WEB APP – SINGLE SERVER TO ELASTIC EVOLUTION (STAGE 4) BY ADRIAN CANTRILL

Note: The project instructions are detailed in Adrian's GitHub repository.

Project Link Source:
https://github.com/acantril/learn-cantrill-io-labs/tree/master/aws-elastic-wordpress-evolution

In this section, we build **Stage 4**

Objectives:

- Offload the **wp-content** from the **WordPress instance** by migrating it to an **AWS EFS.** This ensures that in the event of an instance crash, the **application media** and **UI** can survive.

Instructions:

1. Log in to your AWS Console. Ensure that your account has Administrator Access..
2. Copy and paste the following link into your browser https://console.aws.amazon.com/cloudformation/home?region=us-east-1#/stacks/quickcreate?templateURL=https://learn-cantrill-labs.s3.amazonaws.com/aws-elastic-wordpress-evolution/A4LVPC.yaml&stackName=A4LVPC.

   This CloudFormation template will create the infrastructure for our **WordPre**ss app. Click "**I acknowledge that AWS CloudFormation might create IAM resources,**" then click "**Create stack**." Wait for the stack to move into the "**CREATE_COMPLETE**" state before continuing.

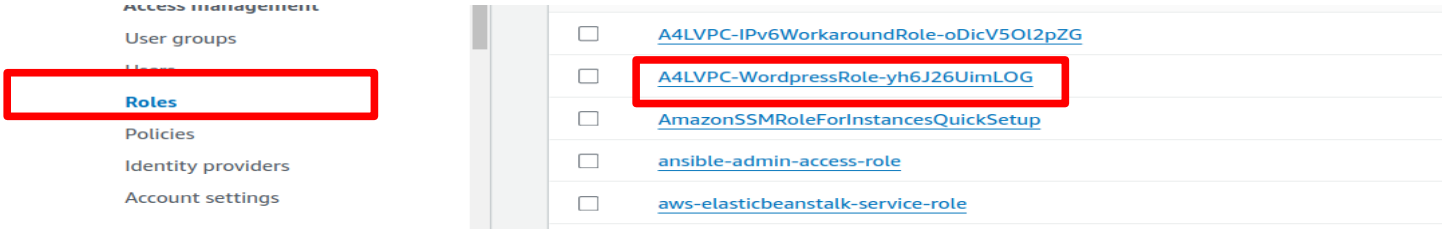
3. Download the CloudFormation template from this link: *https://github.com/robudexIT/awsdevopsproject/blob/cloudformation/cloudformation/wordpress/wordpress_instance_rds_efs.yaml*

Note: You can skip step 2 if you already created the stack

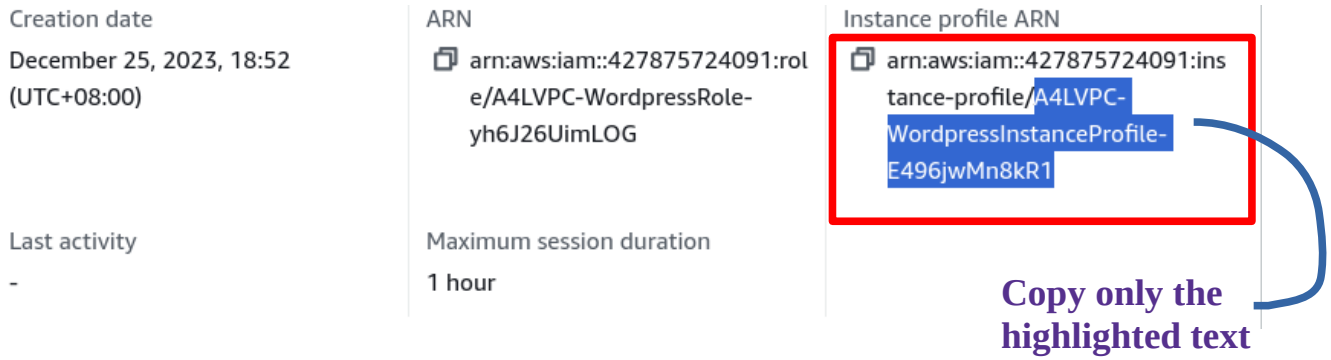
This CloudFormation template contains the same instructions as in **Stage 4**

4. **Stage4 Instructions Cloudformation:**

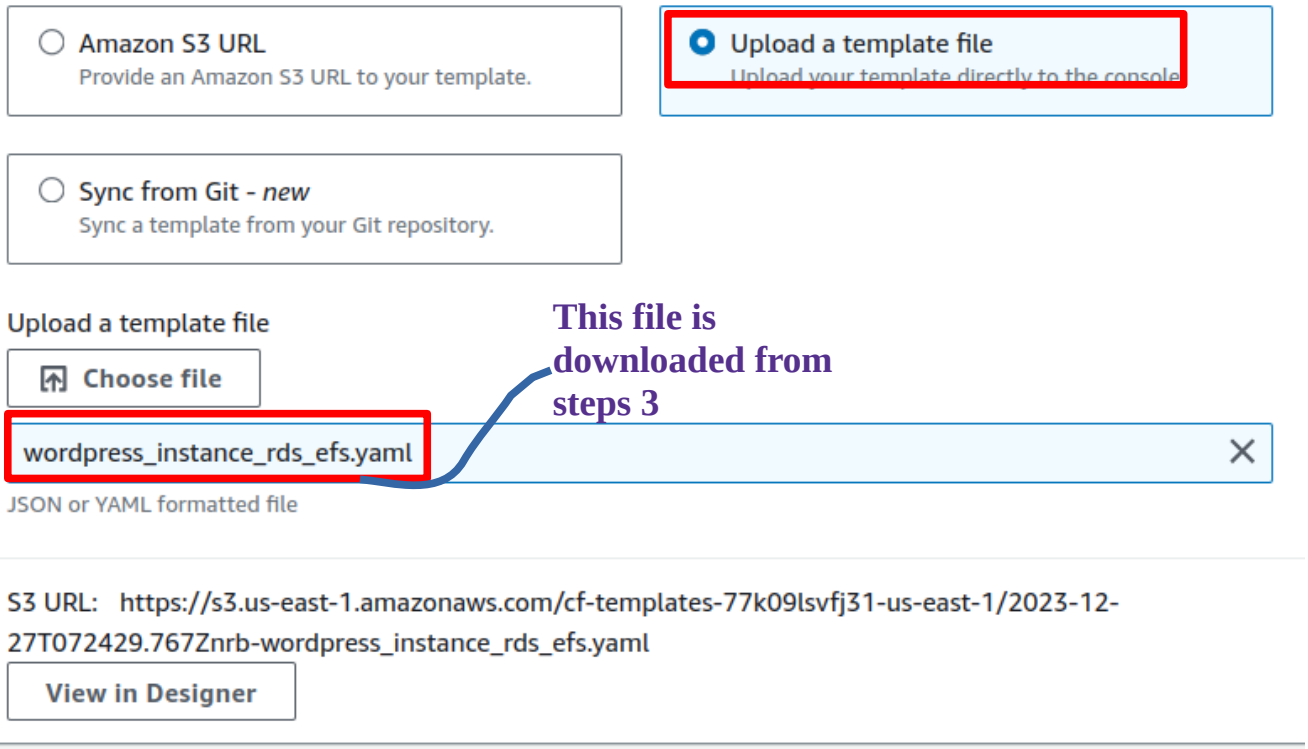
- Goto https://us-east-1.console.aws.amazon.com/iam/home?region=us-east-1#/roles and look for A4LVPC-WordpressRole Roles and click it.



