



Software Superglue

An Agile Office 365 Migration

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Introduction

This document describes an agile way to migrate from Google Apps to Office 365. Google Apps is an attractive way for small companies to get access to good quality productivity tools for a very small cost. However, as the company grows, so too does the organisation's requirements on Google Apps, and there may come a point where it might be time to switch to a competing provider, such as Microsoft Office 365.

We will not discuss the merits or economics of choosing one cloud service over another here. Let's assume you've done your homework and now you are looking for a way to migrate from Google Apps to Office 365 as painlessly as possible. Can it be done? With the right preparation, yes.

Scope

Both Office 365 and Google apps include many services, but we will focus on migrating these core services:

1. Mail
2. Calendar
3. Contacts
4. Groups
5. Documents

Each of these services has its challenges when migrating from one provider to another. Small companies are more focused on what works than with applying IT policies. This leads to ad-hoc solutions that must be analysed and understood before a migration can take place. For instance, to what extent is calendar and document sharing used.

Obviously, the most critical concern must be business continuity; the migration must not impact business operations more than absolutely necessary. Email is possibly the most important service, as this is often the most important means of communication within the company – and with customers.

The scope of the document is also limited to a "like-for-like" migration, meaning that the aim is only to replace the existing functionality in Google Apps with equivalent functionality in Office 365. That being said, a migration is also a good

opportunity to create a better structure and prepare for future growth and some scope will be given to that.

There are probably few migrations that can be done exactly as described in the chapters ahead. In fact, not all companies will use all of the services in the way described here. A useful way of approaching this document is that it will describe how to migrate all of your user data in a planned way, which is probably about 98% of what needs to be done. The remaining 2% is the part of the Google Apps configuration that is unique to your organisation, and that the IT organisation is in the best position to decide how to migrate this functionality to Office 365.

Identity Management

One part of the organisation's unique configuration is what can be called the [Identity Management](#) (IdM) service provided by Google Apps, or [Google SSO](#) for short. Migrating this service is a purely administrative change that would swap one [Identify Provider \(IdP\)](#) (i.e. Google) for another (i.e. Office 365). But it is worth mentioning here because it has a big impact on the feasibility of a migration to Office 365.

Briefly, the IdM service contains the authentication and authorization information stored in Google Apps that can be used to provide access to other services without requiring users to login, better known as [Single sign-on \(SSO\)](#).

This IdM service is only relevant to the migration if Google SSO has been used to provide SSO for [other services](#). If it has then then a proper analysis is needed of how it can be replaced by [Azure Active Directory](#) (AAD) which may not be possible in all cases; for instance, AAD does not currently support [LDAP](#).

An Agile Migration

What do we mean by agile? Microsoft provides [a blueprint](#) for migrating Google App mailboxes to Exchange. This, in short, describes a process where a background mailbox synchronisation is set up between Google and Microsoft. When synchronisation has been achieved for all accounts, a cutover is performed to Exchange. All users must then install and configure Outlook or can start directly using the Outlook Web App (OWA).

This process is problematic for several reasons:

1. The [big bang adoption](#) can overload IT services with support requests, especially for larger organisations. Such a migration must be meticulously planned and well-rehearsed.

2. There are few learning opportunities as all users are equally (in)experienced with the new environment, meaning that the migration process has little chance to be improved upon once it is set in motion for all users.
3. The synchronisation process can take weeks to perform due to [Google Apps bandwidth limits](#) if users have very large mailboxes. Synchronisation should also be performed in batches which increases the [lead time](#) even further.

Instead, performing an agile migration involves doing a migration of batches of users from start to finish. In other words, the cutover is an iterative process, with some users already using Outlook while others are still using Gmail under the whole transition period. An agile migration will avoid all of the disadvantages of the big bang adoption as described above.

Once a user is up and running with Outlook, they can proceed to migrate the Calendar, Contacts and Documents according to the migration instructions provided by the administrator.

So as a result of being able to do an agile migration of users' mailboxes, it becomes possible to the whole Google Apps migration in an agile fashion.

The goal of an agile migration

The goal of an agile migration is to provide a smooth transition from Google Apps to Office 365 in a way that imposes a manageable workload on the limited IT resources available.

Even though some users will be using Gmail while others have switched to Office 365, this should have no impact on the functionality expected by staff.

Designing an agile migration

This chapter will analyse the challenges involved in doing an agile migration and how they can be overcome. This will provide the basis for the process described in the following chapter.

Mail servers in brief

When email is sent to someone at your organisation (let's call it acme.com), the sending agent uses the [MX records](#) of the acme.com domain to determine what the address of the recipient mail server(s) is.

If acme.com is using Google Mail, then it is Google’s mail servers that are the recipient mail server(s). As part of the migration to Office 365, the MX records will be updated to point to Microsoft’s mail server(s). But this will only be done at the very end, when all accounts have been migrated.

Incoming mail

In an agile process, users are migrated in batches to Office 365, but their mail will still be sent to their Gmail account. So, to receive their mail in Outlook, the user adds a forwarding rule in Gmail to forward their mail to the Outlook account. What email address should the mail be forwarded too?

