



Create pretask, post-task, and policy scripts

SnapManager for SAP

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Create pretask, post-task, and policy scripts

SnapManager enables you to create the scripts for the preprocessing activity, the post-processing activity, and policy tasks of the backup, restore, and clone operations. You must place the scripts in the correct installation directory to execute the preprocessing activity, post-processing activity, and policy tasks of the SnapManager operation.

About this task

Pretask and post-task script content

All scripts must include the following:

- Specific operations (check, describe, and execute)
- (Optional) Predefined environment variables
- Specific error handling code (return code (rc))



You must include correct error handling code to validate the script.

You can use the pretask scripts for many purposes, for example, cleaning up a disk space before the SnapManager operation starts. You can also use the post-task scripts, for instance, to estimate whether SnapManager has enough disk space to complete the operation.

Policy task script content

You can execute the policy script without using specific operations such as check, describe, and execute. The script includes the predefined environmental variables (optional) and specific error handling code.

The policy script is executed before the backup, restore, and clone operations.

Supported format

A command file with a .cmd extension can be used as the prescript and post-script.



If you select the shell script file, the SnapManager operation does not respond. To resolve this, you must provide the command file in the plug-in directory, and perform the SnapManager operation again.

Script installation directory

The directory in which you install the script affects how it is used. You can place the scripts in the directory and execute the script before or after the backup, restore, or clone operation takes place. You must place the script in the directory specified in the table and use it on an optional basis when you specify the backup, restore, or clone operation.



You must ensure that the plugins directory has the executable permission before using the scripts for the SnapManager operation.

| Activity | Backup | Restore | Clone |
|-----------------|---|--|--|
| Preprocessing | <default_installation_directory>\plugins\backup\create\pre | <default_installation_directory>\plugins\restore\create\pre | <default_installation_directory>\plugins\clone\create\pre |
| Post-processing | <default_installation_directory>\plugins\backup\create\post | <default_installation_directory>\plugins\restore\create\post | <default_installation_directory>\plugins\clone\create\post |
| Policy-based | <default_installation_directory>\plugins\backup\create\policy | <default_installation_directory>\plugins\restore\create\policy | <default_installation_directory>\plugins\clone\create\policy |

Sample scripts locations

The following are some samples of the pretask and post-task scripts for the backup and clone operations available in the installation directory path:

- <default_installation_directory>\plugins\examples\backup\create\pre
- <default_installation_directory>\plugins\examples\backup\create\post
- <default_installation_directory>\plugins\examples\clone\create\pre
- <default_installation_directory>\plugins\examples\clone\create\post

What you can change in the script

If you are creating a new script, you can change only the describe and execute operations. Each script must contain the following variables: `context`, `timeout`, and `parameter`.

The variables you have described in the describe function of the script must be declared at the start of the script. You can add new parameter values in `parameter=()` and then use the parameters in the execute function.

Sample script

The following is a sample script with a user-specified return code for estimating the space in the SnapManager host:

```

@echo off
REM $Id:
//depot/prod/capstan/Rcapstan_ganges/src/plugins/windows/examples/clone/create/policy/validate_sid.cmd#1 $
REM $Revision: #1 $ $Date: 2011/12/06 $
REM
REM

set /a EXIT=0

