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ЛАБОРАТОРНАЯ РАБОТА № 3

«Docker сеть»

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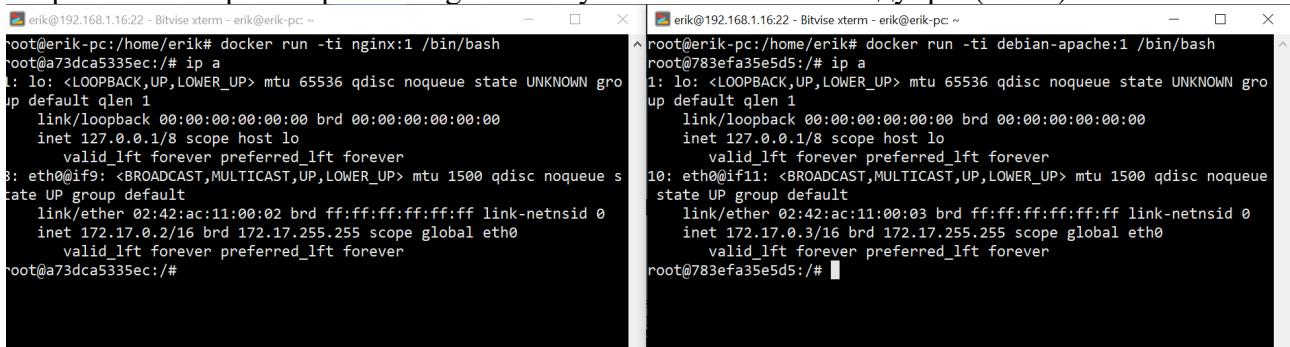
Ход работы.

1) В докер есть следующие сети (Рис.1).

```
root@erik-pc:/home/erik# docker network ls
NETWORK ID          NAME                DRIVER              SCOPE
fb0cf3dd51fd        bridge             bridge             local
8a68a20e8cce        host               host               local
ca6a9c92d171        none              null               local
root@erik-pc:/home/erik#
```

Рис.1 — Сети.

2) Для начала откроем два терминала и создадим два контейнера на основе ранее сохраненных образов apache и nginx и запустим на обоих команду ip a (Рис.2).

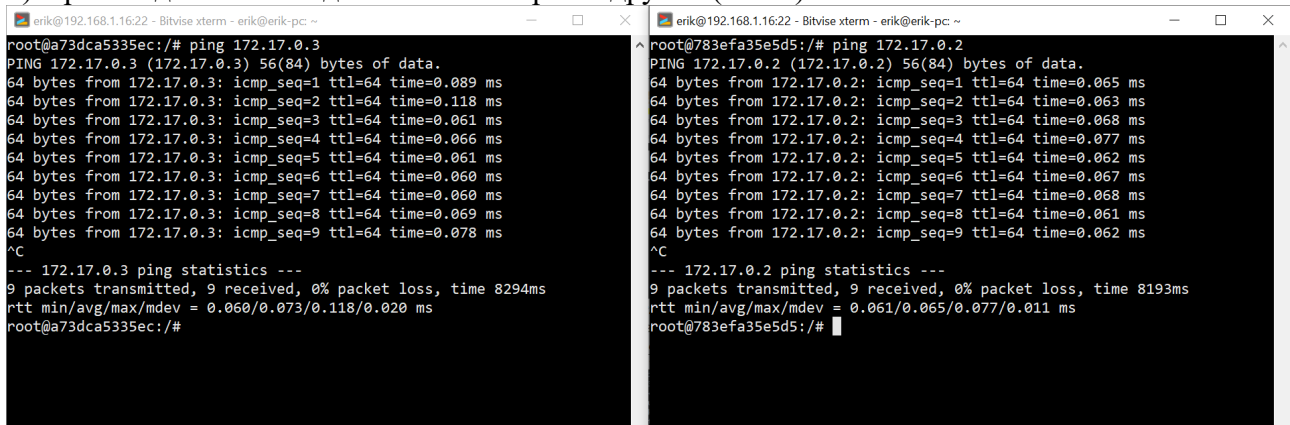


```
root@erik-pc:/home/erik# docker run -ti nginx:1 /bin/bash
root@a73dca5335ec:/# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
8: eth0@if19: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default
    link/ether 02:42:ac:11:00:02 brd ff:ff:ff:ff:ff:ff link-netnsid 0
    inet 172.17.0.2/16 brd 172.17.255.255 scope global eth0
        valid_lft forever preferred_lft forever
root@a73dca5335ec:/#

root@erik-pc:/home/erik# docker run -ti debian-apache:1 /bin/bash
root@783efa35e5d5:/# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
10: eth0@if11: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default
    link/ether 02:42:ac:11:00:03 brd ff:ff:ff:ff:ff:ff link-netnsid 0
    inet 172.17.0.3/16 brd 172.17.255.255 scope global eth0
        valid_lft forever preferred_lft forever
root@783efa35e5d5:/#
```

Рис.2 — Конфигурация интерфейсов контейнеров.

