

Сетевые технологии

Подготовка экспериментального стенда GNS3 (Лабораторная работа №4)

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Цели и задачи работы

Установка и настройка среды **GNS3** и сопутствующего программного обеспечения, а также добавление и проверка работы образов маршрутизаторов **FRRouting** и **VyOS**.

Выполнение лабораторной работы

```
GNS3 server version: 3.0.5
Release channel: 3.0
VM version: 0.16.0
Ubuntu version: noble
Qemu version: 8.2.2
Virtualization: vmware
KVM support available: True
Uptime: up 0 minutes

IP: 192.168.133.130 PORT: 80

To log in using SSH: ssh gns3@192.168.133.130
Password: gns3

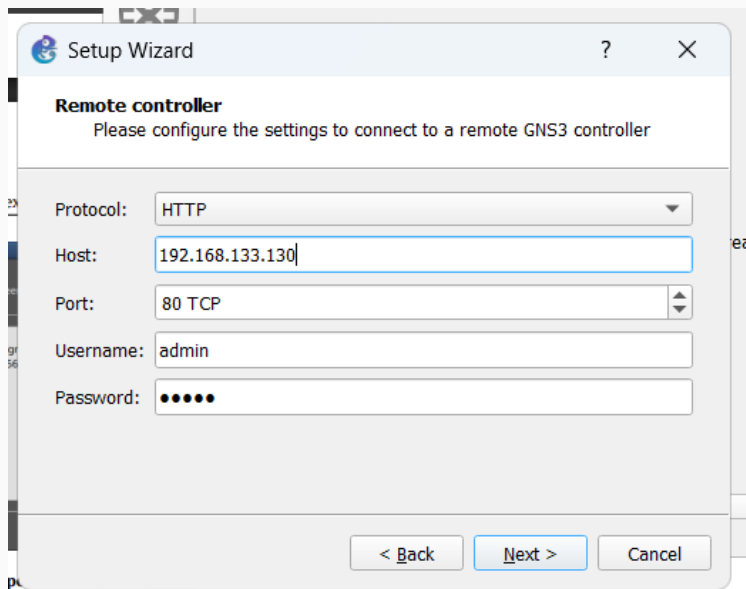
To launch the Web-UI: http://192.168.133.130 (default username/password is admin)

Images and projects are stored in '/opt/gns3'
```

< OK >

Рис. 1: Информация о сервере GNS3

Настройка подключения клиента GNS3



The screenshot shows a 'Setup Wizard' window with a title bar containing a question mark and a close button. The main heading is 'Remote controller' in bold, followed by the instruction 'Please configure the settings to connect to a remote GNS3 controller'. Below this, there are five input fields: 'Protocol' (a dropdown menu set to 'HTTP'), 'Host' (a text box containing '192.168.133.130'), 'Port' (a dropdown menu set to '80 TCP'), 'Username' (a text box containing 'admin'), and 'Password' (a text box with five dots). At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a blue border.

Setup Wizard

Remote controller
Please configure the settings to connect to a remote GNS3 controller

Protocol: HTTP

Host: 192.168.133.130

Port: 80 TCP

Username: admin

Password: •••••

< Back Next > Cancel

Добавление образа маршрутизатора FRR

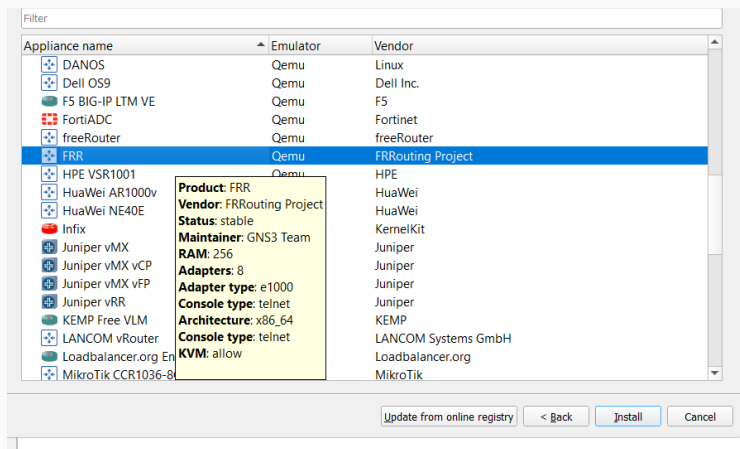
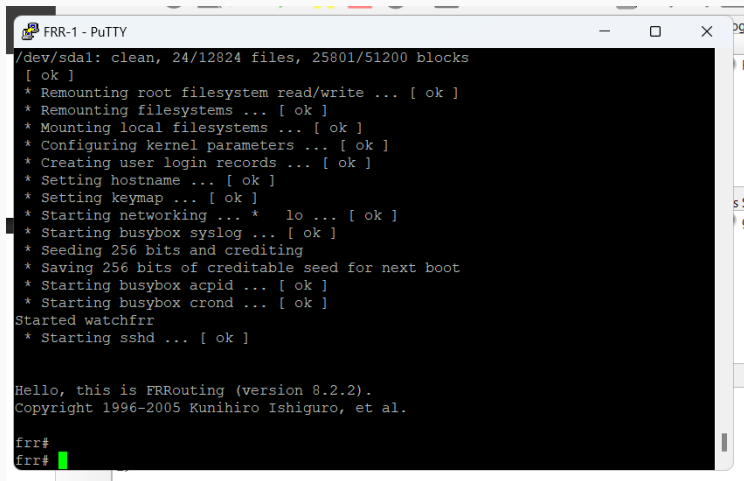


