

SOAP API Reference Guide

Arcserve® High Availability

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arcserve®

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Arcserve Product References

This document references the following Arcserve products:

- Arcserve® High Availability (HA)
- Arcserve® Replication
- Arcserve® Assured Recovery®
- Arcserve® Content Distribution

Related Documentation

Use this Guide with the *Arcserve RHA Installation Guide* and the *Arcserve RHA Administration Guide*. For links of Arcserve RHA 18.0 documentation, refer to the following:

- [Bookshelf](#)
- [Release Notes](#)

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Chapter 1: Introduction

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Programming with SOAP API - the Flow

To control Arcserve RHA using SOAP API, the client should authenticate against RHA CS and then create a session. This operation is accomplished by invoking the `create_session` API function. After the client creates a session, the client can invoke any API function described in this reference guide. When the task is complete, the client calls the `close_session` API to invalidate the session and free the resources.

Overview of SOAP API

This guide describes SOAP API exported by Arcserve RHA. The APIs let you manage various aspects of replication and high availability. For example, you can control RHA scenarios and can perform various operations such as running or stopping scenarios and perform a scenario failover operation. To use <carha> SOAP API, you can use any programming language that contains integrated web services support, such as Visual Basic or C#.

Note: The sample code provided in this reference guide is written in the C#.

The SOAP API URL used in the sample code is http://127.0.0.1:8088/ws_man/xosoapapi.asmx. Substitute address part of the URL with your RHA CS IP address or host name when calling API.

Conventions Used in this Reference Guide

The Arcserve RHA SOAP API Reference Guide uses the argument types described in the following table:

| Type | Description |
|------------|------------------------------|
| bool | boolean value |
| out uint | output integer |
| out ulong | output unsigned long integer |
| out string | output string |
| uint | unsigned integer |
| ulong | unsigned long integer |
| ushort | unsigned short integer |

Chapter 1: SOAP APIs

This section contains the following topics:

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Scenario Management APIs

The following sections describe APIs that let you perform basic scenario management tasks:

- [Starting Work: create_session\(\)](#)
- [Creating Scenarios: create_scenario_ex\(\)](#)
- [Setting Root Directories: set_root_dir\(\)](#)
- [Adding Root Directories: add_root_dir\(\)](#)
- [Adding Replicas: add_replica\(\)](#)
- [Adding Multiple Replicas: add_replica_ex\(\)](#)
- [Setting Scenario Properties: set_scenario_data\(\)](#)
- [Setting Host Properties: set_host_data\(\)](#)
- [Starting Scenarios: run\(\)](#)
- [Stopping Scenarios: stop\(\)](#)
- [Pausing Data Replication: suspend_replication\(\)](#)
- [Finishing Work: close_session\(\)](#)
- [Managing Credentials: add_credentials_ex\(\)](#)
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- [Synchronizing Running Scenarios: synchronize\(\)](#)
- [Resuming Replication: resume_replication\(\)](#)
- [Adding Rewind Bookmarks: set_rewind_bookmark\(\)](#)

Starting Work: create_session()

The create_session API function lets you authenticate against Control Service and returns the session ID. You pass the session ID as an argument when calling any other API function. The open session can be invalidated by using the [close_session API](#).

Arguments

The create_session API function includes the arguments described in the following table:

| Name | Type | Description |
|------------|--------|--|
| user_name | string | The user name. Example: MyDomain\Administrator |
| password | string | The password for the user name. Example: <ca> |
| error_code | uint | A zero value indicates that API function was executed successfully. A nonzero value indicates failure API. |

Return Values

When authentication using create_session is successful, this function returns uint value with the session ID and an error_code argument set to 0. Otherwise, the MAX uint value (0xFFFFFFFF) is returned and the error_code argument contains the detailed error code.

Note: You should specify the user_name argument in the form <DOMAIN_NAME>\<USER_NAME>. For example, test_domain\Administrator.

Examples

Example 1: Creating a web services object.

```
xosoapapi_c get_mng()
{
xosoapapi_c mng = new xosoapapi_c();
return mng;
}
```

Example 2: Creating a session.

```
public bool create_session_example()
{
try
{
uint err = 0;
string user_name = global::api_examples.Properties.Settings.Default.user_name;
string password = global::api_examples.Properties.Settings.Default.password;
_session_id = get_mng().create_session(user_name, password, out err);
}
```

```
if (_session_id == 0xffffffff)
{
return false;
}
return true;
}
catch (Exception ex)
{
System.Windows.Forms.MessageBox.Show(ex.Message);
}
return false;
}
```


Creating Scenarios: create_scenario_ex()

The create_scenario_ex API function lets you create scenarios. After you create scenarios, you can perform operations such as running the scenario, changing the scenario properties, adding or removing hosts, and so on.

Arguments

The create_scenario_ex API function includes the arguments described in the following table:

| Name | Type | Description |
|---------------|------|--|
| session_id | uint | The session ID that was returned by calling the create_session function API. |
| product | uint | Specify an integer value for the following products: 0 - DR scenario 1 - HA scenario 2 - CD scenario |
| application | uint | Specify an integer value for the following applications: 0 - File server scenario. 1 - Exchange scenario 2 - Oracle scenario 3 - Not used 4 - SQL server scenario 5 - IIS scenario 6 - Control Service scenario 7 - Hyper-v scenario 8 - Sharepoint scenario 9 - vCenter scenario 10 - CRM scenario 11 - Full system scenario 12 - Customize scenario |
| is_ar | bool | Specifies whether the scenario supports assured recovery (AR): <ul style="list-style-type: none"> ■ true: supports AR ■ false: does not support AR |
| is_cdp | bool | Always false, not used. |
| integrate_opt | uint | Specify a real integer value for the following applications: 0 - No integration 1 - Backup 2 - <ca> D2D |

| | | |
|---------------|------------|--|
| | | 3 - <ca> Central Applications |
| group_id | uint | Group ID. When the group_id is 0xFFFFFFFF, the scenario belongs to the default scenario group, which is usually named scenarios. |
| scenario_data | out string | The data for the scenario. After calling this API, the argument contains the updated scenario data. Note: For more information, see Example in this topic. |
| group_data | out string | The group data. |

Return Values

This API returns the scenario ID that was created. The other APIs, such as run and stop require the scenario id. When the scenario id is zero, the API failed. Else, non-zero values indicate that the API completed successfully.

Note: When this API call completes successfully, the skeleton of the scenario is created. All of the properties for the scenario have the default values. Important properties such as the root directory, the host IP, and so on are empty. You call other APIs to fulfill the properties. The subsequent APIs in this reference guide describe how to fulfill the properties.

Example

```
uint product = 0;
uint app = 0;
bool is_ass_rec = false;
bool is_cdp = false;
uint si_opt = 0;
uint group_id = 0xFFFFFFFF;
string scenario_data = "";
string group_data = "";
uint scenario_id = get_mng().create_scenario_ex(_session_id, product, app, is_ass_rec, is_cdp, si_opt, group_id, out scenario_data, out group_data);
```

Setting Root Directories: set_root_dir()

The set_root_dir() API function lets you edit the path of the root directory.

