

# Google Apps Migration for Microsoft® Exchange

Administration Guide

- Google Apps Premier Edition
- Google Apps Education Edition



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**Google Inc.**

1600 Amphitheatre Parkway

Mountain View, CA 94043

[www.google.com](http://www.google.com)

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# Introduction

## About this guide

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This guide is provided to help administrators understand and implement Google Apps Migration for Microsoft® Exchange, a utility that lets you migrate email, calendar, and contact data from Microsoft® Exchange to Google Apps.

## What's in this guide

This guide contains the following information:

- An overview of the features and functionality
- An explanation of the architecture and how information is migrated
- Instructions for running the utility
- Troubleshooting tips and FAQ

## Who should use this guide

This guide is intended for the administrators who are responsible for the preliminary setup and for running Google Apps Migration for Microsoft® Exchange. Those administrators need to have a thorough understanding of Microsoft® Exchange administration and of Google Apps.

## Where to find the latest information about the utility

You can find information about the latest version of the utility, including new features and fixed issues, and a link to the latest documentation at the following address:

<https://www.google.com/support/a/bin/answer.py?hl=en&answer=162794>

## How to provide comments about this guide

Google values your feedback. If you have comments about this guide or suggestions for its improvement, please send an email message to:

`enterprise-apps-doc-feedback@google.com`

In your message, be sure to tell us the specific section to which your comment applies.

Thanks!

## How to get support

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For information about the support provided for your edition of Google Apps, open the Support tab in your Google Apps control panel.

For information about the support available to help you through your migration, see the [Google Apps Premier Edition Pilot Guide](#). Available support includes deployment resources, Help Center articles and training, technical support, and customized deployment options.

## Disclaimer for third-party product configurations

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Parts of this guide describe how Google products work with Microsoft® Exchange and the configurations that Google recommends. These instructions are designed to work with the most common Microsoft® Exchange scenarios. Any changes to Microsoft® Exchange configuration should be made at the discretion of your Microsoft® Exchange administrator.

Google does not provide technical support for configuring mail servers or other third-party products. In the event of a Microsoft® Exchange issue, you should consult your Microsoft® Exchange administrator. **GOOGLE ACCEPTS NO RESPONSIBILITY FOR THIRD-PARTY PRODUCTS.** Please consult the product's Web site for the latest configuration and support information. You may also contact Google Solutions Providers for consulting services and options.

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# Overview

## Features

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Google Apps Migration for Microsoft® Exchange lets you:

- Selectively migrate mail folders by choosing from a list of options, and by optionally specifying an exclusion list
- Specify whether you want to also migrate calendar and contact data  
  
Only personal contacts are migrated for each user. To make your Global Address List, including shared contacts, available to your users, you need to migrate that data first with a utility like [Google Apps Directory Sync](#).
- Specify a time frame for the email you migrate.
- Specify the list of users that are processed, and the number of users processed simultaneously by each instance of the utility.

You can configure your migration by using the migration wizard or by running the utility from the command line. Both methods are explained in [“Migration” on page 29](#).

Google Apps Migration for Microsoft® Exchange offers a single solution to migrating your data from Microsoft® Exchange. The following table provides an overview of the similarities and differences between Google Apps Migration for Microsoft® Exchange and other solutions provided by Google.

Data	Solutions that migrate the data from Microsoft® Exchange
Mail	<p><b>Google Apps Migration for Microsoft® Exchange (Microsoft® Exchange 2003 and 2007)</b></p> <ul style="list-style-type: none"> <li>• Migration managed by an administrator</li> <li>• Migration managed outside your Microsoft® Exchange and Google Apps environment</li> <li>• Migrates directly from your Microsoft® Exchange Server to Google Apps</li> <li>• Migrates mail for multiple users at once</li> </ul> <p><b>Google IMAP Mail Migration (Microsoft® Exchange 2003)</b></p> <ul style="list-style-type: none"> <li>• Migration managed by an administrator</li> <li>• Migration managed from Google Apps control panel</li> <li>• Migrates directly from your Microsoft® Exchange Server to Google Apps</li> <li>• Migrates mail for multiple users at once</li> </ul> <p><b>Google Apps Sync for Microsoft® Outlook (Microsoft® Exchange 2003 and 2007)</b></p> <ul style="list-style-type: none"> <li>• Migration managed by individual users</li> <li>• Migration implemented via Microsoft® Outlook client</li> <li>• Migrates directly from your Microsoft® Exchange Server to Google Apps</li> <li>• Migrates mail for one user</li> </ul>
Calendar and Contacts	<p><b>Google Apps Migration for Microsoft® Exchange (Microsoft® Exchange 2003 and 2007)</b></p> <ul style="list-style-type: none"> <li>• Migration managed by an administrator</li> <li>• Migration managed outside your Microsoft® Exchange and Google Apps environment</li> <li>• Migrates directly from your Microsoft® Exchange Server to Google Apps</li> <li>• Migrates calendar events and contacts for multiple users at once</li> </ul> <p><b>Google Apps Sync for Microsoft® Outlook (Microsoft® Exchange 2003 and 2007)</b></p> <ul style="list-style-type: none"> <li>• Migration managed by individual users</li> <li>• Migration implemented via Microsoft® Outlook client</li> <li>• Migrates from Microsoft® Exchange to Microsoft® Outlook to Google Apps</li> <li>• Migrates calendar events and contacts for one user</li> </ul>

For a more in-depth look at the various migration solutions available, see the [Google Apps Premier Edition Pilot Guide](#).

## Architecture

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Google Apps Migration for Microsoft® Exchange is run on one or more client machines in your network, with a single instance of the utility on each client. If you run more than one instance of the utility, then those multiple instances run in parallel. Each instance of the utility migrates a specific list of users. The utility is multi threaded, with a thread opened for each user that's being migrated. You can specify the number of users that are migrated simultaneously by an instance of the utility.

For more information about architecture and deployment scenarios, see [“Architecture and Deployment Scenarios” on page 11](#).

## Preparation

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Before you migrate your Microsoft® Exchange data, you need to:

- Plan your migration. Decide the start date and duration of your migration.
- Plan your communication to your users regarding the migration.
- Configure Google Apps and your Microsoft® Windows client machines.
- Provision your users' accounts in Google Apps.
- Generate CSV files of the users you want to migrate.

For more information about preparing for your migration, see [“Preparing for Your Migration” on page 17](#).

## System requirements

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Before you run Google Apps Migration for Microsoft® Exchange, you need to meet some Google Apps edition and configuration requirements, some account requirements for your Microsoft® Exchange Server, and Microsoft® Windows system requirements for your client machines.

### Google Apps

Google Apps Migration for Microsoft® Exchange works with Google Apps Premier and Education Editions.

Before you can migrate Microsoft® Exchange data to Google Apps, you need to make the following configurations in the Google Apps control panel:

- Set the Email Migration API (EMAPI) option in the control panel
- Enable [2-Legged OAuth](#) so the utility can access the user accounts in Google Apps

For more information about configuring Google Apps, see [“Configure Google Apps” on page 20](#).

## Microsoft<sup>®</sup> Exchange Server

Google Apps Migration for Microsoft<sup>®</sup> Exchange requires one administrative account on your Microsoft<sup>®</sup> Exchange Server that has permission to read each user's mailbox. The Microsoft<sup>®</sup> Exchange permission *Receive As* is sufficient for this task.

## Microsoft<sup>®</sup> Windows client machine

Each client machine needs to have the following minimum configuration:

- Microsoft<sup>®</sup> Windows: Windows XP SP3, Windows Vista Business SP1 or later, Windows Server 2003 SP 2 or later
- Microsoft<sup>®</sup> Outlook 2003 or 2007

We recommend that you use the latest patches for both Microsoft<sup>®</sup> Windows and Microsoft<sup>®</sup> Outlook.

# Migration

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Migration is accomplished via a wizard in which you provide all the necessary connection, authentication, and configuration information.

During the migration, contacts and then calendar data are processed first, followed by email. An update is provided as data has been migrated.

If a migration is stopped for any reason, you can restart the process, and the migration picks up at the point it stopped on the last run.

