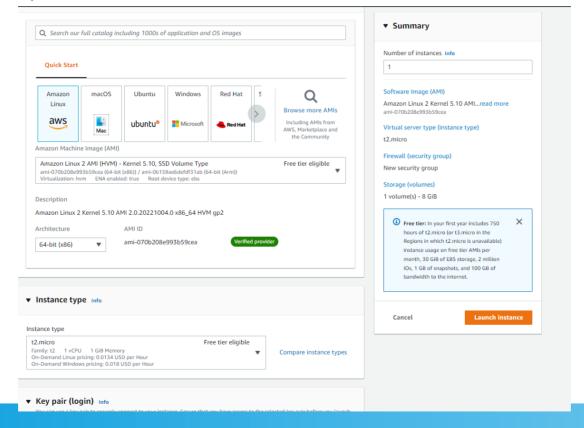
AWS TASK

Amazon EC2

For creating instance need push launch instances button. Used t2.micro Linux Amazon AMI



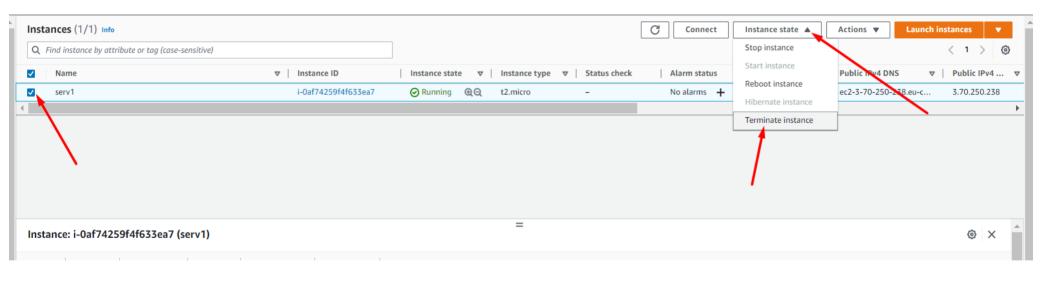
For connecting to instance we can use MobaXterm program and ssh key witch we created when created EC2 instance

```
2. 3.120.244.62 (ec2-user)
                      • MobaXterm Personal Edition v22.1 •
                    (SSH client, X server and network tools)
      ➤ SSH session to ec2-user@3.120.244.62
        • Direct SSH : 🗸
        • SSH compression : 🗸

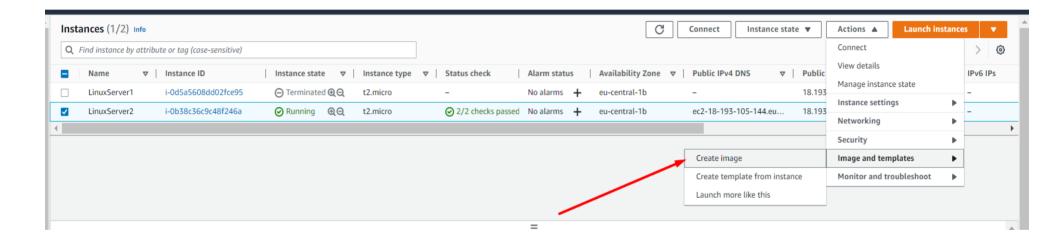
    SSH-browser

        • X11-forwarding : x (disabled or not supported by server)
      ➤ For more info, ctrl+click on help or visit our website.
                     Amazon Linux 2 AMI
https://aws.amazon.com/amazon-linux-2/
13 package(s) needed for security, out of 16 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-40-213 ~]$
[ec2-user@ip-172-31-40-213 ~]$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp seg=1 ttl=53 time=0.900 ms
64 bytes from 8.8.8.8: icmp seq=2 ttl=53 time=0.943 ms
64 bytes from 8.8.8.8: icmp seq=3 ttl=53 time=0.946 ms
 --- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2028ms
rtt min/avg/max/mdev = 0.900/0.929/0.946/0.041 ms
[ec2-user@ip-172-31-40-213 ~]$
```

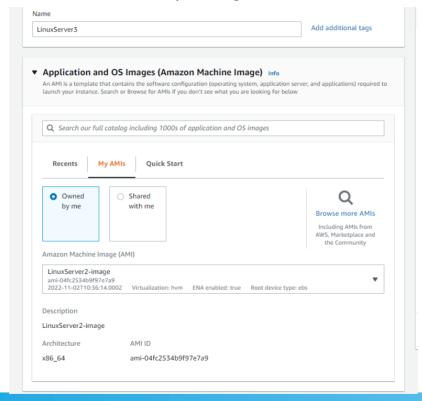
For deleting instance need highlighted instance push Instance state → terminate instance



For creating image of whole server need highlighted server → Action → Images and templates → Create image



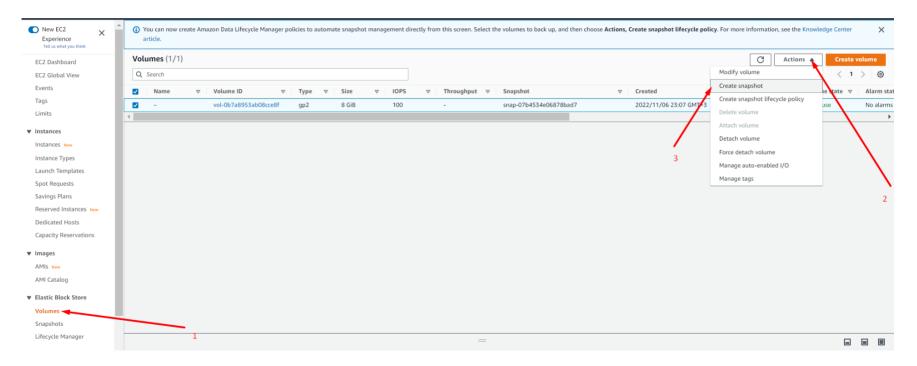
After previous operation we have own AMI in corresponding tab and we can create new instanse from our own AMI

