README

SAS Security Updates and Hot Fixes

This document describes the steps to take to apply SAS security updates and product-specific hot fixes that contain security updates. Applying SAS security updates and hot fixes updates both the SASHOME and SAS Configuration directories. It is critical that the steps be performed in the order in which they appear in this document. Some product-specific hot fixes might require you to reapply SAS security updates. If so, follow the instructions in this document to reapply the appropriate SAS security updates, and then rebuild and redeploy web applications.

Before you apply security updates and hot fixes, it is strongly recommended that you back up your SAS deployment. This is the only way that you can restore the SASHOME and SAS Configuration directories to their previous state.

Refer to SAS 9.4 Upgrade in Place: System-Level Backup and Recovery Best Practice for instructions.

Section 1 — Product-Specific Hot Fixes

All deployments should perform the steps in this section.

Apply product-specific hot fixes using the following steps:

1. Run the HFADD tool to generate a report of other hot fixes that you might want to apply to your deployment.

   Note: *When you use the HFADD tool, SAS security updates and Hot Fix Y09009 are not included in the results. SAS security updates and Hot Fix Y09009 must always be applied manually following the instructions below.*

2. When you have determined which hot fixes to apply to your deployment, download them. Place them in a directory on each machine or in a shared location that each machine can access based on the instructions in SAS Deployment Wizard and SAS Deployment Manager 9.4: User's Guide.
3. Perform any pre-installation tasks for each hot fix.
4. Apply the hot fixes.
5. Perform any post-installation tasks for each hot fix. If the post-installation tasks include rebuilding and redeploying web applications, delay these tasks until you reach Section 7 — Rebuild and Redeploy Web Applications.

Section 2 — Java Deserialization Update

Determine Whether Java Deserialization Update Is Needed

These steps should be followed for all maintenance levels of SAS 9.4, regardless of whether any other security updates have been applied.

To determine whether you have applied the most recent Java Deserialization Update, review the contents of these files:

```
SASHome\InstallMisc\utilities\installqual\9.4\serialization_hotfix.properties
SASHome\instqualtool\serialization_hotfix.properties
```

If this file does not exist in either location, or, if in the file, the version of the SAS security update is less than 4.0, then you do not have the latest version of the Java Deserialization Update. Continue with these steps to apply the Java Deserialization Update.

If the correct version is listed and you have applied a hot fix, you might be directed to re-apply the Java Deserialization Update. If so, please re-apply it to ensure continued system security.

Apply the Java Deserialization Update

Use the following steps to apply the update. These steps should be performed for every machine in your deployment by applying the update on each installed and/or configured machine.

1. Before beginning, ensure that all active SAS sessions, daemons, spawners, servers, and agents are terminated. In addition, SAS strongly recommends that you back up your system before applying the update.
2. Download the update: https://tshf.sas.com/techsup/download/hotfix/HF2/SAS_Security_Updates.html#update
3. Unzip `sas-security-update-2020-08.zip` into a directory of your choice. On UNIX, using the `unzip` command is the best option. If you use WinZip or the `jar xvf` command, you must also use the following command to preserve the appropriate permissions:

   ```
   chmod a+x install.sh
   ```

   If the installer ID differs from the update directory owner, make the directory writable by all IDs in the same group with the following command:

   ```
   chmod -R g+w /<security directory>/sas-security-update-2020-08
   ```
4. From the directory into which you unzipped, go to the `sas-security-update-2020-08` directory.
5. In that directory, run the appropriate script using the same user ID that was used to install (installer ID). The script requires one argument— the full path to the SASHOME directory where the update is going to be applied.

   Windows

   ```
   install.bat "SASHOME"
   ```

   Windows Example

   ```
   install.bat "C:\Program Files\SASHome"
   ```

   Note: *Depending on your settings, you might have to use the* **Run as administrator** *option.*

   UNIX

```
./install.sh "SASHOME"
```

UNIX Example

```
./install.sh "/usr/lpp/SAS"
```

6. The script applies the update to all files in the SASHOME and SAS Configuration directories that need to be updated. When the script finishes, a message states that the update is completed and the script exits.
7. If you plan to deploy other hot fixes or updates from the location where you placed this ZIP file, you need to remove it from this location. The SAS Deployment Manager, which is used for deploying other hot fixes, does not recognize this file and will issue an error.

Section 3 — Apply SAS Security Update 2018-09

Determine Whether SAS Security Update 2018-09 Is Needed

If you are not using SAS 9.4_M5, skip to Section 4 — Apply SAS Security Update 2021-02-M6.

To determine whether you have applied SAS Security Update 2018-09, review the contents of this file:

```
SASHome\InstallMisc\utilities\installqual\9.4\security_hotfix.properties
```

If this file does not exist, or it does not list the version as 1.0, then you do not have the latest version of the update. Continue with these steps to apply SAS Security Update 2018-09.

If the correct version is listed and you have applied a hot fix, you might be directed to re-apply the update. If so, please re-apply it to ensure continued system security.