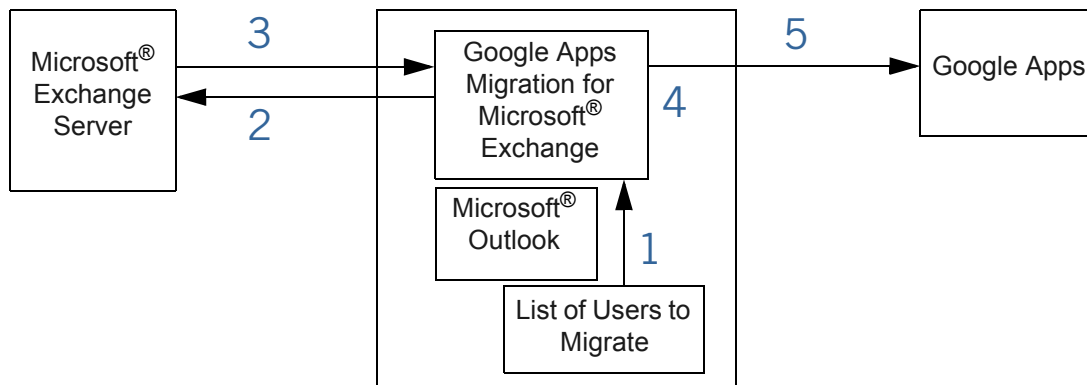
For more information about how to run a migration and what to expect during the migration process, see [“Migration” on page 29](#).

# Architecture and Deployment Scenarios

## Architecture

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The following diagram illustrates how Google Apps Migration for Microsoft® Exchange gets users' Microsoft® Exchange data and migrates it to Google Apps.



1. The utility reads the list of users you want to migrate.

You create the list of users ahead of time.

A separate thread is spawned for each user.  $N$  threads are processed simultaneously according to your configuration. When one group of threads has finished processing, the next group begins.

2. Using the credentials of an Microsoft® Exchange administrator, the utility opens the message store for each user identified in the list.
3. The utility retrieves mail, calendar, and contact data from each user's message store.
4. The utility transforms email data to MIME.

5. The utility makes a WinHTTP connection to Google Apps.

Using 2-legged OAuth, the utility logs in to the users' Google Apps accounts, and writes the transformed message-store data to each user's account.

Email is processed at one message per second per user. For example, if you configure the utility to process 10 users at a time (spawn 10 simultaneous threads), then 10 messages are processed every second.

The original message headers are preserved. Duplicate messages are filtered out based on subject and body.

Calendar and contact data are processed according to the speed at which your network connects to external networks.

Data is processed from newest to oldest.

## Deployment scenarios

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This section covers:

- Running a pilot migration
- Examples of the topological approaches you can take to setting up client machines between your Microsoft® Exchange environment and Google Apps, and information about the parallel processing of users on those client machines

### Running a pilot migration

When you are ready to migrate your users, you can first migrate a pilot group to get an idea of how quickly the process completes.

For example, you can choose 10 users, make a note of the sizes of their mailbox stores, and then migrate just those users. After the test migration has completed, you can consult the log files to see the start and end times for each test user, and extrapolate from that an estimate of how long it will take to migrate all your users' data.

Using a pilot group also allows you to test the whole process of migrating data and then working with mail, calendar, and contacts in the new Gmail environment. Any technical or communication issues you encounter with a small group are more easily managed and rectified, and with that experience you can provide a smoother transition for the rest of your users.

Once you have data from your pilot test, you can plan the migration of the rest of your users, including the hardware resources you'll need, and the amount of time you'll need to devote to the process.

## Topology

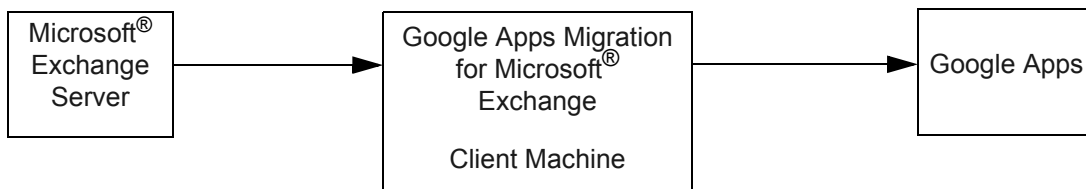
A single instance of Google Apps Migration for Microsoft® Exchange runs on an intermediary client machine between your Microsoft® Exchange Server and Google Apps. You can migrate the data from one or more Microsoft® Exchange Servers, and you can deploy one or more clients for each Microsoft® Exchange Server. You must use at least one client per Microsoft® Exchange Server, and each client migrates a unique list of users.

### Important:

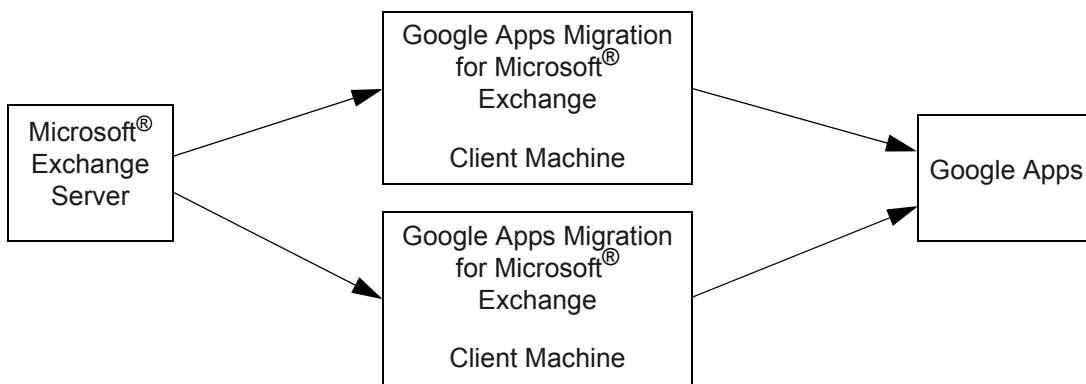
- You can run only one instance of Google Apps Migration for Microsoft® Exchange on each client machine. If you try to run multiple instances on a single client, those instances overwrite one another's configuration files (there is a single location for configuration files).
- In addition, each instance has to reference a unique list of users in order to avoid corrupting the status information for each user's data.

The following four diagrams illustrate approaches you can take.

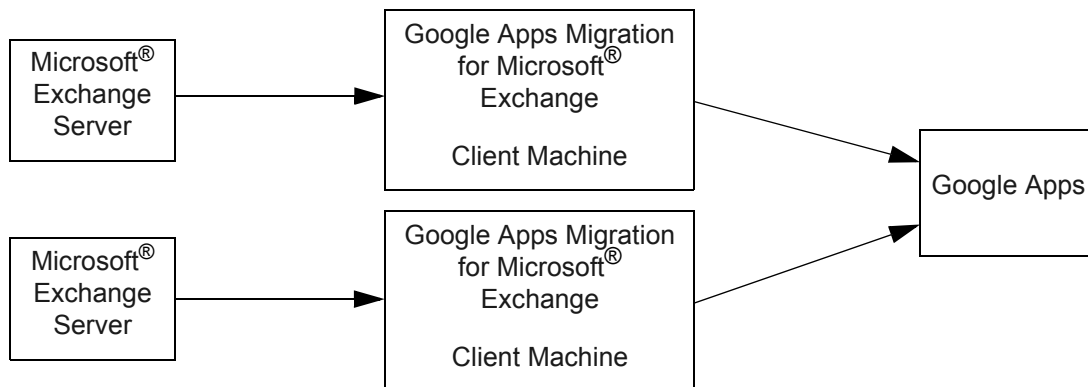
### Single Microsoft® Exchange Server, Single Client



