

Upgrading to Flow Enterprise Server 2021.1.1

If you're upgrading from a previous Flow version to 2021.1.1, it will require a reinstallation of Flow from the command line. You cannot upgrade through the KOTS admin console. You must export your Flow configuration, uninstall Flow from all nodes, then reinstall Flow. Follow the steps outlined below to upgrade to Flow 2021.1.1.

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Before you begin

Before upgrading to Flow Enterprise 2021.1.1 there are a few things to know and be prepared for, Read through this information carefully before beginning the upgrade process.

Check out the [Flow Enterprise Server 2021.1.1 release notes](https://help.pluralsight.com/help/flow-enterprise-server-release-2021-1-1) for an overview of updates included in this version.

Important: To upgrade to 2021.1.1, you must reinstall Flow from the command line. You cannot upgrade through the KOTS admin console. This article will go through the process of exporting your Flow configuration, uninstalling Flow, then reinstalling Flow.

New system requirements for 2021.1.1

- Flow strongly recommends having a three node configuration to ensure proper disk [quorum](https://rook.io/docs/rook/v1.5/ceph-mon-health.html#monitor-quorum) and system stability. The Flow software will show a warning message on the KOTS admin console if you have fewer than three nodes, but installation will proceed. [Add additional nodes](https://help.pluralsight.com/help/adding-a-new-node) to your configuration at any point.
- Flow Enterprise Server is moving to require a single, raw block device for Ceph storage usage on every node in the cluster. This is optional for upgrades in the 2021.1.1 release. Future versions of Flow Enterprise Server will require raw block devices for upgrades.
When you add your raw block device, you must do a full reinstallation, including exporting your configurations and uninstalling Flow. This is true whether you add the raw block device when upgrading to 2021.1.1 or if you add it later.
- The computing and storage requirements, including some directories, have been updated. Please read the [Flow Enterprise Server 2021.1.1 system requirements](https://help.pluralsight.com/help/system-requirements-2021-1-1) to see the updated requirements and directories. Disk space requirements for nodes have increased.

Information to gather before you begin

- Your Flow license file.
- Your TLS/SSL certificates. (<https://help.pluralsight.com/help/obtaining-certificates>)
- The latest version of the `flow-enterprise-tools` package. Request this from Pluralsight Support.

Important: You must have the latest version of `flow-enterprise-tools` to successfully upgrade.

- Pluralsight recommends [backing up your database](https://help.pluralsight.com/help/backups) (<https://help.pluralsight.com/help/backups>) before you begin the upgrade process.
- If your version of Flow Enterprise Server is airgapped, download the airgap bundle from Replicated . A password is required. If you can't access Replicated, contact Support for assistance.

Tip: Depending on how you install Flow, you need to download a few different packages. `flow-enterprise-tools` contains the tools for installation and maintenance of the Kubernetes framework. Download the airgap version for airgapped installations. The app airgap bundle, only for airgap installations, is downloaded from Replicated. It contains the Flow application files which are installed into the Kubernetes framework provided by `flow-enterprise-tools` .

To install the `flow-enterprise-tools` package:

- For the host server, copy `flow-enterprise-tools-[-airgap]-.tar.gz` to the home directory of the user account used for the installation on the host server.
- Extract the tools file using `tar xvf flow-enterprise-tools-[-airgap]-.tar.gz` .

Note: You can run any tool from the `bin` directory by running `cd /path/to/flow-enterprise-tools/bin ./[tool name]` . Install the tools package with the `install-enterprise-tools.sh` script `cd /path/to/flow-enterprise-tools ./install-enterprise-tools.sh` . The script will ask where to install the components. The default is `/usr/local/share/flow-enterprise-tools` .

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Verify your current KOTS installation

On the primary node, run `kubectl get installers flow-enterprise -o yaml` to ensure you are running the latest version of Flow Enterprise with a KOTS version of 1.19.x and Kubernetes version 1.17.x.

