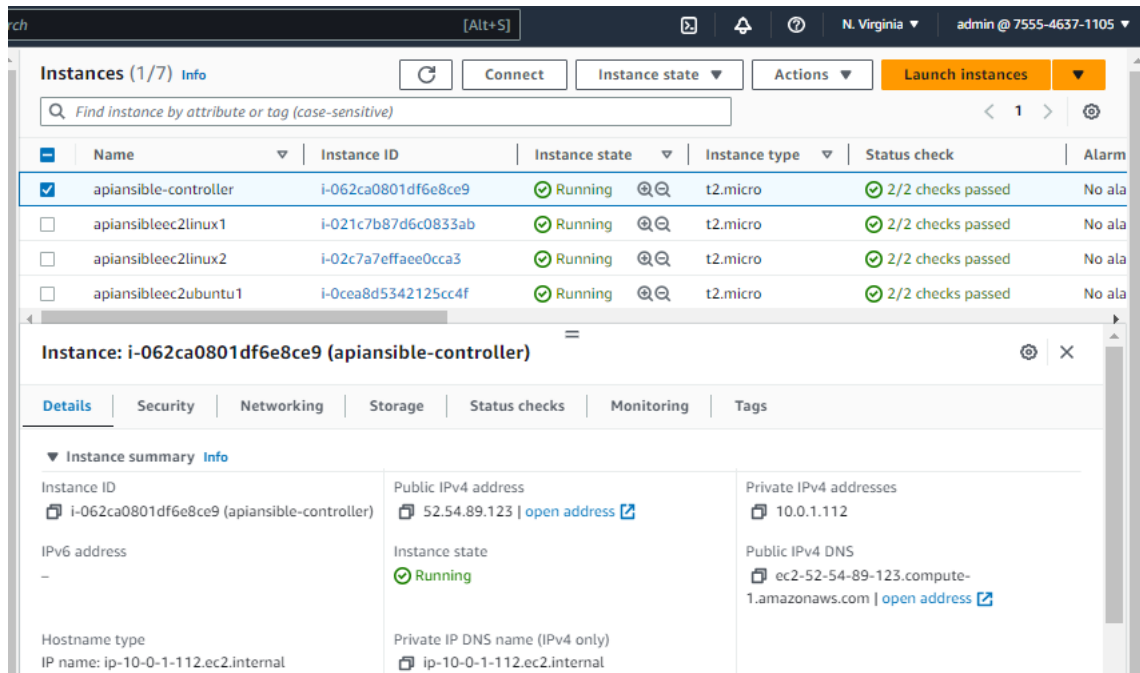


Ansible Assignment 1

Launching 5 EC2s: the controller is running Amazon Linux 2, 2 nodes running Amazon Linux 2 and 2 other nodes running Ubuntu.



The screenshot shows the AWS Management Console interface. At the top, there's a navigation bar with the AWS logo, a search bar, and user information (N. Virginia, admin@7555-4637-1105). Below the navigation bar, there's a section titled 'Instances (1/7) Info'. It includes a search bar, a 'Connect' button, an 'Instance state' dropdown, an 'Actions' dropdown, and a 'Launch instances' button. A table lists the instances:

Name	Instance ID	Instance state	Instance type	Status check	Alarm
apiansible-controller	i-062ca0801df6e8ce9	Running	t2.micro	2/2 checks passed	No ala
apiansibleec2linux1	i-021c7b87d6c0833ab	Running	t2.micro	2/2 checks passed	No ala
apiansibleec2linux2	i-02c7a7effae0cca3	Running	t2.micro	2/2 checks passed	No ala
apiansibleec2ubuntu1	i-0cea8d5342125cc4f	Running	t2.micro	2/2 checks passed	No ala

Below the table, the details for the selected instance 'apiansible-controller' (i-062ca0801df6e8ce9) are shown. The details are organized into tabs: Details, Security, Networking, Storage, Status checks, Monitoring, and Tags. The 'Details' tab is active, showing the instance summary:

- Instance ID: i-062ca0801df6e8ce9 (apiansible-controller)
- Public IPv4 address: 52.54.89.123 | open address
- Private IPv4 addresses: 10.0.1.112
- Instance state: Running
- Public IPv4 DNS: ec2-52-54-89-123.compute-1.amazonaws.com | open address
- Private IP DNS name (IPv4 only): ip-10-0-1-112.ec2.internal

Installing ansible on my EC2 Amazon Linux 2 controller

Still having issues with pip3 on EC2 sh-5.2\$ version

```
us-east-1.console.aws.amazon.com/systems-manager/session-manager/i-062ca0801df6e8ce9?region=us-east-1#

Session ID: admin-045c1e77fa78e0aec Instance ID: i-062ca0801df6e8ce9

sh-5.2$ sudo yum update -y
Last metadata expiration check: 0:26:29 ago on Fri Jun 16 00:50:33 2023.
Dependencies resolved.
Nothing to do.
Complete!
sh-5.2$ sudo yum install ansible
Last metadata expiration check: 0:31:07 ago on Fri Jun 16 00:50:33 2023.
No match for argument: ansible
Error: Unable to find a match: ansible
sh-5.2$ sudo su - ec2-user
[ec2-user@ip-10-0-1-112 ~]$ sudo yum update -y
Last metadata expiration check: 0:32:25 ago on Fri Jun 16 00:50:33 2023.
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-10-0-1-112 ~]$ sudo amazon-linux-extras install ansible2 -y
sudo: amazon-linux-extras: command not found
[ec2-user@ip-10-0-1-112 ~]$ pip3 install ansible
-bash: pip3: command not found
[ec2-user@ip-10-0-1-112 ~]$ ^C
[ec2-user@ip-10-0-1-112 ~]$ sudo pip3 install ansible
sudo: pip3: command not found
[ec2-user@ip-10-0-1-112 ~]$ pwd
/home/ec2-user
[ec2-user@ip-10-0-1-112 ~]$ pyrhon --version
-bash: pyrhon: command not found
[ec2-user@ip-10-0-1-112 ~]$ python3 --version
Python 3.9.16
[ec2-user@ip-10-0-1-112 ~]$ pip3 --version
-bash: pip3: command not found
[ec2-user@ip-10-0-1-112 ~]$
```

