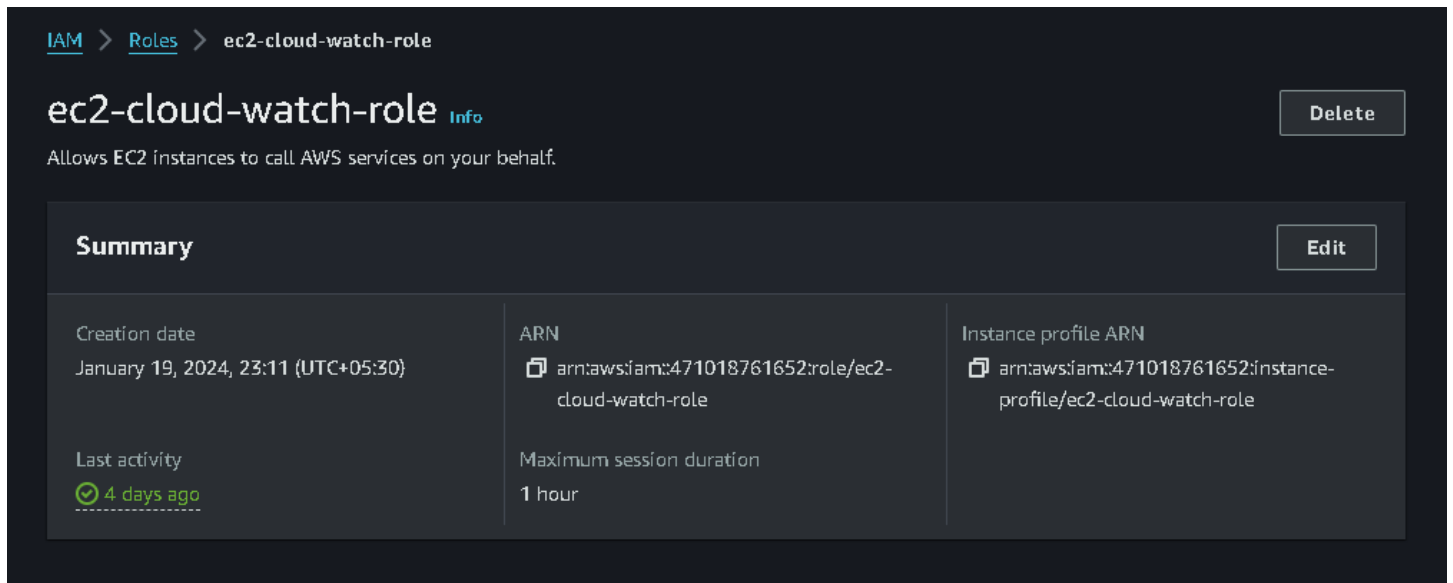


Send Apache Logs To Cloudwatch Log Group

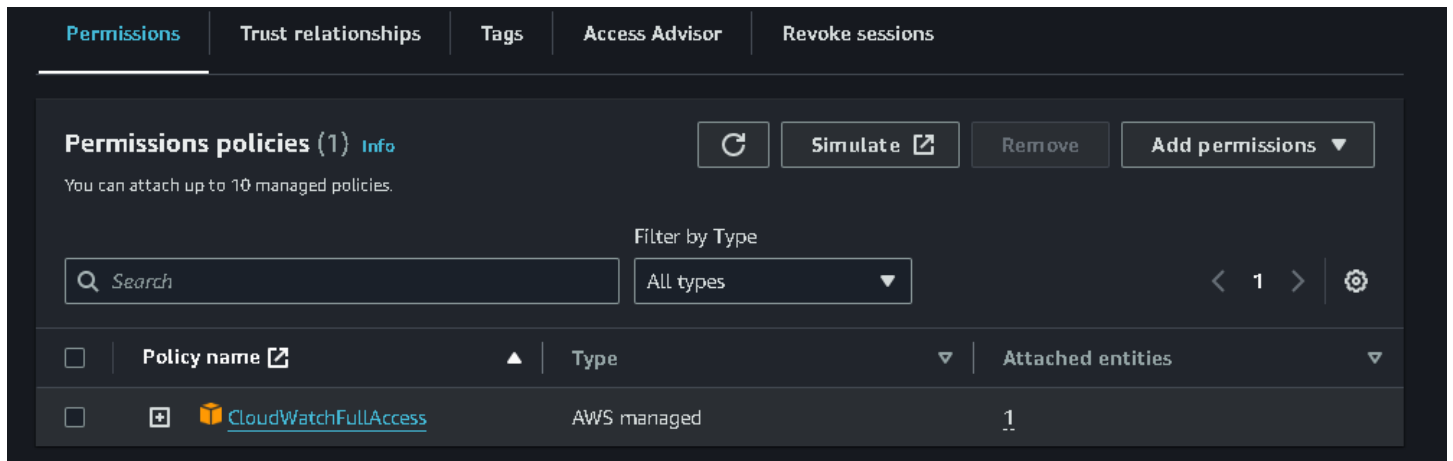
Dushyant Kumar

- Create iam role with policy attached to it.



The screenshot shows the AWS IAM console page for the role 'ec2-cloud-watch-role'. The breadcrumb navigation is 'IAM > Roles > ec2-cloud-watch-role'. The role name is 'ec2-cloud-watch-role' with an 'Info' link. A 'Delete' button is in the top right. Below the role name is the description: 'Allows EC2 instances to call AWS services on your behalf.' The 'Summary' section is expanded, showing an 'Edit' button. The summary table contains the following information:

Creation date	ARN	Instance profile ARN
January 19, 2024, 23:11 (UTC+05:30)	arn:aws:iam::471018761652:role/ec2-cloud-watch-role	arn:aws:iam::471018761652:instance-profile/ec2-cloud-watch-role
Last activity 4 days ago	Maximum session duration 1 hour	



The screenshot shows the 'Permissions policies' tab for the role 'ec2-cloud-watch-role'. The breadcrumb navigation is 'IAM > Roles > ec2-cloud-watch-role > Permissions policies'. The tab is titled 'Permissions policies (1)' with an 'Info' link. Below the title is the text: 'You can attach up to 10 managed policies.' There are buttons for 'Refresh', 'Simulate', 'Remove', and 'Add permissions'. A search bar and a 'Filter by Type' dropdown are present. The table below lists the attached policies:

Policy name	Type	Attached entities
CloudWatchFullAccess	AWS managed	1

- Create a Instance and attach an iam role.

Instances (1/1) Info

Find instance by attribute or tag (case-sensitive)

running X Clear filters

Name	Instance ID	Instance state	Instance type	Status check
apache-cloud	i-05b4afa48347a5a94	Running	t2.micro	2/2 checks pas

Instance: i-05b4afa48347a5a94 (apache-cloud)