Tip: Example text outputs are included in this article.

```
admin-user@primary-node:~$ kubectl get installers flow-enterprise -o yaml
```

apiVersion: cluster.kurl.sh/v1beta1

kind: Installer

metadata:

annotations:

kubectl.kubernetes.io/last-applied-configuration: |

```
{"apiVersion":"cluster.kurl.sh/v1beta1","kind":"Installer","metadata":{"annotations":{},"name":"flow-enterprise","namespace":"default"},"spec":{"contour":{"version":"1.7.0"},"docker":{"version":"19.03.10"},"kotsadm":{"applicationSlug":"flow-enterprise","version":"1.19.6"},"kubernetes":{"version":"1.17.7"},"prometheus":{"version":"0.33.0"},"registry":{"version":"2.7.1"},"rook":{"version":"1.0.4"},"weave":{"version":"2.6.5"}}
```

creationTimestamp: "2021-04-06T19:50:30Z"

generation: 1

labels:

velero.io/exclude-from-backup: "true"

name: flow-enterprise

namespace: default

resourceVersion: "390"

selfLink: /apis/cluster.kurl.sh/v1beta1/namespaces/default/installers/flow-enterprise

uid: 78c208b3-bfb9-43c2-ac6f-c7ffad9bc592

spec:

contour:

version: 1.7.0

docker:

version: 19.03.10

kotsadm:

applicationSlug: flow-enterprise

version: 1.19.6

kubernetes:

version: 1.17.7

prometheus:

version: 0.33.0

registry:

version: 2.7.1

rook:

version: 1.0.4

weave:

version: 2.6.5

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Export your Flow configuration

Next, export the current KOTS configuration using `flow-enterprise-tools` with the command `sudo flow-tools export --preserve-tls`. Make sure to download the latest version of `flow-enterprise-tools` from Pluralsight. Version 2.0.x is required.

Note: For the `root` user, `/usr/local/bin` must be in the `PATH` environment variable. The root user should be set up as a Flow user after the installation of Flow. This is critical if your OS is hardened.

```
admin-user@primary-node:~$ sudo flow-tools export --preserve-tls
```

```
[INFO] Checking environment...
```

```
[INFO] Archive command (tar): OK
```

```
[INFO] HTTP command (curl): OK
```

```
[INFO] YAML command (yq): OK
```

```
[INFO] KOTS CLI command (kubect! kots): OK
```

```
[INFO] Flow app installed: OK
```

```
[INFO] Using yq command: /usr/local/share/flow-enterprise-tools/packages/yq
```

- Connecting to cluster ✓

The application manifests have been downloaded and saved in /tmp/flow-export-to-kotsVm/flow-enterprise

After editing these files, you can upload a new version using

```
kubectl kots upload --namespace default --slug flow-enterprise /tmp/flow-export-to-kotsVm/flow-enterprise
```

```
[INFO] Exporting config bundle: kots-config-2021-04-07-18-19-56.tar.gz
```

```
[INFO] Cleaning up...
```

Validate that the exported configuration file has all the required files in it as shown below. Extract the `tar.gz` file just created using the `tar tvf >` command.

```
admin-user@primary-node:~$ tar tvf kots-config-2021-04-07-18-27-33.tar.gz

drwxr-xr-x root/root          0 2021-04-07 18:27 migration/

-rw-r--r-- root/root        1704 2021-04-07 18:27 migration/server.key

-rw-r--r-- root/root       12352 2021-04-07 18:27 migration/kots.yaml

-rw-r--r-- root/root        3460 2021-04-07 18:27 migration/server.pem

-rw-r--r-- root/root        5443 2021-04-07 18:27 migration/license.yaml
```

Note: If you have an external database connected to Flow, it will not be impacted or removed by default. If you used an embedded database for testing, etc., please use `flow-tools export --help` for additional options to back up the application, repository cache, and database directories. Also, if the node is being migrated to a different external server, utilize additional flags to the `flow-tools export` command accordingly.

