

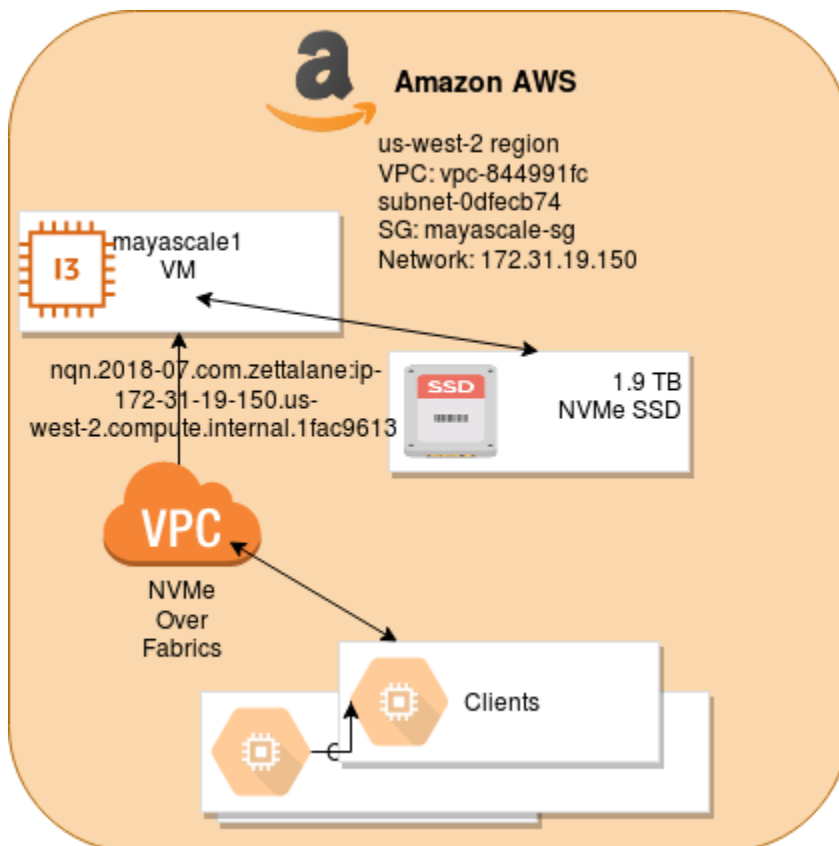
MayaScale Data Platform on AWS

Amazon AWS Cloud Platform provides rich set of high-performance NVMe resources for building true enterprise-class NVMe Over Fabrics readily. Note that the network bandwidth is tied to the number of cpu cores of the compute instance. The storage IOPS is based on capacity of provisioned storage. Please refer to [AWS cloud documentation](#) for more information on storage optimized instance types.

Purpose	Machine	Cores	Memory	Network	Storage
Shared block storage for IP-SAN or NVMeoF	Storage Optimized i3.xlarge Other i3 series	4	30.5GB	~10Gbps	Ephemeral direct NVMe or SSD 1 x 950
High Performance NFS Server	Storage Optimized i3.2xlarge i2.2xlarge	8	61GB	~10Gbps	zpool 1 x 1900 (NVMe) 2 x 800 (SSD)
High-Availability	High Availability Set			Secondary Private IP address	Synchronous mirroring by using zpool mirror dm raid-1 over NVMe target DRBD replication

Here is the sequence of steps involved in experiencing the industry's very first elastic NVMe after you've deployed a MayaScale instance from AWS marketplace. In this tutorial we will assume you have launched EC2 i3-xlarge instance type that comes with 1 x 1.9T NVMe SSD.

- 1 EC2 instance `mayascale1`
- 1.9 TB NVMe SSD (ephemeral)
- Default network with private IP 172.31.19.150 (ip-172-31-19-150.us-west-2.compute.internal)



1. Connect to the MayaScale Cloud Data Platform instance using SSH to secure the Web console GUI access by changing the default password to something random by running

```
# /opt/mayastor/web/genrandpass.sh
```

Or to set your own password

```
# /opt/mayastor/web/changepass.sh
Login name (default admin):
Login password:
Password again:
```