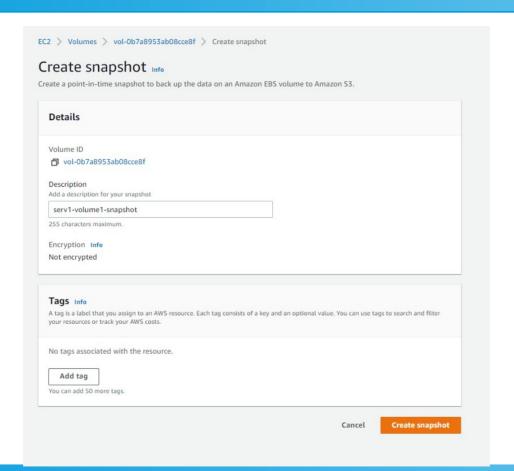


In result we have exact copy of the original server

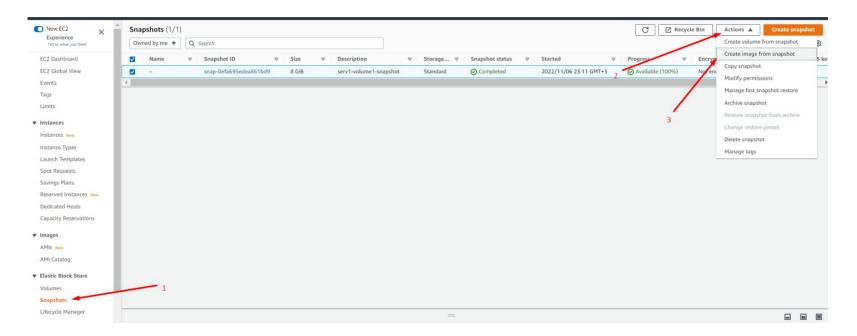
```
[ec2-user@ip-172-31-39-37 ~]$ sudo fdisk -l
Disk /dev/xvda: 8 GiB, 8589934592 bytes, 16777216 sectors
Jnits: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: gpt
Disk identifier: 2330CCC2-270B-42AA-8CB6-AB640F80B1B4
            Start
                       End Sectors Size Type
Device
             4096 16777182 16773087
                                      8G Linux filesystem
/dev/xvda1
/dev/xvda128 2048
                      4095
                               2048
                                      1M BIOS boot
Partition table entries are not in disk order.
Disk /dev/xvdf: 1 GiB, 1073741824 bytes, 2097152 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x42461c41
Device
          Boot Start
                         End Sectors Size Id Type
/dev/xvdf1
                2048 2097151 2095104 1023M 83 Linux
```

In active instance we can create snapshot of volume:

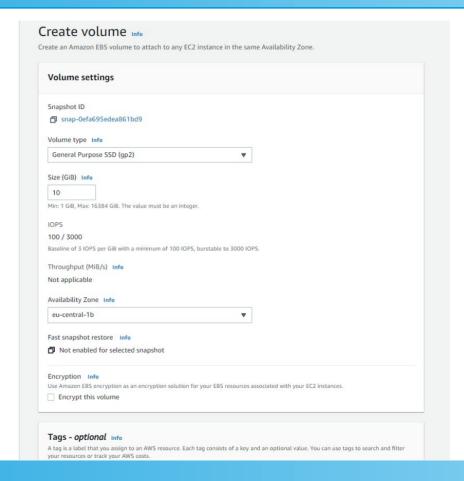




We can create new volume from snapshot



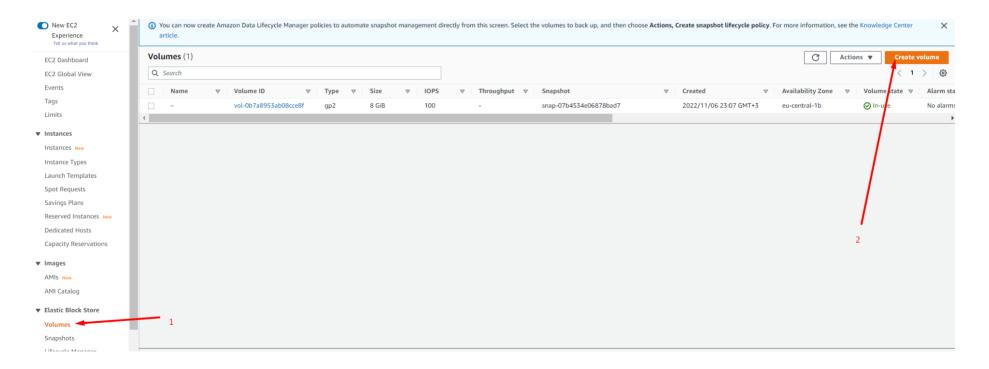
And after snapshot created we can create Volume from this snapshot and attach it to instance. It is important that new Volume will be in the same Availability Zone as an instance. On Volume creating master we can change volume type or size



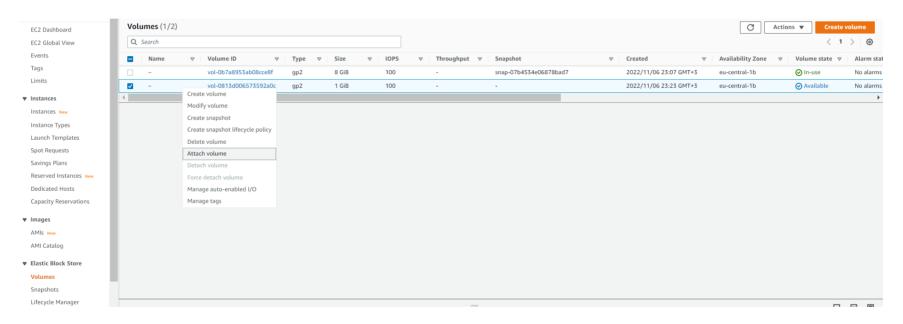
All data saving on new Volume that was on snapshot

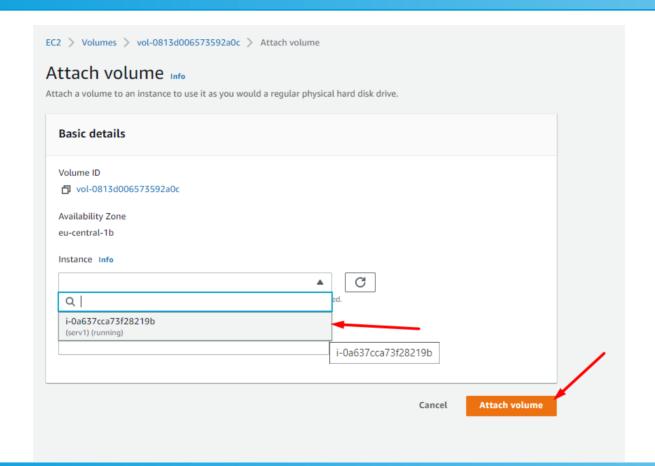
```
[ec2-user@ip-172-31-44-145 ~]$ sudo mkdir /di<u>sk-from-server1</u>
ec2-user@ip-172-31-44-145 ~]$ sudo mount /dev/xvdf1 /disk-from-server1/
ec2-user@ip-172-31-44-145 ~]$ sudo df -h
ilesystem Size Used Avail Use% Mounted on
          474M
devtmpfs
                       0 474M 0% /dev
tmpfs
              483M
                       0 483M 0% /dev/shm
           483M 448K 482M 1% /run
tmpfs
tmpfs 483M 0 483M 0% /s
/dev/xvda1 8.0G 1.6G 6.5G 20% /
                                0% /sys/fs/cgroup
tmpfs
             97M
                           97M 0% /run/user/1000
/dev/xvdf1
               989M 28K 922M
                                1% /disk-from-server1
[ec2-user@ip-172-31-44-145 ~]$ sudo cat /disk-from-server1/test.txt
fffff
fffff
fffff
ddddd
bbbbb
[ec2-user@ip-172-31-44-145 ~]$
```

