

The background of the slide is a complex network diagram. It consists of numerous nodes, represented by small circles in shades of brown and gold, connected by thin, dark lines. The nodes are distributed across the entire frame, creating a dense, interconnected web that suggests a network topology. The overall color palette is warm, with gold and brown tones on a light background.

# **ПРЕЗЕНТАЦИЯ ПО ЛАБОРАТОРНОЙ РАБОТЕ № 5 ДИСЦИПЛИНА: СЕТЕВЫЕ ТЕХНОЛОГИИ**

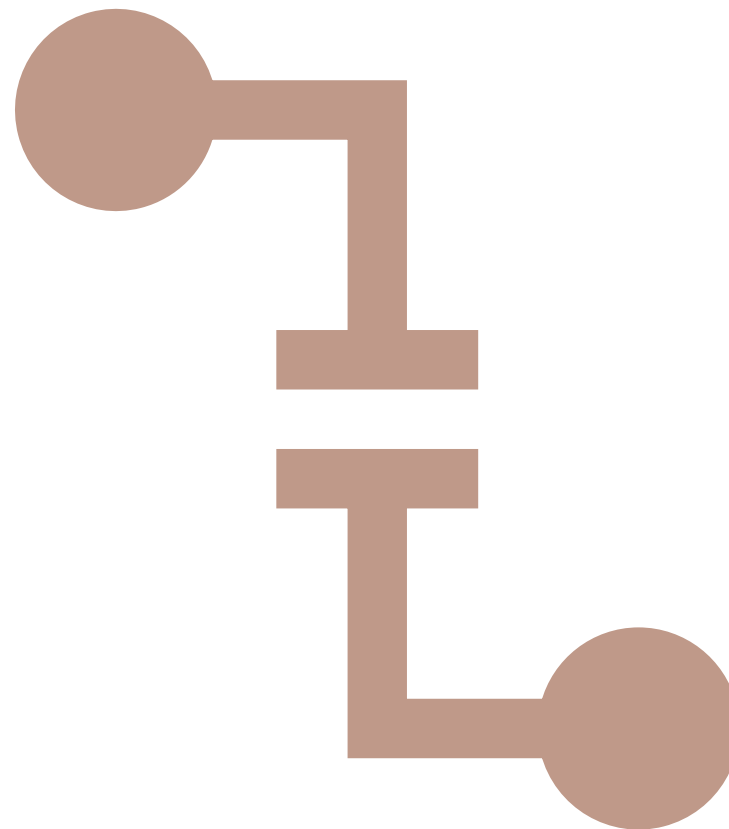
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Группа: НПИбд-02-20

# ВВЕДЕНИЕ:



Построение простейших  
моделей сети на базе  
коммутатора и  
маршрутизаторов FRR и VyOS  
в GNS3, анализ трафика  
посредством Wireshark.



# МОДЕЛИРОВАНИЕ ПРОСТЕЙШЕЙ СЕТИ НА БАЗЕ КОММУТАТОРА В GNS3



```
PC1 - PuTTY
version          Shortcut for: show version

To get command syntax help, please enter '?' as an argument of the command.

PC1> ip /?

ip ARG ... [OPTION]
  Configure the current VPC's IP settings
  ARG ...:
    address [mask] [gateway]
    address [gateway] [mask]
      Set the VPC's ip, default gateway ip and network mask
      Default IPv4 mask is /24, IPv6 is /64. Example:
      ip 10.1.1.70/26 10.1.1.65 set the VPC's ip to 10.1.1.70,
      the gateway to 10.1.1.65, the netmask to 255.255.255.192.
      In tap mode, the ip of the tapx is the maximum host ID
      of the subnet. In the example above the tapx ip would be
      10.1.1.126
      mask may be written as /26, 26 or 255.255.255.192
    auto      Attempt to obtain IPv6 address, mask and gateway using SLAAC
    dhcp [OPTION] Attempt to obtain IPv4 address, mask, gateway, DNS via DHCP
      -d      Show DHCP packet decode
      -r      Renew DHCP lease
      -x      Release DHCP lease
    dns ip     Set DNS server ip, delete if ip is '0'
    dns6 ipv6  Set DNS server ipv6, delete if ipv6 is '0'
    domain NAME Set local domain name to NAME

PC1>
```

```
PC2> ip 192.168.1.11/24 192.168.1.1
Checking for duplicate address...
192.168.1.11 is being used by MAC 00:50:79:66:68:00
Address not changed

PC2> save
Saving startup configuration to startup.vpc
. done

PC2>
```

```
PC1> ip 192.168.1.11/24 192.168.1.1
Checking for duplicate address...
PC1 : 192.168.1.11 255.255.255.0 gateway 192.168.1.1

PC1>

PC1> ip 192.168.1.11/24 192.168.1.1
Checking for duplicate address...
PC1 : 192.168.1.11 255.255.255.0 gateway 192.168.1.1

PC1> save
Saving startup configuration to startup.vpc
. done

PC1>
```

```
PC2> show ip

NAME       : PC2[1]
IP/MASK    : 0.0.0.0/0
GATEWAY    : 0.0.0.0
DNS        :
MAC        : 00:50:79:66:68:01
LPORT     : 20006
RHOST:PORT : 127.0.0.1:20007
MTU        : 1500

PC2>
```

```
PC1 - PuTTY

PC1> ahow ip
Bad command: "ahow ip". Use ? for help.

PC1> show ip

NAME       : PC1[1]
IP/MASK    : 192.168.1.11/24
GATEWAY    : 192.168.1.1
DNS        :
MAC        : 00:50:79:66:68:00
LPORT     : 20004
RHOST:PORT : 127.0.0.1:20005
MTU        : 1500

PC1>
```





