

## MANTA Flow on OpenShift Using the Operator (39.x)

### Overview

For architecture details on MANTA Flow in Kubernetes, please read [MANTA Flow Container Architecture \(39.x\)](#).

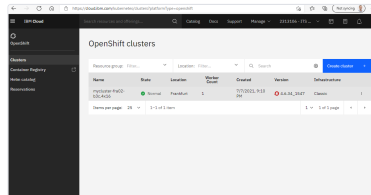
Please note that as of version 39.x.x MANTA Flow container images are now based on RedHat UBI images and are hosted at `repo.getmanta.com/manta-ubi8/`.

### Prerequisites

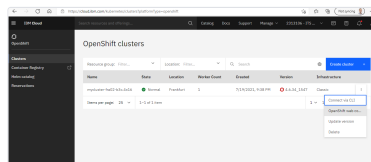
- OpenShift CLI (oc) installed: [Getting started with the OpenShift CLI - OpenShift CLI \(oc\) | CLI tools | OpenShift Container Platform 4.10](#)
- Valid credentials for the OpenShift cluster
- Valid credentials for the MANTA Docker repository `repo.getmanta.com` [\[view link\]](#)
- Valid `license.key` for MANTA Flow

### Log In to the OpenShift Cluster

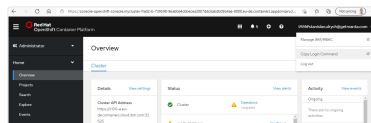
Log in to <http://cloud.ibm.com> and go to *OpenShift Clusters* <https://cloud.ibm.com/kubernetes/clusters?platformType=openshift>.



Click on the three dots to the right of the cluster that you want to connect, and click *OpenShift Web Console*.



The OpenShift console will open in a new tab. Click on your account in the upper-right corner, and select *Copy Login Command*.



A new tab will open. Click on the *Display Token* link, and you should get the following page with the login commands.



Copy and paste the `oc login ...` command to the console.

```
CODE Copy
1 oc login ....
```

Output:

```
CODE Copy
1 Logged into "https://c100-e.eu-de.containers.cloud.ibm.com:32625" as "IAM#"
2
3 You have access to 64 projects, the list has been suppressed. You can list
```

Now you are logged in to the cluster with the `oc` CLI.

## Namespace Preparation

Create your own namespace to avoid any collisions with other users/testers.

```
CODE Copy
1 oc new-project <namespace>
```

Or use a namespace that has already been created.

```
CODE Copy
1 oc project <namespace>
```

## Creating Pull Secrets to Pull Container Images from MANTA Repo

Create the secret for pulling images from the MANTA registry.

```
CODE Copy
1 oc create secret docker-registry manta-registry-credentials --docker-serve
```

The secrets above are used to pull all MANTA Flow container images.

## Creating Secrets for MANTA Flow

Create a MANTA Flow secret using the MANTA Flow `license.key`.

```
CODE Copy
1 oc create secret generic manta-keys --from-file=<path>/license.key
```

Create a secret with the initial MANTA Flow admin credentials and the `MANTA_MASTERPASSWORD` for the encryption of sensitive data in persistent storage. Use the passwords of your choice.

```
CODE Copy
1 oc create secret generic manta-credentials --from-literal=MANTA_USER=<mant
```

You can verify that the credentials were successfully created.

```
CODE Copy
1 oc get secret
```

Output:

```
CODE Copy
1 NAME                                TYPE
2 ...
3 manta-credentials                    Opaque
4 manta-keys                            Opaque
5 ...
6 manta-registry-credentials            kubernetes.io/dock
7 ...
```

Please note that the names of the credentials are different from those in previous versions of MANTA.

### MANTA Flow Operator Installation

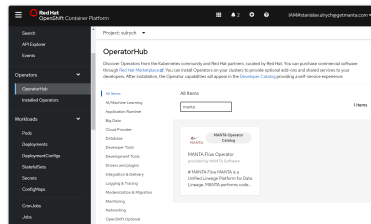
MANTA provides its operators through an Operator Lifecycle Manager (OLM). Create a catalog source listing the current operator. Create a file with the catalog source and save it as `manta-operator-catalog.yaml`.

```
CODE Copy
1 apiVersion: operators.coreos.com/v1alpha1
2 kind: CatalogSource
3 metadata:
4   name: manta-operator-catalog
5 spec:
6   displayName: MANTA Operator Catalog
7   publisher: MANTA Software
8   sourceType: grpc
9   image: repo.getmanta.com/manta-ubi8/mantaflow-operator-catalog:v39.0.0
10  secrets:
11  - manta-registry-credentials
12  updateStrategy:
13    registryPoll:
14      interval: 45m
```