And then restart the web server for password changes to take effect

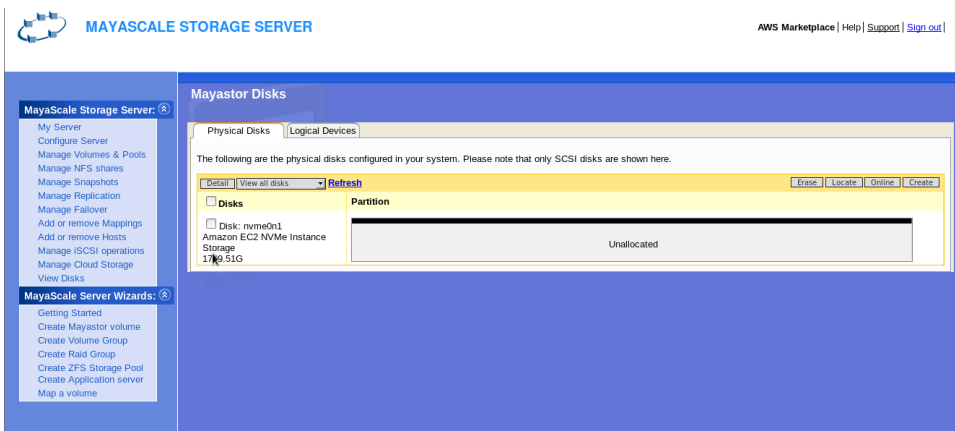
```
# /opt/mayastor/web/stop

# /opt/mayastor/web/start
```

2. Now you can proceed with provisioning NVMe storage using the Administration Web console available on <http://<mayascale1-ip>:2020>

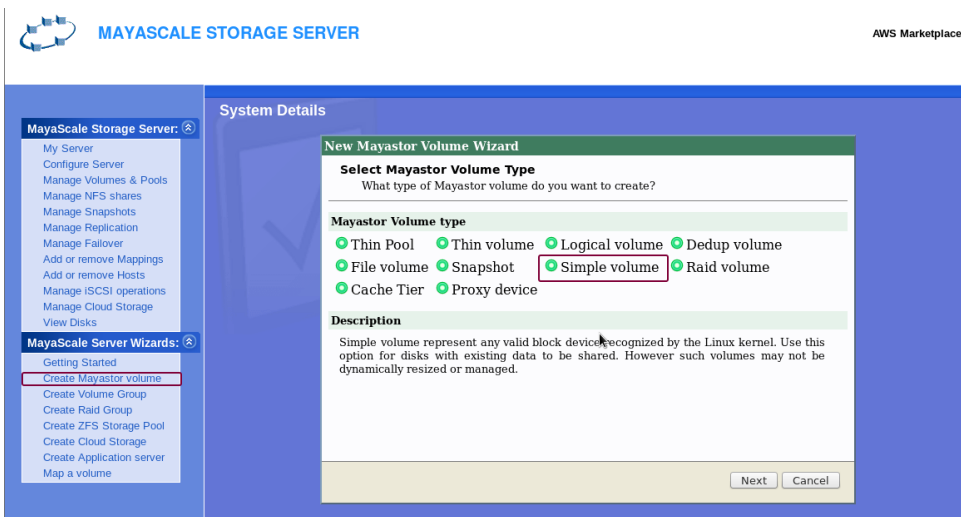
The screenshot displays the MayaScale Storage Server Administration Web console. The interface is divided into a left sidebar and a main content area. The sidebar includes a 'My Server' section with links like 'Configure Server', 'Manage Volumes & Pools', and 'Manage NFS shares'. Below it is the 'MayaScale Server Wizards' section with links like 'Getting Started', 'Create Mayastor volume', and 'Create RAID Group'. The main content area is titled 'System Details' and shows information for an AWS instance. It includes a 'System' tab with details like IP, Version, Uptime, and Load average. There are also 'Resources' and 'View Performance' sections. The 'View Disks' section shows the available NVMe SSDs.

3. Based on the number of NVMe SSD that is available on the instance you will be able to view them on the GUI from **View Disks**



For provisioning NVMe storage to clients you can create volume group from the physical NVMe and then slice them as logical volumes for flexible provisioning. But for this guide we will be provisioning the whole NVMe resource to client.

Using Mayascale Server Wizards Create Mayastor Volume. Then **Select Simple Volume** and click **Next**



4. Select the device for provisioning and click **Next**. In this example nvme0n1 is chosen.

New Mayastor Volume Wizard

Select block device for Mayastor volume
Select the block device that will be shared as a SCSI compliant disk to the application server.

All available block devices:

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Name	Capacity	1K-blocks	Major	Minor
xvda	8.000G	8388608	202	0
xvda1	7.999G	8387584	202	1
nvme0n1	1769.513G	1855468750	259	0