```

```

set name="Validate SID"
set description="Validate SID used on the target system"
set parameter=()

rem reserved system IDs
set INVALID_SIDS=( "ADD" "ALL" "AND" "ANY" "ASC" "COM" "DBA" "END" "EPS"
"FOR" "GID" "IBM" "INT" "KEY" "LOG" "MON" "NIX" "NOT" "OFF" "OMS" "RAW"
"ROW" "SAP" "SET" "SGA" "SHG" "SID" "SQL" "SYS" "TMP" "UID" "USR" "VAR" )

if /i "%1" == "-check" goto :check
if /i "%1" == "-execute" goto :execute
if /i "%1" == "-describe" goto :describe

:usage:
echo usage: %0 "{ -check | -describe | -execute }"
set /a EXIT=99
goto :exit

:check
set /a EXIT=0
goto :exit

:describe
echo SM_PI_NAME:%name%
echo SM_PI_DESCRIPTION:%description%
set /a EXIT=0
goto :exit

:execute
set /a EXIT=0

rem SM_TARGET_SID must be set
if "%SM_TARGET_SID%" == "" (
    set /a EXIT=4
    echo SM_TARGET_SID not set
    goto :exit
)

rem exactly three alphanumeric characters, with starting with a letter
echo %SM_TARGET_SID% | findstr "\<[a-zA-Z][a-zA-Z0-9][a-zA-Z0-9]\>">nul
if %ERRORLEVEL% == 1 (
    set /a EXIT=4
    echo SID is defined as a 3 digit value starting with a letter.
[%SM_TARGET_SID%] is not valid.
    goto :exit

```

```

)
rem not a SAP reserved SID
echo %INVALID_SIDS% | findstr /i "%SM_TARGET_SID%" >nul
if %ERRORLEVEL% == 0 (
    set /a EXIT=4
    echo SID [%SM_TARGET_SID%] is reserved by SAP
    goto :exit
)
goto :exit

:exit
echo Command complete.
exit /b %EXIT%

```

Operations in task scripts

The pretask or post-task scripts that you create must follow a standard SnapManager for SAP plug-in structure.

The pretask and post-task scripts must include the following operations:

- check
- describe
- execute

If any one of these operations is not specified in the pretask or post-task script, then the script becomes invalid.

When you run the `smsap plugin check` command for the pretask or post-task scripts, the returned status of the scripts display error (because the returned status value is not zero).

| Operation | Description |
|-----------|--|
| check | The SnapManager server runs the <code>plugin.sh -check</code> command to ensure that the system has execution permission on the plug-in scripts. You might also include file permission checking on the remote system. |

| Operation | Description |
|-----------|---|
| describe | <p>The SnapManager server runs the <code>plugin.sh -describe</code> command to obtain information about your script and match the elements provided by the specification file. Your plug-in script must contain the following description information:</p> <ul style="list-style-type: none"> • <code>SM_PI_NAME</code>: Script name. You must provide a value for this parameter. • <code>SM_PI_DESCRIPTION</code>: Description of the script's purpose. You must provide a value for this parameter. • <code>SM_PI_CONTEXT</code>: Context in which the script should run—for example, root or orasid. You must provide a value for this parameter. • <code>SM_PI_TIMEOUT</code>: The maximum time (in milliseconds) that SnapManager should wait for the script to complete processing and terminate execution. You must provide a value for this parameter. • <code>SM_PI_PARAMETER</code>: One or more custom parameters necessary for your plug-in script to perform processing. Each parameter should be listed in a new output line and include the name of the parameter and a description. When the script completes processing, the parameter value will be provided to your script by an environment variable. <p>The following is the sample output of the <code>Followup_activities</code> script.</p> <pre> plugin.sh - describe SM_PI_NAME:Followup_activities SM_PI_DESCRIPTION:this script contains follow-up activities to be executed after the clone create operation. SM_PI_CONTEXT:root SM_PI_TIMEOUT:60000 SM_PI_PARAMETER:SCHEMAOWNER:Name of the database schema owner. Command complete. </pre> |

| Operation | Description |
|-----------|---|
| execute | The SnapManager server runs the <code>plugin.sh -execute</code> command to start your script to execute the script. |

Variables available in the task scripts for the backup operation

SnapManager provides context information in the form of environment variables related to the backup operation that is being performed. For example, your script can retrieve the name of the original host, the name of the retention policy, and the label of the backup.

