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Upgrade

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

Overview

This upgrade guide covers two parts: upgrading the **global cluster** and upgrading **workload clusters**.

For both global and workload clusters, a **Feature Components** tab is available on the cluster detail page. This tab lists all upgradable components when performing a cluster upgrade, including:

- the Kubernetes version
- the container runtime
- platform-provided cluster plugins and Operators

When a new version of any listed component becomes available, the **Upgrade** button will be enabled. Users can initiate the upgrade process by clicking the button.

INFO

- **Kubernetes Version:** Kubernetes upgrades are only supported for **On-Premises Clusters**. For **Managed Clusters** (e.g., Amazon Elastic Kubernetes Service, Azure Kubernetes Service), Kubernetes upgrades must be performed through the respective cloud provider. For more information about the definitions and differences between **On-Premises Clusters** and **Managed Clusters**, see Cluster Type.
- **Operator:** Only **platform-provided Operators** are listed and can be upgraded via the cluster upgrade feature. **Third-party or user-installed Operators** are managed via the **OLM** component in the Marketplace and are not included in this upgrade process.
- **Cluster Plugin:** Platform-provided plugins can be upgraded through the cluster upgrade feature on **both** On-Premises and Managed Clusters, as long as they are installed.
- **DR:** DR is short of *Disaster Recovery Environment*. It has both primary global cluster & standby global cluster while a standard ACP environment would have just one global cluster.
- **primary global cluster:** The standby global cluster is roughly a replica of the primary global cluster. To distinguish between the two, hereby define the primary global cluster as the one that

the ACP access domain name resolves to.

- **standby global cluster:** Hereby define the standby global cluster as the one that the ACP access domain name DOES NOT resolve to.

Pre-Upgrade Preparation

Supported upgrade paths: `3.16` → `4.0`, `3.18` → `4.0`.
Before upgrading, ensure that your current platform version is within this supported range.

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Important notes before upgrade

- Starting from ACP **4.0**, periodic ETCD backup tasks besides the default one will all be deprecated. Before upgrading, backup and delete all ETCD backup tasks except the task `etcd-backup-default` (deleting a periodic backup task will not remove any existing snapshot of ETCD, just the task itself). You may reconfigure the `etcd-backup-default` task as you wish after the upgrading is accomplished.
- When upgrading the cluster's **Kubernetes version to 1.31 or higher**, all running Pods will be **restarted**. This behavior is due to changes in the PodSpec fields introduced in Kubernetes 1.31 and cannot be avoided. For more details, refer to the Kubernetes issue report: #129385↗.
- Starting from ACP **4.0**, the upgrading procedure of the **DR (Disaster Recovery Environment)** has changed. Please refer to global DR procedure for the new procedure.

Prerequisites

Condition	Requirement	If Not Met
Service mesh (Istio)	All clusters running **1.20 or later**	Upgrade `Istio` and its instances BEFORE upgrading `Kubernetes` or ACP
Kubernetes	All clusters running **1.28 or later**	Upgrade Kubernetes BEFORE upgrading ACP ; be aware to upgrade `Istio` FIRST
CostManager / Kubecost plugins	Must **not** be installed (deprecated from 4.0)	Uninstall those plugins
Elasticsearch logging	Must comply with the fix described in *How to Correct the Issue of Node Role Settings in Big Cluster Elasticsearch* (see Custom Portal > Knowledge)	Apply the fix before upgrade
Disk space on `/cpaas/minio` (global cluster control plane)	At least **120 GB free**	Expand storage
Disk space for upgrade package extraction	At least **250 GB free** if package and extraction path are on the same disk	Free or expand storage

Upgrading from 3.16

Condition	Requirement	If Not Met
ClickHouse log storage plugin	Uninstall it **before the upgrade**, then reinstall it after upgrading	

Preparation procedure

1 Run the checklist

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

2 Download the upgrade package

For platforms upgrading from version `3.16` or `3.18` to `4.0`, the **upgrade package is the same as the installation package**. Refer to Download Installation Package for instructions.

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 upgrade 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>
```

> **INFO**
>
> Uploading images typically takes about 2 hours, depending on your network and disk performance. If your platform uses the global DR, remember that the **standby global cluster also requires image upload**, and plan your maintenance window accordingly.

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.

3 Upgrade the global cluster

1. Log into 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 shown in the dialog, and confirm to continue.

> **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**.

global DR procedure

1 Compare data consistency

1. 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.
2. On **both** clusters, run the following 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

5.1. Access the Web Console of the **primary global cluster** via its IP or VIP.

5.2. Switch to the **Platform Management** view.

5.3. Navigate to **Catalog > Cluster Plugin**.

5.4. Select `global` from the cluster dropdown.

5.5. Find the **EtcdSync** plugin and click **Uninstall**. Wait for the uninstallation to complete.

Upgrading from 3.16

Log into any **control plane node** of the **primary global cluster**, then run:

```
helm3 del etcd-sync -n default 2> /dev/null
helm3 del etcd-sync -n cpaas-system 2> /dev/null

kubectl delete configmaps,secret -n kube-system   etcd-master-mirror-cert etcd-
slave-mirror-cert etcd-sync-env   etcd-sync-ignore-text &> /dev/null

kubectl delete deploy -n kube-system etcd-mirror-etcd-mirror &> /dev/  null

kubectl get pod -n kube-system | grep etcd-mirror  # Ensure no   etcd-mirror pods
remain
```

3 Upgrade the standby global cluster

Follow the same procedure as described in the Standard procedure section to upgrade the **standby global cluster** first.

4 Upgrade the primary global cluster

After the standby is upgraded, follow the same Standard procedure to upgrade the **primary global cluster**.

5 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)
```

6 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.

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Upgrade a workload cluster

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.

Upgrade DevOps toolchain (if installed)

If DevOps tools are installed in your cluster, you can upgrade them **after the cluster upgrade is complete**.

1. In the Web Console, switch to the **Administrator** view.
2. Navigate to **DevOps Toolchain** in the left-hand menu to open the **DevOps Console**.
3. In the DevOps Console, navigate to **DevOps Toolchain > Instances**.
4. Use the breadcrumb navigation at the top to switch between clusters.
5. If any tool instance shows an available upgrade, click the **Upgrade** icon in the **Actions** column.

Upgrade service mesh (if installed)

If a service mesh is installed in any cluster, refer to the Service Mesh Upgrade Guide ↗ for detailed upgrade instructions.