

# **Installation and Maintenance Instructions for SAS<sup>®</sup> 9.2 Installation Kit for Basic DVD Installations on z/OS<sup>®</sup>**



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### **Installation and Maintenance Instructions for SAS® 9.2 Installation Kit for Basic DVD Installations on z/OS®**

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## Before You Begin

This document provides all of the information related to installing a SAS 9.2 DVD Software **basic** order on z/OS systems for which you have purchased licenses. Please review this document in its entirety.

Be sure to review each of the topics in the “Prerequisites” and “Overview” sections before beginning your installation.

### Prerequisites

#### System Requirements

Confirm that your system meets the minimum requirements by referring to the system requirements from the SAS 9.2 Install Center Documentation Web site

(<http://support.sas.com/documentation/installcenter/922/index.html>) and selecting **Documentation for SAS 9.2 Installation on z/OS**, or referring to SAS Note 36008 (<http://support.sas.com/kb/36/008.html>).

#### Installation Alert Notes

Click **Outstanding Alert Status Installation Problems** from the <http://support.sas.com/notes/index.html> Web page. On the **Filter Results By** toolbar, select **z/OS** from the **Operating System** drop-down list box.

Review the Installation Alert Notes that are listed to see if they apply to this installation order.

*Important:* Be sure to review SAS Note 41697 at <http://support.sas.com/kb/41697>.

#### Software Order E-mail (SOE)

To install SAS 9.2 phase 2 on z/OS, start with the Software Order E-mail (SOE) you received from SAS Institute. This e-mail contains details such as the order number, a key, and the type of installation you have: Basic or Planning. Basic orders are generally straightforward single-machine deployments. Planning orders are more complex, multi-machine deployments. This document is for a **basic** order.

#### SAS Installation Data File (SID file)

The SAS Software Depot includes the SAS installation data file (SID file), and is valid for a limited time. The SID file consists of customized installation information and product authorization information. The SAS Deployment Wizard uses the installation information in the SID file to install your licensed software and apply customized product authorization information to your system. The file is named something like `sas92_XXXXXX_YYYYYYY_zzz.txt`, where `XXXXXX` is your order number, `YYYYYYY` is your setnumid (a unique identifier that SAS Technical Support uses), and `zzz` is the operating system the order is licensed for.

The SID file for your software order will be located in the `sid_files` directory at the root of your SAS Software Depot or, if you have received media, on the first disk of that installation media.

If your order is more than 90 days old, the SID file shipped with the order may have expired.

Contact your SAS site representative who may have received a Renewal Software Order E-mail that will contain a more recent SID file. If the site representative does not have an updated SID file, please contact SAS Customer Service at 1-800-727-0025 (press option 3).

## Overview

### SAS Deployment Wizard

The SAS Deployment Wizard is the common interface used to install and deploy all SAS 9.2 software. Using the SAS Deployment Wizard, you interact with the SAS Software Depot, the repository of files and data necessary to install your SAS 9.2 software. You will invoke the SAS Deployment Wizard on each system that is part of your SAS software deployment.

For basic installations, you may run the SAS Deployment Wizard in one of two ways:

- `setup.rexx`, which provides a windowing interface that requires an X11 server.
- `linemode.rexx`, which collects the necessary information to install your software via line mode prompts.

### SAS Software Depot

The SAS Software Depot is a collection of SAS installation files that represents one or more orders. The SAS Software Depot is organized in a specific format that is meaningful to the SAS Deployment Wizard, which is the tool that is used to install and initially configure SAS. The SAS Software Depot contains the SAS Deployment Wizard executable, one or more deployment plans, a SID file, order data, and product data. *Please see your Software Order E-Mail for the space required for the SAS Software Depot for your order.*

### Location of SAS Software Depot

You can load your SAS Software Depot from the DVD to either UNIX or Windows. You must be able to:

- Mount your UNIX or Windows directory on your z/OS system, using NFS mount, **or**
- Have a third-party utility that can transfer a complete directory tree to your z/OS system.

### CPUTIMEMAX and ASSIZEMAX or TSO Region Parameters

The user ID that will be running the SAS Deployment Wizard to install SAS 9.2 Foundation for z/OS requires a larger region setting:

- If running under OMVS, a TSO region size of at least 800 MB.
- If running UNIX-style commands using `rlogin`, `putty`, or `telnet`, an ASSIZEMAX of at least 800 MB.

The user ID must meet the following requirements:

- Must have a home directory that is not root.
- Must have a default program shell defined.
- Must not be a superuser.
- Must not share a uid with other user IDs.

