Software Content Repository Tool 2.0 Guide

vCenter Configuration Manager 5.3

Software Content Repository Tool 2.0

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About This Book

This guide, *VMware vCenter Configuration Manager Software Content Repository Tool Guide*, provides procedures for:

- Preparing for the installation of all components and tools
- Installing all components and tools
- Getting started with all components and tools

Intended Audience

This document contains information intended for system administration personnel tasked with managing users and resources within their network, and performing system maintenance.

To use the information in this book effectively, you need to have a basic understanding of how to configure network resources. You also need to fully understand your network's topology and resource naming conventions.

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Software Content Repository Tool Documentation

The Software Content Repository Tool documentation consists of this document. Related documents include the *VCM Hardware and Software Requirements Guide*, online Help, and Release Notes.

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About the Software Content Repository Tool

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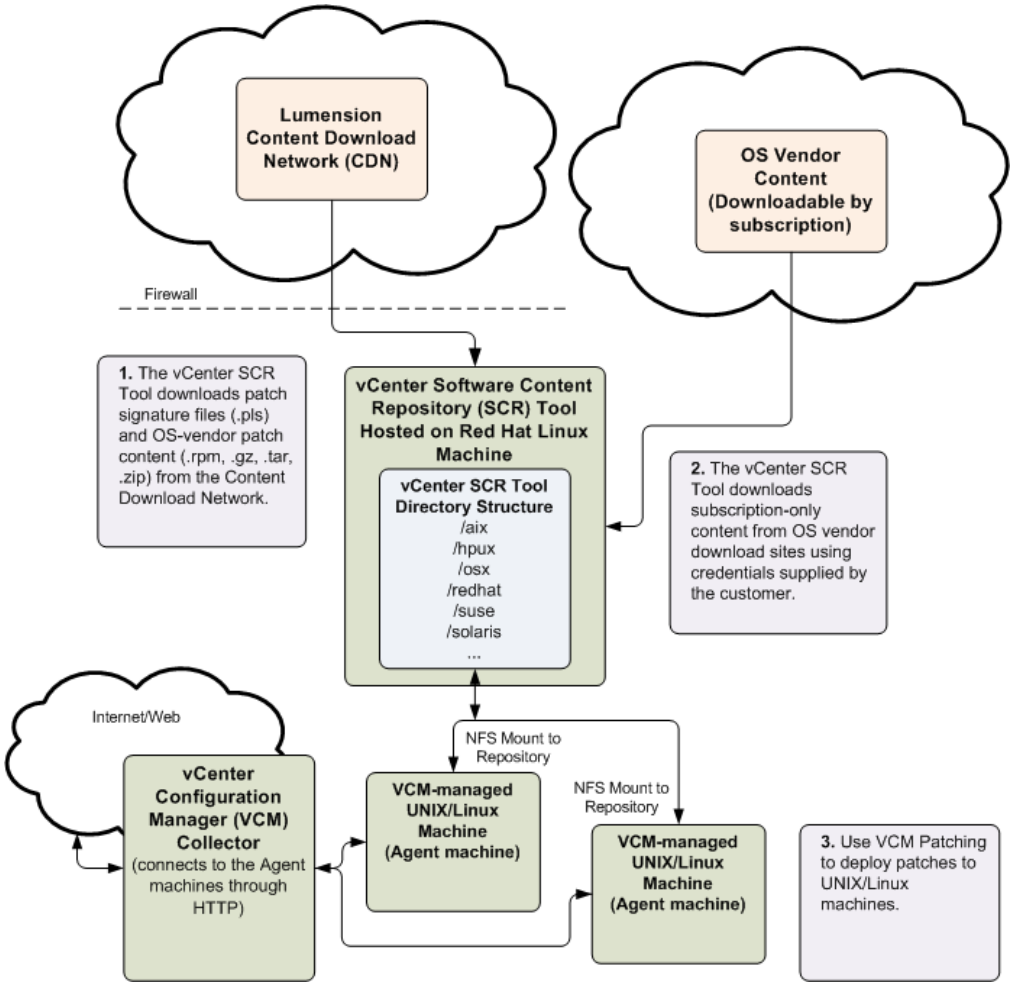
The Software Content Repository (SCR) Tool is a standalone Java client software application that builds a software content repository of UNIX/Linux patches, and then provides automated downloading of operating system (OS) vendor patch content to the repository.

