SAS® Viya® Platform Operations: Updating Software Tasks

2023.09 - 2023.10

This document might apply to additional versions of the software. Open this document in SAS Help Center and click on the version in the banner to see all available versions.

Get Started: Pre-update Checklist

Read First

Make sure that you are viewing the correct version of the documentation. To update to a new version, use the version of the documentation that you want to update to (the target version). To apply a patch update, use the version of the documentation for the currently deployed version.

It is important to keep the software up to date. An update to the latest version for your release cadence (Stable or Long-Term Support) ensures that the newest features, hot fixes, and security updates are deployed and that the software is covered by Standard Support. For more information, see the supported update paths to the latest version . Also, a patch update to the version of your current deployment ensures that fixes are applied in between major releases.

To successfully update to a new version or apply a patch update, start with the following Pre-update Checklist. Through a Q&A format, the Pre-update Checklist highlights prerequisites, best practices, specific scenarios, and the required documentation to update the software. Although the overall process to update to a new version or to apply a patch update is similar from release to release, you should revisit and complete the Pre-update Checklist before each software update.

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Note: If you received a new software order because of a software order modification, see "Options to Deploy Software with a Modified Software Order" on page 34 before continuing with the Pre-update Checklist. To apply only a new license without updating the software, go to "How to Apply a New License" on page 19.

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Complete the Checklist

☐ **1. Is the version of your current deployment in Standard Support?** (View the Versions in Standard Support.)

Yes	You can update to any newer version or apply a patch update to the current version of your environment. Also, if you need assistance from SAS Technical Support, the software update is covered by Standard Support. Continue to the next question.

No	Go to "Limited Support and Updating Software" on page 27 to review considerations for updating software that is covered by Limited Support. It is possible that you can perform a single update to a newer version, or a new deployment might be required instead of a software update.

TIP To determine the cadence, release, and version of the software that is currently deployed, run the following command:

```
kubectl -n name-of-namespace get cm -o yaml | grep ' SAS_CADENCE'
```

☐ **2. Is the version of Kubernetes that is in the current environment supported for the target version?**

Yes	Go to the next question.
Not sure	View the Supported Versions of Kubernetes to determine whether a Kubernetes upgrade is required. Next, return to this checklist and continue to the next question.

Note: Information about SAS Viya support and Kubernetes versions is also provided in SAS Viya Platform Releases That Have Been Declared under Limited Support and SAS Support for Alternative Kubernetes Distributions.

☐ **3. Have you reviewed the System Requirements for any changes?**

Yes	Go to the next question.
No	Perform the following steps: **Note:** Skip steps 1 and 2 if you are applying a patch update. 1 Go to What's New in SAS Viya Platform Operations and read about any changes to the system requirements for each version after the version that is currently deployed, up to and including the target version. Changes to system requirements are highlighted in What's New. 2 Verify the System Requirements for the SAS Viya Platform for the target version before each software update. 3 Review the Hardware and Resource Requirements to verify that the cluster has sufficient resources for the update process. During the update process, new pods are created to replace the existing pods; and each existing pod continues to run until the new pod

starts. Additional resources are required to run multiple existing pods and new pods at the same time. Also, additional resources are required for new pods that are created for any new software and for any components that are deployed for the first time.

4   Return to this checklist and continue with the next question.

☐ **4. Do you have a recent inventory scan report?**

Yes	Go to the next question.
No	A best practice is to perform an inventory scan before each software update. For more information, see "Inventory: Overview" in *SAS Viya Platform: Inventory*, and then return to this checklist and continue with the next question.

☐ **5. Do you have a recent backup?**

Yes	Go to the next question.
No	A recent backup is recommended before each software update. For more information, see "Backup and Restore: Perform an Ad Hoc Backup" in *SAS Viya Platform: Backup and Restore*, and then return to this checklist and continue with the next question.

☐ **6. Have you downloaded the new files (deployment assets) for the software update?**

Yes	Go to the next question.
No	Go to "Download New Files for a Software Update" on page 29. For an update to a new version, download new files for the target version. To apply a patch update, download new files for the currently deployed version. After you have the new files, return to this checklist and continue to the next question.

☐ **7. Have you reviewed the Deployment Notes?**

Note: Skip this question if you are applying a patch update.

Yes	Go to the next question.
No	Go to SAS Viya Platform: Deployment Notes, and perform the required steps for each version after the version that is currently deployed, up to and including the target version. Next, return to this checklist and continue to the next question.

TIP   Keep the deployment notes handy when you are updating to a new version. The deployment notes provide steps to perform before and after the deployment of a new version of the software. The deployment notes can include changes to deployment commands, specific files, and system requirements, as well as additional instructions for specific servers and services.

☐   **8. Are multiple CAS servers deployed?**

Note: Skip this question if you are applying a patch update.

Yes	Go to "Regenerate CAS Servers" on page 35 to run the create-cas-server.sh script to regenerate the existing subdirectories and files for the CAS servers. This step is performed after you have obtained the deployment assets. Next, return to this checklist and continue to the next question.
No	Go to the next question.

☐   **9. Have you informed the SAS Viya platform users and administrators about the upcoming software update?**

Yes	Go to the next question.
No	Because services are temporarily disrupted during a software update, make sure to inform users and administrators, and then continue to the next question.

☐   **10. Does the current deployment include SAS Viya with SingleStore?**

| Yes | Pause the SingleStore cluster before the software update. For more information, see "Pausing SingleStore" in *SAS Viya Platform with SingleStore: Administration and Configuration Guide*.

Next, return to this checklist and continue to Perform the Software Update on page 6 to update the software to a new version or to apply a patch update. |
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No	Go to Perform the Software Update on page 6 to update the software to a new version or to apply a patch update.

Perform the Software Update

To update the deployment to a new version, go to one of the following topics:

- "Update to a New Version Using the Deployment Operator" on page 6
- "Update to a New Version Using the sas-orchestration Command" on page 9
- "Update to a New Version Using Kubernetes Commands" on page 10

To apply a patch update to the version of the current deployment, go to one of the following topics:

- "Apply a Patch Update Using the Deployment Operator" on page 13
- "Apply a Patch Update Using the sas-orchestration Command" on page 15
- "Apply a Patch Update Using Kubernetes Commands" on page 17

Update to a New Version

Update to a New Version Using the Deployment Operator

Prerequisites

- Make sure that you are viewing the correct version of the documentation, which is the version that you want to update to (the target version).
- Make sure that you have completed the Pre-update Checklist on page 2.
- Consider updating the SAS Viya Platform Deployment Operator (deployment operator) before updating the SAS Viya platform software. For more information, see "Update the Deployment Operator" on page 25.
- To restart SAS Cloud Analytic Services (CAS) automatically with each update to a new version, see "Enable CAS Auto-Restart After Updates" in *SAS Viya Platform: Deployment Guide*.

Note: CAS auto-restart cannot be enabled if state transfer for CAS Servers is enabled. For more information, see "Enable State Transfer for CAS Servers" in *SAS Viya Platform: Deployment Guide*.

Apply the SASDeployment Custom Resource

When the deployment operator is in use, the software is updated with the SASDeployment custom resource. For example, if the cadence release of a version of the software is updated in the SASDeployment custom resource, then the software is updated to that version when the SASDeployment custom resource is applied. The name of the file for the SASDeployment custom resource is $*deploy*-sasdeployment.yaml.

The following steps are based on the tasks to "Create the SASDeployment Custom Resource" in *SAS Viya Platform: Deployment Guide*, and include modifications that are required when updating to a new version of the software.