We can add extra volume in instance if we need:



And attach it to our instance. It is important that Volume and instance will be in the sane availability zone





In Linux we need add new disk to system using fdisk,mkfs.ext4 and mount new disk in new mount point

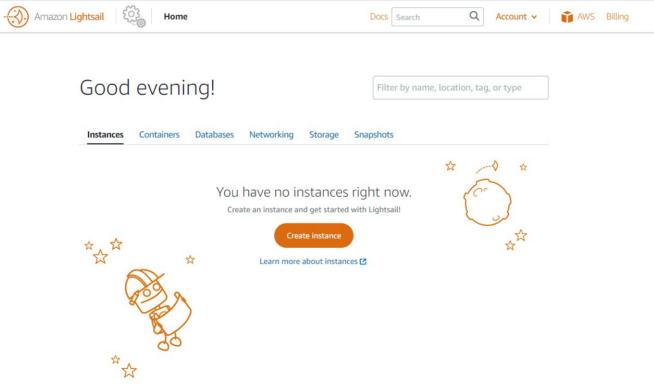
```
[ec2-user@ip-172-31-37-158 ~]$ sudo fdisk -l
Disk /dev/xvda: 8 GiB, 8589934592 bytes, 16777216 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: gpt
Disk identifier: 2330CCC2-270B-42AA-8CB6-AB640F80B1B4
)evice
                       End Sectors Size Type
             Start
                                       8G Linux filesystem
/dev/xvda1
              4096 16777182 16773087
/dev/xvda128 2048
                       4095
                                2048
                                       1M BTOS boot
Partition table entries are not in disk order.
Disk /dev/xvdf: 1 GiB, 1073741824 bytes, 2097152 sectors
Units, sectors of 1 - 512 - 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
[ec2-user@ip-172-31-37-158 ~]$
```

```
[ec2-user@ip-172-31-37-158 ~]$ sudo fdisk /dev/xvdf
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.
Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0x42461c41.
Command (m for help): n
Partition type
  p primary (0 primary, 0 extended, 4 free)
  e extended (container for logical partitions)
Select (default p):
Using default response p.
Partition number (1-4, default 1):
First sector (2048-2097151, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-2097151, default 2097151):
Created a new partition 1 of type 'Linux' and of size 1023 MiB.
Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.
```

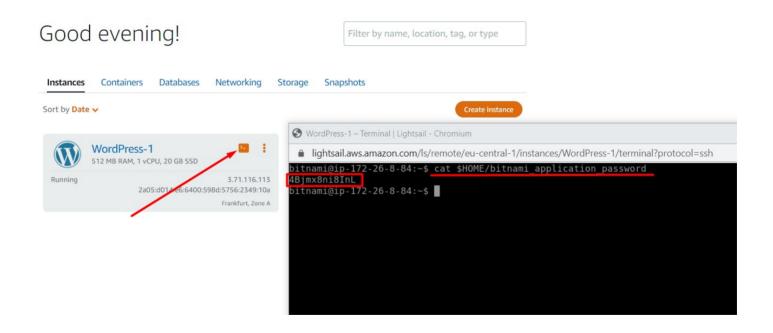
```
[ec2-user@ip-172-31-37-158 ~]$ sudo mkfs.ext4 /dev/xvdf1
mke2fs 1.42.9 (28-Dec-2013)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
65536 inodes, 261888 blocks
13094 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=268435456
8 block aroups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
       32768, 98304, 163840, 229376
Allocating group tables: done
Writing inode tables: done
Creating journal (4096 blocks): done
Writing superblocks and filesystem accounting information: done
[ec2-user@ip-172-31-37-158 ~]$ sudo mkdir /new-disk
[ec2-user@ip-172-31-37-158 ~]$ sudo mount /dev/xvdf1 /new-disk/
[ec2-user@ip-172-31-37-158 ~]$ sudo df -h
Filesystem
               Size Used Avail Use% Mounted on
devtmpfs
               474M
                        0 474M 0% /dev
tmpfs
               483M
                       0 483M
                                 0% /dev/shm
tmpfs
               483M 512K 482M 1% /run
tmpfs
                       0 483M
                                0% /sys/fs/cgroup
               483M
/dev/xvda1
               8.0G 1.6G 6.5G 20% /
                97M
                       0 97M 0% /run/user/1000
tmpfs
/dev/xvdf1
               989M 24K 922M 1% /new-disk
```

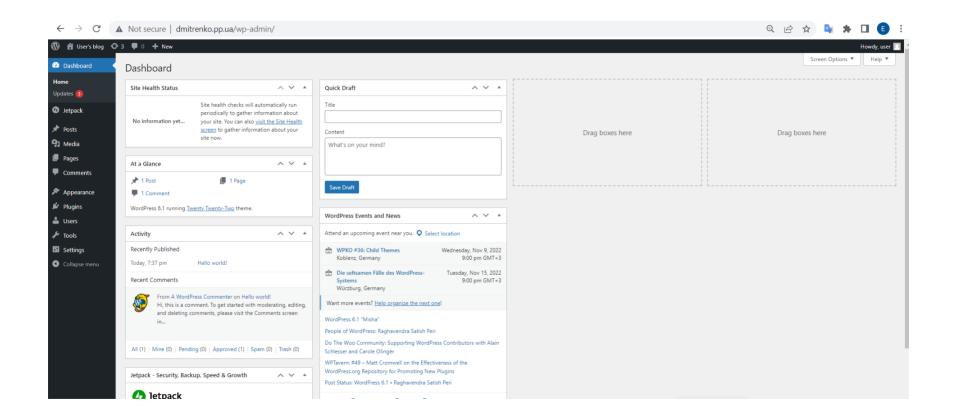
Amazon Lightsail

For creating new instance in Amazon Lightsail need to push button Create instance