As part of the initial Office 365 setup, organisations are provided with the built-in domain acme.onmicrosoft.com. So when user accounts are set up for acme.com in Office 365, they are automatically assigned an email address in the form of firstname.lastname@acme.onmicrosoft.com. This can safely be used as the forwarding address from the Gmail account. The forwarded mail appears in Outlook exactly as if the user had received it in Gmail.

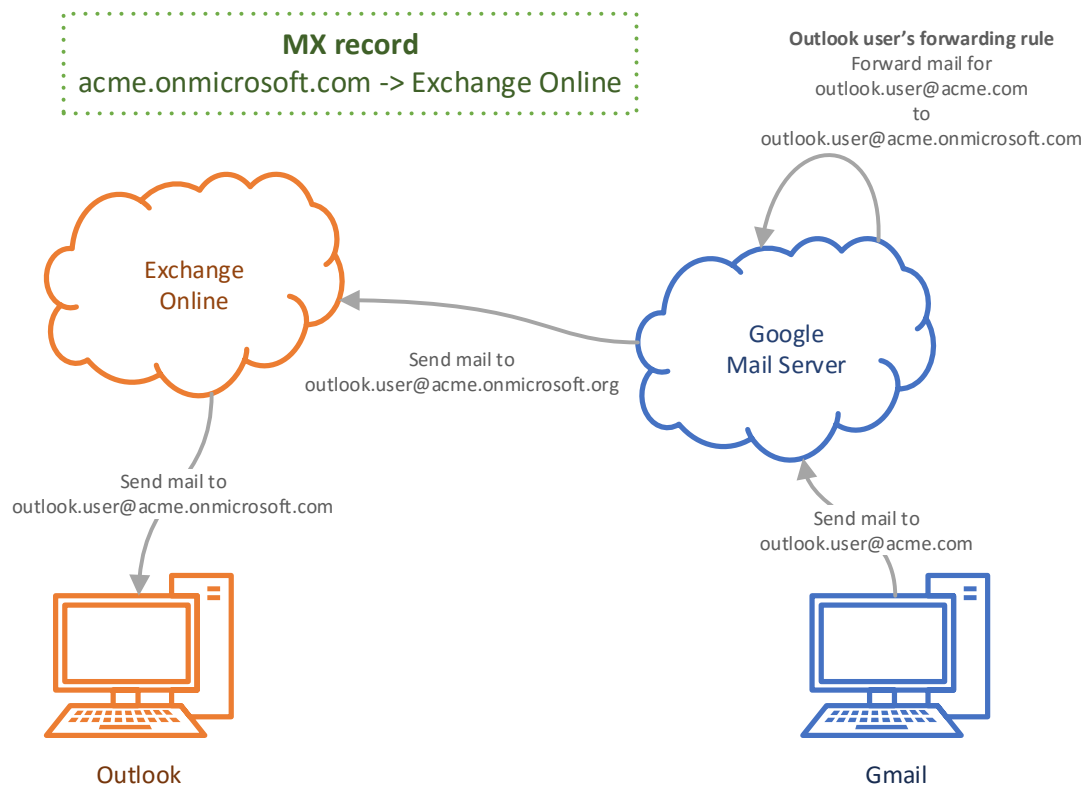


Figure 1 - Sending mail to Outlook users

Outgoing mail

Users using their new Outlook client, will also want to send mail to both internal and external users. However, we do not want mail to be sent from the default

acme.onmicrosoft.com domain. Instead, the acme.com domain will be added to Office 365 and then user accounts will be created with the user name format `firstname.lastname@acme.com`. This then becomes the user's email address in Outlook (the same as in Gmail). Sending and receiving mail to and from external users will now function correctly after the user is migrated.

To recap, the user's Office 365 user name is `firstname.lastname@acme.com`. This is also their primary email address. Users will also have `firstname.lastname@acme.onmicrosoft.com` as an email alias.

The last piece of the puzzle is sending mail to internal users. If an Office 365 user mails to a Google Apps user using `firstname.lastname@acme.com`, then Office 365 will route the mail internally since `acme.com` is associated with Office 365. Thus, the mail will arrive at the recipients Exchange mailbox instead of going to Gmail.

So, to mail to internal users that are still on Google Apps, we need to use another domain that is not associated with our Office 365 setup. Nor should the domain be used for sending or receiving mail in Google Apps.

Usually an organisation will own at least one other domain for trademark purposes, and maybe to reroute web traffic to the main website. If not, then it is a simple matter to acquire a domain (any domain in this case) for the duration of the migration. For our example let's call it `acme.org`. We configure the MX records for `acme.org` to point to Google Apps.

Now the Office 365 user can mail an internal user on Google Apps by sending to `firstname.lastname@acme.org`. However, this is not a good solution as the user must know something about mail routing. Instead, a redirect rule is set up in Exchange for each user that redirects mail from the recipient's `acme.com` address to their `acme.org` address. Office 365 will then send the mail to the correct recipient at Google Apps. This is completely transparent to the sender.

If the Google Apps user replies to the mail they will still be using their normal `acme.com` address to send with since the `acme.org` address is just an alias. As each user is migrated to Office 365, the Exchange redirect rule for that user can be safely removed.