Relaunching 5 EC2s using AMIs (Linux and Ubuntu) of the previous EC2 version: the controller is running Amazon Linux 2, 2 nodes running Amazon Linux 2 and 2 other nodes running Ubuntu.

The screenshot displays the AWS Management Console interface. At the top, there's a navigation bar with the AWS logo, a search bar, and user information (N. Virginia, admin @ 7555-4637-1105). Below this, the 'Instances (1/5) Info' section is visible, featuring a search bar and a filter for 'Instance state = running'. A table lists five instances, all in a 'Running' state. The first instance, 're-apiansible-controller', is selected. Below the table, the 'Instance: i-0bccf9d442af43bb5 (re-apiansible-controller)' details are shown, including tabs for Details, Security, Networking, Storage, Status checks, Monitoring, and Tags. The 'Details' tab is active, showing a summary of the instance's configuration, including its ID, IP addresses, hostname, and VPC ID.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status
re-apiansible-controller	i-0bccf9d442af43bb5	Running	t2.micro	2/2 checks passed	No alarms
re-apiansibleec2linux1	i-0d93bf3fd1afcd611	Running	t2.micro	2/2 checks passed	No alarms
re-apiansibleec2linux2	i-0289e73668fd0277a	Running	t2.micro	2/2 checks passed	No alarms
re-apiansibleec2ubuntu1	i-0f96595e9944b9812	Running	t2.micro	2/2 checks passed	No alarms
re-apiansibleec2ubuntu2	i-011fdf85d8cc7f188	Running	t2.micro	2/2 checks passed	No alarms

Instance: i-0bccf9d442af43bb5 (re-apiansible-controller)

Details | Security | Networking | Storage | Status checks | Monitoring | Tags

Instance summary Info

Instance ID i-0bccf9d442af43bb5 (re-apiansible-controller)	Public IPv4 address 34.229.146.184 open address	Private IPv4 addresses 10.0.1.30
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-34-229-146-184.compute-1.amazonaws.com open address
Hostname type IP name: ip-10-0-1-30.ec2.internal	Private IP DNS name (IPv4 only) ip-10-0-1-30.ec2.internal	Elastic IP addresses -
Answer private resource DNS name -	Instance type t2.micro	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more
Auto-assigned IP address 34.229.146.184 [Public IP]	VPC ID vpc-0fd531094569de6d5 (awesome_vpc) open address	Auto Scaling Group name
IAM Role	Subnet ID	

I ran the commands below to verify whether python and python 3 were installed

```
sudo su – ec2-user
```

```
pwd
```

```
python --version
```

```
python 3 --version
```

Both were installed in the previous EC2 version that I am using for this assignment.

