

Installing and Configuring SAS[®] Environment Manager in a SAS[®] Grid Environment with a Shared Configuration Directory



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Overview

This document is intended only for customers who have a SAS Grid environment with a shared configuration directory and a shared home directory. The contents apply to installations of SAS Grid up to the fifth maintenance release of SAS® 9.4 (SAS® 9.4M5).

For SAS® 9.4 M6 and later, only minimal configuration is required for the SAS Environment Manager agents. See the document titled [Installing and Configuring SAS Environment Manager in a Grid Environment](#) for instructions.

This document describes the following:

- The high-level process for configuring the SAS Environment Manager Agent in a SAS Grid environment in which a shared configuration directory has been used to deploy SAS 9.4.
- The `deploy-ev-agents.sh` script that has been developed to automate the process of configuring the SAS Environment Manager Agent in a SAS Grid environment in which a shared configuration directory has been used to deploy SAS 9.4.
- A manual process for configuring the SAS Environment Manager agent in a SAS Grid environment in which a shared configuration directory has been used to deploy SAS 9.4.

For additional information and to view the latest system requirements for your system, visit the SAS Install Center website, <http://support.sas.com/documentation/installcenter>.

Definitions

The following terms are used in this document:

- SAS Grid Control Server or SAS Grid Master Node – this machine controls distribution of jobs to the grid. This is the machine on which the SAS Deployment Wizard configured SAS software, and is also the machine on which the SAS Environment Manager Enablement Kit scripts execute.
- SAS Grid nodes – these machines are grid computing resources that are capable of receiving the work that is being distributed to the grid nodes.

SAS Technical Support

For information about SAS Technical Support, visit <http://support.sas.com/techsup/>.

Assumptions

The procedures that are described in this document rely on the following assumptions:

- SAS has already been deployed into shared configuration directories (SASHome and SASConfig) by running the SAS Deployment Wizard on the SAS Grid Control Server.
- All other SAS Grid nodes have access to the shared configuration directory via the same fully-qualified path.
- The SAS Grid Control Server should have only one SAS Environment Manager agent running on it, located at `$SAS_CONFIG/Web/SASEnvironmentManager/agent-5.8.0-EE/bin/hq-agent.sh`

High-Level Process

Here is an overview of the procedures to configure the SAS Environment Manager agent in a SAS Grid environment:

1. Stop the SAS Environment Manager agent on the SAS Grid Control Server. On the SAS Grid Control Server, change to the directory that contains the SAS Environment Manager agent.
2. For every other SAS Grid node:
 - Create a target directory for the new agent.
 - Copy the agent directory structure into the target directory.
 - Remove the agent `data/` directory from the target directory.
 - Remove the agent `log/` directory from the target directory.
 - Create a backup of the `conf/agent.properties` file in the target directory.
 - Update the `agent.properties` file in the target directory.
 - Create a backup of the SAS custom agent property file (`conf/sas.properties`) in the target directory.
 - Link the SAS custom agent property file to the original SAS custom agent property file that is used on the SAS Grid Control Server.
3. Start the SAS Environment Manager agent on the SAS Grid Control Server. The default path for the command is `$SAS_CONFIG/Lev1/Web/SASEnvironmentManager/agent-5.8.0-EE/bin/hq-agent.sh start`.

Automation Script

The `deploy-ev-agents.sh` script has been developed to automate the process of installing and configuring SAS Environment Manager on a SAS Grid system with shared configuration directories (SASHome and SASConfig). The script is available for you to copy from the SAS Support Communities. See [SAS Environment Manager in a Grid Environment: deploy script](#).

Caveats

Keep the following limitations in mind as you prepare to run the automation script:

- The process of running the `deploy-ev-agents.sh` script does not include any of the manual post-deployment steps that you must run, such as starting the SAS Environment Manager agents on the SAS Grid nodes. However, the automation script does print a summary of the actions it performed as well as any required post-deployment steps that must be performed after the script successfully completes. This information is printed to the screen just before the script exits on a successful deployment.
- The script is a work-in-progress and may be updated in its current location without prior notice.
- Although it is expected that this script should work on any UNIX system with a `sh` or `bash` shell, the script has only been tested and verified to work on a 64-bit Linux system.

Usage

The `deploy-ev-agents.sh` script requires two inputs:

- The location of the SAS Configuration directory (up to and including the configuration `LevN` directory).
- A list of one or more SAS Grid nodes where the SAS Environment Manager agent should be deployed.

To see the usage statement, run the script with the `-h` option:

```
% ./deploy-ev-agents.sh -h
```

```
-----  
Usage:
```

```
./deploy-ev-agents.sh [-n] [-q] -c SAS_CONFIG_DIRECTORY NODE1  
[NODE2 ... NODEN]  
./deploy-ev-agents.sh -V  
./deploy-ev-agents.sh -h  
-----
```

Script Input Parameters

The script takes a number of input parameters. Some of those parameters are required and others are optional. **All of the optional inputs default to sane values.**

Some inputs can be specified either via an environment variable or a command-line option. For those parameters, the command-line option takes precedence if both the command-line option and the environment variable are specified.

