

смотрим мужика

<https://www.youtube.com/watch?v=L1JtmAiSaFQ>

```
R1>
R1>
R1>
R1>en
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#ip nat ?
    inside    Inside address translation
    outside   Outside address translation
    pool       Define pool of addresses
R1(config)#ip nat inside ?
    source     Source address translation
R1(config)#ip nat inside s
R1(config)#ip nat inside source ?
    list        Specify access list describing local addresses
    static       Specify static local->global mapping
R1(config)#ip nat inside source s
R1(config)#ip nat inside source static ?
    A.B.C.D     Inside local IP address
    tcp         Transmission Control Protocol
    udp         User Datagram Protocol
R1(config)#ip nat inside source static 172.16.16.1 ?
    A.B.C.D     Inside global IP address
R1(config)#ip nat inside source static 172.16.16.1 64.100.50.1 ?
    <cr>
R1(config)#ip nat inside source static 172.16.16.1 64.100.50.1
R1(config)#inter
R1(config)#interface Se
R1(config)#interface Serial0/0/0
R1(config-if)#ip nat out
R1(config-if)#ip nat outside
R1(config-if)#ex
R1(config)#inter
R1(config)#interface G
R1(config)#interface GigabitEthernet0/0
R1(config-if)#ip nat in
R1(config-if)#ip nat inside
R1(config-if)#ex
R1(config)#|
```

для 2го задания

```

R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ip ac
R2(config)#ip access-list ?
    extended  Extended Access List
    standard  Standard Access List
R2(config)#ac
R2(config)#access-list ?
    <1-99>     IP standard access list
    <100-199>  IP extended access list
R2(config)#access-list 1 ?
    deny      Specify packets to reject
    permit    Specify packets to forward
    remark    Access list entry comment
R2(config)#access-list 1 per
R2(config)#access-list 1 permit ?
    A.B.C.D   Address to match
    any       Any source host
    host      A single host address
R2(config)#access-list 1 permit 172.16.0.0 ?
    A.B.C.D   Wildcard bits
    <cr>
R2(config)#access-list 1 permit 172.16.0.0 0.0.255.255 ?
    <cr>
R2(config)#access-list 1 permit 172.16.0.0 0.0.255.255
R2(config)#ip nat ?
    inside    Inside address translation
    outside   Outside address translation
    pool      Define pool of addresses
R2(config)#ip nat pool ?
    WORD      Pool name
R2(config)#ip nat pool POOL ?
    A.B.C.D   Start IP address
R2(config)#ip nat pool POOL 209.165.76.196 209.165.76.199 ?
    netmask   Specify the network mask
R2(config)#ip nat pool POOL 209.165.76.196 209.165.76.199 n
R2(config)#ip nat pool POOL 209.165.76.196 209.165.76.199 netmask 255.255.255.252
R2(config)#|

```

```

R2(config)#inter
R2(config)#interface Serial0/0/0
R2(config-if)#ip nat pu
R2(config-if)#ip nat ou
R2(config-if)#ip nat outside
R2(config-if)#ex
R2(config)#interface S
R2(config)#interface Serial0/0/1
R2(config-if)#ip nat ins
R2(config-if)#ip nat inside
R2(config-if)#ex
R2(config)#|

```

для лабы 5

Port Status Summary Table for R2
Device Name: R2
Device Model: 2911
Hostname: R2

Port	Link	VLAN	IP Address	IPv6 Address	MAC Address
GigabitEthernet0/0	Down	--	<not set>	<not set>	0002.1685.9501
GigabitEthernet0/1	Down	--	<not set>	<not set>	0002.1685.9502
GigabitEthernet0/2	Down	--	<not set>	<not set>	0002.1685.9503
Serial0/0/0	Up	--	209.165.76.194/27	<not set>	<not set>
Serial0/0/1	Up	--	10.4.1.1/30	<not set>	<not set>
Vlan1	Down	1	<not set>	<not set>	0040.0B25.CD65

R2
Physical Config CLI Attributes
IOS Command Line Interface

```

route          IP routing table
ssh            Information on SSH
R2#show ip nat
% Incomplete command.
R2#show ip nat?
nat
R2#show ip nat
% Incomplete command.
R2#show ip nat?
nat
R2#show ip nat ?
statistics      Translation statistics
translations    Translation entries
R2#show ip nat st
R2#show ip nat statistics
Total translations: 0 (0 static, 0 dynamic, 0 extended)
Outside interfaces: Serial0/0/0
Inside interfaces: Serial0/0/0
Hits: 0 Misses: 4
Expired translations: 0
Dynamic mappings:
-- Inside Source
access-list 101 pool R2POOL refCount 0
pool R2POOL: netmask 255.255.255.224
start 209.165.76.195 end 209.165.76.223
type generic, total addresses 29 , allocated 0 (0%), misses 0
R2#

