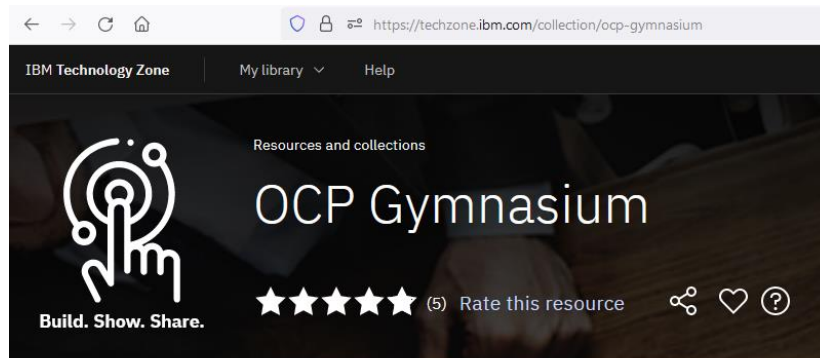**IBM** Sustainability Software

If you are an IBM Business Partner or an IBMer, this is a skinny but complete guide to create a MAS Manage environment in IBM TechZone.

Navigate to https://techzone.ibm.com/collection/ocp-gymnasium

Log into IBM and you should see:

Scroll down till you see the environment section:

Click on the big Reserve button

In the Create a Reservation page input:

Name: MAS SNO Workshop
Purpose: Practice / Self education
Purpose description: Educate myself how to install SNO and MAS
Preferred Geography: AMERICAS
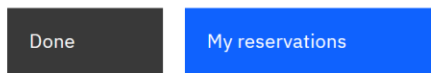VMware Datastore Size: 3 TB
VPN Access: Enable

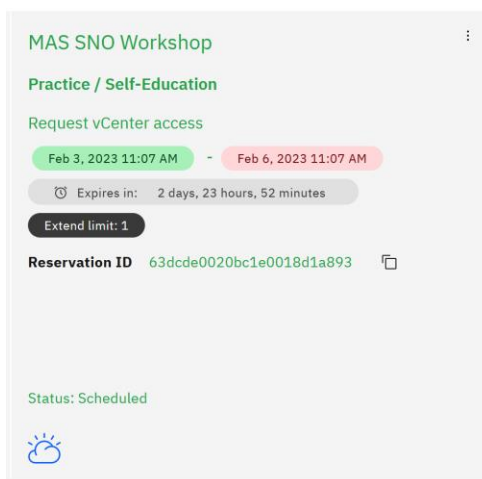Click Submit button, you will see this message:

Thank you.

Your **ibmcloud-2** reservation has been created for **Request vCenter access.**

You will receive an email at **alex.donatelli@it.ibm.com** with information about your reservation once it is ready. You can manage your reservations on the **My reservations** page.
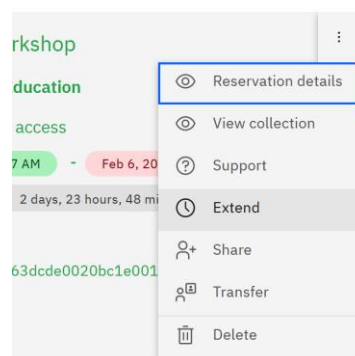
Done	My reservations

Click My reservations button. In the following screen you should see a tile like this:

MAS SNO Workshop   ⋮

Practice / Self-Education

Request vCenter access

Feb 3, 2023 11:07 AM   -   Feb 6, 2023 11:07 AM

🕐 Expires in: 2 days, 23 hours, 52 minutes

Extend limit: 1

Reservation ID   63dcde0020bc1e0018d1a893   📋

Status: Scheduled

You should also have received an email that "Your environment/access request is provisioning"

When the environment is ready, you will receive another email with subject "Your environment is ready"

If you want, you can extend the expiration using the 3 dots menu

rkshop   ⋮

ducation

access   👁 Reservation details

7 AM   -   Feb 6, 20   👁 View collection

2 days, 23 hours, 48 mi   ❓ Support

                          🕐 Extend

63dcde0020bc1e001   👤+ Share

                          👤 Transfer

                          🗑 Delete

While you are waiting for the environment to become ready, we can prepare the OpenShift installation.

Log into the Red Hat Console for OpenShift (https://console.redhat.com/openshift). You should see a blue "Create cluster" button. Click it.

In the following screen, click on the Datacenter tab, and click on the blue "Create cluster" button.