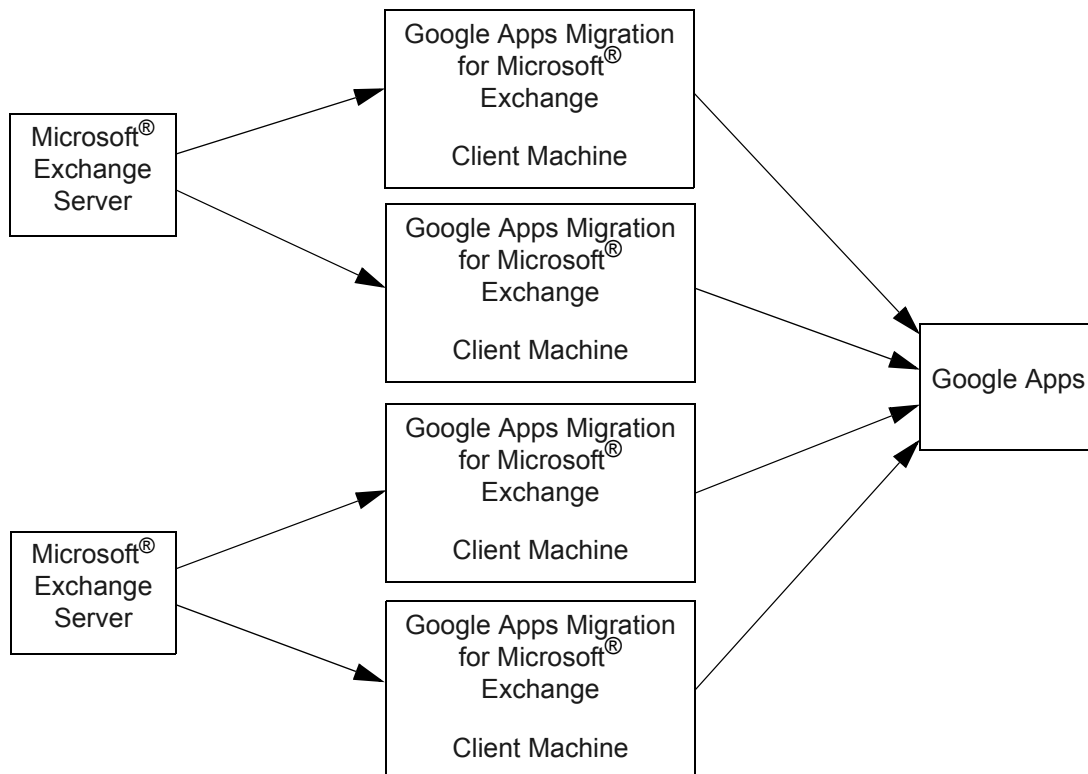
### Single Microsoft® Exchange Server, Multiple Clients



## Multiple Microsoft® Exchange Servers, Each With Single Client



## Multiple Microsoft® Exchange Servers, Each With Multiple Clients



## Parallel Processing

Each client machine simultaneously processes the number of users you specify. If you don't specify a number of users, the utility defaults to 10. The amount of data processed at any one time depends on the number of users you have configured for each client machine, and the number of client machines you are using.

Google Apps Migration for Microsoft® Exchange is capable of processing, and Google Apps can receive, message data at the rate of 1 message per user per second. For example:

- 10 client machines each processing 10 users = 100 messages processed per second
- If each of those 100 users has 10,000 messages, you could process and migrate those messages in 10,000 seconds, or 2.78 hours (100 users X 10,000 messages = 1M messages; 1M messages/100 messages per second = 10,000 seconds or 2.78 hours)

In a magical world with no hardware constraints or network latency issues, you could process and migrate message data at the rate of one message per user per second.

However, the speed at which you can reliably process and migrate data depends on:

- Physical resources on the client machine like CPU, memory, disk speed, and network connection speed
- Physical resources on the Microsoft® Exchange Server like CPU, memory, disk speed, and network connection speed, along with how well you've tuned your Microsoft® Exchange Server performance
- The overall speed of your network and your connection to external networks
- The density of traffic outside your network

Regardless of the actual speed at which you can process a single user, you can multiply the amount of data you process by the number of users you process simultaneously on each client machine, and by the number of client machines you use.

Our testing so far indicates that with Microsoft® Windows Server 2003 and later, you can optimally process 20-50 users at one time on a client machine, depending on that machine's configuration.



# Preparing for Your Migration

In preparation for migrating from Microsoft® Exchange to Google Apps, you need to address the following:

- “What to expect after a Google Apps pilot deployment” on page 17
- “Plan a test migration” on page 18
- “Decide on a time frame” on page 18
- “Notify and provide training for your users” on page 19
- “Have users prepare exclusion folders if necessary” on page 19
- “Provision your users in Google Apps” on page 20
- “Migrate your shared contacts to Google Apps” on page 20
- “Configure Google Apps” on page 20
- “Create lists of the users you want to migrate” on page 21
- “Set up access to your Microsoft® Exchange Server” on page 22
- “Prepare your Microsoft® Windows client machines” on page 22
- “What is/isn’t migrated” on page 23
- “Download and run the installer” on page 27

## What to expect after a Google Apps pilot deployment

If you have gone through the experience of a Google Apps pilot deployment, and you implemented dual delivery for your pilot users, Google Apps removes duplicate messages resulting from the following scenarios:

- Dual delivery through your Microsoft® Exchange Server
- Dual delivery through an edge appliance or service

- Dual delivery through Google Apps

**Note:** You have the option to configure Google Apps Migration for Microsoft® Exchange to migrate only messages from the period prior to your implementation of dual delivery.

If you implemented direct delivery to Google Apps for your pilot users, there are no duplicate messages for the period of the pilot deployment.

## Plan a test migration

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Before you migrate all of your users from Microsoft® Exchange to Google Apps, you may want to first test the migration on a smaller group of users to gather some data on how your proposed deployment topology will handle the process. For example:

- How many users can a single client machine process at one time and stay within the capacity of its physical resources?
- How many client machines can you run at capacity without overwhelming your network?
- With your migration resources running at an optimal rate, how long will it take to migrate all your data?

You can consult the log files on each client to get an idea of migration performance. For information about interpreting log files, see “Interpreting Log Files” on page 49.

In addition to gathering data about performance, your test migration gives you a chance to go through the process on a smaller scale and identify any problems that might arise, as well as identify solutions to those problems.

## Decide on a time frame

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You need to decide on when the migration will begin, over what period of time you will migrate data, and what access your users will have to your Microsoft® Exchange environment before, during, and after the migration.

The following scenario is one example of how to stage a migration with minimal disruption to your enterprise.

Time frame	Activity
Thursday to Friday	Provision users.
Friday end of business	Start receiving mail in Google Apps. Stop receiving mail on your Microsoft® Exchange Server. Establish read-only access to your Microsoft® Exchange Server.

Time frame	Activity
Friday night to whenever migration finishes	Migrate Microsoft® Exchange data.
Monday start of business	Start using Google Apps Email and Calendar.

If your network can accommodate the migration traffic along with normal business, you can let the migration continue until it has finished. If your network cannot accommodate the extra traffic, you can start the migration again each night until it has finished. If you restart the migration, it picks up from the point at which it left off.

Newest data is migrated first, so on Monday morning, your users have access to their most recent mail and calendar events. Your users can work with their Google Apps accounts while older data is being migrated.

If you decide to allow read-only access to your Microsoft® Exchange Server for some period, then your users can still see data that hasn't yet migrated.

## Notify and provide training for your users

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Before you begin the transition from Microsoft® Exchange to Google Apps, we recommend the following communication to your users:

- Notify all users of the coming transition from Microsoft® Exchange to Google Apps. Early communication is important to prepare users for the change in their routines.
- Notify users of their options for Google Apps training. Although Google Apps are simple to use, the interface and procedures are a little different from what many of your users may be accustomed to. By making training available to them as early as possible, you can eliminate much of the anxiety that accompanies this sort of change.

Visit the [Google Apps Deployment for Enterprise site](#) to find resources like:

- Communications templates
- eLearning videos
- Quick reference sheets
- Helpdesk training and resources
- User Help Center
- Google Apps professional training

## Have users prepare exclusion folders if necessary

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When you configure your migration, you can elect to exclude specific top-level folders. A top-level folder is any folder at the same level as the Inbox folder.

If there are messages that you or your users want to exclude from migration, you can have your users prepare exclusion folders prior to migration, locate those folders at the same level as their Inbox folders, and then move all relevant messages to those folders.

For the sake of simplicity, enforce a naming convention, like Excluded Mail. Then when you identify the folders you want to exclude from migration, you have a reliable method of specifying the correct folders for every user.

You specify excluded folders by entering a comma-separated list in [Step 4](#) of the migration wizard.

## Provision your users in Google Apps

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Before you migrate your users, you have to provision accounts for them in Google Apps. For information about provisioning user accounts, see the [Google Apps Premier Edition Enterprise Pilot Guide](#).

In addition to provisioning user accounts in Google Apps, you can also:

- Create nicknames for your users that match aliases they had on your Microsoft® Exchange Server
- Create groups that match the mailing lists on your Microsoft® Exchange Server
- Add domain aliases

For information about these configurations, see the [Google Apps Admin Help Center](#).

## Migrate your shared contacts to Google Apps

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Before you migrate your users, you should migrate your shared contacts to Google Apps so that your users have immediate access to your full address list as soon as they're migrated.

