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Upgrade

This document will provide all the information regarding the upgrading of ACP .

Overview

ACP upgrades consist of three parts:

1. Upgrading the **global cluster**
2. Upgrading **workload clusters**
3. Upgrading **Operators** and **Cluster Plugins**

Users must upgrade the **global cluster** before upgrading any **workload clusters**.

Upgrading Operators and Cluster Plugins is optional. These can be upgraded during the cluster upgrade process, or separately after the cluster upgrade is complete.

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Cluster Upgrade Feature

In the cluster details page, under **Functional Components**, the platform lists all components provided by the system. When a new version is available, the **Upgrade** button becomes active, allowing the user to perform the upgrade.

Notes

- **Kubernetes Version:** Kubernetes upgrades are supported only for **On-Premises Clusters**. For **Managed Clusters** (e.g., Amazon EKS, Azure AKS), Kubernetes upgrades must be performed through the respective cloud provider. See Cluster Type for more information on the differences between **On-Premises Clusters** and **Managed Clusters**.

- **Operator:** Only Operators with **Source = Alauda** are listed and can be upgraded via the cluster upgrade feature. All other Operators are managed through the **OLM** component in the Marketplace and are not included in this process.

- **Cluster Plugin:** Platform-provided plugins can be upgraded through the cluster upgrade feature on **both** On-Premises and Managed Clusters, provided they are already installed.

- **DR (Disaster Recovery Environment):** A DR environment contains both a **primary global cluster** and a **standby global cluster**, whereas a standard ACP environment includes only one global cluster.

- **Primary global cluster:** Defined as the global cluster that the ACP access domain name resolves to.

- **Standby global cluster:** Defined as the global cluster that the ACP access domain name **does not** resolve to.

Pre-Upgrade Preparation

The upgrade process for ACP from **3.x to 4.x** differs significantly from the upgrade process within the **4.x series**. The following sections describe these two upgrade paths separately:

- Upgrade from 4.x
- Upgrade from 3.x

Supported upgrade paths:

- **From** `4.0` → `4.1`
- **From** `3.18` → `4.1`
- **From** `3.18` → `4.0`
- **From** `3.16` → `4.0`

Before starting, ensure your current platform version is within the supported upgrade range.

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Important Notes

Starting from ACP **4.0**:

- The **Disaster Recovery (DR) environment** upgrade procedure has changed. See Global DR Procedure for details.
- All custom periodic ETCD backup tasks will be deprecated. Before upgrading:
  - Back up and delete all ETCD backup tasks **except** `etcd-backup-default`.
  - Deleting a backup task will not remove any existing ETCD snapshots; only the task itself will be deleted.
  - After the upgrade, you can reconfigure the `etcd-backup-default` task as needed.
- **CostManager** and **Kubecost** are deprecated. If installed, they must be uninstalled before upgrading.

When upgrading the cluster **Kubernetes version to 1.31 or higher**, all running Pods will be **restarted**. This behavior is required due to changes in PodSpec fields introduced in Kubernetes 1.31 and cannot be avoided. For details, see Kubernetes issue #129385↗.

The directory `/cpaas/minio` (global cluster control plane) must have at least **120 GB** of available disk space.

Upgrade from 4.x

Prerequisites

Ensure the following requirements are met for your current version:

Upgrading from 4.1

- Kubernetes version of all clusters must be **1.32**. If not, upgrade Kubernetes first.

Upgrading from 4.0

- Kubernetes version of all clusters must be **1.31**. If not, upgrade Kubernetes first.

Run the Checklist

Contact technical support to obtain the **checklist script** and run it against the target platform to verify upgrade readiness.

Download the Packages

From the **Custom Portal**, download the **ACP Core Package**.

If you want to upgrade cluster **Extensions** during the upgrade: *TODO: add instructions.*

In addition, navigate to the **CLI Tools** section in the **Custom Portal** and download the `violet` tool. This tool is required for uploading Extensions. For more information about `violet`, see Upload Packages.

Upgrade from 3.x

Prerequisites

Ensure the following requirements are met for your current version:

Upgrading from 3.18

- Kubernetes version of all clusters must be **1.30**. If not, upgrade Kubernetes first.
- If Istio is installed, **all clusters with Istio must be upgraded to version 1.22** before proceeding. Note that Istio versions must comply with Kubernetes compatibility requirements; see the Service Mesh upgrade documentation for details.
- If Elasticsearch is installed, you must apply the solution **"How to Correct the Issue of Node Role Settings in Big Cluster Elasticsearch"** before upgrading. The solution is available in **Custom Portal > Knowledge**.

Upgrading from 3.16

- Kubernetes version of all clusters must be **1.28**. If not, upgrade Kubernetes first.
- If Istio is installed, **all clusters with Istio must be upgraded to version 1.20** before proceeding. Note that Istio versions must comply with Kubernetes compatibility requirements; see the Service Mesh upgrade documentation for details.
- If ClickHouse is installed, it must be uninstalled before the upgrade and reinstalled afterward.

Run the Checklist

Contact technical support to obtain the **checklist script** and run it against the target platform to verify upgrade readiness.