Fill the form that shows up in this way:

Cluster name: ocpgym
Base domain: gym.lan
OpenShift version: OCP 4.10.50
select "Install single node OpenShift (SNO)"
Hosts' network configuration: DHCP Only

Click the "Next" button. Don't change anything in the next screen and click again "Next".

Click the "Add host" button.

In the dialog that will be shown, select "Full image file: Provision with physical media", upload your SSH public key and click on the "Generate Discovery ISO" button.

In the following dialog, click the "Download Discovery ISO" button and save the ISO file on your computer. It will have a filename like this: e430fdbb-8c63-4b42-b15f-62bd3d8fbef0-discovery.iso

Close the dialog. We'll come back to this screen later, but now we want to upload the ISO into TechZone vCenter, therefore we go back to the reservation to access the VMware vSphere vCenter.

Hopefully at this point you have received the e-mail that the environment is ready. The status on the tile should have become ready. Click on the tile. At the bottom of the page that will display, you will find the button to download the Wireguard VPN configuration:
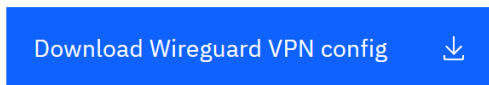
Download the configuration, install Wireguard (https://www.wireguard.com/install/) if you don't have it already and import the configuration.

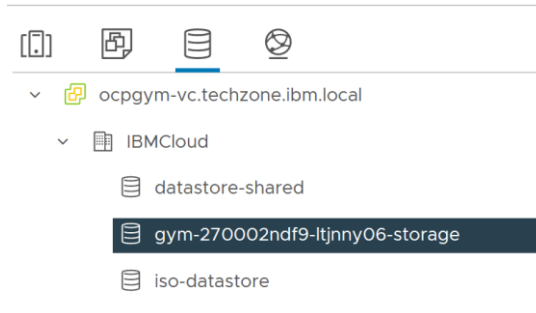Click the link behind "vCenter Console URL (via VPN or Bastion)". A new browser window should open.

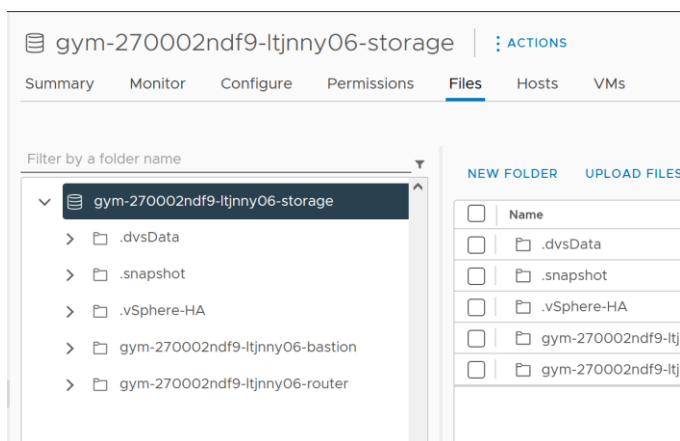Use the "vCenter Username" and "vCenter Password" to log into the vSphere client.
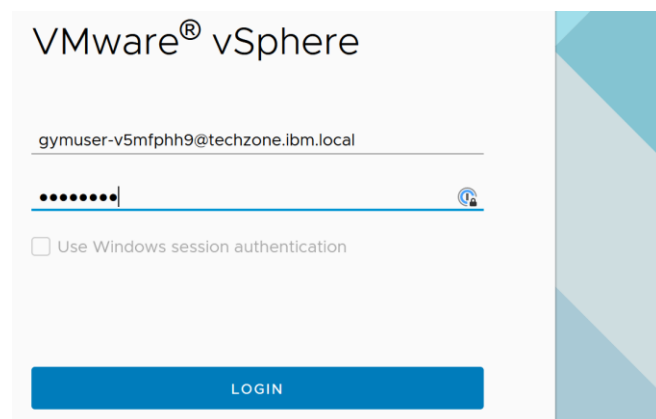
At the top left of the screen you should see a symbol of a drum disk. Click on it
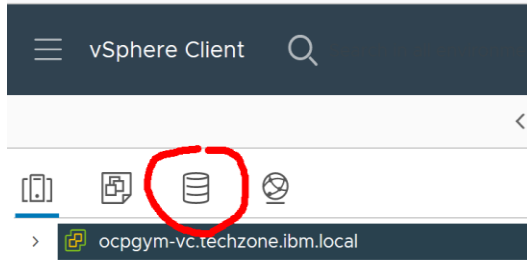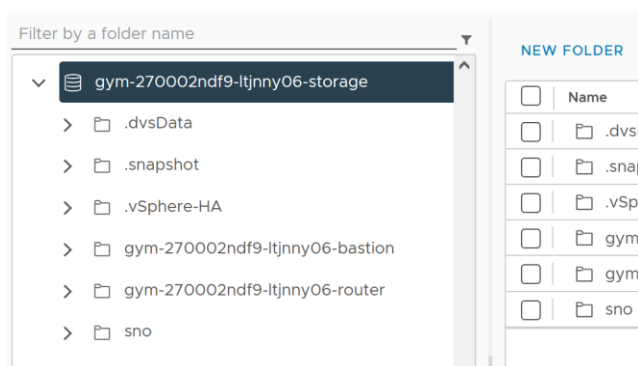
Open the pull down and select the storage with the name that start with "gym-".