Installing ansible on the EC2 Amazon Linux 2 I chose to become the controller

\$ sudo yum update -y

```
← → ↺ us-east-1.console.aws.amazon.com/systems-manager/session-manager/i-0bccf9d442af43bb5?region=us-east-1 🔍 📌 ☆ 🗑️ ⓘ
Session ID: admin-0ef172c1c3cb8344 Instance ID: i-0bccf9d442af43bb5 Terminate

Verifying : libuuid-2.30.2-2.amzn2.0.10.x86_64
Verifying : libcrypt-2.26-62.amzn2.x86_64
Verifying : python-babel-0.9.6-8.amzn2.0.1.noarch
Verifying : python2-rpm-4.11.3-48.amzn2.0.2.x86_64
Verifying : unzip-6.0-43.amzn2.x86_64
Verifying : 1:grub2-2.06-9.amzn2.0.1.x86_64
Verifying : awscli-1.18.147-1.amzn2.0.1.noarch
Verifying : 2:mtr-0.92-2.amzn2.x86_64
Verifying : glibc-minimal-langpack-2.26-62.amzn2.x86_64
Verifying : 1:grub2-common-2.06-9.amzn2.0.1.noarch
Verifying : libxml2-python-2.9.1-6.amzn2.5.6.x86_64
Verifying : kpatch-runtime-0.9.4-6.amzn2.noarch
Verifying : freetype-2.8-14.amzn2.1.x86_64
Verifying : rpm-build-libs-4.11.3-48.amzn2.0.2.x86_64
Verifying : rsync-3.1.2-11.amzn2.0.1.x86_64
Verifying : libcurl-7.79.1-7.amzn2.0.1.x86_64
Verifying : apr-util-1.6.1-5.amzn2.0.2.x86_64
Verifying : openssh-server-7.4p1-22.amzn2.0.1.x86_64
Verifying : screen-4.1.0-0.27.20120314git3c2946.amzn2.x86_64
Verifying : apr-util-bdb-1.6.1-5.amzn2.0.2.x86_64
Verifying : libtiff-4.0.3-35.amzn2.0.5.x86_64
Verifying : ec2-hibinit-agent-1.0.2-3.amzn2.noarch
Verifying : rpm-plugin-systemd-inhibit-4.11.3-48.amzn2.0.2.x86_64
Verifying : glibc-all-langpacks-2.26-62.amzn2.x86_64
Verifying : libfastjson-0.99.4-3.amzn2.x86_64

Installed:
grub2.x86_64 1:2.06-9.amzn2.0.3      grub2-pc.x86_64 1:2.06-9.amzn2.0.3      grub2-tools.x86_64 1:2.06-9.amzn2.0.3      grub2-tools-efi.x86_64 1:
kernel.x86_64 0:5.10.179-171.711.amzn2

Updated:
apr-util.x86_64 0:1.6.3-1.amzn2.0.1      apr-util-bdb.x86_64 0:1.6.3-1.amzn2.0.1      awscli.noarch 0:1.18.147-1.amzn2.0.2
curl.x86_64 0:8.0.1-1.amzn2.0.1          dbus.x86_64 1:1.10.24-7.amzn2.0.3          dbus-libs.x86_64 1:1.10.24-7.amzn2.0.3
glibc.x86_64 0:2.26-63.amzn2             glibc-all-langpacks.x86_64 0:2.26-63.amzn2      glibc-common.x86_64 0:2.26-63.amzn2
grub2-common.noarch 1:2.06-9.amzn2.0.3    grub2-efi-x64-ec2.x86_64 1:2.06-9.amzn2.0.3      grub2-pc-modules.noarch 1:2.06-9.amzn2.0.3
libblkid.x86_64 0:2.30.2-2.amzn2.0.11    libcrypt.x86_64 0:2.26-63.amzn2          libcurl.x86_64 0:8.0.1-1.amzn2.0.1
libmount.x86_64 0:2.30.2-2.amzn2.0.11    libsmartcols.x86_64 0:2.30.2-2.amzn2.0.11    libssh2.x86_64 0:1.4.3-12.amzn2.2.4
libwebp.x86_64 0:0.3.0-10.amzn2.0.2       libxml2.x86_64 0:2.9.1-6.amzn2.5.8        libxml2-python.x86_64 0:2.9.1-6.amzn2.5.8
mtr.x86_64 2:0.92-2.amzn2.0.1             net-tools.x86_64 0:2.0-0.22.20131004git.amzn2.0.3    openssh.x86_64 0:7.4p1-22.amzn2.0.2
pcre.x86_64 0:8.32-17.amzn2.0.3           python-babel.noarch 0:0.9.6-8.amzn2.0.2      python2-botoecore.noarch 0:1.18.6-1.amzn2.0.3
rpm.x86_64 0:4.11.3-48.amzn2.0.3         python-build-libs.x86_64 0:4.11.3-48.amzn2.0.3      python-libs.x86_64 0:4.11.3-48.amzn2.0.3
rsyslog.x86_64 0:8.24.0-57.amzn2.2.0.2    screen.x86_64 0:4.1.0-0.27.20120314git3c2946.amzn2.0.1    tzdata.noarch 0:2023c-1.amzn2.0.1

Replaced:
grub2.x86_64 1:2.06-9.amzn2.0.1      grub2-tools.x86_64

Complete!
[ec2-user@ip-10-0-1-30 ~]$
```

\$ sudo amazon-linux-extras install ansible2 -y

```
Session ID: admin-0ef172c1c3cb8344 Instance ID: i-0bccf9d442af43bb5

24 epel available [ =7.11 =stable ]
25 testing available [ =1.0 =stable ]
26 ecs available [ =stable ]
27 corretto8 available \
   [ =1.8.0_192 =1.8.0_202 =1.8.0_212 =1.8.0_222 =1.8.0_232
   [ =1.8.0_242 =stable ]
29 golang1.11 available \
   [ =1.11.3 =1.11.11 =1.11.13 =stable ]
30 squid4 available [ =4 =stable ]
32 lustre2.10 available \
   [ =2.10.5 =2.10.8 =stable ]
33 java-openjdk11 available [ =11 =stable ]
34 lynx available [ =stable ]
36 EIO available [ =20.x =stable ]
37 mono available [ =5.x =stable ]
38 nginx1 available [ =stable ]
40 mock available [ =stable ]
41 postgresql11 available [ =11 =stable ]
43 livepatch available [ =stable ]
44 python3.8 available [ =stable ]
45 haproxy2 available [ =stable ]
46 collectd available [ =stable ]
47 aws-nitro-enclaves-cli available [ =stable ]
48 R4 available [ =stable ]
   kernel-5.4 available [ =stable ]
50 selinux-ng available [ =stable ]
51 php8.0 available [ =stable ]
52 tomcat9 available [ =stable ]
53 unbound1.13 available [ =stable ]
54 mariadb10.5 available [ =stable ]
55 kernel-5.10=latest enabled [ =stable ]
56 redis6 available [ =stable ]
57 ruby3.0 available [ =stable ]
58 postgresql12 available [ =stable ]
59 postgresql13 available [ =stable ]
60 mock2 available [ =stable ]
61 dnsmasq2.85 available [ =stable ]
62 kernel-5.15 available [ =stable ]
63 postgresql14 available [ =stable ]
64 firefox available [ =stable ]
65 lustre available [ =stable ]
66 php8.1 available [ =stable ]
67 awscli1 available [ =stable ]
68 php8.2 available [ =stable ]
69 dnsmasq available [ =stable ]
70 unbound1.17 available [ =stable ]
71 golang1.19 available [ =stable ]
[ec2-user@ip-10-0-1-30 ~]$
```

