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Практическая работа № 3

Тема: «RabbitMQ»

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Установка DOCKER на UBUNTU

```
lemp@u20-11: ~  
lemp@u20-11:~$ sudo apt update  
[sudo] password for lemp:  
Hit:1 http://ru.archive.ubuntu.com/ubuntu focal InRelease  
Hit:2 http://ru.archive.ubuntu.com/ubuntu focal-updates InRelease  
Hit:3 http://ru.archive.ubuntu.com/ubuntu focal-backports InRelease  
Hit:4 http://deb.anydesk.com all InRelease  
Hit:5 https://dl.google.com/linux/chrome/deb stable InRelease  
Hit:6 http://ppa.launchpad.net/serge-rider/dbeaver-ce/ubuntu focal InRelease  
Hit:7 https://download.docker.com/linux/ubuntu focal InRelease  
Hit:8 http://security.ubuntu.com/ubuntu focal-security InRelease  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
61 packages can be upgraded. Run 'apt list --upgradable' to see them.  
lemp@u20-11:~$  
  
lemp@u20-11:~$ sudo apt install apt-transport-https ca-certificates curl software-properties-common  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
ca-certificates is already the newest version (20211016-20.04.1).  
curl is already the newest version (7.68.0-1ubuntu2.13).  
software-properties-common is already the newest version (0.99.9.8).  
The following packages will be upgraded:  
  apt-transport-https  
1 upgraded, 0 newly installed, 0 to remove and 60 not upgraded.  
Need to get 1 704 B of archives.  
After this operation, 0 B of additional disk space will be used.  
Do you want to continue? [Y/n] Y  
Get:1 http://ru.archive.ubuntu.com/ubuntu focal-updates/universe amd64 apt-transport-https all 2.0.9 [1 704 B]  
Fetched 1 704 B in 0s (41,2 kB/s)  
(Reading database ... 192242 files and directories currently installed.)  
Preparing to unpack .../apt-transport-https_2.0.9_all.deb ...  
Unpacking apt-transport-https (2.0.9) over (2.0.8) ...  
Setting up apt-transport-https (2.0.9) ...  
lemp@u20-11:~$ S
```

Добавление каталогов докера

```
lemp@u20-11:~$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
OK
```

Репозиторий для добавления образов

```
lemp@u20-11:~$ sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu focal stable"
Hit:1 http://ru.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://ru.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://ru.archive.ubuntu.com/ubuntu focal-backports InRelease
Hit:4 http://deb.anydesk.com all InRelease
Hit:5 https://dl.google.com/linux/chrome/deb stable InRelease
Get:6 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Hit:7 https://download.docker.com/linux/ubuntu focal InRelease
Hit:8 http://ppa.launchpad.net/serge-rider/dbeaver-ce/ubuntu focal InRelease
Fetched 114 kB in 1s (135 kB/s)
Reading package lists... Done
```

Индексация изменений

```
lemp@u20-11:~$ sudo apt update
Hit:1 http://ru.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://ru.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://deb.anydesk.com all InRelease
Hit:4 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:5 http://ru.archive.ubuntu.com/ubuntu focal-backports InRelease
Hit:6 http://ppa.launchpad.net/serge-rider/dbeaver-ce/ubuntu focal InRelease
Hit:7 https://download.docker.com/linux/ubuntu focal InRelease
Get:8 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Fetched 114 kB in 1s (102 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
60 packages can be upgraded. Run 'apt list --upgradable' to see them.
lemp@u20-11:~$
```

Установка докера

```
lemp@u20-11:~$ sudo apt install docker-ce
Reading package lists... Done
Building dependency tree
Reading state information... Done
Suggested packages:
  aufs-tools cgroupfs-mount | cgroup-lite
The following packages will be upgraded:
  docker-ce
1 upgraded, 0 newly installed, 0 to remove and 59 not upgraded.
Need to get 20,4 MB of archives.
After this operation, 12,3 MB disk space will be freed.
Get:1 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce amd64 5:20.10.18~3-0~ubuntu-focal [20,4 MB]
Fetched 20,4 MB in 3s (7 789 kB/s)
(Reading database ... 192242 files and directories currently installed.)
Preparing to unpack .../docker-ce_5%3a20.10.18~3-0~ubuntu-focal_amd64.deb ...
Unpacking docker-ce (5:20.10.18~3-0~ubuntu-focal) over (5:20.10.16~3-0~ubuntu-focal) ...
Setting up docker-ce (5:20.10.18~3-0~ubuntu-focal) ...
Processing triggers for systemd (245.4-4ubuntu3.17) ...
lemp@u20-11:~$
```