On the right side select "files"

Create an iso folder called "sno" under the main storage element using the "NEW FOLDER" option also shown in the previous picture

Click on the newly created "sno" folder and upload in it the ISO you downloaded from Red Hat using the "UPLOAD FILES" option. It will take a while to upload (~1h) and you can check the progress from the status window behind the sections we just used

| Name		Status		Start Time		Last Updated
[gym-270002ndf9-ltjnny06-storage] sno/e430fdbb-8c63-4b42-b15f-62bd3d8fbef0-discovery.iso		5% ⊗		02/03/2023, 2:57:56 PM		02/03/2023, 2:57:56 PM

When the ISO has uploaded, we create a new VM that will become the Single Node OpenShift. Click on the servers icon at the top left of the screen and open all the sections
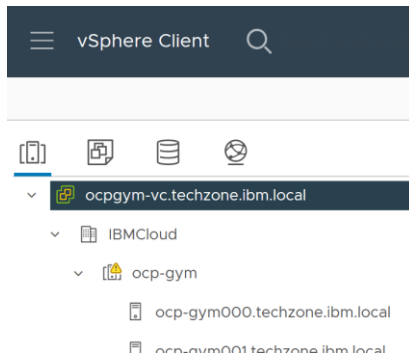
Scroll to the bottom and click on the resource pool where the bastion and the router are also contained.
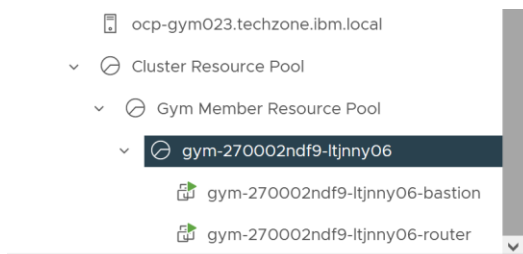
Right click on the resource pool highlighted and chose "New Virtual Machine…"
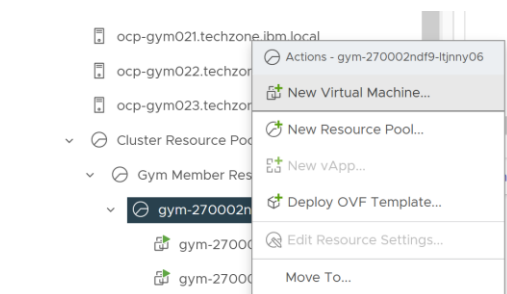
In the dialog that will be shown, select "Create a new virtual machine" and click Next

Set the virtual machine name as "ocpgym" and select the folder shown in the following picture (the one starting with gym-…)

Click Next. Select the compute resource starting with gym-…

Click Next. Select the storage starting with gym-…

Click Next. Select compatibility ESXi 7.0 U2 and later.

Click Next. Select Guest OS Family Linux and Version RHEL 8 64 bit

In the next panel set CPU to 16, memory to 64, primary disk 120 GB, use the "ADD NEW DEVICE" to add a secondary Hard Disk of 500 GB, set the New CD/DVD Drive to "Datastore ISO File" and select the ISO you uploaded before.

Make sure to select the "Connect" checkmark. The final result should look like the following picture.