Details Status and alarms New Monitoring Security Networking Storage Tags

▼ Instance summary Info

Instance ID i-05b4afa48347a5a94 (apache-cloud)	Public IPv4 address 13.201.96.49 open address	Private IPv4 addresses 172.31.38.57
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-13-201-96-49.ap-south-1.compute.amazonaws.com open address

EC2 > Instances > i-05b4afa48347a5a94 > Modify IAM role

Modify IAM role Info

Attach an IAM role to your instance.

Instance ID
i-05b4afa48347a5a94 (apache-cloud)

IAM role
Select an IAM role to attach to your instance or create a new role if you haven't created any. The role you select replaces any roles that are currently attached to your instance.

ec2-cloud-watch-role

Cancel Update IAM role

• Now run some commands

Update and install apache in machine:

`sudo apt update -y && sudo apt install apache2 -y`

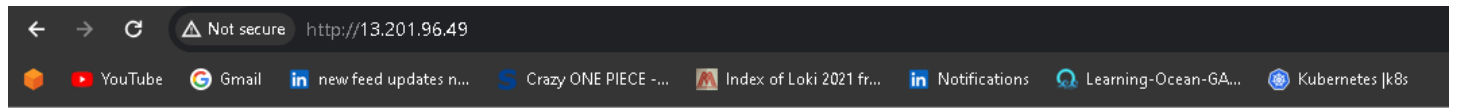
```
ubuntu@ip-172-31-38-57:~$ sudo su
root@ip-172-31-38-57:/home/ubuntu# apt update -y && apt install apache2 -y
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [109 kB]
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 Packages [14.1 MB]
Get:5 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Get:6 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/universe Translation-en [5652 kB]
Get:7 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 c-n-f Metadata [286 kB]
Get:8 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 Packages [217 kB]
Get:9 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse Translation-en [112 kB]
Get:10 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 c-n-f Metadata [8372 B]
Get:11 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1283 kB]
Get:12 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [263 kB]
```

