Installation Instructions for SAS® 9.4 Installation Kit: FTP Format on z/OS

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Overview

This document provides all the information related to unloading and installing a SAS 9.4 order from FTP format on z/OS systems for which you have purchased licenses. Review this document before you start your installation.

***Important**: If you received this order to add maintenance or additional SAS Software products to your existing order, please note that this process creates a new SAS installation, requiring a different high-level-qualifier for your traditional data sets and a new SAS home directory. Using your existing high-level-qualifier will cause unpredictable results.*

You **MUST** complete each of the required items below **before** beginning your SAS installation. The following topics are discussed in this section:

Prerequisites

Verify System Requirements

Confirm that your system meets the minimum requirements by reviewing the *System Requirements for SAS 9.4 Foundation for z/OS*.

Software Order Email (SOE)

To install SAS 9.4 on z/OS, start with the Software Order Email (SOE) you received from SAS. This email message contains details such as the order number, type of installation, and job templates for you to use to install your software.

Sufficient UNIX File System Space for the SASHOME Directory

The `SASHOME` directory is an integral part of the SAS 9.4 installation. For a SAS Foundation-only installation, 3 GB should be allowed for the `SASHOME` directory.

Supported Version of Java

An IBM Java Software Development Kit (JDK) is required. Obtain and install it before you perform the SAS installation.

With SAS 9.4M9 on z/OS, IBM Java 21.0.4 or later (64-bit) is required.

The SAS 9.4 Support for Java page on the SAS Technical Support site describes the Java requirements for each maintenance release of SAS 9.4 Foundation.

(Optional) Updated Logon Password

If you wish to apply hot fixes without running the hot fix jobs manually, you must update the logon password. See "Updating the Logon Password" on page 10 for more information.

(Optional) SAS/GRAPH Map Data Sets

Starting with SAS 9.4M3, SAS/GRAPH Map products are installed.

Additional space is used for SAS/GRAPH. For more information about the required space for SAS/GRAPH Map data sets, refer to the *System Requirements for SAS 9.4 Foundation for z/OS*.

Note: *To remove or re-install SAS/GRAPH Maps, see SAS Note 55984.*

Unloading Your Customized z/OS 9.4 FTP Media

Overview

Installing a basic order from FTP Media is different from other types of orders in that it does not require you to create a SAS Software Depot. Your customized system image, based on your software order, has been built at SAS, and it is sent to you in an FTP format. Your setinit (license file) and an initial set of hot fixes have already been applied to this image.

You will use either DFDSS or FDRDSF to restore the traditional data sets to disk and the PAX command to restore the `SASHOME` directory to UNIX file system space. JCL has been provided to allow you to rename the image to your high-level qualifier (HLQ) and to customize any site-specific information that you require.

Four files were attached to your Software Order Email:

`JCL_to_unload_with_DFDSS.txt`

`JCL_to_unload_with_FDR.txt.`

`JCL_to_FTP_your_order.txt.`

`JCL_to_unPAX_SASHOME.txt.`

These files contain JCL, which has been **customized for your site** based on your order. Depending on the backup/restore software product that is used at your site, you will use only the JCL_to_unload_with_DFDSS.txt file or the JCL_to_unload_with_FDR.txt file. These files (jobs) are also located in the TAPECTL data set that is created in Step 1 for backup purposes.

You will restore the data from FTP and then modify references to high-level qualifiers or the path to the `SASHOME` directory to be consistent with your site's standards.

Here is an overview of the installation process:

1. Retrieve the files from the SAS FTP site.
2. Restore the traditional SAS installations to a high-level qualifier appropriate for your site.
3. Restore the `SASHOME` directory in the UNIX file system space.
4. Replace certain strings with your site-specific values.

Detailed Installation Steps

Important:

- All installation jobs include case-sensitive strings. You **MUST** set CAPS OFF in the ISPF/PDF editor while editing these jobs.
- After you select the restore job from your SOE, all subsequent jobs and members will be found in the data set "*<HLQ>*.TAPECTL", where *<HLQ>* is the high-level qualifier that you will use for the data sets in your SAS deployment.
- Do not create a data set with your target high-level-qualifier that might conflict with the data set names that will be restored. Otherwise, your job will have a return code of 8.