Click Next. Review one more time everything and click Finish

The new VM should now show in your pool under the bastion and the router. Select it by click on it and start it by either typing crtl+alt+b or by right clicking and using the Power->Power ON menu item.

　ocp-gym023.techzone.ibm.local

∨　⊘　Cluster Resource Pool

　　∨　⊘　Gym Member Resource Pool

　　　∨　⊘　gym-270002ndf9-ltjnny06

　　　　　　gym-270002ndf9-ltjnny06-bastion

　　　　　　gym-270002ndf9-ltjnny06-router

　　　　　　ocpgym
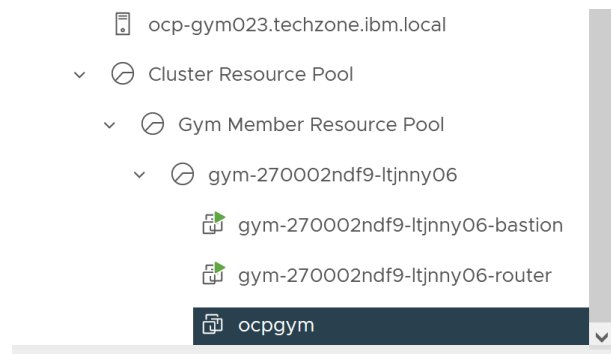
Switch back to the RH Window

Host discovery

[Add host]

◯　Integrate with platform (vSphere/Nutanix) ⑦

◉　Run workloads on control plane nodes ⑦

Information and warnings

ⓘ Minimum hardware requirements　　ⓘ Host not showing up?

ⓘ Check your VM reboot configuration

Host Inventory

Hostname ↑	Role	Sta...	Discovered on	CP...	Me...	Tot...	(1)
› 00-50-56-9d-78-9 4	Control plane node, Worker (bootstrap)	✔ Ready	2/3/2023, 3:58:45 PM	16	64.00 GiB	665.72 GB	⋮

You should see a host appeared. Change its hostname to "ocpgym". The line should look like this:

›	ocpgym	Control plane node, Worker (bootstrap)	✔ Ready	2/3/2023, 3:58

Click Next. In the Storage screen click Next. In the Networking screen don't change anything and click Next. Some times it takes a bit of time to get to a "Ready" state, due to NTP to be unreachable. Don't worry, be patient and wait for the state to become ready and then click next.

In the "Review and create" all the validations should be good and you can click the "Install Cluster" button.

Cluster summary

Hosts	1
Cores	16
Memory	64.00 GiB
Storage	665.72 GB

Cluster validations

✅ All validations passed

Host validations

✅ All validations passed

Cluster support level: Full

✅ Your installed cluster will be fully supported

Install cluster   Back   Cancel

The next screen will allow you to follow the cluster installation till its end. It will take around 45 min to complete.

ocpgym

Installation progress

Started on
2/3/2023, 4:05:47 PM

Status
Installing   45%

⟳
Control Plane
Installing 1 control plane node

⊗
Initialization
Pending

You can follow the details of the progress by using the "View Cluster Events" button at the bottom of the page.

While we are waiting for the SNO to be installed, let's configure the router. Go back to the vCenter panel and click on the "ocpgym" VM

∨ ⊘ Gym Member Resource Pool
   ∨ ⊘ gym-270002ndf9-ltjnny06
          🖥 gym-270002ndf9-ltjnny06-bastion
          🖥 gym-270002ndf9-ltjnny06-router
          🖥 ocpgym
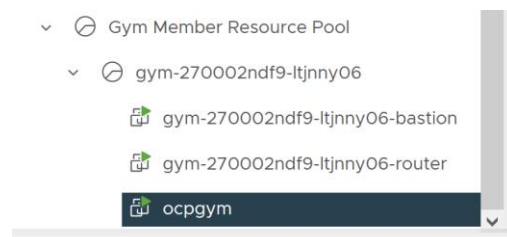
On the right panel that will be shown, note the IP address of the VM:

MORE INFO

DNS Name: ocpgym
IP Addresses: 192.168.252.104
               VIEW ALL 17 IP ADDRESSES
Host: ocp-gym001.techzone.ibm.local