After the installation is complete, start the Apache service and enable it to start on boot:

```
sudo systemctl start apache2
```

```
sudo systemctl enable apache2
```

Check the output in web browser.



Yes It's Working

Download cloudwatch agent package

```
wget https://s3.amazonaws.com/amazoncloudwatch-agent/ubuntu/amd64/latest/amazon-cloudwatch-agent.deb
```

```
root@ip-172-31-38-57:/home/ubuntu/cloudwatch# pwd
/home/ubuntu/cloudwatch
root@ip-172-31-38-57:/home/ubuntu/cloudwatch# ll
total 8
drwxr-xr-x 2 root root 4096 Jan 24 18:08 ./
drwxr-xr-x 5 ubuntu ubuntu 4096 Jan 24 18:08 ../
root@ip-172-31-38-57:/home/ubuntu/cloudwatch# wget https://s3.amazonaws.com/amazoncloudwatch-agent/ubuntu/amd64/latest/amazon-cloudwatch-agent.deb
--2024-01-24 18:13:15-- https://s3.amazonaws.com/amazoncloudwatch-agent/ubuntu/amd64/latest/amazon-cloudwatch-agent.deb
Resolving s3.amazonaws.com (s3.amazonaws.com)... 52.216.33.88, 52.216.138.85, 52.216.222.8, ...
Connecting to s3.amazonaws.com (s3.amazonaws.com)|52.216.33.88|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 91736066 (87M) [application/octet-stream]
Saving to: 'amazon-cloudwatch-agent.deb'

amazon-cloudwatch-agent.deb      100%[=====>] 87.49M  7.93MB/s  in 12s

2024-01-24 18:13:28 (7.20 MB/s) - 'amazon-cloudwatch-agent.deb' saved [91736066/91736066]

root@ip-172-31-38-57:/home/ubuntu/cloudwatch# ls
amazon-cloudwatch-agent.deb
```

Install the CloudWatch Agent

```
sudo dpkg -i amazon-cloudwatch-agent.deb
```

```
root@ip-172-31-38-57:/home/ubuntu/cloudwatch# sudo dpkg -i amazon-cloudwatch-agent.deb
Selecting previously unselected package amazon-cloudwatch-agent.
(Reading database ... 65568 files and directories currently installed.)
Preparing to unpack amazon-cloudwatch-agent.deb ...
create group cwagent, result: 0
create user cwagent, result: 0
Unpacking amazon-cloudwatch-agent (1.300032.3b392-1) ...
Setting up amazon-cloudwatch-agent (1.300032.3b392-1) ...
```

configure cloudwatch agent

```
sudo /opt/aws/amazon-cloudwatch-agent/bin/amazon-cloudwatch-agent-config-wizard
```

```

Do you want to monitor any log files?
1. yes
2. no
default choice: [1]:
1
Log file path:
/var/log/apache2/access.log
Log group name:
default choice: [access.log]
apache_logs
Log group class:
1. STANDARD
2. INFREQUENT_ACCESS
default choice: [1]:
1
Log stream name:
default choice: [{instance_id}]
apache_stream

```

for ubuntu debian, log file path for apache2

/var/log/apache2/access.log

/var/log/apache2/error.log

Note: also add the logstream for both path file and put in the same loggroup file

log group name : apache/logs

access stream name : apache_access_stream

log stream name : apache_error_stream

In additional **log path** enter same path for error logs and enter **same group name** but **different stream name**.

