

Driver for Google Apps Implementation Guide

Novell[®] Identity Manager

4.0.1

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www.novell.com



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Contents

About This Guide	5
1 Understanding the Google Apps Driver	7
1.1 Driver Concepts	7
1.1.1 Data Transfer between Systems	7
1.1.2 How the Driver Works	7
1.1.3 Understanding The Google APIs	8
1.2 Support for Standard Driver Features	8
1.2.1 Local Platforms	8
1.2.2 Remote Platforms	9
1.2.3 Supported Operations	9
2 Installing the Driver Files	11
2.1 Downloading the .iso File	11
2.2 New Installation by Using Physical Media or an ISO	11
3 Creating a New Driver	13
3.1 Creating the Driver in Designer	13
3.1.1 Installing the Current Driver Packages	13
3.1.2 Installing the Driver Packages	14
3.1.3 Configuring the Driver	19
3.1.4 Deploying the Driver	20
3.1.5 Starting the Driver	20
3.2 Activating the Driver	21
3.3 Enabling Access to Google Apps	21
3.3.1 Enabling the Google Provisioning API Access	21
3.3.2 Creating a Google Administrative Account	22
4 Customizing the Driver	25
4.1 User Attributes Mapping	25
4.2 Group Attribute Mapping	27
4.3 Organizational Unit Attribute Mapping	27
4.4 Contact Attribute Mapping	28
5 Managing the Driver	31
6 Troubleshooting the Driver	33
6.1 Reporting Errors to Identity Manager	33
6.2 Google Error Codes	34
6.3 Common Driver Issues	35
6.4 Troubleshooting Driver Processes	35

A	Driver Properties	37
A.1	Driver Configuration	37
A.1.1	Driver Module	38
A.1.2	Driver Object Password	38
A.1.3	Authentication	38
A.1.4	Startup Option	39
A.1.5	Driver Parameters	40
A.2	Global Configuration Values	40
A.3	Special Attributes	42
A.4	Password Configuration	43

About This Guide

This guide explains how to install and configure the Identity Manager 4.0.1 Driver for Google Apps.

- ◆ [Chapter 1, “Understanding the Google Apps Driver,” on page 7](#)
- ◆ [Chapter 2, “Installing the Driver Files,” on page 11](#)
- ◆ [Chapter 3, “Creating a New Driver,” on page 13](#)
- ◆ [Chapter 4, “Customizing the Driver,” on page 25](#)
- ◆ [Chapter 5, “Managing the Driver,” on page 31](#)
- ◆ [Chapter 6, “Troubleshooting the Driver,” on page 33](#)
- ◆ [Appendix A, “Driver Properties,” on page 37](#)

Audience

This guide is for Identity Manager and Google Apps administrators who are using the Identity Manager Driver for Google Apps.

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comments feature at the bottom of each page of the online documentation, or go to www.novell.com/documentation/feedback.html and enter your comments there.

Documentation Updates

For the most recent version of this document, see the [Identity Manager 4.0.1 Drivers Documentation Web site \(http://www.novell.com/documentation/idm401drivers/index.html\)](http://www.novell.com/documentation/idm401drivers/index.html).

Additional Documentation

For information on Identity Manager, see the [Identity Manager Documentation Web site \(http://www.novell.com/documentation/idm401\)](http://www.novell.com/documentation/idm401).

Understanding the Google Apps Driver

1

Identity Manager 4.0 and later offers automatic provisioning and synchronization of users to cloud applications. The new Google Apps Driver for Novell Identity Manager can seamlessly provision and de-provision users, groups, organizational units, and contacts to the Google Apps cloud application while keeping the user identity information consistent across the Identity Vault and the cloud application.

The Google Apps driver supports secure password synchronization between Identity Vault and Google Apps, and offers out-of-the box random password generation policy for the newly provisioned users. The driver uses a combination of language and protocols to enable identity provisioning and data synchronization between an Identity Vault and the driver.

This section contains the following information:

- ◆ [Section 1.1, “Driver Concepts,” on page 7](#)
- ◆ [Section 1.2, “Support for Standard Driver Features,” on page 8](#)

1.1 Driver Concepts

- ◆ [Section 1.1.1, “Data Transfer between Systems,” on page 7](#)
- ◆ [Section 1.1.2, “How the Driver Works,” on page 7](#)
- ◆ [Section 1.1.3, “Understanding The Google APIs,” on page 8](#)

1.1.1 Data Transfer between Systems

The Identity Manager drivers support two data transfer channels between the Identity Vault and the connected system, called the Publisher and Subscriber channels. However, the Google Apps driver currently does not support the Publisher channel, so communication is one-way only, from the Identity Vault into Google Apps.

The Subscriber channel controls data transfer as follows:

- ◆ It monitors the Identity Vault for new objects and changes to existing objects.
- ◆ Any relevant changes are sent to the shim to be executed in the Google Apps system.

Through the use of filters and policies, the driver can be configured to control and manage what changes are detected and sent to Google Apps.

1.1.2 How the Driver Works

[Figure 1-1](#) illustrates the data flow between Identity Manager and the Google Apps APIs :

Figure 1-1 Google Apps Driver Data Flow



The Identity Manager engine uses XDS, a specialized form of XML, to represent events in the Identity Vault. Identity Manager passes the XDS to the driver policy, which can consist of basic policies, DirXML Script, and XSLT style sheets.

After the driver policy has been applied, the driver shim communicates securely over HTTPS to the Google Apps APIs for your domain. The results are then communicated back to the driver. The driver then processes that information, converting it into an appropriate XDS that is reported back to the Identity Manager engine.

1.1.3 Understanding The Google APIs

Google has different APIs available for managing data into and out of the many different Google applications. The Identity Manager 4.0.1 driver supports the following APIs:

- ◆ Provisioning API - The provisioning API is responsible for creating users and group objects. You must turn this API on inside the Google Apps control panel.
- ◆ Profile API - The profile API allows extended attributes to be added to user objects. These include but are not limited to Title, Manager, Phone, Cell, Location, and Company. These attributes are displayed to all domain users in the address book (contacts).
- ◆ Contact API - The contact API is similar to the Profile API but it creates a shared contact inside of the address book (contacts).
- ◆ EMail Settings API - The e-mail API allows modification to the default behavior (as set in your Google Apps domain) for items related to e-mail.

The Contact and Profile API Add events do not appear in the Google Apps control panel and address book (contacts) for up to 24 hours. Modify events immediately.

1.2 Support for Standard Driver Features

The following sections provide information about how the Google Apps driver supports standard driver features:

- ◆ [Section 1.2.1, “Local Platforms,” on page 8](#)
- ◆ [Section 1.2.2, “Remote Platforms,” on page 9](#)
- ◆ [Section 1.2.3, “Supported Operations,” on page 9](#)

1.2.1 Local Platforms

A local installation is an installation of the driver on the Metadirectory server. The Google driver can be installed on the operating systems supported for the Metadirectory server.

For information about the operating systems supported for the Metadirectory server, see [“Metadirectory Server”](#) in [“System Requirements”](#) in the *Identity Manager 4.0.1 Framework Installation Guide*.

