

Google Workspace

GWMHN

Admin Guide

Google Workspace Migration for HCL Notes

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This project contains code from sendmail, NetBSD, RSA Data Security MD5 Message-Digest Algorithm, Cyrus IMAP.

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Chapter 1: About this guide

This guide is provided to help you understand and use Google Workspace Migration for HCL Notes (GWMHN).

GWMHN used to be known as G Suite Migration for IBM Notes (GSMIN).

What's in this guide

This guide contains the following information:

- An overview of GWMHN features and functionality
- An explanation of GWMHN architecture and how information is migrated
- Instructions for installing and configuring GWMHN
- Troubleshooting tips

Who should use this guide

This guide is intended for administrators who are responsible for the installation and management of GWMHN. A thorough understanding of HCL Notes (formerly IBM Notes) administration is required.

Where to find the latest information about GWMHN

You can find information about the latest version of GWMHN, including new features and fixed issues in [What's new in GWMHN](#). You can also find information in [Before you migrate from HCL Notes](#).

Need technical support?

If you have any questions or need technical support, go to [Contact Google Workspace support](#).

Disclaimer for third-party product configurations

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

Google does not provide technical support for configuring mail servers or other third-party products. In the event of a Notes issue, you should consult your Notes administrator. Google accepts no responsibility for third-party products. Consult the product's website for the latest configuration and support information. You can also contact Google Solutions Providers for consulting services and options.



Chapter 2: Overview

What is GWMHN?

GWMHN is a native Notes application that lets you migrate Notes users and mail-in databases to Google Workspace. Migration includes mail, calendars, personal contacts, and groups. You can also migrate data from a Notes discussion database or document library to Google Groups. You install GWMHN on an HCL Domino server running Microsoft Windows.

The following sections outline the general features of GWMHN, as well as functionality specific to each type of content that you can migrate.

Features

With GWMHN, you can simplify your Google Workspace migration with:

- **Unattended migrations**—Information is migrated to Google Workspace by a set of scheduled agents that run in the migration administration and feeder databases.
- **High data integrity**—Maintain data integrity for mail, calendar, and contact information.
- **Multiple methods of registration**—You can register users and databases one at a time, by server, through the Domino Directory, or by file import.
- **Provisioning**—You can optionally choose to provision Google Workspace accounts, mailing lists, and resources.
- **Incremental updates**—Users can continue to work with their Notes mail during migration.
- **Detailed logging**—Event and exception logging for each user and database.
- **Updated status**—During a migration, the status of messages, contacts, and calendar entries is regularly updated.

Mail migration

GWMHN preserves your HCL Notes mail throughout your migration, with support for attachments and links to Notes documents, views, and databases. A folder-inclusion or folder-exclusion list lets you manage what mail is migrated for each user. Additionally, GWMHN logs the number of messages transferred and the total size of the mail transfer for each user.

Supported:

- Notes mail addresses
- Notes mail folders (maps to labels in Gmail)
- Notes follow-up flag (maps to a star in Gmail)

Not supported:

- Unread marks (all mail is migrated as read)

Calendar migration

Supported:

- Meetings, appointments, and reminders
- All-day events
- Anniversaries
- Imported holidays (from the Domino directory)
- Alarm and privacy settings
- Room and resource information in your Notes calendar events.

Note: You must add this information to GWMHN before you start to migrate your users' calendars. For more details, go to [Provisioning resources](#).

Supported with conditions:

- Events that are created by third-party software, such as custom Notes applications. Events must be added to a Notes calendar through a supported Notes or web client.
- Resource bookings that you have added directly into the Domino resource reservations database (unless the user has booked the resource from their own Notes calendar).
- Custom events with a weekend rule applied and imported holidays where the holiday date differs from one year. These events don't migrate as repeating events. Each instance is migrated as a separate single-instance event.

Not supported:

- Calendar attachments
- Delegated attendees



Contacts and group migration

Supported:

- Contact migration, including any personal contact groups stored in the personal address book.
- Roaming users. During user registration, the system detects whether the user is a roaming user. For roaming users, GWMHN migrates contacts and groups from the personal address book on the roaming server specified in the user's Person document. Because GWMHN can't access a local address book, nonroaming users must synchronize their local address book with their mail database prior to migrating contacts.