For information about migrating contacts, see:

- [Google Apps Premier Edition Enterprise Pilot Guide](#)
- [Google Apps Directory Sync Administration Guide](#)

## Configure Google Apps

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Before you can migrate Microsoft® Exchange data to Google Apps you need to make the following configurations in the Google Apps control panel.

1. Set the Email Migration API (EMAPI) option in the control panel:

In the Google Apps control panel > Advanced Tools tab > User email uploads section, select the check box for **Allow users to upload mail using the Email Migration API**.

2. Enable [2-Legged OAuth](#) so the migration utility can access the user accounts in Google Apps:
    - a. In the Google Apps control panel > Advanced Tools tab > Authentication section, click **Manage OAuth domain key**.
    - b. Under *OAuth consumer key*, select the check box for **Enable this consumer key**.  
You'll need the consumer key when you configure your migration.
    - c. Under *OAuth consumer secret*, click the button to generate or regenerate the consumer secret.  
You'll need the consumer secret when you configure your migration.
    - d. Under *Two-legged OAuth access control*, select the check box for **Allow access to all APIs**.
- Click [here](#) for more information about 2-Legged OAuth.

## Create lists of the users you want to migrate

---

Google Apps Migration for Microsoft® Exchange relies on a list of users so that it knows whose data to migrate. For each group of users you want to migrate, you need to provide a CSV file of user names. If you plan to use multiple client machines, you need a separate list for each client, and each list must contain a unique set of users. We recommend each list contain 500-1000 users.

The list of names can take different forms:

- If the user names in Microsoft® Exchange and Google Apps are the same, you need only one user name per line:  
user1  
user2  
user3
- If the user names in Microsoft® Exchange are different from the user names in Google Apps, then you need two user names per line: the Microsoft® Exchange user name followed by the Google Apps user name:  
user1, google\_apps\_user1  
user2, google\_apps\_user2  
user3, google\_apps\_user 3

- You can also use SMTP addresses if you prefer:

If the user names in Microsoft® Exchange and Google Apps are the same, you can enter just the Microsoft® Exchange address (even if the Google Apps domain is different):

user1@domain.com

user2@domain.com

user3@domain.com

If the user names in Microsoft® Exchange are different from the user names in Google Apps, then you need two addresses per line: the Microsoft® Exchange address followed by the Google Apps address:

user1@domain.com, google\_apps\_user1@googleappsdomain.com

user2@domain.com, google\_apps\_user2@googleappsdomain.com

user3@domain.com, google\_apps\_user3@googleappsdomain.com

**Note:** The Google Apps domain you specify in the SMTP address must be the same Google Apps domain you specify in [Step 1](#) when you configure your migration.

**Important:**

- We strongly recommend that the user names in Google Apps match the existing user names in Microsoft® Exchange. This method lets you create user lists with just one name or SMTP address per line, and is consequently less error prone.
- Each instance of the utility has to reference a unique list of users in order to avoid corrupting the status information for each user's data.

## Set up access to your Microsoft® Exchange Server

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Google Apps Migration for Microsoft® Exchange supports Microsoft® Exchange 2003 and Microsoft® Exchange 2007.

If you are using Microsoft® Exchange 2007, we recommend that you upgrade to Service Pack 3.

Google Apps Migration for Microsoft® Exchange requires one administrator account on your Microsoft® Exchange Server with the following:

- A mailbox for the administrator account
- Sufficient permission to read each user's mailbox (the Microsoft® Exchange permission *Receive As* is sufficient for this task)

## Prepare your Microsoft® Windows client machines

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Each client machine that runs the migration utility needs to have the following minimum configuration:

- Microsoft® Windows: Windows XP SP3, Windows Vista Business SP1 or later, Windows Server 2003 SP 2 or later

**Note:** We have seen increased performance in terms of the number of simultaneous threads you can run with Microsoft® Windows Server 2003 and up. Current testing indicates that 25 simultaneous threads is an optimal number with this configuration.

In all cases, we recommend you upgrade to the latest patches for your version of Microsoft® Windows.

- Microsoft® Outlook 2003 or 2007

There are no specific CPU or memory requirements, but keep in mind that the migration process is multi-threaded, which can consume a lot of resources, and that data for each user being processed are loaded into memory. Given that, we recommend that you opt for dedicated machines with more robust CPU and memory, increasing the resources with the number of users you plan to process simultaneously on each machine.

In order for 2-Legged OAuth to function properly, you need to make sure the time on each client machine is set accurately to the current time for the local time zone.

## What is/isn't migrated

During the migration, contacts and then calendar data are processed first, followed by email.



The following tables outline which aspects of mail, calendar, and contact data are and are not migrated from Microsoft® Exchange to Google Apps. For example, messages with .exe attachments are not migrated.

Any data that fails to migrate is identified in the log files by account name, entry ID, and location. Log files are located on each client machine in the following location:

```
C:\Documents and Settings\user-name\Local Settings\Application Data\Google\Google Apps Migration\Tracing\ExchangeMigration
```

*user-name* in the path identifies the administrator who logged in and ran the utility.

## Mail









Mail data in Microsoft® Exchange	Migrated to Google Apps	Notes
Email messages		All email in top-level folders is migrated. A top-level folder is any folder that resides at the same level as your Inbox folder.  You have the option to exclude specific top-level folders from migration.
Email state (read vs. unread)		

Mail data in Microsoft® Exchange	Migrated to Google Apps	Notes
Folders and nested subfolders	✓	<p>Folders map to <i>labels</i> in Google Mail.</p> <p>You can elect to omit top-level folders from migration. If you omit a folder, its subfolders are also omitted.</p>
Junk E-mail	✓	Migration is optional. Junk email is labeled <i>Spam</i> in Google Mail.
Deleted Items	✓	Migration is optional. Deleted items are labeled <i>Trash</i> in Google Mail.
Public folders	✗	
Messages larger than 25 MB	✗	Messages whose total size exceeds 25 MB (message plus attachments) aren't allowed in Google Mail.
Attachments	✓	Most attachments are migrated. See below for exclusions.
Executable files in compressed attachments	✗	These types of attachments aren't allowed in Google Mail.
Posts in mailbox folders	✗	
Importance levels (marking messages high, low priority)	✗	Not available in Google Mail.
Message flags	✓	Flags appear as <i>stars</i> in Google Mail.
Rules	✗	Rules aren't migrated. But you can create equivalent <i>filters</i> in Google Mail.
Signatures	✗	Your signature isn't migrated. But you can recreate it in Google Mail.
POP/IMAP account	✗	IMAP or POP account settings don't import from your Microsoft® Exchange profile. You can add an account to your Google Apps profile after migration.
Pop messages	✓	
Shared mailboxes	✗	
Category definitions	✗	Categories aren't available in Google Mail.
Category assignments	✗	Categories aren't available in Google Mail.

## Calendar

Calendar data in Microsoft® Exchange	Migrated to Google Apps	Notes
Default calendar	✓	Includes all events, descriptions, attendees, and locations.
Additional calendars	✓	Shared calendars are migrated for the owner, but not for other users who have access.
Event reminders	✓	
Free / Busy status	✓	Status is available only for other Google Apps users.
Tentative / Out of Office status	✗	
Optional attendees	✗	
Calendar attachments	✗	
Rich content in event descriptions (images, links, bold, italic)	✗	
Category definitions	✗	Categories aren't available in Google Calendar.
Category assignments	✗	

## Personal Contacts

Personal contact data in Microsoft® Exchange	Migrated to Google Apps	Notes
All personal contacts		Includes all fields (File As, images, notes, etc.).
Multiple contact folders		Separate contacts folders don't to Google Apps. Instead, all contacts from all folders are migrated, and then appear together in Google Apps under My Contacts. You can reorganize them using Google <i>groups</i> .
Personal distribution lists		Mailing lists don't migrate to Google Apps. But you can still email a list from Google Apps by creating a Google <i>group</i> .
Rich formatting in notes		
Notes larger than 16KB		Larger notes are truncated in Google Apps.
Follow-up flags, dates, and reminders.		Flags aren't available in Google contacts.
Category definitions		Categories aren't available in Google contacts.
Category assignments		

## Global Contacts

Global contact data	Migrated to Google Apps	Notes
Domain contacts	✘	You need to migrate domain contacts separately, using a utility like Google Apps Directory Sync. For more information, see <a href="#">“Migrate your shared contacts to Google Apps”</a> on page 20.
Out-of-domain contacts	✘	You need to migrate out-of-domain contacts separately, using a utility like Google Apps Directory Sync. For more information, see <a href="#">“Migrate your shared contacts to Google Apps”</a> on page 20.