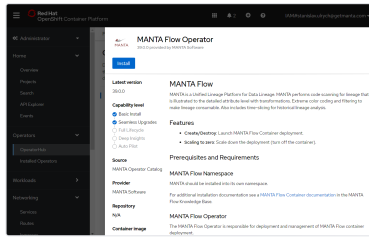
Apply the file.

```
CODE Copy
1 oc apply -f manta-operator-catalog.yaml
```

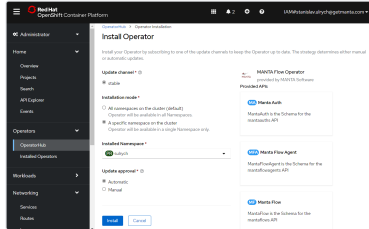
The MANTA Flow operator will appear in *OperatorHub*.



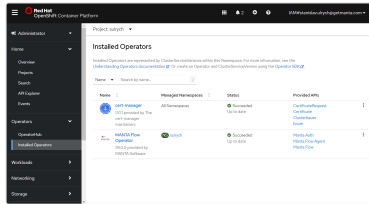
You might see multiple MANTA operators listed. Please be sure to use the one for the current version. Select the operator and click *Install*.



Select the installation mode *A Specific Namespace on the Cluster*, choose the namespace created for the operator, and click *Install*.



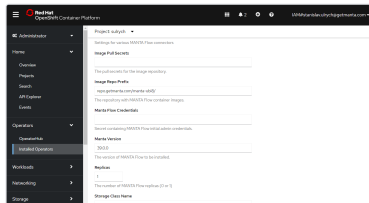
Wait until MANTA Flow Operator is installed and ready to be used.



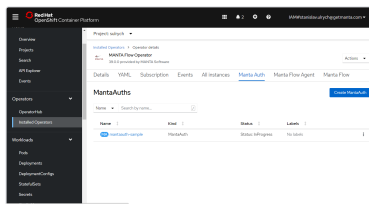
## MANTA Flow Installation by MANTA Flow Operator

### MANTA Auth

Go to *Installed Operators*, choose *MANTA Flow Operator*, then the *Manta Auth* tab, and click on the button *Create MantaAuth*. Leave the values as the defaults provided.

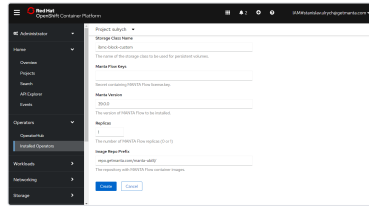


When you click on *Create*, MANTA Auth will be deployed. You will then see your MANTA Auth deployment listed under the *Manta Auth* tab in MANTA Flow Operator. You will see the status *Installing* until the MANTA Auth service is installed.

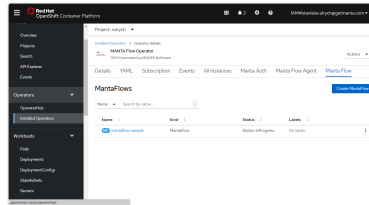


### MANTA Flow

Go to *Installed Operators*, choose *MANTA Flow Operator*, then the *Manta Flow* tab, and click on the button *Create MantaFlow*. Leave the values as the defaults provided.



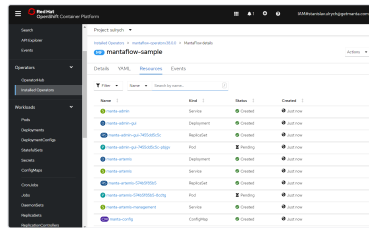
When you click on *Create*, MANTA Flow will be deployed. You will then see your MANTA Flow deployment listed under the *Manta Flow* tab in MANTA Flow Operator.



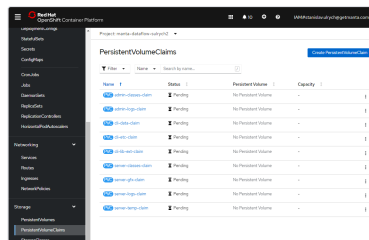
## Resources Created by MANTA Flow Operator

Click on the created MANTA Flow deployment (*mantaflow-sample* in this guide), and then select the *Resources* tab. The resources created for MANTA Flow deployment are listed here. Please note that the PVCs and route objects are not listed.