Not supported:

- Nested contact groups (not supported by Google Workspace). GWMHN migrates nested contact groups as Google contacts. To avoid nested contact groups, users should flatten their group contact membership before beginning migration.

Notes database migration

Supported:

- Discussion databases and document libraries, which can be migrated to Google Groups.
- Mail-in databases, which can be migrated to Google Groups or to a standard Google Workspace account.

Note: Although it's possible to migrate Microsoft Office databases to a group, be aware that OLE objects might not render correctly following a migration.

Migration transport mechanism

All content is packaged and posted to Google using HTTPS. It's important that all servers running GWMHN have direct internet access so they can post content to the Google migration servers. You should work with your own network team to ensure there are no restrictions preventing access to the Google servers from the migration servers.

Migration performance

Migration performance depends on a number of factors, including:

- Message size
- Physical resources on the migration and mail servers, such as CPU, memory, disk speed, and network connection speed

- The overall speed of your network and your connection to external networks
- The density of traffic outside your network
- Chosen migration server topology and location of mail files in relation to the migration server

Parallel processing

Each migration server can process 10 users or databases concurrently. The system migrates a maximum of one message for each user or database each second.

For example, if you have one server that processes 10 users, then a maximum of 10 messages are processed in one second. If each of those 10 users has 4,000 messages, the migration takes approximately 4,000 seconds or 1.11 hours (10 users × 4,000 messages = 40,000 messages; 40,000 / 10 messages a second = 4,000 seconds or 1.11 hours).

The estimate doesn't include the preparation time where each Notes message must be converted to MIME before it can be migrated. In practice, you should double the migration estimate to allow for the preparation phase. In the example above, 10 users could be completed in approximately 2.22 hours.

Chapter 3:

Architecture & deployment

This section covers the primary architectural components of GWMHN and the hierarchy used to implement and manage data migration from Notes to Google Workspace.

Components

GWMHN is made up of the following primary components. Together, these components are referred to as the migration server.

Administration database

A Notes database (migration administration) that contains GWMHN configuration details.

Feeder databases

Provides the staging area where mail being migrated to a Google Account and documents destined for Google Groups are converted to MIME and then transformed to the format required by Google APIs. Feeder databases also manage the migration of calendar and contact information.

A feeder database processes one user at a time. When you implement multiple feeder databases, the databases work simultaneously. For example, if you implement 10 feeder databases, then you can process 10 users at one time.

Log databases

Each migration server has at least one log database. Tasks performed in the migration administration database, such as user registration, are logged to this database. Optionally, the server can also host a log database for each feeder that logs migration events for each user. Log entries are purged after 7 days.

Administration database agents

- **Check feeders agent**—Runs in the administration database. It creates the feeder databases and a mail-in database document in your Domino directory for each feeder database. If you delete a

feeder database or mail-in database document, the check feeders agent recreates them. By default, it runs every 60 minutes.

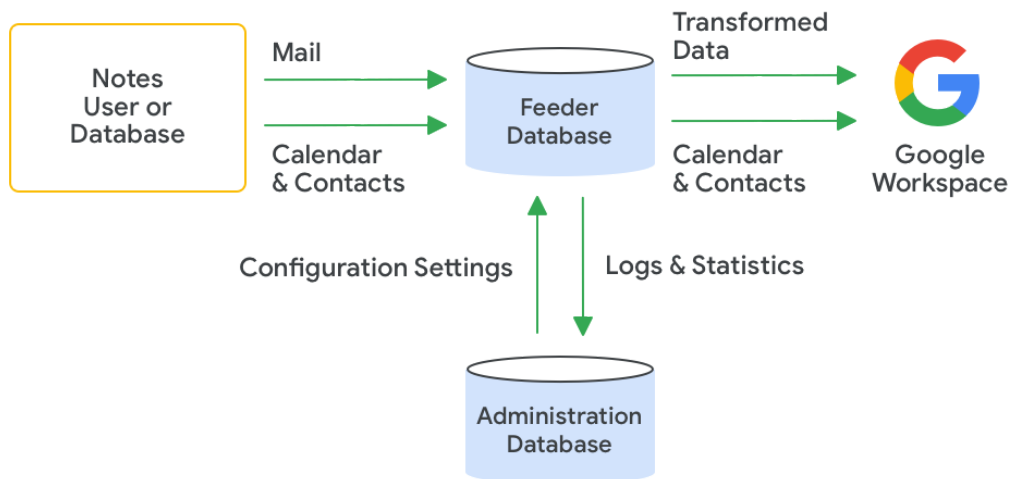
- **Purge documents agent**—Runs in the administration database. The purge documents agent removes any temporary documents that are created by other processes in the administration database. This agent runs daily.

