Logging and Monitoring Management

It is necessary to install awscli on ec2 instance for Recording and Monitoring Management in the project. AWS CLI is written in Python, so you need to install Python and pip (Python package manager) first. In order to install it, the following codes are written respectively:

sudo yum install -y python3

sudo yum install -y python3-pip

sudo pip3 install awscli

```
[root@ip-10-0-1-156 ~]# sudo pip3 install awscli
WARNING: Running pip install with root privileges is generally not a good idea. Try `pip3 install --user
` instead.
Collecting awscli
  Downloading awscli-1.29.15-py3-none-any.whl (4.2 MB)
     |████████████████████████████████| 4.2 MB 10.4 MB/s
Collecting colorama<0.4.5,>=0.2.5
  Downloading colorama-0.4.4-py2.py3-none-any.whl (16 kB)
Collecting PyYAML<6.1,>=3.10
  Downloading PyYAML-6.0.1-cp37-cp37m-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (670 kB)
     |████████████████████████████████| 670 kB 68.0 MB/s
Requirement already satisfied: docutils<0.17,>=0.10 in /usr/lib/python3.7/site-packages (from awscli) (0
.14)
Collecting s3transfer<0.7.0,>=0.6.0
  Downloading s3transfer-0.6.1-py3-none-any.whl (79 kB)
     |████████████████████████████████| 79 kB 18.0 MB/s
Collecting botocore==1.31.15
  Downloading botocore-1.31.15-py3-none-any.whl (11.1 MB)
     |████████████████████████████████| 11.1 MB 59.1 MB/s
Collecting rsa<4.8,>=3.1.2
  Downloading rsa-4.7.2-py3-none-any.whl (34 kB)
Collecting python-dateutil<3.0.0,>=2.1
  Downloading python_dateutil-2.8.2-py2.py3-none-any.whl (247 kB)
     |████████████████████████████████| 247 kB 12.5 MB/s
Collecting urllib3<1.27,>=1.25.4
  Downloading urllib3-1.26.16-py2.py3-none-any.whl (143 kB)
     |████████████████████████████████| 143 kB 27.3 MB/s
Collecting jmespath<2.0.0,>=0.7.1
  Downloading jmespath-1.0.1-py3-none-any.whl (20 kB)
Collecting pyasn1>=0.1.3
  Downloading pyasn1-0.5.0-py2.py3-none-any.whl (83 kB)
     |████████████████████████████████| 83 kB 3.3 MB/s
Collecting six>=1.5
  Downloading six-1.16.0-py2.py3-none-any.whl (11 kB)
Installing collected packages: colorama, PyYAML, six, python-dateutil, urllib3, jmespath, botocore, s3tr
ansfer, pyasn1, rsa, awscli
  WARNING: The scripts pyrsa-decrypt, pyrsa-encrypt, pyrsa-keygen, pyrsa-priv2pub, pyrsa-sign and pyrsa-
verify are installed in '/usr/local/bin' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-scrip
t-location.
Successfully installed PyYAML-6.0.1 awscli-1.29.15 botocore-1.31.15 colorama-0.4.4 jmespath-1.0.1 pyasn1
-0.5.0 python-dateutil-2.8.2 rsa-4.7.2 s3transfer-0.6.1 six-1.16.0 urllib3-1.26.16
[root@ip-10-0-1-156 ~]# aws --version
```

Then, in order to send Nginx error logs to CloudWatch, we will need to redirect these logs from nginx.conf. For this, we need to make a few changes in the nginx.conf file.

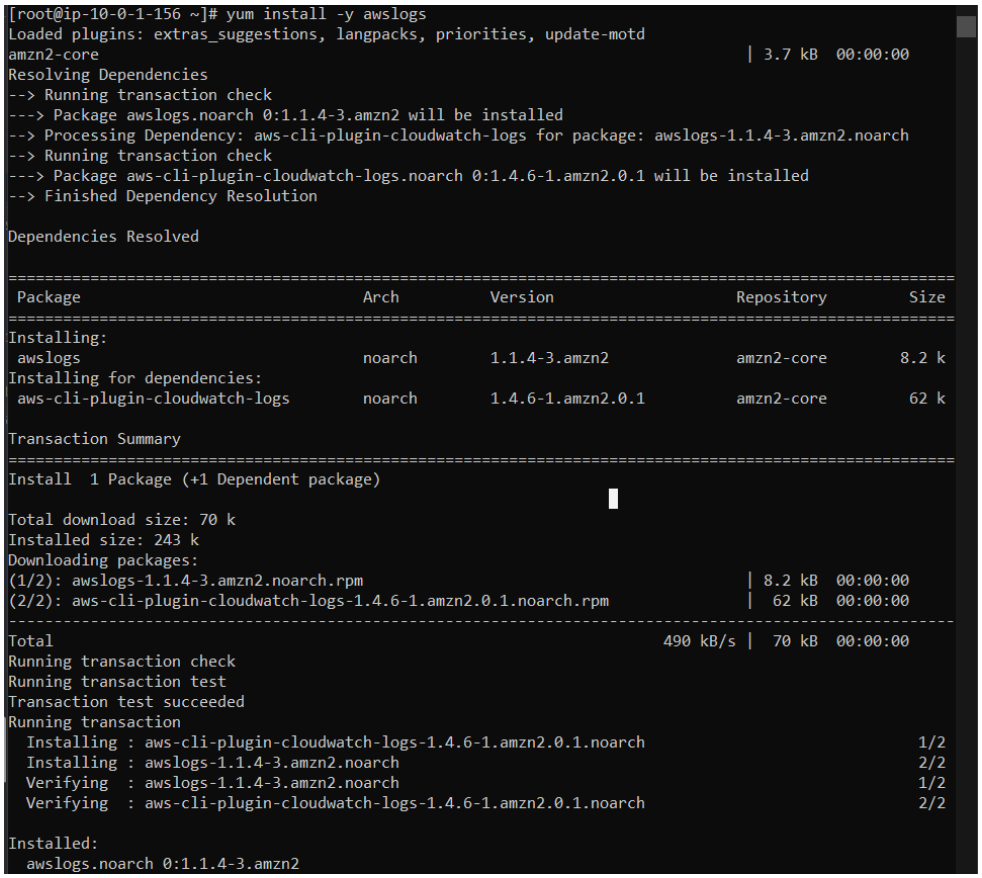
```
error_log /var/log/nginx/error.log;
access_log  /var/log/nginx/access.log;
log_format cloudwatch '$remote_addr - $remote_user [$time_local] "$request" '
                    '$status $body_bytes_sent "$http_referer" '
                    '"$http_user_agent" "$http_x_forwarded_for"';
access_log /var/log/nginx/access.log cloudwatch;
error_log /var/log/nginx/error.log cloudwatch;
```