1. Update the orchestration image. Go to the README file at `$deploy/sas-bases/examples/kubernetes-tools/README.md` (for Markdown format) or `$deploy/sas-bases/docs/using_kubernetes_tools_from_the_sas-orchestration_image.htm` (for HTML format), and follow the instructions in the "Prerequisites" section to deploy the image.

2. Create the SASDeployment custom resource with updated values. Run the docker run command from the parent directory of the $deploy and $license directories.

   Note: All files in the $deploy directory contribute to the size of the custom resource, and an error can occur if the custom resource becomes too large. A best practice is to reduce the size before creating the custom resource for an update to a new version. Review the files in the $deploy directory and subdirectories, and remove any obsolete or unused temporary files, such as earlier backup versions of files and the existing custom resource file. For more information, see "Deployment Operator Custom Resource Is Too Large" in *SAS Viya Platform: Deployment Guide*.

   ```
   docker run --rm \
     -v $(pwd):mount-for-working-directory-inside-container \
     sas-orchestration \
     create sas-deployment-cr \
     --deployment-data new-certificates-information \
     --license new-license-information \
     --user-content location-of-deployment-files \
     --cadence-name stable-or-lts \
     --cadence-version new-cadence-version-number \
     --cadence-release new-cadence-release-number-or-double-quotation-marks \
   > $deploy-sasdeployment.yaml
   ```

   > **IMPORTANT** To update the software, `--cadence-release` is a required flag for the `create sas-deployment-cr` command. For the initial deployment, the flag is optional.

   Here are the values that are substituted for the variables in the command:

   new-certificates-information, *new-license-information*, and *location-of-deployment-files*
   The values must match the locations of the downloaded files for the new software version.

stable-or-lts
> The value is `stable` for software in the Stable cadence or `lts` for the Long-Term Support cadence.

new-cadence-version-number
> The value is the target version that you want to deploy.

new-cadence-release-number-or-double-quotation-marks
> The value can be one of the following:

- A specific cadence release of the cadence version number.

- Double quotation marks, such as `--cadence-release "" \`

  The use of double quotation marks forces the operator to use the latest cadence release of the cadence version.

3   Apply the SASDeployment custom resource:

```
kubectl -n name-of-namespace apply -f $deploy-sasdeployment.yaml
```

To validate that the new version of the software is deployed, run the following command and look for the SUCCEEDED status and the updated cadence version:

```
kubectl -n name-of-namespace get sasdeployment
```

For complete information about applying the SASDeployment custom resource, see "Deployment Using the SAS Viya Platform Deployment Operator" in *SAS Viya Platform: Deployment Guide*.

After Deployment Configuration

- Return to the deployment notes that you followed before the deployment and perform any steps that are listed in the *After Deployment Commands* section. For more information, see SAS Viya Platform: Deployment Notes.

- If the deployment includes SAS Viya with SingleStore, resume the SingleStore cluster. For more information about resuming the cluster after it has been paused, see "Pausing SingleStore" in *SAS Viya Platform with SingleStore: Administration and Configuration Guide*.

- If you updated with a new software order, additional configuration might be required to complete the deployment of any new software that was added. For more information, see "Post-Installation Tasks" in *SAS Viya Platform: Deployment Guide*.

- If state transfer has been enabled for CAS servers, advise users about the following items:

  □ The times in the output from the tableInfo action are updated to reflect the time at which the software update occurred. For more information about the tableInfo action, see "Table information" in *SAS Viya Platform: System Programming Guide*.

  □ User access for existing session tables should be checked after the software is updated. For more information about Access Control Action Set, see "Usage Notes" in *SAS Viya Platform: System Programming Guide*.

  Note: For more information about state transfer, see "Enable State Transfer for CAS Servers" in *SAS Viya Platform: Deployment Guide*.

- Make sure that you have a backup of the updated software. For more information, see "Backup and Restore: Perform an Ad Hoc Backup" in *SAS Viya Platform: Backup and Restore*.

Troubleshooting

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- Troubleshooting — Deployment Guide

Update to a New Version Using the sas-orchestration Command

Prerequisites

- Make sure that you are viewing the correct version of the documentation, which is the version that you want to update to (the target version).
- Make sure that you have completed the .
- To restart SAS Cloud Analytic Services (CAS) automatically with each update to a new version, see "Enable CAS Auto-Restart After Updates" in *SAS Viya Platform: Deployment Guide*.

  Note: CAS auto-restart cannot be enabled if state transfer for CAS Servers is enabled. For more information, see "Enable State Transfer for CAS Servers" in *SAS Viya Platform: Deployment Guide*.

Deploy the Software

Deploy the software by running the deploy command with the sas-orchestration image. Here are some tips when deploying the software:

- Make sure that the sas-orchestration image that is pulled is the same as the one mentioned in the README file (from the new deployment assets) at `$deploy/sas-bases/examples/kubernetes-tools/README.md` (for Markdown format) or `$deploy/sas-bases/docs/using_kubernetes_tools_from_the_sas-orchestration_image.htm` (for HTML format).
- Make sure that the value for `--cadence-version` is set to the version of the software that you want to deploy.
- Make sure that the value for `--cadence-name` is set.
- Make sure to include the `--cadence-release` option, and set it to the same value that is shown for `release` in the `$deploy/sas-bases/.orchestration/cadence.yaml` file from the deployment assets.
- For more information, see "Deployment Using the sas-orchestration Command" in *SAS Viya Platform: Deployment Guide*.

After Deployment Configuration

- Return to the deployment notes that you followed before the deployment and perform any steps that are listed in the *After Deployment Commands* section. For more information, see SAS Viya Platform: Deployment Notes.

- If the deployment includes SAS Viya with SingleStore, resume the SingleStore cluster. For more information about resuming the cluster after it has been paused, see "Pausing SingleStore" in *SAS Viya Platform with SingleStore: Administration and Configuration Guide*.

- If you updated with a new software order, additional configuration might be required to complete the deployment of any new software that was added. For more information, see "Post-Installation Tasks" in *SAS Viya Platform: Deployment Guide*.

- If state transfer has been enabled for CAS servers, advise users about the following items:

  - The times in the output from the tableInfo action are updated to reflect the time at which the software update occurred. For more information about the tableInfo action, see "Table information" in *SAS Viya Platform: System Programming Guide*.

  - User access for existing session tables should be checked after the software is updated. For more information about Access Control Action Set, see "Usage Notes" in *SAS Viya Platform: System Programming Guide*.

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  Note: For more information about state transfer, see "Enable State Transfer for CAS Servers" in *SAS Viya Platform: Deployment Guide*.
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- Make sure that you have a backup of the updated software. For more information, see "Backup and Restore: Perform an Ad Hoc Backup" in *SAS Viya Platform: Backup and Restore*.

Troubleshooting

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Update to a New Version Using Kubernetes Commands

Prerequisites

- Make sure that you are viewing the correct version of the documentation, which is the version that you want to update to (the target version).

- Make sure that you have completed the Pre-update Checklist on page 2.

Perform Required Tasks by Component

- If the deployment uses a mirror registry, perform steps 1 and 2 of the instructions at "Add a Mirror Registry to Your SAS Viya Platform Deployment" in *SAS Viya Platform: Deployment Guide*.

- If the deployment includes OpenSearch, see *Upgrade the Internal OpenSearch Operator* in the README file at `$deploy/sas-bases/overlays/internal-elasticsearch/README.md` (for Markdown) or `$deploy/sas-bases/docs/configure_an_internal_opensearch_instance_for_sas_viya_platform.htm` (for HTML).

  To find out if OpenSearch is deployed, run the following command:

  ```
  kubectl -n name-of-namespace get pods | grep sas-opendistro
  ```

- Delete the sas-pyconfig job with the following command:

  ```
  kubectl delete jobs -l sas.com/component-name=sas-pyconfig -n name-of-namespace
  ```

  If there is no job to delete, the command responds with a message that the job was not found. This is an acceptable result.