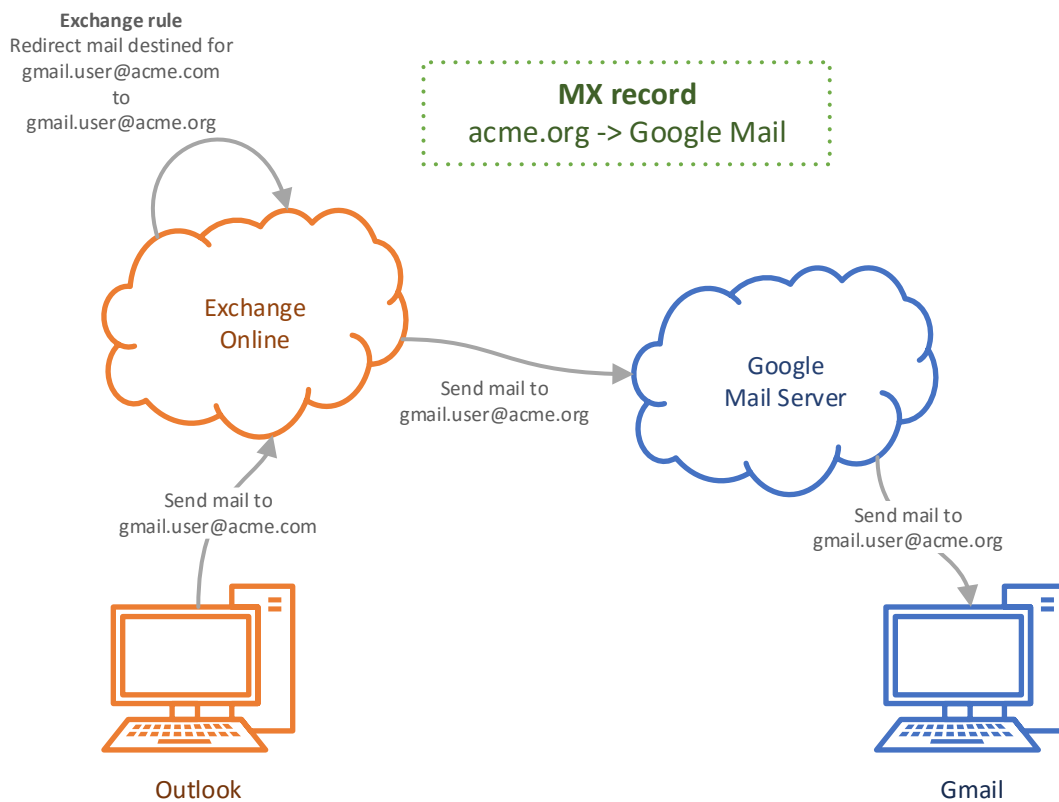


Figure 2 - Sending mail to Gmail users

For large organisations, Office 365 provides batch tools for account creation and mail synchronisation which reduces the work involved in preparing for the migration. There is no batch tool for creating the redirection rules in Exchange, but Office 365 is equipped with the [Exchange Online PowerShell](#) which features the [Set-TransportRule](#) command (see the *RedirectMessageTo* parameter) that can be used to automate this part of the setup.

Meeting requests and replies

Booking meetings also relies on the mail service for sending requests and receiving replies. So the same forwarding and redirecting of mails will also apply to these requests and replies.

When meeting responses are received by Gmail, a sanity check is performed that the responses actually correspond to a meeting in user's Google Calendar (if enabled). If the meeting doesn't exist, then the responses are dropped. This is exactly what happens when a migrated user books a meeting. A meeting request sent from Exchange will elicit responses back to the user's Gmail. Google Calendar does not know about this meeting and so the responses are dropped. To solve this, the user's Google Calendar function is turned off as soon as they are migrated to Office 365.

To turn off the Calendar function for some users but not others, we can utilise Google Apps [Organisations](#) function. By creating a sub-organisation for “Migrated users”, we can [turn off the calendar function](#) for that sub-organisation. Then as each user is migrated we move that user to the “Migrated users” sub-organisation.

Mailing lists

There are many ways to create mail aliases in Google Apps:

1. Add a mail alias to the user’s account, e.g. hr@acme.com.
2. Create a group for mailing to groups of users, e.g. “Scrum masters”
3. Create a non-user account, e.g. sales@acme.com for external users to mail to.

All of these mail aliases should be reviewed and planned for in the migration. There is a function in Google Apps that allows an administrator to see all of the e-mail address and aliases that exist in Google Apps.

In general, non-user accounts are not recommended for security reasons as this involves sharing passwords with all users that want to read the mail, and it also uses up a license.

Instead, non-user accounts can be replaced with a group, with or without a collaborative mailbox enabled as desired. The following table shows how the different options map between Google Apps and Office 365:

Google Apps	Office 365
Mail alias	Mail alias
Group without collaborative mailbox	Distribution list
Group with collaborative mailbox	Shared mailbox
Non-user account (not recommended)	Non-user account (not recommended)

Calendar function

Both platforms offer similar calendar functionality. Migrating calendars from Google Apps to Office 365 is done via a relatively straightforward export/import procedure.