1.2.2 Remote Platforms

The Google Apps driver can use the Remote Loader service to run on a server other than the Metadirectory server. The Google Apps driver can be installed on the operating systems supported for the Remote Loader.

For information about the supported operating systems, see “[Remote Loader](#)” in “[System Requirements](#)” in the *Identity Manager 4.0.1 Framework Installation Guide*.

1.2.3 Supported Operations

The basic configuration files for the Google Apps driver are capable of performing the following operations:

- ◆ User Objects: Add, Modify, Delete, Query, Rename, set/change password, and Move.
- ◆ Group Objects: Add, Modify, Delete, Query.
- ◆ Contact Objects: Add, Modify, Delete, Query.

Additional packages add support for:

- ◆ Entitlements: User-Account and Group Membership.
- ◆ User Placement: Mirrored and Entitlement based placement.

Installing the Driver Files

You must install the Google Apps driver on a server that has direct access to the Google Apps domain. The driver does not support running behind an HTTP proxy server at this time. The Google Apps driver can be installed on multiple systems and platforms. To check the system requirements, see “[System Requirements](#)” in the *Identity Manager 4.0.1 Framework Installation Guide*.

This section contains the following information:

- ♦ [Section 2.1, “Downloading the .iso File,”](#) on page 11
- ♦ [Section 2.2, “New Installation by Using Physical Media or an ISO,”](#) on page 11

2.1 Downloading the .iso File

- 1 After you have purchased Identity Manager 4.0.1, log in to the *Novell Customer Center* (<http://www.novell.com/center>).
- 2 In the *Product or Technology* menu, select *Novell Identity Manager*, then click *Search*.
- 3 On the Novell Identity Manager Downloads page, click *Download* next to a file you want.
- 4 Follow the on-screen prompts to download the file to a directory on your computer.
- 5 Repeat from [Step 2](#) until you have downloaded all the files you need.

If you haven’t already verified that the media you burned is valid, you can check it by using the Media Check option.

2.2 New Installation by Using Physical Media or an ISO

Insert the disc of the Identity Manager 4.0.1 installation media that you created into the CD-ROM or DVD drive of the computer that you want to be your Identity Manager 4.0.1 server.

- 1 From the CD root folder `\Additional_Drivers\GoogleApp`, start the installation by executing the correct program for your workstation’s platform:
 - ♦ **Windows:** `Novell Identity Manager Google Apps Driver-4.0.1-Setup.exe`
 - ♦ **Linux:** `rpm -ivh novell-DXMLGoogleApps.rpm`
 - ♦ **Solaris:** `pkgadd -d novell-DXMLGoogleApps.pkg`
- 2 In order to use the pre-config package within Designer, you need to extend the eDirectory schemas:
 - ♦ **Windows:** Use the following steps:
 1. Click *Start > Settings > Control Panel > Novell eDirectory Services*.
 2. Click *install.dim*, then click *Start*.
 3. Click *Install Additional Schema files*, then click *Next*.
 4. Log in as a user with administrative rights, then click *OK*.

5. Specify the `<InstallDirectory>\Novell_Google_Schema.sch` schema file path and name.

6. Click *Finish*.

- ♦ **Linux/Unix:** `/opt/novell/eDirectory/bin/ndscli -h <localhost:524> -t <MyTreename> <admin_fdn> /opt/novell/eDirectory/lib/nds-schema/Novell_Google_Schema.sch`

3 If necessary, restart eDirectory after the driver binary and schema have been updated.

- ♦ **Windows:** Use services to restart your eDirectory instance.
- ♦ **Linux/UNIX:** `/etc/init.d/ndscli restart`.

Creating a New Driver

3

After the Google Apps driver files are installed on the server where you want to run the driver (see [Chapter 2, “Installing the Driver Files,” on page 11](#)), you can create the driver in the Identity Vault. You do so by importing the driver configuration file and then modifying the driver configuration to suit your environment.

- ♦ [Section 3.1, “Creating the Driver in Designer,” on page 13](#)
- ♦ [Section 3.2, “Activating the Driver,” on page 21](#)
- ♦ [Section 3.3, “Enabling Access to Google Apps,” on page 21](#)

3.1 Creating the Driver in Designer

You create the Google Apps driver by importing the driver’s configuration file and then modifying the configuration to suit your environment. After you have created and configured the driver, you need to start it.

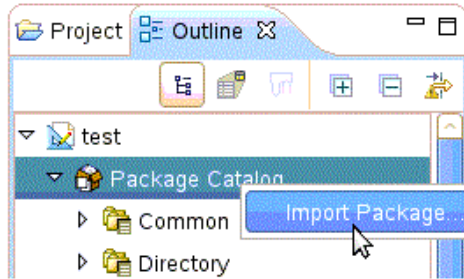
- ♦ [Section 3.1.1, “Installing the Current Driver Packages,” on page 13](#)
- ♦ [Section 3.1.2, “Installing the Driver Packages,” on page 14](#)
- ♦ [Section 3.1.3, “Configuring the Driver,” on page 19](#)
- ♦ [Section 3.1.4, “Deploying the Driver,” on page 20](#)
- ♦ [Section 3.1.5, “Starting the Driver,” on page 20](#)

3.1.1 Installing the Current Driver Packages

The driver packages contain the items required to create a driver, such as policies, entitlements, filters, and Schema Mapping policies. These packages are only available in Designer and can be updated after they are initially installed. You must have the most current version of the packages in the Package Catalog before you can create a new driver object.

To verify that you have the most recent version of the driver packages in the Package Catalog:

- 1 Open Designer.
- 2 In the toolbar, click **Help** > *Check for Package Updates*.
- 3 Click *OK* to update the packages or click *OK* if the packages are up-to-date.
- 4 In the Outline view, right-click the *Package Catalog*.
- 5 Click *Import Package*.



6 Select any Google Apps driver packages.

or

Click *Select All* to import all of the packages displayed.

By default, only the base packages are displayed. Deselect *Show Base Packages Only* to display all packages.

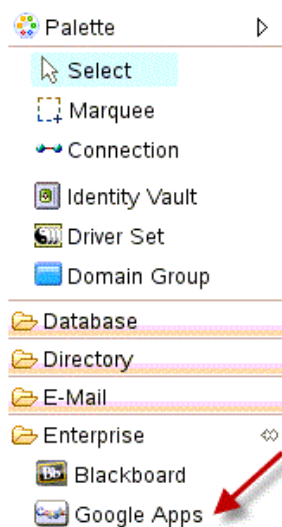
7 Click *OK* to import the selected packages, then click *OK* in the successfully imported packages message.

8 After the current packages are imported, continue with [Section 3.1.2, “Installing the Driver Packages,”](#) on page 14.