- If the deployment includes SAS Risk Engine, delete the sas-risk-samples job:

  ```
  kubectl -n name-of-namespace delete job sas-risk-samples
  ```

  If there is no job to delete, the command responds with a message that the job was not found. This is an acceptable result.

- If the deployment uses the openssl-generated-ingress-certificate.yaml file to generate the server identity certificate for the ingress controller, perform one of the following:

  - **For an update to 2023.10** Skip this step and make sure to complete the Deployment Notes for 2023.10. As of 2023.10, the existing openssl-generated-ingress-certificate.yaml file must be replaced by a new version and the Deployment Notes documents the required steps.

  - **For an update to 2023.09** Delete the related job before the software update:

    ```
    kubectl delete job sas-create-openssl-ingress-certificate -n name-of-namespace
    ```

    > **TIP** If a reference to the openssl-generated-ingress-certificate.yaml file is used in the kustomization.yaml file, delete the job. For more information, see "Configure TLS" in *SAS Viya Platform: Deployment Guide*.

Deploy the New Version

1 Ensure that you are working from the directory where you saved the deployment assets during the initial deployment:

   ```
   cd $deploy
   ```

   For more information, see Retrieve Required Files.

2 Deploy the updated software by performing the steps that were used for the initial deployment. For more information, see Deploy the Software.

> **IMPORTANT**
>
> - You will create a new Kubernetes manifest (site.yaml) for the update.
>
> - The deployment assets include a license file. To apply the license, any license information specified in the secretGenerator block must be commented out or removed from the kustomization.yaml file before you run the kubectl apply command.
>
> - Ignore the following message if it is displayed after running the kubectl apply commands:
>   ```
>   Warning: kubectl apply should be used on resource created by either kubectl
>   create --save-config or kubectl apply.
>   ```

After Deployment Configuration

- Return to the deployment notes that you followed before the deployment and perform any steps that are listed in the *After Deployment Commands* section. For more information, see SAS Viya Platform: Deployment Notes.

- If the deployment includes SAS Viya with SingleStore, resume the SingleStore cluster. For more information about resuming the cluster after it has been paused, see "Pausing SingleStore" in *SAS Viya Platform with SingleStore: Administration and Configuration Guide*.

- If you updated with a new software order, additional configuration might be required to complete the deployment of any new software that was added. For more information, see "Post-Installation Tasks" in *SAS Viya Platform: Deployment Guide*.

- If state transfer has been enabled for CAS servers, advise users about the following items:

  - The times in the output from the tableInfo action are updated to reflect the time at which the software update occurred. For more information about the tableInfo action, see "Table information" in *SAS Viya Platform: System Programming Guide*.

  - User access for existing session tables should be checked after the time at which software is updated. For more information about Access Control Action Set, see "Usage Notes" in *SAS Viya Platform: System Programming Guide*.

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  Note: For more information about state transfer, see "Enable State Transfer for CAS Servers" in *SAS Viya Platform: Deployment Guide*.

  ....

- Make sure that you have a backup of the updated software. For more information, see "Backup and Restore: Perform an Ad Hoc Backup" in *SAS Viya Platform: Backup and Restore*.

Troubleshooting

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Apply a Patch Update

Apply a Patch Update Using the Deployment Operator

Prerequisites

■ Make sure that you are viewing the correct version of the documentation. The version of the documentation to use is the same as the currently deployed software. To find out the cadence, release, and version of the software that is currently deployed, run the following command:

```
kubectl -n name-of-namespace get cm -o yaml | grep ' SAS_CADENCE'
```

■ Make sure that you have completed the Pre-update Checklist on page 2.

■ To restart SAS Cloud Analytic Services (CAS) automatically with each update, see "Enable CAS Auto-Restart After Updates" in *SAS Viya Platform: Deployment Guide*.

> **Note:** CAS auto-restart cannot be enabled if state transfer for CAS Servers is enabled. For more information, see "Enable State Transfer for CAS Servers" in *SAS Viya Platform: Deployment Guide*.

Note: To see what is available in a patch update, view the Update Checker report on page 31.

Apply the SASDeployment Custom Resource

The following steps are based on the tasks to "Create the SASDeployment Custom Resource" in *SAS Viya Platform: Deployment Guide*, and include modifications that are required when applying a patch update.

1 Open the $*deploy*-sasdeployment.yaml file in an editor.

2 Verify that the line `cadenceRelease: ""` is included in the file. If it is not included, add the line.

Here is an example:

```
spec:
  caCertificate:
    secretKeyRef:
      key: cacert
      name: sas-viya
  cadenceName: stable
  cadenceRelease: ""
```

```
cadenceVersion: 2023.04
```

Note: The value for `cadenceRelease` can be one of the following:

- A specific cadence release of the cadence version number.

- Double quotation marks, such as `cadence-release: ""`

  The use of double quotation marks forces the operator to use the latest cadence release of the cadence version.

3 Apply the SASDeployment custom resource:

```
kubectl -n name-of-namespace apply -f $deploy-sasdeployment.yaml
```

To validate that the patch update is applied, run the following command and look for the SUCCEEDED status:

```
kubectl -n name-of-namespace get sasdeployment
```

For complete information about applying the SASDeployment custom resource, see "Deployment Using the SAS Viya Platform Deployment Operator" in *SAS Viya Platform: Deployment Guide*.

Note: If auto-restart or state transfer is not enabled for CAS, you must delete the existing CAS pods, which restarts the updated CAS servers:

```
kubectl -n name-of-namespace delete pods -l app.kubernetes.io/managed-by=sas-cas-operator
```

Enter the command on a single line. Multiple lines are used here to improve readability.

The updated CAS servers might need to be reloaded with data.

After Deployment Configuration

- If you updated with a new software order, additional configuration might be required to complete the deployment of any new software that was added. For more information, see "Post-Installation Tasks" in *SAS Viya Platform: Deployment Guide*.

- If the deployment includes SAS Viya with SingleStore, resume the SingleStore cluster. For more information about resuming the cluster after it has been paused, see "Pausing SingleStore" in *SAS Viya Platform with SingleStore: Administration and Configuration Guide*.

- If state transfer has been enabled for CAS servers, advise users about the following items:

  - The times in the output from the tableInfo action are updated to reflect the time at which the software update occurred. For more information about the tableInfo action, see "Table information" in *SAS Viya Platform: System Programming Guide*.

  - User access for existing session tables should be checked after the software is updated. For more information about Access Control Action Set, see "Usage Notes" in *SAS Viya Platform: System Programming Guide*.

  Note: For more information about state transfer, see "Enable State Transfer for CAS Servers" in *SAS Viya Platform: Deployment Guide*.

■ Make sure that you have a backup of the updated software. For more information, see "Backup and Restore: Perform an Ad Hoc Backup" in *SAS Viya Platform: Backup and Restore*.

Troubleshooting

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Apply a Patch Update Using the sas-orchestration Command

Prerequisites

■ Make sure that you are viewing the correct version of the documentation. The version of the documentation to use is the same as the currently deployed software. To find out the cadence, release, and version of the software that is currently deployed, run the following command:

```
kubectl -n name-of-namespace get cm -o yaml | grep ' SAS_CADENCE'
```

■ Make sure that you have completed the Pre-update Checklist on page 2.
■ To restart SAS Cloud Analytic Services (CAS) automatically with each update, see "Enable CAS Auto-Restart After Updates" in *SAS Viya Platform: Deployment Guide*.