3) Произведем пинг с одного контейнера на другой (Рис.3).

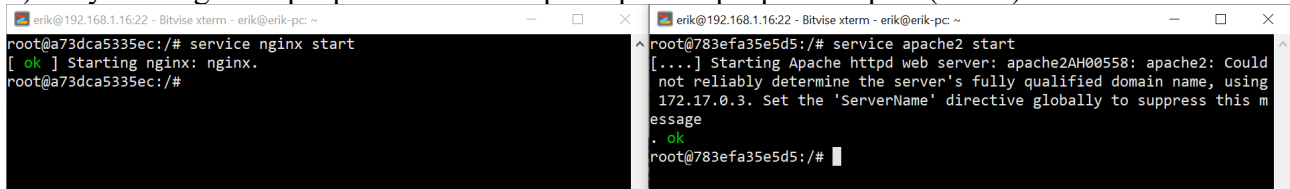


```
root@a73dca5335ec:/# ping 172.17.0.3
PING 172.17.0.3 (172.17.0.3) 56(84) bytes of data.
64 bytes from 172.17.0.3: icmp_seq=1 ttl=64 time=0.089 ms
64 bytes from 172.17.0.3: icmp_seq=2 ttl=64 time=0.118 ms
64 bytes from 172.17.0.3: icmp_seq=3 ttl=64 time=0.061 ms
64 bytes from 172.17.0.3: icmp_seq=4 ttl=64 time=0.066 ms
64 bytes from 172.17.0.3: icmp_seq=5 ttl=64 time=0.061 ms
64 bytes from 172.17.0.3: icmp_seq=6 ttl=64 time=0.060 ms
64 bytes from 172.17.0.3: icmp_seq=7 ttl=64 time=0.060 ms
64 bytes from 172.17.0.3: icmp_seq=8 ttl=64 time=0.069 ms
64 bytes from 172.17.0.3: icmp_seq=9 ttl=64 time=0.078 ms
^C
--- 172.17.0.3 ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 8294ms
rtt min/avg/max/mdev = 0.060/0.073/0.118/0.020 ms
root@a73dca5335ec:/#

root@783efa35e5d5:/# ping 172.17.0.2
PING 172.17.0.2 (172.17.0.2) 56(84) bytes of data.
64 bytes from 172.17.0.2: icmp_seq=1 ttl=64 time=0.065 ms
64 bytes from 172.17.0.2: icmp_seq=2 ttl=64 time=0.063 ms
64 bytes from 172.17.0.2: icmp_seq=3 ttl=64 time=0.068 ms
64 bytes from 172.17.0.2: icmp_seq=4 ttl=64 time=0.077 ms
64 bytes from 172.17.0.2: icmp_seq=5 ttl=64 time=0.062 ms
64 bytes from 172.17.0.2: icmp_seq=6 ttl=64 time=0.067 ms
64 bytes from 172.17.0.2: icmp_seq=7 ttl=64 time=0.068 ms
64 bytes from 172.17.0.2: icmp_seq=8 ttl=64 time=0.061 ms
64 bytes from 172.17.0.2: icmp_seq=9 ttl=64 time=0.062 ms
^C
--- 172.17.0.2 ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 8193ms
rtt min/avg/max/mdev = 0.061/0.065/0.077/0.011 ms
root@783efa35e5d5:/#
```

Рис.3 — Ping с одного контейнера на другой.

4) Запустим nginx сервер на 1 контейнере а арче сервер на втором (Рис.4).