Arguments

The set_root_dir API function includes the arguments described in the following table:

| Name | Type | Description |
|----------------|--------|--|
| session_id | uint | The session ID that was returned by calling the create_session function API. |
| scenario_id | uint | The ID of the scenario. |
| host_index | uint | The index of the host that you want to set. |
| root_dir_index | uint | The index of the root directory, start from the zero, if you have two root directories, the indexes are 0 and 1. |
| root_dir | string | The folder name. Note: This argument is required for only full system scenarios. However, this API function does not currently support setting root directories for full system scenarios. |

Return Values

This function returns a value of true when the API call completes successfully. Otherwise, this function returns a value of false.

Note: The [create_scenario_ex](#) API creates only a skeleton of the scenario. You can call this API to set the root directory.

Example

```
uint master_host_index = 1;
get_mng().set_root_dir(_session_id, scenario_id, master_host_index, 0, "E:/test");
```

Adding Root Directories: add_root_dir()

The add_root_dir API function lets you add a new root directory for the scenario.

Arguments

The add_root_dir API function includes the arguments described in the following table:

| Name | Type | Description |
|--------------------|------------|---|
| session_id | uint | The session ID that was returned by calling the create_session function API. |
| scenario_data | ref string | The data for the scenario. After calling this API, the argument contains the updated scenario data. |
| root_directories | string | The folder name. |
| new_root_dir_index | out uint | The index of the newly created root directory. |

Return Values

This function returns a value of true when the API call completes successfully. Otherwise, this function returns a value of false.

Example: Adding a root directory

```
String scenario_data = get_mng().get_scenario_data(_session_id, scenario_id);  
//add root directory  
get_mng().add_root_dir(_session_id, ref scenario_data, "c:/test", out new_root_dir_id);
```

Adding Replicas: `add_replica()`

The `add_replica` API function lets you add a new replica host for the scenario. If you want to replicate the master data to more than one replica host, you can call this API to add some replica hosts.

Arguments

The `add_replica` API function includes the arguments described in the following table:

| Name | Type | Description |
|--------------------------------|------------|---|
| <code>session_id</code> | uint | The session ID that was returned by calling the create_session function API. |
| <code>scenario_data</code> | ref string | The data for the scenario. After calling this API, the argument contains the updated scenario data. |
| <code>host_index</code> | uint | The parent host index; the master host index is always 1; the first replica usually is 2. |
| <code>new_replica_index</code> | out uint | The index of the newly added replica host |

Return Values

This function returns a value of true when the API call completes successfully. Otherwise, this function returns a value of false.

Example: Adding a replica

```
//add one replica under the master host
get_mng().add_replica(_session_id, ref scenario_data, master_host_index, out new_replica_index);
```

Adding Multiple Replicas: add_replica_ex()

The add_replica_ex API function lets you add one or more new replica hosts for the scenario at one time.

Arguments

The add_replica_ex API function includes the arguments described in the following table:

| Name | Type | Description |
|---------------|------------|--|
| session_id | uint | The session ID that was returned by calling the create_session function API. |
| scenario_data | ref string | The data for the scenario. After calling this API, the argument contains the updated scenario data. |
| host_index | uint | The parent host index; the master host index is always 1; the first replica usually is 2. |
| host_list | ref string | The host list provides information about hosts in an xml format. The xml contains information about the hosts that you want to add to the scenario. Note: See the screen following this table. |

For example, the following xml code contains information about two hosts.

```
<?xml version="1.0"?>
<object>
  - <object>
    <data type="String" val="155.35.76.155" label="Host"/>
    <data type="String" val="155.35.76.155" label="IP"/>
  </object>
  - <object>
    <data type="String" val="155.35.76.156" label="Host"/>
    <data type="String" val="155.35.76.156" label="IP"/>
  </object>
</object>
```

Return Values

This function returns a value of true when the API call completes successfully. Otherwise, this function returns a value of false.

Example: Add multiple replicas

```
string host_list = "<?xml version='1.0'><object> <object><data label='Host' val='155.35.76.155' type='String' /><data label='IP' val='155.35.76.155' type='String' /> </object><object><data label='Host' val='155.35.76.156' type='String' /><data label='IP' val='155.35.76.156' type='String' /> </object></object>";
//add two replicas under the master host
get_mng().add_replica_ex(_session_id, ref scenario_data, master_host_index, ref host_list);
```

Setting Scenario Properties: set_scenario_data()

The set_scenario_data API function lets you edit the scenario property. Most of the properties of the scenario can be updated by this API.

Arguments

The set_scenario_data API function includes the arguments described in the following table:

| Name | Type | Description |
|----------------|--------|--|
| session_id | uint | The session ID that was returned by calling the create_session function API. |
| scenario_id | uint | The ID of the scenario. |
| property_name | string | The property name of the host. Each property has a unique name. |
| property_value | string | The value of the property. |

Return Values

This function returns a value of true when the API call completes successfully. Otherwise, this function returns a value of false.

Example: Set scenario properties

```
//set scenario data properties
get_mng().set_scenario_data(_session_id, scenario_id, "Scenario.ReplicateCompressAttr", "True");
```

The following table lists common scenario property names.

| Property Name | Description |
|-----------------------|-------------------------------|
| Scenario.ScenarioName | The scenario name |
| Scenario.BuildShares | Synchronize the windows share |
| Scenario.SyncADS | Replicate NTFS ADS |

Setting Host Properties: set_host_data()

The set_host_data API function lets you edit the host property. Most of the properties of the host can be updated by this API.

Arguments

The set_host_data API function includes the arguments described in the following table:

| Name | Type | Description |
|----------------|--------|--|
| session_id | uint | The session ID that was returned by calling the create_session function API. |
| host_index | uint | The index of the host. |
| scenario_id | uint | The ID of the scenario. |
| property_name | string | The property name of the host. Each property has a unique name. |
| property_value | string | The value of the property. |

Return Values

This function returns a value of true when the API call completes successfully. Otherwise, this function returns a value of false.