How It Works

The SCR Tool client downloads content used to patch your UNIX/Linux machines. These files include the patch signature files (.pls), deploy package files (.plp) (not currently used), and OS vendor patch content files (.rpm, .gz, .tar, .zip) used in the patching background processes.

As shown in the following diagram, the SCR Tool downloads the UNIX/Linux patch content. Using VCM on another Collector machine, you can then update the VCM-managed (Agent) machines using the VCM Patching UNIX/Linux patching capability.



After downloading patches, you will use the VMware vCenter Configuration Manager (VCM) to assess your UNIX machines. To deploy the patches, you will need to use the alternate source mapping in VCM Patching, and then deploy the patches to the UNIX machines. For additional information, see the VCM online Help.

NOTE The SCR Tool is not required for UNIX patch assessments or deployments, nor does it assess the configuration or downloaded patch content used by VCM Patching. To deploy the patches, you will use VCM Patching.

What to Do First

Before installing the SCR Tool, you must complete the following prerequisites.

Prerequisites for the SCR Tool 2

The prerequisites for installing the SCR Tool include the following machines, software, and user credentials.

Host Machine and Software

The machine used to host the SCR Tool must be a Red Hat Enterprise Linux AS/ES machine (32-bit). For further detail, see the *VCM Hardware and Software Requirements Guide*. If all of the requirements are met, this machine can also run as a guest in a virtualized environment.

IMPORTANT The host machine must be used solely for the SCR Tool execution and repository storage. Before installing the SCR Tool, it is highly recommended that any non-Sun Java versions be removed from the machine that will be hosting the SCR Tool.

The host machine must be equipped with the following:

- Internet access
- 500 GB of storage (recommended, depending on the platforms for which you will require patches). The estimated storage requirements to store the patch content files and patch payload for the supported platforms are as follows. You must allow sufficient disk space to download the content for each platform being supported.

Table 2-1. Platforms and Storage

Supported Platform	Minimum Storage Required for Patch Content Files and Payload
AIX	90 GB
HP-UX	6 GB
Mac OS X	70 GB
Red Hat	250 GB
SUSE	40 GB
Solaris	12 GB

NOTE The patch content will grow as vendors release additional patches. Ensure that you monitor the disk space available on the host machine to avoid any problems in continuing to download and store the patch content files and payload.

- Sun Java Runtime Environment (JRE) version 1.5 or later, 32-bit only. JRE nstallation is described in the following section, Installing the SCR Tool.
- Sun Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files corresponding to the JRE version installed (required only for Red Hat and Solaris patch content). JCE installation is described in the following section, Installing the SCR Tool.

User Credentials for Downloads

To download OS-vendor subscription-only content for Red Hat and Solaris machines, you must have user credentials to the OS vendor sites.

Supported Agent Machines

The VCM-managed (Agent) machines that are supported for connecting to the machine hosting the SCR Tool include: Solaris, Red Hat, HP-UX, AIX, SUSE, and Mac OS X. These Agent machines must be running the VMware vCenter Configuration Manager.

For a list of supported machine/OS versions, see the *VCM Hardware and Software Requirements Guide*.

Installing the SCR Tool 3

Use this chapter to install the SCR Tool and test its functionality.

IMPORTANT Before installing the SCR Tool, you must have performed the prerequisites.