### SAS Home Location

SASHOME is the UNIX directory location where the UNIX file system components of your SAS software are installed on your machine. SASHOME is specified when you install software through the SAS Deployment Wizard for the first time, and that location becomes the default installation location for any other SAS software you install on the same machine. You will need about 3 GB of UNIX file system space for your SAS Home directory.

Many sites prefer to have SAS Home in a separate UNIX file system than their SAS Software Depot. This allows you to easily archive the SAS Software Depot and reuse that disk space. The directory path for your SAS Home location cannot be a directory within your SAS software depot.

**Note:** *The length of the SASHOME path is limited to 54 characters.*

**Note:** *The SAS Home directory is an integral part of the SAS 9.2 installation and **MUST** exist for you to apply maintenance or hotfixes to your SAS 9.2 software.*

## Installing Required Third-Party Software

The checklist indicates any third-party software that must be installed before you install your SAS software, as well as which third-party software must be obtained from its vendor.

Some of your third-party software may be provided in your software order. That software is listed in your `ordersummary.html` which is available in your SAS Software Depot. Follow the path for each third-party product listed in the Third Party section of the `ordersummary.html` to locate the documentation for its installation.

## X11 Server Availability

For a basic installation, you can use either `setup.rexx` or `linemode.rexx`. `Setup.rexx` provides a nicer interface but requires an X11 server.

The SAS Deployment Wizard has a graphical user interface and requires the use of an X11 server. At many sites, this software is already available and running on a UNIX and/or Windows system. X11 software is available from commercial and shareware sites.

For more information about X11 server minimum version requirements, see the Web page entitled “SAS 9.2 Support for Additional Software Products” at <http://support.sas.com/resources/thirdpartysupport/v92/other.sw.html>.

**Note:** *If you install your SAS software using `linemode.rexx`, an X11 server is not required.*

## Installation Action—Action A, Action B, or Action C/D

The installation process will prompt you for an installation action to choose. Determine which one of these installation actions below apply to this installation.

- **Action A** is for a new installation—if you do not currently have SAS 9.2 phase 2 installed on your system at all.
- **Action B** installs maintenance and/or new products directly into your existing production SAS 9.2 libraries and directories.
- **Action C** installs maintenance and/or new products into staging libraries for testing, after which you perform an **Action D** install to copy the staging libraries into your production libraries.

## The `-nojbsubmit` Command Line Option

Several batch jobs will be used to complete part of the deployment. By default, the SAS Deployment Wizard submits these jobs and:

- Assigns the same job name `xxxxxxA` to each job it automatically submits, where:  
`xxxxxxx` – is assigned the installer user ID  
“A” – suffix assigned to the installer user

- Uses the FTP JES interface to track the progress of each job, and in particular determine when they have completed.

There are several reasons why the use of the FTP JES interface might not be possible or successful at your site. Below are some of the reasons for using the **-nojobsubmit** command line option which will allow you to edit and submit the batch jobs yourself:

- Your site uses JES3 (not JES2), or
- Your FTP server is configured for JESINTERFACELEVEL=2, or
- The SAS installer ID is not authorized to use FTP, or
- You need to make site-specific changes to the JCL or wish to review the JCL before submission, or
- The FTP JES interface's requirement that the jobname be the user ID performing the install suffixed with a single letter or digit is incompatible with your site's jobname requirements

If any of these conditions apply at your site, you must use the **-nojobsubmit** command line option when you run the `setup.rexx` or `linemode.rexx` execs, discussed later in this document.

## Installation and Maintenance Process

The remainder of this document describes the installation and maintenance (where applicable) process in detail. At this point you have reviewed and completed all of the pre-requisites for this installation previously documented.

### ***Upgrading an Existing SAS 9.2 Deployment***

If you already have SAS 9.2 installed, determine the version of SAS 9.2 already installed by either using the **Help** → **About** box in an interactive SAS session, or by looking at the top of the SAS log from a batch job. This will be important in helping you plan your installation. Otherwise, if you have a previous release of SAS, skip to the section titled "Creating Your SAS Software Depot" below.

If the version appears as **SAS 9.2 TS1M0** or **TS02.01M0P02052008**, then you have SAS 9.2 phase 1. Your new software order will not upgrade this version of SAS 9.2. You **must** perform a new installation, and the SAS Deployment Wizard will require you to specify a SAS Home location which does not already contain SAS 9.2 TS1M0.

### **Applying Updates to an Existing SAS 9.2 TS2M0 (or above) Maintenance Release**

If your order includes **both** maintenance and new software for SAS 9.2 products you already have installed in your version of SAS 9.2, then the **first invocation** of the SAS Deployment Wizard will **only apply that maintenance**. If your order also includes **new** software, you will need to run the SAS Deployment Wizard a **second time** to install the new products.

