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Automating Your Multi-Environment Hot Fix Management

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ABSTRACT

Managing SAS® hot fixes on a SAS® 9.4 multi servers environment can be a bit of a challenge for SAS administrators. It becomes even more of a struggle when checking for available hot fixes on multiple SAS environments with different SAS versions or even worst if you don't have access to SAS web site from your SAS servers.

The SAS Hot Fix Analysis, Download and Deployment Tool (SASHFADD) creates a customized report that lists available hot fixes for the installed SAS products. It also generates scripts that automate hot fixes downloads. A script is generated to install SAS hot fixes then SAS admins use SAS Deployment Manager to install SAS hot fixes.

The goal of this paper is to provide helpful information on how to use SASHFADD to automate the SAS 9.4 hot fixes download and deployment process when you are dealing with multiple SAS environments. It also provides a workaround solution for SAS environments that can't connect to SAS update servers.

INTRODUCTION

In most organizations, the SAS production environment doesn't have access to SAS web site to validate and download SAS hot fixes. One way to address this challenge is to centralize the SAS hot fixes management on a workstation or on a SAS development server. 1

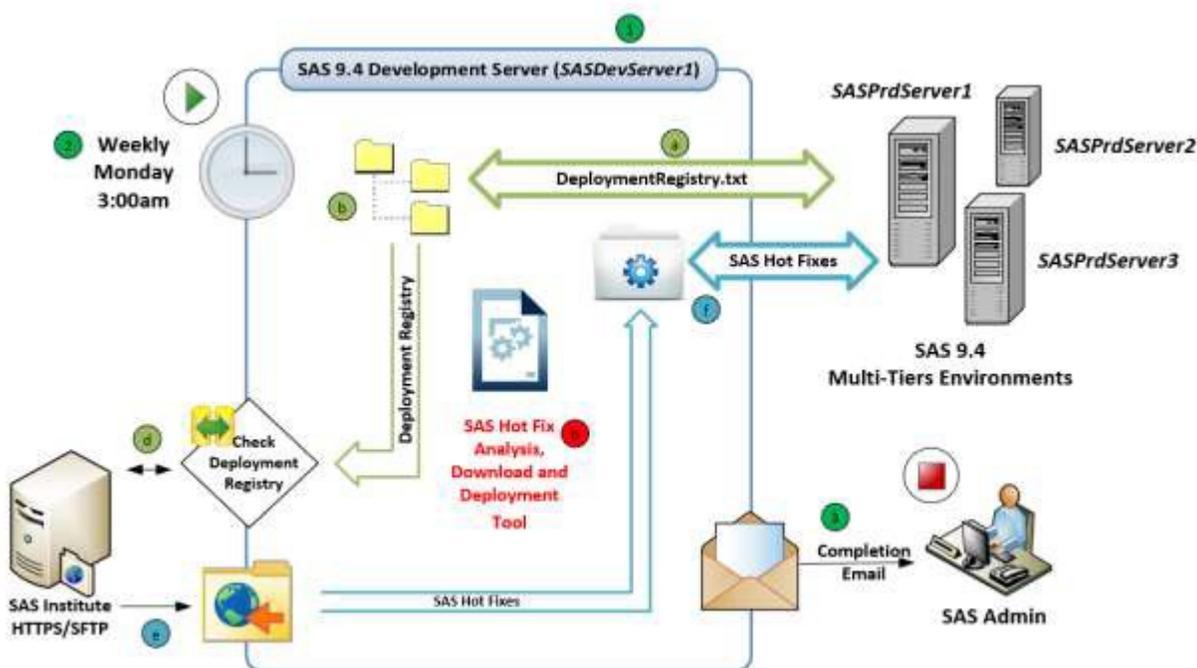


Figure 1 - SAS Hot Fix Management Diagram

One of the primary duties of the SAS administrator is to keep SAS environments up to date with the most recent SAS hot fixes. 2

Best practices are to check and apply SAS hot fixes on a regular basis. To address this challenge a SAS program (Explained later) can be created and added to the scheduler.

Once all steps are completed an email can be sent to inform SAS administrator if any SAS hot fixes are available. (With the SASHFADD analysis report attached if applicable) 3

This Eposter describe a solution created on a Windows operating system environment. SASHFADD tool is supporting both UNIX and Windows operating system. The same solution can be used for UNIX operating system. In this case you batch files and PowerShell scripts can be converted into UNIX Shell scripts.