Example: Set host properties

```
//set the host name and IP address for the host
get_mng().set_host_data(_session_id, scenario_id, master_host_index, "Scenario.ReplicationTree.ReplNode.CommonHostProps.Host", "master");
get_mng().set_host_data(_session_id, scenario_id, master_host_index, "Scenario.ReplicationTree.ReplNode.CommonHostProps.IP", "155.35.78.187");
```

The following table lists common master host property names.

| Property Name | Description |
|--|------------------------------------|
| Scenario.ReplicationTree.ReplNode.CommonHostProps.Host | Master host name |
| Scenario.ReplicationTree.ReplNode.CommonHostProps.IP | Master host IP |
| Scenario.ReplicationTree.ReplNode.CommonHostProps.Data_IP | Master replication IP address |
| Scenario.ReplicationTree.ReplNode.CommonHostProps.Port | Master host connection port number |
| Scenario.ReplicationTree.ReplNode.CommonHostProps.SyncScriptBefore | Run script before synchronization |

| | |
|--|----------------------|
| Scen- ario.ReplicationTree.ReplNode.CommonHostProps.SyncScriptBefore.Path | The script path |
| ReplicationTree.ReplNode.CommonHostProps.SyncScriptBefore.Args | The script arguments |

Starting Scenarios: run()

The run API function lets you run scenarios. As a best practice, call the [add_credentials_ex](#) API to authenticate the Master host before you call the run API.

Arguments

The run API function includes the arguments described in the following table:

| Name | Type | Description |
|----------------------|------------|---|
| session_id | uint | The session ID that was returned by calling the create_session function API. |
| scenario_id | uint | The scenario ID to be started. |
| sync_method | uint | The synchronization method, which can be one of the following options: 0 - File synchronization 1 - Block synchronization 2 - Volume synchronization (for only FullSystem scenario.) |
| ignore_same_files | bool | Ignore the same size/time files. |
| arc_upt | bool | This parameter applies to only Arcserve Backup integrated scenarios. When the scenario is not a Arcserve Backup integrated parameter, you should set this parameter to false. When the scenario is integrated with <caab>, call the add_bab_credentials API before you call the run API. |
| verification_and_run | uint | Reserved. Must always be defined as 1. |
| message | out string | Contains a detailed description of the error when this API fails. |

Return Values

This function returns a value of true when the scenario starts successfully. Otherwise, this function returns a value of false and provides a detailed description of the error in the message argument.

Example

```
public bool run_example()
{
try
{
uint scenario_id = _scenario_id;
//0:File Sync;1:Block Sync;2:Volume Sync
uint sync_method = 0;
```

```
bool ignore_same_files = true;
bool arc_integrated = false;
string message = "";
return get_mng().run(_session_id, scenario_id, sync_method, ignore_same_files, arc_
integrated, 1, out message);
}
catch (Exception ex)
{
System.Windows.Forms.MessageBox.Show(ex.Message);
}
return false;
}
```

Stopping Scenarios: stop()

The stop API function lets you stop running scenarios.

Arguments

The stop API function includes the arguments described in the following table:

| Name | Type | Description |
|----------------|------------|---|
| session_id | uint | The session ID that was returned by calling the create_session API. |
| scenario_id | uint | The scenario ID to be stopped. |
| execute_sync | bool | Regulates whether to call this API synchronously or asynchronously. When you set this argument to true, the API function will not return a value until the scenario is stopped. Otherwise, the function return a value immediately. |
| why_not_reason | out string | Contains a detailed description of the error when this API fails. |

Return Values

The return type is Boolean. When the return value is true, the API completed successfully. When the return value is false, the API did not complete successfully. If the return value is false, review the message returned in the why_not_reason argument to determine why the API failed.

Example

```
public bool stop_example()
{
    try
    {
        uint scenario_id = _scenario_id;
        string why_not_reason = "";
        bool execute_sync = true;
        return get_mng().stop(_session_id, scenario_id, execute_sync, out why_not_reason);
    }
    catch (Exception ex)
    {
        System.Windows.Forms.MessageBox.Show(ex.Message);
    }
    return false;
}
```

Pausing Data Replication: `suspend_replication()`

The `suspend_replication` API function lets you suspend replication operations for a host.

Arguments

The `suspend_replication` API function includes the arguments described in the following table:

| Name | Type | Description |
|----------------------------|-------------------------|---|
| <code>session_id</code> | <code>uint</code> | The session ID that was returned by calling the create_session API. |
| <code>scenario_id</code> | <code>uint</code> | The scenario ID to be suspended. |
| <code>replica_index</code> | <code>uint</code> | The replica host index in a scenario. Typically, the value of the replica index is 2. |
| <code>execute_sync</code> | <code>bool</code> | Regulates whether to call this API synchronously or asynchronously. When you set this argument to true, the API function will not return a value until the operation completes. Otherwise, the function return a value immediately. |
| <code>message</code> | <code>out string</code> | Contains the reason for failure when this API fails. |

Return Values

The return type is Boolean. When the return value is true, the API completed successfully. When the return value is false, the API did not complete successfully. If the return value is false, review the message to determine the reason the API failed.

Example

```
public bool suspend_replication_example()
{
    try
    {
        uint scenario_id = _scenario_id;
        string message = "";
        bool execute_sync = true;
        uint replica_index = 2;
        return get_mng().suspend_replication(_session_id, scenario_id, replica_index,
        execute_sync, out message);
    }
    catch (Exception ex)
    {
        System.Windows.Forms.MessageBox.Show(ex.Message);
    }
    return false;
}
```

}

Finishing Work: close_session()

The close_session API function lets you log out of the Control Service. After you log in to the Control Service, you call the close_session argument to log out of the Control Service.

Arguments

The close_session API function includes the arguments described in the following table:

| Name | Type | Description |
|----------------|------------|---|
| session_id | uint | The session ID that was returned by calling the create_session API. |
| why_not_reason | out string | Contains the reason for failure when this API fails. |

Return Values

The return type is Boolean. When the return value is true, the session was closed. When the return value is false, the session was not closed.

Example

```
public bool close_session_example()
{
    try
    {
        string why_not_reason = "";
        return get_mng().close_session(_session_id, out why_not_reason);
    }
    catch (Exception ex)
    {
        System.Windows.Forms.MessageBox.Show(ex.Message);
    }
    return false;
}
```

Managing Credentials: add_credentials_ex()

The add_credentials_ex API function lets you add credentials for hosts.

Arguments

The add_credentials_ex API function includes the arguments described in the following table:

| Name | Type | Description |
|-------------|--------|--|
| session_id | uint | The session ID that was returned by calling the create_session function API. |
| scenario_id | uint | The scenario ID to which you want to add credentials. |
| host_name | string | The host IP address. Example: 155.35.76.44. |
| port | uint | The engine port number. Typically, the port number is 25000. |
| user_name | string | The user name. Example: Administrator |
| password | string | The password for the user name. Example: Arcserve |
| domain_name | string | The domain name. Example: arcserve.com |

Return Values

The return type is ulong. A return value of zero indicates that API completed successfully. When the return value does not equal zero, the API failed.