Both platforms also offer the possibility to share calendars with other users. These settings are controlled from the Calendar App administration in Google Apps. The

challenge with an iterative migration is that sharing must be supported across platforms until all users have been migrated. When a user switches from Google Apps to Office 365, four possible sharing permutations arise:

1. [Share new Outlook calendar with other Outlook users.](#)
2. [Publish new Outlook calendar for the Google Apps users.](#)
3. [Subscribe to the calendars of other Outlook users.](#)
4. [Subscribe to the calendars of Google Apps users.](#)

Fortunately, the procedures for setting up these shares are well supported.

Users of calendar sharing can be divided into two groups:

1. Ad-hoc calendar sharers, whereby users share their calendars with each other at their own discretion.
2. Calendar coordinator, whereby one person is responsible for managing appointments and meetings for a group of users.

In the latter case, it may be that the coordinator (e.g. secretary) actually books meetings for the users. This justifies the need for calendar sharing.

More often though, sharing is used just to see a user's availability before booking a meeting. However, in Outlook there is a built-in feature called the Scheduling Assistant which does exactly that and could eliminate the need for a lot of the existing calendar sharing.

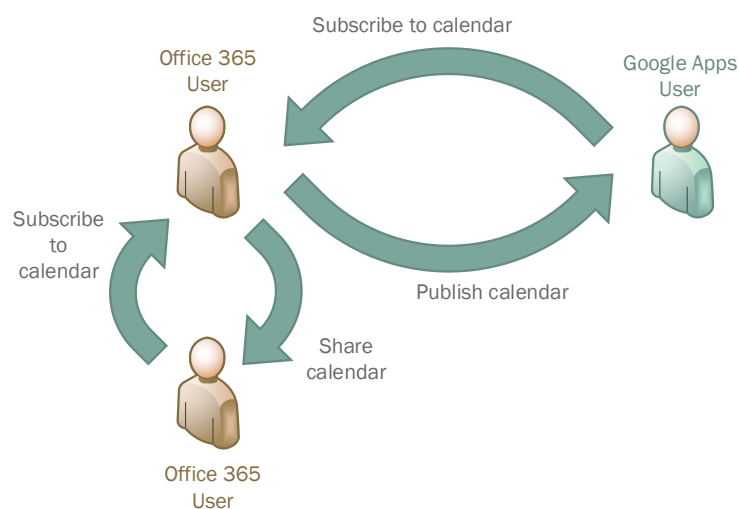


Figure 3 - Permutations of Calendar sharing

The default setting in Google Apps for allowing users to share their primary calendars is:

- Internal sharing: Share all information
- External sharing: Only free/busy information

As users are migrated to Office 365 and Outlook, they will lose access to other user's Google Calendars. To fix this, the administrator must change the external sharing for the domain to:

- External sharing: Share all information, and outsiders can change calendars.

This option ensures that "Private addresses are displayed". The private address is needed to subscribe to a Google Apps calendar from Outlook.

Shared resources

There is one caveat with an agile migration and that is that shared resources (e.g. meeting rooms) can only be managed in one system at a time, which at the start of the migration is Google Apps. Furthermore, Google Apps resources can only be booked by Google Apps users. So a user that has been migrated to Office 365 will not be able to book meeting rooms until these resources have been migrated too.

Furthermore, a migrated user cannot log in to Google Apps and book the resource there since their Calendar function has been disabled as part of the migration. One workaround is to have another Google Apps user book the resource.

Configuring Office clients

Both Outlook and Skype for Business use the user's email address to automatically retrieve the correct settings for the desktop and mobile clients. However, because the MX records will point to Google Apps for the duration of the migration, this will not work. This problem is easily solved using a small amount of manual configuration as described in the appendices.

Document sharing

Again, both platforms offer similar functionality with respect to document management. Microsoft's enterprise-class Office applications (Word, Excel, etc.) are also well-integrated with OneDrive. But first some orientation concerning the different storage possibilities available from Microsoft, and the current confusion concerning the two OneDrive clients.

Employees may already use OneDrive for personal use. In that case, users will already have the OneDrive Next Generation client (onedrive.exe) installed. This is the same client that will be used to access the user's Office 365 files, but when Microsoft is describing how business users use the client, they refer to it somewhat confusingly as the OneDrive for Business Next Generation client. However, from the user's point of view it is the same client, just that it can be configured to synchronise both personal OneDrive accounts and Office 365 OneDrive accounts. The next generation client is also available for Mac users. The OneDrive Next Generation client can be installed in one of three ways:

1. [When upgrading to Windows 10.](#)
2. [Installing Office 2016.](#)
3. [Manually installing.](#)

As discussed in [Microsoft's storage recommendations](#), collaborative files shares that are accessed by many users are better suited for storage in a SharePoint Online Team Site library. These libraries are accessed using the older [OneDrive for Business client](#) (groove.exe) which must be installed manually. However, if your organisation is using Mac devices, then there is **currently no OneDrive for Business client for Mac users that can synchronise with SharePoint Team Site libraries**. Microsoft are expected to solve this later in 2016. Without that support, collaborative document libraries will have to continue to be maintained in the user's Office 365 personal storage.