Feeder database agent

The **migrate agent** runs in each feeder database and migrates data for each user or database that has been registered and activated in the administration database. The agent runs every 15 minutes.

How components work together

The following diagram illustrates how the components work together:



During migration, a crawler in the feeder database scans each mail file or database and extracts the content to be migrated. Mail being migrated to a Google Account and content bound for Google Groups are stored temporarily in the feeder and transformed to XML or JSON format before being posted to the Google servers. Contact and calendar details are delivered directly to Google Workspace.

The system creates migration status views in each mail file or database so users can monitor the migration process.

Migration management settings

System setup form

The system setup form defines your migration server settings, which include:



- General settings:
 - Migration status
 - Administrators
 - Domino directory file name
 - Server time zone
 - Migration start date
- Google Workspace domain details
- Default settings for each newly registered user or database
- Network connection information

The system setup form must be completed when you first install the system. For more information, go to [Configure the administration database](#).

Migration profiles

A migration profile is created for each user or database that you want to migrate. Migration profiles store the configuration settings that control how its user or database and the associated data are migrated to Google Workspace. These settings include:

- Migration status
- Database details (the primary database and any archives)
- Target address (Gmail username or group name)
- Migration parameters, such as cutoff dates, folder-mapping preferences, and a list of folders to include or exclude

For more information on registering users, go to [Register users & databases](#).

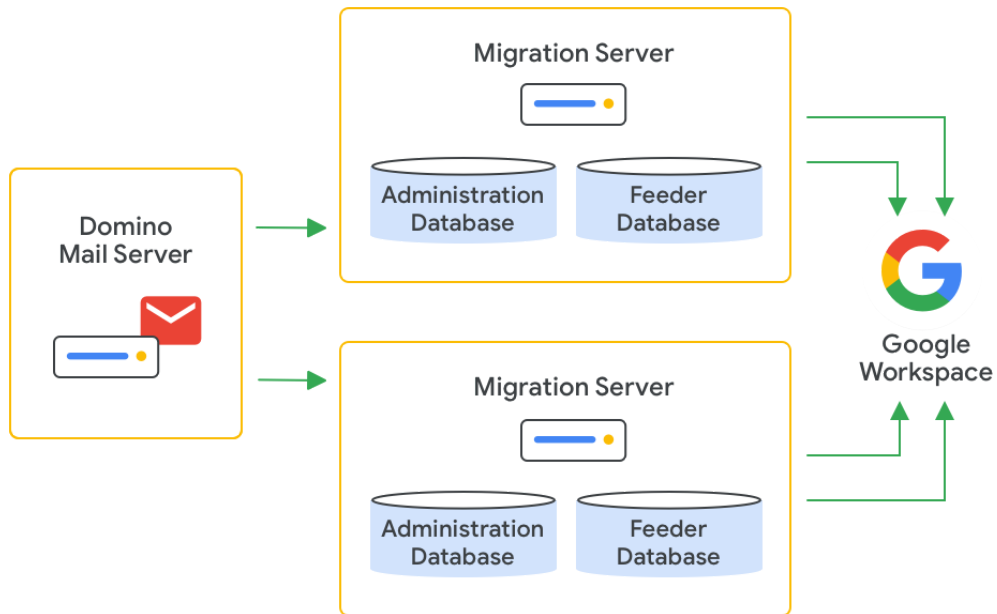
Deployment options

Install GWMHN on one or more dedicated Domino servers at each mail server location in your organization, plus any locations that include document library or discussion databases to be migrated. Migrating content across a WAN isn't recommended.