File path for access and error log are shown above.

systemctl start amazon-cloudwatch-agent

systemctl status-cloudwatch-agent.service

```

root@ip-172-31-38-57:/home/ubuntu/cloudwatch# sudo systemctl status amazon-cloudwatch-agent.service
o amazon-cloudwatch-agent.service - Amazon CloudWatch Agent
   Loaded: loaded (/etc/systemd/system/amazon-cloudwatch-agent.service; enabled; vendor preset: enabled)
   Active: inactive (dead)

Jan 24 18:27:21 ip-172-31-38-57 systemd[1]: Started Amazon CloudWatch Agent.
Jan 24 18:27:21 ip-172-31-38-57 start-amazon-cloudwatch-agent[3201]: D! [EC2] Found active network interface
Jan 24 18:27:21 ip-172-31-38-57 start-amazon-cloudwatch-agent[3201]: I! imds retry client will retry 1 times! Detected the instance is EC2
Jan 24 18:27:21 ip-172-31-38-57 start-amazon-cloudwatch-agent[3201]: 2024/01/24 18:27:21 Reading json config file path: /opt/aws/amazon-cloudwatch-agent/etc/amazon-cloudwatch-agent.json does not exist or cannot read
Jan 24 18:27:21 ip-172-31-38-57 systemd[1]: amazon-cloudwatch-agent.service: Deactivated successfully.
lines 1-10/10 (END)

```

sudo apt-get install collectd

```

root@ip-172-31-38-57:/home/ubuntu/cloudwatch# sudo apt-get install collectd
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  alsa-topology-conf alsa-ucm-conf ca-certificates-java collectd-core default-jre-headless fontconfig fontconfig-config fonts-dejavu-core intel-cmt-cat
  java-common libabsl20210324 libasound2 libasound2-data libavahi-client3 libavahi-common-data libavahi-common3 libbson-1.0-0 libc-ares2 libcairo2 libcups2
  libdatrie1 libdbi1 libdeflate0 libesmtplib libfdt1 libfontconfig1 libgdk-pixbuf2.0-0 libgdk-pixbuf2.0-bin libgdk-pixbuf2.0-common libgps28 libgraphite2-3
  libgrpc++1 libgrpc10 libharfbuzz0b libhiredis0.14 libi2c0 libjbig0 libjpeg-turbo8 libjpeg8 liblcms2-2 libmemcached11 libmicrohttpd12 libmodbus5
  libmongoc-1.0-0 libmongocrypt0 libmosquitto1 libmysqlclient21 libnotify4 libopenipmi0 liboping0 libpango-1.0-0 libpangocairo-1.0-0 libpangoft2-1.0-0
  libpcsc-lite1 libpixman-1-0 libpq5 libprotobuf-c1 libprotobuf22 libqpid-proton11 librabbitmq4 librdkafka1 libriemann-client0 librrd8 librt-eal22
  librt-eval22 librt-ethdev22 librt-kvargs22 librt-mbuf22 librt-mempool22 librt-meter22 librt-net22 librt-ring22 librt-telemetry22 libsensors-config libsensors5
  libsnappy1v5 libsnmp-base libsnmp40 libthai-data libthai0 libtiff5 libvarnishapi2 libvirt0 libwebp7 libxcb-render0 libxcb-shm0 libxencall1 libxendevicemodel1
  libxenbtch1 libxenforeignmemory1 libxengnttab1 libxenhypfs1 libxenmisc4.16 libxenstore4 libxentoolcore1 libxentoollog1 libxrender1 libyajl2 mysql-common
  openjdk-11-jre-headless rrdtool
Suggested packages:
  libasound2-plugins libasound2-doc libavahi-compat-glibc libfontconfig-doc fonts-dejavu-core-doc intel-cmt-cat-doc java-docs libabsl-doc libasound2-doc
  libasound2-data-doc libavahi-compat-glibc-doc libavahi-common-doc libavahi-client-doc libbson-doc libc-ares2-doc libcairo2-doc libcups2-doc libdatrie1-doc
  libdbi1-doc libdeflate0-doc libesmtplib-doc libfdt1-doc libfontconfig1-doc libgdk-pixbuf2.0-bin-doc libgdk-pixbuf2.0-common-doc libgps28-doc libgraphite2-3-doc
  libgrpc++1-doc libgrpc10-doc libharfbuzz0b-doc libhiredis0.14-doc libi2c0-doc libjbig0-doc libjpeg-turbo8-doc libjpeg8-doc liblcms2-2-doc libmemcached11-doc
  libmicrohttpd12-doc libmodbus5-doc libmongoc-1.0-0-doc libmongocrypt0-doc libmosquitto1-doc libmysqlclient21-doc libnotify4-doc libopenipmi0-doc liboping0-doc
  libpango-1.0-0-doc libpangocairo-1.0-0-doc libpangoft2-1.0-0-doc libpcsc-lite1-doc libpixman-1-0-doc libpq5-doc libprotobuf-c1-doc libprotobuf22-doc
  libqpid-proton11-doc librabbitmq4-doc librdkafka1-doc libriemann-client0-doc librrd8-doc librt-eal22-doc librt-eval22-doc librt-ethdev22-doc librt-kvargs22-doc
  librt-mbuf22-doc librt-mempool22-doc librt-meter22-doc librt-net22-doc librt-ring22-doc librt-telemetry22-doc libsensors-config-doc libsensors5-doc
  libsnappy1v5-doc libsnmp-base-doc libsnmp40-doc libthai-data-doc libthai0-doc libtiff5-doc libvarnishapi2-doc libvirt0-doc libwebp7-doc libxcb-render0-doc
  libxcb-shm0-doc libxencall1-doc libxendevicemodel1-doc libxenbtch1-doc libxenforeignmemory1-doc libxengnttab1-doc libxenhypfs1-doc libxenmisc4.16-doc
  libxenstore4-doc libxentoolcore1-doc libxentoollog1-doc libxrender1-doc libyajl2-doc mysql-common-doc openjdk-11-jre-headless-doc rrdtool-doc