Install the Repository Software

On the Red Hat host machine:

1. Locate the VMware vCenter Configuration Manager CD or go to the Download VMware vCenter Configuration Manager (http://downloads.vmware.com/d/info/datacenter_downloads/vmware_vcenter_configuration_manager/5_0).
2. Unzip the SCR Tool files from **SCR-2.0-release.tar.gz** to the directory where the application files will reside on the Red Hat machine. The default installation directory is **SCR-2.0**.

After extracting the vCenter SCR Tool files, a root directory is created, containing sub-directories and files. The root directory is referred to as `<scr_root>` in this document.

Download the Java Runtime Environment

On the Red Hat host machine:

1. Access http://www.java.com/en/download/manual.jsp.
2. Download and install Java Runtime Environment (JRE) version 1.5 or later. Each platform-specific link includes detailed installation instructions. Use the instructions for your platform.

Test the Java Runtime Environment Installation

On the Red Hat host machine:

1. Access http://www.java.com/en/download/help/testvm.xml.
2. Verify the JRE is installed and configured properly.
3. Alternatively, from a Red Hat terminal session, you can run the `java -version` command to display the currently installed version of Java.

Download and Install the Java Cryptography Extension (optional)

On the Red Hat host machine:

The Java Cryptography Extension (JCE) is required only if you need to encrypt passwords when using third-party credentials in the shell scripts for downloading Red Hat and Solaris patch content.

1. Access http://java.sun.com/javase/downloads.
2. Scroll to the bottom of the page or search for **Other Downloads**, and then click **Download**. If this page does not automatically detect your current Java version, you may need to manually locate the correct JCE package.
3. To install the JCE, follow the instructions in the README.txt contained in the JCE zip file.

IMPORTANT If you have multiple Java SE (Standard Edition) Development Kit (JDK)/JRE installations on the same machine, make sure you are updating the correct JDK/JRE instance.

Preparing the Host Machine for Use with the SCR Tool

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To prepare the Red Hat host machine for use with the SCR Tool, perform the following steps.

Review the Directory Structure

The sub-directories created in the root directory are organized by platform type and payload.

- The .pls files are stored in the directories for each platform (./aix, ./hpux, ./osx, ./redhat, ./solaris, ./suse).

  IMPORTANT The .pls files, which are stored in the platform sub-directories of `<scr_root>`, are used to confirm whether the patches are available. Make sure that you do not delete these files.

- Directories starting with "payload" contain the platform vendor patch files and the .plp files.The individual payload directories will contain the patch content after the SCR downloads the content from the Content Download Network (CDN).
- The Mac OS X payload folders contain only .plp files, which embed the vendor patches.

After extracting the vCenter SCR Tool files, a root directory is created, containing sub-directories and files. The root directory is referred to as `<scr_root>` in this document.

NOTE The default root directory is **SCR-2.0.jar**. If desired, you can change the name of the root directory because the execution of the replication scripts is based on relative paths under the `<scr_root>` directory.

Change the Working Directory

To prepare the SCR Tool machine for use, follow these steps:

1. From the `<scr_root>` directory, open a terminal session.
2. On the machine, from the root directory, run `chmod -R a+x **/*`. This command grants execute permission to all of the repository application files.
3. Change the working directory to `<scr_root>/bin`.

Update the Replication Scripts

Replication scripts are supplied for each platform type, and are used during the download process to replicate the patch content. These scripts contain the environment settings and java calls needed to download the patch content for each supported platform, along with user credentials.

The naming convention of these scripts is: `start_<platform>_replication.sh`

IMPORTANT By default, each replication script is configured to require between 512 MB of RAM (minimum) and 1 GB (maximum). If you will be running multiple scripts simultaneously on a single machine, ensure that the machine has sufficient memory to support each process. Insufficient memory may cause errors.

You may need to update each platform's replication script to change the path, platform, distribution, architecture, third-party credentials, extract parameter, output file, and input file path. You can use any combination of platform, distribution, and architecture.

To update the replication scripts, follow these steps.

