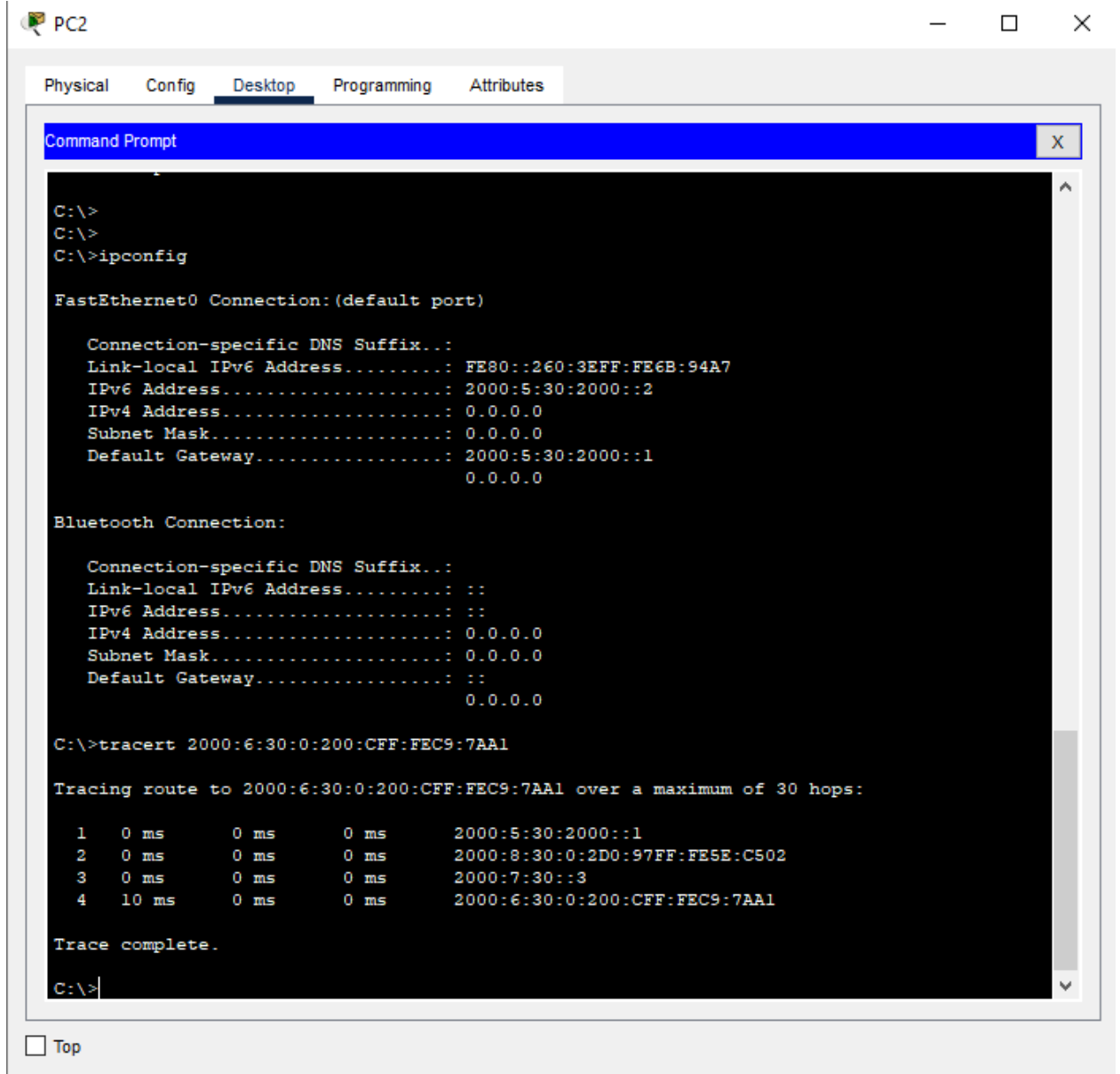
11) Tracert PC PC2



12) Tracert PC0 PC2



13) Tracert PC2 PC1



14) Tracert PC1 PC0

PC1

Physical

Config

Desktop

Programming

Attributes

Command Prompt

X

Default Gateway.....: ::
0.0.0.0

C:\>
C:\>ipconfig

FastEthernet0 Connection:(default port)

Connection-specific DNS Suffix...:
Link-local IPv6 Address.....: FE80::200:CFF:FEC9:7AA1
IPv6 Address.....: 2000:6:30:0:200:CFF:FEC9:7AA1
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: FE80::20A:F3FF:FEAC:701
0.0.0.0

Bluetooth Connection:

Connection-specific DNS Suffix...:
Link-local IPv6 Address.....: ::
IPv6 Address.....: ::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: ::
0.0.0.0

C:\>tracert 2000:5:30::2

Tracing route to 2000:5:30::2 over a maximum of 30 hops:

1	0 ms	0 ms	0 ms	2000:6:30::1
2	0 ms	0 ms	0 ms	2000:7:30::2
3	0 ms	11 ms	0 ms	2000:5:30::2

Trace complete.

C:\>

☐ Top