\$ ansible --version (the controller has been successfully set up)

```
[ec2-user@ip-10-0-1-30 ~]$ ansible --version
ansible 2.9.23
  config file = /etc/ansible/ansible.cfg
  configured module search path = [u'/home/ec2-user/.ansible/plugins/modules', u'/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python2.7/site-packages/ansible
  executable location = /usr/bin/ansible
  python version = 2.7.18 (default, Feb 28 2023, 02:51:06) [GCC 7.3.1 20180712 (Red Hat 7.3.1-15)]
[ec2-user@ip-10-0-1-30 ~]$
```

Generating the key pair to allow SSH connection between the controller and the nodes

```
Session ID: admin-0ef172c1c13cb8344 Instance ID: i-0bcc9d442af43bb5 Terminate

[ec2-user@ip-10-0-1-30 ~]$ sudo -i
[root@ip-10-0-1-30 ~]$ ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/root/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_rsa.
Your public key has been saved in /root/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:zSp2pPx8FemjgoJPFsWdImP5OULkjcziBgZTEBSBtsw root@ip-10-0-1-30.ec2.internal
The key's randomart image is:
+---[RSA 2048]-----+
| o=+ ooo |
| ... .+=+... |
| + .+=. o . |
| Eo.o* + o o |
| =. = S o . . |
| +o + . + |
| oo =o o . |
| .o...=. o |
| ... oo |
+---[SHA256]-----+
[root@ip-10-0-1-30 ~]$ cd .ssh
[root@ip-10-0-1-30 .ssh]$ ls -l
total 12
-rw----- 1 root root 556 Jun 16 01:41 authorized_keys
-rw----- 1 root root 1679 Jun 16 02:17 id_rsa
-rw-r--r-- 1 root root 412 Jun 16 02:17 id_rsa.pub
[root@ip-10-0-1-30 .ssh]$ cat id_rsa^C
[root@ip-10-0-1-30 .ssh]$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQAC8dpDmX0VqvBLcqHb58b4IkaOauUAazfzJYSF5SL3G3/7Iu9JN7T8reJ/6qlalpyAduEuW50kNP7SayWHJM78pBoAtrKb8X344J/0Ke+waQ8xqAM
amnCqJtD7cMbGuzm9N2I3pb4OV1C3FlyHbum/ozFSrqZm+psW4e3VzUq7v7aK5KA4HsM+oEankTUAjSqP0KrdzVszdxc/8xWIPQzK4gW4bcB root@ip-10-0-1-30.ec2.internal
[root@ip-10-0-1-30 .ssh]$
```

Going to each node to establish the connection with the controller

1st node: re-apiansibleec2linux1

```
Session ID: admin-09538721dde11be78 Instance ID: i-0d93bf3fd1afcd611

sh-4.2$ sudo su - ec2-user
Last login: Sun Jan 8 20:36:19 UTC 2023 from cpe-172-100-103-110.twcnv.res.rr.com on pts/0
[ec2-user@ip-10-0-1-76 ~]$ sudo -i
[root@ip-10-0-1-76 ~]$ cd .ssh
[root@ip-10-0-1-76 .ssh]$ ls -l
total 4
-rw----- 1 root root 556 Jun 16 01:41 authorized_keys
[root@ip-10-0-1-76 .ssh]$ cat authorized_keys
```

The public keypair of the controller was successfully copied and pasted in the node's authorized keys file.

```
[root@ip-10-0-1-76 .ssh]# vi authorized_keys
[root@ip-10-0-1-76 .ssh]# cat authorized_keys
no-port-forwarding,no-agent-forwarding,no-X11-forwarding,command="echo 'Please login as the user \"ec2-user\" rather than the user \"root\".';echo;sleep
PUGexuaXp53wygXT8lDZuumpYKfKA2FlIZG/mY/r+udOGSjhWXSHfH14Clqvy6t/u94cUAU9lMbkrHSfuiQNFxcdz6woQ4VhFz4MCWr0qvfsJKfrDF2VMGeOKuOmWRbrT9jIFbKx+D91Yz03noWpozY
ome-key-east1
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQAC8dpDmX0VqvBLcgHb58b4IkaOauUAazfzJYSF5SL33G3/7Iu9JN7T8reJ/6qlalpyAduEuW50kNP7SayWHJM78pBoAtrKb8X344J/0Ke+waQ8xqAM
amnCgJtD7cMbGUZm9N2I3pb4OV1C3F1yHbum/ozFSrqZm+p5w4e3VzUq7v7aK5KA4HsM+oEankTJAjSqP0KrdZVszdxc/8xWIPQzK4qW4bcB root@ip-10-0-1-30.ec2.internal
[root@ip-10-0-1-76 .ssh]#
```

2nd node: re-apiansibleec2linux2

The public keypair of the controller was successfully copied and pasted in the node's authorized keys file.

us-east-1.console.aws.amazon.com/systems-manager/session-manager/i-0289e73668fd0277a?region=us-east-1