Download the Packages

From the **Custom Portal**, download the **ACP Core Package**.

If you want to upgrade cluster **Extensions** during the upgrade, download the **Extensions Package** as follows:

From 3.18.x to 4.1.x

From the **Custom Portal**, click **Extensions** and select the scenario: `For upgrading ACP from 3.18.x to 4.1.x`.

From 3.18.x to 4.0.x

From the **Custom Portal**, click **Extensions** and select the scenario: `For upgrading ACP from 3.18.x to 4.0.x`.

From 3.16.x to 4.0.x

From the **Custom Portal**, click **Extensions** and select the scenario: `For upgrading ACP from 3.16.x to 4.0.x`.

In addition, navigate to the **CLI Tools** section in the **Custom Portal** and download the `violet` tool. This tool is required for uploading Extensions. For more information about `violet`, see Upload Packages.

NOTE

If the extraction packages and extraction path are located on the same disk, ensure the disk has at least **250 GB** of available space.

Upgrade the global cluster

ACP consists of a **global cluster** and one or more **workload clusters**. The global cluster **must** be upgraded before any workload clusters.

This document walks you through the upgrade procedure for the global cluster.

If the global cluster is configured with the **global DR (Disaster Recovery)** solution, follow the global DR procedure strictly. Otherwise, follow the Standard procedure .

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Standard procedure

1 Upload images

Copy the core package to **any control plane node** of the global cluster. Extract the package and `cd` into the extracted directory.

- If the global cluster uses the **built-in registry**, run:

```
bash upgrade.sh --only-sync-image=true
```

- If the global cluster uses an **external registry**, you also need to provide the registry address:

```
bash upgrade.sh --only-sync-image=true --registry <registry-address> --username <username> --password <password>
```

If you plan to upgrade the **Operator** and **Cluster Plugin** together during the global cluster upgrade, you can pre-push their images to the global cluster's registry in advance. For bulk upload instructions, see Push only images from all packages in a directory.

INFO

Uploading images typically takes about 2 hours, depending on your network and disk performance.

If your platform is configured for global disaster recovery (DR), remember that the **standby global cluster also requires image upload**. Be sure to plan your maintenance window accordingly.

WARNING

When using `violet` to upload packages to a standby cluster, the parameter `--dest-repo <VIP addr of standby cluster>` must be specified.
Otherwise, the packages will be uploaded to the image repository of the **primary cluster**, preventing the standby cluster from installing or upgrading extensions.

Also be awared that either authentication info of the standby cluster's image registry or `--no-auth` parameter MUST be provided.

For details of the `violet push` subcommand, please refer to Upload Packages.

2 Trigger the upgrade

After the image upload is complete, run the following command to start the upgrade process:

```
bash upgrade.sh --skip-sync-image
```

Wait for the script to finish before proceeding.

If you have already pre-pushed the Operator and Cluster Plugin images to the global cluster's registry, you can then follow Create only CRs from all packages in a directory. After running this command, wait about **10–15 minutes** until upgrade notifications appear for functional components. You will then be able to upgrade the Operator and Cluster Plugin together as part of the subsequent upgrade steps.

3 Upgrade the global cluster

WARNING

If the platform has **Data Services** installed, you must also upgrade the related extensions when upgrading clusters.
For details, see Upgrade Data Services.

1. Log in to the Web Console of the global cluster and switch to **Administrator** view.
2. Navigate to **Clusters > Clusters**.
3. Click on the `global` cluster to open its detail view.
4. Go to the **Functional Components** tab.
5. Click the **Upgrade** button.

Review the available component updates in the dialog, and confirm to proceed.

INFO

- Upgrading the Kubernetes version is optional. However, since service disruptions may occur regardless, we recommend including the Kubernetes upgrade to avoid multiple maintenance windows.
- If the **Alauda Container Platform GitOps** is installed in the global cluster, and after the upgrading, the pods of the plugin is running abnormally.Please refer to Upgrading Alauda Container Platform GitOps.

4 Install Product Docs Plugin

INFO

The **Alauda Container Platform Product Docs** plugin provides access to product documentation within the platform. All help links throughout the platform will direct users to this documentation. If this plugin is not installed, clicking help links in the platform will result in 404 access errors.

Starting from ACP 4.0, the built-in product documentation has been separated into the **Alauda Container Platform Product Docs** plugin. If you are upgrading from version 3.18, you need to install this plugin by following these steps:

1. Navigate to **Administrator**.
2. In the left sidebar, click **Marketplace** > **Cluster Plugins** and select the `global` cluster.
3. Locate the **Alauda Container Platform Product Docs** plugin and click **Install**.

Post-upgrade

- Upgrade Alauda AI ↗
- Upgrade Alauda DevOps ↗
- Upgrade Alauda Service Mesh ↗

global DR procedure

1 Verify data consistency

Follow your regular global DR inspection procedures to ensure that data in the **standby global cluster** is consistent with the **primary global cluster**.

If inconsistencies are detected, **contact technical support** before proceeding.