Apply SAS Security Update 2018-09

Use the following steps to apply the update. These steps should be performed for every machine in your deployment by applying the update on each installed and/or configured machine.

1. Before beginning, ensure that all active SAS sessions, daemons, spawners, servers, and agents are terminated. In addition, SAS strongly recommends that you back up your system before applying the update.
2. Download the update: https://tshf.sas.com/techsup/download/hotfix/HF2/SAS_Security_Updates.html#update2
3. Unzip `sas-security-update-2018-09.zip` into a directory of your choice. On UNIX, using the `unzip` command is the best option. If you use WinZip or the `jar xvf` command, you must also use the following command to preserve the appropriate permissions:

   ```
   chmod a+x install.sh
   ```

   If the installer ID differs from the update directory owner, make the directory writable by all IDs in the same group with the following command:

   ```
   chmod -R g+w /<security directory>/sas-security-update-2018-09
   ```
4. From the directory into which you unzipped, go to the `sas-security-update-2018-09` directory.
5. In that directory, run the appropriate script using the same user ID that was used to install (installer ID). The script requires one argument— the full path to the SASHOME directory where the update is going to be applied.

Windows

```
install.bat "SASHOME"
```

Windows Example

```
install.bat "C:\Program Files\SASHome"
```

Note: *Depending on your settings, you might have to use the* **Run as administrator** *option.*

UNIX

```
./install.sh "SASHOME"
```

UNIX Example

```
./install.sh "/usr/lpp/SAS"
```

6. The script applies the update to all files in the SAS Home and SAS Configuration directories that need to be updated. When the script finishes, a message states that the update is completed and the script exits.
7. If you plan to deploy other hot fixes or updates from the location where you placed this ZIP file, you need to remove it from this location. The SAS Deployment Manager, which is used for deploying other hot fixes, does not recognize this file and will issue an error.

Section 4 — Apply SAS Security Update 2021-02-M6

Determine Whether SAS Security Update 2021-02-M6 Is Needed

If you are not using SAS 9.4_M6, skip to Section 5 — Apply SAS Security Update 2021-12-M7.

To determine whether you have applied SAS Security Update 2021-02-M6, review the contents of this file:

```
SASHome\InstallMisc\utilities\installqual\9.4\security_hotfix.properties
```

If this file does not exist, or it does not list the version as 5.1, then you do not have the latest version of the update. Continue with these steps to apply SAS Security Update 2021-02-M6.

If the correct version is listed and you have applied a hot fix, then you might be directed to re-apply the update. If so, please re-apply it to ensure continued system security.

Apply SAS Security Update 2021-02-M6

Use the following steps to apply the update. These steps should be performed for every machine in your deployment by applying the update on each installed and/or configured machine.

1. Before beginning, ensure that all active SAS sessions, daemons, spawners, servers, and agents are terminated. In addition, SAS strongly recommends that you back up your system before applying the update.
2. Download the update: https://tshf.sas.com/techsup/download/hotfix/HF2/SAS_Security_Updates.html#update3
3. Unzip `sas-security-update-2021-02-M6.zip` into a directory of your choice. On UNIX, using the `unzip` command is the best option. If you use WinZip or the `jar xvf` command, you must also use the following command to preserve the appropriate permissions:

   ```
   chmod a+x install.sh
   ```

   If the installer ID differs from the update directory owner, make the directory writable by all IDs in the same group with the following command:

```
chmod -R g+w /<security directory>/sas-security-update-2021-02-M6
```

4. From the directory into which you unzipped, go to the `sas-security-update-2021-02-M6` directory.
5. In that directory, run the appropriate script using the same user ID that was used to install (installer ID). The script requires one argument— the full path to the SASHOME directory where the update is going to be applied.

   Windows

   ```
   install.bat "SASHOME"
   ```

   Windows Example

   ```
   install.bat "C:\Program Files\SASHome"
   ```

   Note: *Depending on your settings, you might have to use the* **Run as administrator** *option.*

   UNIX

   ```
   ./install.sh "SASHOME"
   ```

   UNIX Example

   ```
   ./install.sh "/usr/lpp/SAS"
   ```

6. The script applies the update to all files in the SASHOME and SAS Configuration directories that need to be updated. When the script finishes, a message states that the update is completed and the script exits.
7. If you plan to deploy other hot fixes or updates from the location where you placed this ZIP file, you need to remove it from this location. The SAS Deployment Manager, which is used for deploying other hot fixes, does not recognize this file and will issue an error.

Section 5 — Apply SAS Security Update 2021-12-M7

Determine Whether SAS Security Update 2021-12-M7 Is Needed

If you are not using SAS 9.4_M7, skip to Section 6 — Apply Hot Fix Y09009 – Supplemental Hot Fix for SAS Security Updates.

To determine whether you have applied SAS Security Update 2021-12-M7, review the contents of this file:

```
SASHome\InstallMisc\utilities\installqual\9.4\security_hotfix.properties
```

If the file does not exist, or it does not list the version as 9.0, then you do not have the latest version of the update. Continue with these steps to apply SAS Security Update 2021-12-M7.