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Uninstall Flow Enterprise

Next, uninstall Flow Enterprise from all nodes. Remove the primary node first, then all worker nodes.

Run `kubectl get nodes` on the primary node to verify the current state.

```
admin-user@primary-node:~$ kubectl get nodes
```

NAME	STATUS	ROLES	AGE	VERSION
primary-node	Ready	master	22h	v1.17.7
worker-node	Ready		21h	v1.17.7

Run `sudo flow-uninstall` to remove Flow Enterprise from the primary node. Follow the prompts and press `y` to continue.

```
admin-user@primary-node:~$ sudo flow-uninstall

[WARN] ===== WARNING =====

[WARN] Running this script will remove Kubernetes and all

[WARN] related components, Flow application from this server.

[WARN] Worker nodes will be drained and deleted from cluster.

[WARN] Following directory contents will be removed:

[WARN] var/lib/kubelet/var/lib/rook

[WARN] /var/lib/ceph~/.kube/var/lib/docker/opt/flow

[WARN] /opt/replicated/var/lib/weave

[WARN] =====

=== Warning: Removing all Kubernetes components ===

Enter y/n to continue or exit : y

[INFO] Checking environment...

[INFO] Cleaning up...

[INFO] Backing up database...

[INFO] Scaling down services

...

[INFO] Waiting for services to scale down...

[INFO] Waiting for services to scale down...
```

```
[INFO] Backing up embedded db

[INFO] Master node detected with 1 worker nodes

[INFO] Draining worker node ..

[INFO] Draining node = test-ubuntu-fossa-01-b

...

[INFO] Deleting worker node ..

...

[INFO] Scaling down flow ..

...

[INFO] Deleting Embedded DB pods ..

...

[INFO] Disabling Services

[INFO] Stopping kubelet service ..

...

[INFO] Stopping and disabling Docker ..

...

[INFO] Stopping containerd service ..

...

[INFO] Please reboot the server and re-run this script to continue uninstall.

[INFO] Note: May need to do a force reboot/hard reset to clear mounted docker
folders

[INFO] run: 'sudo sh -c 'echo b > /proc/sysrq-trigger''
```

Reboot the server as directed. Once the server is back up, rerun `sudo flow-uninstall` one more time.

```
admin-user@primary-node:~$ sudo flow-uninstall
```

```
[INFO] Continuing uninstall of Flow ..

[INFO] Docker Services stopped, continuing cleanup ..

[INFO] Removing K8s packages ..

...

[INFO] Removing docker packages ..

...

[INFO] Cleaning up mounts ..

[INFO] Cleaning up folders ..

...

[INFO] Resetting IPTABLES ..

[INFO] No ceph raw disks detected..

[INFO] Flow uninstall has been completed.
```

This completes the process of uninstalling Flow on the primary node. Next, run `flow-uninstall` on each worker node. For each worker node, follow the exact same steps as described above, including rebooting the server.

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Reinstall Flow Enterprise

Now we are ready to reinstall Flow Enterprise 2021.1.1. For an online installation, run `sudo flow-tools install`. For an airgapped installation, run `sudo flow-tools install -a`. This only needs to be done in the primary node.

Important: A raw block device for each node is required for new Flow installations. If you are upgrading to Flow 2021.1.1+ and an exported configuration is detected during installation, you will receive a warning about this requirement, but will be able to proceed without the raw block device requirement. **This will become a requirement for all future upgrades.**