### ***Creating Your SAS Software Depot***

Follow these steps to create your SAS Software Depot:

1. Confirm that you have received the software that you expected.
  - In your installation kit, find the SAS Order Information document, which lists the software that you ordered. Verify that the SAS products and servers listed are correct,

and that they match what you expected to receive. If they are not, contact SAS Customer Service at 1-800-727-0025.

- The SAS Software Depot is a network-accessible repository of your SAS software. After you have installed your software, the SAS Order Information document will also be available from your SAS Software Depot at  
`<SAS Software Depot Location>/install_doc/<order number>/soi.html`.
  - After you have created your SAS Software Depot, you may view an expanded list of the software that makes up your order. Consult the `ordersummary.html`, located in your SAS Software Depot at  
`<SAS Software Depot Location>/install_doc/<order number>/ordersummary.html`.
2. Insert your media into a DVD drive on either a Windows or UNIX system to create or add to your SAS Software Depot.
- If you already have a SAS Software Depot from a 9.2 phase 2 installation, you should use the same location for creating this SAS Software Depot. Only new products, releases, and maintenance will need to be added to the SAS Software Depot, saving disk space. If you are creating a new SAS Software Depot, choose a location that either is, or can be, NFS-mounted on z/OS, or confirm that you have a third-party FTP utility that can move the entire directory tree to the z/OS file system. The directory name must not contain blanks.
  - For **Windows** users:
    - The media should autoplay. If it does not, double-click **setup.exe** at the root of your DVD to start the SAS Deployment Wizard.
    - Using the SAS Deployment Wizard, choose “Create or Add to a SAS Software Depot” to create or add to your SAS Software Depot.
    - When you enter the directory path name for the SAS Software Depot, the name should not contain blanks.
  - For **UNIX** users:
    - UNIX users should mount their DVD with the appropriate mount command and execute `setup.sh` at the root of the DVD.  
*Note: If you launch the SAS Deployment Wizard from an order that spans media, do not use a shell in the removable media’s file system when you launch `setup.sh`. In addition, the SAS Deployment Wizard should not be invoked via the File Manager. Either of these methods for launching the SAS Deployment Wizard will create a Device busy condition, which prevents disk swapping later in the deployment process.*
    - Using the SAS Deployment Wizard, choose “Create or Add to a SAS Software Depot” to create or add to your SAS Software Depot.
    - When you enter the directory path name for the SAS Software Depot, the name should not contain blanks.

## Make Your SAS Software Depot Accessible to z/OS

After the SAS Software Depot is created, do one of the following:

- NFS mount the directory on z/OS, **or**
- Transfer the SAS Software Depot to z/OS using a utility that can move a complete directory tree.
  - FTP the entire directory tree, ensuring that all files are transferred in binary to a z/OS UNIX File System directory, and the case of all file names is preserved.
  - Be sure to set the execute bits after moving from Windows. Execute the following command:  
`chmod -R a+r+x <SAS Software Depot Location>`

Alternatively, if the SAS Depot is stored on UNIX:

1. Create a tar file of your existing SAS Software Depot on your UNIX machine. Execute the following command:  
`tar -cvf <SAS Software Depot Location> <tar file name>`
2. FTP the tar file created in the previous step to z/OS in binary format.
3. Extract the SAS Software Depot on z/OS in the zFS directory where you want the SAS Software Depot created. Execute the following command from OMVS or rlogin:  
`tar -xvf <tar file name>`

*Note: The "v" option used in the tar commands is for "verbose." Information is displayed back to the terminal about each file as it is processed. It is not required.*

## Installing Your Software

If you will be installing using `setup.rexx`, then you **must** have an X11 server available on a Windows PC or UNIX machine at your site.

### Important Notes

- Do **not** log in to z/OS as a superuser (sometimes called "root" or "UID(0)").
- The user ID that will be running the SAS Deployment Wizard to install SAS 9.2 Foundation for z/OS must have the same requirements as noted in "CPUTIMEMAX and ASSIZEMAX or TSO Region Parameters" on page 2.
- You must stop all SAS Servers and processes before applying maintenance or adding new software.