3.1.2 Installing the Driver Packages

1 In Designer, open your project.

2 From the Palette, drag and drop the Google Apps driver to the desired driver set in the Modeler.



3 Select *Google Apps Base*, then click *Next*.

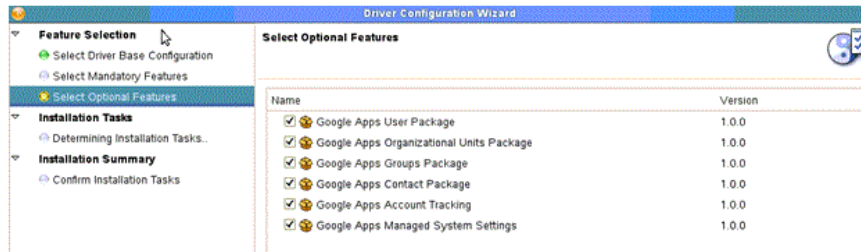
4 Select the optional features to install for the Google Apps driver.

By default “show Only applicable packages versions” is selected.

The options are:

- ♦ Google Apps User Package

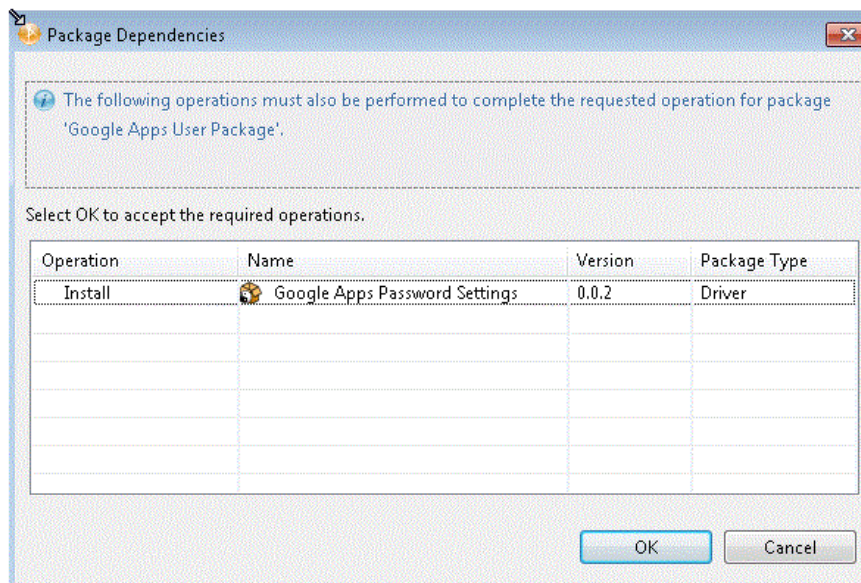
- ◆ Google Apps Organizational Units Package
- ◆ Google Apps Groups Package
- ◆ Google Apps Contact Package
- ◆ Google Apps Account Tracking
- ◆ Google Apps Managed System Settings



5 Click *Next*.

6 (Conditional) If there are package dependencies for the packages you selected to install, you must install them to install the selected package. Click *OK* to install package dependencies.

NOTE: There will be mutable instance of this; one for each option selected.



When all dependencies are installed, the components must be configured.

7 First specify the common settings for User and Group.



- 8 On the Install Google Apps Base page, specify a name for the driver that is unique within the driver set, and then click *Next*.

Driver Information

Driver Name *

- 9 Configure authentication for the application.

Install Google Apps Base 1.0.0 ⓘ * Required

Application Authentication

Google Apps Domain Name *

Google Apps Administrative ID *

Password *

- ◆ **Google Apps Domain Name:** Specify the Google Apps primary domain name. For example, yourcompany.com.
- ◆ **Google Apps Administrative ID:** Specify the e-mail address of a Google Apps administrator.
- ◆ **Password:** Specify the password of the account referenced.

- 10 Select *Next*.

- 11 (Optional) If you are using the Remote Loader, fill in the Remote Loader section.

- 12 (Optional) Verify the Realm information, then click *Next*.

- 13 (Optional) Specify the name of the primary Google Apps domain managed by the driver.

Install Google Apps Configuration 1.0.0 ⓘ * Required

Google Apps Primary Domain Name

- 14 (Optional) “Installing Google Apps Organizational Units package.” To configure the placement of users.

Install Google Apps Organizational Units Package 1.0.0 ⓘ * Required

User Placement Settings

How should users be placed in Google

No Placement
Mirrored Placement
Entitlement Based

- ◆ **No Placement:** All user accounts appear in the base of the domain in the Google Management Interface.
- ◆ **Mirror Placement:** The starting base container for all OUs is synchronized to Google and the user’s DN will match from that point forward.

- ♦ **Entitlement Based:** Allows you to select the container in Google that a user will be placed in. It also grants the location with an entitlement using RBPMS or Legacy.

15 (Optional) Fill in the fields in the Installing Google Apps Organizational Managed Systems Settings section.

- ♦ **Name:** Specify a descriptive name for the managed system.
- ♦ **Description:** Specify a brief description of the managed system.
- ♦ **Location:** Specify the location of the managed system.
- ♦ **Vendor:** Specify the vendor of the managed system.
- ♦ **Version:** Specify the version of the managed system.

16 (Optional) Fill in the fields in the Install Google Apps Managed System Settings - System Ownership section.

Select the Search icon and enter login information to browse to selections.

- ♦ **Business Owner:** Specify the business owner of the managed system. Select a user object (not a role, group or container).
- ♦ **Application Owner:** Specify the application owner of the managed system. Select a user object (not a role, group, or container).

17 (Optional) Fill in the fields in the Install Google Apps Managed System Settings - System Classification section.

- ♦ **Classification:** Specify Mission Critical, Vital, Not Critical, or Other.
- ♦ **Environment:** Specify Development, Test, Staging, Production, or Other.

18 (Optional) Fill in the fields in the Install Google Apps Password Settings - Random Selected section.

Google Apps Password Settings

What to use for initial Password if Distribution Password not Present (Min. 8 Characters per Google) Random Password

How many alphabet characters to use in the "Random Password" (Min. 4) 6

Plus how many number characters to use in the "Random Password" (Min. 4) 6

- ♦ **Initial Password:** If the system is not set up for Universal Password synchronization or if the user doesn't have a password set, this determines the password.
- ♦ **Number of Alphabetic Characters:** This determines the number of letters in the random password. The number is combined with the number of characters you specify.
- ♦ **Number of Number Characters:** This determines how many number characters are in the random password. The number is combined with the number of alphabetic characters you specify. For example, if you specify 6 for both numbers and letters, a random password has a length of 12.

19 (Optional) Fill in the fields in the Install Google Apps Password Settings - Attribute

Google Apps Password Settings

What to use for initial Password if Distribution Password not Present (Min. 8 Characters per Google) Attribute Value from User

eDirectory attribute to use for initial password value. surname

Character to pad password with if not at least 8 characters 0

- ♦ **eDirectory Attribute:** Specify the name of the attribute in eDirectory that the Google driver will use for the initial password.
- ♦ **Character to pad:** Specify the value to be added to the end of the password if the length of the specified attribute value is less than the minimum number of characters.