The device filter is in golang regular expression format. Device names vary between distributions. You can add multiple filters if the devices are named differently in worker nodes. An example of such a case may look like `sd[b-z]|nvme[1-3]|xvd[b-c]`.


```
admin-user@primary-node:~$ sudo flow-tools install
```

```
[INFO] Verifying installation environment...
```

```
[INFO] HTTP command (curl): OK
```

```
[INFO] Archive command (tar): OK
```

```
[INFO] Swarm does not exist: OK
```

```
[INFO] Verifying system requirements...
```

```
[INFO] Checking networking...
```

```
[INFO] systemctl command : OK
```

```
[INFO] IPV6 Kernel module: LOADED
```

```
[INFO] IPV6 Check : OK
```

```
[INFO] IPv4 Forwarding: ENABLED
```

```
[INFO] Check IPtable Rules: OK
```

```
[INFO] Checking ufw firewall: INACTIVE
```

```
[INFO] Detecting proxy: NOT DETECTED
```

```
[INFO] https://replicated.app site check : OK
```

```
[INFO] Checking hardware...
```

```
[INFO] CPU: OK
```

```
[INFO] Memory: OK
```

```
[INFO] Space check in /var/lib/containerd: OK
```

```
[INFO] Space check in /var/lib/kubelet: OK
```

```
[INFO] Space check in /opt/replicated: OK
```

```
[INFO] Space for Repo cache in /opt/flow: 149 GB
```

```
[INFO] Disk Space Check: OK
```

```
[INFO] Non SSD Disks: NOT DETECTED
```

[INFO] Checking filesystem and permissions...

[INFO] Login restrictions check: OK

[INFO] bash Umask setting: OK

[INFO] /etc/profile Umask setting: OK

[INFO] Checking PATH for /usr/local/bin: OK

[INFO] Checking distro...

[INFO] No existing ceph raw disks detected

[INFO] Installation type is : NEW

=== Discovered Block Devices ===

/dev/nvme1n1

Above is the list of block devices found during valid device discovery

Please provide pattern to match devices that should be used for K8s volume storage:
nvme[1-9]n1

[INFO] Validating block storage device filter...

Device match: /dev/nvme1n1

Device size: 500G

Device status: valid

[INFO] Total valid block storage: 500G

[INFO] Block storage: OK

[INFO] Adding patch to use raw ceph block devices for installation

```
[INFO] Installing KOTS application
```

```
[INFO] Saving environment
```

```
[INFO] Fetching kurl.sh installation script from: https://k8s.kurl.sh/flow-  
enterprise
```

```
[INFO] Fetching join script from: https://k8s.kurl.sh/flow-enterprise/join.sh
```

```
...
```

```
Installation
```

```
Complete ✓
```

The UIs of Prometheus, Grafana and Alertmanager have been exposed on NodePorts 30900, 30902 and 30903 respectively.

To access Grafana use the generated user:password of admin:yJ8faebKRe .

```
Kotsadm: http://192.168.0.180:8800
```

```
Login with password (will not be shown again): 3fwbTdGgj
```

To access the cluster with kubectl, reload your shell:

```
bash -l
```

[INFO] Loading environment

node/primary-node labeled

[INFO] Primary node has been labelled with

```
gui=true
```

```
worker=true
```

If adding an additional node, please run the following,

after adding a worker node:

```
kubect1 label nodes worker- --selector='node-role.kubernetes.io/master'
```

[INFO] Existing ceph disk found : /dev/nvme1n1

Kubernetes connection credentials for worker node. Expires in 24 hours

```
Kubernetes Connection String : kubernetes-master-address=192.168.0.180:6443 kubeadm-  
token=e8sj6l.4h2oha16vr7zeths kubeadm-token-ca-  
hash=sha256:4373659bec1eafea7e91f13f75a91319dbdeeb6e52422e8af4caff4eab299f08  
kubernetes-version=1.19.7 docker-registry-ip=10.96.1.73
```

You may add additional command line options to the flow-tools join command.

Run ./flow-tools join --help for all available flags and options like [-a|-f|-k|-n|-
-proxy] etc.