The following table lists the environment variables that you can use in your scripts:

| Variables | Description | Format |
|----------------------------------|---|--------|
| <code>SM_OPERATION_ID</code> | Specifies the ID of the current operation | string |
| <code>SM_PROFILE_NAME</code> | Specifies the name of the profile used | string |
| <code>SM_SID</code> | Specifies the system identifier of the database | string |
| <code>SM_HOST</code> | Specifies the host name of the database | string |
| <code>SM_OS_USER</code> | Specifies the operating system (OS) owner of the database | string |
| <code>SM_OS_GROUP</code> | Specifies the OS group of the database | string |
| <code>SM_BACKUP_TYPE</code> | Specifies the type of the backup (online, offline, or auto) | string |
| <code>SM_BACKUP_LABEL</code> | Specifies the label of the backup | string |
| <code>SM_BACKUP_ID</code> | Specifies the ID of the backup | string |
| <code>SM_BACKUP_RETENTION</code> | Specifies the retention period | string |
| <code>SM_BACKUP_PROFILE</code> | Specifies the profile used for this backup | string |

| Variables | Description | Format |
|-----------------------------------|--|--------------|
| <i>SM_ALLOW_DATABASE_SHUTDOWN</i> | Specifies if you want to start up or shut down the database. If required you can use the -force option from the command-line interface. | boolean |
| <i>SM_BACKUP_SCOPE</i> | Specifies the scope of the backup (full or partial) | string |
| <i>SM_TARGET_FILER_NAME</i> | <p>Specifies the target storage system name</p> <p> If more than one storage system is used, then the storage system names must be separated by commas.</p> | string |
| <i>SM_TARGET_VOLUME_NAME</i> | <p>Specifies the target volume name</p> <p> The target volume name must be prefixed with storage device name, for example, <i>SM_TARGET_FILE_R_NAME/SM_TARGET_VOLUME_NAME</i>.</p> | string |
| <i>SM_HOST_FILE_SYSTEM</i> | Specifies the host file system | string |
| <i>SM_SNAPSHOT_NAMES</i> | <p>Specifies the Snapshot list</p> <p> Name of the Snapshot copies must be prefixed with the storage system name and volume name. Names of the Snapshot copies are separated by commas.</p> | string array |

| Variables | Description | Format |
|-----------------------------------|---|--------------|
| <i>SM_ARCHIVE_LOGS_DIRECTORY</i> | <p>Specifies the archive logs directory</p> <p> If the archive logs are located in more than one directory, then the names of those directories are separated by commas.</p> | string array |
| <i>SM_REDO_LOGS_DIRECTORY</i> | <p>Specifies the redo logs directory</p> <p> If the redo logs are located in more than one directory, then the names of those directories are separated by commas.</p> | string array |
| <i>SM_CONTROL_FILES_DIRECTORY</i> | <p>Specifies the control files directory</p> <p> If the control files are located in more than one directory, then the names of those directories are separated by commas.</p> | string array |
| <i>SM_DATA_FILES_DIRECTORY</i> | <p>Specifies the data files directory</p> <p> If the data files are located in more than one directory, then the names of those directories are separated by commas.</p> | string array |
| <i>user_defined</i> | Specifies additional parameters defined by the user. User-defined parameters are not available for plug-ins that are used as policies. | user-defined |

Variables available in the task scripts for the restore operation

SnapManager provides context information in the form of environment variables related to the restore operation that is being performed. For example, your script can retrieve the name of the original host and the label of the backup that is restored.

The following table lists the environment variables that you can use in your scripts:

| Variables | Description | Format |
|-------------------------------|---|--------|
| <i>SM_OPERATION_ID</i> | Specifies the ID of the current operation | string |
| <i>SM_PROFILE_NAME</i> | Specifies the name of the profile used | string |
| <i>SM_HOST</i> | Specifies the host name of the database | string |
| <i>SM_OS_USER</i> | Specifies the operating system (OS) owner of the database | string |
| <i>SM_OS_GROUP</i> | Specifies the OS group of the database | string |
| <i>SM_BACKUP_TYPE</i> | Specifies the type of the backup (online, offline, or auto) | string |
| <i>SM_BACKUP_LABEL</i> | Specifies the backup label | string |
| <i>SM_BACKUP_ID</i> | Specifies the backup ID | string |
| <i>SM_BACKUP_PROFILE</i> | Specifies the profile used for the backup | string |
| <i>SM_RECOVERY_TYPE</i> | Specifies the recovery configuration information | string |
| <i>SM_VOLUME_RESTORE_MODE</i> | Specifies the volume restore configuration | string |