PRE-REQUISITES

- ✓ SASHFADD tool. Detailed steps on how to download SASHFADD tool are available on SAS web site (<https://support.sas.com/en/technical-support/maintenance/hot-fixes/hot-fix-analysis-download-deployment-tool.html>)
- ✓ Access to SAS web site (HTTPS or SFTP)
- ✓ SAS Deployment Registry files (DeploymentRegistry.html and DeploymentRegistry.txt) Detailed steps on how to generate SAS Deployment Registry files is available in SAS Usage Note 35968 (<https://support.sas.com/kb/35/968.html>)

CONFIGURATION STEPS

1. Create a folder structure in a centralized location (Workstation or Server) where you will manage SAS hot fixes. 4

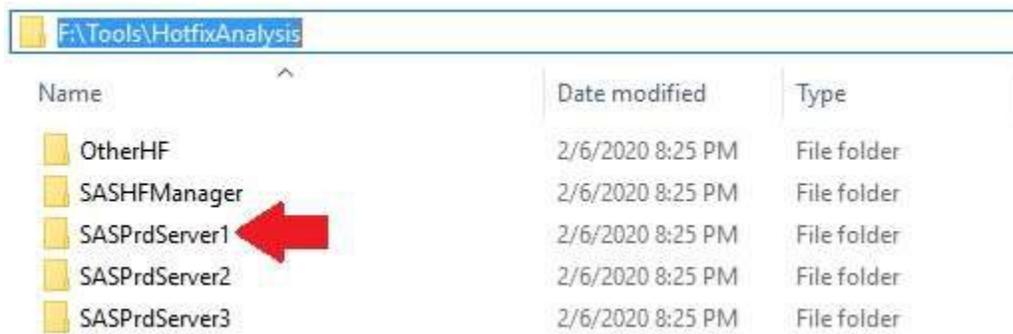


Figure 2 – Main Folder Structure

2. Create a folder “**OtherHF**” that will be used to distribute other 3rd party SAS related software hot fix or security vulnerability hot fix that are not cover by SASHFADD tool
3. Create a folder called “**SASHFManager**” that will be used to keep SAS program and other scripts to automate the whole process.

4. Create a folder (using the **host name**) for each SAS tier in your SAS environment (i.e SASPrdServer1, SASPrdServer2, SASPrdServer3, ...). This folder will be used as the staging area where you will extract SAS hot fix and save all SAS sever specific files (i.e. deployment registry, SASHFADD configuration file, ...). For each folder do the following:

Name	Date modified	Type	Size
Log	2/6/2020 8:25 PM	File folder	
DeploymentRegistry.html	2/3/2020 2:54 PM	HTML Document	91 KB
DeploymentRegistry.txt	2/3/2020 2:54 PM	Text Document	47 KB
SASHFADD.bat	2/3/2020 3:55 PM	Windows Batch File	1 KB
SASHFADD.cfg	1/31/2020 11:47 AM	SAS Configuration...	7 KB
SASHFADD.exe	1/30/2020 10:38 AM	Application	398 KB

Figure 3 - SAS Tier Folder

- a) Create a **Log** folder where we will save all related logs.
- b) Generate the latest SAS Deployment Registry files for this specific SAS server and save files: **DeploymentRegistry.html** and **DeploymentRegistry.txt** in this folder.
- c) Download and copy the SASHFADD related files (i.e **SASHFADD.exe** and **SASHFADD.CFG**).
- d) Update **SASHFADD.CFG** as specify into SASHFADD documentation.
- e) Create a batch file (**SASHFADD.BAT**) that will execute SASHFADD.exe and save the output window into a log file.

```

1 REM SASHFADD.bat
2 F:
3 cd "F:\Tools\HotfixAnalysis\SASPrdServer1"
4 del "F:\Tools\HotfixAnalysis\SASPrdServer1\Log\SASHFADD_SASPrdServer1.log"
5 "F:\Tools\HotfixAnalysis\SASPrdServer1\SASHFADD.exe" >"F:\Tools\HotfixAnalysis\SASPrdServer1\Log\SASHFADD_SASPrdServer1.log"
6 EXIT
7