Example

```
public bool add_credentials_ex_example()
{
    try
    {
        uint scenario_id = _scenario_id;
        //Add credential for Master
        string host_ip = "155.35.66.138";
        uint port = 25000;
        string user_name = "administrator";
        string password = "caworld";
        string domain_name = "155.35.66.138";
        ulong res = get_mng().add_credentials_ex(_session_id, scenario_id, host_ip, port,
        user_name, password, domain_name);
        //Add credential for Replica
        host_ip = "155.35.66.142";
        domain_name = "155.35.66.142";
```



```
res = get_mng().add_credentials_ex(_session_id, scenario_id, host_ip, port, user_
name, password, domain_name);
return (res == 0);
}
catch (Exception ex)
{
System.Windows.Forms.MessageBox.Show(ex.Message);
}
return false;
}
```

Integrating with Arcserve Backup add_bab_credentials()

The add_bab_credentials API function lets you add credentials so that you can access <caab>.

Arguments

The add_bab_credentials API function includes the arguments described in the following table:

| Name | Type | Description |
|-------------|--------------|---|
| session_id | uint | The session ID that was returned by calling the create_session API. |
| scenario_id | uint | The scenario ID to which you want to add Arcserve credentials. |
| username | string | The user name. Example: Administrator |
| password | string | The password for the user name. Example: <ca> |
| async_id | out ulong | When this API function is called asynchronously, the async_id argument will contain a nonzero value, which allows the function to wait for the operation to complete and retrieve the result. |

Return Values

The return type is Boolean. When the return value is true, the API completed successfully. When the return value is false, the API did not complete successfully.

Example

```
public bool add_bab_credentials_example()
{
    try
    {
        uint scenario_id = _scenario_id;
        string username = "admin";
        string password = "caworld";
        ulong async_id = 0;
        bool res = get_mng().add_bab_credentials(_session_id, scenario_id, username, password, out async_id);
        return res;
    }
    catch (Exception ex)
    {
        System.Windows.Forms.MessageBox.Show(ex.Message);
    }
}
```

```
return false;  
}
```

Updating Scenario Properties: update_scenario()

The update_scenario API function lets you update scenario data at run time.

Arguments

The update_scenario API function includes the arguments described in the following table:

| Name | Type | Description |
|-------------------|------------|--|
| session_id | uint | The session ID that was returned by calling the create_session API. |
| scenario_id | uint | The scenario ID that you want to update. |
| scenario_data_str | ref string | The data about the scenario. When the operation completes successfully, the new scenario data is provided. |
| why_not_reason | ref string | Contains the reason for failure when this API fails. |

Return Values

The return values provide the data for the scenario in xml format.

Example

```
public bool update_scenario_example()
{
    try
    {
        uint scenario_id = _scenario_id;
        string why_not_reason = "";
        string scenario_data_str = get_mng().get_scenario_data(scenario_id);
        //do some changes for the scenario.
        return get_mng().update_scenario(_session_id, scenario_id, ref scenario_data_str, out
        why_not_reason);
    }
    catch (Exception ex)
    {
        System.Windows.Forms.MessageBox.Show(ex.Message);
    }
    return false;
}
```

Removing Scenarios: `remove_scenario()`

The `remove_scenario` API function lets you remove scenarios from the Control Service.

Arguments

The `remove_scenario` API function includes the arguments described in the following table:

| Name | Type | Description |
|-----------------------------|-------------------------|---|
| <code>session_id</code> | <code>uint</code> | The session ID that was returned by calling the create_session API. |
| <code>scenario_id</code> | <code>uint</code> | The scenario ID that will run. |
| <code>arc_upd</code> | <code>bool</code> | This parameter applies to only <caab> integrated scenarios. |
| <code>why_not_reason</code> | <code>out string</code> | Contains the reason for failure when this API fails. |

Return Value

The return type is Boolean. When the return value is true, the API completed successfully. When the return value is false, the API did not complete successfully. If the return value is false, review the message to determine the reason the API failed.

Example

```
public bool remove_scenario_example()
{
    try
    {
        uint scenario_id = _scenario_id;
        bool arc_integrated = false;
        string why_not_reason = "";
        return get_mng().remove_scenario(_session_id, scenario_id, arc_integrated, out why_not_reason);
    }
    catch (Exception ex)
    {
        System.Windows.Forms.MessageBox.Show(ex.Message);
    }
    return false;
}
```

Importing Scenarios: import_scenario()

The import_scenario API function lets you import scenarios to the Control Service.

Arguments

The import_scenario API function includes the arguments described in the following table:

| Type | Name | Description |
|----------------|------------|---|
| session_id | uint | The session ID that was returned by calling the create_session API. |
| group_id | uint | The scenario group ID that you want to import. If you are not sure of the group ID, set this to 0xFFFFFFFF. |
| scenario_id | out uint | Retrieves the scenario id when the API completes successfully. |
| scenario_data | string | The data about the scenario. Typically, you retrieve the scenario data string from a scenario file. The data is in an XML format. |
| why_not_reason | out string | Contains the reason for failure when this API fails. |

Return Values

The return values provide the data for the scenario in xml format.

Example

```
public bool import_scenario_example()
{
    try
    {
        uint scenario_id = 0;
        string why_not_reason = "";
        string scenario_data = "load the data from a scenario file.";
        uint group_id = 0xFFFFFFFF;
        return get_mng().import_scenario(_session_id, group_id, scenario_data, out scenario_id, out why_not_reason);
    }
    catch (Exception ex)
    {
        System.Windows.Forms.MessageBox.Show(ex.Message);
    }
    return false;
}
```

Synchronizing Running Scenarios: synchronize()

The synchronize API function lets you synchronize the data for scenarios.

Arguments

The synchronize API function includes the arguments described in the following table:

| Name | Type | Description |
|-------------------|------------|--|
| session_id | uint | The session ID that was returned by calling the create_session API. |
| scenario_id | uint | The scenario ID that you want to synchronize. |
| sync_method | uint | The synchronization method, which can be one of the following options: 0 - File synchronization 1 - Block synchronization 2 - Volume synchronization (for only FullSystem scenario.) |
| ignore_same_files | bool | Ignore the same size/time files. |
| execute_sync | bool | Regulates whether to call this API synchronously or asynchronously. |
| message | out string | Contains the reason for failure when this API fails. |

Return Values

The return type is Boolean. When the return value is true, the API completed successfully. When the return value is false, the API did not complete successfully. If the return value is false, review the message to determine the reason the API failed.

Example

```
public bool synchronize_example()
{
    try
    {
        uint scenario_id = _scenario_id;
        string message = "";
        bool execute_sync = true;
        uint sync_method = 1;
        bool ignore_same_files = false;
        return get_mng().synchronize(_session_id, scenario_id, sync_method, ignore_same_files, execute_sync, out message);
    }
    catch (Exception ex)
```

```
{  
System.Windows.Forms.MessageBox.Show(ex.Message);  
}  
return false;  
}
```


Resuming Replication: `resume_replication()`

The `resume_replication` API function lets you resume replication operations for a host.