It is expected that Microsoft will eventually phase out the old client, but for now both clients can be used together to synchronise the necessary files.

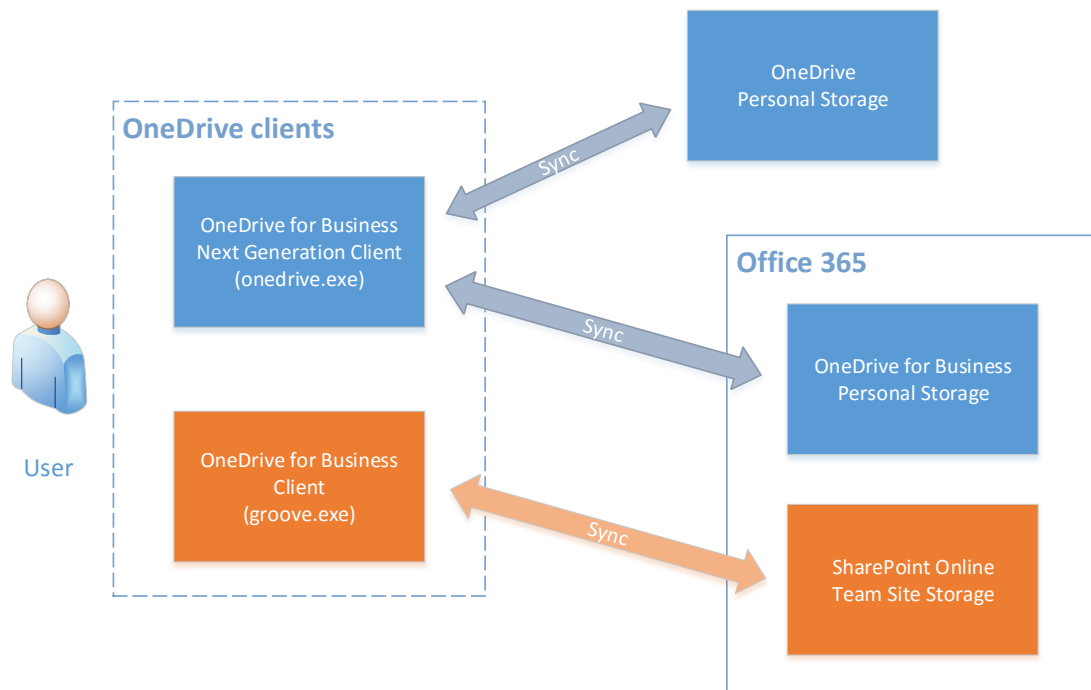


Figure 4 - OneDrive storage and synchronisation options

SharePoint may seem like overkill for small organisations; it is a very complex product and can require a lot of resources to manage properly. Despite that it is exactly the place where collaborative file shares (called libraries in SharePoint) should be stored. This can be achieved without having to learn much about SharePoint. In fact, users do not really need to know SharePoint exists in order to access and work these files. They will just use OneDrive for Business to synchronise with these libraries and will be able to work on them locally the whole time.

As a result, instead of access controls on a shared folder in Google Drive being managed by a single user, access controls on a SharePoint Team Site library (or library sub-folder) can be centrally managed by proper data custodians.

Administrators should also be aware of the [limitations](#) of synchronising SharePoint libraries within OneDrive.

Apart from the storage considerations, the other important question is the retention times for documents. There are two questions that need to be asked:

- 1) Does your organisation need to preserve version history?
- 2) What is the desired retention time for older versions and deleted files?

If version history is not important, then users can very simply migrate their documents by moving their local copy of their Google Drive files to their OneDrive for Business folder, i.e. drag-n-drop. In the background, the Google Drive client

will then proceed to delete the files from Google Apps and the OneDrive for Business client will proceed to upload the same files to Office 365.

If version history is important, then there are [document mover services](#) available to assist with that, but that is outside the scope of this document. Retention times for version history and deleted files will also be different when comparing Google Drive with OneDrive. The default for Google Drive is 30 days or 100 versions; the default for SharePoint is 500 versions.

Both services offer the possibility to share documents between users. Unlike calendar sharing, users can use OneDrive for Business and Google Drive in parallel until the migration is complete. So there is no need for two services to interact which simplifies the user experience. However, it does mean that all users must have the OneDrive client(s) installed from the start in order to share files with migrated Office 365 users.

Furthermore, if some file shares are categorised as collaborative file shares, then it may be better to migrate them at the beginning of the migration since this can be done independently of the user migration and the fact that it impacts so many users.

Users should never migrate documents that were shared with them. They should be granted access to the files again in Office 365 once the share files have been migrated by the owner. Otherwise the copied files will have no connection to the original files and changes to them will not be shared as intended.

Finally, a word about library sizes for document repositories. It is easy in Google Apps and Office 365 to allow file shares or libraries to become very large; the limits are very generous. However, in SharePoint you can only synchronise a whole library which may be many GBs of data. It is not certain that all of this data is relevant to the user; it adds to synchronisation times and is certainly more difficult to manage from a security perspective. So when migrating document repositories to SharePoint consider dividing the documents into several smaller libraries, perhaps separating current documents from historical ones.