- **Copy the Instance Profile Name to your notes**



- **Goto Cloudformation and create stack:**

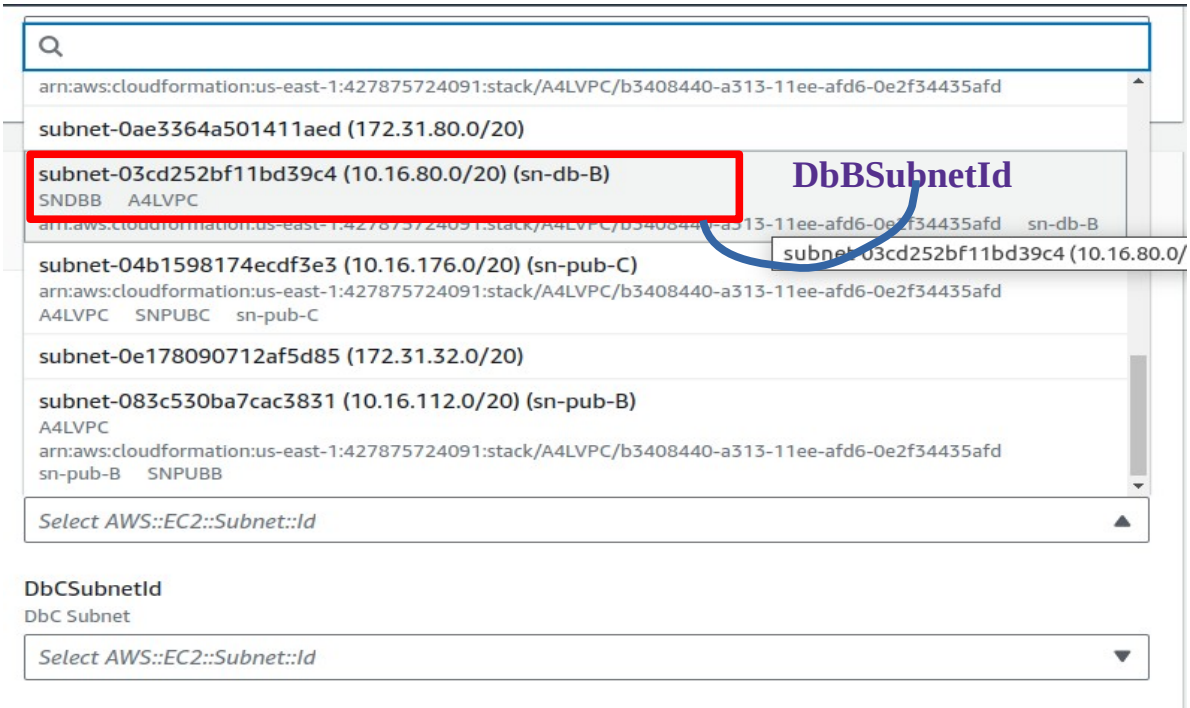


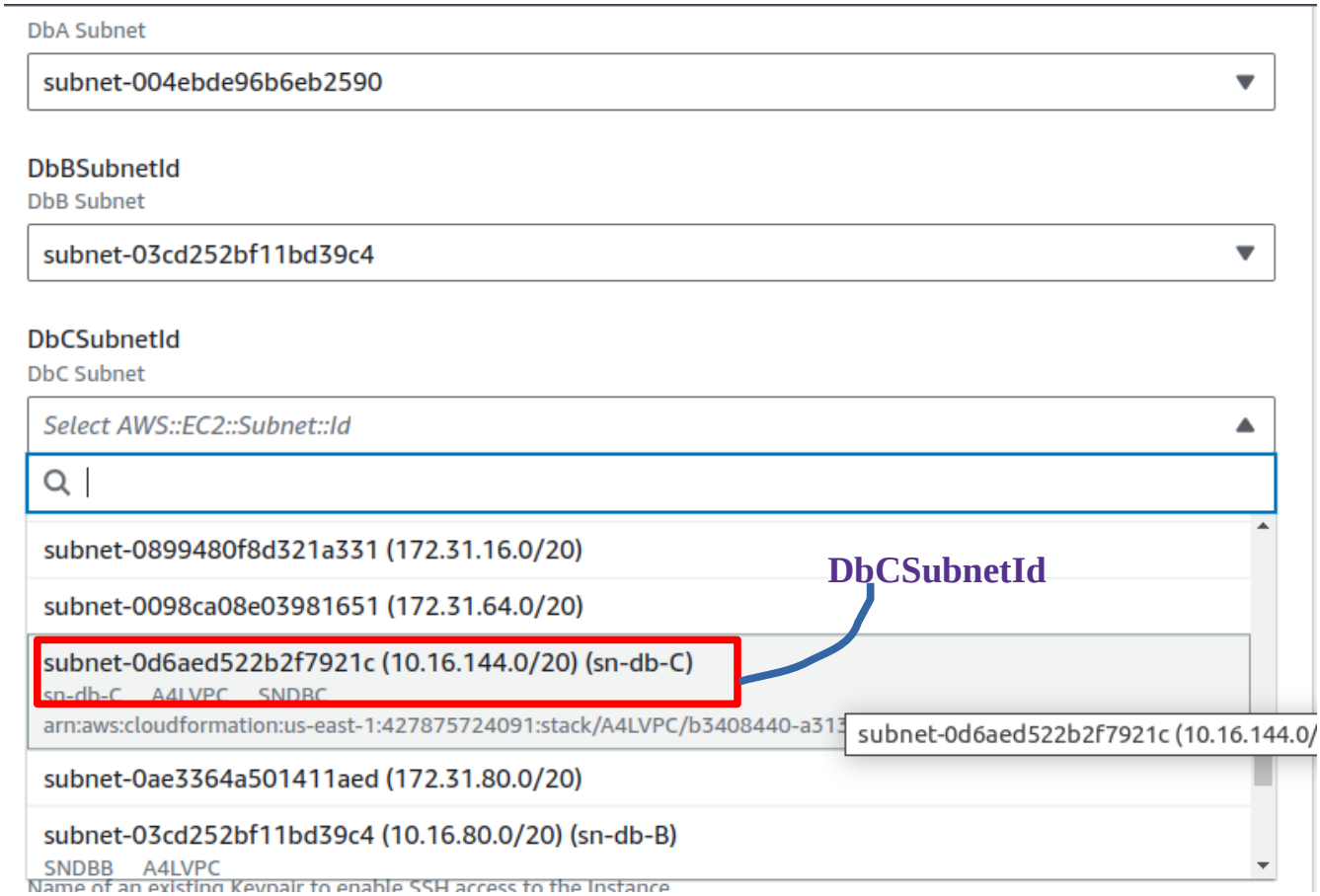
Provide a stack name

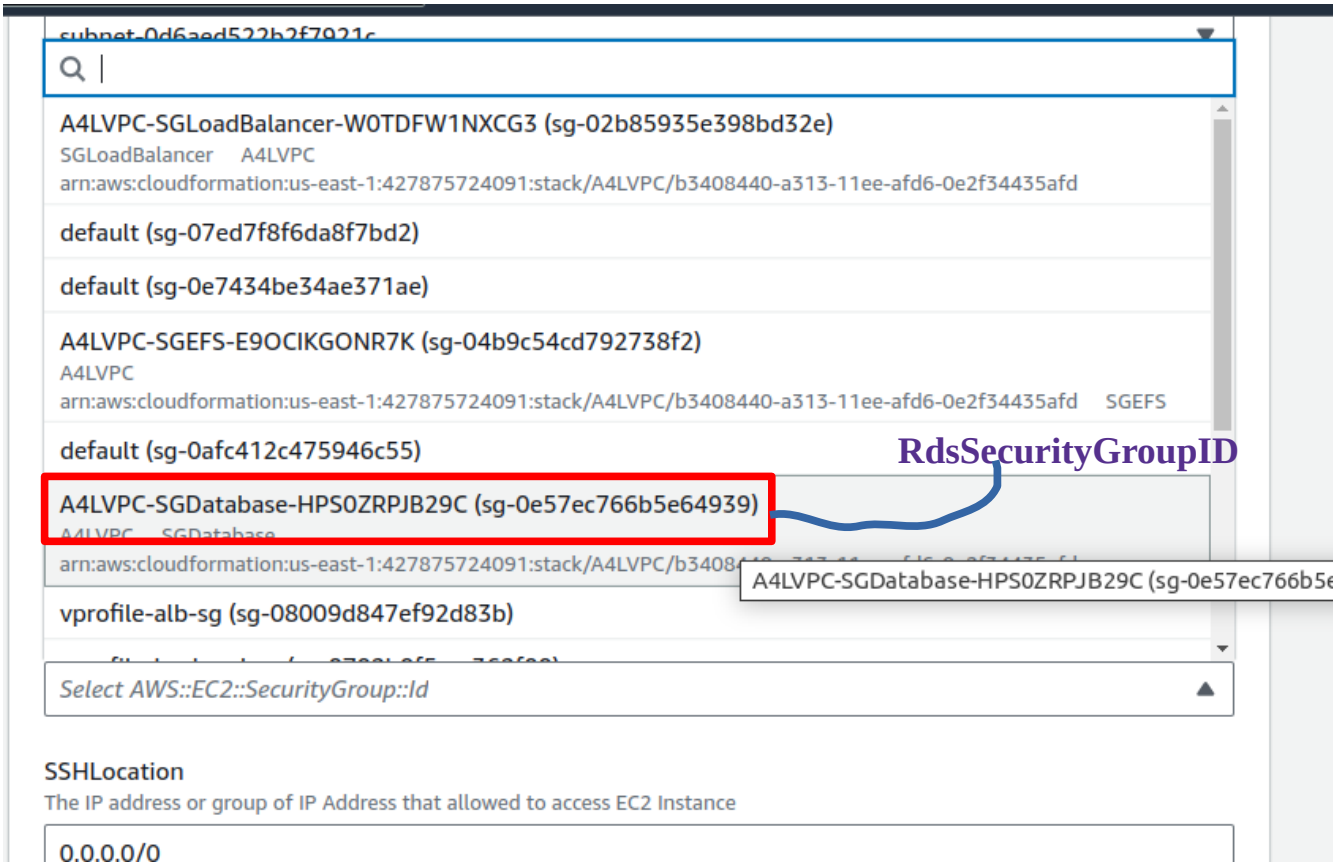
Stack name

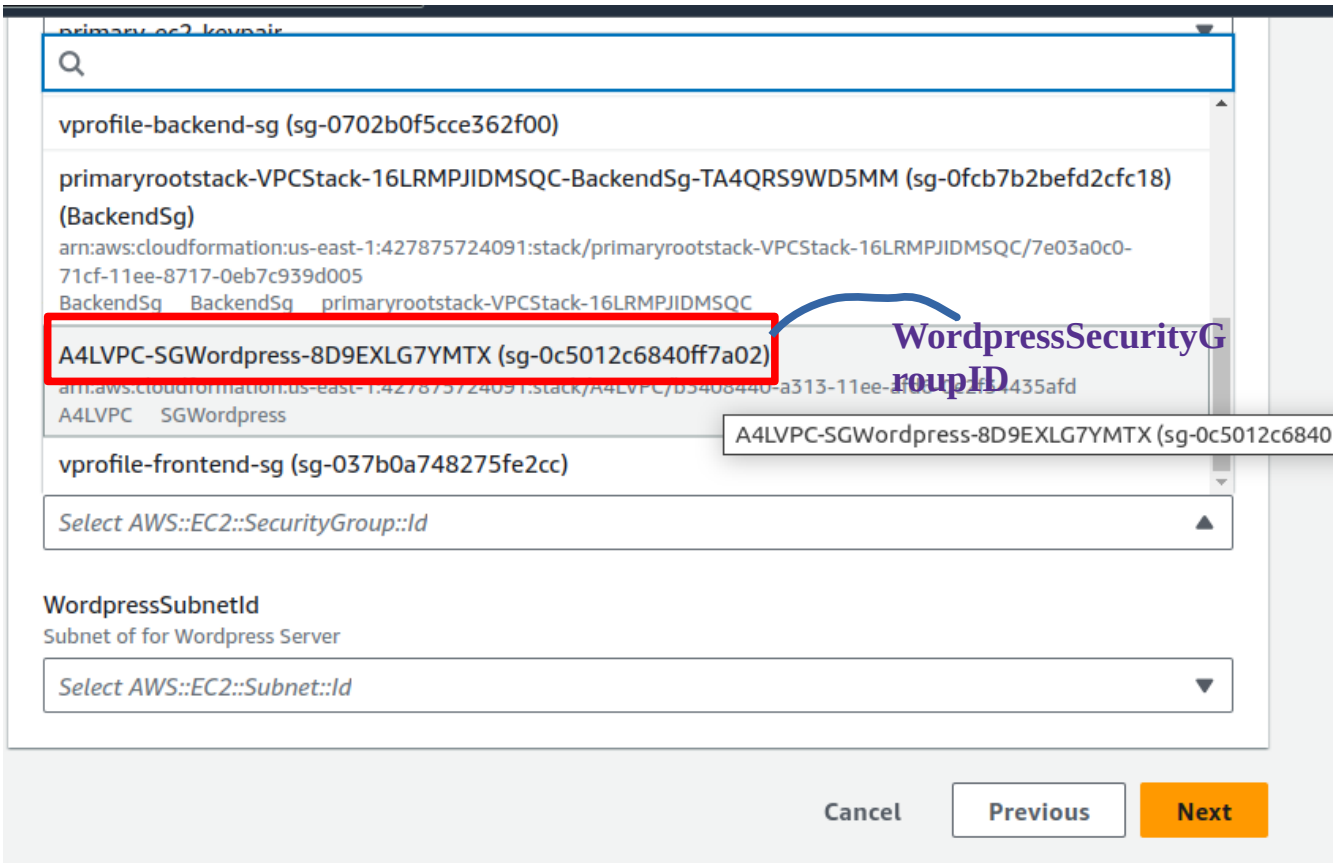
wordpress-rds-efs-stack

Stack name can include letters (A-Z and a-z), numbers (0-9), and dashes (-).

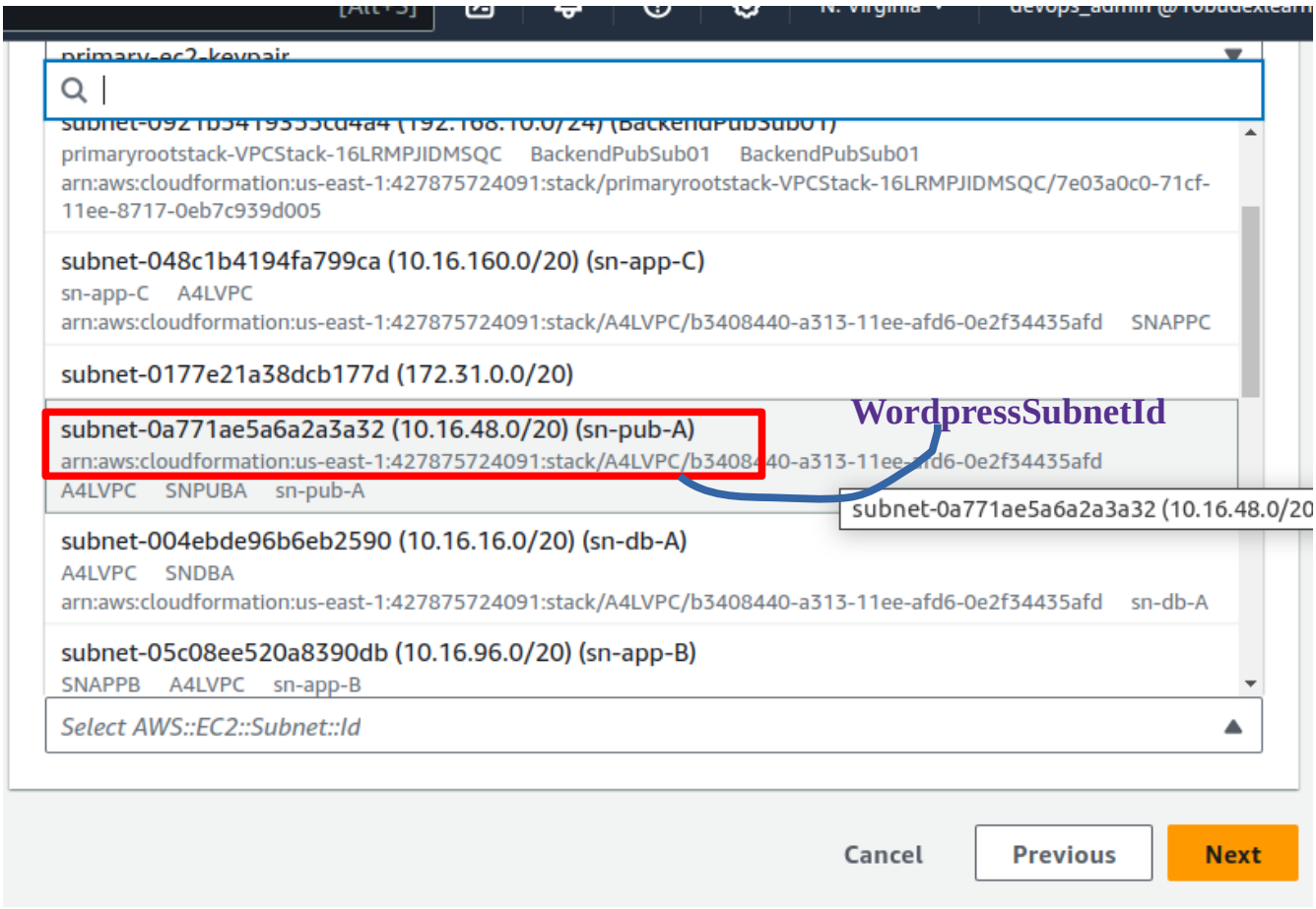


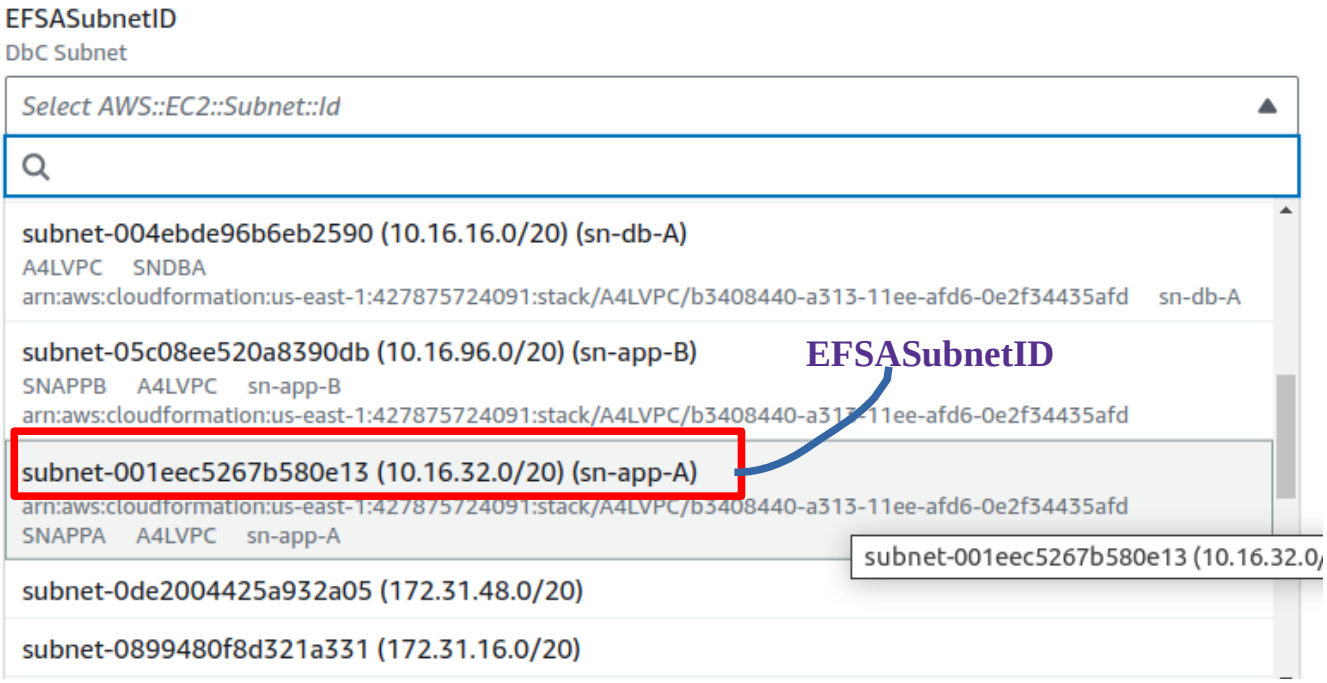

DbA Subnet
subnet-004ebde96b6eb2590
DbBSubnetId
DbB Subnet
subnet-03cd252bf11bd39c4
DbCSubnetId
DbC Subnet
Select AWS::EC2::Subnet::Id
subnet-0899480f8d321a331 (172.31.16.0/20)
subnet-0098ca08e03981651 (172.31.64.0/20)
subnet-0d6aed522b2f7921c (10.16.144.0/20) (sn-db-C)
sn-db-C A4LVPC SNDBC
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313
subnet-0ae3364a501411aed (172.31.80.0/20)
subnet-03cd252bf11bd39c4 (10.16.80.0/20) (sn-db-B)
SNDBB A4LVPC
DbCSubnetId
subnet-0d6aed522b2f7921c (10.16.144.0/
Name of an existing Keypair to enable SSH access to the Instance


