Oracle® Enterprise Single Sign-on Provisioning Gateway

.NET CLI SDK Guide

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Abbreviations and Terminology

Following is a list of commonly-used abbreviations and terminology.

Abbreviation or Terminology	**Full Name**
Administrative Console	ESSO-LM Administrative Console
Agent	ESSO-LM Agent
FTU	First Time Use Wizard
ESSO-Anywhere	Oracle Enterprise Single Sign-on Anywhere
ESSO-PG	Oracle Enterprise Single Sign-on Provisioning Gateway
ESSO-LM	Oracle Enterprise Single Sign-on Logon Manager
ESSO-PR	Oracle Enterprise Single Sign-on Password Reset
ESSO-UAM	Oracle Enterprise Single Sign-on Universal Authentication Manager

About the ESSO-PG .NET CLI SDK

The .NET CLI SDK is provided with Oracle Enterprise Single Sign-on Provisioning Gateway (ESSO-PG). The SDK provides an interface for communicating with the ESSO-PG Web Service. These programming APIs live inside the assembly `Passlogix.Provisioning.dll`. This assembly leverages the main .NET CLI executable as an SDK library.

This guide is intended for experienced .NET application programmers responsible for the development of an organization's provisioning solutions.

Installing .NET CLI

The ESSO-PG .NET CLI must be installed prior to performing the steps in the document. Refer to the *ESSO-PG Installation and Setup Guide* for information on installing the ESSO-PG .NET CLI.

The .NET CLI is located under `<Passlogix home>\v-GO PM\Client\DotNet`.

Using the .NET CLI as an SDK

To use the .NET CLI as an SDK, complete the following steps:

1. In your .NET project, add a reference to the `Passlogix.Provisioning.dll`.
2. Create an instance of the IProvisioning interface.
3. Call the available methods on this interface (such as `AddCredential`, etc).
4. Use the returned IProvisioningResult interface to determine success and retrieve results.

Add a reference to the Passlogix.Provisioning.dll

Add a reference to `Passlogix.Provisioning.dll` in your .NET project:

1. From Visual Studio, load your solution and launch the **Solution Explorer**.
2. Select the applicable .NET project and expand it.
3. Right click on the **References** node and select **Add Reference**.
4. From the dialog, select **Browse** and find `Passlogix.Provisioning.dll` (can be found under `<Passlogix home>\v-GO PM\Client\dotnet).`
5. Click **Open**. A new reference to the assembly will be created.
6. Open the source file (with `.cs` extension) where the APIs will be called, and add the following lines to the top of the file:

```
using Passlogix.Provisioning;

using Passlogix.Provisioning.Exceptions;
```

Create an Instance of the IProvisioning Interface

In the same file, create a method to initialize an instance of the IProvisioning interface and add one of the following lines to that method:

```
// Method 1: If you know the full path

IProvisioning iprov =

ProvisioningFactory.CreateFrom(@"<Path to .NET CLI>");

// Method 2: Load from same directory as provisioning assembly

IProvisioning iprov = ProvisioningFactory.CreateFromPrivate();

// Method 3: To load file from the path (specified by %PATH%)

IProvisioning iprov = ProvisioningFactory.CreateFromPath();
```

After you have selected a method for loading, check for errors and then set the credentials for connection to the ESSO-PG service:

```
// Code to use after method of loading assembly has been selected

if (iprov != null)

{
```

```
try
{
// You'll first need to establish a connection
// or else all resulting calls to the methods will
// fail. This method sets credentials for connecting
// to PM service. It does not actually connect to
// the service until a provisioning request is made.
// You can connect in three ways:
iprov.Connect("Administrator", "password");
// Assumes http://localhost/v-go pm service/up.asmx
// and %COMPUTERNAME% is the Agent name.

// Method 2 allows you to specify URL and Agent name
iprov.Connect(
"http://<server>/v-go pm service/up.asmx",
"My Agent",
"Administrator", "password");
// Method 3 allows you to specify URL.
// This method is preferred since the web service
// is not local but the user does not necessarily
// want to specify the agent name (defaults to
// %COMPUTERNAME%).
iprov.Connect(
"http://<server>/v-go pm service/up.asmx",
"Administrator", "password");
// Make provisioning requests via the iprov interface
// Examples of this are given later in this document
. . .
}
catch (ProvisioningException ex)
{
    // Handle exception

    }

    }
```

After the connection has executed successfully, requests can be sent to the ESSO-PG Web service through the methods of the `iprov` variable. Each method returns its results in an `IProvisioningnResult` interface. Oracle recommends these methods be called within a `try…catch` block for error handling. Catching the `ProvisioningException` class is sufficient for any exceptions thrown by the CLI. Other exceptions can be handled by adding a catch (`Exception`) block.