Step 1: Retrieve the Files from Our FTP Site

Retrieve the files from the SAS FTP site. Run the batch job that is included in the file JCL_to_FTP_your_order.TXT, which is attached to your SOE. Edit the values shown in < .> to indicate variables, replacing them with values that are appropriate for your site.

As an alternative, from TSO or ISPF option 6 you can execute the commands shown below(pre-allocate the file for the DFDSS or FDR TERSEd data set). Replace the values shown in < > to indicate variables:

Important: *Retrieve either the dfdsstrs file or the fdrtrs file, depending on whether you will use IBM ADRDSSU (sometimes called DFDSS) or Innovative Data Processing's FDRDSF program to restore your data sets. You do NOT need both files.*

```
ftp ftp.sas.com
Userid:  anonymous
Password:   <your e-mail address>
cd techsup/zOS/Install_Depot
binary
get V<order #>.dfdsstrs <preallocated file> (REPL
get V<order #>.fdrtrs <preallocated file> (REPL
get V<order #>.pax   <a Unix file system directory>/V0F1M9T.pax
quit
```

Notes: *This is a blind directory. You cannot display the contents of the directory in a browser or with an "ls" command. You must request the file explicitly by name.*

The size of these datasets is specified in the JCL_to_FTP_your_order.TXT file.

Step 2: Restore the Traditional SAS System Data Sets to a Defined High-level Qualifier

You must select a program to use to unload the SAS system image. Use either IBM ADRDSSU or Innovative Data Processing's FDRDSF program to execute the job for that utility. A sample of each job, customized for your installation, was attached to your SOE. The comments at the beginning of the JCL statements provide additional information.

Important: *Do **NOT** run both jobs.*

DFDSS: RES1DSS Job

Note: *If you are using SMS, be sure to read the additional information in Steps 2b and 4 below.*

1. Fill in the necessary JOBCARD information.
2. Change the first five SET statements:

   a. `SET  DISKUNIT='SYSALLDA'`

   Disk unit for data sets

   b. `SET  DISKVOL='XXXXXX'`

   Disk volser for data sets

   Note: *If you are using SMS, you must add a valid disk volume and follow the instructions in Step 4 below.*

   c. `SET  TEMPUNIT='SYSALLDA'`

   Temporary disk space

   d. `SET  FTPDSN='YOUR.FTP.DSN`

   DSN of downloaded DSS dump

   e. `SET  UNTERSE='YOUR.UNTERSE.DSN'`

   DSN of the unterse dump

3. In the SYSIN to ADRDSSU (step DSSREST): Specify the high-level qualifier for the data sets in your SAS deployment, in place of '-HLQ-', in the RENAMEU keyword. Note that there is a limit of 17 characters for the HLQ, and it must be in uppercase.

   Use only a two-level replacement value. If you need a three-level high-level qualifier, you must restore using a two-level value and then rename the restored data sets.

4. If you are using SMS, in the SYSIN DD statement, you must provide a valid STORCLAS value after the CATALOG statement. Follow these steps:

   a. Specify a continuation character (a dash) on the CATALOG statement.

   b. Specify the STORCLAS(*your site value*) statement on the next line.

   You can also add a MGMTCLAS value if desired. Follow these steps:

   a. Specify a continuation character (a **dash**) on the STORCLAS statement.

   b. Specify the MGMTCLAS(*your site value*) statement on the next line.

   Note: *DATACLAS is **not** a valid option for a restore. For more information, refer to IBM's document titled DFSMSdss Storage Administration.*

   Here is an example of the JCL, both before and after the STORCLAS and MGMTCLAS values were added:

   BEFORE:

```
//SYSIN    DD *
 RESTORE DATASET(                                          -
           INCLUDE(**)                                     -
                )                                          -
         RENAMEU(                                          -
```

```
                  (**,                                                -
                   -HLQ-.**)                    /* Supply */ -
                 )                                                    -
          INDDNAME(TAPEDD1)                                           -
          OUTDDNAME(DISKDD1)                                          -
          CATALOG
/*
//
```