```

перенастроим интерфейсы

```

R2(config)#inter
R2(config)#interface Ser
R2(config)#interface Serial0/0/0
R2(config-if)#ip nat ou
R2(config-if)#ip nat outside
R2(config-if)#ex
R2(config)#interface ser
R2(config)#interface serial0/0/1
R2(config-if)#ip nat ins
R2(config-if)#ip nat inside

```

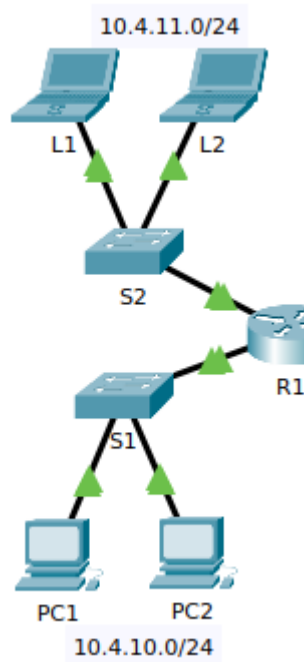
Посмотрим сюда

```

R2#show access-lists
Extended IP access list 101
  10 permit ip 10.4.10.0 0.0.0.255 any (2 match(es))

```

и на компы



Первые 2 числа меняются, а последние 2 - нет. А в выводе команды в wild card bits не меняются первые 3 числа- что неверно. Поэтому надо удалить этот access list и написать новый нормальный.

```
R2(config)#access-list ?
<1-99>      IP standard access list
<100-199>   IP extended access list
R2(config)#access-list 101 ?
deny        Specify packets to reject
permit      Specify packets to forward
remark      Access list entry comment
R2(config)#access-list 101 p
R2(config)#access-list 101 permit ?
ahp         Authentication Header Protocol
eigrp       Cisco's EIGRP routing protocol
esp         Encapsulation Security Payload
gre         Cisco's GRE tunneling
icmp        Internet Control Message Protocol
ip          Any Internet Protocol
ospf        OSPF routing protocol
tcp         Transmission Control Protocol
udp         User Datagram Protocol
R2(config)#access-list 101 permit ip ?
A.B.C.D     Source address
any         Any source host
host        A single source host
R2(config)#access-list 101 permit ip ?
A.B.C.D     Source address
any         Any source host
host        A single source host
R2(config)#access-list 101 permit ip 10.4.10.0 0.0.1.255 ?
A.B.C.D     Destination address
any         Any destination host
host        A single destination host
R2(config)#access-list 101 permit ip 10.4.10.0 0.0.1.255 any ?
dscp        Match packets with given dscp value
precedence  Match packets with given precedence value
<cr>
R2(config)#access-list 101 permit ip 10.4.10.0 0.0.1.255 any |
```