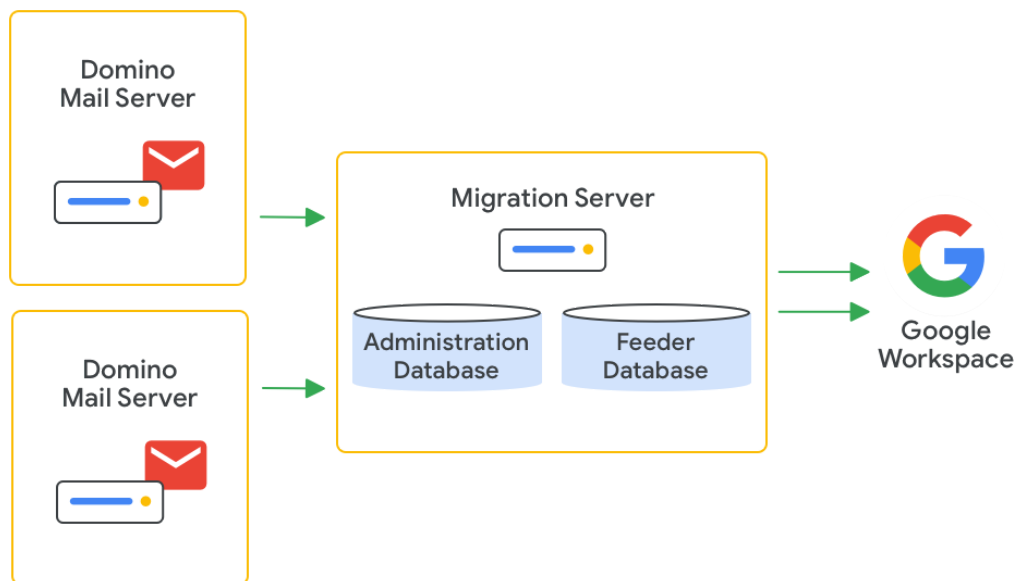
It's possible to install the system onto an existing mail server, however this isn't recommended. We strongly recommend installation on dedicated servers so that your production server performance isn't degraded during the migration period.

Example: Single mail server, multiple migration servers

In this scenario, each migration server migrates a unique set of users.



Example: Multiple mail servers, single migration server



Chapter 4: Installation

For you to successfully install and use GWMHN, it's important that you carefully follow the guidelines provided here. This section outlines how to prepare your environment before you install GWMHN and the system installation and configuration process.

Before you install GWMHN

After you decide on your deployment configuration, do some preparatory work on those systems before you install GWMHN.

Step 1: Meet the system requirements

Make sure you meet the system requirements for Google Workspace, the installation computer, and HCL Notes. For details, go to [Before you migrate from HCL Notes](#).

Step 2: Create a service account

Complete the steps in [Create a service account](#).

Prepare the installation computer

Step 1: Increase maximum concurrent agents and execution times

By using multiple feeder databases, you can run multiple simultaneous migrations from a single Notes server. To do so:

- Increase the daytime and nighttime values for **Max concurrent agents** on your server to **10**.
- Increase the daytime and nighttime values for **Max LotusScript/Java execution times** to **1440 minutes**. (**Note:** If you have a very large migration, you might want to set the execution time to more than 1,440 minutes.)

These settings are found in **Server Document > Server Tasks > Agent Manager**.

Step 2: Check the mail server field on your migration servers

In your migration server's Server document, confirm that the Mail server field's **Server document > Basics > Server Location Information** section matches the Server name field in **Server document > Basics**.

Step 3: Check the number of MAIL.BOX files on each server

To ensure optimum performance, you must have at least 2 MAIL.BOX files on each mail server and migration server.

To set the number of MAIL.BOX files:

1. Open Domino Administrator.
2. Click the **Configuration** tab, then click **Server/Configurations**.
3. Find the server configuration for each mail server and migration server.
4. In each server configuration, click the **Router/SMTP** tab, then click the **Basics** tab.
5. Set **Number of mailboxes** to 2 or more.

Step 4: Set your migration servers' MIME outbound settings

To make sure that Notes rich text is converted to HTML, set your servers' MIME conversion settings:

1. Open Domino Administrator.
2. Click the **Configuration** tab, then click **Server/Configurations**.
3. Find the server configuration for each migration server.
4. Click the **MIME** tab > the **Conversion Options** tab > the **Outbound** tab.
5. Set **Message content** to **From Notes to HTML**.

Step 5: Optimize console output

As email is routed through the feeder databases, you might want to reduce console output. Add the following line to the Notes.ini file for each mail server and migration server: **converter_log_level=10**.

Step 6: Set trusted servers

The migration server must have trusted access to any Domino server that hosts mail files and databases that are to be migrated.