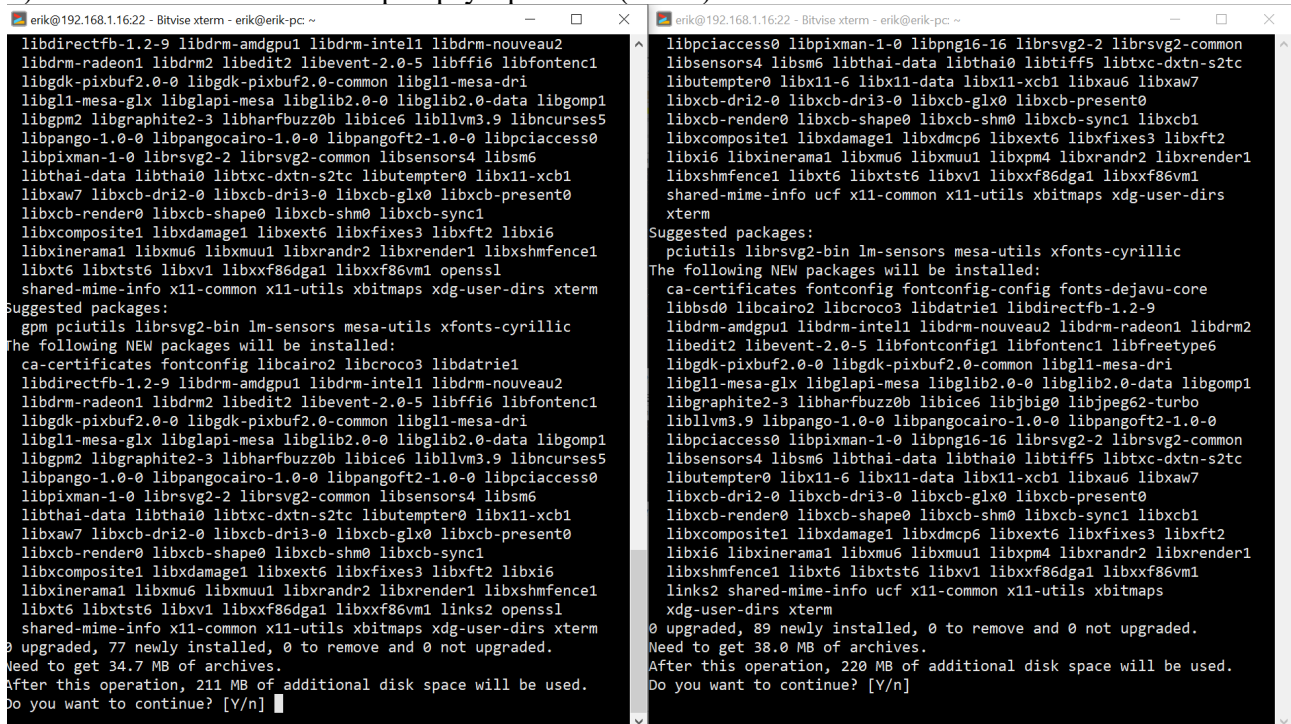


```
root@a73dca5335ec:/# service nginx start
[ ok ] Starting nginx: nginx.
root@a73dca5335ec:/#

root@783efa35e5d5:/# service apache2 start
[....] Starting Apache httpd web server: apache2AH00558: apache2: Could
not reliably determine the server's fully qualified domain name, using
172.17.0.3. Set the 'ServerName' directive globally to suppress this m
essage
. ok
root@783efa35e5d5:/#
```

Рис.5 — Запуск контейнеров.

5) Скачаем на оба контейнера браузер links2 (Рис.6).