Note: CAS auto-restart cannot be enabled if state transfer for CAS Servers is enabled. For more information, see "Enable State Transfer for CAS Servers" in *SAS Viya Platform: Deployment Guide*.

Note: To see what is available in a patch update, view the Update Checker report on page 31.

Deploy the Software

To apply the patch update, deploy the software by running the deploy command with the sas-orchestration image. Here are some tips when deploying the software:

■ Make sure that the sas-orchestration image that is pulled is the same as the one mentioned in the README file (from the new deployment assets) at `$deploy/sas-bases/examples/kubernetes-tools/README.md` (for Markdown format) or `$deploy/sas-bases/docs/using_kubernetes_tools_from_the_sas-orchestration_image.htm` (for HTML format).
■ Make sure that the value for `--cadence-version` is set to the software version of the current deployment.

- Make sure to include the `--cadence-release` option, and set it to the same value that is shown for **release** in the **$deploy/sas-bases/.orchestration/cadence.yaml** file from the deployment assets.

- For more information, see "Deployment Using the sas-orchestration Command" in *SAS Viya Platform: Deployment Guide*.

After Deployment Configuration

- If you updated with a new software order, additional configuration might be required to complete the deployment of any new software that was added. For more information, see "Post-Installation Tasks" in *SAS Viya Platform: Deployment Guide*.

- If the deployment includes SAS Viya with SingleStore, resume the SingleStore cluster. For more information about resuming the cluster after it has been paused, see "Pausing SingleStore" in *SAS Viya Platform with SingleStore: Administration and Configuration Guide*.

- If state transfer has been enabled for CAS servers, advise users about the following items:

  - The times in the output from the tableInfo action are updated to reflect the time at which the software update occurred. For more information about the tableInfo action, see "Table information" in *SAS Viya Platform: System Programming Guide*.

  - User access for existing session tables should be checked after the software is updated. For more information about Access Control Action Set, see "Usage Notes" in *SAS Viya Platform: System Programming Guide*.

  ....

  Note: For more information about state transfer, see "Enable State Transfer for CAS Servers" in *SAS Viya Platform: Deployment Guide*.

  ....

- Make sure that you have a backup of the updated software. For more information, see "Backup and Restore: Perform an Ad Hoc Backup" in *SAS Viya Platform: Backup and Restore*.

Troubleshooting

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Apply a Patch Update Using Kubernetes Commands

Prerequisites

- Make sure that you are viewing the correct version of the documentation. The version of the documentation to use is the same as the currently deployed software. To find out the cadence, release, and version of the software that is currently deployed, run the following command:

  ```
  kubectl -n name-of-namespace get cm -o yaml | grep ' SAS_CADENCE'
  ```

- Make sure that you have completed the Pre-update Checklist on page 2.

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Note: To see what is available in a patch update, view the Update Checker report on page 31.

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Perform Required Tasks by Component

- If the deployment uses a mirror registry, perform steps 1 and 2 of the instructions at "Add a Mirror Registry to Your SAS Viya Platform Deployment" in *SAS Viya Platform: Deployment Guide*.

- If the deployment includes OpenSearch, see *Upgrade the Internal OpenSearch Operator* in the README file at **$deploy/sas-bases/overlays/internal-elasticsearch/README.md** (for Markdown) or **$deploy/sas-bases/docs/ configure_an_internal_opensearch_instance_for_sas_viya_platform.htm** (for HTML).

  To find out if OpenSearch is deployed, run the following command:

  ```
  kubectl -n name-of-namespace get pods | grep sas-opendistro
  ```

- Run the following command to delete any **sas-commonfiles** Jobs from an earlier version:

  ```
  kubectl -n name-of-namespace delete job -l app=sas-commonfiles
  ```

  If there is no job to delete, the command responds with a message that the job was not found. This is an acceptable result.

- Delete the **sas-pyconfig** job:

  ```
  kubectl delete jobs -l sas.com/component-name=sas-pyconfig -n name-of-namespace
  ```

  If there is no job to delete, the command responds with a message that the job was not found. This is an acceptable result.

- If the deployment includes SAS Risk Engine, delete the **sas-risk-samples** job:

  ```
  kubectl -n name-of-namespace delete job sas-risk-samples
  ```

  If there is no job to delete, the command responds with a message that the job was not found. This is an acceptable result.

■ (Skip this step if you are applying a patch update to 2023.10.) If the deployment uses the openssl-generated-ingress-certificate.yaml file to generate the server identity certificate for the ingress controller, delete the related job before applying a patch update to 2023.09:

```
kubectl delete job sas-create-openssl-ingress-certificate -n name-of-namespace
```

> **TIP**   If a reference to the openssl-generated-ingress-certificate.yaml file is used in the kustomization.yaml file, delete the job. For more information, see "Configure TLS" in *SAS Viya Platform: Deployment Guide*.

Deploy the Software

> **IMPORTANT**   Performing this task requires a restart of your CAS server or servers, which cause the termination of all active connections and sessions and the loss of any in-memory data.

1   Ensure that you are working from the directory where you saved the deployment assets during the initial deployment:

```
cd $deploy
```

For more information, see Retrieve Required Files.

2   Deploy the updated software by performing the steps that were used for the initial deployment. For more information, see Deploy the Software.

> **IMPORTANT**
> ■ You will create a new Kubernetes manifest (site.yaml) for the update.
> ■ The deployment assets include a license file. To apply the license, the secretGenerator block must be commented out or removed from the kustomization.yaml file before you run the kubectl apply command.
> ■ Ignore the following message if it is displayed after running the kubectl apply commands:
> ```
> Warning: kubectl apply should be used on resource created by either kubectl
> create --save-config or kubectl apply.
> ```

3   If state transfer is enabled for CAS, skip this step.

Delete the existing CAS pods, which restarts the updated CAS servers:

```
kubectl -n name-of-namespace delete pods -l app.kubernetes.io/managed-by=sas-cas-operator
```

....

Note: Enter the command on a single line. Multiple lines are used here to improve readability.

....

The updated CAS servers might need to be reloaded with data.

After Deployment Configuration

- If you updated with a new software order, additional configuration might be required to complete the deployment of any new software that was added. For more information, see "Post-Installation Tasks" in *SAS Viya Platform: Deployment Guide*.

- If the deployment includes SAS Viya with SingleStore, resume the SingleStore cluster. For more information about resuming the cluster after it has been paused, see "Pausing SingleStore" in *SAS Viya Platform with SingleStore: Administration and Configuration Guide*.

- If state transfer has been enabled for CAS servers, advise users about the following items:

  - The times in the output from the tableInfo action are updated to reflect the time at which the software update occurred. For more information about the tableInfo action, see "Table information" in *SAS Viya Platform: System Programming Guide*.

  - User access for existing session tables should be checked after the software is updated. For more information about Access Control Action Set, see "Usage Notes" in *SAS Viya Platform: System Programming Guide*.

  ....

  Note: For more information about state transfer, see "Enable State Transfer for CAS Servers" in *SAS Viya Platform: Deployment Guide*.

  ....

- Make sure that you have a backup of the updated software. For more information, see "Backup and Restore: Perform an Ad Hoc Backup" in *SAS Viya Platform: Backup and Restore*.

Troubleshooting

- Troubleshooting — Updating Software on page 36
- Troubleshooting — Deployment Guide

How to Apply a New License

Overview

> **IMPORTANT**   Only the administrator of the provider tenant can see the License page.

Applying a new license enables new offerings or extends the expiration date on existing offerings. A **Software License Renewal Confirmation** email is sent to notify you when there is a new license

available for an order. The email links to My SAS (my.sas.com), where you can download a new license.

These instructions are for applying the new license without updating the software. If you want to update the software with a patch or version and also apply the new license, see SAS Viya Platform Operations: Updating Software Tasks on page 0   .