Node join command for this cluster is below:

```
sudo ./flow-tools join kubernetes-master-address=192.168.0.180:6443 kubeadm-  
token=e8sj6l.4h2oha16vr7zeths kubeadm-token-ca-
```

```
hash=sha256:4373659bec1eafea7e91f13f75a91319dbdeeb6e52422e8af4caff4eab299f08
kubernetes-version=1.19.7 docker-registry-ip=10.96.1.73
```

```
[]
```

[INFO] To change the admin console password, run the following command:

```
kubectl kots reset-password -n default
```

[INFO] Setting up kubectl command for current user

[INFO] Processing home directory: /home/admin-user

[INFO] Setting up kube-config for user: admin-user

On a single node cluster, the installation will label the primary node appropriately by default. However, in a multi-node installation, label the worker nodes as directed from the output of the installation command as seen above.

Reset the console password by running `kubectl kots reset-password -n default` if desired.

Next, install Flow Enterprise on each of the worker nodes using the join command output at the end of the installation of the primary node. [Read more about joining a node to the cluster \(https://help.pluralsight.com/help/adding-a-new-node\)](https://help.pluralsight.com/help/adding-a-new-node).

Then, open your browser and go to the URL provided at the end of the installation on the primary node. It will look like `http://:8800`.

Bypass browser TLS warning

We use a self-signed SSL/TLS Certificate to secure the communication between your local machine and the Admin Console during setup. You'll see a warning about this in your browser, but you can be confident that this is secure.

Chrome

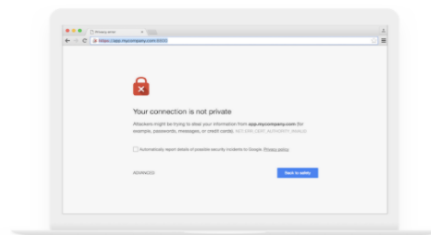
On the next screen, click "Advanced", then click "Proceed" to continue to the Admin Console.

Verifying the certificate's authenticity

```
$ echo | openssl s_client -servername local -connect :8800 2>/dev/null | openssl x509 -noout -fingerprint
```

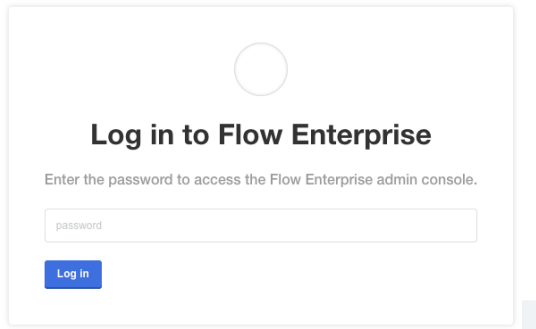
SHA Fingerprint

```
16:6C:6D:3F:23:FB:7A:32:2F:FE:34:88:32:63:AE:01:14:77:3B:08
```



[Continue to Setup](#) or visit <https://:8800/tls> to proceed

Click **Continue** to set up and configure the hostname and SSL certificates. Then log in to the KOTS admin console using the password created during the installation.



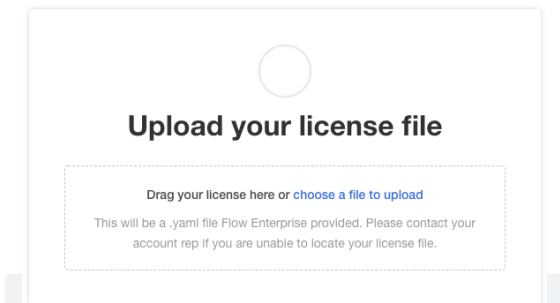
Log in to Flow Enterprise

Enter the password to access the Flow Enterprise admin console.

password

Log in

Then upload your license file.



Upload your license file

Drag your license here or [choose a file to upload](#)

This will be a .yaml file Flow Enterprise provided. Please contact your account rep if you are unable to locate your license file.

If you have an airgapped installation, upload the airgap bundle you downloaded from Replicated before you began the installation.

Once the license is validated, you'll see the configuration screen. Click **Save** and continue to the next screen.

Dashboard GitOps Cluster Management Add a new application Log out

Configure Flow Enterprise

Flow Enterprise Configura... ^

Use this page to configure the base settings for your instance of Flow Enterprise. You can find more information about configuring Flow Enterprise on our help site at [\[https://help.pluralsight.com/help/get-started-on-prem\]](https://help.pluralsight.com/help/get-started-on-prem) (<https://help.pluralsight.com/help/get-started-on-prem>).