CONSOLE
TE CONSOLE ⓘ
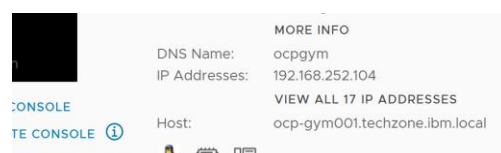
In this case the IP address is 192.168.252.104. Then click on the router VM in the left panel.
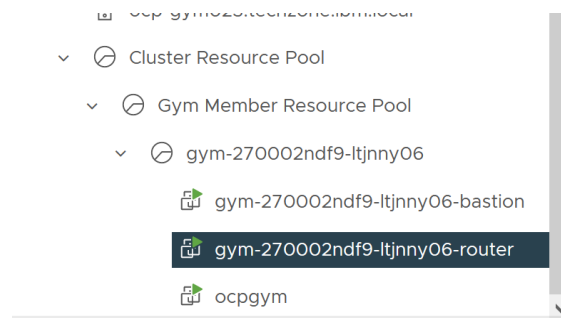
On the right panel that will be shown, click on the "VIEW ALL 4 IP ADDRESSES" and pick the one from the 192.168.252.x subnet.
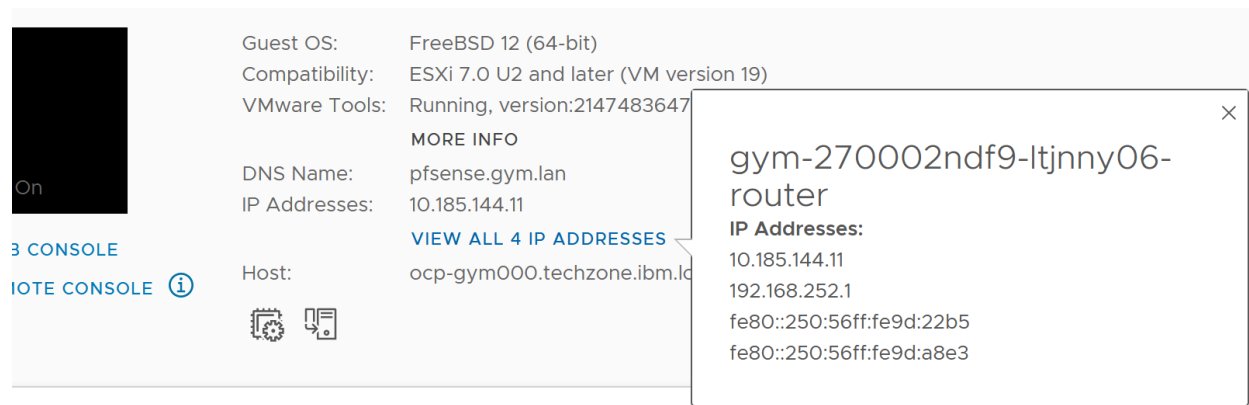
In this case it's 192.168.252.1. Open a new browser window and navigate to that address. You should see the pfsense login panel. Use "admin" as username and the vCenter password you used before to login to vCenter (which is in the Reservation page).
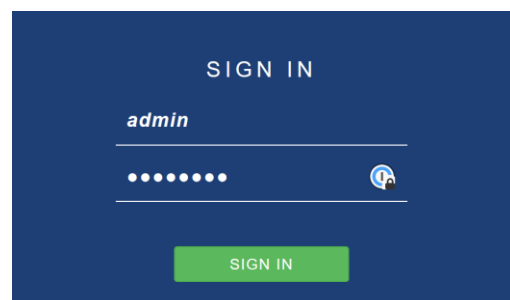
At the top, use the "Services" pull down and chose "DNS Forwarder"
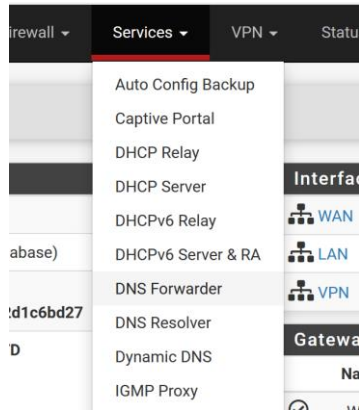
In the page that will be shown, there are a few configurations to make at the bottom of the page using the "ocpgym" IP address.

Add "address=/apps.ocpgym.gym.lan/192.168.252.104" to the "Custom options" and Save.

Add two Host Overrides using the Add button:
Host: api, Domain: ocpgym.gym.lan, IP Address: 192.168.252.104
Host: api-int, Domain: ocpgym.gym.lan, IP Address: 192.168.252.104

You page sould look like this in the end:

Go to the top of the page and apply changes using the button

You can log out from pfsense using the exit door icon at the top left of the page.

Hopefully at this time the cluster is installed. Go back to the Red Hat Cluster installation page and you should see a page including this:

Status

Installed on 2/3/2023, 4:50:09 PM ✓

✓   ✓

Control Plane   Initialization

1 control plane node installed   Completed

✓ Installation completed successfully

Web Console URL

https://console-openshift-console.apps.ocpgym.gym.lan ↗
ⓘ Not able to access the Web Console?

Username

kubeadmin

Password

•••••   ⎘

You can click the Web Control URL to access the Single Node OpenShift. Use the Username and Password in that page to log in.

Check around to see if everything is in shape. The next step is to provide the cluster with a storage class and related provisioner. Go to the OperatorHub (left menu under Operators) and search for LVM.