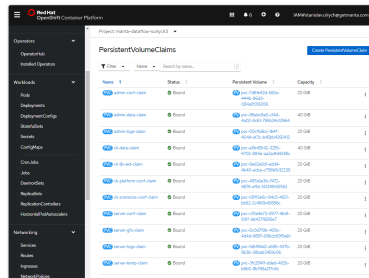
You will see that the pod's status is *Pending*.



The pod is waiting for the PVCs to be instantiated. You can check the status of PVCs under *Storage | PersistentVolumeClaims*. You will get a list of pending PVCs.

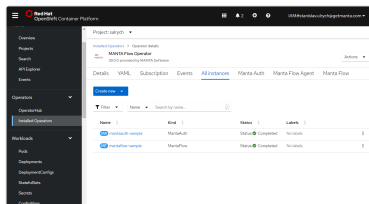


Once all the PVCs are ready, their status will be *Bound*.



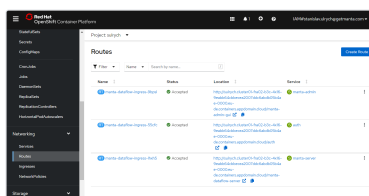
When you go back to the MANTA Flow resources, you will see that the pod's status is still *Pending*. After few minutes, the pod's status should change to *Running*. This means the MANTA Flow deployment is ready.

You can also check the overall status of MANTA Auth and MANTA Flow under the *All Instances* tab in MANTA Flow Operator.



## Accessing the MANTA Flow Deployment

MANTA Flow Services—Admin UI, Server, and Keycloak—are exposed through an ingress. You can see the routes defined in the *Routes* section.



The *Location* column shows the URLs of the services where you can access MANTA Flow.

**Note:** You need to append `app/#` to the Admin GUI URL.

## Storage Options

MANTA Operator uses the storage classes provided. Those currently tested are:

- `ibmc-block-custom` (default)
- `ibmc-block-gold`
- `ibmc-block-silver`

All persistent volumes require the access mode `RWO`—ReadWriteOnce.

Please note that the operator sets IOPS annotations of storage classes to 2000 IOPS. This only works with the `ibmc-block-custom` storage class. For the other storage classes, the respective IOPS defined by the storage class are set.

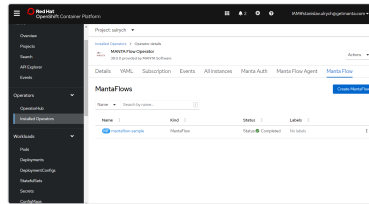
## MANTA Flow Scaling

### Horizontal Scaling

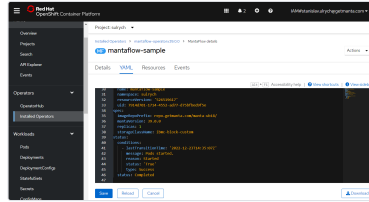
Currently, only scaling to zero is supported.

Scaling to zero means that no MANTA Flow containers are running (`replicas=0`). In such cases, the MANTA Flow container is stopped and deleted and only the persistent volumes hold MANTA Flow deployment data.

To scale down MANTA Flow to zero replicas, please go to the *Manta Flow* tab in MANTA Flow Operator.



Click on your instance of MANTA Flow (*mantaflow-sample* in our case) and switch to the **YAML** tab.



You can see there is a spec.

CODE

Copy

```
1 replicas: 1
```

Change it to:

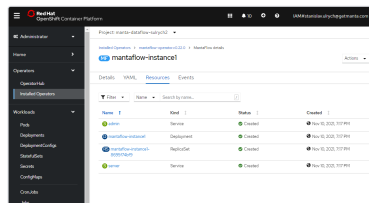
CODE

Copy

```
1 replicas: 0
```

Then, click **Save** below the code listing.

You can make sure that the MANTA Flow pod has been removed under the **Resources** tab.



Scale MANTA Flow back using a similar approach by setting:

CODE

Copy

```
1 replicas: 1
```

Once saved, MANTA Flow Operator initiates the creation of a new MANTA Flow container. However, it might take a while.

## Vertical Scaling

Default resource specifications are provided for all pods when you deploy a CR.

The values can be overridden in the CR for each pod by providing `.spec.resources`. `<container>` sections with the respective resource requirements. Please see the examples below containing the default values.