To identify your migration servers as trusted servers:

1. In the Domino directory, open the server document for each mail or database server.
2. On the **Security** tab, in the **Trusted servers** field, enter the name of the migration server.

Step 7: Restart your servers

Restart each migration and mail server that is involved in the migration process.



Step 8: Sign the installation templates and check access

Copy the 3 Notes templates provided in the installation kit (gmail-migration.ntf, gmailfeeder.ntf, and gmail-log.ntf) to the root data folder on each migration server (typically the x:\Lotus\Domino\Data folder, but the location might depend on your server's configuration). After you copy the templates, use the Domino Administrator client to sign **All design documents** with a trusted ID. We recommend you use the server ID.

The ID used to sign the templates requires the following minimum rights:

- Designer access to all mail databases that you want to migrate
- Database creation rights on the migration server
- Editor access to the Domino Directory, with Create document rights and the NetModifier role

Additionally, the ID used to sign the templates must be an administrator on all mail and migration servers and must have permission to run restricted agents on all migration servers.

Step 9: Register the Service Account DLL on your migration server

Copy the appropriate Service Account DLL file `service_account_com_dll.dll` from your installation kit to the Domino program folder on each migration server (typically the x:\Lotus\Domino folder, but the location might depend on your server's configuration).

Note: If you're running a 32-bit version of Domino, copy the DLL file from the **Service Account DLL Win32** folder. If you're running a 64-bit version of Domino, copy the file from the **Service Account DLL x64** folder.

Register the DLL:

1. Start a command prompt in elevated mode (select **Run as an administrator**).
2. Ensure you're in the correct folder.
Move to C:\Windows\System32 for 64 bit Domino or C:\Windows\SysWoW64 for 32 bit Domino.
3. Enter the **regsvr32.exe c:\Lotus\Domino\service_account_com_dll.dll** command (where c:\Lotus\Domino is your Domino program folder).

Step 10: (Optional, but recommended) Disable mail database replication

Mail is flagged with a migration status as it moves through the process. The **Last Modified** property changes when a message is flagged. Each time this property changes, the message is replicated, which can cause a significant amount of unwanted network traffic.

Complete this step if you plan to stop using Notes after you have migrated to Google Workspace.

Step 11: Check file-size restrictions

Your Domino servers aren't set up to automatically restrict the size of an individual message. If you imposed a file-size restriction at any point, relax that restriction so that the mail servers can send legacy messages that exceed the file size to the migration servers.

To check the maximum message size setting:

1. In the Domino Directory, open the mail server's Configuration document.
2. Click the **Router/SMTP** tab.
3. Click the **Restrictions and Controls** tab.
4. Click the **Restrictions** tab.
5. Set the **Maximum message size** to **0**.

This value imposes no limit on message size.

Create the administration database

Create the administration database from the gmailmigration.ntf template that you copied to your migration server and signed earlier. We recommend that you create the administration database in its own folder on the migration server, so that all feeder and log databases are kept in one place on the server.

While creating the database and specifying the template to use, select **Show Advanced Templates** and use the Notes menus. If you simply copy the NTF file to an NSF file, the monitoring agents won't run, and the ACL won't be configured correctly.

Configure the administration database

When you create a new administration database, you have the option of choosing **Normal** or **Quick** setup. This section uses normal setup. For details on how to use quick setup, go to [Using the Quick Setup wizard](#).

Select **Normal Setup** > **OK**. A new setup form opens automatically. Follow the instructions in the sections below to complete the setup form. After you configure each tab, save the setup document.



General tab

- **Status**—Set this field to **Enabled**. If you set this field to **Disabled**, the migration agents won't run, however, any active migration processes finish as normal.
- **Administrators**—Select the users and groups you want as administrators. The default value is **LocalDomainAdmins**. If you're not a member of LocalDomainAdmins, add your name here so you can complete the configuration process and have administrative access later.
- **Domino directory file name**—Enter the name of the Domino directory.
- **Domino server time zone**—Select the geographic location of the site. This information is used to ensure that calendar information is assigned to the correct time zone before it is migrated to Google Workspace.
Important: The value you choose here must match the time zone of the Windows server where GWMHN is running. If these 2 values do not match, calendar events will not migrate correctly, so double-check your Windows settings.
- **Migration start date**—Enter the date on which you want migration to begin. The default value is today.