You should see the following tile:

Red Hat

ODF LVM Operator
provided by Red Hat

The ODF LVM Operator manages local storage using LVM.
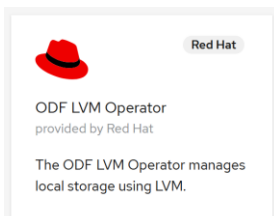
Click on it and install the operator using default parameters. When the operator becomes ready for use, click on the View Operator button

ODF LVM Operator   ✓
4.10.9 provided by Red Hat

Installed operator - ready for use

[View Operator]   View installed Operators in Namespace openshift-storage
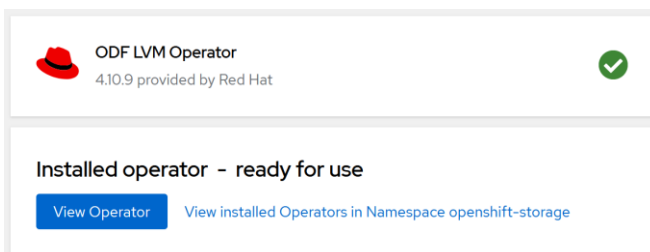
In the page that will appear, you should see the LVMCluster tile

---

Project: openshift-storage ▾

Installed Operators › **Operator details**

ODF LVM Operator
4.10.9 provided by Red Hat

Details   YAML   Subscription   Events   LVMCluster

Provided APIs

LVMC **LVMCluster**

LVMCluster is the Schema for the
lvmclusters API

⊕ Create instance

Description

The ODF LVM Operator manages local storage using LVM.

Click on Create instance

Project: openshift-storage ▾

ODF LVM Operator › **Create LVMCluster**

Create LVMCluster

Create by completing the form. Default values may be provided by the Operator authors.

Configure via: ⦿ Form view   ○ YAML view

ⓘ Note: Some fields may not be represented in this form view. Please select "YAML view" for full control.

Name *

lvmcluster-sample

Labels

app=frontend

Storage

Storage describes the deviceClass configuration for local storage devices

Tolerations

Tolerations to apply to nodes to act on

[Create]   [Cancel]

Click Create

Then go to Storage -> StorageClasses using the left menu. You should see:

Name ↕

SC odf-lvm-vg1

Click on it, in the next screen click on the YAML tab.

Add storageclass.kubernetes.io/is-default-class: "true" under the annotations.

The YAML should look like this:

```
    creationTimestamp: '2023-02-02T13:19:33Z'
    annotations:
      description: Provides RWO and RWOP Filesystem & Block volumes
      storageclass.kubernetes.io/is-default-class: 'true'
    managedFields:
provisioner: topolvm.cybozu.com
```

Now if you look back in the list of storage classes you should see that odf-lvm-vg1 is now the default.

Next step is to enable the local image registry.

Home -> Search, type "config" in the search field, you should see:

Choose the first config, which is the one for the image registry. You should see:

Click on the "cluster" resource and click on the YAML tab. Edit the yaml in the following way, save frequently otherwise you will get an error when the yaml has changed:

Modify rolloutStrategy from this:

```
    rolloutStrategy: RollingUpdate
```
to this:

```
  rolloutStrategy: Recreate
```
Save and then modify storage from this:

```
  storage: {}
```
to this:

```
  storage:
    pvc:
      claim: ''
```
Save and then modify managementState from this:

```
  managementState: Removed
```
to this:

```
  managementState: Managed
```
Save then goto to Storage -> PersistentVolumeClaim. Unfortunately the registry operator has a bug and has created a wrong PVC, therefore you will find it that that PVC is pending and not bound:

To resolve this problem, click on the image-registry-storage PVC, click on the YAML tab, download the YAML and edit it to:

- Remove the metadata fields   uid, resourceVersion, creationTimestamp
- Remove the manageFields section
- Remove the status section
- Modify the accessModes from ReadWriteMany to ReadWriteOnce

In the end it should look something like this:

```
kind: PersistentVolumeClaim
apiVersion: v1
metadata:
  name: image-registry-storage
  namespace: openshift-image-registry

  annotations:
    imageregistry.openshift.io: 'true'
    volume.beta.kubernetes.io/storage-provisioner: topolvm.cybozu.com
    volume.kubernetes.io/selected-node: 00-50-56-9d-4e-28
    volume.kubernetes.io/storage-provisioner: topolvm.cybozu.com
  finalizers:
    - kubernetes.io/pvc-protection
spec:
  accessModes:
    - ReadWriteOnce
  resources:
    requests:
      storage: 100Gi
  storageClassName: odf-lvm-vg1
  volumeMode: Filesystem
```

Go back to the PersistentVolumeClaim list and delete the image-registry-storage PVC using the three dots pulldown.