The instructions that you need to update your license depends on the method you used to originally deploy your software.

Update Using Kubernetes Commands

Note: To perform some elements of this task, you must have elevated Kubernetes permissions.

Be advised that these instructions modify the manifest that is derived from the kustomization.yaml file such that the license provided in the initial deployment assets is not applied for subsequent software updates.
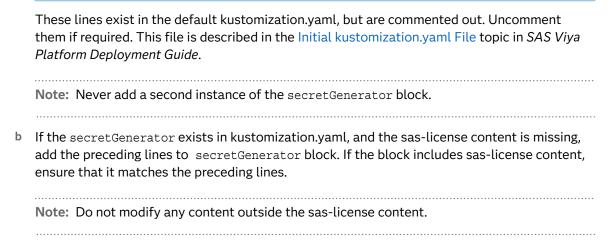
> **IMPORTANT**   If the `secretGenerator` has a license section in your kustomization.yaml file, that license is used regardless of the license included in the deployment assets. Be sure to edit the kustomization.yaml file the next time you update the software so that the license provided with updated deployment assets is used.

1 From My SAS (my.sas.com), click the order for the deployed software.

   a Click the **Download** tab. The line above the **Asset Type** table indicates the release cadence and the version of SAS Viya platform software that you will deploy. If you want to deploy a different version, find the listing for that version on the page.

   b Select **License** from the **Asset Type** table, and then click **Download** to download the license file, which is identified by the .jwt extension.

2 Save the .jwt file in the `$deploy` directory. For more information about the `$deploy` directory, see "Retrieve Required Files" in *SAS Viya Platform: Deployment Guide*.

3 Find the kustomization.yaml file most recently used when creating or updating the deployment. It should be located in the `$deploy` directory where the deployment assets were expanded.

   a If the `secretGenerator` block does not exist in the kustomization.yaml file, add the following code immediately before the `configMapGenerator` block:

```
secretGenerator:
 - name: sas-license
   type: sas.com/license
   behavior: merge
   files:
   - SAS_LICENSE=new-license-file
```

> **IMPORTANT** Do not keep more than one secretGenerator in your kustomization.yaml file.

These lines exist in the default kustomization.yaml, but are commented out. Uncomment them if required. This file is described in the Initial kustomization.yaml File topic in *SAS Viya Platform Deployment Guide*.

Note: Never add a second instance of the `secretGenerator` block.

b   If the `secretGenerator` exists in kustomization.yaml, and the sas-license content is missing, add the preceding lines to `secretGenerator` block. If the block includes sas-license content, ensure that it matches the preceding lines.

Note: Do not modify any content outside the sas-license content.

4   Deploy the software. See "Deploy the Software" in *SAS Viya Platform: Deployment Guide*.

Update Using the sas-orchestration Command

Note: To perform some elements of this task, you must have elevated Kubernetes permissions.

1   From My SAS (my.sas.com), click the order for the deployed software.

a   Click the **Download** tab. The line above the **Asset Type** table indicates the release cadence and the version of SAS Viya platform software that you will deploy. If you want to deploy a different version, find the listing for that version on the page.

b   Select **License** from the **Asset Type** table, and then click **Download** to download the license file, which is identified by the .jwt extension.

2   Save the .jwt file in the `$deploy` directory. For more information about the `$deploy` directory, see "Retrieve Required Files" in *SAS Viya Platform: Deployment Guide*.

3   Deploy the software. See "Deployment Using the sas-orchestration Command" in *SAS Viya Platform: Deployment Guide*.

Update Using the Deployment Operator

Note: The user must have deployed with the operator in order to update the license with the operator.

Note: Applying your license using the SAS Viya Platform Deployment Operator requires an outage for your SAS Viya platform. Updating the software as you apply the license requires a longer outage.

> **IMPORTANT** If the `secretGenerator` has a license section in your kustomization.yaml file, that license is used regardless of the license included in the deployment assets. Be sure to edit the kustomization.yaml file the next time you update the software so that the license provided with the updated deployment assets is used.

> **IMPORTANT** Be sure to check the kustomization.yaml file for license information and remove or comment it out. To update the new version manually, see "Update to a New Version Using Kubernetes Commands" on page 10.

1   From My SAS (my.sas.com), click the order for the deployed software.

    a   Click the **Download** tab. The line above the **Asset Type** table indicates the release cadence and the version of SAS Viya platform software that you will deploy. If you want to deploy a different version, find the listing for that version on the page.

    b   Select **License** from the **Asset Type** table, and then click **Download** to download the license file, which is identified by the .jwt extension.

2   Create the SASDeployment custom resource.

    a   To avoid updating your SAS Viya platform while applying the license, ensure that the updatePolicy field in the custom resource is set to "never" or that the cadence variables are set to the values of the current release. For more information, see "Manage Updates" in *SAS Viya Platform: Deployment Guide*.

    b   Save the .jwt file in the `$license` directory using the same naming strategy that was used with the initial deployment.

    c   Re-run the command to create the SAS Deployment custom resource as described in "Create the SASDeployment Custom Resource" in *SAS Viya Platform: Deployment Guide*, ensuring that the license option specifies the name of the new license.

> **IMPORTANT** The deployment operator might apply patch updates to your SAS Viya platform deployment. These updates can potentially cause intermittent outages or longer outages than the outages that you expect if your SAS Viya platform deployment is using internal PostgreSQL. To prevent these patch updates from being applied, follow the instructions to create the SASDeployment custom resource in the link in this step.

3   Apply the custom resource per "Deployment Using the SAS Viya Platform Deployment Operator" in *SAS Viya Platform: Deployment Guide*.

Note: Before applying the custom resource, ensure that only the files that are needed are included in the $deploy directory. For example, site.yaml files from earlier manual deployments and old or duplicate kustomization.yaml files should be moved from the $deploy directory or

deleted. For more information about potential errors, see "Licensing: Troubleshooting" in *SAS Viya Platform: Licensing*.

....

Update Using the viya4-deployment Project

To renew your license through the viya4-deployment project, see Applying a New License for your SAS Viya Platform Deployment.

Related Topics for Updating Software

Best Practices for Updating Software

Keep the Software Current

To keep the software up-to-date and covered by Standard Support, update the software to the latest version as it becomes available.

- Update to the latest version for your cadence (Stable or Long-Term Support) as it becomes available. For more information, see the following topics:

  - □ Versions in Standard Support and Update Paths

  - □ What's New in SAS Viya Platform Operations

  - □ Release Schedule and Versions

- Apply patch updates as they become available. Patch updates can be released anytime and can include critical fixes and security updates.

- Opt in to receive emails about new versions that are available for your software order at my.sas.com (My SAS). Also, you can view the list of available versions for the deployment assets from your software order. Typically, all versions that are available from your software order are covered by Standard Support.

Follow the Pre-update Checklist

To successfully update to a new version or apply a patch update, follow the steps in the Pre-update Checklist. The Pre-update Checklist highlights prerequisites, specific scenarios, and the required documentation to update the software. For more information, see "Get Started: Pre-update Checklist" on page 2.

Create a Backup before a Software Update

> **TIP** A best practice is to perform an inventory scan of the current Kubernetes environment before each backup and software update. After updating the software, you can scan the content again to generate a comparison report, which is used to validate the content of the updated deployment. For more information, see "Inventory: Overview" in *SAS Viya Platform: Inventory*.

Before updating the software, make sure that the data of the current deployment is backed up correctly by the backup job, and that the status of the most recent backup is `Completed`. To create a backup, see "Backup and Restore: Perform an Ad Hoc Backup" in *SAS Viya Platform: Backup and Restore*.