Available Methods in IProvisioning Interface

This section lists all the available methods and their parameters for each provisioning operation. The following information is provided for each available method:

- Method name and description
- Method Overload List
- A description of the method's parameters (if applicable)

  One of these parameters requires a special explanation. The options parameter is a dictionary of key-value pairs. The key is the name of the argument used by the CLI on the command line. The value is its value. The developer can set a key-value pair in the dictionary using either the literal name of the key (passed on the command line) or the key constants defined in the `OperationKeys` class.

- Command-line syntax used by the CLI (CLI_Syntax) (if applicable)

  The command-line arguments map directly to the valid keys that can be used to fill the `options` parameter of a method. The `OperationKeys` class has been provided for convenience with constants mapping to the literal value of each key. This can be used to fill or index the options array. For brevity, the CLI Syntax does not show the full syntax. Refer to the *ESSO-PG CLI Guide* for full syntax information. The operation name is capitalized. Arguments specified in brackets are optional.

Method	**Description**
`Connect`	Establishes connection to Web service. This method does not actually attempt the connection but stores the credentials used to connect for use by other methods.

Overload List

```
void Connect(string strUsername, string strPassword);

void Connect(string strURL, string strUsername, string
strPassword);

void Connect(

 string strURL,

 string strAgent,

 string strUsername,

string strPassword);
```

Parameter	Description
`strURL`	Web Service URL. Default is http://localhost/v-GO%20PM%20Service/up.asmx
`strAgent`	Identifier for this agent. Default is `%COMPUTERNAME%`.
`strUsername`	Username used to authenticate against the Web service.
`strPassword`	Password used to authenticate against the Web service.

Method	Description
`SetExecTime`	Sets the execution time of the provisioning instruction. This can be used to tell the instruction to execute in the agent at a future date or time after it has been created. If this is not set, it defaults to "Now."

Overload List

```
void SetExecTime(DateTime dtExec);
```

Method	Description
`AddCredential`	Provision the user with a new credential.

Overload List

```
IProvisioningResult AddCredential(
 string strUserId,
 string strApplication,
 string strDescription,
 string strAppUserId,
 string strPassword);
IProvisioningResult AddCredential(
 string strUserId,
 string strApplication,
 StringDictionary options);
```

Parameter	Description
`strUserId`	User ID of user to be provisioned.
`strApplication`	Name of the application to provision.
`strDescription`	Description of the provisioning instruction.
`strAppUserId`	Application user ID of the credential.

`strPassword`	Password of the credential.
`options`	Hashtable of options (keys specified by `OperationKeys`).

CLI Syntax

```
ADD_CREDENTIAL sso_userid sso_application [sso_app_userid]

sso_password] [sso_description] [sso_other1] [sso_other2]
```

Method	Description
`CancelRequest`	Cancel the provisioning request (before the agent runs).

Overload List

```
IProvisioningResult CancelRequest(string strUserId, string
strGuid);
```

Parameter	Description
`strUserId`	User ID of user to be provisioned.
`strGuid`	ID of provisioning instruction to cancel (returned by several methods) that can be canceled.

CLI Syntax

```
CANCEL sso_userid=<username> command_id=<guid>
```

Method	Description
`DeleteCredential`	Delete a provisioned credential.

Overload List

```
IProvisioningResult DeleteCredential(string strUserId,
 string strApplication, string strAppUserId, string strOther1,
 string strOther2);
IProvisioningResult DeleteCredential(string strUserId,
 string strApplication, StringDictionary options);
```

Parameter	Description
`strUserId`	User ID of user to be provisioned.
`strApplication`	Name of the application to provision.
`strAppUserId`	Application User ID of the credential.

`strOther1`	Other field value (1).
`strOther2`	Other field value (2).
`options`	Hashtable of options (keys specified by OperationKeys).

CLI Syntax

```
DELETE_CREDENTIAL sso_userid sso_application [sso_app_userid]
[sso_password] [sso_other1] [sso_other2]
```

Method	Description
`ModifyCredential`	Modify a provisioned credential.

Overload List

```
IProvisioningResult ModifyCredential(string strUserId,
  string strApplication, string strAppUserId,
  string strDescription, string strPassword, string strOther1,
  string strOther2);
  IProvisioningResult ModifyCredential(string strUserId,
  string strApplication, string strAppUserId,
  StringDictionary options);
```

Parameter	Description
`strUserId`	User ID of user to modify.
`strApplication`	Name of the application of credential to modify.
`strAppUserId`	Application User ID of the credential to modify.
`strAppUserId`	Password of the credential to modify.
`strDescription`	Description of the provisioning instruction.
`strOther1`	Other field value (1).
`strOther2`	Other field value (2).
`options`	Hashtable of options (keys specified by OperationKeys).