Arguments

The `suspend_replication` API function includes the arguments described in the following table:

| Name | Type | Description |
|----------------------------|-------------------------|---|
| <code>session_id</code> | <code>uint</code> | The session ID that was returned by calling the <code>create_session</code> API. |
| <code>scenario_id</code> | <code>uint</code> | The scenario ID for which you want to resume replication. |
| <code>replica_index</code> | <code>uint</code> | The replica host index in a scenario. Typically, the value of the replica index is 2. This is the host for which replication will be suspended. For example, the data changes are aggregated in a spool without copying the data to a disk until the replication operation resumes. |
| <code>execute_sync</code> | <code>bool</code> | Regulates whether to call this API synchronously or asynchronously. |
| <code>message</code> | <code>out string</code> | Contains the reason for failure when this API fails. |

Return Values

The return type is Boolean. When the return value is true, the API completed successfully. When the return value is false, the API did not complete successfully. If the return value is false, review the message to determine the reason the API failed.

Example

```
public bool resume_replication_example()
{
    try
    {
        uint scenario_id = _scenario_id;
        string message = "";
        bool execute_sync = true;
        uint replica_index = 2;
        return get_mng().resume_replication(_session_id, scenario_id, replica_index,
            execute_sync, out message);
    }
    catch (Exception ex)
    {
        System.Windows.Forms.MessageBox.Show(ex.Message);
    }
}
```

```
return false;  
}
```

Adding Rewind Bookmarks: set_rewind_bookmark()

The set_rewind_bookmark API function lets you set bookmarks for scenarios.

Arguments

The set_rewind_bookmark API function includes the arguments described in the following table:

| Name | Type | Description |
|----------------|------------|--|
| scenario_id | string | The scenario ID for which you want to set bookmarks. |
| host_index | uint | Always = 1. |
| bookmark_msg | string | The bookmark name. |
| why_not_reason | out string | Contains the reason for failure when this API fails. |

Return Values

The return type is Boolean. When the return value is true, the API completed successfully. When the return value is false, the API did not complete successfully. If the return value is false, review the message to determine the reason the API failed.

Example

```
public bool set_rewind_bookmark_example()
{
    try
    {
        string scenario_id = _scenario_id.ToString();
        uint host_index = 1;
        string why_not_reason = "";
        string bookmark_msg = "test bookmark";
        return get_mng().set_rewind_bookmark(scenario_id, host_index, bookmark_msg, out
        why_not_reason);
    }
    catch (Exception ex)
    {
        System.Windows.Forms.MessageBox.Show(ex.Message);
    }
    return false;
}
```

High Availability Scenario Management APIs

The following sections describe APIs that let you manage high availability scenarios.

This section contains the following topics:

- [Triggering Assured Recovery: start_ar\(\)](#)
- [Disabling Heartbeat in High Availability Scenarios: stop_is_alive\(\)](#)
- [Switching Over for High Availability Scenarios: switchover\(\)](#)
- [Enabling Heartbeats in High Availability Scenarios: start_is_alive\(\)](#)

Triggering Assured Recovery: start_ar()

The start_ar API function lets you perform an assured recovery operation (AR) for a scenario. When you perform an automatic AR, you do not need to call other APIs to stop the AR. The AR will stop after the AR operation completes. When you perform a manual AR, call the API [resume_application](#) to stop the AR operation.

Arguments

The start_ar API function includes the arguments described in the following table:

| Name | Type | Description |
|---------------|------------|---|
| session_id | uint | The session ID that was returned by calling the create_session API. |
| scenario_id | uint | The scenario ID for which you want to perform assured recovery. |
| replica_index | uint | The replica host index in a scenario. Typically, the value of the replica index is 2. This is the host for which replication will be suspended. |
| auto_ar | bool | Run AR automatically or manually. <ul style="list-style-type: none"> ■ True- automatically ■ False-manually |
| execute_sync | bool | Regulates whether to call this API synchronously or asynchronously. |
| message | out string | Contains the reason for failure when this API fails. |

Return Values

The return type is Boolean. When the return value is true, the API completed successfully. When the return value is false, the API did not complete successfully. If the return value is false, review the message to determine the reason the API failed.

Example

```
public bool start_ar_example()
{
try
{
uint scenario_id = _scenario_id;
string message = "";
bool execute_sync = true;
uint replica_index = 2;
bool auto_ar = true;
return get_mng().start_ar(_session_id, scenario_id, replica_index, auto_ar, execute_sync, out message);
}
}
```

```
catch (Exception ex)
{
    System.Windows.Forms.MessageBox.Show(ex.Message);
}
return false;
}
```

Disabling Heartbeat in High Availability Scenarios: `stop_is_alive()`

Is-alive is an electronic signal that replica servers send to master servers to identify the status of the node. While high availability scenarios run, the replica server periodically sends an electronic signal (ping) to the master server. By default, the frequency of the ping is 30 seconds. You can trigger a switchover event when the replica server cannot ping the master after a predetermined period of time elapses (the default is 300 seconds).

The `stop_is_alive` API function lets you suspend the is-alive check.

Arguments

The `stop_is_alive` API function includes the arguments described in the following table:

| Name | Type | Description |
|---------------------------|------------|---|
| <code>session_id</code> | uint | The session ID that was returned by calling the create session API. |
| <code>scenario_id</code> | uint | The scenario ID for which you want to suspend the is-alive check. |
| <code>execute_sync</code> | bool | Regulates whether to call this API synchronously or asynchronously. |
| <code>err_message</code> | out string | Contains the reason for failure when this API fails. |

Return Values

The return type is Boolean. When the return value is true, the API completed successfully. When the return value is false, the API did not complete successfully. If the return value is false, review the message to determine the reason the API failed.

Example

```
public bool stop_is_alive_example()
{
    try
    {
        uint scenario_id = _ha_scenario_id;
        string err_messages = "";
        bool execute_sync = true;
        return get_mng().stop_is_alive(session_id, scenario_id, execute_sync, out err_messages);
    }
    catch (Exception ex)
    {
```

```
System.Windows.Forms.MessageBox.Show(ex.Message);  
}  
return false;  
}
```


Switching Over for High Availability Scenarios: `switchover()`

The `switchover` API function lets you perform switchover operations.

With full system, high availability scenarios, you can perform switchover operations to any replica server. When you want to switch over to non-failover replica servers, you call the `execute_action` API before you call the `switchover` API.

Note: The `execute_action` API is described in the examples.

Arguments

The `switchover` API function includes the arguments described in the following table:

| Name | Type | Description |
|-----------------------------------|------------|---|
| <code>session_id</code> | uint | The session ID that was returned by calling the create_session API. |
| <code>scenario_id</code> | uint | The scenario ID for which you want to perform switchover operations. |
| <code>execute_sync</code> | bool | Regulates whether to call this API synchronously or asynchronously. |
| <code>run_reverse_scenario</code> | bool | Run or do not run the backward scenario after the switchover operation occurs. |
| <code>err_message</code> | out string | Contains the reason for failure when this API fails. |

Return Values

The return type is Boolean. When the return value is true, the API completed successfully. When the return value is false, the API did not complete successfully. If the return value is false, review the message to determine the reason the API failed.