20 Install the Google Apps User Package

User Object Entitlements

Use Entitlements to Control GoogleApps Accounts? true

Match Users who do not have a Google Account Entitlement. true

What should the Connector do when the Google Account entitlement is revoked? Delete Account

Use Group Membership Entitlement true

- ♦ **Use Entitlements to control Google Apps accounts?** Select either True or False. If you set it to True, then the entitlement connector must be installed and entitlements must be set to create users in Google Apps.
 - ♦ **Match users who do not have a Google account entitlement:** When this option is set to True, users that have not been given an entitlement are matched to Google users. When it is set to False, the connector does not attempt to match users without a Google user entitlement, and it is blocked at the matching rule.

- ♦ **What should the Connector do when the Google Account entitlement is revoked?:** Choose *Do Nothing*, *Disable Account*, or *Delete Account* as the default behaviour.
- ♦ **Use Group Membership Entitlement:** Select either True or False.

21 Review the summary.

22 Select *Finish*.

3.1.3 Configuring the Driver

After importing the driver configuration file, you need to configure the driver before it can run.

There are many settings that can help you customize and optimize the driver. The settings are divided into categories such as Driver Configuration, Engine Control Values, and Global Configuration Values (GCVs). Although it is important for you to understand all of the settings, your first priority should be to review the [Driver Parameters](#) located on the Driver Configuration page. The Driver Parameters and the Global Configuration Values let you configure the Google Apps login information and security credentials, and other parameters associated with the Publisher channel. These settings must be configured properly for the driver to start and function correctly.

If you do not have the Driver Properties page displayed in Designer, configure the driver properties:

- 1 Open your project.
- 2 In the Modeler, right-click the driver icon or the driver connection, then select Properties.
- 3 Make any desired changes, then click *OK* to save the changes.
- 4 After the driver is created in Designer, it must be deployed to the Identity Vault. Proceed to [Section 3.1.4, “Deploying the Driver,” on page 20](#).

The Authentication panel contains the user account and connection details for your Google Apps subscription. It also contains additional Remote Loader configuration. The driver requires an account with Google Apps that is an administrator for your Google Apps subscription. You should create a new account in your Google Apps domain specifically for this purpose. Make sure that this new account is set to administer your Google Apps domain. These values are set during the default import of the driver.

Google Apps Driver Properties

Property	Description	Example Value
Authentican ID	Google Apps Admin Account	idm@yourdomain.com
Connection Information	Your Google Apps Domain	yourdomain.com

Be sure to set the account password in the Application Authentication section of the driver properties.

Driver Configuration

The driver parameters panel contains driver-specific configuration options:

Driver Options: The Google Apps driver does not use any driver options. This panel is intentionally blank.

Subscriber Options: For the hash password, select *True* to have the Google driver apply an MD5 hash to passwords prior to sending them to Google.

Publisher Options: For the heartbeat interval, specify the length of time in seconds between heartbeats emitted by the Google driver's Publisher channel.

If this GCV is set to *True*, then groups that have not been given a Google Group Create entitlement are matched to existing Google groups. Otherwise the connector will not attempt to match groups and they are blocked at the matching rule.

Global Configuration Values (GCVs)

The GCVs are defined in a tabular form in [Section A.2, "Global Configuration Values," on page 40](#).

After completing the configuration tasks, continue with [Section 3.1.4, "Deploying the Driver," on page 20](#).

3.1.4 Deploying the Driver

After the driver is created in Designer, it must be deployed into the Identity Vault.

- 1 In Designer, open your project.
- 2 In the Modeler, right-click the driver icon or the driver connection, then select *Live > Deploy*.
- 3 Read through the deployment summary, and then click *Deploy*.
- 4 Read the success message, and then click *OK*.
- 5 Click *Define Security Equivalence* to assign rights to the driver.

The driver requires rights to objects within the Identity Vault. The Admin user object is most often used to supply these rights. However, you might want to create a DriversUser (for example) and assign security equivalence to that user. Any rights the driver needs to have on the server need to be assigned to the DriversUser object.

- 5a Click *Add*, then browse to and select the object with the correct rights.
- 5b Click *OK* twice.
- 6 Click *Exclude Administrative Roles* to exclude users that should not be synchronized.
 - 6a Click *Add*, then browse to and select the user object you want to exclude.
 - 6b Click *OK*.
 - 6c Repeat [Step 6a](#) and [Step 6b](#) for each object you want to exclude.
 - 6d Click *OK*.
- 7 Click *OK*.

3.1.5 Starting the Driver

When a driver is created, it is stopped by default. To make the driver work, you must start the driver. Identity Manager is an event-driven system, so after the driver is started, it won't do anything until an event occurs.

To start the driver:

- 1 In Designer, select the project view.
- 2 Click the Google Apps driver.
- 3 Click the green start icon.

3.2 Activating the Driver

If you created the Google Apps driver in a driver set that has not been activated, you must activate the driver with a Google Apps Driver activation within 90 days. If you do not apply a Google Apps Driver activation within 90 days, the driver stops working.

For information on activation, refer to “[Activating Novell Identity Manager Products](#)” in the *Identity Manager 4.0.1 Framework Installation Guide*.

3.3 Enabling Access to Google Apps

In order for the driver to interact with your domain, the following steps are required:

- ♦ [Section 3.3.1, “Enabling the Google Provisioning API Access,”](#) on page 21
- ♦ [Section 3.3.2, “Creating a Google Administrative Account,”](#) on page 22

3.3.1 Enabling the Google Provisioning API Access

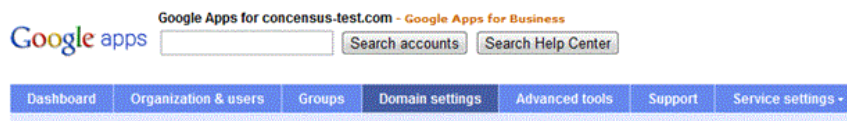
The driver provisions users into Google Apps for Business or Google Apps for Education services. However, it is necessary to enable the Google Provisioning API of your Google Apps subscription before the driver can interoperate with Google Apps.

To enable Google’s API access:

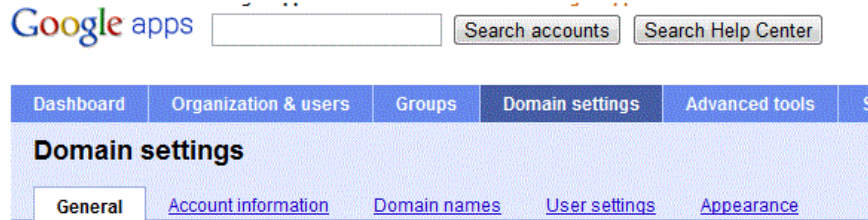
- 1 Using a Web browser, log into the Google Apps Administration Console, typically found at <http://www.google.com/a/yourdomainname>, where *yourdomainname* is the Google Apps domain for your subscription.

For example, if your Google Apps accounts use the format *username@mydomain.com*, then your domain name is *mydomain.com*.