See also [this blog article](#) for some more insights in how OneDrive for Business can be used to improve productivity.

Migration batch sizes

How many users should be migrated at a time? Mail migration is the [critical path](#) in the migration process since it requires the most effort from the IT resources, which are always limited. As mentioned earlier, [the bandwidth limits in Google](#)

[Apps](#) limits how quickly mailbox synchronisation can be achieved between Gmail and Exchange. In other words, the larger the user mailboxes are, the smaller the migration batches will be. It might be worth asking users to search their Gmail for email with large attachments (e.g. "has:attachment larger:10M") that can be deleted.

It is easy to see how large a Google Apps mailbox is by looking at the list of users in the administration console. The column "Email usage" displays the number of GBs each user is using. However, this value does not include the storage used by attachments, so the actual amount of data migrated could be much larger. To verify this, do a test migration and check the migrated user's mailbox usage in Exchange:

1. Navigate to Exchange Administration -> recipients -> mailboxes and edit the user.
2. Select Mailbox Usage to see how big the Exchange mailbox is. This can be several times larger than the Google Apps mailbox.

So, all we can know for certain is that the amount of data transferred lies somewhere between the "email usage" reported by Google Apps and the "mailbox usage" reported by Exchange.

Mac limitations

Later in 2016, Microsoft will improve support for Mac, but for now the following limitations exist:

1. As mentioned earlier, there is no OneDrive for Business client for Mac that can synchronise SharePoint Team Site libraries. The client can only synchronise the user's own storage space in Office 365. Until this problem is solved, it may not be feasible to migrate collaborative files shares to SharePoint Team Site libraries.
2. There is no Skype for Business client for Mac. For now, [users must install Lync 2011](#), which is compatible with Skype for Business.

Summary

With a proper analysis of the functionality available and how it is used, the organisation can prepare to iteratively migrate users to Office 365 in a transparent and robust fashion. Migrations can also be quite complex, and it is useful to be able to break down the problem into manageable tasks that provide the possibility

of adapting to external factors, such as changes in the organisation priorities, or the availability of resources.

Plan Outline

The scope of the migration includes Mail, Calendar, Contacts, Groups and Documents. Mail migration requires administrator intervention, but the other services can be safely migrated by the users themselves with a small bit of help from the administrators. Document collaboration is also an early migration candidate and does provide a rather straightforward use case to get user's acclimatised to the Office 365 environment.

So, collaborative file share will be migrated first followed by the mail migration. After that the user can complete the transition with an appropriate set of instructions which this document should help to provide. The process can be summarised in the following steps:

1. Set up Office 365 with all user accounts. Configure mailing lists and shared mailboxes. Prepare for mailbox migration.
2. All users install and configure the OneDrive for Business client(s). Collaborative file shares are migrated.
3. Prepare Google Apps for migrating mailboxes.
4. Migrate the Mail service for batches of users. Each batch should take about the same time to execute.
5. Users can continue to complete the migration of the remaining services, Calendar, Contacts and Documents themselves.
6. Replace [Google SSO](#) with [Azure Active Directory](#) or disable as necessary.
7. Update the domain information and disable access to Goggle Apps.
8. After a quarantine period, cancel the Google Apps subscription.

Setting up Office 365

The [initial setup](#) of Office 365 is the same as usual. The domain will be acme.com and the user names addresses (which are also the users' email addresses) are probably in the format `firstname.lastname@acme.org`. The following steps can be

compared to Microsoft's procedure for [migrating Google Apps mailboxes to Office 365](#). The administrator needs to:

1. [Purchase Office 365](#) with enough subscriptions for all accounts that are to be migrated. The number of subscriptions can always be adjusted later.
2. [Associate the domain](#) acme.com with Office 365. This will allow you to set up the user accounts with their correct email address. The account used to register for Office 365 should be updated as well.
3. Associate any other domains with Office 365 that are used to send or receive mail from. This is necessary for the creation of distribution lists and shared mailboxes. This does not include the acme.org domain that will be used for mail forwarding during the migration.
4. [Create all of the user accounts](#) that are to be migrated to Office 365 and assign them an Office subscription. The primary email address should be in the acme.com domain. All users will also receive an acme.onmicrosoft.com email address by default as well. Create other email aliases as necessary.
5. Create the same mail distribution lists and shared mailboxes in Office 365 that are used in Google Apps. Remember that lists can be nested to simplify maintenance.

Forwarding rules

As described earlier, the administrator needs to set up forwarding rules to make sure that mail from migrated users reaches users still in Google Apps.

1. Navigate to Exchange administration in Office 365. Under Mail Flow, select Rules.
2. For each user create a rule that redirects mail from `firstname.lastname@acme.com` to `firstname.lastname@acme.org`. Create the rules in alphabetical order with a title such as "Forward to Gmail for <user>". Consider scripting the process using the [Exchange Online PowerShell](#) if there are many users.

Collaborative file shares (Windows only organisations)

The first data to be migrated to Office 365 will be collaborative files. These are document repositories that are shared with many users and should be migrated to

a SharePoint Team Site library. However, if SharePoint cannot be used (because of lack of Mac support for example) then this section can be skipped.