The following table summarizes the script input parameters:

Description	Environment Variable	Command-Line Option	Default Value
Fully-qualified path to SAS configuration directory (up to and including the configuration "LevN" directory)	GRID_SAS_CONFIG	-c	NONE
Extension to use for any backup files created by the script	GRID_BACKUP_EXTENSION	NONE	.orig
Relative path to SAS Environment Manager agent control script	GRID_EV_AGENT_CONTROL_SCRIPT	NONE	bin/hq-agent.sh
Relative path to SAS Environment Manager agent data directory	GRID_EV_AGENT_DATA_DIRECTORY	NONE	data
Relative path to deployment root created by script for SAS Environment Manager agents used by SAS Grid nodes	GRID_EV_AGENT_DEPLOY_ROOT	NONE	grid
SAS Environment Manager agent identifier (also the name of the agent root directory)	GRID_EV_AGENT_ID	NONE	agent-5.8.0-EE
SAS Environment Manager agent IP address or host name	GRID_EV_AGENT_IP_PROPERTY	NONE	agent.setup.agentIP
Name of property used to configure SAS Environment Manager agent plugins to be excluded	GRID_EV_AGENT_PLUGINS_EXCLUDE_PROPERTY	NONE	plugins.exclude
Name of property used to configure SAS Environment Manager agent plugins to be included	GRID_EV_AGENT_PLUGINS_INCLUDE_PROPERTY	NONE	plugins.include

Description	Environment Variable	Command-Line Option	Default Value
Relative path to SAS Environment Manager agent log directory	GRID_EV_AGENT_LOG_DIRECTORY	NONE	log
Relative path to SAS Environment Manager agent property file	GRID_EV_AGENT_PROPERTY_FILE	NONE	conf/agent.properties
Relative path to SAS Environment Manager agent custom property file	GRID_EV_AGENT_SAS_PROPERTY_FILE	NONE	conf/sas.properties
SAS Environment Manager agent control script start command	GRID_EV_AGENT_START_COMMAND	NONE	start
Agent control script stop command	GRID_EV_AGENT_STOP_COMMAND	NONE	stop
Relative path to agent configuration directory	GRID_EV_CONFIG_DIRECTORY	NONE	Web/SASEnvironmentManager

Command-Line Options

The following table summarizes the command-line options for the script. Some of these options were discussed earlier in the inputs section:

Option	Description	Required?	Default Value
-c	Specify the SAS configuration directory (up to and including the configuration "LevN" directory)	YES	NONE
-n	Execute the script in dry-run or "no execute" mode	NO	
-q	Execute the script in quiet mode; suppresses informational output	NO	
-v	Display version information	NO	N/A
-h	Print the usage statement	NO	N/A

Usage Examples

The following examples show command-line usage:

- Display usage statement:

```
./deploy-ev-agents.sh -h
```
- Deploy grid agents for the following SAS Grid nodes using a shared deployment directory located at `/shared/SASConfig/Lev1`:
 - `sasgrid01.sas.com`
 - `sasgrid02.sas.com`
 - `sasgrid03.sas.com`

```
./deploy-ev-agents.sh -c /shared/SASConfig/Lev1 sasgrid01.sas.com  
sasgrid02.sas.com sasgrid03.sas.com
```
- Run the script in dry-run mode to see the effects of running the above command:

```
./deploy-ev-agents.sh -n -c /shared/SASConfig/Lev1 sasgrid01.sas.com  
sasgrid02.sas.com sasgrid03.sas.com
```
- Deploy grid agents for the following SAS Grid nodes using a shared deployment directory located at `/shared/SASConfig/Lev1` and using the `GRID_SAS_CONFIG` environment variable to specify the SAS configuration directory:
 - `sasgrid01.sas.com`
 - `sasgrid02.sas.com`
 - `sasgrid03.sas.com`

```
GRID_SAS_CONFIG=/shared/SASConfig/Lev1 ./deploy-ev-agents.sh  
sasgrid01.sas.com sasgrid02.sas.com sasgrid03.sas.com
```
- Run the script in dry-run mode to see the effects of running the above command:

```
GRID_SAS_CONFIG=/shared/SASConfig/Lev1 ./deploy-ev-agents.sh -n  
sasgrid01.sas.com sasgrid02.sas.com sasgrid03.sas.com
```

Manual Process

Using the automation script is not required. You can instead follow a manual process for configuring the SAS Environment Manager agent in a SAS Grid environment in which a shared configuration directory has been used to deploy SAS 9.4

Keep the following in mind as you manually configure the SAS Environment Manager agent in a SAS Grid environment:

- Environment variables are used in these steps in order make it easier to copy the commands. The `$SAS_CONFIG` variable represents your SAS configuration directory (including the `LevN` directory). The `$GRID_NODE` variable represents the fully qualified host name of a grid node. These variables are not defined in a configuration file. You must manually replace the variables with the values for your environment when you copy the command.