Проверка докера

```
lemp@u20-11:~$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/lib/systemd/system/docker.service; enabled; vendor prese
   Active: active (running) since Tue 2022-09-27 09:26:37 MSK; 42s ago
   TriggeredBy: ● docker.socket
     Docs: https://docs.docker.com
    Main PID: 161561 (dockerd)
      Tasks: 9
     Memory: 32.5M
    CGroup: /system.slice/docker.service
            └─161561 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/c
сен 27 09:26:36 u20-11 dockerd[161561]: time="2022-09-27T09:26:36.908123804+03>
сен 27 09:26:36 u20-11 dockerd[161561]: time="2022-09-27T09:26:36.908153505+03>
сен 27 09:26:36 u20-11 dockerd[161561]: time="2022-09-27T09:26:36.908163105+03>
сен 27 09:26:36 u20-11 dockerd[161561]: time="2022-09-27T09:26:36.908335108+03>
сен 27 09:26:37 u20-11 dockerd[161561]: time="2022-09-27T09:26:37.235855252+03>
сен 27 09:26:37 u20-11 dockerd[161561]: time="2022-09-27T09:26:37.283488373+03>
сен 27 09:26:37 u20-11 dockerd[161561]: time="2022-09-27T09:26:37.318050168+03>
сен 27 09:26:37 u20-11 dockerd[161561]: time="2022-09-27T09:26:37.318274972+03>
сен 27 09:26:37 u20-11 systemd[1]: Started Docker Application Container Engine.
сен 27 09:26:37 u20-11 dockerd[161561]: time="2022-09-27T09:26:37.363867958+03>
lines 1-21/21 (END)
```

Скачивание docker compose

```
lemp@u20-11:~$ sudo curl -L "https://github.com/docker/compose/releases/download/1.25.0/docker-co
mcompose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-compose
[sudo] password for lemp:
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
  0     0     0      0     0      0     0      0      0 --:--:-- --:--:-- --:--:--    0
100 16.2M  100 16.2M    0     0 19.9M      0 --:--:-- --:--:-- --:--:-- 19.9M
lemp@u20-11:~$
```

Открытие общего доступа

```
lemp@u20-11:~$ sudo chmod +x /usr/local/bin/docker-compose
lemp@u20-11:~$ docker-compose --version
docker-compose version 1.25.0, build 0a186604
lemp@u20-11:~$
```

Проверка наличия сборок

```
lemp@u20-11:~$ docker-compose ps
ERROR:
       Can't find a suitable configuration file in this directory or any
       parent. Are you in the right directory?

       Supported filenames: docker-compose.yml, docker-compose.yaml
lemp@u20-11:~$
```

Установка RabbitMQ

```
lemp@u20-11: ~  
lemp@u20-11: ~  
lemp@u20-11: ~  
lemp@u20-11:~$ sudo docker pull rabbitmq:3.6.14-management  
[sudo] password for lemp:  
3.6.14-management: Pulling from library/rabbitmq  
e7bb522d92ff: Pull complete  
ad90649c4d84: Pull complete  
5a318b914d6c: Pull complete  
cedd60f70052: Pull complete  
f754361b064d: Pull complete  
9024d880d342: Pull complete  
b3d775050fc8: Pull complete  
6e9f52fff670: Pull complete  
2af9c86e1071: Pull complete  
80eef1b61d37: Pull complete  
82f0271a3b5e: Pull complete  
c6f959a3f62b: Pull complete  
a289a4ffa099: Pull complete  
Digest: sha256:8f4d1feacc3f160a8e426dd33c57b7147c8e863d6283e917e3ce5f790830cca3  
Status: Downloaded newer image for rabbitmq:3.6.14-management  
docker.io/library/rabbitmq:3.6.14-management  
lemp@u20-11:~$
```