Flow Host Settings ▾

E-mail Settings ▾

Storage Filesystem ▾

Database Settings ▾

Trusted Certificates ▾

Outbound HTTP/S Proxy S... ▾

Advanced Settings ▾

Web Server Settings ▾

BitBucket Cloud Settings ▾

GitHub Cloud Settings ▾

GitLab Cloud Settings ▾

Global Worker Settings ▾

Project Worker Settings ▾

Repository Worker Settings ▾

Deletion Worker Settings ▾

Misc. Worker Settings ▾

Commit Deduplication Setti... ▾

API Integration Settings ▾

API Integration Hacks ▾

System Settings ▾

DB Work Settings ▾

APM Settings ▾

Security Settings ▾

Flow Enterprise Configuration

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Flow Host Settings

These settings control the web functionality of the site.

Flow URL Required

The fully qualified URL your users will use to access the site.

Default value: <https://example.mycompany.com>

Use TLS

Use TLS for web UI

Administrator E-mail Address Required

The e-mail address for system alerts.

Default value: admin@mycompany.com

E-mail Settings

Flow Enterprise can use an external e-mail server. If this is enabled, it will send e-mails to your users for password management, joining organizations, and for updates. Otherwise, this will be a manual administration process. It is highly recommended you configure an external e-mail server.

Use E-mail Server

Storage Filesystem

Please enter the path to a directory that has a large amount of disk space for storing data. You should prepare this directory according to the instructions at [Flow Help - Preinstallation Instructions](#). This directory must be set to permissions mode 0755.

Storage Path Required

This directory specifies the location where you want to store log data and temporary clones of the repositories for processing. This directory must have enough space to contain all of your repositories at once. It must also have a permissions mode of

Default value: [/opt/flow](#)

Database Settings

v1.34.0

Then click **Deploy**

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Import Flow configurations

Go back to the terminal session on the primary node. Run `flow-tools import -i ./kots-config-YYYY-MM-DD-HH-mm-ss.tar.gz`. This is the file created during the `flow-tools export` command .

```
admin-user@primary-node:~$ flow-tools import -i kots-config-2020-01-01-08-00-00.tar.gz
```

```
[INFO] Checking environment...
```

```
[INFO] Archive command (tar): OK
```

```
[INFO] HTTP command (curl): OK
```

```
[INFO] YAML command (yq): OK
```

```
[INFO] Kubernetes CLI command (kubectl): OK
```

```
[INFO] KOTS CLI command (kubectl kots): OK
```

```
[INFO] Input file (kots-config-2021-04-07-18-37-00.tar.gz): OK
```

```
[INFO] Extracting kots config bundle...
```

```
[INFO] Extracting any app and db backups found...
```

```
[INFO] Using yq command: /usr/local/share/flow-enterprise-tools/packages/yq
```

```
[INFO] Exporting KOTS config
```

- Connecting to cluster ✓

The application manifests have been downloaded and saved in /tmp/flow-import-to-kotsMDR/flow-enterprise

After editing these files, you can upload a new version using

```
kubectl kots upload --namespace default --slug flow-enterprise /tmp/flow-import-to-kotsMDR/flow-enterprise
```

```
[INFO] Merging swarm config into KOTS config
```

```
[INFO] Merge result code: 0
```

```
[INFO] Updating KOTS with new config
```

- Uploading local application to Admin Console ✓

Please make a minor config change in the admin console, and deploy to finalize the install!

```
[INFO] Cleaning up...
```

Once this completes, check the status of the pods. Run `watch kubectl get pods` and wait until all pods are in the running state, Once they are all in the running state, log in to the Flow Enterprise application using the URL you used to access Flow before

upgrading.

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If you need help, please email support@pluralsight.com () for 24/7 assistance.

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