A4LVPC-SGLoadBalancer-W0TDFW1NXCG3 (sg-02b85935e398bd32e)
SGLoadBalancer A4LVPC
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd
default (sg-07ed7f8f6da8f7bd2)
default (sg-0e7434be34ae371ae)
A4LVPC-SGEFS-E9OCIKGONR7K (sg-04b9c54cd792738f2)
A4LVPC
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd SGEFS
default (sg-0afc412c475946c55)
A4LVPC-SGDatabase-HPS0ZRPJB29C (sg-0e57ec766b5e64939)
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408
RdsSecurityGroupID
A4LVPC-SGDatabase-HPS0ZRPJB29C (sg-0e57ec766b5e
vprofile-alb-sg (sg-08009d847ef92d83b)
Select AWS::EC2::SecurityGroup::Id
SSHLocation
The IP address or group of IP Address that allowed to access EC2 Instance
0.0.0.0/0


vprofile-backend-sg (sg-0702b0f5cce362f00)
primaryrootstack-VPCStack-16LRMPJIDMSQC-BackendSg-TA4QRS9WD5MM (sg-0fcb7b2befd2cfc18)
(BackendSg)
arn:aws:cloudformation:us-east-1:427875724091:stack/primaryrootstack-VPCStack-16LRMPJIDMSQC/7e03a0c0-71cf-11ee-8717-0eb7c939d005
BackendSg BackendSg primaryrootstack-VPCStack-16LRMPJIDMSQC
A4LVPC-SGWordpress-8D9EXLG7YMTX (sg-0c5012c6840ff7a02)
A4LVPC SGWordpress
WordpressSecurityGroupID
A4LVPC-SGWordpress-8D9EXLG7YMTX (sg-0c5012c6840
vprofile-frontend-sg (sg-037b0a748275fe2cc)
Select AWS::EC2::SecurityGroup::Id
WordpressSubnetId
Subnet of for Wordpress Server
Select AWS::EC2::Subnet::Id
Cancel
Previous
Next


InstanceProfileRole
Role use by the ec2 instance in your behalf
A4LVPC-WordpressInstanceProfile-E496jwMn8kR1


primary-ec2-keypair
primaryrootstack-VPCStack-16LRMPJIDMSQC BackendPubSub01 BackendPubSub01
arn:aws:cloudformation:us-east-1:427875724091:stack/primaryrootstack-VPCStack-16LRMPJIDMSQC/7e03a0c0-71cf-11ee-8717-0eb7c939d005
subnet-048c1b4194fa799ca (10.16.160.0/20) (sn-app-C)
sn-app-C A4LVPC
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd SNAPPC
subnet-0177e21a38dcb177d (172.31.0.0/20)
subnet-0a771ae5a6a2a3a32 (10.16.48.0/20) (sn-pub-A)
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd
A4LVPC SNPUBA sn-pub-A
WordpressSubnetId
subnet-0a771ae5a6a2a3a32 (10.16.48.0/20
subnet-004ebde96b6eb2590 (10.16.16.0/20) (sn-db-A)
A4LVPC SNDBA
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd sn-db-A
subnet-05c08ee520a8390db (10.16.96.0/20) (sn-app-B)
SNAPPB A4LVPC sn-app-B
Select AWS::EC2::Subnet::Id
Cancel
Previous
Next


EFSASubnetID
DbC Subnet
Select AWS::EC2::Subnet::Id
subnet-004ebde96b6eb2590 (10.16.16.0/20) (sn-db-A)
A4LVPC SNDBA
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd sn-db-A
subnet-05c08ee520a8390db (10.16.96.0/20) (sn-app-B)
SNAPPB A4LVPC sn-app-B
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd
EFSASubnetID
subnet-001eec5267b580e13 (10.16.32.0/20) (sn-app-A)
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd
SNAPPA A4LVPC sn-app-A
subnet-001eec5267b580e13 (10.16.32.0/
subnet-0de2004425a932a05 (172.31.48.0/20)
subnet-0899480f8d321a331 (172.31.16.0/20)

EFSBSubnetID

DbC Subnet

Select AWS::EC2::Subnet::Id

subnet-048c1b4194fa799ca (10.16.160.0/20) (sn-app-C)
sn-app-C A4LVPC
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd SNAPPC

subnet-0177e21a38dcb177d (172.31.0.0/20)

subnet-0a771ae5a6a2a3a32 (10.16.48.0/20) (sn-pub-A)
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd
A4LVPC SNPUBA sn-pub-A

subnet-004ebde96b6eb2590 (10.16.16.0/20) (sn-db-A)
A4LVPC SNDBA
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd sn-db-A

EFSBSubnetID

subnet-05c08ee520a8390db (10.16.96.0/20) (sn-app-B)
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd

subnet-05c08ee520a8390db (10.16.96.0/

subnet-001eec5267b580e13 (10.16.32.0/20) (sn-app-A)
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd

t2.micro

EFSCSubnetID

DbC Subnet

Select AWS::EC2::Subnet::Id

subnet-05b424f6c32efe54f (192.168.11.0/24) (BackendPubSub02)
BackendPubSub02 BackendPubSub02
arn:aws:cloudformation:us-east-1:427875724091:stack/primaryrootstack-VPCStack-16LRMPJIDMSQC/7e03a0c0-71cf-11ee-8717-0eb7c939d005
primaryrootstack-VPCStack-16LRMPJIDMSQC

EFSCSubnetID

subnet-0921b5419355cd4a4 (192.168.10.0/24) (BackendPubSub01)
primaryrootstack-VPCStack-16LRMPJIDMSQC BackendPubSub01 BackendPubSub01
arn:aws:cloudformation:us-east-1:427875724091:stack/primaryrootstack-VPCStack-16LRMPJIDMSQC/7e03a0c0-71cf-11ee-8717-0eb7c939d005

subnet-048c1b4194fa799ca (10.16.160.0/20) (sn-app-C)
sn-app-C A4LVPC
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd SNAPPC