```

Figure 4 - SASHFADD.BAT Example

AUTOMATION

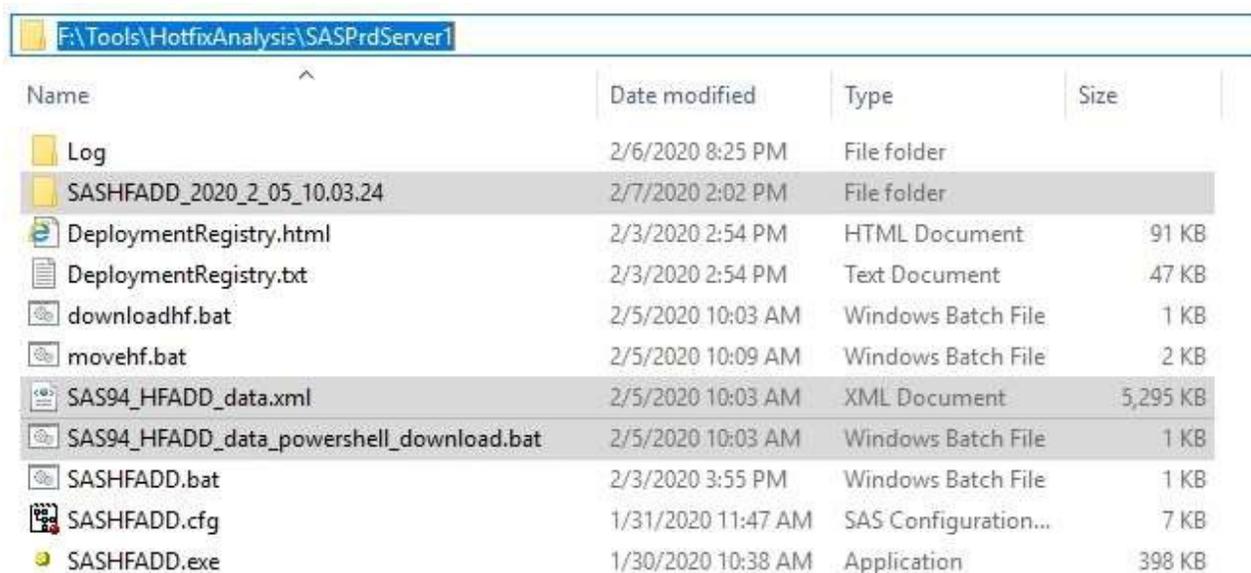
Create a batch file (**UpdateDeploymentRegistry.bat**) that will be executed on each SAS server. Basically, the batch file will generate the latest SAS Deployment Registry files (**DeploymentRegistry.html** and **DeploymentRegistry.txt**) and save them in the folder you created for each SAS tier. SAS Deployment Registry files are prerequisite so they must be generated prior to the execution of SASHFADD tools. a

```
REM UpdateDeploymentRegistry.bat
E:
cd "%SASHome\deploymentreg"
*F:\SASHome\SASPrivateJavaRuntimeEnvironment\9.4\jre\bin\java.exe" -jar sas.tools.viewregistry.jar -out "%SASPrdServer1\F\Tools\HotfixAnalysis\SASPrdServer1"
*F:\SASHome\SASPrivateJavaRuntimeEnvironment\9.4\jre\bin\java.exe" -jar sas.tools.viewregistry.jar -out "%F:\SASHome\deploymentreg"
EXIT
```

Figure 5 - UpdateDeploymentRegistry.bat Example

Create a SAS program (**SASHFManager.SAS**) that will do the following:

1. Run the **SASHFADD.bat** created in previous steps. SASHFADD tool (i.e. SASHFADD.exe) will do the following: b
 - a. Compare your installed hot fix list (i.e. DeploymentRegistry.txt) with all available hot fix on SAS web site (SAS94_HFADD_data.xml).
 - b. Create **SAS94_HFADD_data.xml** and **SAS94_HFADD_data_powershell_download.bat** files. d
 - c. Create the **hot fix analysis folder**, subfolders and files. (i.e. SASHFADD_YYYY_MM_DD_HH.MM.SS)



Name	Date modified	Type	Size
Log	2/6/2020 8:25 PM	File folder	
SASHFADD_2020_2_05_10.03.24	2/7/2020 2:02 PM	File folder	
DeploymentRegistry.html	2/3/2020 2:54 PM	HTML Document	91 KB
DeploymentRegistry.txt	2/3/2020 2:54 PM	Text Document	47 KB
downloadhf.bat	2/5/2020 10:03 AM	Windows Batch File	1 KB
movehf.bat	2/5/2020 10:09 AM	Windows Batch File	2 KB
SAS94_HFADD_data.xml	2/5/2020 10:03 AM	XML Document	5,295 KB
SAS94_HFADD_data_powershell_download.bat	2/5/2020 10:03 AM	Windows Batch File	1 KB
SASHFADD.bat	2/3/2020 3:55 PM	Windows Batch File	1 KB
SASHFADD.cfg	1/31/2020 11:47 AM	SAS Configuration...	7 KB
SASHFADD.exe	1/30/2020 10:38 AM	Application	398 KB