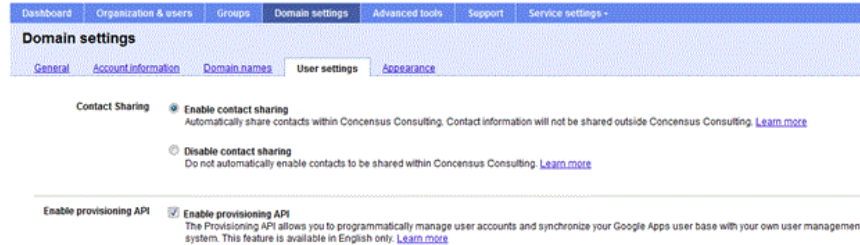
- 2 On the Dashboard, select *Domain Settings*.



- 3 On the Domain Settings management page, select *User Settings*.



4 Scroll down the Settings page and select the box labeled *Enable Provisioning API*.



5 Save the settings by clicking the *Save Changes* button at the bottom of the page.

You can confirm that the API has been enabled by clicking the *Organizations and Users* button at the top of the management console.



This enables the Provisioning API interface for your Google Apps subscription. This interface provides the access methods that the driver uses to provision and manage users and groups in Google Apps.

3.3.2 Creating a Google Administrative Account

In order for the Google Driver to access the Google Domain and perform administrative functions such as creating users, the driver must log in to the domain through a Google account with Administrative privileges.

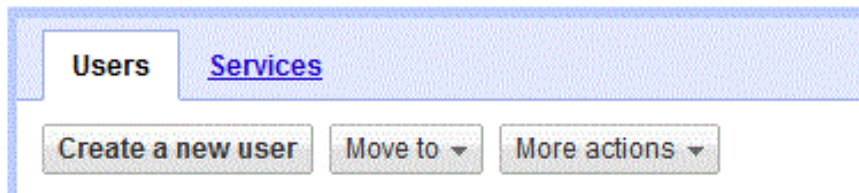
To access the Google domain:

- 1 Using a Web browser, log into the Google Apps Administration Console, typically found at <http://www.google.com/a/yourdomainname>, where *yourdomainname* is the Google Apps domain for your subscription.

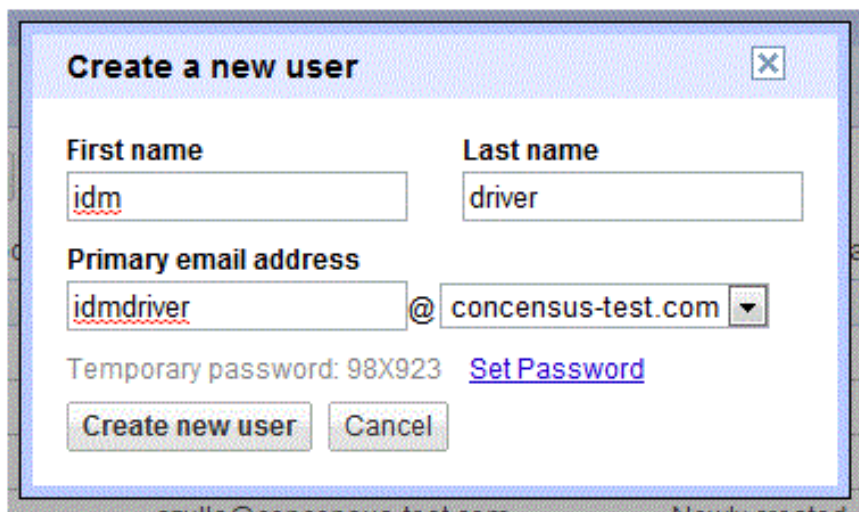
For example, if your Google Apps accounts use the format *username@mydomain.com*, then your domain name is *mydomain.com*.

- 2 On the Dashboard, select *Organization & Users*.

3 Click the *Create a New User* button.



4 Specify a first name, last name, and e-mail address.



5 Click the *Set Password* link and set the password you want to use for the driver ID.

Create a new user

First name:

Last name:

Primary email address: @

Password:

Re-enter Password:

Password strength: **Strong**

[Use a temporary password](#)

- 6 Click *Create new user*.
- 7 Find your new Driver ID in the list of users and select it.
- 8 Click the *Privileges* tab, select the *Administrator Privileges* box, then click *Save Changes*.

[User information](#) [Resolved settings](#) **Privileges**

Administrator Privileges Allow idmdriver@concensus-test.com to administer Concensus Consulting. Administrators can manage all users and settings for Concensus Consulting

- 9 Log out of the Google console and log back in using the new driver ID.
- 10 Accept the Google Terms of Service.

The driver can now use this ID to manage the Google domain.

Customizing the Driver

4

The schema map indicates how Identity Vault attributes and classes are translated into Google Apps attributes and classes.

- ♦ [Section 4.1, “User Attributes Mapping,” on page 25](#)
- ♦ [Section 4.2, “Group Attribute Mapping,” on page 27](#)
- ♦ [Section 4.3, “Organizational Unit Attribute Mapping,” on page 27](#)
- ♦ [Section 4.4, “Contact Attribute Mapping,” on page 28](#)

4.1 User Attributes Mapping

Identity Vault	Google Apps	
User	UserEntry	
	Agreed to terms	
Assistant	Assistant	
assistantPhone	AssistantPhoneNumber	
	Birthday	
	Brother	
	CallbackPhoneNumber	
	ChangePasswordAtNextLogin	
	Child	
	CompanyMainPhoneNumber	
	DomesticPartner	
	Surname	FamilyName
		Father
Friend		
Gender		
General		
Given Name	GivenName	
	GmailSettingsEnableIMAP	
	GmailSettingsEnablePOP	
	GmailSettingsForwarding	
	GmailSettingsLabel	
Language	GmailSettingsLanguage	

Identity Vault	Google Apps
	GmailSettingsSendAs
	GmailSettingsSignature
Groups Memberships	Groups
	HomeFaxPhoneNumber
Home Phone	HomePhoneNumber
	InternalExtensionPhoneNumber
	IpWhiteListed
	IsAdmin
internationalISDNNumber	ISDNPhoneNumber
Login Disabled	IsSuspended
	MaidenName
	MainPhoneNumber
manager	Manager
mobile	MobilePhoneNumber
	Mother
preferredName	NickNames
	Occupation
OU	OrgDepartment
	OrgJobDescription
L	OrgLocation
company	OrgName
	OrgSymbol
Title	OrgTitle
otherPhoneNumber	OtherPhoneNumber
Pager	PagerPhoneNumber
	Parent
	Partner
nspmDistributionPassword	Password
	ProfileAdditionalName
	ProfileFamilyName
	ProfileFullName
	ProfileGivenName

Identity Vault	Google Apps
	ProfileNamePrefix
	ProfileNameSuffix
	Quota
	RadioPhoneNumber
	ReferredBy
	Sister
	Spouse
TelexNumber	TelexPhoneNumber
	TTY_TDDPhoneNumber
CN	UserName
Fascimile Telephone Number	WorkFaxPhoneNumber
	WorkMobilePhoneNumber
	WorkPagerPhoneNumber
	WorkPhoneNumber

4.2 Group Attribute Mapping

Identity Vault	Google Apps
Group	Group
Description	Description
DirXML-GAGroupEmailAddress	EmailAddress
Member	Members
CN	Name
Owner	Owners

4.3 Organizational Unit Attribute Mapping

Identity Vault	Google Apps
Organizational Unit	Organizational Unit
	BlockInheritance
Description	Description
OU	Name

4.4 Contact Attribute Mapping

The driver does not map contacts directly to a class in eDirectory. The schema can be extended or mapped to the user object class. The driver contains a sample `GoogleContact.sch` file that can be used to extend the eDirectory schema.