для 4й лабы

```
R2>
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ip ac
R2(config)#ip access-list ?
    extended  Extended Access List
    standard  Standard Access List
R2(config)#ip access-list s
R2(config)#ip access-list standard ?
    <1-99>  Standard IP access-list number
    WORD    Access-list name
R2(config)#ip access-list standard R2NAT ?
    <cr>
R2(config)#ip access-list standard R2NAT |
```

```
R2(config)#ip access-list ?
    extended  Extended Access List
    standard  Standard Access List
R2(config)#ip access-list s
R2(config)#ip access-list standard ?
    <1-99>  Standard IP access-list number
    WORD    Access-list name
R2(config)#ip access-list standard R2NAT ?
    <cr>
R2(config)#ip access-list standard R2NAT
R2(config-std-nacl)#?
    <1-2147483647>  Sequence Number
    default        Set a command to its defaults
    deny           Specify packets to reject
    exit           Exit from access-list configuration
    no             Negate a command or set its default
    permit         Specify packets to forward
    remark         Access list entry comment
R2(config-std-nacl)#pr
R2(config-std-nacl)#pe
R2(config-std-nacl)#permit 192.168.10.0 ?
    A.B.C.D  Wildcard bits
    <cr>
R2(config-std-nacl)#permit 192.168.10.0 0.0.0.255
R2(config-std-nacl)#permit 192.168.20.0 0.0.0.255
R2(config-std-nacl)#permit 192.168.30.0 0.0.0.255
R2(config-std-nacl)#|
```

```
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#ip nat ?
    inside    Inside address translation
    outside   Outside address translation
    pool       Define pool of addresses
R2(config)#ip nat pool R2POOL ?
    A.B.C.D    Start IP address
R2(config)#ip nat pool R2POOL 209.165.202.129 209.165.202.129 ?
    netmask    Specify the network mask
R2(config)#ip nat pool R2POOL 209.165.202.129 209.165.202.129 net
R2(config)#ip nat pool R2POOL 209.165.202.129 209.165.202.129 netmask
255.255.255.252 ?
    <cr>
R2(config)#ip nat pool R2POOL 209.165.202.129 209.165.202.129 netmask
255.255.255.252
R2(config)#
```

```
IOS Command Line Interface

pool      Define pool of addresses
R2(config)#ip nat in
R2(config)#ip nat inside ?
    source Source address translation
R2(config)#ip nat inside so
R2(config)#ip nat inside source ?
    list Specify access list describing local addresses
    static Specify static local->global mapping
R2(config)#ip nat inside source 1
R2(config)#ip nat inside source list ?
    <1-199> Access list number for local addresses
    WORD Access list name for local addresses
R2(config)#ip nat inside source list R2NAT ?
    interface Specify interface for global address
    pool Name pool of global addresses
R2(config)#ip nat inside source list R2NAT int
R2(config)#ip nat inside source list R2NAT p
R2(config)#ip nat inside source list R2NAT pool ?
    WORD Name pool of global addresses
R2(config)#ip nat inside source list R2NAT pool R2POOL ?
    overload Overload an address translation
    <cr>
R2(config)#ip nat inside source list R2NAT pool R2POOL o
R2(config)#ip nat inside source list R2NAT pool R2POOL overload ?
    <cr>
R2(config)#ip nat inside source list R2NAT pool R2POOL overload
R2(config)#
```

Copy Paste

теперь настроим интерфейсы

```
R2(config)#inter
R2(config)#interface Serial0/1/0
R2(config-if)#ip nat o
R2(config-if)#ip nat outside
R2(config-if)#ex
R2(config)#int
R2(config)#interface F
R2(config)#interface FastEthernet0/0
R2(config-if)#ip nat o
R2(config-if)#ip nat outside
R2(config-if)#ex
R2(config)#interface Ser
R2(config)#interface Serial0/0/0
R2(config-if)#ip nat in
R2(config-if)#ip nat inside
R2(config-if)#ex
R2(config)#interface Serial0/0/1
R2(config-if)#ip nat un
R2(config-if)#ip nat in
R2(config-if)#ip nat inside
R2(config-if)#ex
```


На маршрутизаторе R2 настройте стандартный ACL-список с именем R2NAT, который использует 3 правила, разрешающих в указанном порядке пр

создадим статическое преобразование

```
R2(config)#ip nat in
R2(config)#ip nat inside sou
R2(config)#ip nat inside source st
R2(config)#ip nat inside source static 192.168.20.254 ?
    A.B.C.D  Inside global IP address
R2(config)#ip nat inside source static 192.168.20.254
209.165.202.130 ?
    <cr>
R2(config)#ip nat inside source static 192.168.20.254
209.165.202.130
R2(config)#|
```

///

```
R2#show ip nat s
R2#show ip nat statistics
Total translations: 12 (1 static, 11 dynamic, 11 extended)
Outside Interfaces: FastEthernet0/0 , Serial0/1/0
Inside Interfaces: Serial0/0/0 , Serial0/0/1
Hits: 101  Misses: 103
Expired translations: 0
Dynamic mappings:
-- Inside Source
access-list R2NAT pool R2POOL refCount 4
  pool R2POOL: netmask 255.255.255.252
    start 209.165.202.129 end 209.165.202.129
    type generic, total addresses 1 , allocated 1 (100%),
misses 0
R2#
```

Fastethernet0/0 определен не верно
переделаем

```
R2#show ip nat s
R2#show ip nat statistics
Total translations: 12 (1 static, 11 dynamic, 11 extended)
Outside Interfaces: FastEthernet0/0 , Serial0/1/0
Inside Interfaces: Serial0/0/0 , Serial0/0/1
Hits: 101 Misses: 103
Expired translations: 0
Dynamic mappings:
-- Inside Source
access-list R2NAT pool R2POOL refCount 4
  pool R2POOL: netmask 255.255.255.252
    start 209.165.202.129 end 209.165.202.129
    type generic, total addresses 1 , allocated 1 (100%),
misses 0
R2#
```