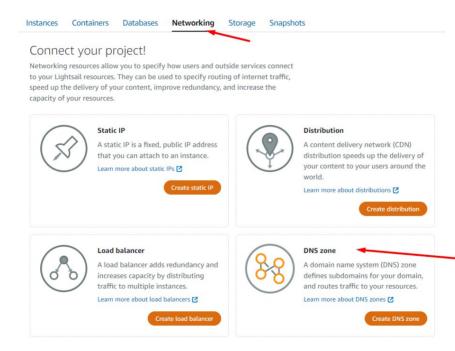


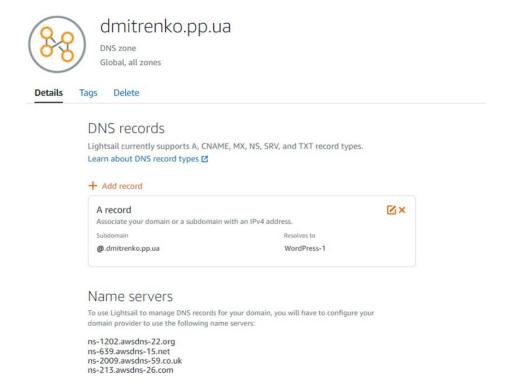
After creating instance we need connect to instance via command line and get password (command on screen) to admin panel of wordpress



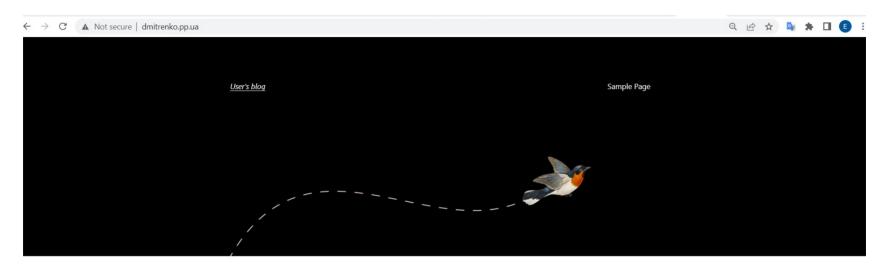


We can connect dns zone to our site





And now we can get access to our site via dns name: dmitrenko.pp.ua



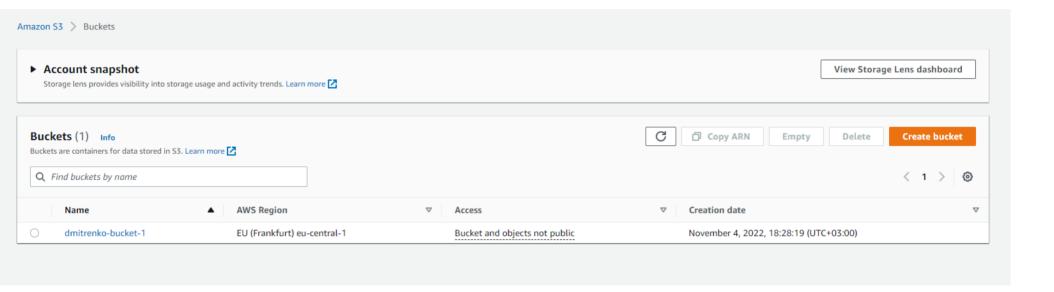
Hello world!

Welcome to WordPress. This is your first post. Edit or delete it, then start writing!

November 3, 2022

AWS S3

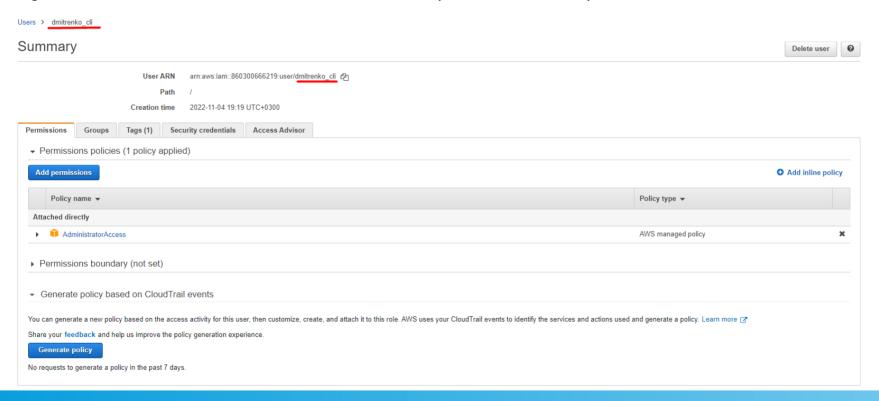
For creating bucket in console S3 use button Create bucket



We can work with AWS S3 Buckets via aws cli

```
g:\Temp>aws s3 ls --human-readable
2022-11-04 18:28:20 dmitrenko-bucket-1 list s3 buckets
g:\Temp>aws s3 ls s3://dmitrenko-bucket-1 --recursive --human-readable | ict files in bucket
2022-11-04 18:55:07 3.0 MiB Sunrise-mountains-flowers-grass-dawn_3840x2160.jpg
2022-11-04 19:39:32 854.6 KiB sunrise-in-the-mountains.ipg
g:\Temp>aws_s3_cp_ama-dablam2-most-beautiful-mountains-in-the-world.jpg_s3://dmitrenko-bucket-1 copy_file_to_s3_hucket
upload: .\ama-dablam2-most-beautiful-mountains-in-the-world.ipg to s3://dmitrenko-bucket-1/ama-dablam2-most-beautiful-mountains-in-the-world.ipg
2022-11-04 18:55:07 3.0 MiB Sunrise-mountains-flowers-grass-dawn 3840x2160.jpg
2022-11-04 19:58:44 245.2 KiB ama-dablam2-most-beautiful-mountains-in-the-world.jpg
2022-11-04 19:39:32 854.6 KiB sunrise-in-the-mountains.jpg
g:\Temp>mkdir 1
g:\Temp>cd 1
g:\Temp\1>dir
 Volume in drive G has no label.
 Volume Serial Number is 8AFE-6351
 Directory of g:\Temp\1
11/04/2022 19:59 <DIR>
11/04/2022 19:59 <DIR>
             0 File(s)
                              0 bytes
             2 Dir(s) 10,765,049,856 bytes free
g:\Temp\1>aws s3 cp s3://dmitrenko-bucket-1/sunrise-in-the-mountains.jpg ./ copy file from aws s3 to local machine
download: s3://dmitrenko-bucket-1/sunrise-in-the-mountains.jpg to .\sunrise-in-the-mountains.jpg
g:\Temp\1>dir
 Volume in drive G has no label.
 Volume Serial Number is 8AFE-6351
 Directory of g:\Temp\1
11/04/2022 19:59 <DIR>
 11/04/2022 19:59 <DIR>
11/04/2022 19:39
                        875,103 sunrise-in-the-mountains.jpg
             1 File(s) 875,103 bytes
             2 Dir(s) 10,764,173,312 bytes free
g:\Temp\1>
```