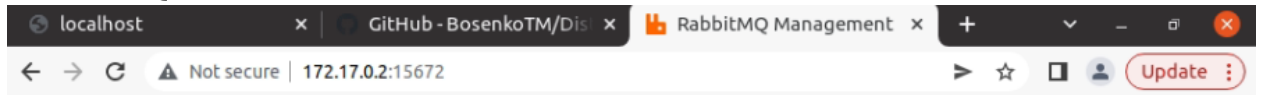
Запуск контейнера

```
lemp@u20-11:~$ sudo docker volume create rabbitmq_data  
rabbitmq_data  
lemp@u20-11:~$ sudo docker run -d --hostname rabbitmq --log-driver=journald --name rabbitmq -p 5672:5672 -p 15672:15672 -p 15674:15674 -p 25672:25672 -p 61613:61613 -v rabbitmq_data:/var/lib/rabbitmq rabbitmq:3.6.14-management  
3e1312478f793364f7c5d7716251a66014338468f9b4aa1828623477f7281d92  
lemp@u20-11:~$  
Запуск контейнера после перезагрузки  
lemp@u20-11:~$ sudo docker container inspect rabbitmq  
[  
  {  
    "Id": "3e1312478f793364f7c5d7716251a66014338468f9b4aa1828623477f7281d92",  
    "Created": "2022-09-27T06:47:12.067555701Z",  
    "Path": "docker-entrypoint.sh",  
    "Args": [  
      "rabbitmq-server"  
    ],  
    "State": {  
      "Status": "running",  
      "Running": true,  
      "Paused": false,  
      "Restarting": false,  
      "OOMKilled": false,  
      "Dead": false,  
      "Pid": 162458,  
      "ExitCode": 0,  
      "Error": "",  
      "StartedAt": "2022-09-27T06:47:12.829687788Z",  
      "FinishedAt": "0001-01-01T00:00:00Z"  
    },  
    "Image": "sha256:42b283da44d0b52785e7f114e5252f6f9fbcc0f0ca580461e6c7125af9ab3e94",  
    "ResolvConfPath": "/var/lib/docker/containers/3e1312478f793364f7c5d7716251a66014338468f9b4aa1828623477f7281d92/resolv.conf",  
    "HostnamePath": "/var/lib/docker/containers/3e1312478f793364f7c5d7716251a66014338468f9b4aa1828623477f7281d92/hostname",  
    "HostsPath": "/var/lib/docker/containers/3e1312478f793364f7c5d7716251a66014338468f9b4aa1828623477f7281d92/hosts",  
    "LogPath": "",  
    "Name": "/rabbitmq",  
    "RestartCount": 0,  
    "Driver": "overlay2",  
    "Platform": "linux",  
    "MountLabel": "",  
    "ProcessLabel": "",  
    "AppArmorProfile": "docker-default",  
    "ExecIDs": null,  
    "HostConfig": {  
      "Binds": [  
        "rabbitmq_data:/var/lib/rabbitmq"  
      ],  
      "ContainerIDFile": "",  
      "LogConfig": {
```

IP- адрес

```
Gateway": "172.17.0.1",  
"IPAddress": "172.17.0.2",  
"IPPrefixlen": 16,
```

RabbitMQ



A screenshot of the RabbitMQ Management UI in a web browser. The browser's address bar shows 'localhost' and the URL '172.17.0.2:15672/#/'. The page displays the RabbitMQ logo and version information (3.6.14, Erlang 19.2.1). The 'Overview' tab is selected, showing various metrics and a table of nodes.

Refreshed 2022-09-27 09:56:42 Refresh every 5 seconds

Virtual host All

Cluster rabbit@rabbitmq

User guest Log out

Overview Connections Channels Exchanges Queues

Admin

Totals

Queued messages last minute ?

Currently idle

Message rates last minute ?

Currently idle

Global counts ?

Connections: 0 Channels: 0 Exchanges: 8 Queues: 0 Consumers: 0

Nodes

Name	File descriptors ?	Socket descriptors ?	Erlang processes	Memory	Disk space	Uptime	Info
rabbit@rabbitmq	24 1048576 available	0 943626 available	320 1048576 available	77MB 3.0GB high watermark	41GB 48MB low watermark	9m 20s	basic disc 1

Ports and contexts

Export definitions

Import definitions

HTTP API Server Docs Tutorials Community Support Community Slack Commercial Support Plugins GitHub Changelog

Удаление контейнеров

```

lemp@u20-11:~$ sudo docker ps -a
[sudo] password for lemp:

```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
3e1312478f79	rabbitmq:3.6.14-management	"docker-entrypoint.s..."	17 minutes ago	Up 17 minutes	4369/tcp, 5671/tcp, 0.0.0.0:5672->5672/tcp, :::5672->5672/tcp, 0.0.0.0:5672->15672/tcp, :::15672->15674/tcp, 0.0.0.0:5674->15674/tcp, :::15674->15674/tcp, 15670/tcp, 0.0.0.0:35672->35672/tcp, :::35672->25672/tcp, 15671/tcp, 0.0.0.0:61613->61613/tcp, :::61613->61613/tcp
1e57e0c77fad	frolow/2802_postgres	"docker-entrypoint.s..."	3 months ago	Exited (255) 3 weeks ago	0.0.0.0:5432->5432/tcp, :::5432->5432/tcp
d27503befda0	marcelmittelstaedt/spark_base:latest	"/startup.sh"	3 months ago	Exited (137) 3 months ago	
55daef9758aa	marcelmittelstaedt/hiveserver_base:latest	"/startup.sh"	3 months ago	Exited (137) 3 months ago	

```

lemp@u20-11:~$ sudo docker stop 1e57e0c77fad
1e57e0c77fad
lemp@u20-11:~$ sudo docker rm 1e57e0c77fad
1e57e0c77fad
lemp@u20-11:~$ sudo docker stop d27503befda0
d27503befda0
lemp@u20-11:~$ sudo docker rm d27503befda0
d27503befda0
lemp@u20-11:~$ sudo docker stop 55daef9758aa
55daef9758aa
lemp@u20-11:~$ sudo docker rm 55daef9758aa
55daef9758aa
lemp@u20-11:~$ sudo docker ps -a

```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
3e1312478f79	rabbitmq:3.6.14-management	"docker-entrypoint.s..."	23 minutes ago	Up 23 minutes	4369/tcp, 5671/tcp, 0.0.0.0:5672->5672/tcp, 0.0.0.0:5672->15672/tcp, :::5672->15672/tcp, 0.0.0.0:5674->15674/tcp, :::15674->15674/tcp, 0.0.0.0:5672->25672/tcp, 0.0.0.0:35672->35672/tcp, 15671/tcp, 0.0.0.0:61613->61613/tcp, :::61613->61613/tcp

```

lemp@u20-11:~$

```

ПРИМЕРЫ

Переход в папку examples

```
lemp@u20-11:~/Downloads$ cd examples
lemp@u20-11:~/Downloads/examples$
```

Проверка версии python, установка pip3 и проверка версии pip3

```
lemp@u20-11:~/Downloads$ cd examples
lemp@u20-11:~/Downloads/examples$ python3 --version
Python 3.8.10
```

```

lemp@u20-11:~/Downloads/examples$ sudo apt -y install python3-pip
[sudo] password for lemp:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  binutils binutils-common binutils-x86-64-linux-gnu build-essential dpkg-dev fakeroot g++ g++-9 gcc gcc-9 libalgorithm-diff-perl
  libalgorithm-diff-xs-perl libalgorithm-merge-perl libasan5 libatomic1 libbinutils libctf-nobfd0 libctf0 libexpat1-dev libfakeroot
  libgcc-9-dev libitm1 liblsan0 libpython3-dev libpython3.8-dev libquadmath0 libstdc++-9-dev libubsan1 make python-pip-whl
  python3-dev python3-distutils python3-setuptools python3-wheel python3.8-dev
Suggested packages:

```

```
lemp@u20-11:~/Downloads/examples$ pip --version
pip 20.0.2 from /usr/lib/python3/dist-packages/pip (python 3.8)
```

Переход в папку с примером hello world, установка pika и запуск receiver.py

```
lemp@u20-11:~/Downloads/examples/rabbitmq$ cd hello-world
lemp@u20-11:~/Downloads/examples/rabbitmq/hello-world$ python3 recieve.py
Traceback (most recent call last):
  File "recieve.py", line 1, in <module>
    import pika
ModuleNotFoundError: No module named 'pika'
lemp@u20-11:~/Downloads/examples/rabbitmq/hello-world$ python -m pip install pika --upgrade

Command 'python' not found, did you mean:

  command 'python3' from deb python3
  command 'python' from deb python-is-python3

lemp@u20-11:~/Downloads/examples/rabbitmq/hello-world$ python3 -m pip install pika --upgrade
Collecting pika
  Downloading pika-1.3.0-py3-none-any.whl (155 kB)
    | 155 kB 2.5 MB/s
Installing collected packages: pika
Successfully installed pika-1.3.0
lemp@u20-11:~/Downloads/examples/rabbitmq/hello-world$ python3 recieve.py
started simple reciever
[producer] Waiting for messages.
```

Запуск sender.py и отправка сообщений

```
lemp@u20-11:~/Downloads/examples/rabbitmq/hello-world$ python3 send.py
enter message >>> hellow world
[sender] Sent hellow world to queue default on host localhost
enter message >>> hellow world 2
[sender] Sent hellow world 2 to queue default on host localhost
enter message >>> hello world 3
[sender] Sent hello world 3 to queue default on host localhost
enter message >>>
```