1. Locate the UNIX/Linux replication scripts in the directory named `<scr_root> SCR-2.0\bin`. The script names are as follows:

Platform	Shell Script Name
Red Hat	`start_rh_replication.sh`
AIX	`start_aix_replication.sh`
HP-UX	`start_hp_replication.sh`
SUSE	`start_suse_replication.sh`
Solaris	`start_sol_replication.sh`
Mac OS X	`start_osx_replication.sh`

2. Obtain an encrypted password using the password encryptor tool (`pwd_encryptor.sh`) by following these steps:
   a. At the root prompt, enter:
   `# ./pwd_encryptor.sh`
   The encryptor tool will return the string "MyPassword".
   b. Enter your password twice, ignoring the strings returned by the encryptor tool.
   c. When the encryptor tool returns the encrypted password string, you will copy the string into encrypted password field of the `-thirdparty -user <username> -pwd <encrypted password>` string in the replication script, as described in the next step.
3. Update the command line parameters in the replication scripts for the platforms you will be using.

CAUTION The command line parameters listed here are the only parameters that may be modified in a typical installation environment.

`-checkPayload`

The `-checkPayload` option defaults to false if it is not included on the command line, or is not explicitly set to true. If `-checkPayload` is false (or not provided), the behavior is to download and loop through each new/modified .pls file, downloading any payload data (.plp files and vendor patch files) that correspond to each .pls file downloaded during the process. If true, the SCR Tool validates every payload file for every .pls file, whether new/modified or not. This feature allows the SCR Tool to audit/verify payload content for .pls files, downloading or replacing payload files if they do not match what the .pls/.plp files indicate they should be.

`-folder <SCR_output_folder>`

Defines the root folder where the SCR Tool output will be stored. By default, this folder is set to `/tmp/SCR/download`.The SCR Tool automatically creates the following sub-directory tree under the root output folder.

<SCR_output_folder>
  <platform>
    <architecture> (contains .pls files)

<payload>
  <platform>
    <architecture> (contains patch content files, such as .plp, .zip, .rpm, .htm, .jar, .etc)

```
-platform <platform_name> -dist <distribution>
-arch <architecture1>,<architecture2>
```

The -platform and -arch parameters are required to specify the patch content to be downloaded. For Linux platforms (Red Hat, SUSE), the -dist parameter is also required.

The -arch parameter value must include one or more valid architecture strings for the specified platform or platform/distribution combination. Multiple architectures must be comma-delimited with no spaces.

Valid parameter values for -platform, -dist, and -arch are listed below.

Table 4-1. Supported Platforms, Distributions, and Architectures

platform	dist	arch
AIX		POWERPC
HP_UX		PA_RISC,ITANIUM
OSX		X86,PPC
LINUX	REDHAT	X86,X86_64
LINUX	SUSE	X86,X86_64
SOLARIS		X86,SPARC

```
-thirdparty -user <username> -pwd <encrypted password>
```

For Red Hat and Solaris platforms, which require third-party credentials when downloading subscription patch content directly from the OS vendor, the -thirdparty, -user, and -pwd parameters must be supplied. The -user parameter is always required for Red Hat, and is only required for Solaris when the patch is specifically only available with subscription to SunSolve.

NOTE The -thirdparty parameter will always accompany the -user and -pwd on the Java command line in the replication scripts that require third-party credentials.

When processing platforms whose vendors require subscription credentials, the -pwd parameter expects an encrypted password. To encrypt a password, a script is provided, and is included in <scr_root>/bin. this file is named pwd_encryptor.sh.

The encryption script accepts a clear text password, and then returns a 32-bit character encrypted string to be used as the argument to the -pwd parameter. Use the encrypted password returned from the password encryptor tool, as described in the previous step.

```
-extractOSX <true|false>
```

The -extractOSX parameter specifies that embedded vendor patch files (*.dmg) should be extracted from the corresponding .plp files when executed for the Mac OS X platform. This parameter has no effect when used with any other platform.