Use the Create PersistentVolumeClaim button to create a new one (the project at the top right should still be openshift-image-registry). Click on the "Edit YAML" link at the top right of the screen. Replace the content of the yaml with the modified one you edited.

Click the Create button at the bottom. The new PVC should immediately go into the "bound" state.

PersistentVolumeClaims

Name	Status	PersistentVolumes
PVC image-registry-storage	✓ Bound	PV pvc-b4ea2712-176f-4dd3-97a

At this point we are ready to install MAS and this will take more or less an hour.

Before starting this step, make sure you have two things:

1. The **Entitled Registry (ER) key**. With this key you must have access to the Maximo Application Suite and CloudPak for Data images. You can get it by logging into My IBM and click on *Container Software & Entitlement key*
2. A **MAS license file**. This file is named license.dat and you can get it from the License Key Server.

You also need a computer from where to run the installation. You can use the bastion that is part of the TechZone environment. To get a remote console into it, use the link provided in your reservation:

Desktop

Open your IBM Cloud environment

Desktop url: https://remote.cloud.techzone.ibm.com/guacamole/#/?username=gymuser-v5mfphh9&password=8ZrloYjS

Shared Reservation

Username

gymuser-v5mfphh9

Password

8ZrloYjS

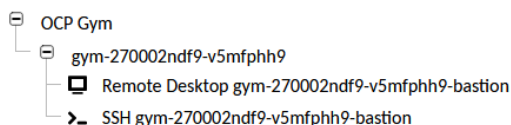For full desktop access, connect to: https://remote.cloud.techzone.ibm.com/guacamole/#/?username=gymuser-v5mfphh9&password=8ZrloYjS

Clicking on the link, you will land on a page that will show possible connections. Click on the + sign to get to the connections:

ALL CONNECTIONS

OCP Gym
    gym-270002ndf9-v5mfphh9
        Remote Desktop gym-270002ndf9-v5mfphh9-bastion
        SSH gym-270002ndf9-v5mfphh9-bastion

Use the first link to get a remote desktop of the bastion.

Open a terminal using the "Activities" button at the top left. Issue the following commands to get a few files from GitHub

```
git clone https://github.com/evilADevil/mas-techzone
cd mas-techzone
```

In the same "mas-techzone" directory you need to put your license.dat file that you got from the License Key Server.

Note that you can transfer files from your computer to the bastion when the VPN is active by using SFTP and its IP address (192.168.252.2). The credentials are admin and the vCenter password.

Final step before starting the installation of MAS, is to customize the masocpl.yml.

Replace <<your ER key>> with your ER key from step 0 above.

Replace <<your license id>> with the license id of your license.dat file. You can find out what this is by opening the license file in an editor, and check the first line. The license id will be the second-last number. For example, if your first line is `SERVER sls-rlks-0.rlks 0272bc344002 27000` then your license id is `0272bc344002`.

You should have these 4 files in the current mas-techzone directory:

```
license.dat
masdevops.yaml
masinst.sh
masocpl.yml
```

At this point we need to download the OpenShift command line. Use the following command:

```
curl -O https://mirror.openshift.com/pub/openshift-
v4/x86_64/clients/ocp/stable/openshift-client-linux.tar.gz
```

then untar the downloaded file in a directory on the path:

```
sudo tar -xf openshift-client-linux.tar.gz -C /usr/sbin
```

Now we want to log into the Single Node OpenShift cluster using the command line. To find the command to use, goto the OpenShift cluster console, and click on the top right pulldown:
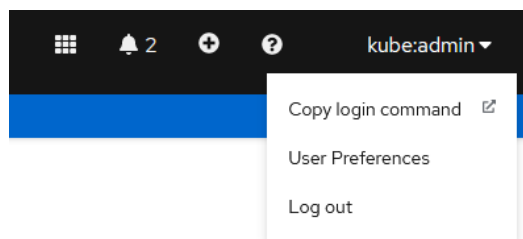
Click on the "Copy login command" menu item. Re-authenticate in case it asks and then click on "Display token". Copy the login command and issue it in the terminal window.

```
oc login --token=sha256~2gFkqieVhsRqtNPgUk2nsZdAvr0d8Ixk0TZGVwv563s --
server=https://api.ocpgym.gym.lan:6443
```