## Notes, Tasks, Journal entries, RSS feeds

Other Microsoft® Exchange data	Syncs with Google Apps	Notes
Notes	✘	
Tasks	✘	
Journal entries	✘	
RSS feeds	✘	

## Download and run the installer

Download `GoogleAppsMigration.msi` from the following location:

<https://tools.google.com/dlpage/exchangemigration>

You can copy the installer to any folder on your client machines and run it from there.

### To run the installer:

Double-click **GoogleAppsMigration.msi**, then click **Run**.

The utility is installed in the following location:

```
C:\Program Files\Google\Google Apps Migration\ExchangeMigration.exe.
```



# Migration

To start your migration, simply run the utility on each client machine. When you run the utility, the migration wizard opens and prompts you for connection, authentication, and configuration information.

**Important:**

- Run only one instance of Google Apps Migration for Microsoft® Exchange on each client machine. If you try to run multiple instances on a single client, those instances overwrite one another's configuration files (there is a single location for configuration files).
- In addition, each instance has to reference a unique list of users in order to avoid corrupting the status information for each user's data.

**To run Google Apps Migration for Microsoft® Exchange:**

Click **Start > All Programs > Google Apps Migration > Google Apps Migration**.

If during your configuration you click **Cancel** before clicking **Save** or **Migrate** in [Step 5](#), then the information you entered is lost. When you click **Save** or **Migrate** in [Step 5](#), then your information is saved in a configuration file and you can choose to use those settings in [Step 1](#). The configuration file contains only the settings from your most recent Save or Migrate operation.

If you cancel the migration while it is in progress, or if it stops due to circumstances like a hardware failure or power outage, then when you resume migrating the same data, the process begins where it stopped on the previous run.

# Welcome

---



The Welcome screen gives you a brief overview of:

- The Microsoft® Windows system requirements for your client machine  
For more information, see “[Prepare your Microsoft® Windows client machines](#)” on page 22.
- The preparations you have to make in Google Apps before you migrate data  
For more information, see “[Configure Google Apps](#)” on page 20.

Click any of the links for more in-depth information.

Click **Next** to proceed with your migration.

# Step 1

---

Step 1 of 4 : Exchange Server

**Google** Apps Migration for Microsoft Exchange [Help](#)

Enter your Microsoft Exchange server information and Google Apps domain.

Use my most recent migration settings

Microsoft Exchange Server:

Google Apps domain:

< Back    Next >    Cancel

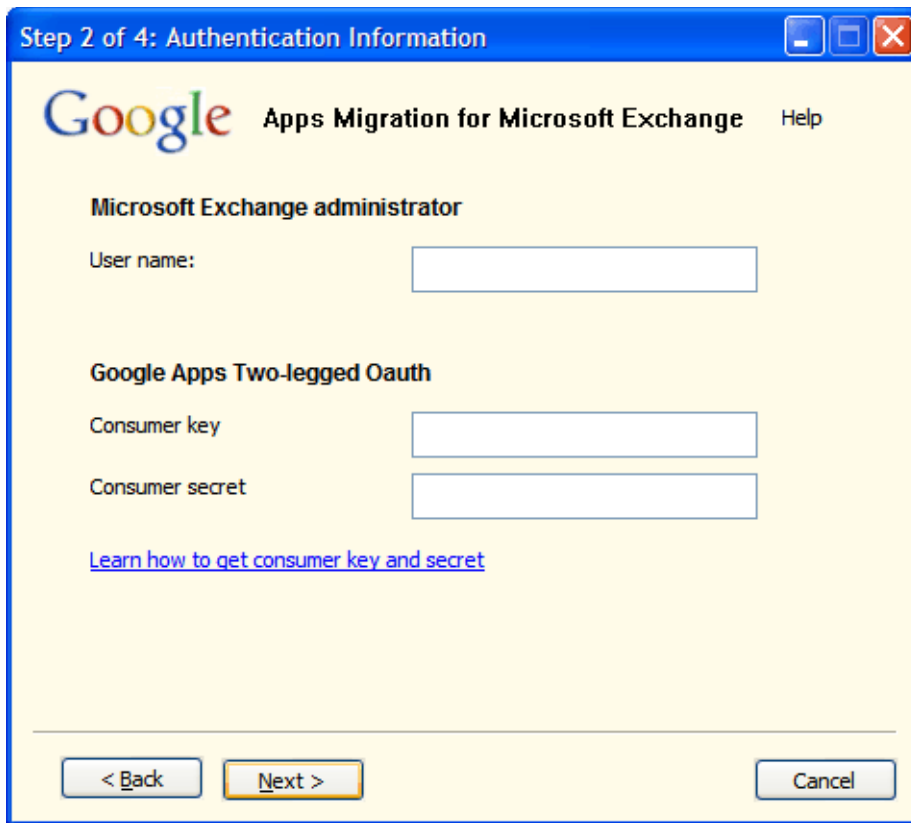
1. Provide the following information:

Setting	Description
Use my most recent migration settings	<p>Select this option to use the settings from your most recent configuration file.</p> <p>If this is your first migration and you have not saved any previous settings, this option has no effect.</p> <p>Once you have selected this option and saved your migration settings, the next time you run the utility, your settings are loaded and the wizard opens to <a href="#">Step 4</a>. If you need to change a setting, use the Back button to open steps 1-3.</p> <p>Migration settings are saved in <code>config_file.xml</code>, located in the following folder:</p> <p><code>C:\Documents and Settings\<i>user-name</i>\Local Settings\Application Data\Google\Google Apps Migration\Tracing\ExchangeMigration</code></p>
Microsoft® Exchange Server	<p>Enter the fully qualified domain name or the IP address of the Microsoft® Exchange Server from which you want to migrate data. For example: <code>smtp.mydomain.com</code> or <code>198.102.434.8</code>.</p>
Google Apps domain	<p>Enter the Google Apps domain to which you want to migrate data. Use the format <code>yourdomain.com</code>.</p>

2. Click **Next**.

## Step 2

---



The screenshot shows a Windows-style dialog box titled "Step 2 of 4: Authentication Information". The dialog has a blue title bar with standard minimize, maximize, and close buttons. The main content area has a yellow background and features the Google logo on the left, followed by the text "Apps Migration for Microsoft Exchange" and a "Help" link. Below this, there are two sections: "Microsoft Exchange administrator" with a "User name:" label and an empty text box; and "Google Apps Two-legged OAuth" with "Consumer key" and "Consumer secret" labels, each followed by an empty text box. A blue hyperlink "Learn how to get consumer key and secret" is positioned below the second section. At the bottom of the dialog, there are three buttons: "< Back", "Next >" (which is highlighted with a yellow border), and "Cancel".

1. Provide the following information:

Setting	Description
Microsoft® Exchange administrator User Name	<p>Enter the user name for the Microsoft® Exchange administrator account you want to use to open your users' mail stores.</p> <p>This account must have at least the <i>Receive As</i> permission on the Microsoft® Exchange Server.</p> <p>You are prompted for this user name and the associated password in <a href="#">Step 5</a>.</p>
Google Apps Two-legged OAuth Consumer key	<p>Enter the consumer key for your Google Apps domain.</p> <p>You can find the key in the Google Apps control panel in the following location:</p> <p>Advanced Tools tab &gt; Authentication &gt; Manage OAuth domain key &gt; OAuth consumer key.</p> <p>For more information, see <a href="#">“Configure Google Apps” on page 20</a>.</p>
Google Apps Two-legged OAuth Consumer secret	<p>Enter the consumer secret for your Google Apps domain.</p> <p>You can find the value in the Google Apps control panel in the following location:</p> <p>Advanced Tools tab &gt; Authentication &gt; Manage OAuth domain key &gt; OAuth consumer secret.</p> <p>For more information, see <a href="#">“Configure Google Apps” on page 20</a>.</p>

2. Click **Next**.

## Step 3

---

The screenshot shows a Windows-style dialog box titled "Step 3 of 4: User List File Upload". The dialog has a blue title bar with standard minimize, maximize, and close buttons. The main content area has a yellow background and features the Google logo followed by the text "Apps Migration for Microsoft Exchange". Below this, the instruction "Upload a .csv file with the list of users to migrate" is displayed. A text input field is followed by a "Browse" button. Two radio buttons are present: "Migrate all data (overwrite previously migrated data)" and "Migrate only new data", with the latter being selected. At the bottom of the dialog, there are three buttons: "< Back", "Next >", and "Cancel".

