Site Recovery Manager API

VMware vCenter Site Recovery Manager 1.0 and later

The VMware Site Recovery Manager API provides an interface for Site Recovery Manager in the same way that the VMware Infrastructure API (VI API) provides interfaces for the VMware Virtual Infrastructure Management (VIM) framework. The SRM API provides a way for third party systems to initiate tests or failovers and collect the results. The APIs do not help with setup or failback. The SRM API provides the following ways for a client application to use Web services:

■ Log in to the SRM server

■ Obtain the API version

■ Get a list of recovery plans at the SRM site

■ Get the settings of a specific recovery plan at the SRM site

■ Start a specific recovery plan in recovery or test mode

■ Pause a running recovery plan

■ Answer a prompt

■ Restart a paused recovery plan

■ Cancel a recovery plan

■ Get the final status of a recovery plan

■ Log out of the SRM server

The SRM API complies with the following standards organizations:

■ Web Services Interoperability Organization (WS-I) Basic Profile 1.0

■ Simple Object Access Protocol (SOAP) 1.1

■ Web Services Description Language (WSDL) 1.1

■ XML Schema 1.0

Site Recovery Manager API

To use the SRM API, you should be familiar with the following concepts:

■ **Web services operations** – Allow you to create client applications that can perform server-side management and monitoring tasks.

■ **WSDL** – The Web services API is defined in a WSDL file. The WSDL file is used by client-side, Web-services utilities to create proxy code (stubs) that client applications use to interact with the server.

■ **SOAP** – Client applications invoke operations by sending SOAP formatted messages. When passing data objects between client and server, you need to build or parse a SOAP message that contains the data object properties as XML elements corresponding to the message structures described in the WSDL.

The SRM API is located in the following directory:

`<installdir>\www`

The SRM API interface uses the following default listener ports:

- SOAP – 9007

- WSDL – 9008

You can obtain the WSDL for the SRM API by requesting the file `/srm.wsdl` from the SRM API WSDL port.

Site Recovery Manager WSDL

SRM provides a WSDL file in XML format. Client-side Web services use the WSDL file to create stubs that enable client-side applications to interact with the SRM Server. The WSDL file specifies the operations that the client application can use to interact with and query the SRM Server. The input, output and fault messages are defined for each operation. The SRM WSDL has the following operations:

- SrmLogin

- SrmLogout

- GetApiVersion

- ListRecoveryPlans

- RecoveryPlanSettings

- RecoveryPlanStart

- RecoveryPlanPause

- RecoveryPlanResume

- RecoveryPlanCancel

- RecoveryPlanAnswerPrompt

- GetFinalStatus

The WSDL file is located in the following directory:

`<installdir>\www`

SNMP Traps

SRM provides Simple Network Management Protocol (SNMP) traps that collect information sent by the API. All traps are compliant with the SNMPv1 type. Information provided by the traps can be used to initiate actions by client applications. Callers of the SRM API interface should listen for the following SNMP traps:

- `vmwareSrmRecoveryProfilePromptDisplay` – The Recovery Plan/Profile is paused waiting for user input

- `vmwareSrmRecoveryProfilePromptResponse` – The Recovery Plan is no longer paused waiting for user input

- `vmwareSrmRecoveryVmBegin` – S tarting to recover a particular virtual machine

- `vmwareSrmRecoveryVmEnd` – Completed recovery of a particular virtual machine

- `vmwareSrmRecoveryVmResultSuccess` – A particular virtual machine was recovered successfully

- `vmwareSrmRecoveryVmResultFailure` – A particular virtual machine failed recovery

- `vmwareSrmRecoveryVmResultWarning` – A particular virtual machine was recovered but there may have been errors

- `vmwareSrmRecoveryProfileExecuteTestBegin` – A recovery is starting in test mode

- `vmwareSrmRecoveryProfileExecuteTestEnd` – A recovery finished running in Test mode

- `vmwareSrmRecoveryProfileExecuteBegin` — A recovery is starting in Recovery mode

- `vmwareSrmRecoveryProfileExecuteEnd` – A recovery finished running in Recovery mode

You might need to configure the VirtualCenter Server to forward the SNMP traps to the registered SNMP Server. The MIB file is located in the following directory:

`<installdir>\www\VMWARE-SRM-TRAPS-1_0.MIB`

Server Certificate Requirements

The SRM API is a secure Web service running on the SRM Server. To develop client applications, you must obtain the VirtualCenter Server certificate, which is used by the SRM Server, and import it into the certificate store of the workstation you use to develop client applications.