`-configlog <config_log_file_path>`

The `-configlog` parameter specifies an output file where a list of command line parameters and values will be written. These values reflect the parameter configuration used during the last (or current) execution of the SCR Tool. This information can be used for troubleshooting.

`-Djava.util.logging.config.file=<logging_config_file_path>`

The `-Djava.util.logging.config.file` parameter specifies the input file path to a custom application logging configuration file. This file specifies the logging granularity and output log file path. See the section about setting logging levels for details.

You can automate running the scripts using the OS schedulers, such as cron or at. See "Using the SCR Tool" on page 19.

Connect the VCM-Managed Machines to the SCR Tool

To connect the VCM-managed (Agent) machines to the SCR Tool, you must create a mount point to the appropriate directory on the host machine that contains the patch payload for the platform.

Alternatively, you can use a remote command to mount the Agent machine at the time of patch deployment, or use a remote command to ftp the files to the Agent machine at deployment time.

Set Logging Levels and Output File Names

The SCR Tool provides flexible logging settings. Using the `-Djava.util.logging.config` file command line parameter, you can specify custom logging levels and output file names for each execution of the SCR Tool. By default, all scripts will log data to the same filename pattern at the INFO logging level.

NOTE You can optionally change any of the logging properties.

To set up custom logging:

1. Copy the `<scr_root>/bin/logging.properties` file to a new custom file, such as logging.properties.aix.
2. Change the `-Djava.util.logging.config.file` command line parameter in the SCR replication script to refer to the new logging properties file.
3. Edit the new logging properties file.
4. Change the logging level values for the following properties:
   - `.level=<logging_level>`
   - `com.lumension.level=<logging_level>`

   The `com.lumension.level` property determines the logging level of the repository component. The `FileHandler.level` should be set to the same or higher level.

   The allowable logging level values are:

   - SEVERE
   - WARNING (valid, but not used)
   - INFO (recommended for production)
   - CONFIG (valid, but not used)

- FINE (debug)
- FINER (debug)
- FINEST (debug)

5. To customize log file names, change the output `log_filename_pattern` parameter. The entry resembles:

   ```
   java.util.logging.FileHandler.pattern = <log_filename_pattern>
   ```

   The `<log_filename_pattern>` should contain the path. For example:

   ```
   ../logs/scr-messages-rh-%g.log
   ```

   The `%g` entry is described in the following list of special substitution variables that can be used to aid in automatically generating distinct filenames:

   - `"/"` - local pathname separator
   - `"%t"` - system temporary directory
   - `"%h"` - value of the "user.home" system property
   - `"%g"` - generated number to distinguish rotated logs
   - `"%u"` - unique number to resolve conflicts
   - `"%%"` - translates to a single percent sign "%"

6. Change the `handlers=<handler_name>` property to choose where the log stream will be written. Valid values are:

   - `java.util.logging.FileHandler` (log file)
   - `java.util.logging.ConsoleHandler` (stderr)

7. Change `java.util.logging.FileHandler.limit=<bytes>` to increase or decrease the number of bytes written to the log files before they will rotate.
8. Change `java.util.logging.FileHandler.count=<log_file_count>` to specify the maximum number of log files to be kept before overwriting the oldest.
9. Set the `java.util.logging.FileHandler.append = true`. When set to true, the SCR Tool will attempt to append the last used log file. When set to false, the SCR Tool will roll over to a new log file for writing.

Using the SCR Tool

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The SCR Tool downloads patch content files from the Content Download Network (CDN) (managed by Akamai, the hosted content service provider), obtains any additional patches from the Red Hat and Solaris vendor sites, and saves those patches in the path(s) that you define.

The SCR Tool performs delta downloads. After the first download, successive downloads will retrieve only the differences in patch content since the last download. When the files are downloaded, the patch source, CDN, Vendor, and other information is recorded in the log files.