All of the Office 365 accounts have been created, so now each user should set up their OneDrive for Business clients:

1. Install the next generation OneDrive for Business client (onedrive.exe) by [upgrading to Windows 10](#) or, [logging in to Office 365](#) and installing Office 2016.
2. Login to the OneDrive for Business client with Office 365 credentials. This will synchronise the user's Office 365 storage space (which is empty).
3. [Install the older OneDrive for Business client](#) (groove.exe). This will be used to synchronise any SharePoint libraries that are created next.
4. Login to the OneDrive for Business client with Office 365 credentials.

Now the current owner of the collaborative files shares should move the files to a SharePoint team site library (or libraries) as follows:

1. Either the share owner or the administrator creates the necessary libraries in a SharePoint Team Site. The share owner should then synchronise with the new libraries.
2. The share owner informs the users of the shared files that they are about to be migrated. The users should stop working on these files.
3. The share owner moves the files from Google Drive to the new SharePoint libraries using drag-n-drop, or by the administrator using a file mover service.
4. The share owner or newly appointed data custodian [establishes new shares](#) with the users. The users will use the share invitation to synchronise with the files using OneDrive for Business (groove.exe).

Preparing Google Apps

To prepare for an agile migration the administrator needs to configure the following:

1. [Add a domain alias](#) for acme.org so that all Google Apps users will have an email address at acme.org to receive mail at.
2. [Allow users to enable 2-Step validation](#) in Google Apps.



3. [Create a sub-organisation](#) called "Migrated users".
4. [Disable Google Calendar](#) for this sub-organisation. This will solve the issue with meeting replies being dropped.
5. [Set the Calendar sharing options](#) for external users to "Share all information, and outsiders can change calendars" so that private links are available for subscribing to in Outlook.

Migrate mailboxes, calendars and contacts

Users should be migrated in batches as part of an agile strategy. This part of the migration process requires action from both the administrators and the users. How big a batch is, depends on how long it takes to achieve mailbox synchronisation between Google Apps and Office 365 for a group of users, as discussed earlier. The easiest way to batch users is probably by team or office. This way users can help each other with the rest of the migration. Each user should:

1. [Install the Office 365 apps](#) on their PC/Mac (if not done so already when setting up OneDrive for Business). Wait with installing them on secondary devices (e.g. mobile phones) until the user's migration is complete.
2. [Configure Outlook](#) with the Office 365 account. This requires a little bit of manual configuration.
3. [Tweak the Outlook configuration](#). These are some recommended sanity settings.
4. (Windows only) [Sign-in to Skype for Business](#). This requires a little bit of manual configuration.
5. (Mac users only) [Install Lync 2011](#) if Skype for Business is not available. Before logging in go the **Advanced options** and set the following:
Internal server name: sipdir.online.lync.com:443
External server name: sipdir.online.lync.com:443
6. Have a valid mobile phone number as required by the 2-step authentication process in Google Apps.
7. [Enable 2-Step validation](#) in Google Apps. The user must save the generated password and send it to the administrator who will use it to do the mailbox migration.

Once the batch of users has completed these steps, then the administrator can begin the migration. The users should be prepared to switch over to Outlook once the mailbox migration is complete. The administrator needs to do the following:

1. [Create an Excel list](#) of users to migrate. This includes a column for the Google app passwords generated by the users in the previous steps.
2. [Connect Office 365 to Gmail](#) using the Excel file.
3. [Migrate the Gmail mailboxes](#) for the users.
4. Stop synchronisation with Gmail once synchronisation has been achieved. This can be seen in the migration status column.
5. Remove the Exchange Rule for redirecting mail to Gmail for the newly migrated users, since migrated users are supposed to mail directly to each other in Exchange. Note that if the user tries to verify the forwarding rule by mailing themselves from Outlook, Google Apps will not forward the mail back to Exchange; this is so as to avoid creating mail loops.

Now the users should immediately complete the migration to Outlook.

1. [Set up mail forwarding for all new emails](#) in Gmail to forward mail to `firstname.lastname@acme.onmicrosoft.com`. This will also forward mail from any other aliases that are associated with the account.
2. [Install Outlook mobile app](#) and configure. The user should configure the app to synchronise with Office 365 not with Google Apps (since the MX records still point to Google Apps).
3. [Export contacts from Gmail](#) and import them into Outlook.
4. [Export calendar\(s\) from Gmail](#) and import them into Outlook.
5. [Subscribe to other users Google Apps calendars](#) in Outlook as needed.
6. [Subscribe to other users Outlook calendars](#) in Outlook as needed.
7. [Share Outlook calendar](#) with Outlook users as needed.
8. [Publish Outlook Calendar](#) to Google users as needed.

Finally, the administrator should disable the calendar function for the migrated users:

1. [Move the users to the Google Apps sub-organisation](#) "Migrated users". This disables their calendar function and ensures that meeting replies will be forwarded to Exchange instead of being dropped.

At this point, the administrator is finished migrating the batch of users and can start migrating the next batch. The newly migrated users will now work exclusively with Outlook and can continue to setup the remaining Office 365 services, in particular the migration to OneDrive for Business.

Migrate Documents

Migrating Documents from Google Drive to OneDrive for Business is done in several stages depending on the setup.