For MantaAuth:

CODE

Copy

```
apiVersion: manta.getmanta.com/v1alpha1
kind: MantaAuth
metadata:
  name: mantaauth-sample
spec:
```

```

6     ...
7     replicas: 1
8     ...
9     resources:
10      manta-keycloak:
11        requests:
12          cpu: "500m"
13          memory: "512Mi"
14        limits:
15          cpu: "1"
16          memory: "2Gi"

```

For MantaFlow:

```

CODE Copy
1  apiVersion: manta.getmanta.com/v1alpha1
2  kind: MantaFlow
3  metadata:
4    name: mantaflow-sample
5  spec:
6    ...
7    replicas: 1
8    ...
9    resources:
10     manta-artemis:
11       requests:
12         cpu: "500m"
13         memory: "2Gi"
14       limits:
15         cpu: "1"
16         memory: "4Gi"
17     manta-dataflow:
18       requests:
19         cpu: "3.5"
20         memory: "4Gi"
21       limits:
22         cpu: "7"
23         memory: "16Gi"
24     manta-admin-gui:
25       requests:
26         cpu: "0.1"
27         memory: "512Mi"
28       limits:
29         cpu: "2"
30         memory: "4Gi"
31     manta-configuration-service:
32       requests:
33         cpu: "0.1"
34         memory: "350Mi"
35       limits:
36         cpu: "0.5"
37         memory: "1Gi"
38     manta-flow-agent:
39       requests:
40         memory: "500Mi"
41         cpu: "0.1"
42       limits:
43         memory: "750Mi"
44         cpu: "0.5"

```

The snippets above show the internal default values provided by operator when no overrides are present in the CR.

It is possible to override only some of the pods. The default values will be used for the pods that do not have overrides.

When providing overrides, all 4 values `requests.cpu`, `requests.memory`, `limits.cpu`, and `limits.memory` must be provided for the given pod. There is no merging of the default values and the overrides per pod.

You can either update the values in the OpenShift web interface or by using the `oc apply -f ...` command.



## MANTA Flow Upgrade

The upgrades for MANTA Auth and MANTA Flow are done separately. First, upgrade MANTA Auth, then MANTA Flow. (See the instructions below.)

Please note that downgrading to a previous version is not permitted. If you enter a version that is older than the one currently being deployed, the operator will fail to work.

Please back up all persistent volumes before the upgrade.

### Secret Names

In previous versions of MANTA, the secrets had different names.

Please create the secrets for manta-keys and manta-credentials as described in the section Secret Initialization.

### MANTA Operator Upgrade

Before upgrading to the new version, it is necessary to upgrade the operator. Go to *Installed Operators*, click on the dot menu for MANTA Flow Operator on the right, and choose *Uninstall Operator*.

Remove the operator catalog for the old version.

```
CODE Copy
1 oc delete catalogsource manta-operator-catalog
```

Then, install the new catalog and new operator as described in the section MANTA Flow Operator Installation.

### Removal of OpenShift Routes When Upgrading from Version 37.x.x

OpenShift routes were used in previous versions of MANTA Flow. As of 38.x.x, MANTA Flow Operator no longer has access to OpenShift routes and, therefore, the routes have to be removed manually.

Please go to *Networking | Routes* and delete the following routes.

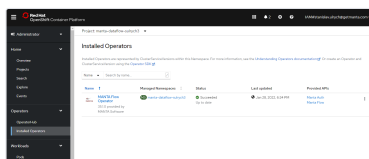
- manta-auth
- manta-server
- manta-admin

After the upgrade is finished, an ingress controller is created for exposing MANTA Flow services.

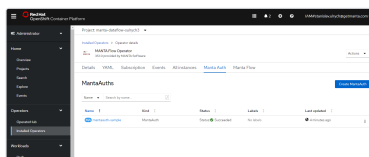
Now, you can upgrade MANTA Auth and MANTA Flow.

### MANTA Auth Upgrade

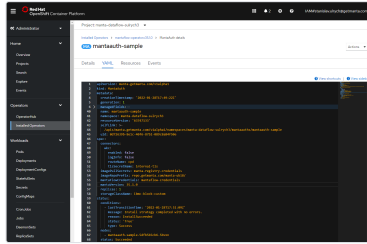
Please go to *Installed Operators* and click on *MANTA Auth* in the *Provided APIs* column.



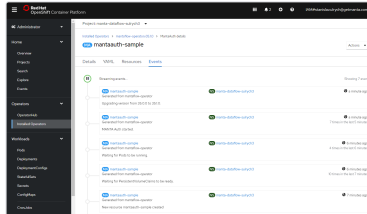
You will see the MANTA Auth instance listing.



Click on *mantaauth-sample* and switch to the *YAML* tab. Change the version to the target version 39.0.0.