IMPORTANT The patch signature (.pls) files are stored in the platform sub-directories of `<scr_root>`, and are used to confirm whether the patches are available. Make sure that you do not delete these files.

Download the Patch Content

To download patch content onto the Red Hat host machine, follow these steps:

1. Run the updated replication scripts using `crontab` to specify the shell commands to be executed on a particular schedule.
2. If you want to interactively track the progress of the download, open a terminal session and execute the following commands:
   ```
   date; df -kh | grep /home; du -kh | grep payload/
   ```
3. When the patch download process is complete, use VCM Patching to patch the UNIX machines.

How to Schedule Downloads

The SCR Tool does not provide embedded scheduling. You can automate running the scripts using OS schedulers, such as cron or at.

NOTE If multiple platforms connect to the same repository, schedule the execution of the replication scripts for each platform separately.

Maintaining the Software Content Repository

All activities are logged in the log files named `logging.<platform>.properties`. A separate log file is used for each platform type. For example: `logging.aix.properties`

You should monitor the size of the log file. If you specify a rotation in the log file properties, you should not need to clean up the log file content. Otherwise, be sure to clean up the log file content so that it does not consume unnecessary amounts of memory.

IMPORTANT You should monitor and check the available disk space before running the scripts or scheduling downloads.

Troubleshooting

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Use this section to troubleshoot problems that may occur with the SCR Tool.

Do I have the correct version of JRE? To display the currently installed java version, execute `java -version` from a Red Hat terminal session.

Is my version of JRE installed properly? To verify the JRE is installed and configured properly, access http://www.java.com/en/download/help/testvm.xml, and follow the instructions.

What does the OutofMemoryErrorChange message mean? You must ensure that your machine has enough memory to run the replication scripts. Each replication script is configured to require anywhere between 512 MB of RAM (minimum) and 1 GB (maximum). If you will be running multiple batch files simultaneously on a single machine, ensure that the host machine running the SCR Tool has sufficient RAM to support each process. Insufficient host memory may cause OutofMemoryErrorChange errors.

What if the SCR cannot connect to the CDN? To help resolve this problem, ping the address of the CDN server, as specified in the script you are executing. If you cannot ping the host name, you may have a host resolution problem or blocks in your firewall. Ensure you can connect to the Internet from the machine on which the SCR Tool is installed..

More patches are available on the vendor site than listed on the download site. Why? The list of patches that the host machine verifies are security patches recommended by the vendor. However, not all patches fall into this category. The patches available to the SCR Tool will always be a subset of the total number of patches available.

In addition, a patch signature list (.pls) file may have been downloaded, and the script terminated, before the payload was downloaded. To resolve this problem, rerun the script.

How do I locate errors in the process? Monitor the log file to verify whether any SEVERE entries are logged.

What is the unixpatching.xml for? The file named unixpatching.xml contains a .lst files, which are processed by the SCR Tool to determine which pls files to use for assessments.

How do I handle patch dependencies? Patch dependencies can be handled upon deployment using the VCM Patching. The SCR Tool will download all of the necessary patches to ensure that all patch dependencies can be met when deployed with VCM Patching. This excludes superceded patches.

What do I do if I think a patch is missing? Delete the corresponding .pls file for the missing patch, and then download the content again. See "More patches are available on the vendor site than listed on the download site.

How can I view the parameters used when executing the script? The `-configlog` parameter specifies an output file where a list of command line parameters and values will be written. These values reflect the parameter configuration used during the last (or current) execution of the SCR Tool.

What if the OS Vendor does not accept my credentials? Do the following:

- Check that the credentials are valid on the vendor's site.
- Check that the correct user is defined in the replication script.
- If the password has changed, re-encrypt the password in the replication script.

How do I patch UNIX machine with the SCR Tool? The SCR Tool is not designed for UNIX patching. Instead, it is designed for use with the VCM Patching to deploy patches to the UNIX machines.

What if I cannot resolve a problem? Call VMware Customer Support.