Creating pretask, post-task, and policy scripts

SnapManager Oracle

NetApp
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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.

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/cr
eate/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 Oracle 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 smo 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 plugin.sh -check 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.

describe	The SnapManager server runs the plugin.sh -describe 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:
	• SM_PI_NAME: Script name. You must provide a value for this parameter.
	• SM_PI_DESCRIPTION: Description of the script's purpose. You must provide a value for this parameter.
	• SM_PI_CONTEXT: Context in which the script should run-for example, root or oracle. You must provide a value for this parameter.
	• SM_PI_TIMEOUT: 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.
	• SM_PI_PARAMETER: 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.
	The following is the sample output of the Followup_activities script.
	``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.``` |
| execute | The SnapManager server runs the plugin.sh -execute 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
SM_OPERATION_ID	Specifies the ID of the current operation	string
SM_PROFILE_NAME	Specifies the name of the profile used	string
SM_SID	Specifies the system identifier of the database	string
SM_HOST	Specifies the host name of the database	string
SM_OS_USER	Specifies the operating system (OS) owner of the database	string
SM_OS_GROUP	Specifies the OS group of the database	string
SM_BACKUP_TYPE	Specifies the type of the backup (online, offline, or auto)	string
SM_BACKUP_LABEL	Specifies the label of the backup	string
SM_BACKUP_ID	Specifies the ID of the backup	string
SM_BACKUP_RETENTION	Specifies the retention period	string
SM_BACKUP_PROFILE	Specifies the profile used for this backup	string
SM_ALLOW_DATABASE_SHUTDOWN	Specifies if you want to start up or shut down the databaseIf required you can use the -force option from the command-line interface.	boolean

SM_BACKUP_SCOPE	Specifies the scope of the backup (full or partial)	string
SM_TARGET_FILER_NAME	Specifies the target storage system name **Note:** If more than one storage system is used, then the storage system names must be separated by commas.	string
SM_TARGET_VOLUME_NAME	Specifies the target volume name **Note:** The target volume name must be prefixed with storage device name, for example, SM_TARGET_FILER_NAME/SM_TARGET_VOLUME_NAME.	string
SM_HOST_FILE_SYSTEM	Specifies the host file system	string
SM_SNAPSHOT_NAMES	Specifies the Snapshot list **Note:** 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.	string array
SM_ARCHIVE_LOGS_DIRECTORY	Specifies the archive logs directory **Note:** If the archive logs are located in more than one directory, then the names of those directories are separated by commas.	string array
SM_REDO_LOGS_DIRECTORY	Specifies the redo logs directory **Note:** If the redo logs are located in more than one directory, then the names of those directories are separated by commas.	string array
SM_CONTROL_FILES_DIRECTORY	Specifies the control files directory **Note:** If the control files are located in more than one directory, then the names of those directories are separated by commas.	string array
SM_DATA_FILES_DIRECTORY	Specifies the data files directory **Note:** If the data files are located in more than one directory, then the names of those directories are separated by commas.	string array

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

Variables	Description	Format
SM_TARGET_FILER_NAME	Specifies the target storage system name **Note:** If more than one storage system is used, then the storage system names must be separated by commas.	string
SM_TARGET_VOLUME_NAME	Specifies the target volume name **Note:** The target volume name must be prefixed with storage device name, for example, SM_TARGET_FILER_NAME/SM_TARGET_VOLUME_NAME.	string
SM_HOST_FILE_SYSTEM	Specifies the host file system	string
SM_SNAPSHOT_NAMES	Specifies the Snapshot list **Note:** 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.	string array
SM_ARCHIVE_LOGS_DIRECTORY	Specifies the archive logs directory **Note:** If the archive logs are located in more than one directory, then the names of those directories are separated by commas.	string array
SM_REDO_LOGS_DIRECTORY	Specifies the redo logs directory **Note:** If the redo logs are located in more than one directory, then the names of those directories are separated by commas.	string array
SM_CONTROL_FILES_DIRECTORY	Specifies the control files directory **Note:** If the control files are located in more than one directory, then the names of those directories are separated by commas.	string array
SM_DATA_FILES_DIRECTORY	Specifies the data files directory **Note:** If the data files are located in more than one directory, then the names of those directories are separated by commas.	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
SM_ORIGINAL_SID	SID of the original database	string
SM_ORIGINAL_HOST	Host name associated with the original database	string
SM_ORIGINAL_OS_USER	OS owner of the original database	string
SM_ORIGINAL_OS_GROUP	OS group of the original database	string
SM_TARGET_SID	SID of the clone database	string
SM_TARGET_HOST	Host name associated with the clone database	string
SM_TARGET_OS_USER	OS owner of the clone database	string
SM_TARGET_OS_GROUP	OS group of the clone database	string
SM_TARGET_DB_PORT	Port of the target database	integer
SM_TARGET_GLOBAL_DB_NAME	Global database name of the target database	string
SM_BACKUP_LABEL	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