To obtain a VirtualCenter Server certificate:

1   From your development workstation, open Internet Explorer.

2   Navigate to the VirtualCenter Server using HTTPS protocol – `https://<servername>`.

     A Security Alert message displays a warning regarding the certificate's certifying authority.

3   Click **View Certificate**.

4   Click **Install Certificate** to launch the Certificate Import wizard. Keep the default settings and click **Next**.

5   Click **Finish**. A security warning message displays concerning the certificate's certifying authority.

6   Click **Yes.**

     A Certificate Import wizard "success" message displays.

7   Click **OK** to dismiss the success message.

     The Certificate Properties page becomes active again.

8   Click **OK** in the Certificate dialog box to continue to the server.

     The initial Security Alert message presented in step 2 becomes active again.

9   Click **Yes** in the Security Alert message to continue with the original HTTPS request.

     The server Welcome page displays. The certificate is now installed in the IE certificate cache.

Now that you have the certificate, your next task depends on what programming language you use to develop your client applications.

- For C# developers, you can continue setting up your development environment by following the instructions at "Setting Up for Microsoft C# Development" in the *Developer's Setup Guide* located at VMware's Web site support page under VMware Infrastructure SDK 2.5.0.

- For Java developers, you must export the certificates from the Internet Explorer cache to a local directory. Minimize the Internet Explorer browser window, and export the certificates as detailed in the following procedure.

Exporting Cached Certificates to a Local Directory

For Java development in a Windows environment, you must export the certificate to a local directory:

1   Create a directory for the certificate, using the name set in the various batch files for the VI SDK: **C:\VMware-Certs**.

2   From the Internet Explorer Tools menu, select **Internet Options** to open the Internet Options properties page.

3   Click the **Content** tab to activate the content advisor.

4   Click **Certificates** to open the Certificate manager.

5   Click the **Trusted Root Certificate Authorities** tab to display the list of trusted certificates.

6   Scroll through the list of certificates to find the certificate. For the VirtualCenter Server, the certificate name is VMware.

7   Click the certificate to select it.

8   Click **Export...** to launch the Certificate Export Wizard.

9   Click **Next** to continue. The Export File Format dialog displays.

10 Keep the defaults ("DER encoded binary X.509 (.CER)") and click **Next** to continue. The File To Export dialog displays, enabling you to enter a unique name for the certificate.

11 Choose a filename and enter it, along with the complete path to the directory:
    C:\VMware-Certs\<servername>.cer

    If you don't enter the complete path, the certificate is stored in your Documents and Settings folder.

12 Click **Next** to continue with the export. A Completing the Certificate Export Wizard page displays, summarizing the information about the certificate.

13 Click **Finish** to complete the export. A Certificate Export Wizard "success" message displays.

14 Click **OK** to dismiss the success message.

15 Click **Close**.

16 Click **Cancel** to close the Internet Options properties page.

For more information about setting up your development environment, see "Setting Up for Java Development" in the *Developer's Setup Guide* located at the VMware Web site support page under VMware Infrastructure SDK 2.5.0.

Site Recovery Manager Methods

This section lists the methods available with the Site Recovery Manager API.

ManagedObjectReference

The methods for SRM use the ManagedObjectReference _this, which is a reference to the SessionManager used to make method calls. This is obtained by calling RetrieveContent on the ServiceInstance. The ServiceInstance is obtained by creating a ManagedObjectReference whose type and value are SrmServiceInstance. Following is an example in C#:

```
/// <param name="srmUrl">URL (in the form http://x.y.z.w:p/) to the SOAP port on the SRM
                server</param>
public void Connect(string srmUrl)
{
 _serviceRef = new ManagedObjectReference();
 _serviceRef.type = "SrmServiceInstance";
 _serviceRef.Value = "SrmServiceInstance";

_service = new Drextapi.SrmBinding();
 _service.Url = srmUrl;
 _service.CookieContainer = new System.Net.CookieContainer();

 _serviceInstanceContent = _service.RetrieveContent(_serviceRef);
}
```

GetApiVersion

Gets the version of the SRM API on the SRM Server you are logged into.