Session ID: admin-04d7d7dcd7e75bde8 Instance ID: i-0289e73668fd0277a Terminate

```
sh-4.2$ sudo su - ec2-user
Last login: Fri Jun 16 03:46:19 UTC 2023 on pts/0
[ec2-user@ip-10-0-1-209 ~]$ sudo -i
[root@ip-10-0-1-209 ~]# cd .ssh
[root@ip-10-0-1-209 .ssh]# ls -l
total 8
-rw----- 1 root root 968 Jun 16 03:48 authorized_keys
-rw-r--r-- 1 root root 343 Jun 16 04:02 known_hosts
[root@ip-10-0-1-209 .ssh]# cat authorized_keys
no-port-forwarding,no-agent-forwarding,no-X11-forwarding,command="echo 'Please login as the user \"ec2-user\" rather than the user \"root\".';echo;sleep 10" ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQAC8dpDmX0VqvBLcgHb58b4IkaOauUAazfzJYSF5SL33G3/7Iu9JN7T8reJ/6qlalpyAduEuW50kNP7SayWHJM78pBoAtrKb8X344J/0Ke+waQ8xqAMxdmS7/dByXCTgeoeR0c2PNKAcxh+0CU3k1FNA
m3MWWjh4Kvc98JnwY6NET/4VSONrGKFT7uDJ3/sfNhVqcXa6DebshJ32/dclm2hrPYPnouJlsOgrEAnYP/ZamnCgJtD7cMbGUZm9N2I3pb4OV1C3F1yHbum/ozFSrqZm+p5w4e3VzUq7v7aK5KA4HsM+oEankTJAjSqP0KrdZVszdxc/8xWIPQzK4qW
4bcB root@ip-10-0-1-30.ec2.internal
[root@ip-10-0-1-209 .ssh]#
```

3rd node: re-apiansibleec2ubuntu1

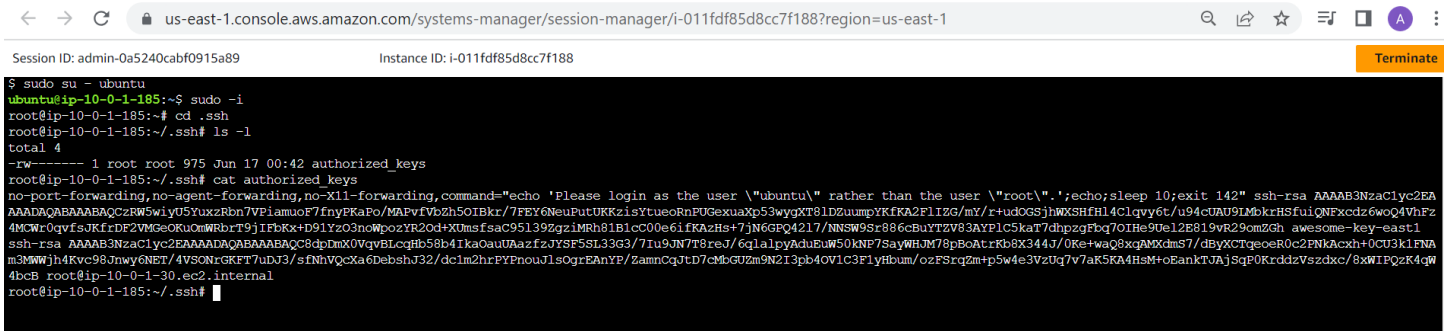
The public keypair of the controller was successfully copied and pasted in the node's authorized keys file.

Session ID: admin-0ca7829f1511b0593 Instance ID: i-0f96595e9944b9812 Terminate

```
$ sudo su - ubuntu
ubuntu@ip-10-0-1-31:~$ sudo -i
root@ip-10-0-1-31:~$ cd .ssh
root@ip-10-0-1-31:~/.ssh$ ls -l
total 4
-rw----- 1 root root 974 Jun 16 02:54 authorized_keys
root@ip-10-0-1-31:~/.ssh$ vi authorized_keys
root@ip-10-0-1-31:~/.ssh$ cat authorized_keys
no-port-forwarding,no-agent-forwarding,no-X11-forwarding,command="echo 'Please login as the user \"ubuntu\" rather than the user \"root\".';echo;sleep
YtueoRnFUGexuaXp53wygXT8lDZuumpYKfKA2FlIZG/mY/r+udOGSjhWXSHfH14Clqvy6t/u94cUAU9lMbkrHSfuiQNFxcdz6woQ4VhFz4MCWr0qvfsJKfrDF2VMGeOKuOmWRbrT9jIFbKx+D91Yz03
Gh awesome-key-east1
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQAC8dpDmX0VqvBLcgHb58b4IkaOauUAazfzJYSF5SL33G3/7Iu9JN7T8reJ/6qlalpyAduEuW50kNP7SayWHJM78pBoAtrKb8X344J/0Ke+waQ8xqAM
amnCgJtD7cMbGUZm9N2I3pb4OV1C3F1yHbum/ozFSrqZm+p5w4e3VzUq7v7aK5KA4HsM+oEankTJAjSqP0KrdZVszdxc/8xWIPQzK4qW4bcB root@ip-10-0-1-30.ec2.internal
root@ip-10-0-1-31:~/.ssh$
```

4th node: re-apiansibleec2ubuntu2

The public keypair of the controller was successfully copied and pasted in the node's authorized keys file.