AFTER:

```
//SYSIN    DD *
 RESTORE DATASET(                                                     -
           INCLUDE(**)                                                -
                )                                                     -
          RENAMEU(                                                    -
                  (**,                                                -
                   -HLQ-.**)                    /* Supply */ -
                 )                                                    -
          INDDNAME(TAPEDD1)                                           -
          OUTDDNAME(DISKDD1)                                          -
          CATALOG                                                     -
          STORCLAS(your site value)                                   -
          MGMTCLAS(your site value)
/*
//
```

2. Submit the job.

OR

FDRDSF: RES1FDR Job

Note: *If you are using SMS, be sure to read the additional information in Steps 2b and 4 below.*

1. Fill in the necessary JOBCARD information.
2. Change the first three SET statements:
   a. `SET DISKUNIT='SYSALLDA'`

      Disk unit for data sets

   b. `SET DISKVOL='XXXXXX'`

      Disk volser for data sets

      Note: *If you are using SMS, you must add a valid disk volume and follow the instructions in Step 4 below.*

   c. `SET TEMPUNIT='SYSALLDA'`
      Temporary disk space
   d. `SET FTPDSN='YOUR.FTP.DSN`
      DSN of download FDR dump
   e. `SET UNTERSE='YOUR.UNTERSE.DSN'`
      DSN of the unterse dump
3. In the `SYSIN` to `FDRDSF` (step `FDRREST`):

Specify the high-level qualifier for the data sets in your SAS deployment, in place of '-HLQ-', in the NEWINDEX keyword. Note that there is a limit of 17 characters for the HLQ, and it must be in uppercase.

4. If you are using SMS, in the SYSIN DD statement, you must provide a valid STORCLAS value after the NEWINDEX statement. Take the following steps:

   a. Specify a continuation character (a **comma**) after your '-HLQ-specification on the NEWINDEX statement.

   b. Specify the STORCLAS=*your value* statement on the next line.

   You can also add MGMTCLAS and DATACLAS values if desired. Take the following steps:

   a. Specify a continuation character (a **comma**) after the STORCLAS value.

   b. Specify the MGMTCLAS=*your value* or DATACLAS(*your value*) statements on the same line, with each value separated by commas.

      Here is an example of the JCL, both before and after the STORCLAS, MGMTCLAS, and DATACLAS values were added:

      BEFORE:

```
//SYSIN    DD *
  RESTORE TYPE=DSF
  SELECT ALLDSN,
    NEWINDEX=-HLQ-
/*
//
```

      AFTER:

```
//SYSIN    DD *
  RESTORE TYPE=DSF
  SELECT ALLDSN,
    NEWINDEX=-HLQ-,
    STORCLAS=your value,MGMTCLAS=your value,DATACLAS=your value
/*
//
```

4. Submit the job.

Step 3: Restore the SASHOME Directory to UNIX File System Space

This step restores the SASHOME directory to UNIX file system space. You can either create the necessary UNIX file system space using the using the supplied sample job REC2CZFS, or your system staff can create a suitable UNIX file system space for you. You can use either hFS or zFS, but SAS recommends zFS for improved performance.

Allocate about 3 GB of UNIX file system space for your SASHOME directory.

Optional: RES2CZFS Job

Note: *This job (JCL located in <HLQ>.TAPECTL) is provided as an example of how to create a UNIX file system space and mount it.*

This job allocates a UNIX file system data set and formats it in compatibility mode to hold the UNIX file system for the SAS image. In order to properly execute this job, you must have sysadmin mount

authority. You do ***not*** need to run this job if you already have UNIX file system space created for this installation. The comments at the beginning and end of the JCL statements may provide additional information.

1. Fill in the required JOBCARD information.
2. Change the four `SET` statements:
   a. `SET ZFS='-HLQ-.ZFS'`

      Data set name of the zFS. Note that the value you specify for `-HLQ-` must be in uppercase.

   b. `SET SU='BPXROOT'`

      User ID with UID=0 authority

   c. `SET SASADMIN='sasadm'`

      User ID that is the owner of the file system

   d. `SET MOUNTPT='/?????'`

   e. Location of the `SASHOME` directory. For example, `/usr/lpp/SAS/SAS94`.
3. In the `SYSIN` to `IDCAMS` (step `ALLOCZFS`):
   - Change the zFS data set name, `-zFS-`, in the `NAME` keyword.
   - Change the volume assignment, `-VOLSER-`, in the `VOLUME` keyword.
4. In the `SYSTSIN` to `IKJEFT01` (step `MOUNTZFS`):
   - Change the zFS data set name, `-zFS-`, in the `FILESYSTEM` keyword.
   - Change the mount point, `-mountpoint-`, in the `MOUNTPOINT` keyword.
5. Submit the job.