A backup is used in the unlikely event that the deployment becomes inoperable during the software update and cannot be remediated. For more information, see "Backup and Restore: Recover from a Disaster" in *SAS Viya Platform: Backup and Restore*.

Here are some rules to remember when using a backup:

- A backup is specific to the cadence and version of the deployment from which it is created. For example, if you create a backup of a Stable 2023.01 deployment and an update to Stable 2023.02 fails, then the backup can be used to restore data to a redeployment of Stable 2023.01 only. The same rule applies to Long-Term Support versions of the software.

- A backup is not used to restore data to a new version of the software or to a different cadence. For more information, see "What Restore Scenarios Are Not Supported?" in *SAS Viya Platform: Backup and Restore*.

Inform Users before a Software Update

Because services are temporarily disrupted during a software update, work with the SAS users and administrator to schedule software updates.

Stay Informed about Available Updates

Your Software Order at My SAS

If an update is available, a notification is displayed in the **Status** field for the software order on the **My Orders** page at My SAS (my.sas.com). To view an available update, click **Update ⇨ Downloads**, and then look for **Update Available** in the **Status** field for an asset. An update for **Deployment Assets** indicates that a patch update is available. An update for **License** indicates that a new license is available.

Update Checker Report

The Update Checker report indicates whether a patch update or a new version for your cadence (Stable or Long-Term Support) is available. For more information, see "Update Checker Report" on page 31.

> **TIP** Get familiar with the Update Checker report. The Update Checker is a CronJob that is included automatically with the deployment and provides a comprehensive report of what is deployed and available updates.

Email Notifications

SAS sends an email if a new license is available and if new software is added through a new software order. If you have selected to receive email notifications at My SAS, you receive an email each time a new version is available for software that you have previously downloaded.

Update the Deployment Operator

The SAS Viya Platform Deployment Operator (deployment operator) is deployed and updated separately from the SAS Viya platform software, and updating it does not disrupt a running SAS deployment. If you are updating the SAS software to a new version, consider updating the deployment operator to obtain the latest patch and security updates. Any update to the deployment operator is backward compatible.

Updating the deployment operator requires that it be redeployed by following the instructions at "Deploy the SAS Viya Platform Deployment Operator" in *SAS Viya Platform: Deployment Guide*. Here are a few best practices to follow:

- Save the existing $deploy-operator directory to a different location so that you can refer to it.

- When editing the site-config/transformers.yaml file, the values for the name and the namespace must match existing values.

- If cluster-wide mode is used, edit the kustomization.yaml and uncomment the specified line as was done previously.

To find out whether the deployment operator is in use, run the following command:
```
kubectl -n name-of-namespace get sasdeployment
```

If the deployment operator is being used, a status message is displayed for the name of the deployment. Here is an example of the status message for a deployment named **sas-viya**:

```
NAME        STATE        CADENCENAME     CADENCEVERSION    CADENCERELEASE            AGE
sas-viya    SUCCEEDED    stable          2023.07           20230720.1614701770126    14d
```

If the deployment operator is not in use, an error message is displayed indicating that **sasdeployment** is not a resource for your namespace.

For more information about the deployment operator, see "Overview of the SAS Viya Platform Deployment Operator" in *SAS Viya Platform: Deployment Guide*.

Update the Mirror Registry

SAS Mirror Manager is a command-line utility that pulls the container images from the SAS Container Registry and pushes the images to a mirror registry. When a mirror registry is created, the certificates from your software order are downloaded and configured for the mirror registry. The certificates ensure that the images to which you are entitled are available when you deploy and update the SAS Viya platform software.

When updating software, consider the following:

■ To update the mirror registry, run the mirrormgr command and include the path to the certificates (*-certs.zip) that are downloaded from your software order at My SAS. The certificates are downloaded from an existing software order or from a new software order. You can update an existing mirror registry or create a separate mirror registry.

■ For convenience, the mirrormgr command is provided as follows. For complete information about the command and optional flags and about authenticating by cloud provider, see "Create a Mirror Registry" in *SAS Viya Platform: Deployment Guide*.

```
mirrormgr mirror registry \
    --destination myregistry.mydomain.com \
    --username myregistryuser \
    --password myregistrypassword \
    --deployment-data ~path-to-new-certs-zip-file
```

Update SAS Viya Monitoring for Kubernetes

If SAS Viya Monitoring for Kubernetes is in use, SAS recommends that you always use the most recent release. Update your deployment at least every six months in order to run with the latest bug fixes, security updates, and feature enhancements. For more information, see Welcome to SAS Viya Monitoring for Kubernetes.

Guidelines for Updating to a New Version

About the Guidelines

The following guidelines describe update paths that are typically supported. Refer to these guidelines and the *Deployment Notes* when planning an update to a newer, supported version on the same cadence (Stable or Long-Term Support) and when switching cadences.

....

Note: In this topic, a "supported" version refers to a version that is covered by Standard Support. Software that is not covered by Standard Support is covered by Limited Support.

....

Deployment Notes Are Required

The deployment notes include changes to the update process that you must review for the new version that you want to update to. Also, deployment notes include requirements and recommendations about updates to specific cadence versions. When planning an update, review the deployment notes for each version between the version that you are updating from and the version that you are updating to. For more information, see "How to Use the Deployment Notes" in *SAS Viya Platform: Deployment Notes*.

Updating to a Supported Version on the Same Cadence

- You can update from any version in Standard Support to a newer version in Standard Support on the same cadence, Stable or Long-Term Support. You can update to a newer version only. To view the versions in Standard Support, see "Versions in Standard Support" in *SAS Viya Platform Operations: Versions in Standard Support and Update Paths*.

- To ensure that the software is covered by Standard Support on the Stable cadence, update to a new version at least every three months. On the Long-Term Support cadence, Standard Support covers the current Long-Term Support version and up to three previous Long-Term Support versions. For more information, see SAS Technical Support Services and Policies for the SAS Viya Platform.

- If the deployed version is in Limited Support, see "Limited Support and Updating Software" on page 27.

> **IMPORTANT**   Deployment notes include requirements and recommendations about updates to specific cadence versions. When planning an update, review the deployment notes for each version between the version that you are updating from and the version that you are updating to.

Updating to a Supported Version on a Different Cadence (Switching Cadences)

For information about switching cadences, see "Update Paths to the Latest Version" in *SAS Viya Platform Operations: Versions in Standard Support and Update Paths*.

Limited Support and Updating Software

SAS provides two support levels for the SAS Viya platform: Standard Support and Limited Support. If the deployed version is older than the versions covered by Standard Support, then the process to update to a new version is covered by Limited Support. For information about the support levels and the activity provided by SAS Technical Support for each level, see SAS Technical Support Services and Policies for the SAS Viya Platform and SAS Viya Platform Releases That Have Been Declared under Limited Support.

> **TIP**   Keep the software covered by Standard Support by updating to the latest version as it becomes available.

Here are considerations if the deployed version is in Limited Support:

- Order assets (deployment assets, licenses, certificates) and patches are not available for versions in Limited Support.

- Order assets for versions that are in Standard Support are available. An update to a version in Standard Support might be successful if the deployed version is within four versions of the latest version. Consider the following scenario:

  Scenario: Stable yyyy.01 is deployed, and the latest version is Stable yyyy.05. Because Stable yyyy.01 is in Limited Support, an update to Stable version yyyy.02, yyyy.03, or yyyy.04 is covered by Limited Support. If the update is not successful, additional fee-based assistance and triage might be available through SAS Consulting Services. If the update is successful, a subsequent update to yyyy.05 (the latest version) is covered by Standard Support and recommended in order to deploy the latest features and security patches.