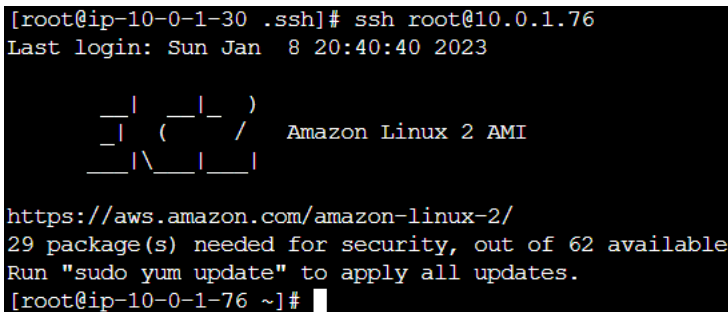


The screenshot shows the AWS Systems Manager console interface. At the top, the browser address bar displays the URL: `us-east-1.console.aws.amazon.com/systems-manager/session-manager/i-011fdf85d8cc7f188?region=us-east-1`. Below the address bar, the console header shows the Session ID: `admin-0a5240cabf0915a89` and the Instance ID: `i-011fdf85d8cc7f188`. On the right side of the header, there is a yellow 'Terminate' button. The main area of the console is a terminal window with a black background and white text. The terminal shows the following commands and output:

```
$ sudo su - ubuntu
ubuntu@ip-10-0-1-185:~$ sudo -i
root@ip-10-0-1-185:~# cd .ssh
root@ip-10-0-1-185:~/.ssh# ls -l
total 4
-rw----- 1 root root 975 Jun 17 00:42 authorized_keys
root@ip-10-0-1-185:~/.ssh# cat authorized_keys
no-port-forwarding,no-agent-forwarding,no-X11-forwarding,command="echo 'Please login as the user \"ubuntu\" rather than the user \"root\".';echo;sleep 10;exit 142" ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQCAzRW5wYU5YUzZlbnR7VPiamuoF7fnyPKaPo/MAPvFvBZh50IBkr/7FEY6NeuPutUKKzisYtueoRnPOGexuaXp53wygXT81DZuumpYKfKA2FLIZG/mY/r+udOGSjhWXSfh14C1qvy6t/u94cUAU9IMbkrHSfuiQNFxcdz6woQ4VhFz4MCwR0qvfsUJkfrDF2VMGeOKuOmWRBrt9jIFbKx+D91Yz03nOWpozYR2Od+XUmsfsac95139zgziMRh81Bic00e6ifKAZhs+7jN6GEQ4217/NNSW9Sr886cBuYTzV83AYP1C5kaT7dhpzgzFbq70IHe9Uel2E819vR29cmZgh_awesome-key-east1 ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQCAzRW5wYU5YUzZlbnR7VPiamuoF7fnyPKaPo/MAPvFvBZh50IBkr/7FEY6NeuPutUKKzisYtueoRnPOGexuaXp53wygXT81DZuumpYKfKA2FLIZG/mY/r+udOGSjhWXSfh14C1qvy6t/u94cUAU9IMbkrHSfuiQNFxcdz6woQ4VhFz4MCwR0qvfsUJkfrDF2VMGeOKuOmWRBrt9jIFbKx+D91Yz03nOWpozYR2Od+XUmsfsac95139zgziMRh81Bic00e6ifKAZhs+7jN6GEQ4217/NNSW9Sr886cBuYTzV83AYP1C5kaT7dhpzgzFbq70IHe9Uel2E819vR29cmZgh_awesome-key-east1 m3MwWjh4Kvc98Jnwy6NET/4VSONrGKFT7uDJ3/sfNnVQcXa6DebshJ32/dclm2hrPYPnouJlsOgrEAnYP/ZammCqJtD7cMbGUZm9N2I3pb40V1C3F1yHbum/ozFSrg2m+5w4e3VzUq7v7ak5KA4Hsm+oEankTUAjsqP0KrdzVsZdxo/8xWIPQzK4qW4bcB root@ip-10-0-1-30.ec2.internal
root@ip-10-0-1-185:~/.ssh#
```

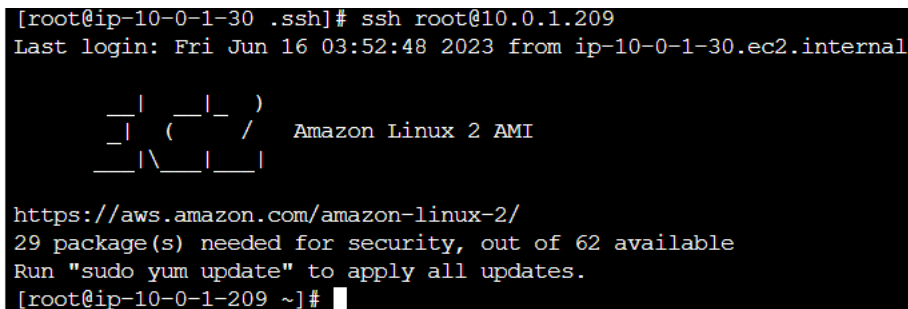
Testing the connectivity

1st node: re-apiansibleec2linux1 – Successfully connected!



The screenshot shows a terminal session where an SSH connection is established to the first node. The command `ssh root@10.0.1.76` is entered, and the output shows the last login time as `Sun Jan 8 20:40:40 2023`. The terminal then displays the Amazon Linux 2 AMI logo, which consists of a stylized 'A' made of horizontal lines. Below the logo, the text `Amazon Linux 2 AMI` is displayed. The terminal then shows the URL `https://aws.amazon.com/amazon-linux-2/` and the message `29 package(s) needed for security, out of 62 available`. The prompt `[root@ip-10-0-1-76 ~]#` is shown at the bottom.

2nd node: re-apiansibleec2linux2 - Successfully connected!



The screenshot shows a terminal session where an SSH connection is established to the second node. The command `ssh root@10.0.1.209` is entered, and the output shows the last login time as `Fri Jun 16 03:52:48 2023 from ip-10-0-1-30.ec2.internal`. The terminal then displays the Amazon Linux 2 AMI logo, which consists of a stylized 'A' made of horizontal lines. Below the logo, the text `Amazon Linux 2 AMI` is displayed. The terminal then shows the URL `https://aws.amazon.com/amazon-linux-2/` and the message `29 package(s) needed for security, out of 62 available`. The prompt `[root@ip-10-0-1-209 ~]#` is shown at the bottom.