Рис. 3: Установка образа FRR

Проверка работы маршрутизатора FRR



```
FRR-1 - PuTTY
/dev/sdal: clean, 24/12824 files, 25801/51200 blocks
[ ok ]
* Remounting root filesystem read/write ... [ ok ]
* Remounting filesystems ... [ ok ]
* Mounting local filesystems ... [ ok ]
* Configuring kernel parameters ... [ ok ]
* Creating user login records ... [ ok ]
* Setting hostname ... [ ok ]
* Setting keymap ... [ ok ]
* Starting networking ... * lo ... [ ok ]
* Starting busybox syslog ... [ ok ]
* Seeding 256 bits and crediting
* Saving 256 bits of creditable seed for next boot
* Starting busybox acpid ... [ ok ]
* Starting busybox crond ... [ ok ]
Started watchfrr
* Starting sshd ... [ ok ]

Hello, this is FRRouting (version 8.2.2).
Copyright 1996-2005 Kunihiro Ishiguro, et al.

frr#
frr#
```

Рис. 4: Запуск маршрутизатора FRR

Добавление образа маршрутизатора VyOS

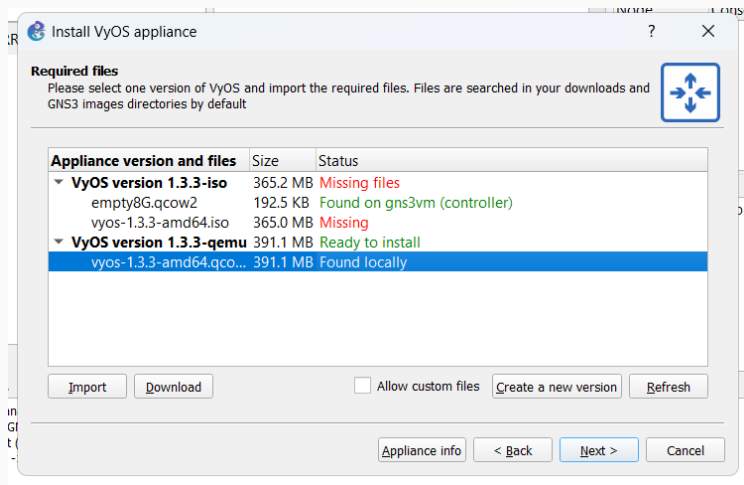
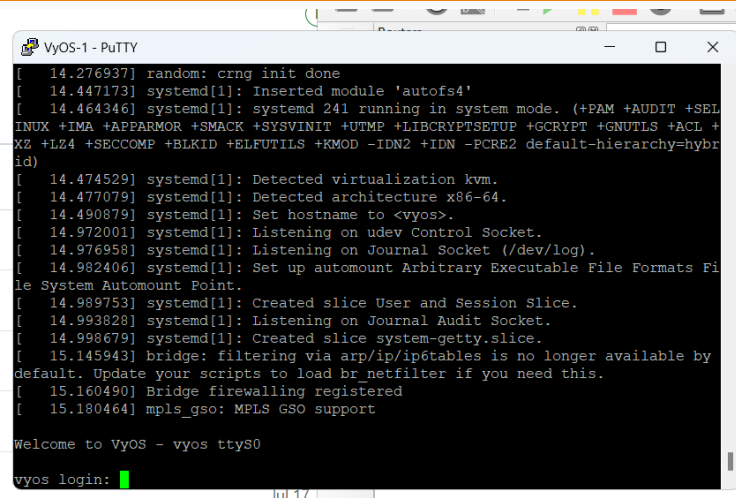


Рис. 5: Выбор образа VyOS

Проверка работы маршрутизатора VyOS



```
VyOS-1 - PuTTY
[ 14.276937] random: crng init done
[ 14.447173] systemd[1]: Inserted module 'autofs4'
[ 14.464346] systemd[1]: systemd 241 running in system mode. (+PAM +AUDIT +SEL
INUX +IMA +APPARMOR +SMACK +SYSVINIT +UTMP +LIBCRYPTSETUP +GCRYPT +GNUTLS +ACL +
XZ +LZ4 +SECCOMP +BLKID +ELFUTILS +KMOD -IDN2 -IDN -PCRE2 default-hierarchy=hybr
id)
[ 14.474529] systemd[1]: Detected virtualization kvm.
[ 14.477079] systemd[1]: Detected architecture x86-64.
[ 14.490879] systemd[1]: Set hostname to <vyos>.
[ 14.972001] systemd[1]: Listening on udev Control Socket.
[ 14.976958] systemd[1]: Listening on Journal Socket (/dev/log).
[ 14.982406] systemd[1]: Set up automount Arbitrary Executable File Formats Fi
le System Automount Point.
[ 14.989753] systemd[1]: Created slice User and Session Slice.
[ 14.993828] systemd[1]: Listening on Journal Audit Socket.
[ 14.998679] systemd[1]: Created slice system-getty.slice.
[ 15.145943] bridge: filtering via arp/ip/ip6tables is no longer available by
default. Update your scripts to load br_netfilter if you need this.
[ 15.160490] Bridge firewalling registered
[ 15.180464] mpls_gso: MPLS GSO support

Welcome to VyOS - vyos ttyS0

vyos login: █
```

Рис. 6: Запуск VyOS

Выводы по работе

- Успешно установлена и настроена среда **GNS3** с использованием **VMware**.
- Выполнено подключение клиента GNS3 к серверу.
- Добавлены и протестированы образы маршрутизаторов:
 - **FRRouting (FRR)**
 - **VyOS**
- Проверена корректность загрузки и доступности CLI обоих устройств.