Show All

BackNextCancel

5. The next screen is to specify a name for the provisioned volume with brief description.

New Mayastor Volume Wizard

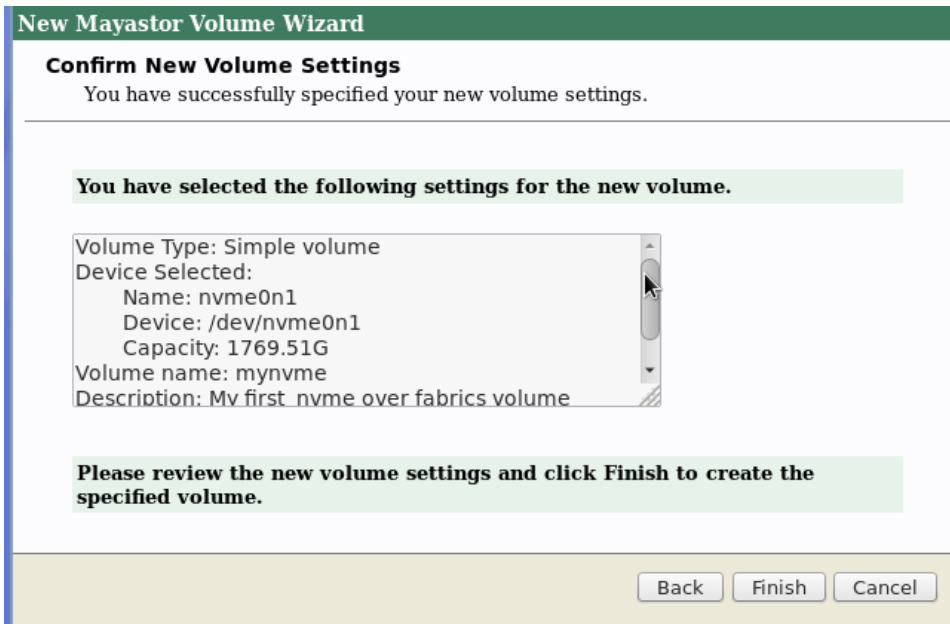
Create Volume
Please specify a name for this Volume. You may also provide a brief description for your reference.

Volume Label:
mynvme

Description:
My first nvme over fabrics volume

BackNextCancel

6. Confirm the new volume settings.



New Mayastor Volume Wizard

Confirm New Volume Settings
You have successfully specified your new volume settings.

You have selected the following settings for the new volume.

Volume Type: Simple volume

Device Selected:

- Name: nvme0n1
- Device: /dev/nvme0n1
- Capacity: 1769.51G

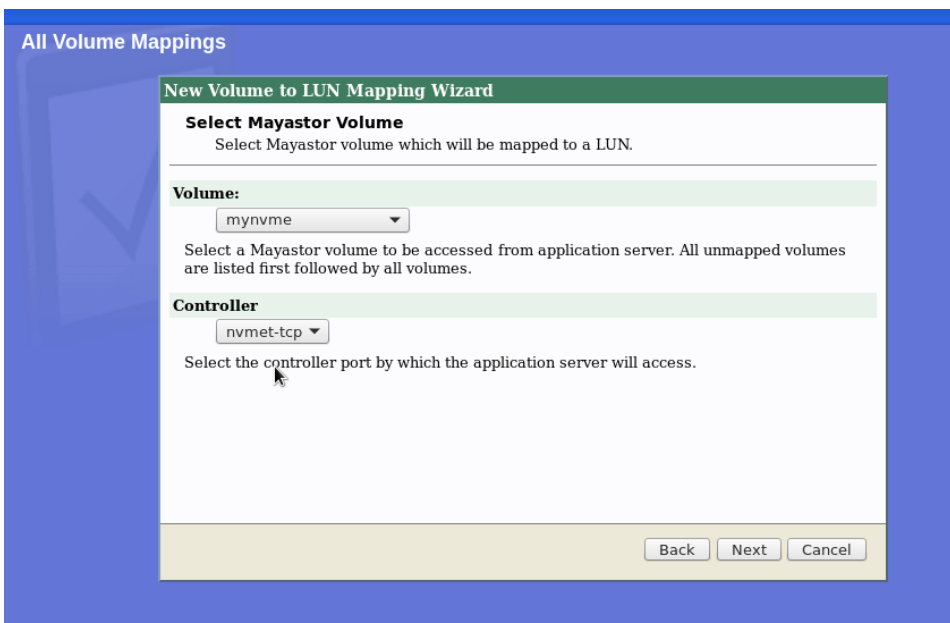
Volume name: mynvme

Description: Mv first nvme over fabrics volume

Please review the new volume settings and click Finish to create the specified volume.

Back Finish Cancel

7. Once the volume `mynvme` was created successfully the next step is to make them available to clients using the NVMe TCP protocol. For this use the wizard **Map a volume**. Here select the newly create volume `mynvme` and choose `nvmet-tcp` as the controller. For iSCSI provisioning the controller will be `iscsi`. Then click **Next**



All Volume Mappings

New Volume to LUN Mapping Wizard

Select Mayastor Volume
Select Mayastor volume which will be mapped to a LUN.

Volume:

mynvme

Select a Mayastor volume to be accessed from application server. All unmapped volumes are listed first followed by all volumes.