```

sudo service collectd start

sudo service collectd enable

systemctl status collectd.service

```

root@ip-172-31-38-57:/home/ubuntu/cloudwatch# sudo service collectd start
root@ip-172-31-38-57:/home/ubuntu/cloudwatch# sudo service collectd start
root@ip-172-31-38-57:/home/ubuntu/cloudwatch# sudo service collectd enable
Usage: /etc/init.d/collectd {start|stop|restart|force-reload|status}
root@ip-172-31-38-57:/home/ubuntu/cloudwatch# systemctl status collectd.service
● collectd.service - Statistics collection and monitoring daemon
   Loaded: loaded (/lib/systemd/system/collectd.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2024-01-24 18:31:18 UTC; 1min 17s ago
     Docs: man:collectd(1)
           man:collectd.conf(5)
           https://collectd.org
   Process: 4756 ExecStartPre=/usr/sbin/collectd -t (code=exited, status=0/SUCCESS)
  Main PID: 4757 (collectd)
    Tasks: 12 (limit: 1121)
   Memory: 30.2M
      CPU: 179ms
   CGroup: /system.slice/collectd.service
           └─4757 /usr/sbin/collectd

Jan 24 18:31:18 ip-172-31-38-57 collectd[4757]: plugin_load: plugin "irq" successfully loaded.
Jan 24 18:31:18 ip-172-31-38-57 collectd[4757]: plugin_load: plugin "load" successfully loaded.
Jan 24 18:31:18 ip-172-31-38-57 collectd[4757]: plugin_load: plugin "memory" successfully loaded.
Jan 24 18:31:18 ip-172-31-38-57 collectd[4757]: plugin_load: plugin "processes" successfully loaded.
Jan 24 18:31:18 ip-172-31-38-57 collectd[4757]: plugin_load: plugin "rrdtool" successfully loaded.
Jan 24 18:31:18 ip-172-31-38-57 collectd[4757]: plugin_load: plugin "swap" successfully loaded.
Jan 24 18:31:18 ip-172-31-38-57 collectd[4757]: plugin_load: plugin "users" successfully loaded.
Jan 24 18:31:18 ip-172-31-38-57 collectd[4757]: Systemd detected, trying to signal readiness.
Jan 24 18:31:18 ip-172-31-38-57 system[1]: Started Statistics collection and monitoring daemon.
Jan 24 18:31:18 ip-172-31-38-57 collectd[4757]: Initialization complete, entering read-loop.
root@ip-172-31-38-57:/home/ubuntu/cloudwatch#