Figure 6 - SAS Tier Folder After SASHFADD Execution

2. Extract the analysis folder name from the log (**SASHFADD.log**). The analysis folder name has this following format: **SASHFADD_YYYY_MM_DD_HH.MM.SS**

3. Create batch file (**SilentInst.bat**) for silent installation and save it into the folder DEPLOY_SASHFADD_YYYY_MM_DD_HH.MM.SS, located in the hot fix analysis folder and created by the SASHFADD tool.

Name	Date modified	Type	Size
DEPLOY_SASHFADD_2020_2_05_10.03.24	2/7/2020 2:02 PM	File folder	
DOWNLOAD_SASHFADD_2020_2_05_10.03.24	2/7/2020 2:02 PM	File folder	
LOG_SASHFADD_2020_2_05_10.03.24	2/7/2020 2:02 PM	File folder	
SAS_Hot_Fix_Analysis_Report_2020_2_05_10.03.24_SASPrdServer1.html	2/5/2020 10:03 AM	HTML Document	45 KB

Figure 7 - Hot Fix Analysis Folder

The **SilentInst.bat** batch file will be used to install SAS hot fix on each server. SilentInst.bat is using SAS Deployment Manager to deploy SAS hot fix in silent mode.

```

1 rem SilentInst.bat
2 @ECHO ---
3 @ECHO This batch file will install hot fixes silently from: F:\SASHome\InstallMisc\HotFixes\New\Deploy_2020_2_05_10.03.24
4 @ECHO ---
5 f:
6 cd F:\SASHome\SASDeploymentManager\9.4
7 sasdm.exe -silenthotfix -hotfixdir "F:\SASHome\InstallMisc\HotFixes\New\Deploy_2020_2_05_10.03.24"
8 @ECHO ---
9 @ECHO Completed. Please review log file in: <SASHome>\InstallMisc\InstallLogs
10 @ECHO ---
11 pause
12

```

Figure 8 - SilentInst.bat Example

4. Create and run **downloadhf.bat** that will transfer SAS hot fix from SAS web site using the PowerShell scripts (powershell_script.bat) generated by SASHFADD tool.

Note: If powershell_script.bat is empty then all available SAS hot fix are already installed.

```

1 REM downloadhf.bat
2 f:
3 cd "F:\Tools\HotfixAnalysis\SASPrdServer1\SASHFADD_2020_2_05_10.03.24\DOWNLOAD_SASHFADD_2020_2_05_10.03.24"
4 del "F:\Tools\HotfixAnalysis\SASPrdServer1\Log\download_SASPrdServer1.log"
5 call powershell_script.bat > "F:\Tools\HotfixAnalysis\SASPrdServer1\Log\download_SASPrdServer1.log"
6 EXIT
7

```

Figure 9 - Downloadhf.bat Example

Once downloaded all SAS hot fix will be save into the **DOWNLOAD_SASHFADD_YYYY_MM_DD_HH.MM.SS** folder, located in the hot fix analysis folder and created by the SASHFADD tool.

5. Create and run **movehf.bat** that will transfer SAS hot fix from the analysis folder to the remote SAS server.



```

REN movehf.bat
cd %*\SASPrdServer1\F\SASHome\InstallMisc\HotFixes\New\Deploy_2020_2_05_10.03.24*
%COMSPEC% %F:\Tools\HotFixAnalysis\ASAPServer1\SASHFADD_2020_2_05_10.03.24\DEPLOY_SASHFADD_2020_2_05_10.03.24* %*\SASPrdServer1\F\SASHome\InstallMisc\HotFixes\New\Deploy_2020_2_05_10.03.24* *.asp /new
%COMSPEC% %F:\Tools\HotFixAnalysis\ASAPServer1\SASHFADD_2020_2_05_10.03.24\DEPLOY_SASHFADD_2020_2_05_10.03.24* %*\SASPrdServer1\F\SASHome\InstallMisc\HotFixes\New\Deploy_2020_2_05_10.03.24* *.bat /new
%COMSPEC% %F:\Tools\HotFixAnalysis\ASAPServer1\SASHFADD_2020_2_05_10.03.24\DEPLOY_SASHFADD_2020_2_05_10.03.24* %*\SASPrdServer1\F\SASHome\InstallMisc\HotFixes\New\Deploy_2020_2_05_10.03.24* *.log /new
EXIT
  
```

Figure 10 - Movehf.bat Example

Basically the movehf.bat will move the content of the folder **DEPLOY_SASHFADD_YYYY_MM_DD_HH.MM.SS**, located in the hot fix analysis folder to the default folder used by the SAS Deployment Manager to install SAS hot fix (i.e. <SASHOME>\InstallMisc\Hotfixes\New). This batch file will also copy the folder **OtherHF** created in previous steps.