  To learn more, see "Update Paths to the Latest Version" in *SAS Viya Platform Operations: Versions in Standard Support and Update Paths*.

- After a successful update to a new version that is in Standard Support, the software is covered by Standard Support for as long as the deployed version is in Standard Support.

- If the deployed version is in Limited Support and not within four versions of the latest version, SAS recommends contacting SAS Consulting Services.

- The process to perform a new deployment (not updating the existing deployment) is covered by Standard Support.

Types of Software Updates

New Version

An update to a new version is the deployment of a later version of the software than the one that is currently deployed. Updating to a new version requires that you download a new version of the deployment assets from My SAS (my.sas.com). To see the related topics by deployment method, see "Update to a New Version" on page 6.

Patch Update

A patch update is an update to the version of the software that is currently deployed. A patch update can include critical fixes and security updates, and requires that you download new deployment assets for the deployed version. Deployment assets are downloaded from your software order at My SAS. To see the related topics by deployment method, see "Apply a Patch Update" on page 13.

Modified Software Order

A modification to the existing software order is delivered in a new software order. To modify and update the software requires that you download deployment assets from the new software order. Each time that new software is ordered, SAS sends a Software Change Confirmation email to your company or organization. Also, at My SAS, a new software order is added to **My Orders** and assigned a new **Order Number**. For more information, see "Options to Deploy Software with a Modified Software Order" on page 34.

License Only

A license-only update is required each time you are issued a new license through a software purchase or contract renewal. For example, if you deploy the software on a temporary basis and then purchase the software, a license is provided that you can download and apply without having to redeploy the software. Each time a new license is issued, SAS notifies your company or organization by sending an email. For more information, see "How to Apply a New License" on page 19.

Download New Files for a Software Update

The new files are downloaded from your software order at My SAS (my.sas.com). Before you begin, make sure that you have access to your orders at My SAS.

1   Prepare for the download:

   a   Make sure that you have a backup of the $deploy directory, which includes the /sas-bases directory.

   b   Ensure that you are working from the directory where you saved the deployment assets during the initial deployment:

```
cd $deploy
```

      To confirm that you are in the correct directory, run the following command:

```
pwd
```

> **TIP**   The output should be the directory that was created at the beginning of the Retrieve Required Files task.

   c   Remove the /sas-bases directory in order to receive the updated software:

```
rm -Rf sas-bases
```

2   Download the new files from the software order:

   a   Do one of the following:

      ■   Log in to My SAS (my.sas.com), and then click **My Orders**.

- Click **Get Started** in the email that was sent to your company or organization.

b Select the order on the **My SAS Orders** page, as needed.

....

Note: If you are modifying the existing deployment with a new order, make sure to select the new order. Also, if you plan to switch cadences, read "Updating to a Supported Version on a Different Cadence (Switching Cadences)" on page 27 to understand the supported use cases.

....

c Click **Downloads**, and then do one of the following:

- To update to a new version using the deployment operator or the sas-orchestration command, click the **Deployment Assets**, **Certificate**, and **License** check boxes for the cadence version of the software that you want to update to (the target version).

- To update to a new version using Kubernetes commands, click the **Deployment Assets** check box for the cadence version of the software that you want to update to (the target version). You do not have to select the certificates or the license file for download.

- To apply a patch update, click the **Deployment Assets** check box for the cadence version of the software that is currently deployed. You do not have to select the certificates or the license file for download.

d Click the **Download** button to download the files in a compressed file.

- A .zip file is downloaded if the deployment assts, certificate, and license were selected for download.

- A .tgz file is downloaded if the deployment assets only were selected for download.

e Move the compressed file to the $deploy directory.

f Extract the files from the .zip or .tgz file:

- **.zip file:**

    1 Unzip the files, and then move the .tgz file (deployment assets) to the $deploy directory, and extract the files in the same directory:

    ```
    tar xvfz file-name.tgz
    ```

    2 Move the *-certs.zip file and the license file, identified by the .jwt extension, to the $license directory. Do not unzip *-certs.zip file.

- **.tgz file:** Extract the .tgz file (deployment assets) to the $deploy directory:

    ```
    tar xvfz file-name.tgz
    ```

....

Note:

- The contents of the .tgz file include README files. You customize your deployment by modifying example and overlay files in your deployment assets and then adding references to those files to the base kustomization.yaml file. To see the full list of configurations that are available for your order, go to **/$deploy/sas-bases/README.md** for README files in Markdown language or **/$deploy/sas-bases/docs/index.htm** for README files in HTML.

- The name of the certificate file includes the order number: SASViyaV4_**order-number**_certs.zip. If you downloaded certificates for the same order, the *-certs.zip file

overwrites the existing file. The name of the license file includes the order number, information about the cadence release and version, and a time stamp.

Update Checker Report

About the Update Checker

- The Update Checker is a CronJob that is included automatically with the software deployment. The Update Checker creates a report that compares the release of the deployed software with the available releases from the SAS Container Registry. The report is a log that is written to the standard output (stdout) of the launched pod. The report indicates when a new update or patch update is available. Here is a summary of the report details:

  - □ the release that is deployed

  - □ whether the release is still supported and the end date for support

  - □ the availability of a patch update

  - □ the availability of a new version for your cadence (Stable or Long-Term Support)

  Note: When updating software to the latest version, make sure to review "Update Paths to the Latest Version" in *SAS Viya Platform Operations: Versions in Standard Support and Update Paths*.

- The default schedule for the Update Checker is to create a new report every Sunday at midnight. To schedule a different time, see "(Optional) Change the Schedule for the Update Checker" on page 33.

- As needed, you can run the Update Checker to create an ad hoc report on page 32.

- If you customized the deployment to exclude the Update Checker, the reports are not created. To include the Update Checker, you must update the kustomization.yaml file, and then build a new manifest and apply it. For more information, see "Add the Update Checker to Your Deployment" in *SAS Viya Platform: Deployment Guide*.

> **TIP**   As an alternative to viewing the logs manually, SAS Viya Monitoring for Kubernetes includes an OpenSearch dashboard that shows all the results of the Update Checker reports that have run over the last seven days. For more information, see the SAS Viya Monitoring for Kubernetes documentation.

View the Latest Report

Note: In the following steps, the value `sas-update-checker` is the default name that is used by the scheduler. To create an ad hoc report, substitute the name that you provided.

To view the report:

1 Determine the full names of the pods:

```
kubectl -n name-of-namespace get pods | grep sas-update
```

Here is example output:

```
sas-update-checker-1592301600-q2scv 0/1 Completed 0 2d2h
sas-update-checker-1592388000-pk7rw 0/1 Completed 0 26h
sas-update-checker-1592474400-r7dd2 0/1 Completed 0 154m
```

2 View the logs from the most recently created pod:

```
kubectl -n name-of-namespace logs -f sas-update-checker-unique-hash-value
```

Here is an example:

```
kubectl -n namespace01 logs -f sas-update-checker-1592474400-r7dd2
```

Here is example output:

```
The report command started
Deployed release 'stable-2020.0.5-20200918.1600465441168':
Support level is 'SUPPORTED'
Support ends '2021-01-17T03:01:41.267Z'
New release available for deployed version 'stable-2020.0.5':
'stable-2020.0.5-20200924.1600985745738'.
New content available at: 'stable-2020.0.5-20200924.1600985745738'.
Different versions:
'sas-annotations' version '2.5.0-20200824.1598272777757' has an available update
'2.5.1-20200910.1599741481752'
'sas-backup-agent' version '2.10.6-20200904.1599240159114' has an available update
'2.10.8-20200921.1600690954675'
'sas-connect' version '4.11.1-20200908.1599597211869' has an available update
'4.11.1-20200921.1600711980180'
'sas-files' version '2.33.4-20200903.1599168366641' has an available update
'2.33.6-20200922.1600741413515'
'sas-job-flow-scheduling' version '2.2.3-20200903.1599155515778' has an available update
'2.2.5-20200922.1600743219690'
'sas-localization' version '1.4.3-20200916.1600292890148' has an available update
'1.4.3-20200918.1600443688202'
'sas-search' version '2.27.5-20200903.1599168034067' has an available update
'2.27.7-20200922.1600746056812'
No new release available for deployed cadence 'stable'.
The report command completed successfully
```

In the preceding output, note these lines:

- ```
  New release available for deployed version 'stable-2020.0.5': 'stable-2020.0.5-20200924.1600985745738'
  ```

  indicates that a patch update is available for the deployed version of the software.

- ```
  No new release available for deployed cadence 'stable'
  ```

  indicates that there is not a new version available for the deployed software.