```

systemctl start amazon-cloudwatch-agent

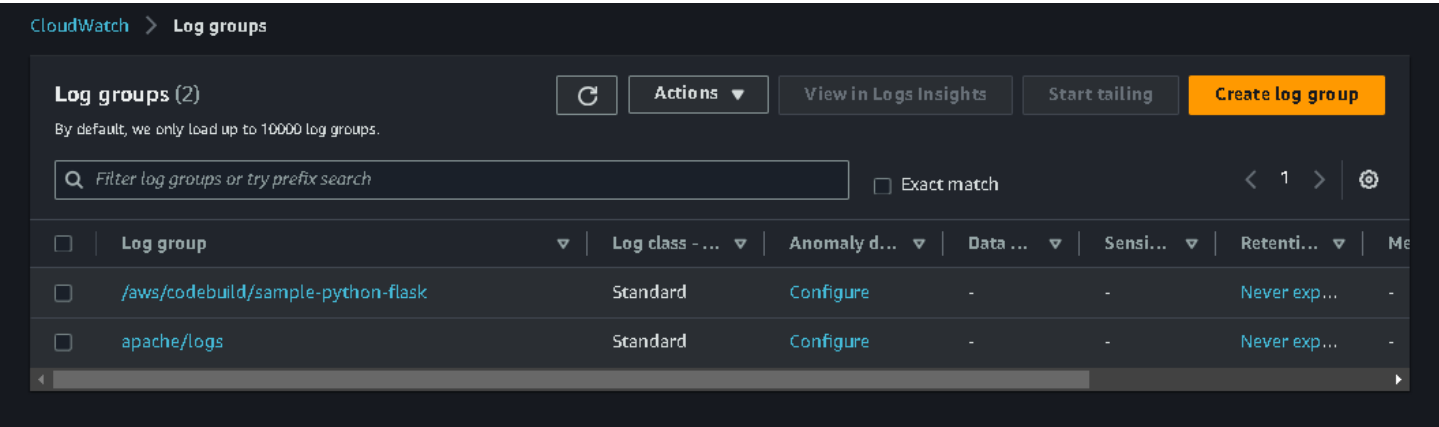
sudo /opt/aws/amazon-cloudwatch-agent/bin/amazon-cloudwatch-agent-ctl -a fetch-config -m ec2 -c file:/opt/aws/amazon-cloudwatch-agent/bin/config.json -s

```

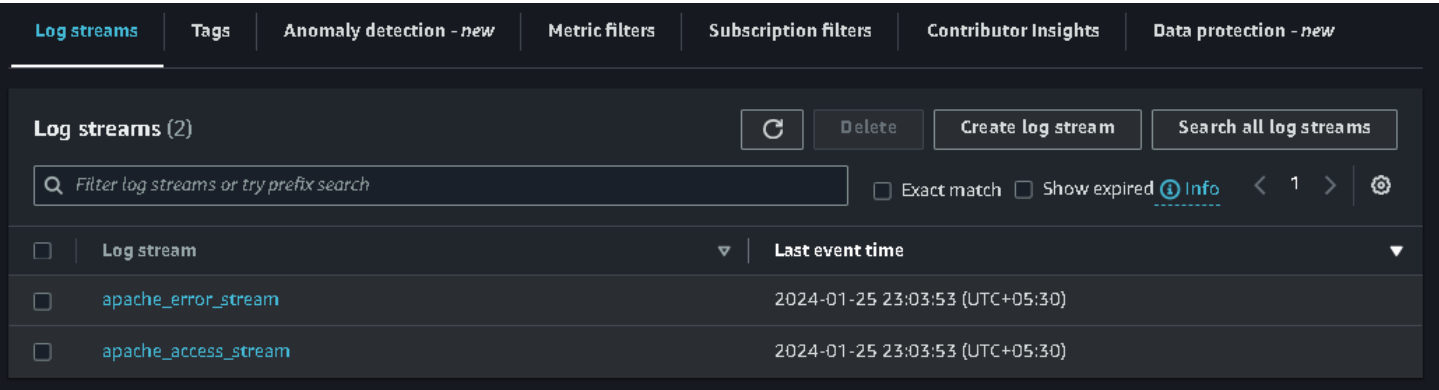
root@ip-172-31-38-57:/home/ubuntu/cloudwatch# systemctl start amazon-cloudwatch-agent
root@ip-172-31-38-57:/home/ubuntu/cloudwatch# sudo /opt/aws/amazon-cloudwatch-agent/bin/amazon-cloudwatch-agent-ctl -a fetch-config -m ec2 -c file:/opt/aws/amazon-cloudwatch-agent/bin/config.json -s
***** processing amazon-cloudwatch-agent *****
I! Trying to detect region from ec2 D! [EC2] Found active network interface I! imds retry client will retry 1 timesSuccessfully fetched the config and saved in /opt/aws/amazon-cloudwatch-agent/etc/amazon-cloudwatch-agent.d/file_config.json.tmp
Start configuration validation...
2024/01/24 18:34:38 Reading json config file path: /opt/aws/amazon-cloudwatch-agent/etc/amazon-cloudwatch-agent.d/file_config.json.tmp ...
2024/01/24 18:34:38 I! Valid Json input schema.
2024/01/24 18:34:38 D! ec2tagger processor required because append_dimensions is set
2024/01/24 18:34:38 D! pipeline hostDeltaMetrics has no receivers
2024/01/24 18:34:38 Configuration validation first phase succeeded
I! Detecting run_as_user ...
I! Trying to detect region from ec2
D! [EC2] Found active network interface
I! imds retry client will retry 1 times
/opt/aws/amazon-cloudwatch-agent/bin/amazon-cloudwatch-agent -schematest -config /opt/aws/amazon-cloudwatch-agent/etc/amazon-cloudwatch-agent.toml
Configuration validation second phase succeeded
Configuration validation succeeded
root@ip-172-31-38-57:/home/ubuntu/cloudwatch#