Click Save. MANTA Flow operator will recreate the deployment on the newer version. Switch to the Events tab to see the event stating "Upgrading version from x.y.z to 39.0.0".



### MANTA Flow Upgrade

Please repeat the steps above for the MANTA Flow resource.

Wait until the upgrades are finished and the MANTA Auth and MANTA Flow resources are back in the *Completed* state.

## Troubleshooting MANTA Flow Deployment

To check the logs of a running pod, please use the following command. You have to provide the correct pod ID from the list of `oc get pods`.

```
CODE Copy
1 oc logs <pod ID>
```

To troubleshoot problems, it is possible to connect to the pod using the command below. You have to provide the correct pod ID from the list of `oc get pods`.

```
CODE Copy
1 oc exec -it <pod ID> -- /bin/bash
```

Then, you are in the container bash and you can check whatever you need to.

### Troubleshooting Information to Be Provided in MANTA Helpdesk Tickets

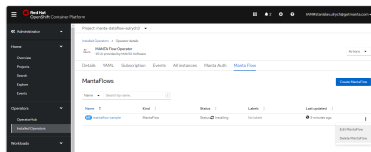
If you open a troubleshooting ticket in MANTA Helpdesk, please provide the following.

1. Output of `oc get pods,pvc,svc,ingress`
2. Output of `oc get pods -o yaml`
3. Output of `oc describe pod <pod>` for pods whose state is not *Running*
4. Output of `oc logs <pod>` for all the pods, with each log provided as a separate file
5. MANTA Flow Server logs, which can be obtained by running `oc cp manta-dataflow:server/logs ./server-logs`; the copied directory can be sent as a ZIP or TAR
6. MANTA Admin GUI logs, which can be obtained by running `oc cp manta-admin-gui:serviceutility/log ./admin-gui-logs`; the copied directory can be sent as a ZIP or TAR

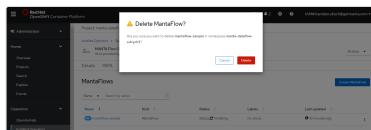
## MANTA Flow Deletion by MANTA Flow Operator

### Deletion of MANTA Flow

If you need to delete the MANTA Flow deployment, go to the section *Installed Operators* | *MANTA Flow Operator* under the tab *MANTA Flow*, click on the dot menu to the right of the MANTA Flow resource, and choose *Delete MantaFlow*.



You will be asked for confirmation. Please be careful. Deleting MANTA Flow will also delete volumes with persistent data.



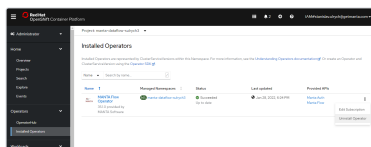
Once you confirm by clicking on *Delete*, the MANTA Flow resources will be deleted.

### Deletion of MANTA Auth

Delete MANTA Auth the same way you deleted MANTA Flow.

### Uninstalling MANTA Flow Operator

To uninstall MANTA Flow Operator, go to *Installed Operators*, click the menu to the right of *MANTA Flow Operator*, and select *Uninstall Operator*.



### Migration from Non-Operator MANTA Deployment

It is possible to migrate MANTA Flow installed by OpenShift manifests to operator deployment. Before doing so, please:

1. Make sure you have MANTA Flow version 35.1.0.
2. Try to install a new MANTA Flow deployment in a new namespace by operator.
3. Make sure you have just one MANTA Flow installed in the namespace.
4. Make sure you have made a backup of all persistent storage volumes (PVs).
5. When installing MANTA Flow by operator, endpoints are exposed through OpenShift routes and ingress controller is not supported by the operator. Make sure you will not be limited by this.

Then, please do the following.

1. Delete OpenShift MANTA Flow resources — deployments, services, routes, and ingresses. **Do not delete PVCs and PVs.**
2. Install the operator in the namespace where you had MANTA Flow installed. This namespace should contain the PVCs and PVs.
3. Then, install MANTA Flow according to [MANTA Flow on OpenShift Using the Operator \(35.x\)](#).
  - a. Make sure you specify version 35.1.0 for the MANTA Auth and MANTA Flow CRs. The version of MANTA Flow must match the version of the persistent data you have from the non-operator deployment!
  - b. The operator will detect the existing PVs and PVCs and use them when deploying pods; hence, the data from the MANTA Flow deployment you had will be used.

MANTA Flow should be migrated to the operator deployment.

Please note that if you migrate to operator deployment from non-operator deployment, the PVCs and PVs will not be deleted by the operator automatically when deleting the MANTA Flow CRs.