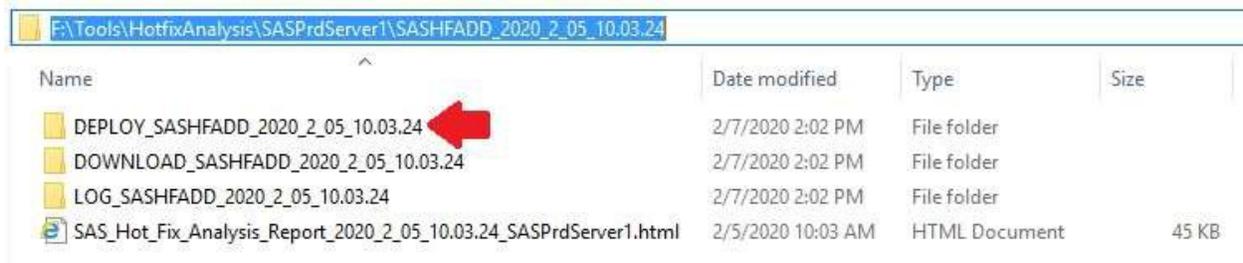


Figure 11 - DEPLOY_SASHFADD_YYYY_MM_DD_HH.MM.SS

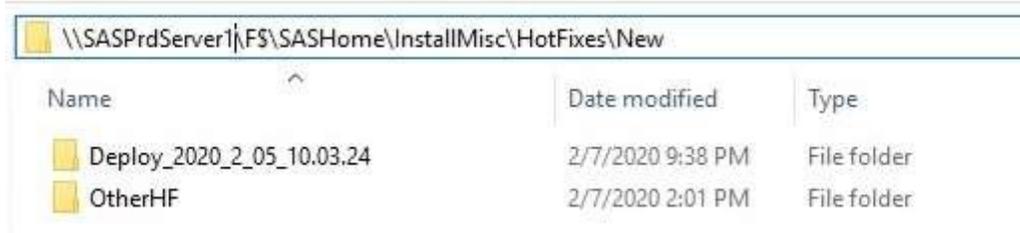


Figure 12 - Default Folder Used by The SAS Deployment Manager to Install SAS Hot Fixes

6. Then send an email to SAS administrator with the SASHFADD analysis report and logs.



Figure 13 - Email Example



Figure 14 - SASHFADD Analysis Report Example

CONCLUSION

The review of SAS hot fixes on a regular basis is part of SAS administrator best practices. Once SASHFADD is setup and scheduled weekly then SAS administrators don't need to spend more time and could focus to review the SASHFADD analysis report and do an assessment of the current level of hot fix applied. The assessment will determine which hot fix is essential or less critical. Once the decision is made to apply SAS hot fix then it is very important to review the hot fix documentation first then use the silent installation batch file.

REFERENCES & RECOMMENDED READING

Hot Fix FAQs

<https://support.sas.com/en/technical-support/maintenance/hot-fixes/hot-fix-faq.html>

SAS Hot Fix Analysis, Download and Deployment (SASHFADD) Tool

<https://support.sas.com/en/technical-support/maintenance/hot-fixes/hot-fix-analysis-download-deployment-tool.html>

SAS Hot Fix Analysis, Download and Deployment (SASHFADD) Tool Usage Guide Version 2.2.2/2.2.3

https://tshf.sas.com/techsup/download/hotfix/HF2/SASHFADD_usage.pdf

What's New in SASHFADD?

https://tshf.sas.com/techsup/download/hotfix/HF2/SASHFADD_whats_new.pdf

Usage Note 35968: Using the ViewRegistry Report and other methods to determine the SAS® 9.2 and later software releases and hot fixes that are installed

<http://support.sas.com/kb/35/968.html>

Harmonize Your SAS Environments with Hot Fix Versions - Jitendra N. Pandey

<https://www.sas.com/content/dam/SAS/support/en/sas-global-forum-proceedings/2018/2572-2018.pdf>

CONTACT INFORMATION

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