CLI Syntax

```
MODIFY_CREDENTIAL sso_userid sso_application sso_app_userid
```

```
[sso_description] [sso_password] [sso_other1] [sso_other2]
[sso_password] [sso_other1] [sso_other2]
```

Method	Description
`DeleteUser`	Delete the user container (similar to deleting all credentials for a particular user).

Overload List

```
IProvisioningResult DeleteUser(string strUserId);
```

Parameter	Parameter
`strUserId`	User ID of container to delete.

CLI Syntax

```
DELETE_USER sso_userid=<username>
```

Method	Description
`GetStatus`	Ping the server. If it returns successfully without error, the server is functioning.

Overload List

```
IProvisioningResult StatusRequest(string strUserId, string
strGuid);
```

CLI Syntax

```
STATUS sso_userid=<username> command_id=<guid>
```

Method	Description
`StatusRequest`	Request the status of a pending provisioning instruction.

Overload List

```
IProvisioningResult StatusRequest(string strUserId, string
strGuid);
```

Parameter	Parameter
`strUserId`	User ID to query.
`strGuid`	ID of provisioning instruction (returned by several methods)

CLI Syntax

```
STATUS sso_userid=<username> command_id=<guid>
```

Method	Description
`GetSettings`	Return the directory settings of the PM Web service.

Overload Listhttps://passportal.passlogix.com/Passlogix%20Documentation/Forms/AllItems.aspx

```
IProvisioningResult GetSettings();
```

CLI Syntax

```
GET_SETTINGS
```

Method	Description
`GetSchema`	Get the schema (or list of available options for `SetSettings`).

Overload List

```
IProvisioningResult GetSchema();
```

CLI Syntax

```
CLI Syntax: GET_SCHEMA
```

Method	Description
`SetSettings`	Change the settings used by the Web service.

Overload List

```
IProvisioningResult SetSettings(IDictionary map).
```

Parameter	Description
`Map`	Key-value pair for each setting.

CLI Syntax

```
SET_SETTINGS name="key1, key2, ..." value="value1, value2, ..."
```

Method	Description
`ExtSearch`	Search the directory service and return information on users, applications, logs. This returns a list of applications that can be provisioned for a particular user or all users.

Overload List for Applications

```
IProvisioningResult ExtSearchApplications();
IProvisioningResult ExtSearchApplications(string strUserId);
```

Parameter	Description
`strUserId`	Name of user whose application list should be returned.

Overload List for Users

```
IProvisioningResult ExtSearchUsers(); IProvisioningResult
ExtSearchUsers(string strUserId,
 StringCollection logons, bool fRetLogons, bool fRetInsts,
 bool fMatchExact);
IProvisioningResult ExtSearchUsers(StringDictionary options);
```

Parameter	Description
`strUserId`	User to return information on.
`logons`	Return only these logons (csv format).
`fRetLogons`	Return logon information.
`fRetInsts`	Return pending provisioning instructions.
`fMatchExact`	Use exact match on strUserId.
`options`	Hashtable of options (specified by ExtSearchKeys).

Overload List for Logging

```
IProvisioningResult ExtSearchLog();
IProvisioningResult ExtSearchLog(EventType evt);
IProvisioningResult ExtSearchLog(DateTime dtStart, DateTime
dtEnd,
 EventType evt);
```

Parameter	Description
`evt`	EventType to return.
`dtStart`	Start date of range to return.
`dtEnd`	End date of range to return.

CLI Syntax

```
EXT_SEARCH CATALOG=Applications [userId=<username>]
EXT_SEARCH CATALOG=Users [userId=<username>]
[logon="logon1,logon2,..."] [returnLogons=true|false]
[returnInstructions=true|false] [uidMatch=substring|equal]
```

```
EXT_SEARCH CATALOG=EventLog [startDate=mm/dd/yyyy]
[endDate=mm/dd/yyyy]

[eventType=amducs]
```

Retrieving Results Using the IProvisioningResult Interface

After a provisioning request to the ESSO-PG Web Service has completed, an `IProvisioningResult` interface is returned by the called method. Your application can use this interface to determine whether if the request has completed successfully and retrieve any relevant results. This section shows the available properties on the `IProvisioningResult` interface and how to interpret their values for the methods called from `IProvisioning`.