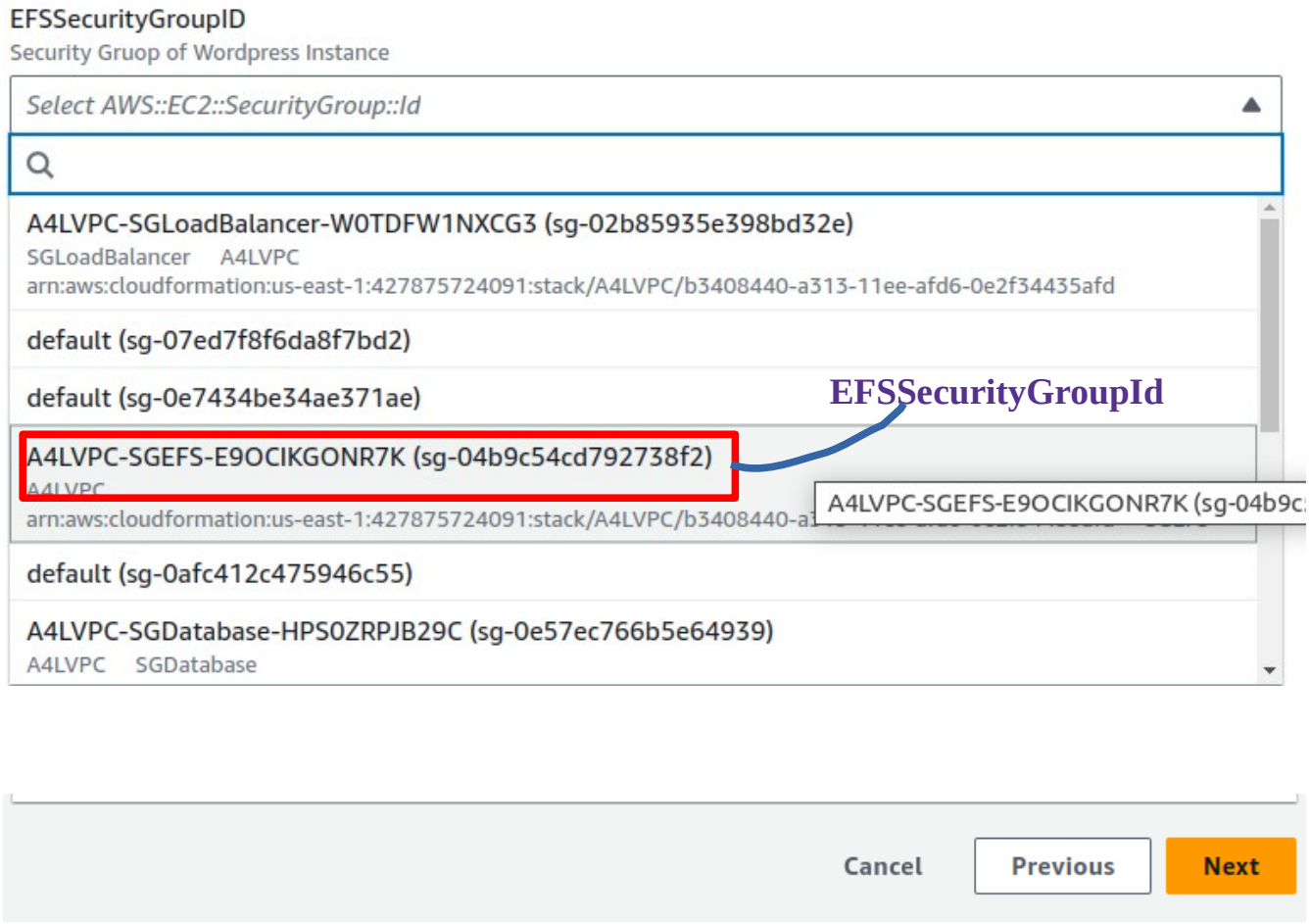
subnet-048c1b4194fa799ca (10.16.160.0/

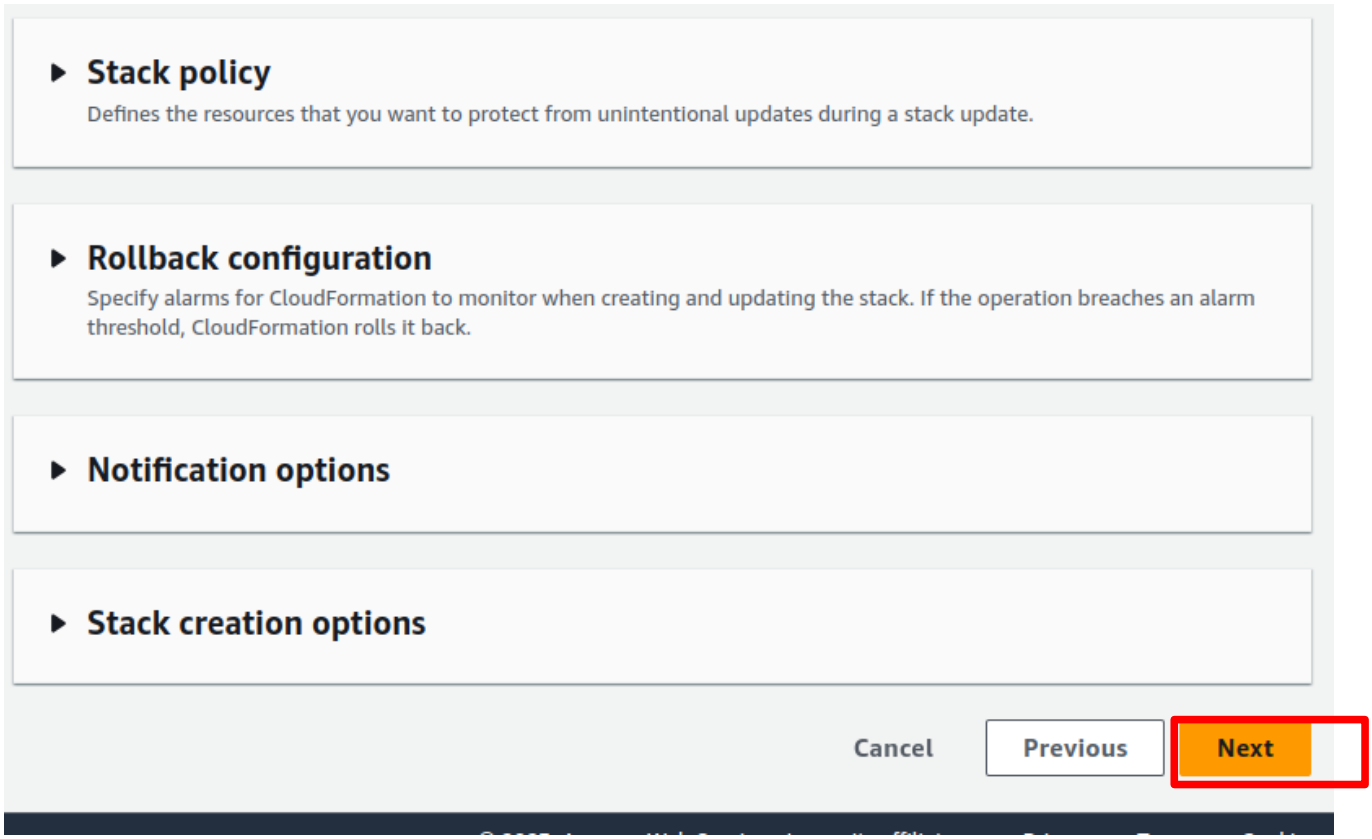
subnet-0177e21a38dcb177d (172.31.0.0/20)

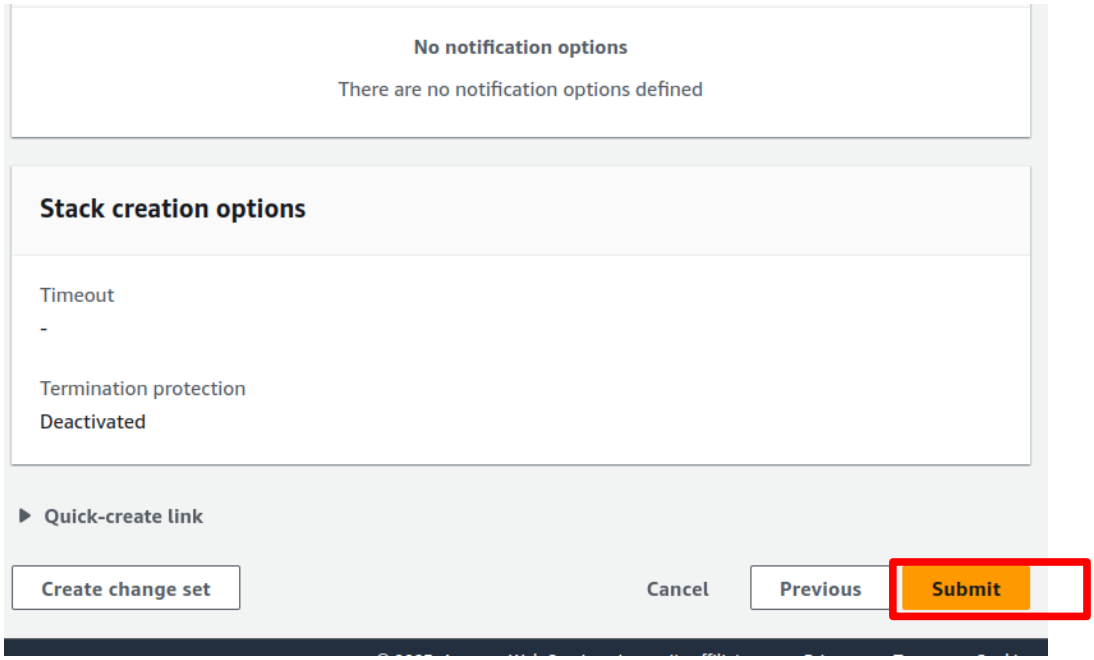
subnet-0a771ae5a6a2a3a32 (10.16.48.0/20) (sn-pub-A)
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd
A4LVPC

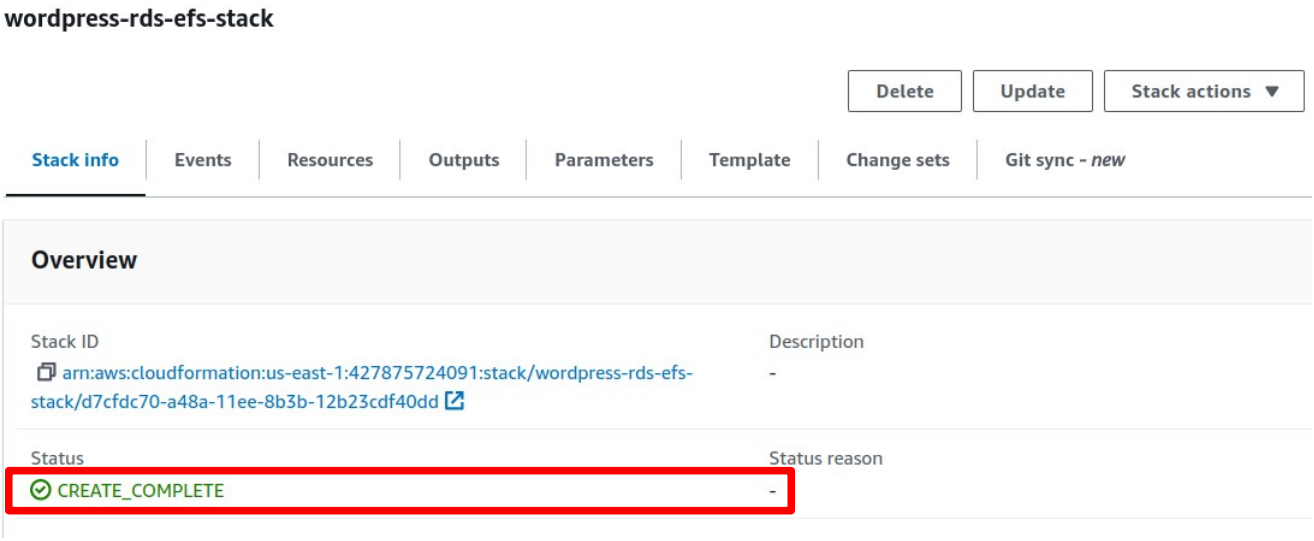
Headphones

subnet-004ebde96b6eb2590 (10.16.16.0/20) (sn-db-A)