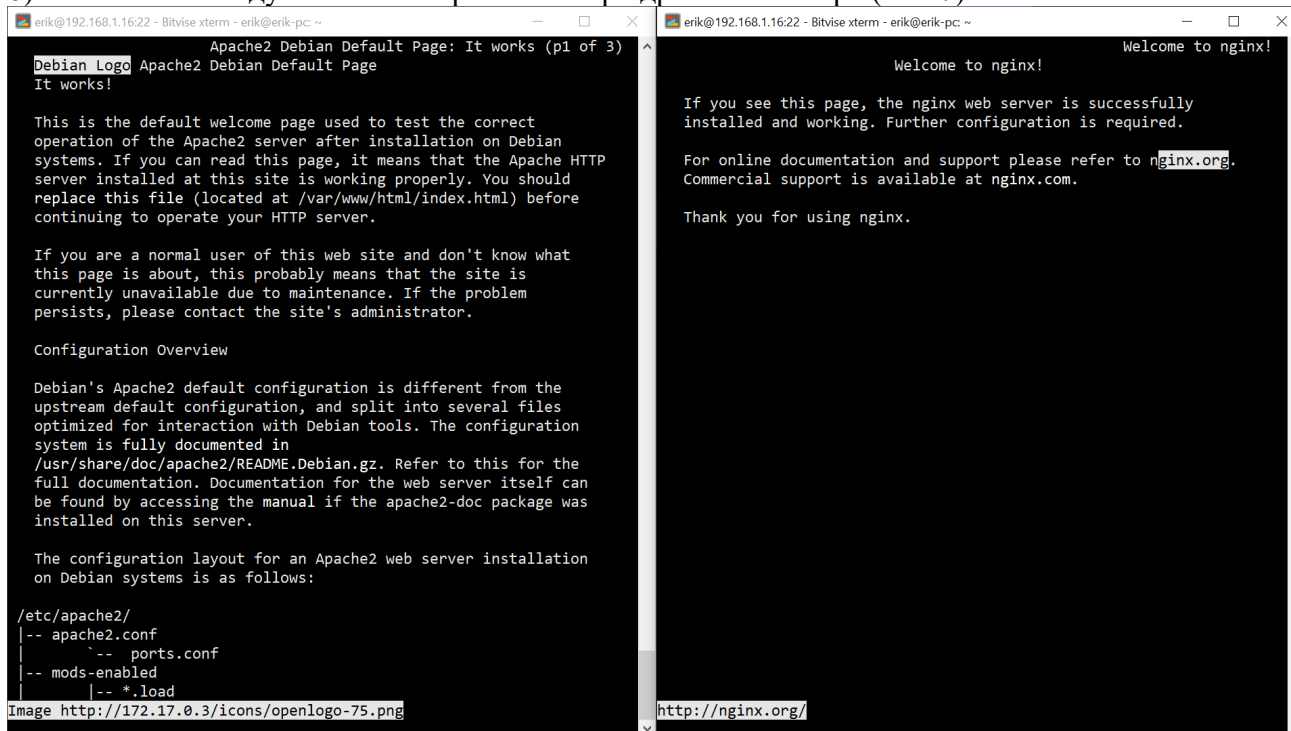


```
erik@192.168.1.16:22 - Bitvise xterm - erik@erik-pc ~
libdirectfb-1.2-9 libdrm-amdgpu1 libdrm-intel1 libdrm-nouveau2
libdrm-radeon1 libdrm2 libedit2 libevent-2.0-5 libffi6 libfontenc1
libgdk-pixbuf2.0-0 libgdk-pixbuf2.0-common libgl1-mesa-dri
libgl1-mesa-glx libglapi-mesa libglb2.0-0 libglb2.0-data libgomp1
libgpm2 libgraphite2-3 libharfbuzz0b libice6 liblvm3.9 libncurses5
libpango-1.0-0 libpangocairo-1.0-0 libpangoft2-1.0-0 libpciaccess0
libpixmap-1-0 librsvg2-2 librsvg2-common libsensors4 libsm6
libthai-data libthai0 libtxc-dxtn-s2tc libutempter0 libx11-xcb1
libxaw7 libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0 libxcb-present0
libxcb-render0 libxcb-shape0 libxcb-shm0 libxcb-sync1
libxcomposite1 libxdamage1 libxext6 libxfixes3 libxft2 libxi6
libxinerama1 libxmu6 libxmuu1 libxrandr2 libxrender1 libxshmfence1
libxt6 libxtst6 libxv1 libxxf86dga1 libxxf86vm1 openssl
shared-mime-info x11-common x11-utils xbitmaps xdg-user-dirs xterm
Suggested packages:
gpm pciutils librsvg2-bin lm-sensors mesa-utils xfonts-cyrillic
The following NEW packages will be installed:
ca-certificates fontconfig fontconfig-config fonts-dejavu-core
libbsd0 libcairo2 libcroc03 libdatrie1 libdirectfb-1.2-9
libdrm-amdgpu1 libdrm-intel1 libdrm-nouveau2 libdrm-radeon1 libdrm2
libedit2 libevent-2.0-5 libfontconfig1 libfontenc1 libfreetype6
libgdk-pixbuf2.0-0 libgdk-pixbuf2.0-common libgl1-mesa-dri
libgl1-mesa-glx libglapi-mesa libglb2.0-0 libglb2.0-data libgomp1
libgraphite2-3 libharfbuzz0b libice6 libjbig0 libjpeg62-turbo
liblvm3.9 libpango-1.0-0 libpangocairo-1.0-0 libpangoft2-1.0-0
libpciaccess0 libpixmap-1-0 libpng16-16 librsvg2-2 librsvg2-common
libsensors4 libsm6 libthai-data libthai0 libtiff5 libtxc-dxtn-s2tc
libutempter0 libx11-6 libx11-data libx11-xcb1 libxau6 libxaw7
libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0 libxcb-present0
libxcb-render0 libxcb-shape0 libxcb-shm0 libxcb-sync1
libxcomposite1 libxdamage1 libxext6 libxfixes3 libxft2 libxi6
libxinerama1 libxmu6 libxmuu1 libxrandr2 libxrender1 libxshmfence1
libxt6 libxtst6 libxv1 libxxf86dga1 libxxf86vm1 links2 openssl
shared-mime-info x11-common x11-utils xbitmaps xdg-user-dirs xterm
0 upgraded, 77 newly installed, 0 to remove and 0 not upgraded.
Need to get 34.7 MB of archives.
After this operation, 211 MB of additional disk space will be used.
Do you want to continue? [Y/n]

erik@192.168.1.16:22 - Bitvise xterm - erik@erik-pc ~
libpciaccess0 libpixmap-1-0 libpng16-16 librsvg2-2 librsvg2-common
libsensors4 libsm6 libthai-data libthai0 libtiff5 libtxc-dxtn-s2tc
libutempter0 libx11-6 libx11-data libx11-xcb1 libxau6 libxaw7
libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0 libxcb-present0
libxcb-render0 libxcb-shape0 libxcb-shm0 libxcb-sync1
libxcomposite1 libxdamage1 libxext6 libxfixes3 libxft2
libxi6 libxinerama1 libxmu6 libxmuu1 libxpm4 libxrandr2 libxrender1
libxshmfence1 libxt6 libxtst6 libxv1 libxxf86dga1 libxxf86vm1
shared-mime-info ucf x11-common x11-utils xbitmaps xdg-user-dirs
xterm
Suggested packages:
pciutils librsvg2-bin lm-sensors mesa-utils xfonts-cyrillic
The following NEW packages will be installed:
ca-certificates fontconfig fontconfig-config fonts-dejavu-core
libbsd0 libcairo2 libcroc03 libdatrie1 libdirectfb-1.2-9
libdrm-amdgpu1 libdrm-intel1 libdrm-nouveau2 libdrm-radeon1 libdrm2
libedit2 libevent-2.0-5 libfontconfig1 libfontenc1 libfreetype6
libgdk-pixbuf2.0-0 libgdk-pixbuf2.0-common libgl1-mesa-dri
libgl1-mesa-glx libglapi-mesa libglb2.0-0 libglb2.0-data libgomp1
libgraphite2-3 libharfbuzz0b libice6 libjbig0 libjpeg62-turbo
liblvm3.9 libpango-1.0-0 libpangocairo-1.0-0 libpangoft2-1.0-0
libpciaccess0 libpixmap-1-0 libpng16-16 librsvg2-2 librsvg2-common
libsensors4 libsm6 libthai-data libthai0 libtiff5 libtxc-dxtn-s2tc
libutempter0 libx11-6 libx11-data libx11-xcb1 libxau6 libxaw7
libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0 libxcb-present0
libxcb-render0 libxcb-shape0 libxcb-shm0 libxcb-sync1
libxcomposite1 libxdamage1 libxext6 libxfixes3 libxft2 libxi6
libxinerama1 libxmu6 libxmuu1 libxrandr2 libxrender1 libxshmfence1
libxt6 libxtst6 libxv1 libxxf86dga1 libxxf86vm1 links2 shared-mime-info
ucf x11-common x11-utils xbitmaps xdg-user-dirs xterm
0 upgraded, 89 newly installed, 0 to remove and 0 not upgraded.
Need to get 38.0 MB of archives.
After this operation, 220 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

Рис.6 — Установка браузера.

6) Вбиваем команду на контейнерах links2 ip адрес контейнера (Рис.7)