PAXUNLD Job

An example file for this job, customized for your installation, was attached to your SOE: JCL_to_unPax_SASHOME.txt. This job restores the `SASHOME` directory to a UNIX file system.

The RES2CZFS job must complete before this job can be executed unless the RES2CZFS job did not run because UNIX file system space for the installation was already present.

Take the following steps:

1. Fill in the necessary JOBCARD information.
2. Change the first two `SET` statements:
   a. `SET PAXSCRPT='/???/pax_tape.sh'`

      The pax_tape.sh file is created by this job in that directory. This directory must already exist.

   b. `SET SASHOME='/?????'`

      Location of the `SASHOME` directory. This directory must already exist.

      This should be the same value as `MOUNTPT` in the RES2CZFS job if you used it.

3. Specify the name of the data set to which you downloaded the .PAX that you retrieved from the SAS FTP site.

   ```
   SET PAXDSN = '/a directory/v<order #>.pax'
   ```

4. Submit the job.

Step 4: Replace Certain Strings with Site-Specific Values

You must edit the RPLVARC control file and then run the following two jobs:

RPLVARC Control File

This is a control file (member RPLVARC located in *<HLQ>*.TAPECTL) for customizing SAS at your site. This file requires modifications before the subsequent JCL jobs are run. Modify the following parameters:

- HLQ — Your high-level qualifier. Must be in upper case. (There is a limit of 17 characters.)
- SYSNAME — The machine name in upper case. This is the machine that hosts the SAS deployment (replacing ZOSHOST).
- LSYSNAME — The machine name in lower case on which this installation resides (replacing zoshost).
- SASPATH — Your SASHOME directory path.
- JAVAHOME — Your JAVAHOME directory path; for example, usr/lpp/java/J21.0_64.

  Note: *Steps 6–9 allow you to override the SAS-supplied JOBCARD parameters with those that are specific to your site.*

- JOBCARD2 — MSGCLASS, MSGLEVEL, and CLASS
- JOBCARD3 — TIME and REGION
- JOBCARD4 — A comment by default. Add a comma after your last parameter on JOBCARD3 if you need to use this JOBCARD.
- JOBCARD5 — A comment by default. Add a comma after your last parameter on JOBCARD4 if you need to use this JOBCARD.
- USER — Your installer user ID in upper case (replacing USERNM).
- LUSER — Your installer user ID in lower case (replacing usernm).

  Note: *Steps 12–16 are only needed if the order includes SAS/IntrNet. If your order does not contain SAS/IntrNet, add an asterisk (*) before each of these lines to comment them out.*

- CGIBINURL — The URL for CGI executables.
- ADMINNAME — The name of the administrator.
- ADMINMAIL — The email address of the administrator.
- APPSRVHOSTNAME — The DNS name or IP address of the application server host where SAS Foundation is located.
- APPSRVPORT — The customary default port number is 5001, but you can use any valid available port on your system in the range 256 – 65535.

- DSKVOL — Specify DASD volume. This value is **required**.

  Note: *If USESMS is true, specify '`DSKVOL=_blank/null_`'.*

- USESMS — Set to "`True`" if using SMS; otherwise set to "`False`". This value is **required**.
- SMSDTCLS — Set to the value of your SMS data class. This value is **required** if `USESMS=True`. Otherwise, leave the value as '`_blank/null_`'.
- SMSMGCLS — Set to the value of your SMS management class. This value is **required** if `USESMS=True`. Otherwise, leave the value as '`_blank/null_`'.
- SMSSTCLS — Set to the value of your SMS storage class. This value is **required** if `USESMS=True`. Otherwise, leave the value as '`_blank/null_`'.

Save your changes when you have completed the modifications.

RPLCPDS *Job*

This job (member RPLCPDS located in *<HLQ>*`.TAPECTL`) modifies the z/OS traditional datasets with the values you specified in member RPLVARC.