1. Provide the following information:

Setting	Description
Upload a .csv file with the list of users to migrate	<p>Click Browse to locate the CSV file with the names of the users you want to migrate.</p> <p>For more information about this file, see <a href="#">“Create lists of the users you want to migrate”</a> on page 21.</p>
Migrate all data (overwrite previously migrated data)	<p>Select this option to migrate all data for your users, including any previously migrated data.</p> <p>Google Apps takes care of not migrating duplicate messages.</p> <p>Contact data is duplicated.</p> <p>Calendar data is overwritten. If you have made changes to an event in Google Apps, those changes are overwritten.</p> <p>This option is useful if you have performed previous migrations and then deleted all the migrated data from Google Apps (for example, after a test migration).</p>
Migrate only new data	<p>Select this option to migrate only data that has not been previously migrated.</p> <p>This is the preferred option as it does not duplicate contacts, nor does it overwrite changes to calendar events.</p> <p>You can use this option for your initial migration, and for any subsequent migrations.</p>

2. Click **Next**.

## Step 4

Step 4 of 4 : Migration Settings

Google Apps Migration for Microsoft Exchange [Help](#)

**Select the data you wish to migrate**

Email messages  Contacts  
 Deleted messages  Calendar  
 Junk email

**Additional options**

Migrate only email sent or received on or after: 2/ 1/2010 ▾  
 Migrate only email sent or received on or before: 1/31/2010 ▾  
 Restrict migration to 10 users at a time. [Learn more](#)  
 Do not migrate mail from these top-level folders. Subfolders are not supported. Enter comma-separated list:  
  
 Estimate number of contacts, calendar events and emails to migrate.

< Back    Next >    Cancel

**Note:** If you have saved previous migration settings using the option in [Step 1](#), the wizard opens to this step. If you want to change a setting, use the Back button to open steps 1-3.

1. Provide the following information:

Setting	Description
Select the data you wish to migrate	Select the check box for each type of data you want to migrate.
Migrate only email sent or received on or after	<p>Select this option if you want to set a beginning date for your migration. When you set this option, only messages sent or received on this date and afterward are migrated.</p> <p>If you select this option, enter a date (MM/DD/YYYY), or click the arrow to select a date.</p> <p>The date is effective as of 12:00:00:01 AM GMT (1/100 of a second after midnight on that date).</p> <p>Messages are migrated based on the time they were submitted to the Microsoft® Exchange Server as outgoing messages.</p>
Migrate only email sent or received on or before	<p>Select this option if you want to set an end date for your migration. When you set this option, only messages sent or received on this date and before are migrated.</p> <p>If you select this option, enter a date (MM/DD/YYYY), or click the arrow to select a date.</p> <p>The date is effective as of 12:00:00:01 AM GMT (1/100 of a second after midnight on that date).</p> <p>Messages are migrated based on the time they were submitted to the Microsoft® Exchange Server as outgoing messages.</p>
Restrict migration to ___ users at a time	<p>Select this option to enter the number users you want to migrate at one time on this client. A separate thread is opened for each user.</p> <p>If you do not select this option and specify a number, the utility defaults to 25 users.</p> <p>If you are using Microsoft® Windows Server 2003 or later, we have found that 20-50 users is an optimal setting, depending on the machine's configuration.</p> <p>The utility processes one message per second per user.</p> <p>For more information about how users are processed, see <a href="#">"Parallel Processing" on page 15.</a></p>

Setting	Description
Do not migrate mail from these top-level folders	<p>Select this option to exclude specific top-level folders from migration. Any folder at the same level as the Inbox is considered a top-level folder.</p> <p>Enter a comma-separated list of folder names. If you enter subfolder names, those are ignored by the utility.</p> <p>For information about preparing exclusion folders, see <a href="#">“Have users prepare exclusion folders if necessary”</a> on page 19.</p>
Estimate number of contacts, calendar events and emails to migrate	<p>Select this option if you want to enable the progress bars on the Output screen (<a href="#">Monitor migration</a>).</p> <p>When you select this option, the system makes an estimate of the amount of each type of data, and then displays migration progress based on that estimate.</p>

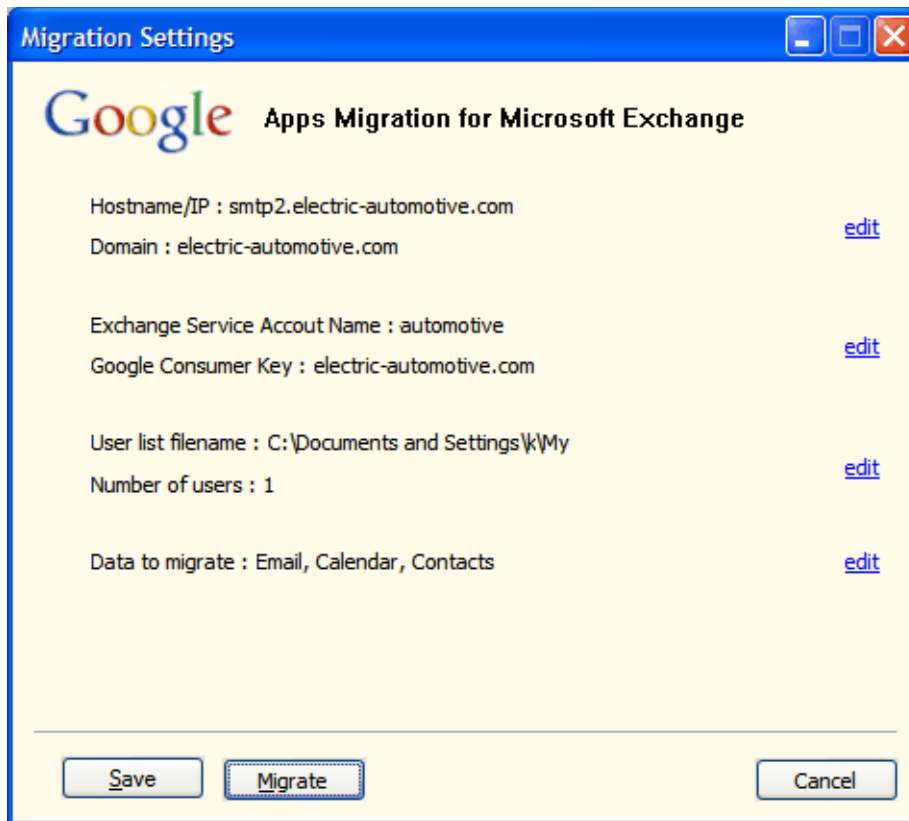
2. Click **Next**.

You see a confirmation message for the file identifying the users you are going to migrate.

3. Click **OK**.

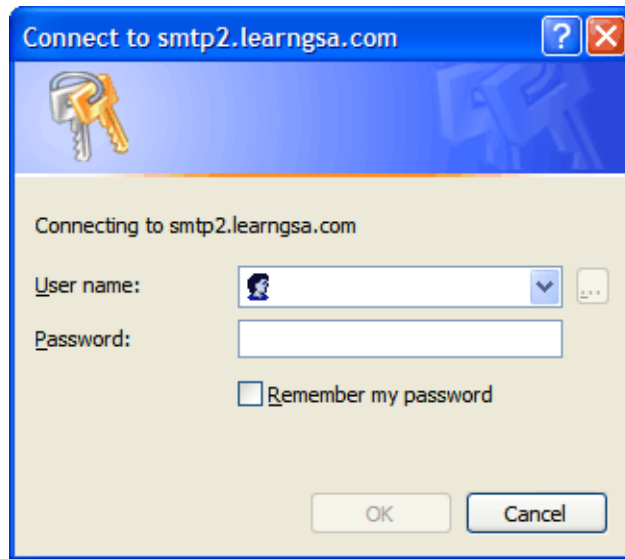
## Step 5

---



1. Review your migration settings. If you want to change a value, click **edit**.
2. If you want to save your settings in a config file so you can use them again, click **Save**.

3. When you are satisfied with your settings, click **Migrate**.



4. Enter the user name and password for the Microsoft® Exchange administrator account you are using to open your users' mail stores. This is the same user name you entered in [Step 2](#).