Identity Vault	Google Apps
GoogleContact	ContactEntry
Assistant	Assistant
assistantPhone	AssistantPhoneNumber
	Birthday
	Brother
	CallbackPhoneNumber
	CarPhoneNumber
	Child
	CompanyMainPhoneNumber
	DomesticPartner
	Father
	Friend
	Gender
	General
Given Name	GivenName
	HomeEmailAddress
	HomeFaxPhoneNumber
Home Phone	HomePhoneNumber
internationalISDNNumber	ISDNPhoneNumber
	MaidenName
	MainPhoneNumber
Manager	Manager
mobile	MobilePhoneNumber
	Mother
	Occupation
OU	OrgDepartment
	OrgJobDescription
L	OrgLocation
company	OrgName

Identity Vault	Google Apps
	OrgSymbol
Title	OrgTitle
	OtherFaxPhoneNumber
otherPhoneNumber	OtherPhoneNumber
Pager	PagerPhoneNumber
	Parent
	Partner
	ProfileAdditionalName
	ProfileFamilyName
	ProfileFullName
	ProfileGivenName
	ProfileNamePrefix
	ProfileNameSuffix
	RadioPhoneNumber
	ReferredBy
	Sister
	Spouse
TelexNumber	TelexPhoneNumber
	TTY_TDDPhoneNumber
CN	UserName
Facsimile Telephone Number	WorkFaxNumber
mobile	WorkMobilePhoneNumber
pager	WorkPagerPhoneNumber
Telephone Number	WorkPhoneNumber

The following table lists the available attributes within Google Apps.

Managing the Driver

5

As you work with the Google Apps driver, there are several management tasks you might need to perform, including the following:

- ◆ Starting, stopping, and restarting the driver
- ◆ Viewing driver version information
- ◆ Using Named Passwords to securely store passwords associated with the driver
- ◆ Monitoring the driver's health status
- ◆ Backing up the driver
- ◆ Inspecting the driver's cache files
- ◆ Viewing the driver's statistics
- ◆ Using the DirXML Command Line utility to perform management tasks through scripts
- ◆ Securing the driver and its information

Because these tasks, as well as several others, are common to all Identity Manager drivers, they are included in one reference, the [Identity Manager 4.0.1 Common Driver Administration Guide](#).

Troubleshooting the Driver

6

You can log Identity Manager events by using the Novell Event Auditing Service. Using this service in combination with the driver log level setting provides you with tracking control at a very granular level.

- ◆ [Section 6.1, “Reporting Errors to Identity Manager,” on page 33](#)
- ◆ [Section 6.2, “Google Error Codes,” on page 34](#)
- ◆ [Section 6.3, “Common Driver Issues,” on page 35](#)
- ◆ [Section 6.4, “Troubleshooting Driver Processes,” on page 35](#)

6.1 Reporting Errors to Identity Manager

The driver reports errors occurring in both the driver and the Google domain. All errors reported by the driver follow the Identity Manager driver error reporting scheme of Status Level and Status Type.

Status Level	Description
Success	The operation succeeded.
Warning	The operation succeeded with a warning.
Retry	The operation failed because of an error not related to invalid data or a memory or execution error. These are transient errors. For instance, the Google driver issues a Retry when Google reports a Server Busy error.
Error	The operation failed because of an error in XML formatting or a data error.
Fatal	The operation failed as a result of an unrecoverable condition, such as an <code>OutOfMemoryException</code> .

The Status Type provides a way for a driver to indicate the category of the error. For instance, the driver can use Status Type to indicate if a Retry has been issued as a result of an application connectivity error. When handling an exception or an error as a result of a transient condition, the driver disconnects from the Google domain and then sends a retry request to the Identity Manager engine. The default retry interval is 30 seconds. When 30 seconds has elapsed, the Identity Manager engine sends the event to the driver again. The driver detects that it is no longer connected to the Google domain and establishes a new connection.

The driver reports invalid XML conditions such as invalid class names, attribute names, or values with an Error status level.

All other errors are reported with a Java exception or a Google API exception along with the Status Level and Status Type.

6.2 Google Error Codes

Exception	Cause	Status Level
Java.io.IOException	Interrupted I/O operations	Retry
com.google.gdata.util.ServiceException	An error occurred in Google while processing a request.	Error
com.google.gdata.util.AuthenticationException	This is a connection exception received from Google after the driver has successfully authenticated.	Retry
com.google.gdata.util.InvalidEntryException	The Google Entry ID requested is invalid	Error
com.google.gdata.util.ResourceNotFoundException	This exception indicates that a query failed to retrieve a valid object	If the exception is a result of a query, the Status Level is Success, because a query that doesn't resolve to an object is not an error. If the exception is a result of requesting a Google object based on an Association value, the Status Level is Error.
com.google.gdata.util.ServiceException with an error description of "Internal Server Error"	The Google APIs encountered an undefined server error when processing a request.	Retry
Java.net.MalformedURLException	Indicates that a malformed URL was received.	Error
com.google.gdata.data.AppsForYourDomainException	An exception thrown by AppsForYourDomainService, which is the service that implements Google Provisioning.	The Status Level is dependent on the error code associated with the exception.
Invalid Domain Edition	The Google domain doesn't support the client library.	Fatal
Unknown Error	The provisioning API is reporting an unknown error condition. This is routinely a transient condition.	Retry
Entity does not exist	An exception occurred looking up or querying for an object.	Success if the operation was a query operation. Error if the operation was a lookup based on an association value.
Entity Exists	An attempt to create an object in Google has failed because an object of that name already exists.	Error
All other Apps ForYourDomainException Error Codes		Error

6.3 Common Driver Issues

Issue	Example
User Placement. Do not use a leading "\" to place users or Organization Units.	To place a user in the root container, the dest-dn should only contain the username. If you are placing a user in the Google Sales\Marketing container, your dest-dn should look like <code><add class-name="User" dest-dn="Sales\Marketing\ddare"/></code> Organization Units use the same format for dest-dn.
Group Placement: Do not use a placement rule on groups because Google does not support placing groups in organizations.	
Group renames are not supported.	The naming attribute of a group in Google is the e-mail address. Google does not support changing this address after the group has been created. It is up to the developer to decide how to capture this event. If the group in eDirectory is renamed, the driver continues to manage the group in Google, but the Google group won't be renamed.
Unique naming: It is important that Nicknames, Group names and usernames be unique in the Google Apps domain.	When you develop a matching rule, be sure to check for nicknames and usernames to ensure proper matching. Further, naming must be unique across all Google Organizational units. For example, it is not legal to have Sales\Marketing\ddare and Engineering\ddare, because ddare needs to be unique across the domain.