3rd node: re-apiansibleec2ubuntu1 - Successfully connected!

Session ID: admin-04d381ebc46776cf2

Instance ID: i-0bccf9d442af43bb5

```
[root@ip-10-0-1-30 .ssh]# ssh root@10.0.1.31
The authenticity of host '10.0.1.31 (10.0.1.31)' can't be established.
ECDSA key fingerprint is SHA256:rzSZ8683sdWMOCqBUSOV6A8AZjbZqbZrFKaE+GGByRg.
ECDSA key fingerprint is MD5:92:ea:01:47:ed:cb:92:c3:5b:25:e9:d9:44:c6:16:00.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.0.1.31' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 18.04.6 LTS (GNU/Linux 5.4.0-1103-aws x86_64)
```

```
* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:        https://ubuntu.com/advantage
```

System information as of Sat Jun 17 01:20:57 UTC 2023

```
System load:  0.01          Processes:      110
Usage of /:   24.0% of 7.57GB Users logged in:  0
Memory usage: 22%          IP address for eth0: 10.0.1.31
Swap usage:   0%
```

* Ubuntu Pro delivers the most comprehensive open source security and compliance features.

<https://ubuntu.com/aws/pro>

28 updates can be applied immediately.
To see these additional updates run: `apt list --upgradable`

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in `/usr/share/doc/*/copyright`.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

4th node: re-apiansibleec2ubuntu2 - Successfully connected!

us-east-1.console.aws.amazon.com/systems-manager/session-manager/i-0bccf9d442af43bb5?region=us-east-1

Session ID: admin-00c8c9a001c591b32

Instance ID: i-0bccf9d442af43bb5

Terminate

```
Last login: Sat Jun 17 01:45:54 UTC 2023 on pts/0
[ec2-user@ip-10-0-1-30 ~]$ sudo -i
[root@ip-10-0-1-30 ~]# cd .ssh
[root@ip-10-0-1-30 .ssh]# ssh root@10.0.1.185
The authenticity of host '10.0.1.185 (10.0.1.185)' can't be established.
ECDSA key fingerprint is SHA256:1zUnZXKJw9+WNiYt7OpX4evx7wSKVZiWRdgGfhtIU88.
ECDSA key fingerprint is MD5:2f:66:16:f6:e6:f4:1a:a4:0e:f5:d4:53:bb:32:b8:f6.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.0.1.185' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 18.04.6 LTS (GNU/Linux 5.4.0-1103-aws x86_64)
```

```
* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:        https://ubuntu.com/advantage
```

System information as of Sat Jun 17 02:09:19 UTC 2023

```
System load:  0.0          Processes:      108
Usage of /:   24.0% of 7.57GB Users logged in:  0
Memory usage: 21%          IP address for eth0: 10.0.1.185
Swap usage:   0%
```

* Ubuntu Pro delivers the most comprehensive open source security and compliance features.

<https://ubuntu.com/aws/pro>

28 updates can be applied immediately.
To see these additional updates run: `apt list --upgradable`

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in `/usr/share/doc/*/copyright`.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

