

# Отчёт по лабораторной работе 7.

## Адресация IPv4 и IPv6. Настройка DHCP

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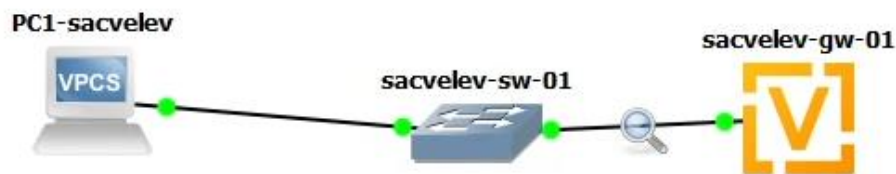
### Содержание

#### 1 Цель работы

Получение навыков настройки службы DHCP на сетевом оборудовании для распределения адресов IPv4 и IPv6.

#### 2 Ход работы

Создаём новый проект в GNS3 и создаём сеть согласно топологии. Запускаем захват трафика между коммутатором и маршрутизатором.



Переходим в режим конфигурации маршрутизаторов, изменяем имя устройства и доменное имя, задаем логин и пароль.

```
sacvelev-gw-01 - PuTTY
VyOS is a free software distribution that includes multiple components,
you can check individual component licenses under /usr/share/doc/*/copyright
vyos@vyos:~$ install image
You are trying to install from an already installed system. An ISO
image file to install or URL must be specified.
Exiting...
vyos@vyos:~$ configure
[edit]
vyos@vyos# set system host-name sacvelev-gw-01
[edit]
vyos@vyos# set system domain-name sacvelev.net
[edit]
vyos@vyos# set system login user sacvelev
[edit]
vyos@vyos# set system login user sacvelev authentication plaintext-password 1234
56
[edit]
vyos@vyos# commit
[edit]
vyos@vyos# save
Saving configuration to '/config/config.boot'...
Done
[edit]
vyos@vyos#
```

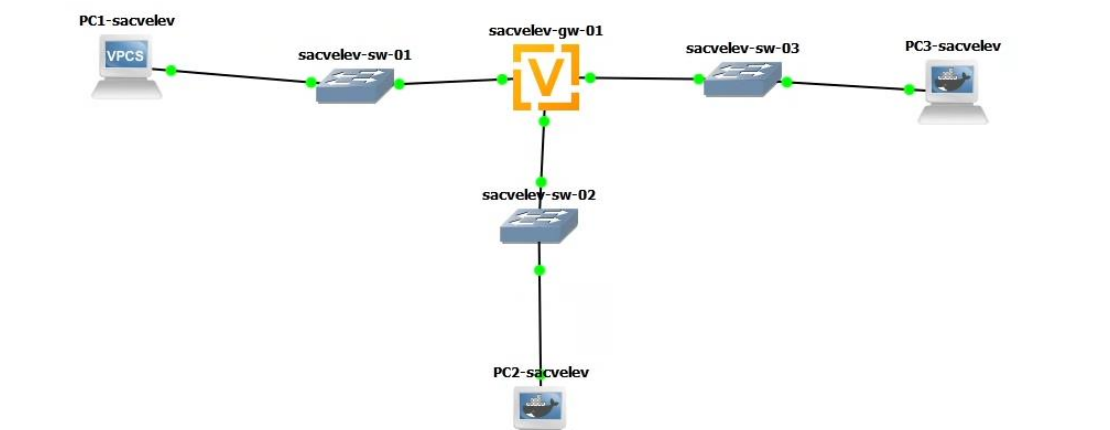
Добавляем конфигурацию DHCP-сервера на маршрутизаторе.

```
sacvelev-gw-01 - PuTTY
[edit]
sacvelev@sacvelev-gw-01# delete system login user vyos
[edit]
sacvelev@sacvelev-gw-01# commit
[edit]
sacvelev@sacvelev-gw-01# save
Saving configuration to '/config/config.boot'...
Done
[edit]
sacvelev@sacvelev-gw-01# set interfaces ethernet eth0 address 10.0.0.1/24
[edit]
sacvelev@sacvelev-gw-01# set service dhcp-server shared-network-name sacvelev do
main-name sacvelev.net
[edit]
sacvelev@sacvelev-gw-01# set service dhcp-server shared-network-name sacvelev na
me-server 10.0.0.1
[edit]
sacvelev@sacvelev-gw-01# set service dhcp-server shared-network-name sacvelev su
bnet 10.0.0.0/24
[edit]
sacvelev@sacvelev-gw-01# set service dhcp-server shared-network-name sacvelev su
bnet 10.0.0.0/24 default-router 10.0.0.1
[edit]
sacvelev@sacvelev-gw-01# set service dhcp-server
```