- This process covers only a single SAS Grid node. Additional nodes follow a similar process. When performing this process for multiple nodes, the first and last steps (stopping and starting the original SAS Environment Manager agent, respectively) only occur once while all steps in between occur for every SAS Grid node.
- If the SAS Grid nodes use multiple NICs or hostname aliasing, see [“Manually Specifying Hostnames and IP Addresses”](#) in *SAS Environment Manager User’s Guide*, Third Edition.

Manual Configuration Steps

Take the following steps in order to configure the SAS Environment Manager agent in a SAS Grid environment without using the `deploy-ev-agents.sh` script:

1. Stop the SAS Environment Manager agent on the SAS Grid Control Server.

```
$SAS_CONFIG/Web/SASEnvironmentManager/agent-5.8.0-EE/bin/hq-agent.sh
stop
```

2. Create a target directory for each SAS Grid node’s new agent in the grid shared file space.

Note: You **must** complete the steps listed below for each SAS Grid node.

```
mkdir -p $SAS_CONFIG/Web/SASEnvironmentManager/grid/$GRID_NODE
```

3. Copy the agent directory structure into the target directory.

```
cp -pr $SAS_CONFIG/Web/SASEnvironmentManager/agent-5.8.0-EE
$SAS_CONFIG/Web/SASEnvironmentManager/grid/$GRID_NODE
```

4. Remove the agent data/ directory from the target directory.

```
rm -rf $SAS_CONFIG/Web/SASEnvironmentManager/grid/$GRID_NODE/agent-
5.8.0-EE/data
```

5. Remove the agent log/ directory from the target directory.

```
rm -rf $SAS_CONFIG/Web/SASEnvironmentManager/grid/$GRID_NODE/agent-
5.8.0-EE/log
```

6. Create a backup of the `agent.properties` file and save it in the target directory.

```
mv $SAS_CONFIG/Web/SASEnvironmentManager/grid/$GRID_NODE/agent-
5.8.0-EE/conf/agent.properties
$SAS_CONFIG/Web/SASEnvironmentManager/grid/$GRID_NODE/agent-5.8.0-
EE/conf/agent.properties.orig
```

7. Update the `agent.properties` file in the target directory.

```
sed "s/^agent.setup.agentIP=.* /agent.setup.agentIP=$GRID_NODE/"
$SAS_CONFIG/Web/SASEnvironmentManager/grid/$GRID_NODE/agent-5.8.0-
EE/conf/agent.properties.orig >
$SAS_CONFIG/Web/SASEnvironmentManager/grid/$GRID_NODE/agent-5.8.0-
EE/conf/agent.properties
```

```
echo "" >>
$SAS_CONFIG/Web/SASEnvironmentManager/grid/$GRID_NODE/agent-5.8.0-
EE/conf/agent.properties
```

```
echo "# Include only Environment Manager plugins for SAS Grid nodes"
>> $SAS_CONFIG/Web/SASEnvironmentManager/grid/$GRID_NODE/agent-
5.8.0-EE/conf/agent.properties
```

```
echo "plugins.include=sas-servers,hqagent,sas-deploy-agent" >>  
$SAS_CONFIG/Web/SASEnvironmentManager/grid/$GRID_NODE/agent-5.8.0-  
EE/conf/agent.properties
```

8. Create a backup of the custom agent property file in the target directory.

```
mv $SAS_CONFIG/Web/SASEnvironmentManager/grid/$GRID_NODE/agent-  
5.8.0-EE/conf/sas.properties  
$SAS_CONFIG/Web/SASEnvironmentManager/grid/$GRID_NODE/agent-5.8.0-  
EE/conf/sas.properties.orig
```

9. Link the custom agent property file to the original custom agent property file on the SAS Grid Control Server.

```
ln -s $SAS_CONFIG/Web/SASEnvironmentManager/agent-5.8.0-  
EE/conf/sas.properties  
$SAS_CONFIG/Web/SASEnvironmentManager/grid/$GRID_NODE/agent-5.8.0-  
EE/conf/sas.properties
```

10. Start the SAS Environment Manager agent on the SAS Grid Control Server. This instance of the agent is the only one that should be started from the location where the SAS Deployment Wizard installed the script:

```
$SAS_CONFIG/Web/SASEnvironmentManager/agent-5.8.0-EE/bin/hq-agent.sh  
start
```

11. Start the SAS Environment Manager agent on each of the SAS Grid nodes by running SAS Environment Managers agent start script.

You **must** run the hq-agent.sh start script from the location in the grid shared file space, and not from the location where the SAS Deployment Wizard installed the script.

```
$SAS_CONFIG/Web/SASEnvironmentManager/grid/$GRID_NODE/agent-5.8.0-  
EE/bin/hq-agent.sh start
```



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