Required Privileges

VcDr.RecoveryProfile.com.vmware.vcDr.View

Parameters for GetApiVersion

`_this:` ManagedObjectReference – A reference to the SessionManager used to make the method call. This is obtained by calling SrmLogin.

Returns

`returnval:` the API version.

GetFinalStatus

Get the XML representation of the recovery plan execution details.

This method returns an XML document that can be retrieved one or more lines at a time. You specify what line to start at and how many lines you want. Only after you have retrieved all of the lines and put them together do you have a valid XML document. This is done because the document can be very long (thousands of lines). The document returned is the description of the most recent run of the named plan.

Required Privileges

VcDr.RecoveryProfile.com.vmware.vcDr.Run

Parameters for GetFinalStatus

`_this:` ManagedObjectReference – A reference to the SessionManager used to make the method call. This is obtained by calling SrmLogin.

`offset:` integer – The offset from the top of the document.

`maxLines:` integer – The maximum number of lines to retrieve.

`name:` xsd:string – The name of the plan.

`return:` string array – The XML representation of the recovery plan execution details.

Returns

`return:` string array – This is the list of strings in the returned XML format:

```
<RecoveryPlanResult>
    <RecoveryPlan>
        <Name>MyPlan</Name>
        <VCServer>10.18.210.221</VCServer>
        <DRServer>10.18.210.222</DRServer>
    </RecoveryPlan>
    <Info>
        <StartTime>%Y-%m-%dT%H:%M:%SZ</StartTime>
        <EndTime>%Y-%m-%dT%H:%M:%SZ/EndTime>
        <Mode>Test</Mode> # Mode is either test or recovery
    </Info>
    <Results>                # If Status is Success, then <Result> is empty
        <Step type="RootStepList" status="Success">
            <Name>Root</Name>
            <Result/>  # No Results
            <Children>
                <Step type="RecoveryStepGroup" status="Error">
                    <Name>Shutdown Protected Virtual Machines at Protected Site</Name>
                    <Result>
                        <Fault>Dr::Fault::InternalError</Fault>
                        <Description>error ocurred</Description>
                    </Result>
                    <Children/>
                </Step>
```

```
            </Children>
          </Step>
       </Results>
    </RecoveryPlanResult>
```

Faults

InvalidArgument: The named plan could not be found, or offset is negative or too large, or maxLines is 0 or negative.

InvalidState: The named plan was not completed, cancelled or error thrown.

ListRecoveryPlans

Lists all of the recovery plans at this SRM site.

Required Privileges

VcDr.RecoveryProfile.com.vmware.vcDr.View

Parameters for ListRecoveryPlans

_this: ManagedObjectReference – A reference to the SessionManager used to make the method call. This is obtained by calling SrmLogin.

Returns

returnval: An array of strings listing every recovery plan at this SRM site.

SrmLogin

Logs in to the server. This method fails if the user ID or password are invalid. It also fails if the user is already logged in.

Required Privileges

System.Anonymous

Parameters for SrmLogin

_this: ManagedObjectReference – A reference to the SessionManager used to make the method call. This is obtained by calling SrmLogin.

userName: xsd:string – The user name of the user logging on to the server.

password: xsd:string – Password of the user logging on to the server.

Faults

AlreadyLoggedInFault: Thrown if the user is already logged in.

InvalidLogin: Thrown if the user name and password combination is invalid.

SrmLogout

Logs out and terminates the current session.

Required Privileges

System.Anonymous

Parameters for SrmLogout

`_this:` ManagedObjectReference – A reference to the SessionManager used to make the method call. This is obtained by calling SrmLogin.

Fault

NotLoggedIn: The user is not logged in.

RecoveryPlanAnswerPrompt

Answers a prompt for a paused recovery plan.

Required Privileges

VcDr.RecoveryProfile.com.vmware.vcDr.Run

Parameters for RecoveryPlanAnswerPrompt

`_this:` ManagedObjectReference – A reference to the SessionManager used to make the method call. This is obtained by calling SrmLogin.

`name:` xsd:string The name of the recovery plan.