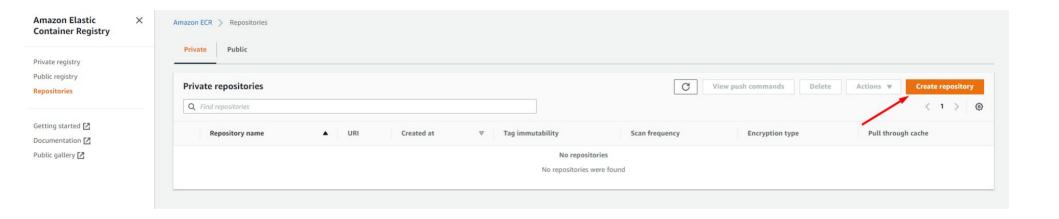
For using AWS cli at first we need create user with a relevant permissions. This operation we can do from AWS AIM Console

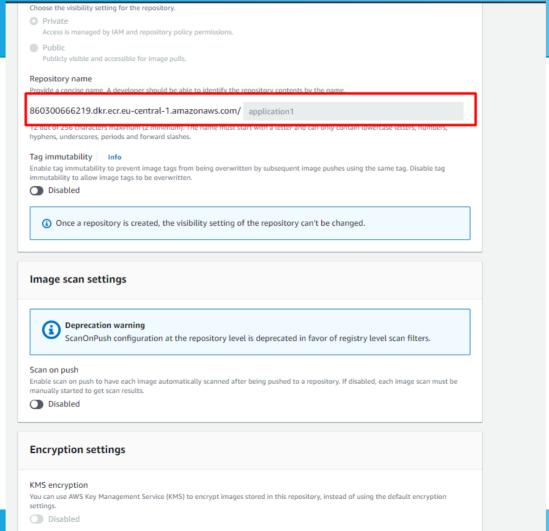


And configure aws cli by running the command – aws configure and install access key id and secret access key

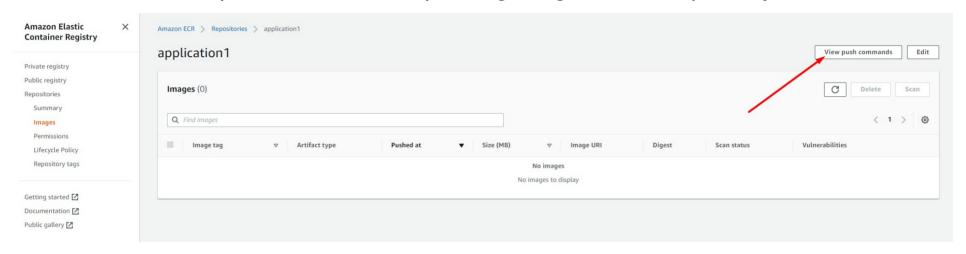
Elastic Container Registry

ECR – this is service for storing Docker images. At first we need create repository and specify name





After we can view push command for pushing images to this repository



aws ecr get-login-password --region eu-central-1 | docker login --username AWS --password-stdin 860300666219.dkr.ecr.eu-central-1.amazonaws.com docker build -t application1.

docker tag application1:latest 860300666219.dkr.ecr.eu-central-1.amazonaws.com/application1:latest docker push 860300666219.dkr.ecr.eu-central-1.amazonaws.com/application1:latest

macOS / Linux

Windows

Make sure that you have the latest version of the AWS CLI and Docker installed. For more information, see Getting Started with Amazon ECR .

Use the following steps to authenticate and push an image to your repository. For additional registry authentication methods, including the Amazon ECR credential helper, see Registry Authentication [2].

- Retrieve an authentication token and authenticate your Docker client to your registry.
 Use the AWS CLI:
 - aws ecr get-login-password --region eu-central-1 | docker login --username AWS --password-stdin 860300666219.dkr.ecr.eu-central-1.amazonaws.com

Note: If you receive an error using the AWS CLI, make sure that you have the latest version of the AWS CLI and Docker installed.

- 2. Build your Docker image using the following command. For information on building a Docker file from scratch see the instructions here ☑. You can skip this step if your image is already built:
 - docker build -t application1.
- 3. After the build completes, tag your image so you can push the image to this repository:
 - 🗖 docker tag application1:latest 860300666219.dkr.ecr.eu-central-1.amazonaws.com/application1:latest
- 4. Run the following command to push this image to your newly created AWS repository:
 - docker push 860300666219.dkr.ecr.eu-central-1.amazonaws.com/application1:latest

On our Linux machine there I created Docker image run these commands

v1.0: digest: sha256:90d94dd34e3d97ebe832a3eb4d984513beee28b60ada377406328fd4ec88b9a8 size: 1781

WARNING! Your password will be stored unencrypted in /root/.docker/config.ison.

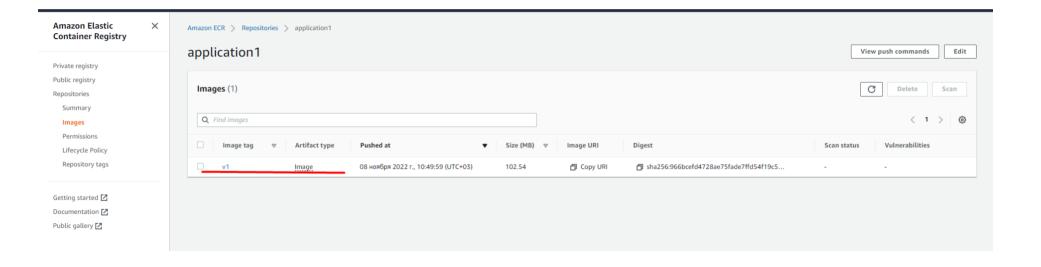
be96a3f634de: Layer already exists

root@server1:/home/user/Docker/aws-task#

root@server1:/home/user/Docker/aws-task# aws ecr get-login-password --region eu-central-1 | docker login --username AWS --password-stdin 860300666219.dkr.ecr.eu-central-1

```
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store
Login Succeeded
root@server1:/home/user/Docker/aws-task# docker tag application1:v1.0 860300666219.dkr.ecr.eu-central-1.amazonaws.com/application1:v1.0
   root@server1:/home/user/Docker/aws-task# docker push 860300666219.dkr.ecr.eu-central-1.amazonaws.com/application1:latest
   The push refers to repository [860300666219.dkr.ecr.eu-central-1.amazonaws.com/application1]
   35a91fac3086: Pushed
   94cd7839d440: Pushed
   cb802ff23ed0: Pushed
   1251204ef8fc: Pushed
   47ef83afae74: Pushed
   df54c846128d: Pushed
   be96a3f634de: Pushed
   latest: digest: sha256;caafa8fcf7edc7910ad2cf4e46ab2b995a98ed1f2776247e29f4beeba87eb09d size: 1781
   root@server1:/home/user/Docker/aws-task# docker push 860300666219.dkr.ecr.eu-central-1.amazonaws.com/application1:v1.0
   The push refers to repository [860300666219.dkr.ecr.eu-central-1.amazonaws.com/application1]
   d045c9e7ebec: Pushed
   94cd7839d440: Layer already exists
   cb802ff23ed0: Layer already exists
   1251204ef8fc: Layer already exists
   47ef83afae74: Layer already exists
   df54c846128d: Layer already exists
```

As a result we have new Docker image in AWS ECR



ECS

List of actions to deploy the ECS service:

- 1) Create ecs cluster
- 2) create task definition. Use docker image from aws ecr.
- 3) create task
- 4) create service and run task via service.