```

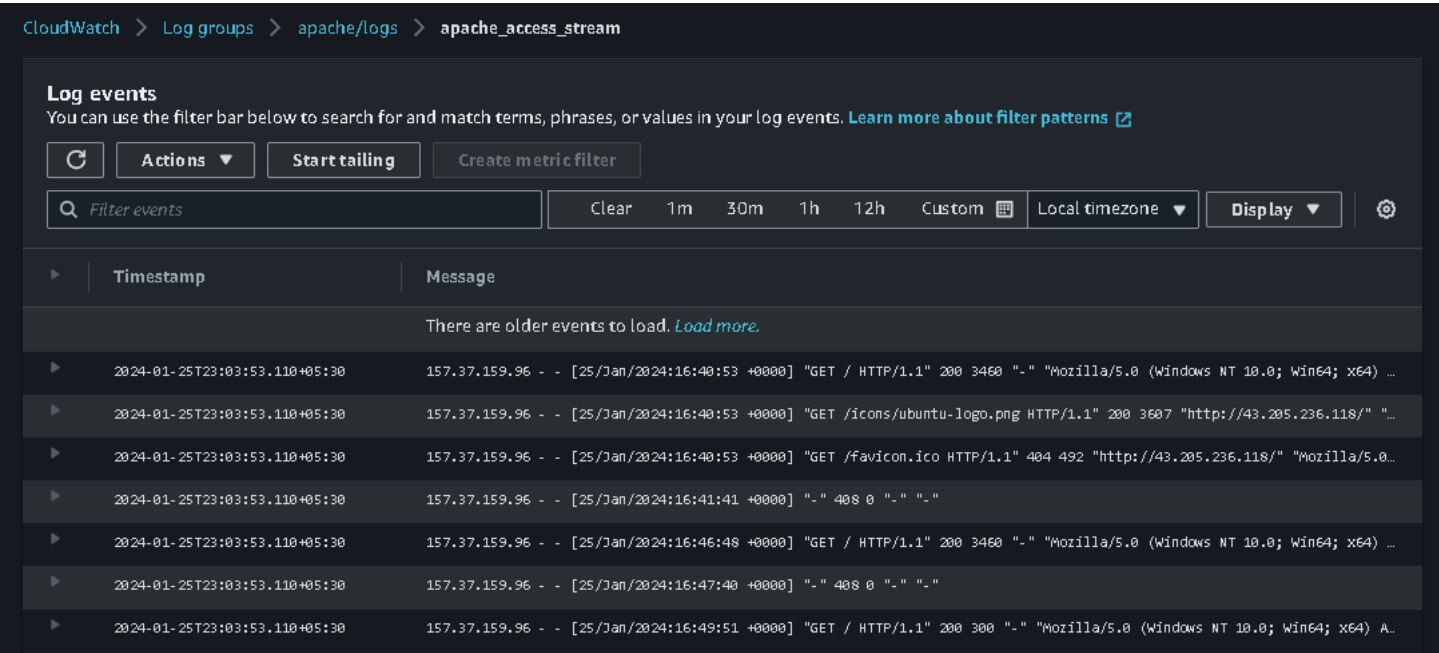
Now, we get the log group (apache/logs) in cloudwatch