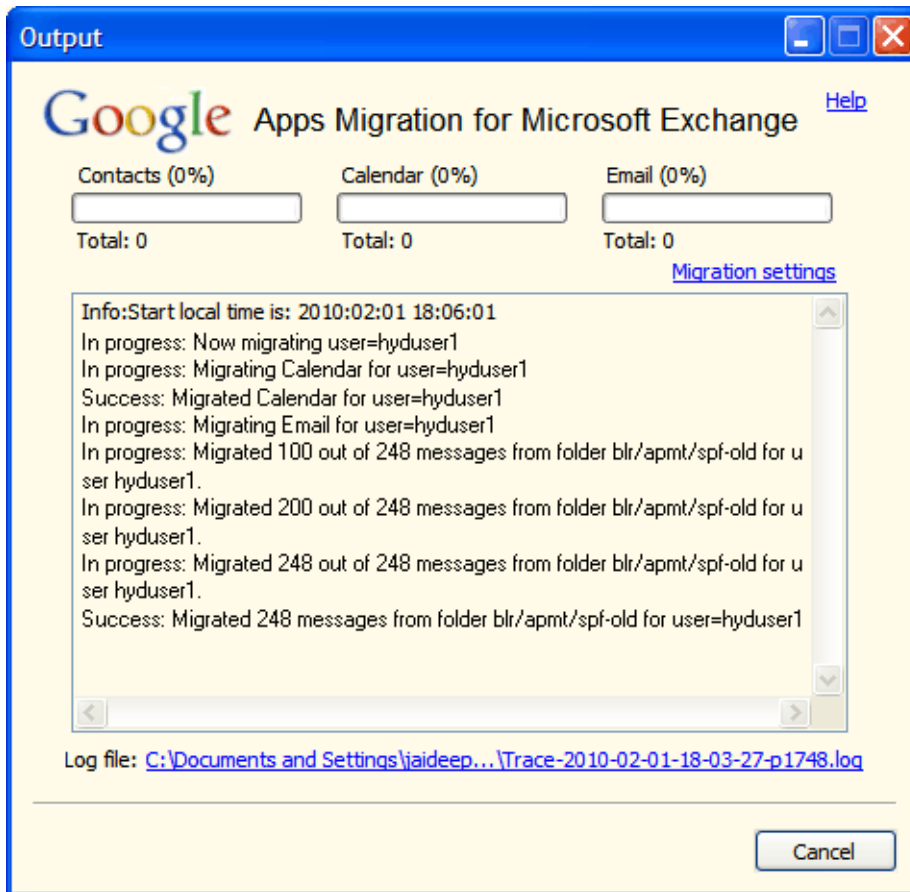
Select the check box for **Remember my password** if you would like to bypass this step in future migrations. If you select this option, the password is stored by the Microsoft® APIs (no passwords are stored in the migration utility).

**Note:** This dialog box defaults to the user who last logged in, so you may find that the **User name** field is populated with a user name different from the Microsoft® Exchange administrator account you want to use.

5. Click **OK**.

## Monitor migration

When your migration starts, you can monitor the progress in the following screen:



As the migration progresses, the Output screen is updated with information about which user is being migrated, which data is being migrated (Calendar, Contacts, Email), and when each segment of data has been migrated successfully.

If you selected the [Estimate number of contacts, calendar events and emails to migrate](#) option in [Step 4](#), the progress bars at the top indicate the percentage of each type of data that has been migrated.

Click **Migration settings** to return to [Step 5](#).

Click the **Log file link** to open the log file for the current migration.

When the migration has finished (either successfully or due to a cancellation or failure), you see the following line of text:

```
End local time is: end time of migration
```

## What to expect during migration

---

Contacts are migrated first, followed by calendar data, and then email.

Your users can work with their Google Apps accounts during migration.

If a user in the list is not also provisioned in Google Apps, the migration moves on to the next user. If the migration encounters a mail store it cannot open, it moves on to the next user in the list. If the migration encounters an error with a particular item, for example a message, it moves on to the next item.

Errors are recorded in the log files. You can find log files in the following location:

```
C:\Documents and Settings\user-name\Local Settings\Application  
Data\Google\Google Apps Migration\Tracing\ExchangeMigration
```

*user-name* in the path identifies the administrator who logged in and ran the utility.

## Best practices

---

Avoid remigrating contact and calendar data that you have already migrated.

If you remigrate contact data, you end up with duplicate contacts.

If you remigrate calendar data, you can encounter problems. For example, if you migrated a recurring event, made a change to it in Google Apps, and then remigrated that same event, the change you made in Google Apps would be lost.

If you need to remigrate contact and calendar data for some reason, you need to first delete the data you migrated originally, and then run a new migration.

## Running a migration from the command line

---

You can also run ExchangeMigration.exe from the command line. Below is a list of the arguments you can use, the parameters required by those arguments, along with an example.

Each argument is preceded by a double dash (--). All parameters must be enclosed in double quotes.

**Note:** When you run the utility from the command line, you are still presented with the Microsoft® Windows dialog box asking for the Microsoft® Exchange administrator user name and password. See “Step 5” on page 40 for more information.

For this argument...	Supply this parameter
--help	No parameter required.  Displays a list of the arguments for ExchangeMigration.exe.
--nouse_gui	No parameter required.  Runs the utility via the command line. GUI mode is default.
--exchange_server	Microsoft® Exchange Server IP address or fully qualified domain name.  Use this argument in conjunction with the following one, --exchange_admin_login.  If you use this argument, do not use --exchange_profile_name.
--exchange_admin_login	The login name for the Microsoft® Exchange administrator account you want to use for your migration.  Use this argument in conjunction with the previous one, --exchange_server.  If you use this argument, do not use --exchange_profile_name.
--exchange_profile_name	The name of an existing Outlook profile you want to use to connect to your Microsoft® Exchange Server.  If you use this argument, do not use: <ul style="list-style-type: none"> <li>• --exchange_server</li> <li>• --exchange_admin_login</li> </ul>
--google_domain	The Google Apps domain to which you are migrating data.
--google_consumer_key	The consumer key for the Google Apps domain to which you are migrating data.
--google_consumer_secret	The consumer secret for the Google Apps domain to which you are migrating data.
--filename	Path to the CSV file of user names you want to use for this migration.
--force_restart	No parameter required.  Reruns the migration from the beginning rather than from the last point of failure.

For this argument...	Supply this parameter
--noenable_calendar_migration	No parameter required. Runs the migration without including calendar data.
--noenable_contact_migration	No parameter required. Runs the migration without including contact data.
--noenable_email_migration	No parameter required. Runs the migration without including email data.
--exclude_top_level_folders	Comma-separated list of top-level folders to exclude from migration.
--email_migration_start_date	Date in YYYY-MM-DD format. All messages before this date are excluded from migration.
--email_migration_end_date	Date in YYYY-MM-DD format. All messages after this date are excluded from migration.

Here is an example of how you can run the utility from the command line. Remember to enclose the parameters in double quotes ("*parameter*").

```
.\ExchangeMigration.exe --noenable_contact_migration --
exchange_admin_login="user-name" --exchange_server="exchange-server hostname"
--google_domain="Google Apps Domain" --filename="file-name containing users
list" --google_consumer_key="Google Apps 2LO Consumer Key" --
google_consumer_secret="Google Apps 2LO Consumer Secret" --force_restart
```



# Troubleshooting and FAQ

## Troubleshooting

---

You can find the latest troubleshooting information at:

<https://www.google.com/support/a/bin/answer.py?hl=en&answer=173653>

## FAQ

---

### **Can I run the utility on the Microsoft® Exchange Server?**

This scenario is not recommended. See <http://support.microsoft.com/kb/266418> for more information.

### **Does the utility work in a hosted Microsoft® Exchange environment?**

Yes. If you can use Microsoft® Outlook to access Microsoft® Exchange data for a user's profile from a computer, you can use that same computer to run the utility.

If you are migrating from a hosted server, the profile for the administrator account you are using must be a default profile that uses only the default settings for connection to the server. If you modify any of the settings under Control Panel > Mail > *Profile Name* > Properties > E-mail Accounts > *Profile Name* > Change E-mail Account > More Settings, then the connection to the server fails.

### **Can I run multiple instances of the utility on a single client machine?**

No. There is a single location for configuration files. If you run multiple instances of the utility on a single client, those instances overwrite one another's configuration files.

If you want to increase the number of users migrated by a client machine, increase the number of users processed at one time by that instance of the utility (see [Step 4](#)).