## Installing Your SAS Foundation Software

1. If you are using `setup.rexx`, set the DISPLAY environment variable to point to your X11 server.

Because the SAS Deployment Wizard is used interactively, you will need to have access to a desktop computer with an X11 server installed and active. Issue the following case-sensitive command from the z/OS UNIX shell on your z/OS system before starting the SAS Deployment Wizard:

```
export DISPLAY=<your X11 server name>:0
```

*Note: If you do not issue this command, setup.rexx will prompt you for the server name. Make sure that the X11 server is started.*

2. During the execution of `linemode.rexx` or `setup.rexx`, you will be prompted for a Java location. You must specify the same release of Java that is being used to execute the REXX exec. If you are using an installed JRE, be sure to use the same JRE as you are using to run the SAS Deployment Wizard for the “Select Java Runtime Environment prompt.” If you are unsure of which JRE you are using, see the messages displayed when the SAS Deployment Wizard starts up which indicate the JRE being used. Alternatively, you may call SAS Technical Support.
3. Start the SAS Deployment Wizard.  
On your z/OS system, from OMVS (**not** ISHELL), rlogin, or putty, enter the z/OS UNIX shell command `./setup.rexx` or `./linemode.rexx` at the root of your SAS Software Depot to start the SAS Deployment Wizard.

The most commonly used options for `linemode.rexx` and `setup.rexx` are:

- `-nojobsubmit` as discussed earlier in this document, using this option means that the SAS Deployment Wizard will not submit the jobs automatically so that you can inspect and/or modify the JCL before execution. You will follow the manual steps in the section “After Running `setup.rexx` or `linemode.rexx` with the `-nojobsubmit` Command-line Option” below.

*Note:* If you are using `linemode.rexx`, you must hit “**enter**” to get a response back.

*Note:* A full listing and description of the command-line options for `setup.rexx` may be found in the SAS Deployment Wizard User’s Guide, available from the Install Center at <http://support.sas.com/installcenter>.

## **After Running `setup.rexx` or `linemode.rexx` with the `-nojobsubmit` Command-line Option**

Follow these steps to complete **an installation that used the `-nojobsubmit` option**.

1. Once the SAS Deployment Wizard shows that the installations have completed (all green checkmarks if using `setup.rexx` or a return code of 0 if using `linemode.rexx`), batch jobs for both the foundation installation and the maintenance installation have been created in the `<HLQ>.V92D8nnn.CNTL` partitioned data set.

2. Determine the location of `<java home>` on your system. You can use either:

`<SAS Software Depot Location>/products/javaruntime_92140_mvsv_xx_sp0_1/`

This represents the UNIX file system path used to invoke Java provided by SAS and licensed for deployment purposes only.

Where

`<SAS Software Depot Location>`

Represents the UNIX file system path to the location of the SAS Deployment Depot.

**or**

If your site already has a 31-bit version of Java installed, use that instead of the supplied JRE; for example: `/usr/lpp/java/J5.0/`

3. If you are applying only maintenance to an existing SAS installation, proceed directly to Step 7.  
Otherwise, if you are performing a new SAS installation, or adding additional products to an

existing SAS installation, manually submit the following batch jobs to accomplish the SAS Foundation installation.

**Note:** When adding some products to an existing installation, the EDITMKI job documented below will **not** be generated; a MAINT0 job will be generated instead. Run the MAINT0 job and it will start a second job named MKSASINS. Then continue with the \$\$\$NSTRO job which is documented below.

**EDITMKI** This job will start a second job called MKSASINS. After MKSASINS has completed successfully, the jobs that will perform the SAS installation will have been created in the <HLQ>.V92D8nnn.CNTL dataset. The names of those jobs are listed in the JOBINDEX member, where “x” represents the install action selected: A, B, C, or D. (Note: The \$\$\$NSTRO and \$\$\$NSTR1 jobs are not included in the JOBINDEX member, but are also part of the installation job stream.)

If you have site-specific JCL requirements, you can edit the jobs appropriately. When all JCL edits are complete, submit the \$\$\$NSTRO job.

**\$\$\$NSTRO** This job will start the series of installation jobs listed in the JOBINDEX member, as well as \$\$\$NSTR1, to install SAS Foundation.

**Note:** If you are running an **Action D**, you should not run the remaining steps in this section. Proceed directly to “Additional Configuration Steps” on page 9.

4. Once the install jobs have completed successfully, run the <SASHOME>/SASFoundation/9.2/postInstall.sh script to update the SAS configuration files and TKMVSENV files for proper operation.
5. If your Software Order E-mail shows a version for SAS 9.2, Rev. 920\_10wmm, where mm is **20 or higher**, or Rev. 920\_11wyy, or Rev. 920\_12wyy, where yy is **any value**, then proceed to Step 7 (you do not need to run the commands in steps 5 and 6).