No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	::	ff02::2	ICMPv6	62	Router Solicitation
2	0.007884	::	ff02::2	ICMPv6	62	Router Solicitation
3	0.051151	Private_66:68:00	Broadcast	ARP	64	Gratuitous ARP for 192.168.1.11 (Request)
4	1.051507	Private_66:68:00	Broadcast	ARP	64	Gratuitous ARP for 192.168.1.11 (Request)
5	2.052368	Private_66:68:00	Broadcast	ARP	64	Gratuitous ARP for 192.168.1.11 (Request)

> Frame 3: 64 bytes on wire (512 bits), 64 bytes captured (512 bits) on interface -, id 0

▼ Ethernet II, Src: Private\_66:68:00 (00:50:79:66:68:00), Dst: Broadcast (ff:ff:ff:ff:ff:ff)

> Destination: Broadcast (ff:ff:ff:ff:ff:ff)

> Source: Private\_66:68:00 (00:50:79:66:68:00)  
Type: ARP (0x0806)  
Padding: 00000000000000000000000000000000  
Frame check sequence: 0x00000000 [unverified]  
[FCS Status: Unverified]

▼ Address Resolution Protocol (request/gratuitous ARP)

Hardware type: Ethernet (1)  
Protocol type: IPv4 (0x0800)  
Hardware size: 6  
Protocol size: 4  
Opcode: request (1)  
[Is gratuitous: True]  
Sender MAC address: Private\_66:68:00 (00:50:79:66:68:00)  
Sender IP address: 192.168.1.11  
Target MAC address: Broadcast (ff:ff:ff:ff:ff:ff)  
Target IP address: 192.168.1.11

Capturing from - [PC1 Ethernet0 to msk-osama-sw-01 Ethernet0]						
No.	Time	Source	Destination	Protocol	Length	Info
267	6601.561177	Private_66:68:00	Broadcast	ARP	64	Gratuitous ARP for 192.168.1.11 (Request)
268	6602.562128	Private_66:68:00	Broadcast	ARP	64	Gratuitous ARP for 192.168.1.11 (Request)
269	6603.563189	Private_66:68:00	Broadcast	ARP	64	Gratuitous ARP for 192.168.1.11 (Request)
270	6631.956359	Private_66:68:01	Broadcast	ARP	64	Who has 192.168.1.11? Tell 0.0.0.0
271	6631.956640	Private_66:68:00	Private_66:68:01	ARP	64	192.168.1.11 is at 00:50:79:66:68:00
272	6631.958134	0.0.0.0	192.168.1.11	ECHO	98	Request
273	6631.958360	Private_66:68:00	Broadcast	ARP	64	Who has 192.168.1.1? Tell 192.168.1.11
274	6632.959620	Private_66:68:00	Broadcast	ARP	64	Who has 192.168.1.1? Tell 192.168.1.11
275	6633.959916	Private_66:68:00	Broadcast	ARP	64	Who has 192.168.1.1? Tell 192.168.1.11
276	6634.960130	192.168.1.11	0.0.0.0	ECHO	98	Response
277	6643.947137	0.0.0.0	192.168.1.11	TCP	74	29916 → 7 [SYN] Seq=0 Win=2920 Len=0 MSS=1460 TSval=1665149
278	6643.947692	Private_66:68:00	Broadcast	ARP	64	Who has 192.168.1.1? Tell 192.168.1.11
279	6644.947914	Private_66:68:00	Broadcast	ARP	64	Who has 192.168.1.1? Tell 192.168.1.11
280	6644.947966	0.0.0.0	192.168.1.11	TCP	74	[TCP Port numbers reused] 29916 → 7 [SYN] Seq=0 Win=2920 Le
281	6645.948232	Private_66:68:00	Broadcast	ARP	64	Who has 192.168.1.1? Tell 192.168.1.11
282	6645.948266	0.0.0.0	192.168.1.11	TCP	74	[TCP Port numbers reused] 29916 → 7 [SYN] Seq=0 Win=2920 Le
283	6646.950356	192.168.1.11	0.0.0.0	TCP	54	[TCP ACKed unseen segment] 7 → 29916 [SYN, ACK] Seq=0 Ack=3
284	6646.950501	Private_66:68:00	Broadcast	ARP	64	Who has 192.168.1.1? Tell 192.168.1.11
285	6647.951516	Private_66:68:00	Broadcast	ARP	64	Who has 192.168.1.1? Tell 192.168.1.11
286	6648.952131	Private_66:68:00	Broadcast	ARP	64	Who has 192.168.1.1? Tell 192.168.1.11
287	6649.952192	192.168.1.11	0.0.0.0	TCP	54	[TCP ACKed unseen segment] [TCP Previous segment not captur
288	6649.952232	Private_66:68:00	Broadcast	ARP	64	Who has 192.168.1.1? Tell 192.168.1.11
289	6650.954172	Private_66:68:00	Broadcast	ARP	64	Who has 192.168.1.1? Tell 192.168.1.11
290	6651.955508	Private_66:68:00	Broadcast	ARP	64	Who has 192.168.1.1? Tell 192.168.1.11
291	6652.955903	192.168.1.11	0.0.0.0	TCP	54	[TCP Retransmission] [TCP Port numbers reused] 7 → 29916 [S

Tvne: ARP (0x0806)

"\*" was unexpected in this context.

Packets: 291 · Displayed: 291 (100.0%)

Profile: Default

# Вывод

Построил простейшие модели сети на базе коммутатора и маршрутизаторов FRR и VyOS в GNS3 и проанализировала трафик посредством Wireshark.