| Variables | Description | Format |
|----------------------------------|--|--------------|
| <i>SM_TARGET_FILER_NAME</i> | <p>Specifies the target storage system name</p> <p> If more than one storage system is used, then the storage system names must be separated by commas.</p> | string |
| <i>SM_TARGET_VOLUME_NAME</i> | <p>Specifies the target volume name</p> <p> The target volume name must be prefixed with storage device name, for example, <i>SM_TARGET_FILE_R_NAME/SM_TARGET_VOLUME_NAME</i>.</p> | string |
| <i>SM_HOST_FILE_SYSTEM</i> | Specifies the host file system | string |
| <i>SM_SNAPSHOT_NAMES</i> | <p>Specifies the Snapshot list</p> <p> Name of the Snapshot copies must be prefixed with the storage system name and volume name. Names of the Snapshot copies are separated by commas.</p> | string array |
| <i>SM_ARCHIVE_LOGS_DIRECTORY</i> | <p>Specifies the archive logs directory</p> <p> If the archive logs are located in more than one directory, then the names of those directories are separated by commas.</p> | string array |

| Variables | Description | Format |
|---|---|--------------|
| <code>SM_REDO_LOGS_DIRECTORY</code> | <p>Specifies the redo logs directory</p> <p> If the redo logs are located in more than one directory, then the names of those directories are separated by commas.</p> | string array |
| <code>SM_CONTROL_FILES_DIRECTORY</code> | <p>Specifies the control files directory</p> <p> If the control files are located in more than one directory, then the names of those directories are separated by commas.</p> | string array |
| <code>SM_DATA_FILES_DIRECTORY</code> | <p>Specifies the data files directory</p> <p> If the data files are located in more than one directory, then the names of those directories are separated by commas.</p> | string array |

Variables available in the task scripts for clone operation

SnapManager provides context information in the form of environment variables related to the clone operation being performed. For example, your script can retrieve the name of the original host, the name of the clone database, and the label of the backup.

The following table lists the environment variables that you can use in your scripts:

| Variables | Description | Format |
|----------------------------------|---|--------|
| <code>SM_ORIGINAL_SID</code> | SID of the original database | string |
| <code>SM_ORIGINAL_HOST</code> | Host name associated with the original database | string |
| <code>SM_ORIGINAL_OS_USER</code> | OS owner of the original database | string |

| Variables | Description | Format |
|---------------------------------|--|---------|
| <i>SM_ORIGINAL_OS_GROUP</i> | OS group of the original database | string |
| <i>SM_TARGET_SID</i> | SID of the clone database | string |
| <i>SM_TARGET_HOST</i> | Host name associated with the clone database | string |
| <i>SM_TARGET_OS_USER</i> | OS owner of the clone database | string |
| <i>SM_TARGET_OS_GROUP</i> | OS group of the clone database | string |
| <i>SM_TARGET_DB_PORT</i> | Port of the target database | integer |
| <i>SM_TARGET_GLOBAL_DB_NAME</i> | Global database name of the target database | string |
| <i>SM_BACKUP_LABEL</i> | Label of the backup used for the clone | string |

Error handling in custom scripts

SnapManager processes the custom script based on the specific return codes. For example, if your custom script returns a value of 0, 1, 2, or 3, SnapManager continues with the clone process. The return code also influences how SnapManager processes and returns the standard output of your script execution.

| Return code | Description | Continue processing the operation |
|-------------|---|-----------------------------------|
| 0 | The script completed successfully. | Yes |
| 1 | The script completed successfully, with informational messages. | Yes |
| 2 | The script completed, but includes warnings | Yes |
| 3 | The script fails, but the operation continues. | Yes |
| 4 or >4 | The script fails and the operation stops. | No |

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