Update the deployment registry for SAS Foundation by running the following command:

**Note:** The following lines must be entered as one continuous line. There is a space before “-jar” and there are 2 hyphens before the “file” parameter.

```
<java home dir>/bin/java -jar  
<SASHOME>/deploymentreg/sas.tools.deploymentreg.jar  
--file <SASHOME>/SASFoundation/9.2/DepRegUpdateData.xml
```

**Note:** If your order contains additional new products, rename or delete the DepRegUpdateData.xml file before running setup.rexx again to install those products.

6. Update the SAS Versioned Jar Repository cache by running the following command:

**Note:** The following lines must be entered as one continuous line. Note that there is a space after “-cp” before “<SASHOME>” and there is a space after “.jar” before “com.sas.app.NonAPI.”

```
<java home dir>/bin/java -cp  
<SASHOME>/SASVersionedJarRepository/9.2/eclipse/plugins/sas.launcher.jar  
com.sas.app.NonAPI -install
```

7. Manually submit the following maintenance jobs that were created by the Maintenance Install Tool in <HLQ>.V92D8nnn.CNTL. Submit each one and wait for a successful completion before submitting the next one in the list.
  - o MAINT0
 

*Note: MAINT0 will only exist if you are performing a maintenance-only or an add-on installation. Even if you ran this job in Step 3, you **must** submit it again at this time.*
  - o MAINT1
  - o MAINT2
8. Once the maintenance jobs have completed successfully, run the <SASHOME>/SASFoundation/9.2/postInstall.sh script to update the SAS config files and TKMVSENV files for proper operation.
9. If your Software Order E-mail shows a version for SAS 9.2, Rev. 920\_10wmm, where mm is 20 or higher, or Rev. 920\_11wyy, or Rev. 920\_12wyy, where yy is **any value**, then proceed to “Additional Configuration Steps” below (you do **not** need to run the commands in steps 9 and 10).
 

Update the deployment registry for SAS Foundation maintenance by running the following command:

*Note: The following lines must be entered as one continuous line. There is a space before and after “-jar” and there are 2 hyphens before the “file” parameter.*

```
<java home dir>/bin/java -jar
<SASHOME>/deploymentreg/sas.tools.deploymentreg.jar
--file <SASHOME>/InstallMisc/DepRegUpdateData.xml
```
10. Update the SAS Versioned Jar Repository cache by running the command:
 

*Note: The following lines must be entered as one continuous line. There is a space after “-cp” before “<SASHOME>” and there is a space after “.jar” before “com.sas.app.NonAPI”.*

```
<java home dir>/bin/java -cp
<SASHOME>/SASVersionedJarRepository/9.2/eclipse/plugins/sas.launcher.jar
com.sas.app.NonAPI -install
```

## Additional Configuration Steps

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

Consult the configuration instructions available for your operating system for product-specific post-installation steps. The configuration instructions are available from Install Center.

*Note: If you performed a staged install (Action C), once you are finished testing you should execute the SAS Deployment Wizard again and perform an Action D to copy the staged libraries to your production libraries.*

## Archiving Your SAS Software Depot

For future maintenance or installation of additional SAS software products, you will need your SAS Software Depot. It can be recreated, but you may find it easier to keep a backup of your SAS Software Depot so that only updates must be downloaded in the future. SAS Note 37119 (available at

<http://support.sas.com/kb/37/119.html>) contains sample jobs to back up and restore your SAS Software Depot.

## Tips and Additional Information

For the latest installation news, please visit these sites for tips and additional information that may not be in your documentation:

General support for SAS issues (including a link to Tech Support)

<http://support.sas.com>

SAS 9.2 Installation and Configuration FAQ

<http://support.sas.com/kb/33/144.html>

General Information and Troubleshooting for Electronic Software Delivery

<http://support.sas.com/kb/30/950.html>

Locating the log files for SAS 9.2 installations

<http://support.sas.com/kb/37/838.html>

Documentation for a SAS 9.2 Phase 2 installation on z/OS

<http://support.sas.com/kb/36/008.html>

## Technical Support

- If you need assistance with the software, we ask that only the SAS Installation Representative or the SAS Support Consultant call our Technical Support Division.  
For U.S. and Canadian customers, support is provided from our corporate headquarters in Cary, North Carolina. You may 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.
- Before calling, you may want to explore the SAS Institute Technical Support Web site at <http://support.sas.com/techsup/>. The Technical Support Web site offers a Knowledge Base, FAQs, Technical Support Documents and more that may answer your questions. This Web site also provides a mechanism for reporting problems.





THE  
POWER  
TO KNOW.

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