6.4 Troubleshooting Driver Processes

Viewing driver processes is necessary to analyze unexpected behavior. To view the driver processing events, use DSTrace. You should only use it during testing and troubleshooting the driver. Running DSTrace while the drivers are in production increases the utilization on the Identity Manager server and can cause events to process very slowly. For more information, see "[Viewing Identity Manager Processes](#)" in the *Identity Manager 4.0.1 Common Driver Administration Guide*.

Driver Properties

A


This section provides information about the Driver Configuration and Global Configuration Values properties for the Google Apps driver. These are the only unique properties for this driver. All other driver properties (Named Password, Engine Control Values, Log Level, and so forth) are common to all drivers. Refer to “[Driver Properties](#)” in the *Identity Manager 4.0.1 Common Driver Administration Guide* for information about the common properties.

The information is presented from the viewpoint of iManager. If a field is different in Designer, it is marked with an  icon.

- ♦ [Section A.1, “Driver Configuration,” on page 37](#)
- ♦ [Section A.2, “Global Configuration Values,” on page 40](#)
- ♦ [Section A.3, “Special Attributes,” on page 42](#)
- ♦ [Section A.4, “Password Configuration,” on page 43](#)

A.1 Driver Configuration

In iManager:

- 1 Click  to display the Identity Manager Administration page.
- 2 Open the driver set that contains the driver whose properties you want to edit:
 - 2a In the *Administration* list, click *Identity Manager Overview*.
 - 2b If the driver set is not listed on the *Driver Sets* tab, use the *Search In* field to search for and display the driver set.
 - 2c Click the driver set to open the Driver Set Overview page.
- 3 Locate the driver icon, then click the upper right corner of the driver icon to display the *Actions* menu.
- 4 Click *Edit Properties* to display the driver’s properties page.

By default, the Driver Configuration page is displayed.

In Designer:



- 1 Open a project in the Modeler.
- 2 Right-click the driver icon or line, then select click *Properties > Driver Configuration*.

The Driver Configuration options are divided into the following sections:

- ♦ [Section A.1.1, “Driver Module,” on page 38](#)
- ♦ [Section A.1.2, “Driver Object Password,” on page 38](#)
- ♦ [Section A.1.3, “Authentication,” on page 38](#)
- ♦ [Section A.1.4, “Startup Option,” on page 39](#)
- ♦ [Section A.1.5, “Driver Parameters,” on page 40](#)

A.1.1 Driver Module

The driver module changes the driver from running locally to running remotely or the reverse.

Option	Description
<i>Java</i>	<p>Used to specify the name of the Java class that is instantiated for the shim component of the driver. This class can be located in the <code>classes</code> directory as a class file, or in the <code>lib</code> directory as a <code>.jar</code> file. If this option is selected, the driver is running locally.</p> <p>The Java class name is:</p> <pre>com.novell.nds.dirxml.driver.gmailshim.GMailDriverShim</pre>
<i>Native</i>	This option is not used with the Google Apps driver.
<i>Connect to Remote Loader</i>	<p>Used when the driver is connecting remotely to the connected system. Designer includes two suboptions:</p> <ul style="list-style-type: none">◆  <i>Driver Object Password</i>: Specifies a password for the Driver object. If you are using the Remote Loader, you must enter a password on this page. Otherwise, the remote driver does not run. The Remote Loader uses this password to authenticate itself to the remote driver shim.◆  <i>Remote Loader Client Configuration for Documentation</i>: Includes information on the Remote Loader client configuration when Designer generates documentation for the driver.


A.1.2 Driver Object Password










Option	Description
<i>Driver Object Password</i>	Use this option to set a password for the driver object. If you are using the Remote Loader, you must enter a password on this page or the remote driver does not run. This password is used by the Remote Loader to authenticate itself to the remote driver shim.

A.1.3 Authentication

The authentication section stores the information required to authenticate to the connected system.


Table A-1 Authentication

Option	Description
<i>Authentication ID</i> or  <i>User ID</i>	This is a User ID on the target Google domain that has administrative rights for the domain. The driver authenticates to Google Apps using this User ID. If your domain is <code>mydomain.com</code> , then this user ID would use the form <code>admin@mydomain.com</code> .

Option	Description
<p><i>Authentication Context</i></p> <p>or</p> <p> <i>Connection Information</i></p>	<p>This is the name of the Google domain to be managed by the driver. If your Google domain is named mydomain.com, then you would enter mydomain.com in the Authentication Context.</p>
<p><i>Remote Loader Connection Parameters</i></p> <p>or</p> <p> <i>Host name</i></p> <p> <i>Port</i></p> <p> <i>KMO</i></p> <p> <i>Other parameters</i></p>	<p>Used only if the driver is connecting to the application through the Remote Loader. The parameter to enter is <code>hostname=xxx.xxx.xxx.xxx port=xxxx</code> <code>kmo=certificatename</code>, where the host name is the IP address of the application server running the Remote Loader server and the port is the port the Remote Loader is listening on. The default port for the Remote Loader is 8090.</p> <p>The <code>kmo</code> entry is optional. It is only used when there is an SSL connection between the Remote Loader and the Metadirectory engine.</p> <p>Example: <code>hostname=10.0.0.1 port=8090</code> <code>kmo=IDMCertificate</code></p>
<p><i>Driver Cache Limit (kilobytes)</i></p> <p>or</p> <p> <i>Cache limit (KB)</i></p>	<p>Specify the maximum event cache file size (in KB). If it is set to zero, the file size is unlimited.</p> <p> Click <i>Unlimited</i> to set the file size to unlimited in Designer.</p>
<p><i>Application Password</i></p> <p>or</p> <p> <i>Set Password</i></p>	<p>This option is not used with the Google Apps driver.</p>
<p><i>Remote Loader Password</i></p> <p>or</p> <p> <i>Set Password</i></p>	<p>Used only if the driver is connecting to the application through the Remote Loader. The password is used to control access to the Remote Loader instance. It must be the same password specified during the configuration of the Remote Loader on the connected system.</p>

A.1.4 Startup Option

The Startup Option section allows you to set the driver state when the Identity Manager server is started.

Option	Description
<i>Auto start</i>	The driver starts every time the Identity Manager server is started.
<i>Manual</i>	The driver does not start when the Identity Manager server is started. The driver must be started through Designer or iManager.
<i>Disabled</i>	The driver has a cache file that stores all of the events. When the driver is set to Disabled, this file is deleted and no new events are stored in the file until the driver state is changed to Manual or Auto Start.
 <i>Do not automatically synchronize the driver</i>	This option only applies if the driver is deployed and was previously disabled. If this option is not selected, the driver re-synchronizes the next time it is started.

A.1.5 Driver Parameters


Parameter Name	Description
Hash Passwords	Setting this subscriber parameter to True tells the driver to apply an MD5 hash to the password before passing it to Google.
Heartbeat Interval	This parameter tells the Publisher how frequently to emit a heartbeat document to the Identity Manager engine.