Controller

nvmet-tcp

Select the controller port by which the application server will access.

Back Next Cancel

8. Here the LUN refers the NVMe namespace id and it starts from 1. For iSCSI the LUN starts from 0.

New Volume to LUN Mapping Wizard

Specify Mapping Details

Specify the LUN number for this volume mapping.

nvmet-tcp LUN Mappings

LUN:

Provide unique LUN number by which the volume will be addressed in the storage area network. You may use *auto* to assign the next available LUN for that port.

☐ **Authorized access only**

Check the above option and click Next to specify a list of SAN clients authorized to access this volume.

Back
Next
Cancel

- Confirm mapping settings.

New Volume to LUN Mapping Wizard

Confirm Mapping Settings

You have successfully specified settings for volume to LUN mapping.

You have selected the following settings

Volume Selected: mynvme
Controller: nvmet-tcp
LUN: 1
Access allowed to: Everyone

Please review the new mapping settings and click Finish to create the specified mapping.

Back
Finish
Cancel

- Once mapping was created successfully it can be viewed by clicking **Add or remove Mappings** from the sidebar. Here you would notice the default NQN for the new volume.

MayaScale Storage Server:

- My Server
- Configure Server
- Manage Volumes & Pools
- Manage NFS shares
- Manage Snapshots
- Manage Replication
- Manage Failover
- Add or remove Mappings
- Add or remove Hosts
- Manage iSCSI operations
- Manage Cloud Storage
- View Disks

MayaScale Server Wizards:

- Getting Started
- Create Master volume
- Create Volume Group
- Create Raid Group
- Create ZFS Storage Pool
- Create Application server
- Map a volume

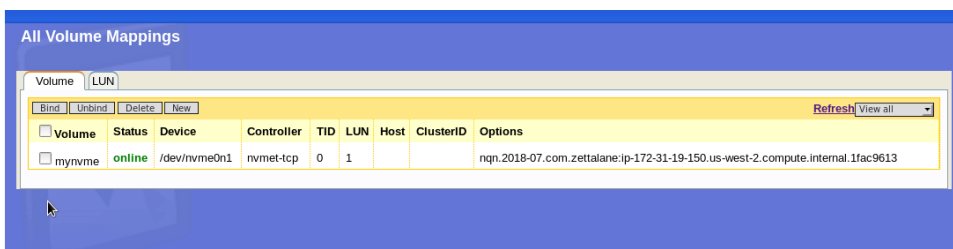
All Volume Mappings

Volume
LUN

Bind
Unbind
Delete
New
Refresh
View all

Volume	Status	Device	Controller	TID	LUN	Host	ClusterID	Options
<input type="checkbox"/> mynvme	offline	/dev/nvme0n1	nvmet-tcp	0	1			nqn.2018-07.com.zettalane:ip-172-31-19-150.us-west-2.compute.internal:1fac9613

- The next step is to activate the newly created mapping so that it is discoverable from NVMe hosts in the network. To activate click on the checkbox associated with *mynvme* and click **Bind**



12. To discover this NVMe target from another client with NVMe over fabrics support.

```
[root@ip-172-31-20-45 ~]# modprobe nvme-tcp
[root@ip-172-31-20-45 ~]# /opt/zettalane/bin/nvme discover -a 172.31.19.150 -s 4420 -t tcp

Discovery Log Number of Records 1, Generation counter 1
====Discovery Log Entry 0=====
trtype: tcp
adrfam: ipv4
subtype: nvme subsystem
treq: not specified
portid: 0
trsvcid: 4420
subnqn: nqn.2018-07.com.zettalane:ip-172-31-19-150.us-west-2.compute.internal.1fac9613
traddr:
[root@ip-172-31-20-45 ~]#
```

13. For the client to perform IO on the discovered NVMe target, it has to be connected and configured with the host as follows.

```
[root@ip-172-31-20-45 ~]# /opt/zettalane/bin/nvme connect -a 172.31.19.150 -s 4420 -t tcp -n nqn.
2018-07.com.zettalane:ip-172-31-19-150.us-west-2.compute.internal.1fac9613
[root@ip-172-31-20-45 ~]# /opt/zettalane/bin/nvme list
[root@ip-172-31-20-45 ~]# /opt/zettalane/bin/nvme list
```

Node	SN	Model	Namespace
Usage	Format	FW Rev	

/dev/nvme0n1	vol047c5ca2e5ca231b8	Amazon Elastic Block Store	1
8.59 GB	512 B + 0 B	1.0	0.00 B /
/dev/nvme1n1	7e2888517b895b8	Linux	1
1.90 TB	512 B + 0 B	3.10.0-6	1.90 TB /

14. Congratulations you have created NVMe target with MayasScale and mapped over NVMeof-TCP successfully to be discovered by clients.