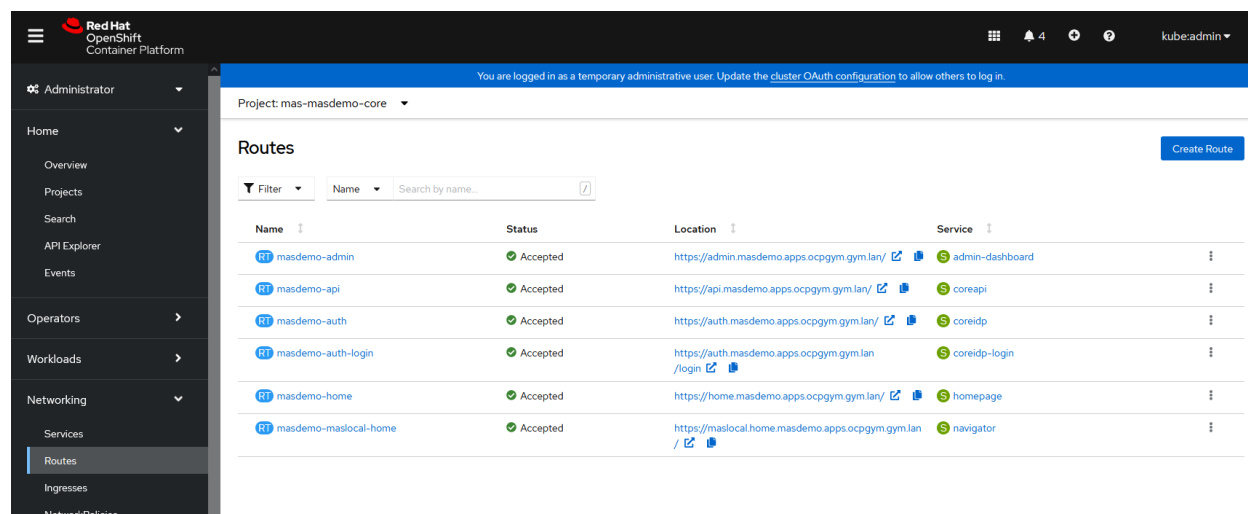Now we are ready to launch the MAS installation. Issue the following command:

```
./masinst.sh
```

As the log proceed, pay attention to record the userid and password of the MAS superuser, that should look like this:

```
ok: [localhost] => {
    "msg": [
        "Maximo Application Suite is Ready, use the superuser credentials to
authenticate",
        "Admin Dashboard ... https://admin.masdemo.apps-crc.testing",
        "Username .......... DIZv7X2eavITxb3vKtf3XRsY85UYj7FV",
        "Password .......... 58Wi9n9U4yVgZ7AhXVRS4eIqEQSnMhsq"
    ]
}
```

In case you don't have the log anymore, you can always retrieve them from the `masdemo-credentials-superuser` secret in the `mas-masdemo-core` namespace.

After the installation completes successfully, you may want to log into MAS administration using the MAS superuser credentials. You can find the urls to use by navigating in the OpenShift cluster console to Networking -> Routes of the mas-masdemo-core namespace.

First of all click on the masdemo-api url (the one in the Location column) and accept the self-signed certificate. In this way your browser won't have a problem in accessing the MAS APIs later on. Ignore the exception you will get and close that window.

Then go back to the cluster UI and click the masdemo-admin url. Log into MAS.

Once in MAS, click on the Users tile.

You should see the list of users that have been inherited by the Manage demo data. Filter by Wilson.

User management
Manage your suite users, their entitlements, and access rights and set password rules and requirements.

Users	Password settings

🔍 wilson   ✕   Create user +

User ID	Username	Display name	Email	System administrator	Last updated by
cswilson	cswilson	⊘ Chris Wilson		No	Manage Application
wilson	wilson	⊘ Mike Wilson	m.wilson@helwig.com	No	Manage Application

Items per page: 20 ⌄   1–20 of 82 items   1 of 5 pages   ◂ ▸

Click on the wilson user. Edit this user by using the pencil icon at the top right. Open the "Login details" section and click "Replace forgotten password". Click on the "Custom" radio button and set a password. Save the changes and close the information dialog that follows.

Wait for the synchronization to finish. Log out and login as "Wilson". Accept any self-signed certificate. In the MAS Navigator you should see the Manage tile and you should be able to launch into it. Hover your mouse on it to show the Launch link.

✅ **Manage**   ⋮

Manage your asset lifecycle, workflow, and business processes and integrate with other enterprise applications.

Launch