Получение сообщений

```
lemp@u20-11:~/Downloads/examples/rabbitmq/hello-world$ python3 recieve.py
started simple reciever
[producer] Waiting for messages.
[reciever] Received hellow world from channel <BlockingChannel impl=<Channel number=1 OPEN conn=<SelectC
onnection OPEN transport=<pika.adapters.utils.io_services_utils._AsyncPlaintextTransport object at 0x7fb
1c0610f70> params=<ConnectionParameters host=localhost port=5672 virtual_host=/ ssl=False>>>>, method <B
asic.Deliver(['consumer_tag=ctag1.50ca19cdc48f45e1991b0bdefd45dcee', 'delivery_tag=1', 'exchange=', 'r
edelivered=False', 'routing_key=default'])>>
[reciever] Received hellow world 2 from channel <BlockingChannel impl=<Channel number=1 OPEN conn=<Sele
ctConnection OPEN transport=<pika.adapters.utils.io_services_utils._AsyncPlaintextTransport object at 0x7
fb1c0610f70> params=<ConnectionParameters host=localhost port=5672 virtual_host=/ ssl=False>>>>, method
<Basic.Deliver(['consumer_tag=ctag1.50ca19cdc48f45e1991b0bdefd45dcee', 'delivery_tag=2', 'exchange=', 'r
edelivered=False', 'routing_key=default'])>>
[reciever] Received hellow world 3 from channel <BlockingChannel impl=<Channel number=1 OPEN conn=<Sele
ctConnection OPEN transport=<pika.adapters.utils.io_services_utils._AsyncPlaintextTransport object at 0x7f
b1c0610f70> params=<ConnectionParameters host=localhost port=5672 virtual_host=/ ssl=False>>>>, method <
Basic.Deliver(['consumer_tag=ctag1.50ca19cdc48f45e1991b0bdefd45dcee', 'delivery_tag=3', 'exchange=', 're
delivered=False', 'routing_key=default'])>>
```

Пример task-queue

```
lemp@... x lemp@... x lemp@... x lemp@... x lemp@... x lemp@...
lemp@u20-11:~/Downloads/examples/rabbitmq/task-queue$ python3 dispatcher.py
enter message >>> hello
[sender] Sent hello to queue default on host localhost
enter message >>> hello 2
[sender] Sent hello 2 to queue default on host localhost
enter message >>> 
[worker] Received command '['hello', '2']' from channel default, method <class 'pika.spec.Basic.Deliver'>
```


Удаление и установка RabbitMQ посредством файла

В ходе работы был остановлен RabbitMQ, затем удален. После чего был создан файл run.sh и определены правами на запуск этого файла. Далее в него был записан скрипт для поднятия брокера в докере. Затем файл был сохранен и запущен, после чего создан docker volume для RabbitMQ и запущен rabbitmq контейнер.

```
lemp@u20-11:~$ sudo docker stop rabbitmq
[sudo] password for lemp:
rabbitmq
lemp@u20-11:~$ sudo docker rm rabbitmq
rabbitmq
lemp@u20-11:~$ sudo touch run.sh
lemp@u20-11:~$ sudo chmod +x run.sh
lemp@u20-11:~$ sudo nano run.sh
lemp@u20-11:~$ sudo sh run.sh
bb6c9bbb4f6ff40c470910deb10cb95f0a57fe921abd40928565b178828aea88
lemp@u20-11:~$ sudo docker volume create rabbitmq_data
rabbitmq_data
lemp@u20-11:~$ sudo docker container inspect rabbitmq
[
  {
    "Id": "bb6c9bbb4f6ff40c470910deb10cb95f0a57fe921abd40928565b178828aea88",
    "Created": "2022-10-03T19:02:18.10456513Z",
    "Path": "docker-entrypoint.sh",
    "Args": [
      "rabbitmq-server"
    ],
    "State": {
      "Status": "running",
      "Running": true,
      "Paused": false,
```

Скрипт для поднятия брокера в докере:

```
GNU nano 4.8
docker run -d \
--hostname rabbitmq \
--log-driver=journald \
--name rabbitmq \
-p 5672:5672 \
-p 15672:15672 \
-p 15674:15674 \
-p 25672:25672 \
-p 61613:61613 \
-v rabbitmq_data:/var/lib/rabbitmq \
rabbitmq:3.6.14-management
```