Interface Definition

```
public interface IProvisioningResult

{

string Response

{

get;

}


bool Success

{

get;

}


string CommandID

{

get;

}


string ErrorMessage

{

get;

}
IDictionary AttributesCollection

{

get;

}

}
```

Property	Description
`Success`	True if the command completed successfully.
`ErrorMessage`	The error string if Success is False. May not always be set.
`CommandID`	The unique ID associated with the completed command (a 32-digit GUID)). All methods except `ExtSearch` return a GUID. However, only the following methods provide a GUID that can be used by the `CancelRequest` and `StatusRequest` operation: • `AddCredential` • `ModifyCredential` • `DeleteCredential`
`Response`	The raw XML response returned by Web service. This is useful if the results need to be re-parsed.
`AttributesCollection`	Detailed results returned by Web service on Success. The format is a Dictionary of key-value pairs. The methods that fill this property are: • `GetSettings` • `GetSchema` • `StatusRequest` • `ExtSearch`

AttributesCollection

This is a dictionary collection of attributes returned by `GetSettings`, `GetSchema`, `ExtSearch`, and `StatusRequest`. The keys are strings that represent the attribute name. The values can either refer to another IDictionary, an IList, or a string. However, types are not mixed within the same collection. After the type has been established, the same type is referenced by all keys.

The following table describes the meaning of the keys and values returned by the provisioning operations listed:

Methods	Description
`GetSettings`	Returns a collection of string key-value pairs. The key is the name of the setting. The value is its value. These are the storage values set in

	the registry by the ESSO-PG Web Service.
`StatusRequest`	Returns a collection of string key-value pairs. The *key* is the name of a status property. The *value* is its value. The following status keys are supported:

Status Key	**Value**
InstructionState	PENDING, PROCESSED
Result	SUCCESS, FAILED
Description	SUCCESS, <Reason for failure>
Modified	<Date modified>

`GetSchema`	The *key* is a string that represents the name of a group of storage settings. The value is an IList. Each IList entry describes one setting under this group. The entry is an IDictionary of string key-value pairs. The key can be one of the following followed by one of the possible values:

Key	**Value**
`DataType`	Can be string or bool
`DisplayDesc`	A description of this setting. Can be empty.
`DisplayName`	The friendly name of this setting to display.
`Flags`	An internal value used to describe if the settings is non-persistent, must exist
`RegDefault`	The default value for this setting. Can be empty.

	RegName	The name of the registry key.
	RegPath	The relative registry path to this setting.
	RegType	The registry type (DWORD or string).
	[note] The setting described by this entry becomes a value that can be retrieved or set by `GetSettings` and `SetSettings`.	
ExtSearch	Collection of hashtables. (See next section for more information). The key is a string but the type of the returned value depends on the `ExtSearchXXX` called.	

The structure and format of the returned key-value pairs from the AttributesCollection property are designed to closely mirror the console output from the actual CLI. Simply using the CLI will help in understanding the format and structure of the collection returned by these methods.

ExtSearch Results

This section describes the format of the AttributesCollection map returned by ExtSearch.

ExtSearchApplications

Returns:

.NET: HashTable of HashTables

Java: HashMap of HashMaps

Key	**Value**	
Application Name	**HashTable (string key/value pairs)**	
	Key	**Value**
	HasFourthField	True | False
	HasPassword	True | False

`HasThirdField`	`True | False`
`HasUserId`	`True | False`
`IsSecurId`	`True | False`

If IsSecurId is true, then the first four fields are renamed:

- `SecurID-UserId`
- `SecurID-Other[4th]`
- `HasPassword`
- `PassKeyType`

Adobe Acrobat Reader

```
HasFourthField: False
HasPassword: True
HasThirdField: False
IsSecurID: False
HasUserId: False
```

MSN Messenger

```
HasFourthField: False
HasPassword: True
HasThirdField: False
IsSecurID: False
HasUserId: True
```

Visual SourceSafe

```
HasFourthField: False
HasPassword: True
HasThirdField: True
IsSecurID: False
HasUserId: True
```
Users

Returns:

.NET: HashTable of Lists of HashTables

Java: HashMap of Lisis of HashMaps

Key	**Value**	
User's Name		
	Logon Entry	
	Key	**Value**
	`name`	Application name
	`modifiedDate`	Date last modified
	`lastUsedData`	Date last used by SSO
	`Id`	GUID identifier
	Pending Entry	
	`applicationName`	Application
	`createDate`	Date created
	`executeDate`	Date this will execute
	`id`	GUID identifier
	`GUID identifier`	`ADD` | `MODIFY` | `DELETE`
	`provisioningAgent`	Agent name
	`status`	`SUCCESS` | `Pending`