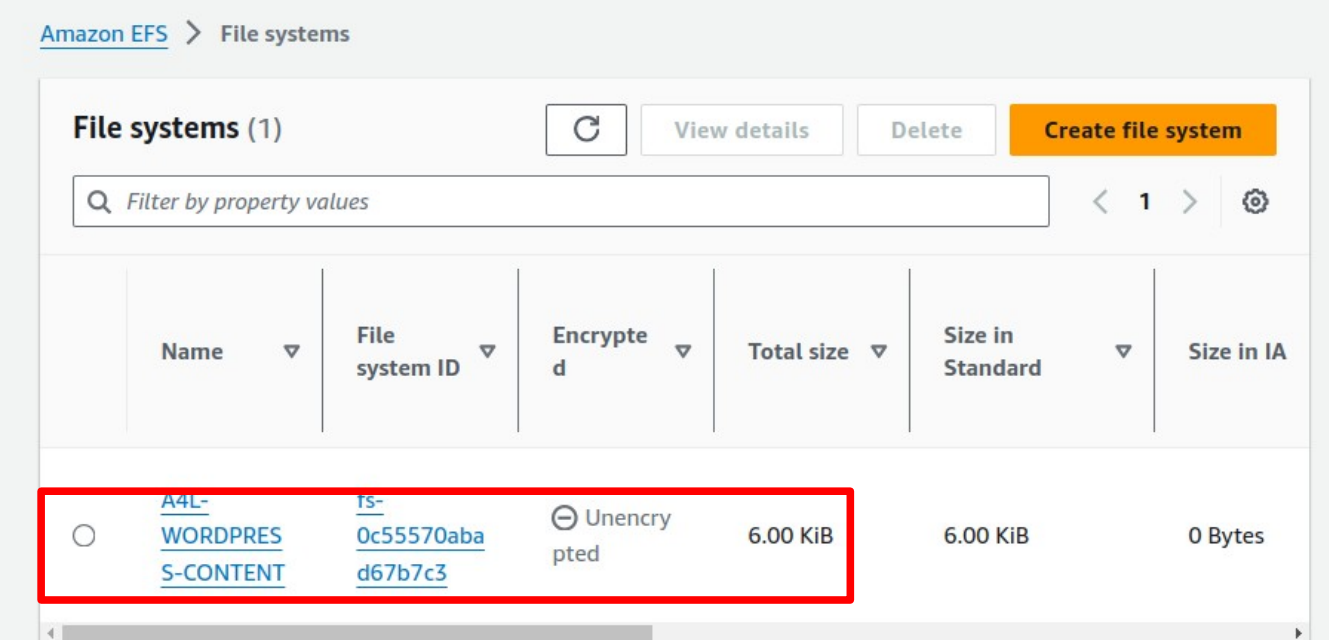

EFSSecurityGroupID
Security Gruop of Wordpress Instance
Select AWS::EC2::SecurityGroup::Id
A4LVPC-SGLoadBalancer-W0TDFW1NXCG3 (sg-02b85935e398bd32e)
SGLoadBalancer A4LVPC
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a313-11ee-afd6-0e2f34435afd
default (sg-07ed7f8f6da8f7bd2)
default (sg-0e7434be34ae371ae)
EFSSecurityGroupId
A4LVPC-SGEFS-E9OCIKGONR7K (sg-04b9c54cd792738f2)
A4LVPC
arn:aws:cloudformation:us-east-1:427875724091:stack/A4LVPC/b3408440-a
A4LVPC-SGEFS-E9OCIKGONR7K (sg-04b9c
default (sg-0afc412c475946c55)
A4LVPC-SGDatabase-HPS0ZRPJB29C (sg-0e57ec766b5e64939)
A4LVPC SGDatabase
Cancel
Previous
Next


Stack policy
Defines the resources that you want to protect from unintentional updates during a stack update.
Rollback configuration
Specify alarms for CloudFormation to monitor when creating and updating the stack. If the operation breaches an alarm threshold, CloudFormation rolls it back.
Notification options
Stack creation options
Cancel
Previous
Next

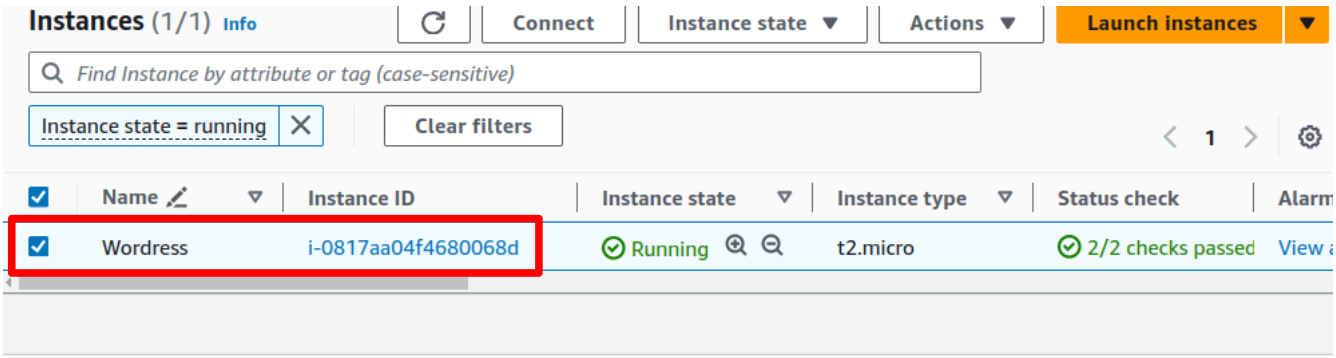

No notification options
There are no notification options defined
Stack creation options
Timeout
-
Termination protection
Deactivated
Quick-create link
Create change set
Cancel
Previous
Submit

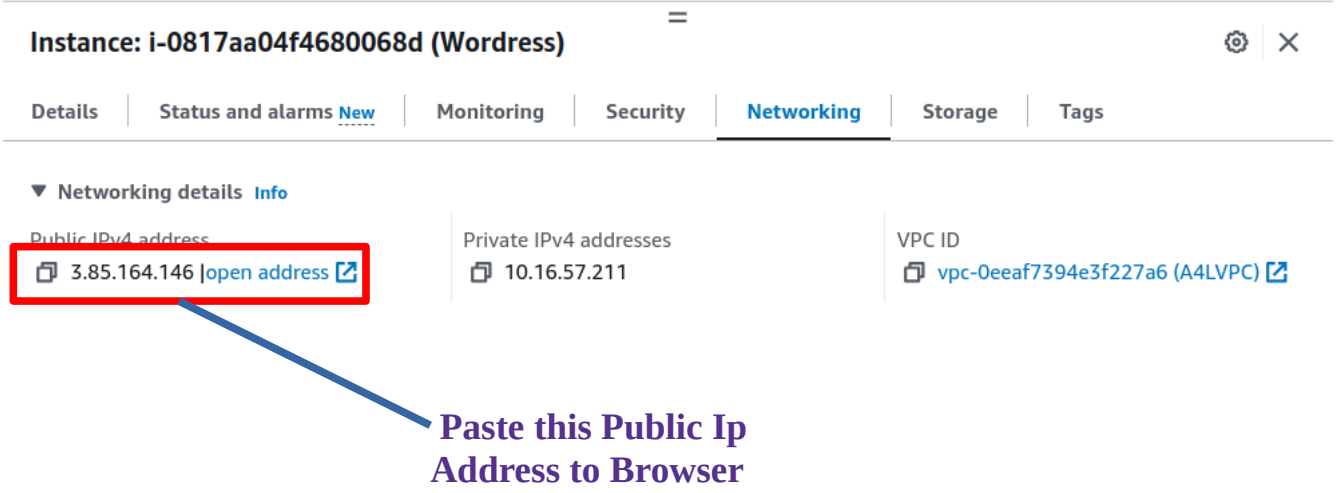


- **Check If the AWS EFS is created successfully.**

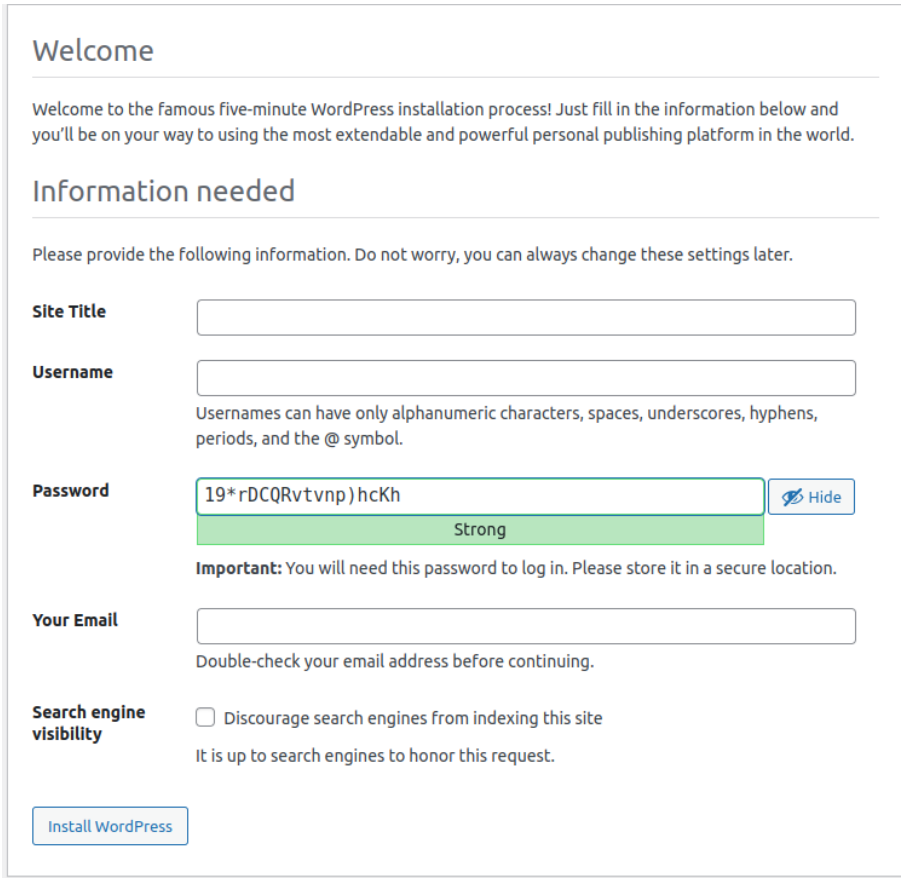


- Go to https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#Instances:sort=desc:tag:Name
- Select the Wordpress Instance and copy the Public IP Address and paste it to browser address bar
- If this page will appear that means the wordpress setup is successful