**Can I run multiple instances of the utility on separate virtual machines on a single physical client machine?**

You can, but this scenario is not recommended. If the client machine is robust enough to run multiple virtual machines, then we recommend that you take advantage of the strength of that machine and run one instance of the client and increase the number of users that are processed simultaneously.

**Can multiple instances of the utility reference the same list of users?**

No. Each instance of the utility has to reference a unique list of users. If you configure separate instances of the utility to reference the same list of users, then the status information for those users' data becomes corrupt.

**How do I get support during migration?**

To get support for your edition of Google Apps, open the Support tab in the Google Apps control panel.

For information about the support that's available for migrations, see the [Google Apps Premier Edition Enterprise Pilot Guide](#).

**How does this utility compare with the IMAP migration tool available in the Google Apps control panel?**

The IMAP tool migrates only email. This utility migrates email, calendar, and contact data, and results in higher fidelity migrations.

**Can I use this utility to migrate local PST files?**

No. This utility is designed to migrate email directly from your Microsoft® Exchange Server. If you want to also migrate local PST files, you can use [Google Apps Sync for Microsoft Outlook](#).

# Interpreting Log Files

Google Apps Migration for Microsoft® Exchange produces two log files:

- **Status**, which contains a summary of the overall status of a completed migration run
- **Trace**, which contains detailed information about the migration as it progresses through the data for each user

Log files are located on each client machine in the following location:

```
C:\Documents and Settings\user-name\Local Settings\Application Data\Google\Google  
Apps Migration\Tracing\ExchangeMigration
```

If you encounter a problem during migration, you can use these log files to identify where in the process the error occurred.

The following sections explain how to interpret the information in each file.

## Status log file

---

The Status log file for a given migration run is created on and named by the date and time that the migration run completed, and includes the process ID. For example, a file with the name `Status-2009-11-12-11-14-20-p5172.log` was created on November 12, 2009, at 11:14:20 A.M., with a process ID of 5172.

A Status file has content similar to the following:

```
<Exchange User:hyduser1:
Status:Success:
<Contact Migration:Not Started
Total Contacts:0
Success Count:0
Fail Count:0
>
<Calendar Migration:Success
Total Calendar Events:0
Success Count:0
Fail Count:0
>
<Email Migration:Success
<Folder Name:blr/apmt/spf-old
Folder Migration Status:Success
Folder Total:248
Migrated Count:248
Success Count:248
Fail Count:0>

<Folder Name:blr/apmt/springfield
Folder Migration Status:Success
Folder Total:465
Migrated Count:465
Success Count:465
Fail Count:0>

<Folder Name:Drafts
Folder Migration Status:Success
Folder Total:1
Migrated Count:1
Success Count:1
Fail Count:0>

<Folder Name:Inbox
Folder Migration Status:Success
Folder Total:1
Migrated Count:1
Success Count:1
Fail Count:0>

<Folder Name:Sent Items
Folder Migration Status:Success
Folder Total:8
Migrated Count:8
Success Count:8
Fail Count:0>

<Folder Name:work-gcc
Folder Migration Status:Success
Folder Total:27
Migrated Count:27
Success Count:27
Fail Count:0>

<Folder Name:Deleted Items
Folder Migration Status:Fail
Folder Total:5
```

```
Migrated Count:5
Success Count:4
Fail Count:1
Fail Message Index:3,>
>
>
```

The file contains summary information for each user who was processed during that migration run, and information about each type of data you elected to migrate (Contact, Calendar, Email).

The information for a user includes:

- The user name and the overall status of data migration for that user:

```
<Exchange User:hyduser1:
Status:Success:
```

- Information about the success/failure of migrating Contact data for that user:

```
<Contact Migration:Not Started
Total Contacts:0
Success Count:0
Fail Count:0
```

- Information about the success/failure of migrating Calendar data for that user:

```
<Calendar Migration:Success
Total Calendar Events:0
Success Count:0
Fail Count:0
```

- Information about the success/failure of migrating Email data (per folder) for that user:

```
<Email Migration:Success
<Folder Name:blr/apmt/spf-old
Folder Migration Status:Success
Folder Total:248
Migrated Count:248
Success Count:248
Fail Count:0>
```

## Trace log file

---

The Trace log file for a given migration run is created on and named by the date and time that the migration run started and includes the process ID. For example, a file with the name `Trace-2009-11-12-11-11-20-p5172.log` was created on November 12, 2009, at 11:11:20 A.M., with a process ID of 5172. The file is updated as the migration run progresses.

The Trace file begins with entries similar to the following:

```
Configuration: Exe name: C:\Program Files\Google\Google Apps
Migration\ExchangeMigration.exe
```

```
Exe version: 1.1.157.2121
```

```
GSync version: 1.1.157.2121
```

OS Version: 5.1.2600  
OS Service Pack: 3.0  
OS Suite/Product: 256/1  
Process Id: 5172

These opening entries provide information about the location and version of the Exchange Migration EXE, the Exchange Migration product version, operating-system information about the computer on which the utility is running, and the process ID for this particular migration run.

Subsequent entries in the Trace log begin with the same general information as the following example:

```
2009-11-12T01:03:57.949+05:30 4b0 A:Migration  
ExchangeMigration!EmailUploader::UploadAllEmailInFolder @ 752 (hyduser1)>
```

- **2009-11-12T01:03:57.949+05:30**: The date and time the entry was written
- **4b0**: The thread ID
- **A**: The logging level (A:All, I:Information, E:Error, F: Fatal, W:Warning, V:Verbose)  
All, Error, Fatal, and Warning are hard coded. You can enable Information and Verbose by editing the Microsoft® Windows registry. For more information, see "Enable Information or Verbose logging" on page 53.
- **Migration**: Module name (for example, Migration, Generic, Sync, Calendar)
- **EmailUploader**: Class name
- **UploadAllEmailInFolder**: Method name
- **@ 752**: Line number
- **(hyduser1)**: Microsoft® Exchange user name (user whose data is being migrated)
- **> following text**: Log message (for example, Beginning Email upload of folder blr/apmt/spf-old)

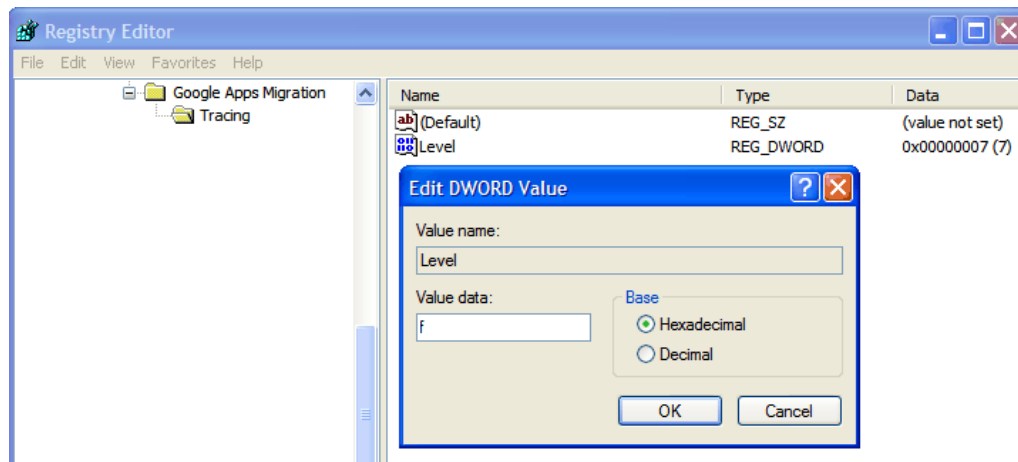
## Enable Information or Verbose logging

---

To enable Information or Verbose logging in the Trace log file:

Edit the **Tracing** registry key and its accompanying **Level** DWORD Value:

- Registry key: HKEY\_CURRENT\_USER\Software\Google\Google Apps Migration\Tracing
- DWORD Value: **Level**
- Level Value data: Change the default value of 7 to either **f** (Information) or **ff** (Verbose)



## Interpreting log file information

---

The log messages provide an ongoing account of how each segment of the migration has progressed. In general, this information is most valuable to Google Support. For example, if a log message implicates a particular Exchange Migration module or method as the cause of an error, then Google engineers can address the issue.

However, the log messages can also help you identify problems like timeouts or network errors that need to be resolved in your own environment. If you experience a migration error, you should first check the logs for problems that arise from configurations in your own environment, and then for problems that arise from the Exchange Migration utility not functioning properly.



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