Далее настраиваем устройство PC1. На маршрутизаторе смотрим логи DHCP-сервера.

```
sacvelev-gw-01 - PuTTY
an 28 23:55:48 dhcpd[4878]: ** Ignoring requests on eth1. If this is not what
an 28 23:55:48 dhcpd[4878]: you want, please write a subnet declaration
an 28 23:55:48 dhcpd[4878]: in your dhcpd.conf file for the network segment
an 28 23:55:48 dhcpd[4878]: to which interface eth1 is attached. **
an 28 23:55:48 dhcpd[4878]: Server starting service.
an 28 23:56:33 sudo[4953]: sacvelev : TTY=ttyS0 ; PWD=/home/sacvelev ; USER=root
; COMMAND=/usr/libexec/vyos/op_mode/show_dhcp.py --statistics
an 28 23:56:52 sudo[4979]: sacvelev : TTY=ttyS0 ; PWD=/home/sacvelev ; USER=root
; COMMAND=/usr/libexec/vyos/op_mode/show_dhcp.py --leases
an 28 23:59:45 sudo[5271]: sacvelev : TTY=ttyS0 ; PWD=/home/sacvelev ; USER=root
; COMMAND=/usr/libexec/vyos/op_mode/show_dhcp.py --statistics
an 29 00:00:44 dhcpd[4878]: DHCPDISCOVER from 00:50:79:66:68:00 via eth0
an 29 00:00:45 dhcpd[4878]: DHCPOFFER on 10.0.0.2 to 00:50:79:66:68:00 (PC1-sacvelev) via eth0
an 29 00:00:48 dhcpd[4878]: DHCPREQUEST for 10.0.0.2 (10.0.0.1) from 00:50:79:66:68:00 (PC1-sacvelev) via eth0
an 29 00:00:48 dhcpd[4878]: DHCPACK on 10.0.0.2 to 00:50:79:66:68:00 (PC1-sacvelev) via eth0
an 29 00:01:39 sudo[5415]: sacvelev : TTY=ttyS0 ; PWD=/home/sacvelev ; USER=root
; COMMAND=/usr/libexec/vyos/op_mode/show_dhcp.py --statistics
an 29 00:01:47 sudo[5441]: sacvelev : TTY=ttyS0 ; PWD=/home/sacvelev ; USER=root
; COMMAND=/usr/libexec/vyos/op_mode/show_dhcp.py --leases
sacvelev@sacvelev-gw-01:~$
```

Создаем новый проект и новую сеть по топологии.