Faults

InvalidArgument: xsd:string – The named recovery plan could not be found.

InvalidState: xsd:string – The named recovery plan is not paused or running.

RecoveryPlanCancel

Cancels the named recovery plan. The recovery plan will not immediately cancel when you call RecoveryPlanCancel. It can take several minutes to cancel depending on what is running at the time.

Required Privileges

VcDr.RecoveryProfile.com.vmware.vcDr.Run

Parameters for RecoveryPlanCancel

`_this:` ManagedObjectReference – A reference to the SessionManager used to make the method call. This is obtained by calling SrmLogin.

`name:` xsd:string – The name of the recovery plan.

Faults

InvalidArgument: xsd:string – The named recovery plan could not be found.

InvalidState: xsd:string – The named recovery plan is not paused or running.

RecoveryPlanPause

Pauses the named recovery plan. The recovery plan will not immediately pause when you call RecoveryPlanPause. It can take several minutes to pause depending on what is running at the time.

Required Privileges

VcDr.RecoveryProfile.com.vmware.vcDr.Run

Parameters for RecoveryPlanPause

_this: ManagedObjectReference – A reference to the SessionManager used to make the method call. This is obtained by calling SrmLogin.

name: xsd:string – The name of the recovery plan.

Faults

InvalidArgument: xsd:string – The named recovery plan could not be found.

InvalidState: xsd:string – The named recovery plan is not running.

RecoveryPlanResume

Resumes the named recovery plan. You can call RecoveryPlanResume on a recovery plan that is paused only. You cannot call RecoveryPlanResume on a recovery plan that is running or in the process of pausing.

Required Privileges

VcDr.RecoveryProfile.com.vmware.vcDr.Run

Parameters for RecoveryPlanResume

_this: ManagedObjectReference – A reference to the SessionManager used to make the method call. This is obtained by calling SrmLogin.

name: xsd:string – The name of the recovery plan.

Faults

InvalidArgument: xsd:string –The named recovery plan could not be found.

InvalidState: xsd:string – The named recovery plan is not paused.

RecoveryPlanSettings

Gets the settings for the named recovery plan. You can use this method to check on the status of a recovery plan that is running.

Required Privileges

VcDr.RecoveryProfile.com.vmware.vcDr.Run

Parameters for RecoveryPlanSettings

_this: ManagedObjectReference – A reference to the SessionManager used to make the method call. This is obtained by calling SrmLogin.

name: xsd:string – The name of the recovery plan.

Returns

returnval: result object:

```
class Settings {
     /**  Name of the RecoveryPlan. */
     String name;

     /**  Description of the RecoveryPlan. */
     @optional String description;

     /**  The current state of the RecoveryPlan. */
     RecoveryState state;
   }
```

Fault

InvalidArgument: xsd:string – The named recovery plan could not be found.

RecoveryPlanStart

Starts the named recovery plan.

Required Privileges

VcDr.RecoveryProfile.com.vmware.vcDr.Run

Parameters for RecoveryPlanStart

_this: ManagedObjectReference – A reference to the SessionManager used to make the method call. This is obtained by calling SrmLogin.

name: xsd:string – The name of the recovery plan.

mode: RecoveryMode – The mode the recovery plan should run in — Recovery or Test.

Faults

InvalidArgument: xsd:string – The named recovery plan could not be found.

InvalidState: xsd:string – The named recovery plan was not uninitialized.

Enumerations

This section lists the enumerations that are available with the SRM API. Enumerations are predefined values used to store information in enumerated types.

Enum RecoveryMode

These enumerations determine whether the recovery plan runs in disaster or test mode.

Recovery

Runs the recovery plan when there is a disaster.

Test

Runs the recovery plan as a test. It recovers all the virtual machines within a specified, isolated network. When the test completes, all of the recovered virtual machines are purged and storage returned to its normal state.

Enum Recovery State

These enumerations provide the current status of a named recovery plan.

Cancelled

The named recovery plan is cancelled, but not finished.

Completed

The named recovery plan has completed.

Error

The named recovery plan has completed with one or more errors.

Paused

The named recovery plan is paused.

Prompting

The named recovery plan is running but requires a user response before continuing.

Running

The named recovery plan is running.

Uninitialized

The named recovery plan is not in a running state.