CLI Output:

```
ext_search catalog=users returnLogons=true
```

This returns a list of logons for all users.

johnd

```
modifiedDate: 2005-08-24 16:43:41Z
lastUsedDate: 2005-08-24 16:43:41Z
name: Adobe Acrobat Reader
id: a75f58c8-a3bd-4d00-bc27-99a587dd98f8


modifiedDate: 2005-08-24 16:43:41Z
 lastUsedDate: 2005-08-24 16:43:41Z
name: Adobe Acrobat Reader
id: d6bc375d-3f90-400b-a012-6b80aff4ef49
```

```
modifiedDate: 2005-09-09 16:28:15Z

lastUsedDate: 2005-09-09 16:28:15Z

name: Visual SourceSafe

id: 80cdc929-61a6-4b86-8763-d5f02b0dbb8b


modifiedDate: 2005-09-01 17:30:26Z

lastUsedDate: 2005-09-01 17:30:26Z

name: Visual SourceSafe

id: 065f5cff-b651-4a3a-a99c-c606059cbad7


modifiedDate: 2005-09-09 16:41:33Z

lastUsedDate: 2005-09-09 16:41:33Z

name: Visual SourceSafe

id: 0a0686b5-3e38-4830-8e02-79b8177de0b4
```

ExtSearchLog

Returns:

.NET: HashTable of HashTables
Java: HashMap of HashMaps

Key	**Value**
Entry Number	HashTable (string key/value pairs)

Key	**Value**
`applicationName`	Application name
`eventType`	Type of event (DWORD flag)
`executeDate`	Date executed
`id`	GUID identifier
`provisionedUser`	User provisioned
`provisioningAgent`	Agent name
`timeStamp`	Time stamp

CLI Output:

```
ext_search catalog=eventLog
```

This returns a list of logons for all users.

Entry 1

```
applicationName:
eventType: 64
executeDate: 0001-01-01 00:00:00.000Z
id: a09b9de7-4b65-464c-8dcb-90219e222991
provisionedUser:
provisioningAgent: SSO PM Console
timestamp: 2005-11-17 18:33:37.290Z
```

Entry 2

```
applicationName:
eventType: 64
executeDate: 0001-01-01 00:00:00.000Z
id: bd444f6c-e3cf-4efc-bbd8-c5e82d55ed96
provisionedUser:
provisioningAgent: SSO PM Console
timestamp: 2005-11-17 18:33:37.370Z
```

Entry 3

```
applicationName:
eventType: 64
executeDate: 0001-01-01 00:00:00.000Z
id: 6eebd1dd-a904-43db-8c22-38ef941e83b3
provisionedUser:
provisioningAgent: SSO PM Console
timestamp: 2005-11-17 18:33:38.960Z
```

Entry 4

```
applicationName: Visual SourceSafe
eventType: 4
executeDate: 2005-11-17 19:28:51.427Z
id: 2c45f078-c9c7-4268-9abd-4e50111ba644
```

```
provisionedUser: davidh

provisioningAgent: SSO PM Console

timestamp: 2005-11-17 19:28:51.427Z
```

Sample Code (AddCredential)

The following code demonstrates how to call the `AddCredential` method from the `IProvisioning` interface. This example demonstrates adding a credential for the ESSO-LM user "johndoe". The application being added is Yahoo and the credentials for this application are "jdoe" and "password." The description of this credential is "Test App."

```
try
   {
IProvisioningResult ipr = iprov.AddCredential(
"johndoe",
"Yahoo",
"Test App",
"jdoe",
"password");
// Process results in ipr
if (!ipr.Success)
{
Console.WriteLine(ipr.ErrorMessage);
return;
}
// Display GUID
Console.WriteLine("SUCCESS" + ipr.CommandID);
}
   catch (ProvisioningException ex)
   {
// Handle Exception...
   }
```

Credentials can also be added using an options argument, which is a more flexible method of passing. This method allows the use of additional parameters (some applications require an OTHER1 and OTHER2 field) and their combinations:

```
   StringDictionary options = new StringDictionary();

   options.Add(OperationKeys.DESCRIPTION, "Test App");

   options.Add(OperationKeys.APP_USERID, "jdoe");
   options.Add(OperationKeys.PASSWORD, "password");

   options.Add(OperationKeys.OTHER1, "VGO");

   IProvisioningResult ipr = iprov.AddCredential("johndoe",

"Visual SourceSafe", options);
```

This example demonstrates how to add a credential for the "Visual SourceSafe" application for the SSO user "johndoe". Since this application requires an OTHER1 field, this method is the only way to add the credential.