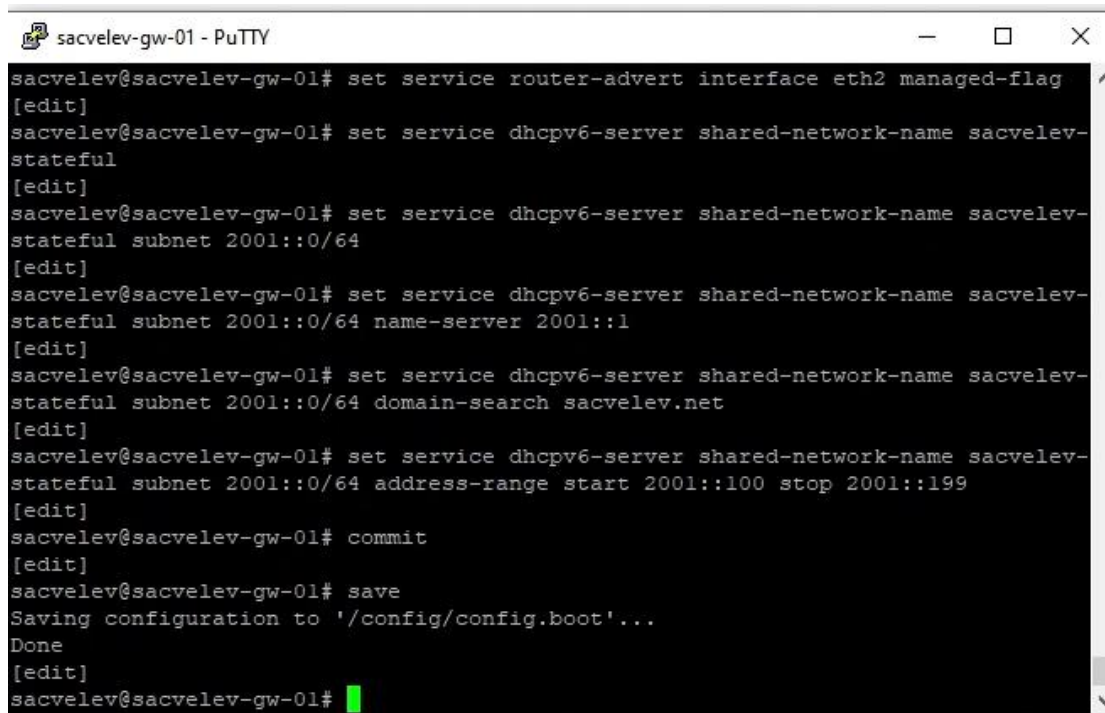
Настраиваем IPv6-адресацию у маршрутизатора.

```
sacvelev-gw-01 - PuTTY
[edit]
sacvelev@sacvelev-gw-01# set interfaces ethernet eth1 address 2000::1/64
[edit]
sacvelev@sacvelev-gw-01# set interfaces ethernet eth2 address 2001::1/64
[edit]
sacvelev@sacvelev-gw-01# show interfaces
  ethernet eth0 {
    address 10.0.0.1/24
    dhcp-options {
    }
    hw-id 0c:f0:35:e0:00:00
  }
  ethernet eth1 {
+   address 2000::1/64
    hw-id 0c:f0:35:e0:00:01
  }
  ethernet eth2 {
+   address 2001::1/64
    hw-id 0c:f0:35:e0:00:02
  }
  loopback lo {
  }
[edit]
sacvelev@sacvelev-gw-01# com
```

На маршрутизаторе настраиваем DHCPv6 без отслеживания состояния.

```
sacvelev-gw-01 - PuTTY
[edit]
sacvelev@sacvelev-gw-01# set service router-advert interface eth1 prefix 2000::/
4
[edit]
sacvelev@sacvelev-gw-01# set service router-advert interface eth1 other-config-f
ag
[edit]
sacvelev@sacvelev-gw-01# set service dhcpv6-server shared-network-name sacvelev-
tateless
[edit]
sacvelev@sacvelev-gw-01# set service dhcpv6-server shared-network-name sacvelev-
tateless subnet 2000::0/64
[edit]
sacvelev@sacvelev-gw-01# set service dhcpv6-server shared-network-name sacvelev-
tateless common-options domain-search sacvelev.net
[edit]
sacvelev@sacvelev-gw-01# commit
[edit]
sacvelev@sacvelev-gw-01# save
aving configuration to '/config/config.boot'...
one
[edit]
sacvelev@sacvelev-gw-01# run show configuration
```

Затем на узлах проверяем настройки. После же настраиваем DHCPv6 с отслеживанием состояния.



```
sacvelev@sacvelev-gw-01# set service router-advert interface eth2 managed-flag
[edit]
sacvelev@sacvelev-gw-01# set service dhcpv6-server shared-network-name sacvelev-
stateful
[edit]
sacvelev@sacvelev-gw-01# set service dhcpv6-server shared-network-name sacvelev-
stateful subnet 2001::0/64
[edit]
sacvelev@sacvelev-gw-01# set service dhcpv6-server shared-network-name sacvelev-
stateful subnet 2001::0/64 name-server 2001::1
[edit]
sacvelev@sacvelev-gw-01# set service dhcpv6-server shared-network-name sacvelev-
stateful subnet 2001::0/64 domain-search sacvelev.net
[edit]
sacvelev@sacvelev-gw-01# set service dhcpv6-server shared-network-name sacvelev-
stateful subnet 2001::0/64 address-range start 2001::100 stop 2001::199
[edit]
sacvelev@sacvelev-gw-01# commit
[edit]
sacvelev@sacvelev-gw-01# save
Saving configuration to '/config/config.boot'...
Done
[edit]
sacvelev@sacvelev-gw-01#
```

Затем проверяем настройки на PC3 и пропинговываем маршрутизатор.

### 3 Вывод

Мы получили навыки настройки службы DHCP на сетевом оборудовании для распределения адресов IPv4 и IPv6.