Here we get two log streams `apache_access_stream` and `apache_error_stream`



Apache access logs in cloudwatch




Apache error logs

CloudWatch > Log groups > apache/logs > apache_error_stream


Log events
You can use the filter bar below to search for and match terms, phrases, or values in your log events. [Learn more about filter patterns](#)

Timestamp	Message
There are older events to load. Load more .	
2024-01-25T23:03:53.114+05:30	[Thu Jan 25 16:39:40.771737 2024] [mpm_event:notice] [pid 2319:tid 140279385950080] AH00489: Apache/2.4.52 (Ubuntu) configu...
2024-01-25T23:03:53.114+05:30	[Thu Jan 25 16:39:40.771835 2024] [core:notice] [pid 2319:tid 140279385950080] AH00094: Command line: '/usr/sbin/apache2'
2024-01-25T23:03:53.114+05:30	[Thu Jan 25 16:49:34.924751 2024] [mpm_event:notice] [pid 2319:tid 140279385950080] AH00492: caught SIGWINCH, shutting down...
2024-01-25T23:03:53.114+05:30	[Thu Jan 25 16:49:34.987761 2024] [mpm_event:notice] [pid 3074:tid 140013938501504] AH00489: Apache/2.4.52 (Ubuntu) configu...
No more records within selected time range <i>Auto retry paused</i> . Resume	



Installing and running the CloudWatch agent on your servers

Monitor your AWS services, collect and track metrics from AWS services and your own applications, and set alarms...

 Amazon CloudWatch

To get config json file:

```
cat /opt/aws/amazon-cloudwatch-agent/bin/config.json
```

```
{
```

```
  "agent": {
```

```
    "metrics_collection_interval": 60,
```

```
    "run_as_user": "root"
```

```
},
"logs": {
  "logs_collected": {
    "files": {
      "collect_list": [
        {
          "file_path": "/var/log/apache2/access.log",
          "log_group_class": "STANDARD",
          "log_group_name": "apache/logs",
          "log_stream_name": "apache_access_stream",
          "retention_in_days": -1
        },
        {
          "file_path": "/var/log/apache2/error.log",
          "log_group_class": "STANDARD",
          "log_group_name": "apache/logs",
          "log_stream_name": "apache_error_stream",
          "retention_in_days": -1
        }
      ]
    }
  }
},
"metrics": {
  "aggregation_dimensions": [
```



```
[
    "InstanceId"
],
"append_dimensions": {
    "AutoScalingGroupName": "${aws:AutoScalingGroupName}",
    "ImageId": "${aws:ImageId}",
    "InstanceId": "${aws:InstanceId}",
    "InstanceType": "${aws:InstanceType}"
},
"metrics_collected": {
    "disk": {
        "measurement": [
            "used_percent"
        ],
        "metrics_collection_interval": 60,
        "resources": [
            "*"
        ]
    },
    "mem": {
        "measurement": [
            "mem_used_percent"
        ],
        "metrics_collection_interval": 60
    }
}
```

}

}

}