During creating cluster ecs we set different parameters of our cluster such as size, network and other

Select cluster template

The following cluster templates are available to simplify cluster creation. Additional configuration and integrations can be added later.

Networking only 6

Resources to be created:

Cluster

VPC (optional)

Subnets (optional)

f) For use with either AWS Fargate (Windows/Linux) or with External instance capacity.

EC2 Linux + Networking

Resources to be created:

Cluster

VPC

Subnets

Auto Scaling group with Linux AMI

EC2 Windows + Networking

Resources to be created:

Cluster

VPC

Subnets

Auto Scaling group with Windows AMI

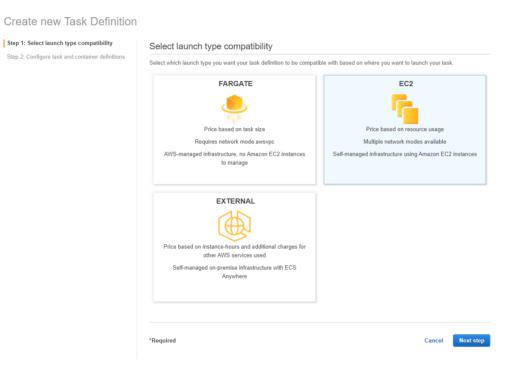
Subnets

*Required

Cancel

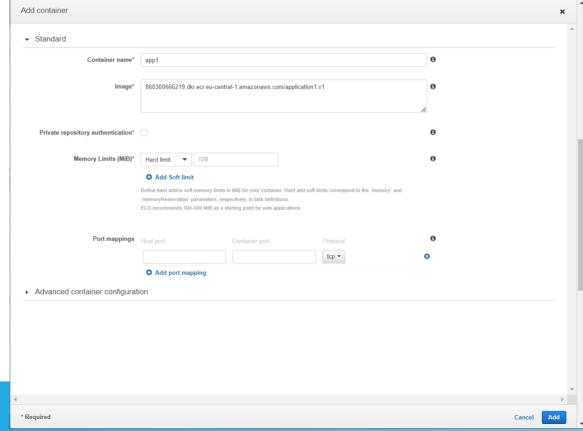
Next step

Ar firs need create new Task Definition

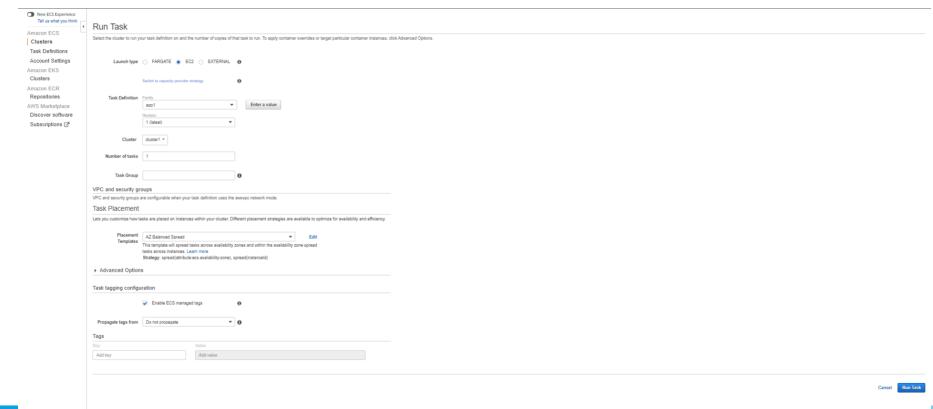


During creating task definition we set name, network mode, task size and and most importantly

Docker image from ECR



Now we can create and run new task.



For updating running container to a new revision we need create new revision of task definition based on previous task definition and after that update service.

But in this case we have another ip addres. For avoiding it we need to use application load balancer:

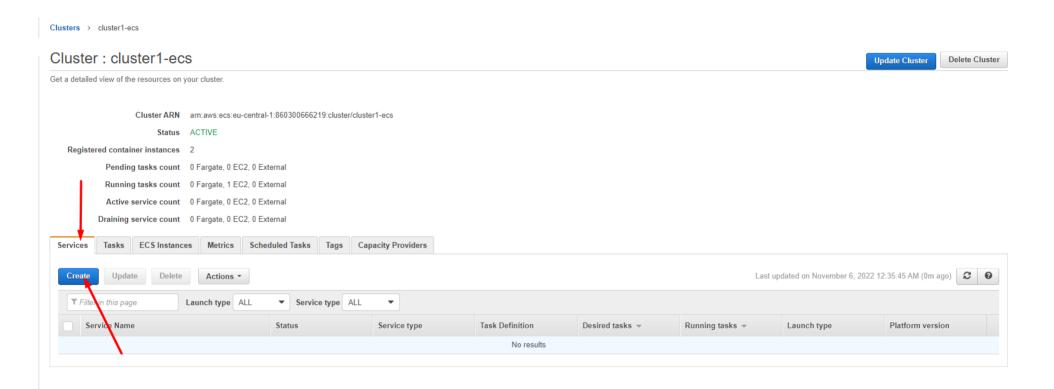
- create target group but without any target (target we'll add since configuring ecs service application load balancer)
- creating application load balancer

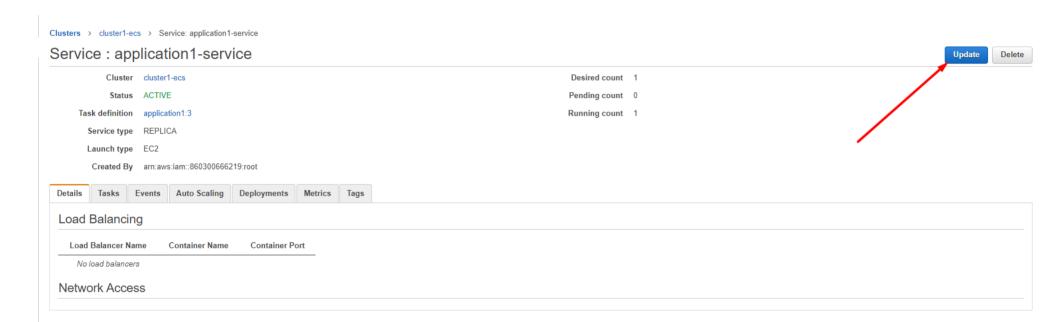
For using dns names like application1.dmitrenko.pp.ua and application2.dmitrenko.pp.ua I have connected zone dmitrenko.pp.ua in aws route53 seervice.