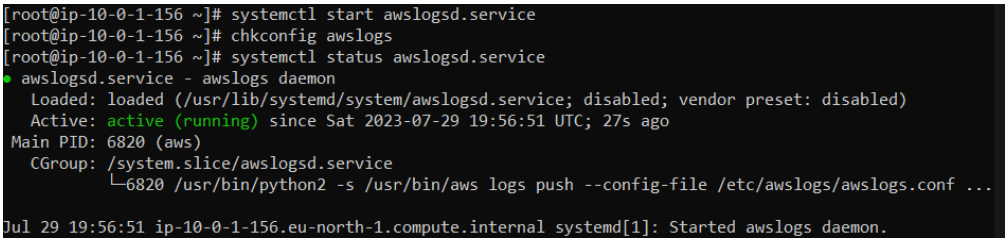
Install CloudWatch Logs Agent

To send logs to AWS CloudWatch, you need to install the CloudWatch Logs Agent on your EC2 instance. This agent sends the log files in your EC2 instance to CloudWatch.

CloudWatch Log Agent (awslogs) is a tool used to collect logs of applications running on EC2 instances and send them to the Amazon CloudWatch Logs service. You can follow the steps below to install awslogs on AMI 2:

```
sudo yum install -y awslogs
sudo systemctl start awslogsd.conf # start awslogs service
sudo chkconfig awslogs on # Set the awslogs service to start automatically
```



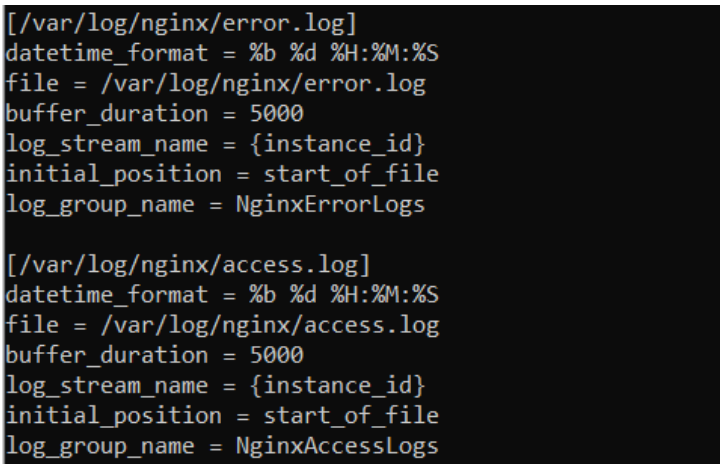


Edit the configuration file to use awslogs. The configuration file is usually located at '/etc/awslogs/awslogs.conf'.

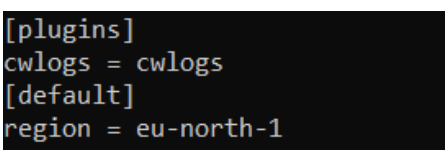
```
[/var/log/nginx/error.log]
datetime_format = %d/%b/%Y:%H:%H:%M:%S
file = /var/log/nginx/error.log
log_stream_name = {instance_id}
log_group_name = NginxErrorLogs

[/var/log/nginx/access.log]
datetime_format = %d/%b/%Y:%H:%H:%M:%S
file = /var/log/nginx/access.log
log_stream_name = {instance_id}
log_group_name = NginxAccessLogs
```

In the above configuration, Nginx access logs are sent from the file '/var/log/nginx/access.log' to the CloudWatch Logs group named 'NginxAccessLogs'. Likewise, error logs are sent from '/var/log/nginx/error.log' file to another CloudWatch Logs group named 'NginxErrorLogs'.



Also region should be set in awscli.conf file. This variable should be changed according to your location.



After this configuration, when we restart the awslogs service, 2 groups named access and error log will be created in CloudWatch Logs. The desired logs can be examined here.