```
erik@192.168.1.16:22 - Bitvise xterm - erik@erik-pc ~
Apache2 Debian Default Page: It works (p1 of 3)
Debian Logo Apache2 Debian Default Page
It works!

This is the default welcome page used to test the correct
operation of the Apache2 server after installation on Debian
systems. If you can read this page, it means that the Apache HTTP
server installed at this site is working properly. You should
replace this file (located at /var/www/html/index.html) before
continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what
this page is about, this probably means that the site is
currently unavailable due to maintenance. If the problem
persists, please contact the site's administrator.

Configuration Overview

Debian's Apache2 default configuration is different from the
upstream default configuration, and split into several files
optimized for interaction with Debian tools. The configuration
system is fully documented in
/usr/share/doc/apache2/README.Debian.gz. Refer to this for the
full documentation. Documentation for the web server itself can
be found by accessing the manual if the apache2-doc package was
installed on this server.

The configuration layout for an Apache2 web server installation
on Debian systems is as follows:

/etc/apache2/
|-- apache2.conf
|   |-- ports.conf
|-- mods-enabled
|   |-- *.load
|-- conf-enabled
|   |-- *.conf
|-- sites-enabled
|   |-- 000-default.conf

Image http://172.17.0.3/icons/openlogo-75.png

erik@192.168.1.16:22 - Bitvise xterm - erik@erik-pc ~
Welcome to nginx!

If you see this page, the nginx web server is successfully
installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

http://nginx.org/
```

Рис.7 — Стартовые странички web серверов.