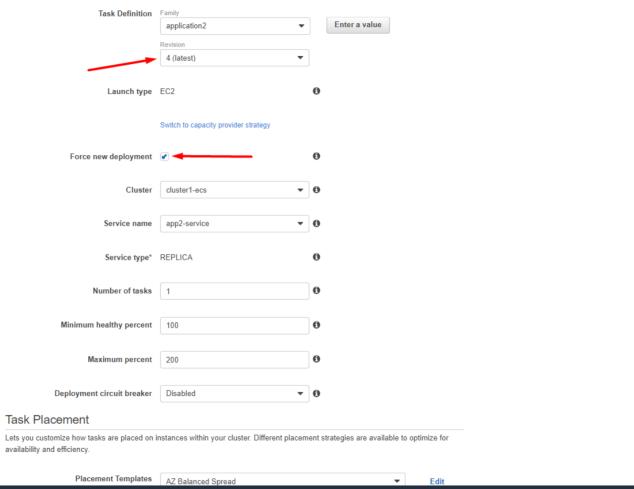
I have used one application load balancer with two different target groups.

I have confugured different rules for application load balancer.

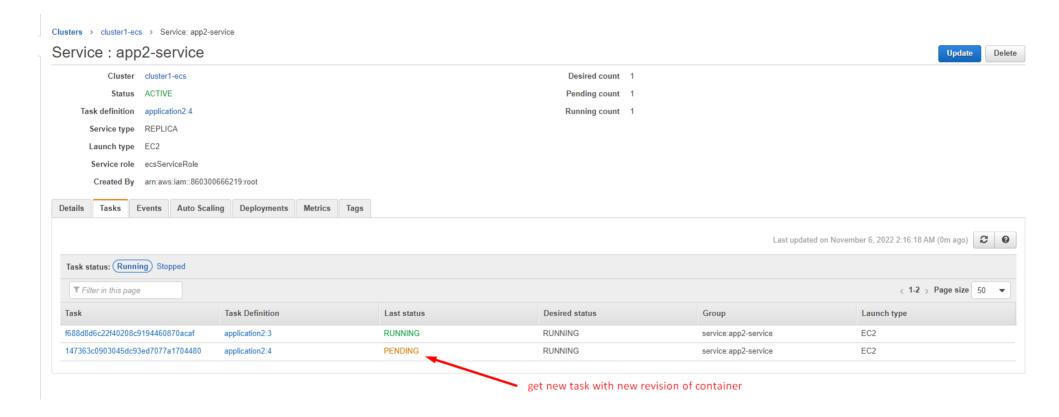
Now we can update ecs-cervice with new contaner without interruption work of application.







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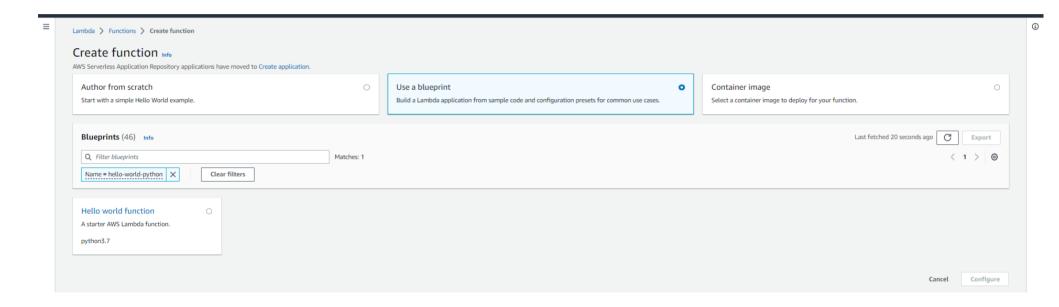






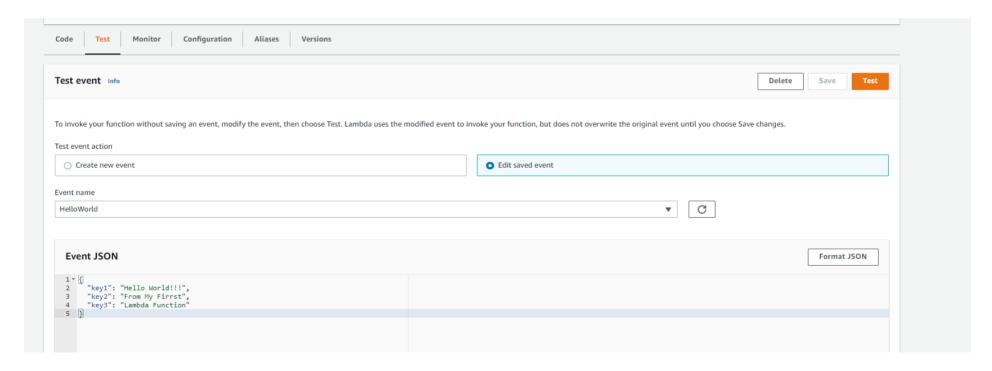
LAMBDA

For creating new Lambda function need to push Create function button. I used blueprint hello-world-python

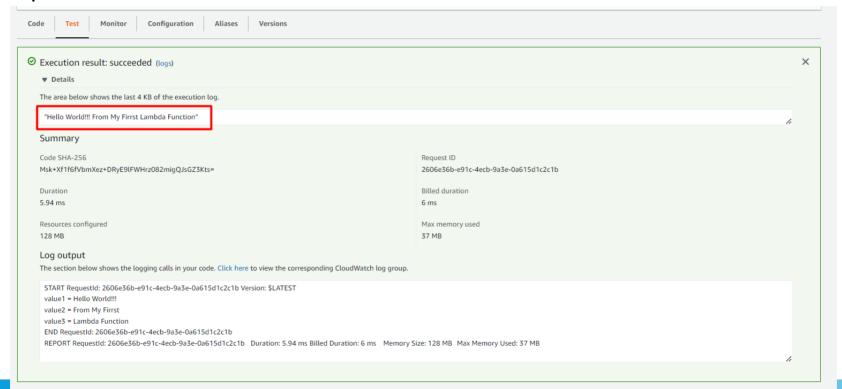


After specify the name and create function.