1. Fill in the necessary JOBCARD information.
2. Change the following `SET` statement:

   ```
   SET    JOBSPDS='-HLQ-.TAPECTL'
   ```

   Install PDS. Note that '`-HLQ-`' must be in uppercase.

   Note: *Your HLQ is now the text* ***before*** *"`.TAPECTL`" and must be specified in upper case.*
3. Submit the job.
4. Review the output to ensure that everything ran successfully.

RPLCUSS Job

This job modifies the UNIX file system files in the `SASHOME` directory with the values you specified in member RPLVARC.

1. Fill in the necessary JOBCARD information.
2. Change the two `SET` statements:

   a. `SET  JOBSPDS='-HLQ-.TAPECTL'`

      Install PDS

      Note: *Your HLQ is now the text* ***before*** *"`.TAPECTL`" and must be entered in upper case.*

   b. `SET  TMPPATH='/tmp'`

      Temporary location used to write the shell script that performs the string replacement.

      Note: *"`tmp`" is a UNIX directory and its name is case sensitive. This location* ***must*** *exist before the RPLCUSS job is run.*
3. Submit the job.
4. Review the output to ensure that everything ran successfully.

Updating the Logon Password

Note: *You only need to update your logon password if you want to run hot fix installations without* `-nojobsubmit`.

When you receive your SAS 9.4 order, or the administrator of your system changes their logon password, you must run a rexx program to update the password that the previous SAS installation process stored. The user ID and password of the person who initially installed the system is located in the `install.properties` file. The password is encrypted, and you will not be able to view it if you open the file. Do not attempt to edit this file on your own.

The CHGPW.REXX program is used to change the password. To run this program under omvs, use the "cd" command to navigate to `[SASHOME]/SASDeploymentManager/9.4`, type the command **chgpw.rexx**, and follow the prompts.

To run this program in USS space, type **chgpw.rexx** and follow the prompts. It can be found in USS under `[SASHOME]/SASDeploymentManager/9.4.` When you launch the program, the Java version that was found is displayed.

You are prompted twice for the current password for your user ID. If the passwords match, the following message is returned:

```
Password successfully updated.
```

Additional Configuration Steps

After all installation jobs have finished, submit the VALID job in the `'-HLQ-.INSTALL.CNTL'` data set and ensure that all steps complete with a return code of 0.

Note: *You may need to edit the job cards to comply with your site's JCL policies. Please check the comments in the VALID job—you may need to increase your Region Size.*

A separate job named INSTHELP is written to `<HLQ>.INSTALL.CNTL` and is optional. It represents the online Help and, depending on your system and other jobs running, it could take an hour or more to complete. If you run this job, SAS recommends running it after the initial installation has completed.

Complete any required product-specific post-installation steps by referring to the *Configuration Guide for SAS 9.4 Foundation for z/OS*.

Tips and Additional Information

Visit these sites for tips and additional information that might not be in your official product documentation:

Technical Support SAS 9.4 Hot Fix downloads:

`https://tshf.sas.com/techsup/download/hotfix/hotfix.html`

General Information and Troubleshooting for Electronic Software Delivery:

`https://sas.service-now.com/csm?id=kb_article_view&sysparm_article=KB0036210`

Locating the log files for SAS 9.4 installations:

`https://support.sas.com/kb/49/756.html`

Configuration Guide for SAS 9.4 Foundation for z/OS:

https://support.sas.com/documentation/installcenter/en/ikfdtnmvscg/66194/PDF/default/config.pdf

Documentation for a SAS 9.4 installation on z/OS:

https://support.sas.com/en/documentation/install-center/94/guide-for-z-os.html

SAS Technical Support

Technical support is available to all customers who license SAS software. However, you are encouraged to engage your designated on-site SAS support personnel as your first support contact. If your on-site SAS support personnel cannot resolve your issue, they can contact SAS Technical Support to report your problem.

Before you contact SAS Technical Support, explore the SAS Support website at https://support.sas.com/en/technical-support.html. This site offers access to the SAS Knowledge Base, SAS communities, and other materials that might answer your questions.

When you contact SAS Technical Support, you are required to provide information, such as your SAS site number, company name, email address, and phone number, that identifies you as a licensed SAS software customer.

If you encounter problems with your installation, create a case at the Customer Service Portal: https://service.sas.com/csm.

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