root@ip-10-0-1-185:~#

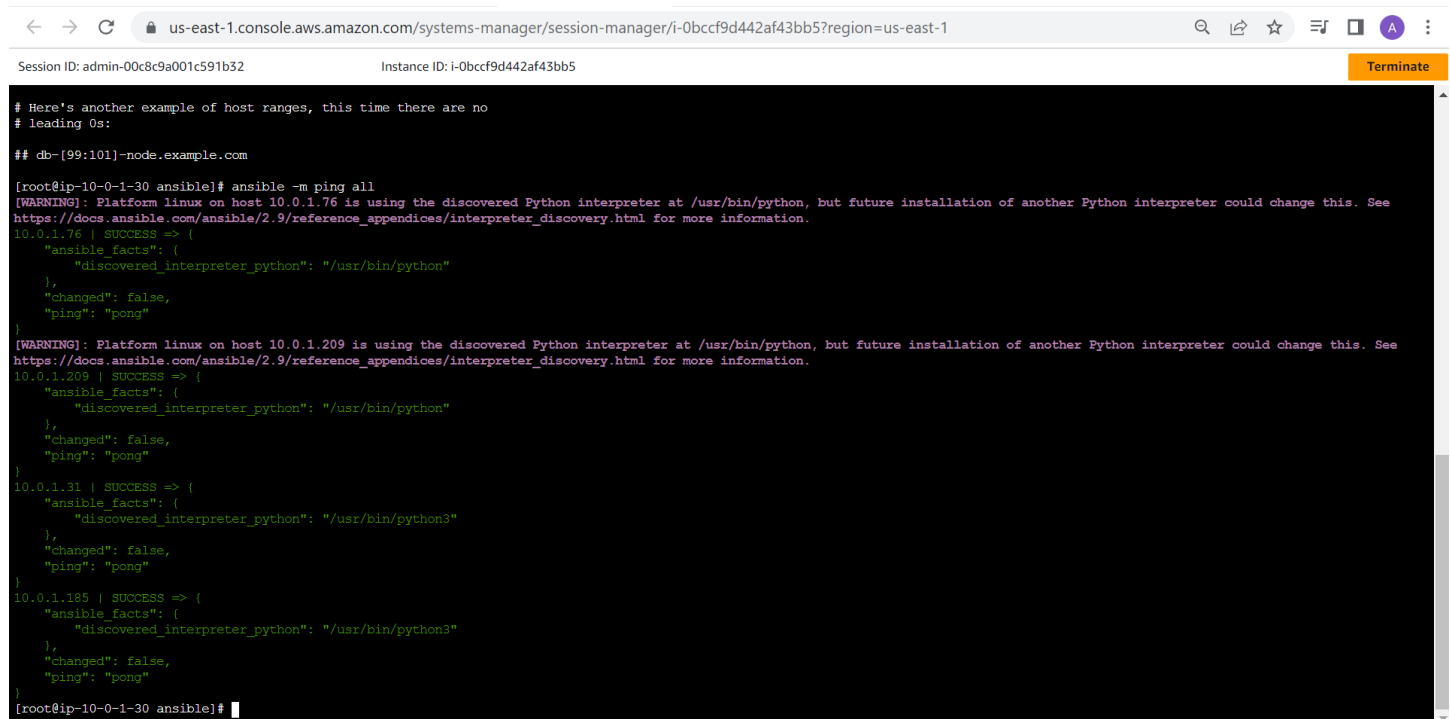
Finalizing configuration of the controller

```
Session ID: admin-09c3d55e30b47b4d5 Instance ID: i-0bccf9d442af43bb5 Terminate
[root@ip-10-0-1-30 .ssh]# ansible --version
ansible 2.9.23
  config file = /etc/ansible/ansible.cfg
  configured module search path = [u'/root/.ansible/plugins/modules', u'/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python2.7/site-packages/ansible
  executable location = /bin/ansible
  python version = 2.7.18 (default, Feb 28 2023, 02:51:06) [GCC 7.3.1 20180712 (Red Hat 7.3.1-15)]
[root@ip-10-0-1-30 .ssh]# cd /etc/ansible/
[root@ip-10-0-1-30 ansible]# ls -l
total 24
-rw-r--r-- 1 root root 19985 Jul  1 2021 ansible.cfg
-rw-r--r-- 1 root root 1016 Jul  1 2021 hosts
drwxr-xr-x 2 root root   6 Jul  1 2021 roles
[root@ip-10-0-1-30 ansible]# cat hosts
# This is the default ansible 'hosts' file.
#
# It should live in /etc/ansible/hosts
#
# - Comments begin with the '#' character
# - Blank lines are ignored
# - Groups of hosts are delimited by [header] elements
# - You can enter hostnames or ip addresses
# - A hostname/ip can be a member of multiple groups
#
# Ex 1: Ungrouped hosts, specify before any group headers.
## green.example.com
## blue.example.com
## 192.168.100.1
## 192.168.100.10
#
# Ex 2: A collection of hosts belonging to the 'webservers' group
## [webservers]
## alpha.example.org
## beta.example.org
## 192.168.1.100
## 192.168.1.110
#
# If you have multiple hosts following a pattern you can specify
```

Running the vi hosts command to list the IP address of each node.

```
← → ↺ 🔒 us-east-1.console.aws.amazon.com/systems-manager/session-manager/i-0bccf9d442af43bb5?region=us-east-1 🔍 📄 ☆ ☰
Session ID: admin-09c3d55e30b47b4d5 Instance ID: i-0bccf9d442af43bb5 1
# This is the default ansible 'hosts' file.
#
# It should live in /etc/ansible/hosts
#
# - Comments begin with the '#' character
# - Blank lines are ignored
# - Groups of hosts are delimited by [header] elements
# - You can enter hostnames or ip addresses
# - A hostname/ip can be a member of multiple groups
#
# Ex 1: Ungrouped hosts, specify before any group headers.
## green.example.com
## blue.example.com
10.0.1.76
10.0.1.209
10.0.1.31
10.0.1.185
## 192.168.100.10
#
# Ex 2: A collection of hosts belonging to the 'webservers' group
## [webservers]
## alpha.example.org
## beta.example.org
## 192.168.1.100
## 192.168.1.110
#
# If you have multiple hosts following a pattern you can specify
# them like this:
## www[001:006].example.com
#
# Ex 3: A collection of database servers in the 'dbservers' group
## [dbservers]
##
## db01.intranet.mydomain.net
-- INSERT --
18,11
```


Confirming that all the nodes' IPs are stored in the controller (ansible -m ping all).



The screenshot shows a terminal window within the AWS Management Console. The browser address bar displays the URL: `us-east-1.console.aws.amazon.com/systems-manager/session-manager/i-0bccf9d442af43bb5?region=us-east-1`. The console header indicates the Session ID is `admin-00c8c9a001c591b32` and the Instance ID is `i-0bccf9d442af43bb5`. A yellow 'Terminate' button is visible in the top right corner of the terminal area.

```
# Here's another example of host ranges, this time there are no
# leading 0s:

## db-[99:101]-node.example.com

[root@ip-10-0-1-30 ansible]# ansible -m ping all
[WARNING]: Platform linux on host 10.0.1.76 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter could change this. See
https://docs.ansible.com/ansible/2.9/reference_appendices/interpreter_discovery.html for more information.
10.0.1.76 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python"
  },
  "changed": false,
  "ping": "pong"
}
[WARNING]: Platform linux on host 10.0.1.209 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter could change this. See
https://docs.ansible.com/ansible/2.9/reference_appendices/interpreter_discovery.html for more information.
10.0.1.209 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python"
  },
  "changed": false,
  "ping": "pong"
}
10.0.1.31 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
10.0.1.185 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
[root@ip-10-0-1-30 ansible]#
```