1. [Install the Google Drive client](#) and synchronise all the user's documents.
2. The new OneDrive for Business client should already be installed as part of the Office 2016 installation. Start the client and log in with the user's Office 365 credentials.
3. Open Windows Explorer and move all of the user's files from the Google Drive folder to the OneDrive for Business folder. (**DO NOT** move shared files that are owned by another user.) The Google Drive client will then remove the files from Google Drive while OneDrive for Business will start uploading the files to Office 365. Note that migrating the files in this way will not preserve the version history as discussed earlier.

If the user is managing one or more de facto document repositories, then these will have been migrated to SharePoint already as described above. However, if SharePoint is not a feasible solution, then these document repositories will be treated as ad-hoc file shares.

If the user is performing ad-hoc file sharing with other users, then the user (share owner) should perform the following for each ad-hoc share:

4. The share owner informs the user that the shared files are about to be migrated. The users should stop working on these files.
5. The share owner moves the files to their OneDrive for Business storage area.

6. The share owner [establishes new shares](#) with the users. The users will use the share invitation to synchronise with the files using OneDrive for Business.

Finally, the user should clean up the Google Drive installation:

1. If the user is not using any shared files, then the Google Drive client can be uninstalled once synchronisation is complete.
2. If the user is using shared files from Google Apps, then Google Drive should only be uninstalled once the shares are re-established using OneDrive for Business.

Install mobile apps

Once the user has finished migrating all their services to Office 365, then they should install the mobile apps for Outlook, OneDrive, Skype for Business, etc.

Finish the migration

At this point, all users have been migrated; mailing lists, shared mailboxes and SharePoint libraries have been set up.

Recreate meeting rooms

In Google Apps for Work it is possible to create resources such as meeting rooms that can be booked by users when creating a meeting. The same feature exists in Exchange.

Now that all users have been migrated, these resources can also be migrated to Exchange. Then users can start to book them again or update existing meetings to include a room, projector, etc.

Update the MX records

Now it is time to update the MX records. Once that is done, all of the forwarding rules in Google Apps will be obsolete, and the new distribution lists and shared mailboxes in Exchange will become active.

Deactivate Google Apps

With the migration complete, there is no reason for users to log in. All user accounts should be disabled.

Cancel Google Apps subscription

It is recommended to wait a month or two before cancelling the Google Apps subscription in case something has been overlooked.

Appendix 1: Outlook 2016 configuration

Outlook normally tries to automatically set up a connection to the mail server using the e-mail address of the user. However, until the DNS MX record is updated this we can use the acme.onmicrosoft.com domain to find these settings.

1. Start Outlook 2016.
2. Fill in the following fields:
Your name: <first name> <last name>
Email address: <first name>.<last name>@acme.onmicrosoft.com
Password: <Office 365 password>
3. Click Next.
4. When prompted for your account password change the username from
<first name>.<last name>@acme.onmicrosoft.com
to
<first name>.<last name>@came.com

The connection should succeed and a test email should be successfully sent.

Appendix 2: Tweak Outlook 2016 Settings

Some of Outlook's default settings can be optionally to better suit a corporate environment:

1. Start Outlook 2016.
2. Click on **File**.
3. Click on **Options**.
4. Click on **Mail**.
Under **Compose messages**, click on **Signatures** and add a signature (see below) called "Acme Corp". Under **New messages** choose "Acme Corp".
Under **Message arrival**, uncheck **Play a sound**.
Under **Message arrival**, uncheck **Display a Desktop alert**.

Under **Send messages**, uncheck **Use Auto-Complete List to suggest names when typing in the To, Cc and Bcc lines**. This way only e-mail addresses from your address book will be used for auto-completion.

5. Click on **Calendar**.

Under **Calendar options**, add national holidays to calendar.

Under **Display options**, check **Show week numbers in the month view and in the Date Navigator**.

Under **Weather**, switch to **Celsius** if needed, or disable Weather altogether.

6. Click **OK**.

Appendix 3: Set up Skype for Business

Until the domain records are updated, the Skype for Business set up must be done manually.

1. Start Skype for Business
2. Enter the Sign-in Address: <first name>.<last name>@acme.com
3. Click on the gear icon and choose **File -> Change my Sign-in address**.
4. Choose Manual Configuration and set the following fields:
Internal server name: sipdir.online.lync.com:443
External server name: sipdir.online.lync.com:443
5. Click **OK**.
6. Enter password and click **Sign-in**.

Appendix 4: Publish Outlook Calendar

Follow these steps to allow Google Apps users to access an Outlook calendar during the transition.

1. Login to Office 365 OWA.
2. Click on the **Calendar** icon.
3. Click the **Settings** icon (gear on upper right corner of screen).
4. Click **Options**.
5. Select **Publish Calendar**.

6. Select the calendar to be published.
7. Select the permissions for the published calendar: (Not Shared, Full Details, Limited Details, Availability Only).
8. Click **Save**. There will now be two links available.
9. Copy the ICS link and email it to the recipients who need access.
10. The recipient should use this link to subscribe to the user's calendar. In Google Apps, select **Other Calendars** and **Add by URL** to subscribe to the user's calendar.