Examples

Example 1

```
public bool switchover_example()
{
    try
    {
        uint scenario_id = _ha_scenario_id;
        string err_messages = "";
        bool execute_sync = true;
        bool run_reverse_scenario = false;
        return get_mng().switchover(_session_id, scenario_id, execute_sync, run_reverse_scenario, out err_messages);
    }
}
```

```
}  
catch (Exception ex)  
{  
    System.Windows.Forms.MessageBox.Show(ex.Message);  
}  
return false;  
}
```

Example 2

```
public bool switchover_2nd_example()  
{  
    try  
    {  
        set_xcmd_data("switchover", "switchover_index","3");  
        uint scenario_id = _ha_scenario_id;  
        string err_messages = "";  
        bool execute_sync = true;  
        bool run_reverse_scenario = false;  
        return get_mng().switchover(_session_id, scenario_id, execute_sync, run_reverse_  
scenario, out err_messages);  
    }  
    catch (Exception ex)  
    {  
        System.Windows.Forms.MessageBox.Show(ex.Message);  
    }  
    return false;  
}
```

Example 3

By default, Replication and High Availability performs switchover operations to the predefined failover, replica servers. With full system, high availability scenarios, you can switch over to non-failover replica servers. However, when you want to switch over to non-failover servers using the switchover API, you call the execute_ action API before you call the switchover API as illustrated by the following example:

```
set_xcmd_data("switchover", "switchover_index","3");  
public bool set_xcmd_data(string cmd_name_str, string cmd_data_str, string cmd_  
value_str)  
{  
    try  
    {  
        string result_data = "";  
        string action_data;  
        XmlDocument doc = new XmlDocument();  
        XmlNode actions = doc.CreateNode(XmlNodeType.Element, xomngapi.WANSync_  
c.xo_actions, "");
```

```
XmlNode commonNode = doc.CreateNode(XmlNodeType.Element, xomngapi.WANSync_c.action_common_lab, "");
XmlAttribute attrSession = doc.CreateAttribute(xomngapi.WANSync_c.action_com_session_id);
XmlAttribute attrScenario = doc.CreateAttribute(xomngapi.WANSync_c.action_com_scenario_id);
XmlAttribute attrHostindex = doc.CreateAttribute(xomngapi.WANSync_c.action_com_host_index);
XmlAttribute attrUsedfor = doc.CreateAttribute(xomngapi.WANSync_c.action_used_for);
attrSession.Value = xomngapi.WANSync_c.WANSync.session_id.ToString();
attrScenario.Value = this.id.ToString();
attrUsedfor.Value = xomngapi.WANSync_c.action_x_command_data;
commonNode.Attributes.Append(attrSession);
commonNode.Attributes.Append(attrScenario);
commonNode.Attributes.Append(attrHostindex);
commonNode.Attributes.Append(attrUsedfor);
XmlNode xo_cmd = doc.CreateNode(XmlNodeType.Element, xomngapi.WANSync_c.xo_cmd, "");
XmlAttribute cmd_name = doc.CreateAttribute(xomngapi.WANSync_c.action_cmd_name);
XmlAttribute cmd_data = doc.CreateAttribute(xomngapi.WANSync_c.action_cmd_data);
XmlAttribute cmd_value = doc.CreateAttribute(xomngapi.WANSync_c.action_cmd_value);
cmd_name.Value = cmd_name_str;
cmd_data.Value = cmd_data_str;
cmd_value.Value = cmd_value_str;
xo_cmd.Attributes.Append(cmd_name);
xo_cmd.Attributes.Append(cmd_data);
xo_cmd.Attributes.Append(cmd_value);
actions.AppendChild(commonNode);
commonNode.AppendChild(xo_cmd);
doc.AppendChild(actions);
action_data = doc.OuterXml;
string error;
return get_mng().execute_action(action_data, true, out result_data, out error);
}
catch (System.Exception)
{
return false;
}
```

Enabling Heartbeats in High Availability Scenarios: `start_is_alive()`

Is-alive is an electronic signal that replica servers send to master servers to identify the status of the node. While high availability scenarios run, the replica server periodically sends an electronic signal (ping) to the master server. By default, the frequency of the ping is 30 seconds. You can trigger a switchover event when the replica server cannot ping the master after a predetermined period of time elapses (the default is 300 seconds).

The `start_is_alive` API function lets you resume the is-alive check.

Arguments

The `start_is_alive` API function includes the arguments described in the following table:

| Name | Type | Description |
|---------------------------|------------|---|
| <code>session_id</code> | uint | The session ID that was returned by calling the create session API. |
| <code>scenario_id</code> | uint | The scenario ID for which you want to start the is-alive check. |
| <code>execute_sync</code> | bool | Regulates whether to call this API synchronously or asynchronously. |
| <code>err_message</code> | out string | Contains the reason for failure when this API fails. |

Return Values

The return type is Boolean. When the return value is true, the API completed successfully. When the return value is false, the API did not complete successfully. If the return value is false, review the message to determine the reason the API failed.

Example

```
public bool start_is_alive_example()
{
    try
    {
        uint scenario_id = _ha_scenario_id;
        string err_messages = "";
        bool execute_sync = true;
        return get_mng().start_is_alive(session_id, scenario_id, execute_sync, out err_messages);
    }
    catch (Exception ex)
    {
```

```
System.Windows.Forms.MessageBox.Show(ex.Message);  
}  
return false;  
}
```

VSS Snapshot Management APIs

The following sections describe APIs that let you manage VSS snapshots.

This section contains the following topics:

- [Mounting VSS Snapshot on Replica Servers: mount_snapshot\(\)](#)
- [Unmounting VSS Snapshots from Replica Servers: unmount_snapshot\(\)](#)
- [Removing VSS Snapshots from Replica Servers: delete_snapshot\(\)](#)
- [Getting Lists of VSS Snapshots from Replica Servers: get_snapshot_list\(\)](#)

Mounting VSS Snapshot on Replica Servers: mount_snapshot()

The mount_snapshot API function lets you mount VSS snapshots to a specific folder on a replica server.

Arguments

The mount_snapshot API function includes the arguments described in the following table:

| Name | Type | Description |
|----------------|------------|---|
| session_id | uint | The session ID that was returned by calling the create_session API. |
| host_name | string | The engine host name |
| ip_string | string | The IP address of the host_name. |
| host_port | ushort | The engine port number. Typically, the port number is 25000. |
| mount_path | string | The folder where you want to mount the snapshot. |
| snapshot_id | string | The VSS snapshot ID. |
| why_not_reason | out string | Contains the reason for failure when this API fails. |

Return Values

The return type is Boolean. When the return value is true, the API completed successfully. When the return value is false, the API did not complete successfully. If the return value is false, review the message to determine the reason the API failed.