(Optional) Create an Ad Hoc Report

To find out if updates are available before the next scheduled job, you can create an ad hoc report at any time.

Run the following command:

```
kubectl -n name-of-namespace create job --from=cronjob/sas-update-checker name-of-job
```

Here is an example:

```
kubectl -n namespace01 create job --from=cronjob/sas-update-checker sas-update-checker-manual-trigger
```

Note:

- Do not name the job **sas-update-checker**, which is the reserved name that is used by the scheduled job.

- The name of the pod that is created will be the value that you provide for *name-of-job* and an appended hash value. Provide this name when viewing the report.

- After you create and view an ad hoc report, run the following command to delete the job and the associated pod:

  ```
  kubectl -n name-of-namespace delete jobs name-of-job
  ```

(Optional) Change the Schedule for the Update Checker

The Update Checker runs at the time, day, month, and day of the week as defined in the **sas-bases/overlays/update-checker/cronjobs.yaml** file. The following example shows the default setting, which is every Sunday at midnight.

```
spec:
  schedule: "0 0 * * 0" # Weekly
```

Note: `0 0 * * 0` represents `minute(0-59) hour(0-24) day_of_month(1-31) month(1-12) day_of_week(0-6)`.

To change the schedule, you must provide a patch transformer to the kustomization.yaml file, and then build a new manifest and apply it.

Here is an example that schedules the Update Checker to run every day:

1 Create and save the following content in a file named **site-config/transformers/daily_update_check.yaml**:

```
apiVersion: builtin
kind: PatchTransformer
metadata:
  name: daily-update-check
patch: |-
  - op: replace
    path: /spec/schedule
    value: "0 8 * * *"
target:
  name: sas-update-checker
  kind: CronJob
```

2 Add the patch transformer to the top-level kustomization.yaml file:

```
transformers:
```

```
- site-config/transformers/daily_update_check.yaml
```

3 Save the kustomization.yaml, and then build the new manifest and apply it.

Options to Deploy Software with a Modified Software Order

About a Modified Software Order

- Customers receive a new software order when there is a modification to an existing software order. For example, if a software offering is added or deleted, a new software order becomes available at My SAS (my.sas.com), and SAS sends a Software Change Confirmation email to your company or organization. The instructions here provide the options for a new deployment or an update to an existing deployment with the deployment assets from the new software order.

  To access a new software order, go to **My Orders** at My SAS (my.sas.com). When new software that complements your existing software is ordered, a new order number is created with the existing Tech Support Site Number. Here is a view of two software orders for the same Tech Support Site Number, with the new software order first:

Tech Support Site Number	Order	Site Name	Order Date	Status
86750308	9EBG3	My Organization	1/8/23	
86750308	9DMBW	My Organization	9/29/22	

- Be sure to inform SAS administrators and users if a software offering is no longer available in the new software order. If the new software order does not include a software offering that was deployed previously, then that offering will no longer be available to users after an update that uses the deployment assets from the new software order. User content that is associated with the software offering that was removed might not be accessible after the update. Also, any offering-specific configuration for the removed offering remains in the files that are used for deployment, such as kustomization.yaml, unless you remove it.

- If the new software order includes SingleStore, additional information is available for adding SingleStore to an existing deployment. For more information, see "Adding SingleStore to an Existing SAS Viya Platform Deployment" in *SAS Viya Platform with SingleStore: Administration and Configuration Guide*.

Options to Deploy or Update the Software

Option 1 — Perform a New Deployment

Customers who want to perform a completely new deployment that is separate from the existing deployment can follow the deployment process. For details, see SAS Viya Platform: Deployment Guide.

Option 2 — Modify Software within the Same Version for an Existing Deployment

Customers who want to modify software within the same version of the existing deployment can perform the steps to apply a patch update. Remember the following tips:

- Be sure to download deployment assets from the new software order.

- Product-specific configuration tasks are described in the README files that are included in your deployment assets. You customize your deployment by modifying example and overlay files in your deployment assets and then adding references to those files to the base kustomization.yaml file. To see the full list of configurations that are available for your order, see the README files at **/$deploy/sas-bases/README.md** (for Markdown) or **/$deploy/sas-bases/docs/index.htm** (for HTML).

To modify software within the same version, start with the Pre-update Checklist on page 2, and then follow the instructions to apply a patch update.

Option 3 — Modify Software for an Existing Deployment and Update to a New Version

Customers who want to modify software to the existing deployment and update to a newer version can perform the steps to update to a new version. Remember the following tips:

- Be sure to download deployment assets from the new software order.

- Product-specific configuration tasks are described in the README files that are included in your deployment assets. You customize your deployment by modifying example and overlay files in your deployment assets and then adding references to those files to the base kustomization.yaml file. To see the full list of configurations that are available for your order, see the README files at **/$deploy/sas-bases/README.md** (for Markdown) or **/$deploy/sas-bases/docs/index.htm** (for HTML).

To modify software and update to a new version, start with the Pre-update Checklist on page 2, and then follow the instructions to update to a new version.

Regenerate CAS Servers

For a deployment with additional CAS servers, you must run the create-cas-server.sh script after you have obtained the new deployment assets. The create-cas-server.sh script regenerates the existing

subdirectories and files for the CAS servers to include any configuration updates that are included in the new version of the software.

■ Perform the steps to add the CAS servers in the README file (from the new deployment assets) at **/$deploy/sas-bases/examples/cas/create/README.md** (for Markdown) or **$deploy/sas-bases/docs/create_an_additional_cas_server.htm** (for HTML).

■ Run the create-cas-server.sh for each tenant CAS server and include the arguments that were used to create each tenant CAS server previously. Because the create-cas-server.sh script replaces existing subdirectories and files, a best practice is to rename the existing subdirectories before running the script. After the subdirectories and files are regenerated, make sure to reapply any previous customizations to the CAS server files.

> **TIP**   Record the arguments that are used with the create-cas-server.sh script so that they can be used during future updates.

Troubleshooting — Updating Software

Note: Additional troubleshooting information is provided in Troubleshooting — Deployment Guide.

Crunchy PostgreSQL: Jobs Created by the Crunchy Operator Do Not Start

Error

The software update is stalled because jobs created by the Crunchy operator do not start: **sas-crunchy-platform-postgres-move-pgdata-dir** and **sas-crunchy-platform-postgres-move-pgbackrest-repo-dir**. Run the `kubectl describe` command for either pod to display failed schedule warnings:

```
Warning   FailedScheduling    19m   default-scheduler    0/16 nodes are available: 1 node(s) had untolerated
```

Explanation

If an internal instance of PostgreSQL is used, Crunchy jobs are in a pending state because there are no tolerations for the available nodes.

Resolution

Configure a new node or node pool with no taint or label, so that the software update completes successfully.