On **both** clusters, run the following command to ensure no `Machine` nodes are in a non-running state:

```
kubectl get machines.platform.tkestack.io
```

If any such nodes exist, contact technical support to resolve them before continuing.

2 Uninstall the etcd sync plugin

Upgrading from 3.18

1. Access the Web Console of the **primary cluster** via its IP or VIP.
2. Switch to the **Administrator** view.
3. Navigate to **Catalog > Cluster Plugin**.
4. Select `global` from the cluster dropdown.
5. Find the **EtcdSync** plugin and click **Uninstall**. Wait for the uninstallation to complete.

3 Upload images

Perform the **Upload images** step on **both** the standby cluster and the primary cluster.

See Upload images in Standard procedure for details.

4 Upgrade the standby cluster

INFO

Accessing the **standby cluster** Web Console is required to perform the upgrade.

Before proceeding, verify that the **ProductBase** resource of the standby cluster is correctly configured with the cluster VIP under `spec.alternativeURLs`.

If not, update the configuration as follows:

```
apiVersion: product.alauda.io/v1alpha2
kind: ProductBase
metadata:
  name: base
spec:
  alternativeURLs:
    - https://<standby-cluster-vip>
```

On the **standby cluster**, follow the steps in the Standard procedure to complete the upgrade.

5 Upgrade the primary cluster

After the standby cluster has been upgraded, proceed with the Standard procedure on the **primary cluster**.

6 Reinstall the etcd sync plugin

Before reinstalling, verify that port `2379` is properly forwarded from both global cluster VIPs to their control plane nodes.

To reinstall:

1. Access the Web Console of the **standby global cluster** via its IP or VIP.
2. Switch to **Administrator** view.
3. Go to **Marketplace > Cluster Plugins**.
4. Select the `global` cluster.
5. Locate **Alauda Container Platform etcd Synchronizer**, click **Install**, and provide the required parameters.

To verify installation:

```
kubectl get po -n cpaas-system -l app=etcd-sync  # Ensure pod is 1/1 Running

kubectl logs -n cpaas-system $(kubectl get po -n cpaas-system -l app=etcd-sync --
no-headers | awk '{print $1}' | head -1) | grep -i "Start Sync update"
# Wait until the logs contain "Start Sync update"

# Recreate the pod to trigger synchronization of resources with ownerReferences
kubectl delete po -n cpaas-system $(kubectl get po -n cpaas-system -l app=etcd-sync
--no-headers | awk '{print $1}' | head -1)
```

7 Check Synchronization Status

Run the following to verify the synchronization status:

```
curl "$(kubectl get svc -n cpaas-system etcd-sync-monitor -
ojsonpath='{.spec.clusterIP}')/check"
```

Explanation of output:

- `"LOCAL ETCD missed keys:"` – Keys exist in the **primary cluster** but are missing in the standby. This often resolves after a pod restart.
- `"LOCAL ETCD surplus keys:"` – Keys exist in the **standby cluster** but not in the primary. Review these with your operations team before deletion.

Upgrade Workload Clusters

After completing the upgrade of the global cluster, you can proceed to upgrade the workload clusters. The workload cluster upgrade process is similar to that of the global cluster but requires attention to the following considerations:

- If your platform uses the **global disaster recovery (DR)** solution, you **must complete the upgrade of both the primary and standby global clusters** before upgrading any workload clusters.
- All **PostgreSQL** instances will be **automatically restarted** during the upgrade.
- For **MySQL-PXC**, **MySQL-MGR**, **Redis**, **Kafka**, and **RabbitMQ** instances configured with an **automatic update strategy**, the upgrade process includes a restart, which may lead to **temporary service disruption**.
- A maximum of **20 workload clusters** can be upgraded concurrently.

If you want to upgrade Operators and Cluster Plugins together with the cluster upgrade, you must upload the Extensions to the platform **before upgrading ACP Core** using **violet**.

For bulk upload instructions, see Upload All Packages in a Directory.

When using `violet push` on a **standby global cluster**, you must specify the `--dest-repo` parameter with the VIP of the standby cluster. For details, see Upload Packages in a Global DR Environment.

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Upgrade a workload cluster

> **WARNING**
>
> If the platform has **Data Services** installed, you must also upgrade the related extensions when upgrading clusters. For details, see Upgrade Data Services.

1. Log into the Web Console and switch to the **Administrator** view.
2. Navigate to **Clusters > Clusters**.
3. Select the **workload cluster** you want to upgrade and open its detail page.
4. Go to the **Functional Components** tab.
5. Click the **Upgrade** button.

If the upgrade program detects any custom configuration overrides, you will be prompted to confirm these settings. If you are unsure whether these overridden configurations may impact the upgrade, please contact technical support for assistance.

Once confirmed, a component upgrade dialog will appear. Review the available updates and proceed with the upgrade.

> **INFO**
>
> Upgrading the Kubernetes version is optional. However, since service disruptions may still occur during other component updates, we recommend including the Kubernetes upgrade to minimize future maintenance windows.

Post-upgrade

- Upgrade Alauda AI ↗
- Upgrade Alauda DevOps ↗
- Upgrade Alauda Service Mesh ↗