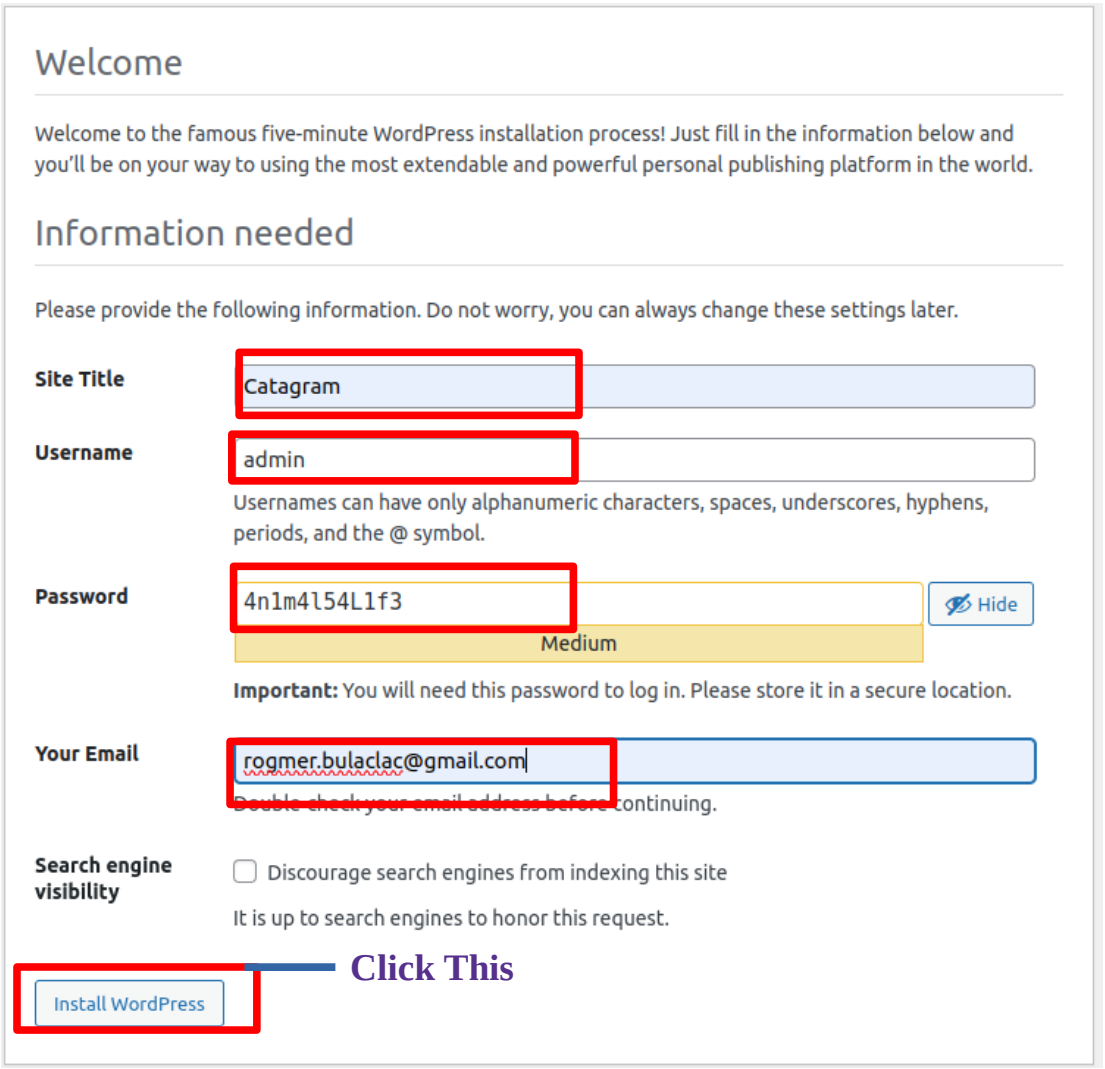


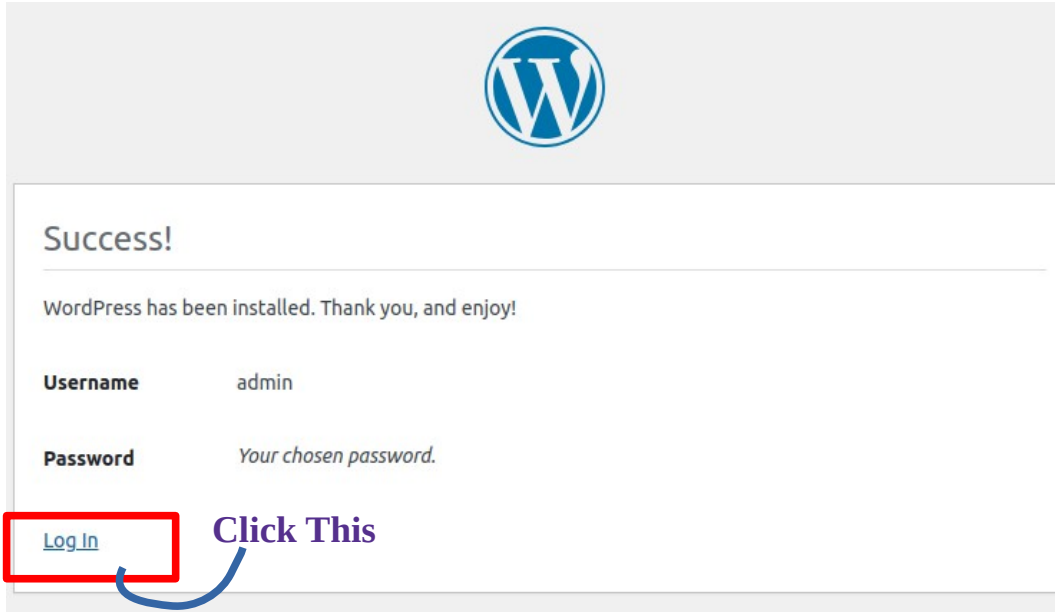


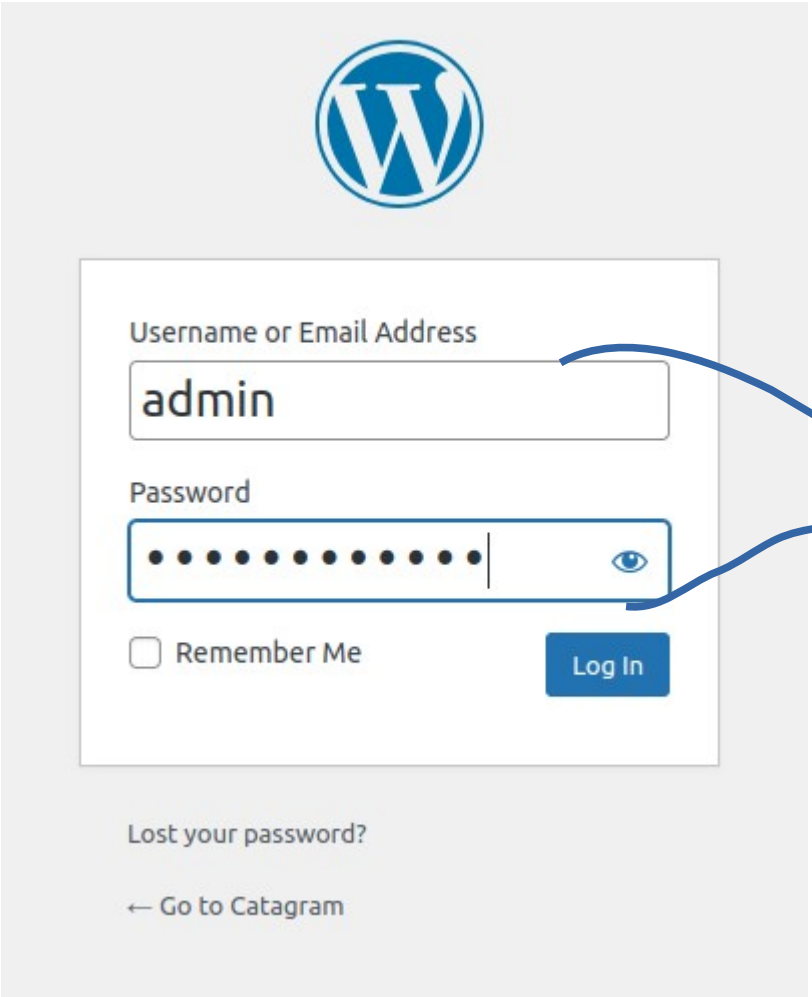
Paste this Public Ip Address to Browser



- **Let Perform Initial Configuration and make a post**



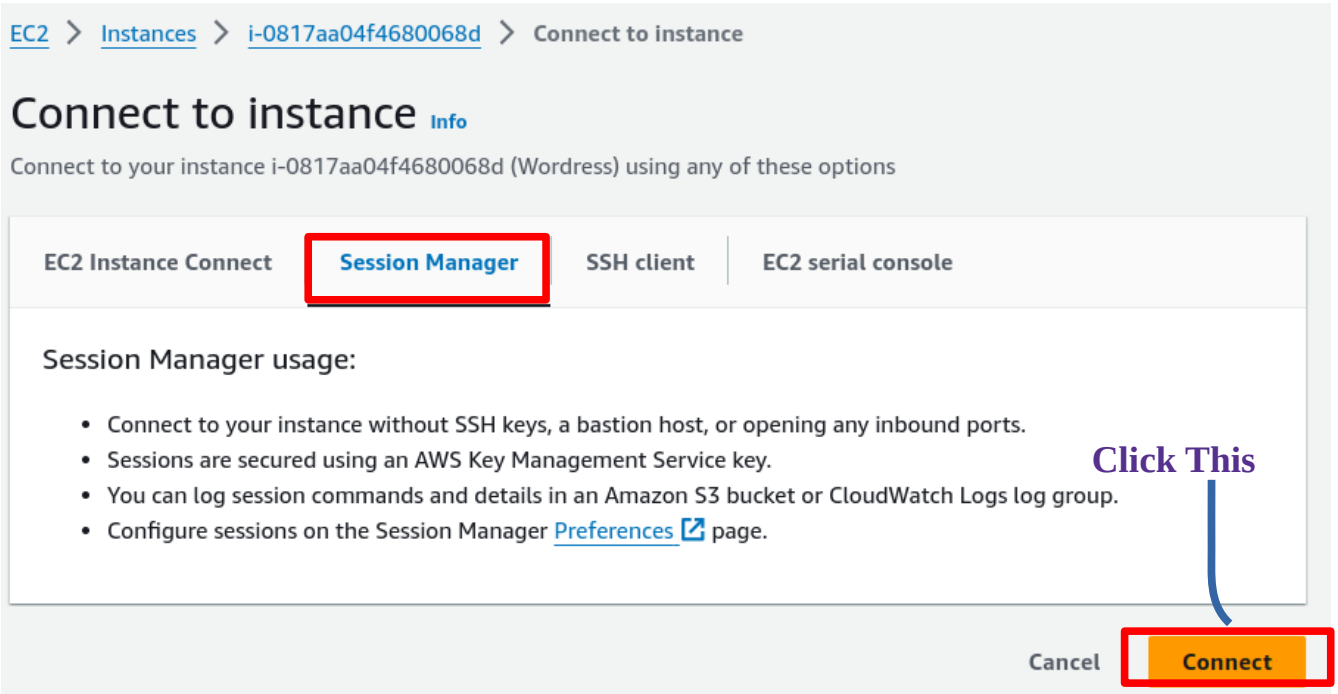




- Click Posts in the menu on the left
- Select Hello World! Click Bulk Actions and select Move to Trash Click Apply
- Click Add New
- If you see any popups close them down
- For title The Best Animal(s)!
- Click the + under the title, select Gallery Click Upload
- Select some animal pictures.... if you dont have any use google images to download some Upload them
- Click Publish
- Click Publish Click view Post

Final Result:

- **Let's log in to our instance to ensure that AWS EFS mount mounted:**



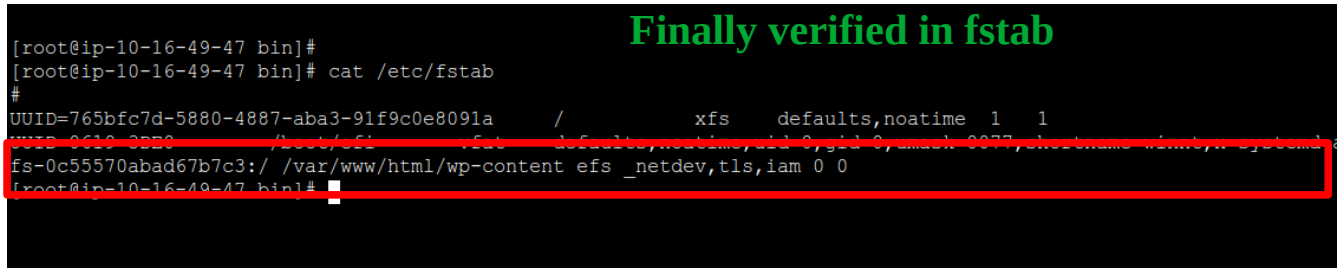
```
sh-5.2$ sudo su
[root@ip-10-16-49-47 bin]# df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        4.0M     0  4.0M   0% /dev
tmpfs           475M     0  475M   0% /dev/shm
tmpfs           190M  2.9M  188M   2% /run
/dev/xvda1      8.0G  2.0G  6.0G  25% /
tmpfs           475M     0  475M   0% /tmp
/dev/xvda128     10M  1.3M  8.7M  13% /boot/efi
127.0.0.1:/     8.0E     0  8.0E   0% /var/www/html/wp-content
tmpfs            95M     0   95M   0% /run/user/0
[root@ip-10-16-49-47 bin]# mount
```

Output using mount command

```
tracefs on /sys/kernel/tracing type tracefs (rw,nosuid,nodev,noexec,relatime,seclabel)
tmpfs on /tmp type tmpfs (rw,nosuid,nodev,seclabel,size=486208k,nr_inodes=1048576)
ramfs on /run/credentials/systemd-sysctl.service type ramfs (ro,nosuid,nodev,noexec,relatime,seclabel,mode=70
fusectl on /sys/fs/fuse/connections type fusectl (rw,nosuid,nodev,noexec,relatime)
configfs on /sys/kernel/config type configfs (rw,nosuid,nodev,noexec,relatime)
ramfs on /run/credentials/systemd-tmpfiles-setup-dev.service type ramfs (ro,nosuid,nodev,noexec,relatime,secl
systemd-1 on /boot/efi type autofs (rw,relatime,fd=38,pgrp=1,timeout=0,minproto=5,maxproto=5,direct,pipe_ino=
ramfs on /run/credentials/systemd-tmpfiles-setup.service type ramfs (ro,nosuid,nodev,noexec,relatime,seclabel
/dev/xvda128 on /boot/efi type vfat (rw,noatime,fmask=0077,dmask=0077,codepage=437,iocharset=ascii,shortname=
nt-ro,x-systemd.automount)
sunrpc on /var/lib/nfs/rpc_pipefs type rpc_pipefs (rw,relatime)
127.0.0.1:/ on /var/www/html/wp-content type nfs4 (rw,relatime,vers=4.1,rsize=1048576,wsize=1048576,namlen=25
proto=tcp,port=21014,timeo=600,retrans=2,sec=sys,clientaddr=127.0.0.1,local_lock=none,addr=127.0.0.1,_netdev)