Now we can test our Function: go to Test tab, set the name of event and value of key of our function



And push Test button. Below the execution result of our function

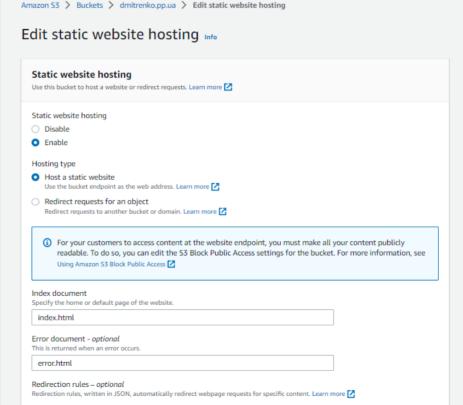


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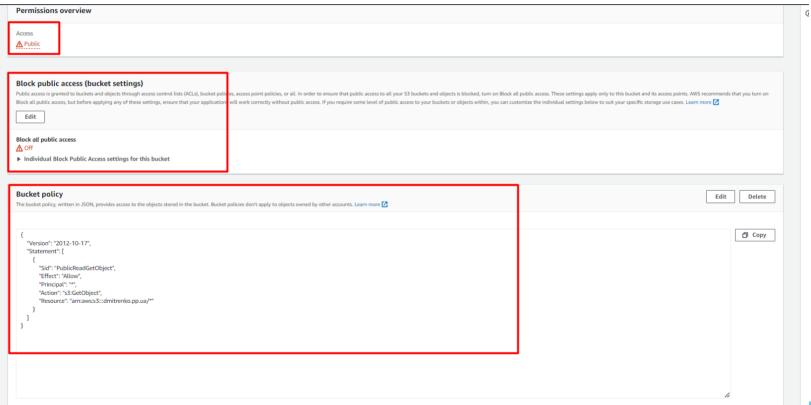
STATIC WEB SITE ON AWS S3

AWS S3 bucket we can use as a static web site. For this we need create a backet and enable static web site

hosting in properties of buket:



for the site to work need make bucket public – insert bucket policy

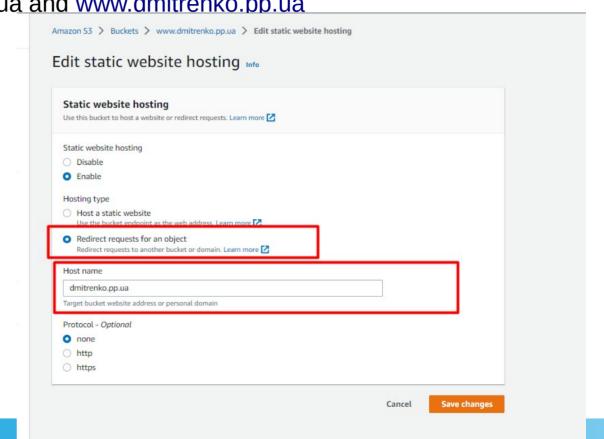


I created two buckets: dmitrenko.pp.ua and www.dmitrenko.pp.ua dmitrenko.pp.ua made public

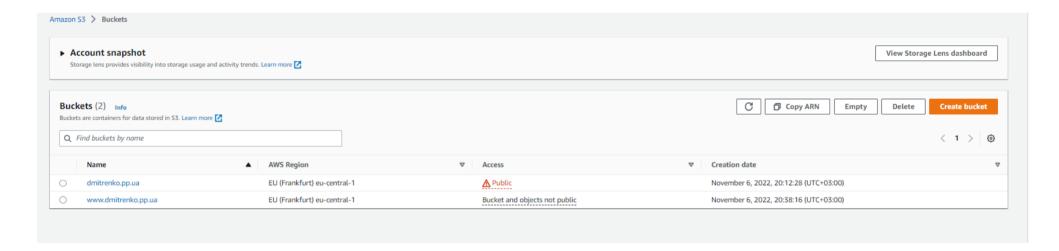
www.dmitrenko.pp.ua redirected to dmitrenko.pp.ua

Amazon S3 > Buckets > www.dmitrenko.pp.ua > Edit static web

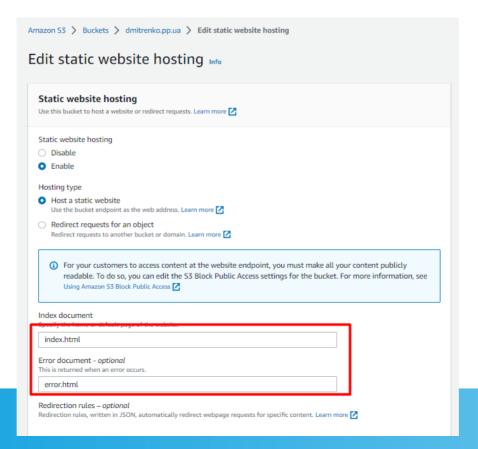
Edit static website hosting Info

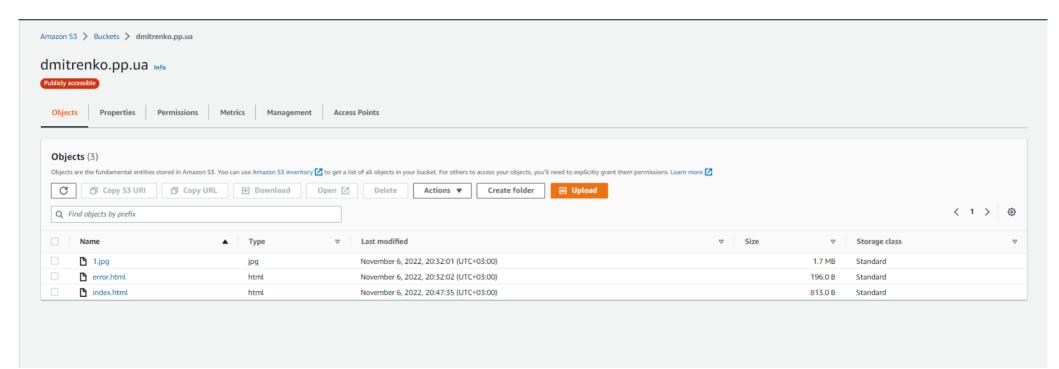


As a result have two buckets



Need to upload files of our static web site to our bucket. Need upload error page which will be displayed when a non-existent page is requested





in order to access the site via dns name need connect our dns zone to AWS Route53 and create two A records and assign it as a alias to AWS S3 bucket