A.2 Global Configuration Values

Global configuration values (GCVs) are values that can be used by the driver to control functionality. GCVs are defined on the driver or on the driver set. Driver set GCVs can be used by all drivers in the driver set. Driver GCVs can be used only by the driver on which they are defined.

The Google Apps driver includes several predefined GCVs. You can also add your own if you discover you need additional ones as you implement policies in the driver.


To access the driver's GCVs in iManager:

- 1 Click  to display the Identity Manager Administration page.
- 2 Open the driver set that contains the driver whose properties you want to edit:
 - 2a In the *Administration* list, click *Identity Manager Overview*.
 - 2b If the driver set is not listed on the *Driver Sets* tab, use the *Search In* field to search for and display the driver set.
 - 2c Click the driver set to open the Driver Set Overview page.
- 3 Locate the driver icon, click the upper right corner of the driver icon to display the *Actions* menu, then click *Edit Properties*.


or

To add a GCV to the driver set, click *Driver Set*, then click *Edit Driver Set properties*.

To access the driver's GCVs in Designer:

- 1 Open a project in the Modeler.
- 2 Right-click the driver icon  or line, then select *Properties > Global Configuration Values*.

or

To add a GCV to the driver set, right-click the driver set icon , then click *Properties > GCVs*.

Name	Description	Example Value
Google Apps Domain Name	Specify the name of the Google Apps domain managed by this driver.	mydomain.com
Base Container for users in eDirectory	Only users in or below this container are synchronized to the connected Google System.	yourorgusers

Name	Description	Example Value
Use Entitlement for User Account Creation	If this GCV is set to True, users are created in Google only when the entitlement is granted.	True
Match Users who do not have a Google Account Entitlement.	If this GCV is set to True, then users who have not been given an entitlement are matched to existing Google accounts. The connector does not attempt to match users without a Google account entitlement; they are blocked at the matching rule.	False
What should the Connector do when the Google Account entitlement is revoked?	<p>This GCV determines how the connector handles a user account that has the Account Entitlement revoked.</p> <p>Do Nothing: if an account entitlement is revoked, the driver does nothing. The account remains in the state it was in when the entitlement was revoked.</p> <p>Disable Account: When the entitlement is revoked, the account in Google is disabled.</p> <p>Delete Account: Tells the connector to delete the account in Google when the entitlement is revoked.</p>	Do Nothing
Base Container for Groups in eDirectory	Only groups in or below this container are synchronized to the connected Google system.	Yourorg/groups
Default visibility for Google Groups.	This GCV sets the default visibility for groups created in Google Apps. If all your groups are used as a distribution list available to users on the Internet, you need to set the Value to Anyone-Internet Enabled. You can use the Policy Builder to change the permissions on any group during Add or Modify events.	Owner, Member, Domain, Anyone
Base Container for Organizational Units in eDirectory	Only OUs in or below this container are synchronized to the connected Google System. If placement is done with a mirroring package, this GCV is also used as the root container for where the mirror starts.	Myorg
What to use for initial Password if Distribution Password not Present	If the system is not set up for universal password synchronization or the user account doesn't have a distribution password set yet, an initial password must be set. This GCV tells the system whether to use an attribute from the user account for an initial password or to use a randomly generated password. If the accounts are going to use SAML for authentication, then a random password can be used. Otherwise, an attribute value should be selected.	<p>Random Password</p> <p>Attribute Value from User</p>

Name	Description	Example Value
eDirectory attribute to use for initial password value.	The name of the attribute in eDirectory that the Google driver should use for an initial password if no Distribution password is available on creation.	Surname
Number of letters to use in the Random Password	The number of letters to use in the random password. When added to the value of the Random Password Numbers GCV, it determines the total number of characters in the password.	6
Number of numbers to use in the Random Password	The number of numbers to use in the random password. When added to the value of the Random password letters GCV, it determines the count of numbers in the password.	6

A.3 Special Attributes

Several attributes are exposed for the Google shema to update a user's default e-mail settings within a Google domain. These attributes are not mapped to an eDirectory attribute but can be sent on Modify or Add events.

- ◆ GmailSettingsEnableIMAP
- ◆ GmailSettingsEnablePop
- ◆ GmailSettingsForwarding
- ◆ GmailSettingsLabel
- ◆ GmailSettingsEnableLanguage
- ◆ GmailSettingsSendAs
- ◆ GmailSettingsSignature

Setting	Example
GmailSettingsEnableIMAP Turns on or off IMAP for the Account. Set to True or False.	<pre><add-attr attr-name="GmailSettingsEnableIMAP"> <value type="string">true</value> </add-attr></pre>
GmailSettingsEnablePOP Turns on or turns off POP for the account.	<pre><add-attr attr-name="GmailSettingsEnablePOP"> <value type="structured"> <component name="EnableFor">Don DaRe</ component> <component name="Action">don@idmtest.org</ component> <component name="Enable">true</component> </value> </add-attr></pre>

Setting	Example
<p>GmailSettingsForwarding</p> <p>Sets a forwarding email address. The API only allows setting this to an account inside of the Google Apps domain. External addresses cause an error.</p>	<pre><add-attr attr-name="GmailSettingsForwarding"> <value type="structured"> <component name="ForwardAddress">Don DaRe</ component> <component name="Action">don@idmtest.org</ component> <component name="Enable">true</component> </value> </add-attr></pre>
<p>GmailSettingsLabel</p> <p>A set of labels that are automatically set on the account. The labels are available in Gmail to the end user.</p>	<pre><add-attr attr-name="GmailSettingsLabel"> <value type="string">MyProject</value> </add-attr></pre>
<p>GmailSettingsLanguage</p> <p>This sets the default language for the user.</p>	<pre><add-attr attr-name="GmailSettingsLanguage"> <value type="string">Eng</value> </add-attr></pre>
<p>GmailSettingsSendAs</p> <p>Set this structured value to set up a Send As alias. Useful when there are multiple domains or subdomains in Google Apps..</p>	<pre><add-attr attr-name="GmailSettingsSendAs"> <value type="structured"> <component name="Name">Don DaRe</component> <component name="SendAs">don@idmtest.org</ component> <component name="ReplyTo">Don@idmtest.org</ component> <component name="isDefault">true</ component> </value> </add-attr></pre>
<p>GmailSettingsSignature</p> <p>Sets a default e-mail signature for the user. This is at the user level and can be overridden by the end user.</p>	<pre><add-attr attr-name="GmailSettingsSignature"> <value type="string">Signature Data</value> </add-attr></pre>

A.4 Password Configuration

Option	Description
<i>Connected system name</i>	Specify the name of the connected system. This name is used for password sync failure notifications.
<i>Notify the user of password synchronization failure via e-mail</i>	Select this option if you want to notify the Google Apps user through e-mail.
<i>Application accepts passwords from Identity Manager</i>	Select whether the application accepts passwords from Identity Manager. Selecting this option to True allows the passwords to flow from the Identity Manager data store to connected system.