tmpfs on /run/user/0 type tmpfs (rw,nosuid,nodev,relatime,seclabel,size=97240k,nr_inodes=24310,mode=700)
```

```
| ├─/sys/fs/pstore          pstore      pstore     rw,nosuid,nodev,noexec,relatime,seclabel
| ├─/sys/fs/bpf             bpf         bpf        rw,nosuid,nodev,noexec,relatime,mode=700
| ├─/sys/fs/selinux         selinuxfs   selinuxfs  rw,nosuid,noexec,relatime
| ├─/sys/kernel/debug       debugfs     debugfs    rw,nosuid,nodev,noexec,relatime,seclabel
| ├─/sys/kernel/tracing     tracefs     tracefs    rw,nosuid,nodev,noexec,relatime,seclabel
| ├─/sys/fs/fuse/connections fusectl    fusectl    rw,nosuid,nodev,noexec,relatime
| └─/sys/kernel/config      configfs    configfs   rw,nosuid,nodev,noexec,relatime
├─/dev                      devtmpfs    devtmpfs   rw,nosuid,seclabel,size=4096k,nr_inodes=118922,mode=755
| ├─/dev/shm                tmpfs       tmpfs      rw,nosuid,nodev,seclabel
| ├─/dev/pts                devpts      devpts     rw,nosuid,noexec,relatime,seclabel,gid=5,mode=620,ptmxmode=000
| ├─/dev/hugepages          hugetlbfs   hugetlbfs  rw,relatime,seclabel,pagesize=2M
| └─/dev/mqueue             mqueue      mqueue     rw,nosuid,nodev,noexec,relatime,seclabel
├─/run                      tmpfs       tmpfs      rw,nosuid,nodev,seclabel,size=194484k,nr_inodes=819200,mode=755
| ├─/run/credentials/systemd-sysctl.service
| |                         ramfs       ramfs      ro,nosuid,nodev,noexec,relatime,seclabel,mode=700
| ├─/run/credentials/systemd-tmpfiles-setup-dev.service
| |                         ramfs       ramfs      ro,nosuid,nodev,noexec,relatime,seclabel,mode=700
| ├─/run/credentials/systemd-tmpfiles-setup.service
| |                         ramfs       ramfs      ro,nosuid,nodev,noexec,relatime,seclabel,mode=700
| └─/run/user/0             tmpfs       tmpfs      rw,nosuid,nodev,relatime,seclabel,size=97240k,nr_inodes=24310,mod
├─/tmp                      tmpfs       tmpfs      rw,nosuid,nodev,seclabel,size=486208k,nr_inodes=1048576
├─/boot/efi                 systemd-1   autofs     rw,relatime,fd=38,pgrp=1,timeout=0,minproto=5,maxproto=5,direct,p
| └─/boot/efi               /dev/xvda128 vfat      rw,noatime,fmask=0077,dmask=0077,codepage=437,iocharset=ascii,sh
├─/var/lib/nfs/rpc_pipefs   sunrpc      rpc_pipefs rw,relatime
└─/var/www/html/wp-content  127.0.0.1:/ nfs4       rw,relatime,vers=4.1,rsize=1048576,wsize=1048576,namlen=255,ha
```

Output using findmnt command



Thats Conclude the Stage 4.....
You can delete the the wordpress-stack.. dont delete the A4LVPC we will need it in Stage 5