Example

```
public bool mount_snapshot_example()
{
    try
    {
        string host_name = "155.35.66.142";
        string ip_string = "155.35.66.142";
        ushort host_port = 25000;
        string mount_path = "c:/mount";
        string snapshot_id = "{9CFDE664-62D5-4fd8-A304-2B664900B98F}";
        string why_not_reason = "";
        return get_mng().mount_snapshot(session_id, host_name, ip_string, host_port, snapshot_id, mount_path, out why_not_reason);
    }
    catch (Exception ex)
    {
        System.Windows.Forms.MessageBox.Show(ex.Message);
    }
}
```

```
}  
return false;  
}
```


Unmounting VSS Snapshots from Replica Servers: `unmount_snapshot()`

The `unmount_snapshot` API function lets you unmount VSS snapshots from a folder.

Arguments

The `unmount_snapshot` API function includes the arguments described in the following table:

| Name | Type | Description |
|-----------------------------|-------------------------|---|
| <code>session_id</code> | <code>uint</code> | The session ID that was returned by calling the create_session API. |
| <code>host_name</code> | <code>string</code> | The engine host name |
| <code>ip_string</code> | <code>string</code> | The IP address of the <code>host_name</code> . |
| <code>host_port</code> | <code>ushort</code> | The engine port number. Typically, the port number is 25000. |
| <code>snapshot_id</code> | <code>string</code> | The VSS snapshot ID. |
| <code>why_not_reason</code> | <code>out string</code> | Contains the reason for failure when this API fails. |

Return Values

The return type is Boolean. When the return value is true, the API completed successfully. When the return value is false, the API did not complete successfully. If the return value is false, review the message to determine the reason the API failed.

Example

```
public bool unmount_snapshot_example()
{
    try
    {
        string host_name = "155.35.66.142";
        string ip_string = "155.35.66.142";
        ushort host_port = 25000;
        string snapshot_id = "{9CFDE664-62D5-4fd8-A304-2B664900B98F}";
        string why_not_reason = "";
        return get_mng().unmount_snapshot(session_id, host_name, ip_string, host_port,
            snapshot_id, out why_not_reason);
    }
    catch (Exception ex)
    {
        System.Windows.Forms.MessageBox.Show(ex.Message);
    }
    return false;
}
```

Removing VSS Snapshots from Replica Servers: `delete_snapshot()`

The `delete_snapshot` API function lets you delete VSS snapshots from replica servers.

Arguments

The `delete_snapshot` API function includes the arguments described in the following table:

| Name | Type | Description |
|-----------------------------|------------|---|
| <code>session_id</code> | uint | The session ID that was returned by calling the create_session API. |
| <code>host_name</code> | string | The engine host name |
| <code>ip_string</code> | string | The IP address of the <code>host_name</code> . |
| <code>host_port</code> | ushort | The engine port number. Typically, the port number is 25000. |
| <code>snapshot_id</code> | string | The VSS snapshot ID. |
| <code>why_not_reason</code> | out string | Contains the reason for failure when this API fails. |

Return Values

The return type is Boolean. When the return value is true, the API completed successfully. When the return value is false, the API did not complete successfully. If the return value is false, review the message to determine the reason the API failed.

Example

```
public bool delete_snapshot_example()
{
    try
    {
        string host_name = "155.35.66.142";
        string ip_string = "155.35.66.142";
        ushort host_port = 25000;
        string snapshot_id = "{9CFDE664-62D5-4fd8-A304-2B664900B98F}";
        string why_not_reason = "";
        return get_mng().delete_snapshot(session_id, host_name, ip_string, host_port, snapshot_id, out why_not_reason);
    }
    catch (Exception ex)
    {
        System.Windows.Forms.MessageBox.Show(ex.Message);
    }
    return false;
}
```

}

Getting Lists of VSS Snapshots from Replica Servers: `get_snapshot_list()`

The `get_snapshot_list` API function lets you get a list of the VSS snapshots from a host.

Arguments

The `get_snapshot_list` API function includes the arguments described in the following table:

| Name | Type | Description |
|-----------------------------|------------|---|
| <code>session_id</code> | uint | The session ID that was returned by calling the create_session API. |
| <code>host_name</code> | string | The engine host name |
| <code>ip_string</code> | string | The IP address of the <code>host_name</code> . |
| <code>host_port</code> | ushort | The engine port number. Typically, the port number is 25000. |
| <code>snapshot_list</code> | out string | The volume snapshot list. |
| <code>why_not_reason</code> | out string | Contains the reason for failure when this API fails. |

Return Values

The return type is Boolean. When the return value is true, the API completed successfully. When the return value is false, the API did not complete successfully. If the return value is false, review the message to determine the reason the API failed.

Example

```
public bool get_snapshot_list_example()
{
    try
    {
        string host_name = "155.35.66.142";
        string ip_string = "155.35.66.142";
        ushort host_port = 25000;
        string snapshot_list = "";
        string why_not_reason = "";
        return get_mng().get_snapshot_list(session_id, host_name, ip_string, host_port, out
        snapshot_list, out why_not_reason);
    }
    catch (Exception ex)
    {
        System.Windows.Forms.MessageBox.Show(ex.Message);
    }
}
```

```
return false;  
}
```

Gathering Statistics APIs

The following sections describe APIs that let you manage the process of gathering statistics about scenarios.

This section contains the following topics:

- [Getting Extended Scenario Statistics: `get_data_ex\(\)`](#)
- [Getting Scenario Statistics: `get_scenario_data\(\)`](#)

| | | |
|--------------|---------------|---|
| | | 4 - host management data 8 - snapshot data 15 - all above data |
| manager_data | out string | Return the data for the scenario in xml format. |

Return Values

The return type is Boolean. When the return value is true, the command completed successfully. When the return value is false, the command did not complete successfully. If the return value is false, review the message to determine the reason the API failed.

Examples

Example 1:

```
public bool get_data_ex_example()
{
    try
    {
        uint[] scenarios_with_statistics = new uint[] { _scenario_id };
        uint request_flag = 1;
        ulong last_update_time = 0;
        string manager_data = "";

        bool res = get_mng().get_data_ex(_session_id, scenarios_with_statistics, request_
        flag, ref last_update_time, out manager_data);

        return res;
    }
    catch (Exception ex)
    {
        System.Windows.Forms.MessageBox.Show(ex.Message);
    }
    return false;
}
```

Example 2:

This function parses the XML buffer data (manager_data) that was returned by the get_data_ex() function. The following example describes how to get the scenario state when it is running or stopped:

```
string get_scenario_state (string manager_data, string scenario_name_or_id)
{
```



```

string scenario_state = "unknown";
XmlDocument manager_data_doc = new XmlDocument();
manager_data_doc.LoadXml(manager_data);
XmlNode root_node = manager_data_doc.SelectSingleNode("./manager_data");
if (root_node == null)
{
return scenario_state;
}
//get all the scenario data information
XmlNode scenario_nodes = root_node.SelectSingleNode("./scenarios");
if (scenario_nodes == null)
{
return scenario_state;
}
foreach (XmlNode scenario_node in scenario_nodes.ChildNodes)
{
uint scenario_id = 0;
string scenario_name = "";
XmlAttribute id_attr = scenario_node.Attributes["id"];
if (id_attr != null)
scenario_id = Convert.ToUInt32(id_attr.Value);
XmlAttribute name_attr = scenario_node.Attributes["name"];
if (name_attr != null)
scenario_name = name_attr.Value;
if (scenario_name_or_id != scenario_id.ToString() && scenario_name_or_id.ToLower
() != scenario_name.ToLower())
continue;
//get the scenario status, running or stopped
foreach (XmlNode node in scenario_node.ChildNodes)
{
//get the scenario state, running or stop
if (0 == string.Compare("state", node.Name, true))
{
if (node.Attributes["val"] != null)
{
scenario_state = node.Attributes["val"].Value.ToLower();
}
}
}
}
return scenario_state;
}

```

Example 3:

This function parses the XML buffer data (`manager_data`) that was returned by the `get_data_ex()` function. The following example describes how to get all of the events for the scenario:

```
void get_scenario_events(string manager_data, string scenario_name_or_id, ref
ArrayList events)
{
XmlDocument manager_data_doc = new XmlDocument();
manager_data_doc.LoadXml(manager_data);
XmlNode root_node = manager_data_doc.SelectSingleNode("./manager_data");
if (root_node == null)
{
return ;
}
//get all the scenario data information
XmlNode scenario_nodes = root_node.SelectSingleNode("./scenarios");
if (scenario_nodes == null)
{
return ;
}
foreach (XmlNode scenario_node in scenario_nodes.ChildNodes)
{
uint scenario_id = 0;
string scenario_name = "";
XmlAttribute id_attr = scenario_node.Attributes["id"];
if (id_attr != null)
scenario_id = Convert.ToUInt32(id_attr.Value);
XmlAttribute name_attr = scenario_node.Attributes["name"];
if (name_attr != null)
scenario_name = name_attr.Value;
if (scenario_name_or_id != scenario_id.ToString() && scenario_name_or_id.ToLower
() != scenario_name.ToLower())
continue;
//get the scenario status, running or stopped
foreach (XmlNode node in scenario_node.ChildNodes)
{
//get the scenario state, running or stop
if (0 == string.Compare("gen", node.Name, true))
{
events.Add(new event_data_c(node));
}
}
}
}
```

Example 4:

You define the `scenarios_with_statistics` parameter to get the synchronization and replication statistics for a scenario. The parameter is an array. To get the statistics for more than one scenario, you add the IDs of the scenarios to the array.

The `get_data_ex` gets the following statistics:

Note: The following screens illustrate the process of transferring and synchronization statistics information.

Transferred bytes to Replicas:

| Host | Total Sent Data | Current File Name | Data To be Sent | Transmission Speed | Current Progress |
|----------|-----------------|-------------------------------------|-----------------|--------------------|------------------|
| symibrva | 4.98GB | D:/Master Company/MasterCompany.ECD | 3.78GB | 1.3Mbps | 19.3 % |

Last synchronization statistics: Block Data synchronization

Synchronization Progress:

- sym-sql ->symibrva

C:/

| State | Number of Files | Total Size | Compare Progress | Data To be Sent | Send Progress | Starting Time | Finish Time |
|----------|-----------------|------------|------------------|-----------------|---------------|----------------------|----------------------|
| Finished | 68481 | 18.42GB | 100.0 % | 9.28GB | 100.0 % | 3/25/2012 9:47:49 AM | 3/25/2012 7:34:07 PM |

Code

This function parses the XML buffer data (manager_data) that was returned by the get_data_ex() function. The following code demonstrates how to get the statistics of transferring and synchronization. (See the previous screens.)

```
void get_scenario_sync_statistics(string manager_data, string scenario_name_or_id,
ref ArrayList sync_statistics)
{
XmlDocument manager_data_doc = new XmlDocument();
manager_data_doc.LoadXml(manager_data);
XmlNode root_node = manager_data_doc.SelectSingleNode("./manager_data");
if (root_node == null)
{
return;
}
//get all the scenario data information
XmlNode scenario_nodes = root_node.SelectSingleNode("./scenarios");
if (scenario_nodes == null)
{
return;
}
foreach (XmlNode scenario_node in scenario_nodes.ChildNodes)
{
uint scenario_id = 0;
string scenario_name = "";
XmlAttribute id_attr = scenario_node.Attributes["id"];
if (id_attr != null)
scenario_id = Convert.ToUInt32(id_attr.Value);
XmlAttribute name_attr = scenario_node.Attributes["name"];
```

```
if (name_attr != null)
scenario_name = name_attr.Value;
if (scenario_name_or_id != scenario_id.ToString() && scenario_name_or_id.ToLower
() != scenario_name.ToLower())
continue;
//get the scenario status, running or stopped
foreach (XmlNode node in scenario_node.ChildNodes)
{
//get the scenario state, running or stop
if (0 == string.Compare("statistics", node.Name, true))
{
sync_statistics.Add(new host_statistics_c(node));
}
}
}
}
```

Example 5:

The following code demonstrates how to retrieve sync statistics for scenarios.

```
ArrayList sync_statistics = new ArrayList();
get_scenario_sync_statistics(manager_data, "FileServer 1", ref sync_statistics);
//show the statistics
foreach (host_statistics_c stat in sync_statistics)
{
//host name
string host_name = stat.host_name;
//transmission statistics
foreach (transfer_to_replica_c trans in stat.trans_to_reps)
{
//handle the transfer data such as speed.
ulong speed = trans.transmission_speed;
}
//sync statistics
foreach (sync_statistics_host_c sync_host in stat.children_hosts)
{
//root directory
foreach(sync_statistics_root_dir_c root_dir in sync_host.sync_root_dirs)
{
//root_dir.total_size
}
}
}
```

Getting Scenario Statistics: `get_scenario_data()`

The `get_scenario_data` API function lets you get the scenario IDs.

Arguments

The `get_scenario_data` API function includes the arguments described in the following table:

| Name | Type | Description |
|--------------------------|-------------------|---|
| <code>session_id</code> | <code>uint</code> | The session ID that was returned by calling the create_session API. |
| <code>scenario_id</code> | <code>uint</code> | The scenario ID. |

Return Values

The return values provide the data for the scenario.

Example

```
public bool get_scenario_data_example()
{
    try
    {
        uint scenario_id = _scenario_id;
        string scenario_data_str = get_mng().get_scenario_data(session_id.scenario_id);
        return true;
    }
    catch (Exception ex)
    {
        System.Windows.Forms.MessageBox.Show(ex.Message);
    }
    return false;
}
```