If the correct version is listed and you have applied a hot fix, you might be directed to re-apply the update. If so, please re-apply it to ensure continued system security.

Apply SAS Security Update 2021-12-M7

Use the following steps to apply the update. These steps should be performed for every machine in your deployment by applying the update on each installed and/or configured machine.

1. Before beginning, ensure that all active SAS sessions, daemons, spawners, servers, and agents are terminated. In addition, SAS strongly recommends that you back up your system before applying the update.

2. Download the update:
   https://tshf.sas.com/techsup/download/hotfix/HF2/SAS_Security_Updates.html#update4
3. Unzip `sas-security-update-2021-12-M7.zip` into a directory of your choice. On UNIX, using the `unzip` command is the best option. If you use WinZip or the `jar xvf` command, you must also use the following command to preserve the appropriate permissions:

   ```
   chmod a+x install.sh
   ```

   If the installer ID differs from the update directory owner, make the directory writable by all IDs in the same group with the following command:

   ```
   chmod -R g+w /<security directory>/sas-security-update-2021-12-M7
   ```
4. From the directory into which you unzipped, go to the `sas-security-update-2021-12-M7` directory.
5. In that directory, run the appropriate script using the same user ID that was used to install (installer ID). The script requires one argument— the full path to the SASHOME directory where the update is going to be applied.

   Windows

   ```
   install.bat "SASHOME"
   ```

   Windows Example

   ```
   install.bat "C:\Program Files\SASHome"
   ```

   Note: *Depending on your settings, you might have to use the* **Run as administrator** *option.*

   UNIX

   ```
   ./install.sh "SASHOME"
   ```

   UNIX Example

   ```
   ./install.sh "/usr/lpp/SAS"
   ```
6. The script applies the update to all files in the SASHOME and SAS Configuration directories that need to be updated. When the script finishes, a message states that the update is completed and the script exits.
7. If you plan to deploy other hot fixes or updates from the location where you placed this ZIP file, you need to remove it from this location. The SAS Deployment Manager, which is used for deploying other hot fixes, does not recognize this file and will issue an error.

Section 6 — Apply Hot Fix Y09009 – Supplemental Hot Fix for SAS Security Updates

Hot fix Y09009 is a container hot fix that includes hot fixes for several products. Your deployment might not contain all of the products in this hot fix container. If so, hot fixes are skipped if they do not apply to your deployment. These hot fixes are packaged together to make it simpler.

1. Review `Y09009pt.pdf` to see the list of SAS products that will be updated by Y09009. See `SASNote 35968` for information about how to determine whether you have any of the products installed on your SAS deployment. If you have one or more of the products, you must install Hot Fix Y09009. If you do not have any of the products, skip to Section 7 — Rebuild and Redeploy Web Applications.

2. Use the instructions in `Y09009pt.pdf` to apply Hot Fix Y09009 to every machine in your deployment.
3. Continue to the next section.

Section 7 — Rebuild and Redeploy Web Applications

If you have applied either one or more SAS security updates, you must perform the steps in this section.

Note: *If you have any of the following SAS products clustered horizontally (such as for high availability), complete this section only on the primary middle-tier machine or machines for the cluster. Section 8 updates horizontal cluster nodes for the following SAS products:*

- *SAS JMS Broker*
- *SAS Cache Locator*
- *SAS Web Server*
- *SAS Environment Manager*

After all updates and hot fixes have been applied, you must rebuild and redeploy every web application on each middle-tier machine to ensure that the updates and hot fixes take effect. The instructions for rebuilding and redeploying can be found in the following locations:

Rebuilding

See "Rebuild the SAS Web Applications" in *SAS 9.4 Intelligence Platform: Middle-Tier Administration Guide*

Redeploying

See "Redeploy the SAS Web Applications" in *SAS 9.4 Intelligence Platform: Middle-Tier Administration Guide*

Section 8 — Apply the SAS Security Update to a Horizontal Middle-Tier Cluster Node

Note: *If you have any of the following SAS products clustered horizontally (such as for high availability), complete this section only on the secondary middle-tier cluster nodes for the product.*

- *SAS Web Server*
- *SAS Environment Manager*
- *SAS JMS Broker*
- *SAS Cache Locator*

If you have not clustered any of these products horizontally, skip this section.

If you have clustered any of the products horizontally, see "Maintain a Horizontal Cluster Member" in SAS 9.4 Intelligence Platform: Middle-Tier Administration Guide.

Product-specific hot fixes might require additional manual steps for configuration on horizontal middle-tier cluster nodes. Please review product hot fix installation documentation.

Contacting SAS Technical Support

If you need assistance with the software, we ask that only SAS support personnel call our Technical Support Division.

- For U.S. and Canadian customers, support is provided from our corporate headquarters in Cary, North Carolina. You can call (919) 677-8008, Monday through Friday.
- Customers outside of the U.S. can obtain local-language technical support through the local office in their countries. Customers in these locations should contact their local office for specific support hours. See `http://support.sas.com/techsup/contact/index.html` for contact information for local offices.

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