Google Workspace domain tab

- **Domain name**—Enter the name of the primary Google Workspace domain where you plan to migrate data. You can find the primary domain name in your Google Admin console. Click **Domains > Add/remove domains**.
- **Domain administrator email address**—Enter the full email address of your Google Workspace super administrator.
- **Authorization section**—Complete the authorization section as follows.

If you have not created your GWMHN project:

1. Click **Upload Key File** and attach your service account key file that was downloaded from the API console to the administration database.
The setup form should now show your file attached.
2. You must authorize GWMHN before you can begin to migrate content to Google Workspace. To authorize GWMHN:
 - a. Ensure the Notes client is set to use the operating system's default browser when opening webpages. Refer to your Notes help for more information.
 - b. Click **Authorize**.
 - c. Click **Get Authorization Code**.
 - d. Sign in to your Google Workspace account using your super administrator credentials, if

prompted.

- e. Read the Terms of Service and, if acceptable, click **Allow**.
- f. Copy and paste the code into the **Authorize** box.
- g. Click **Get Access Token**.

A message in the dialog box indicates the token has been obtained.

3. Click **OK**.
4. Check the Google Workspace domain tab and ensure that you have a valid access token.
5. If you don't see an access token valid from date, an error occurred during the authorization process. Troubleshoot using your migration log and Domino server console.
6. To complete the authorization process, grant the service account that you created earlier access to a number of Google APIs. To do this:
 - a. In your Google Admin console, click **Security > Advanced settings > Manage Domain Wide Delegation**.
 - b. Click **Add new**.
 - c. Under Client ID, enter your service account's client ID.

You can find the service account client ID in the JSON file you downloaded when you created the Google Workspace service account. Alternatively, you can find the client ID in the Google Cloud Console. Click **IAM & AdminService accounts**, then select your service account.
 - d. In the **OAuth scopes** field, paste the scopes from the setup form.
 - e. Click **Authorize**.

Migration Profile Defaults tab

Configure the **Migration Profile Defaults** tab as described below. The values you set here become the default values for each new profile that you register for migration to a Google Workspace account and Google Groups. You can change the values for individual users and databases after registration, if required.

User Profiles

- **Allow users to modify content controls**—Select **Yes** to allow users to set these values or **No** to prevent users from modifying the default values. The values are:
 - Mail processing status (and all optional mail processing controls)
 - Calendar processing status (and the optional cutoff date)
 - Contacts and groups processing status
- **Allow users to select archives**—Select **Yes** to allow users to add lists of archived databases to



their migration profiles or **No** to prevent users adding lists of archived databases to their migration profiles. When a user selects a local archive, the file is moved to the migration server. To facilitate writing to the migration server, give your users temporary **Create Database** and **Create Replica** rights on the migration server. You can revoke these rights after the migration. This setting applies only to individual user rights. An administrator can always add archives to a profile.

- **Migration type**—Select **Mail** if you want to migrate mail to the standard Gmail account or **Vault** to migrate to Google Vault.

Note: Vault migrations require additional licenses. Mail migrated to Vault does not appear in the Gmail account. Calendar and Contacts migration are automatically disabled if you migrate to Vault.

- **Mail processing status**—Select **Yes** to migrate mail data for your users or **No** to not migrate this data. Optionally, you can set date controls for mail migration. You can migrate all mail from a specific date, up to a specific date, or between 2 dates. For example, if you have 5 years' worth of mail data, you can set this value to migrate mail from only last year. All dates entered are inclusive.

Tip: Specifying an end date (the same date that you turn on dual delivery) is useful when you enable dual delivery to Notes and Google Workspace. It ensures that any mail dual delivered to both Notes and Google Workspace isn't migrated by GWMHN, which could duplicate mail in Google Workspace.

- **Migrate mail from**—Use one of the following options to identify the mail you want to migrate:
 - **All folders** (default)—Migrates mail from all folders.
 - **These folders only**—Migrates mail from only the folders specified in this field.
 - **All folders except these**—Migrates mail from all folders except the ones specified in this field.

Notes:

- If you select **These folders only** or **All folders except these**, enter the full hierarchical names of the folders. Use a backslash (\) to separate each folder level. Separate folder names with a comma.
- Mail in users' trash isn't migrated, regardless of which option you choose.

- **Migrate junk mail**—Select **Yes** to migrate mail from the Notes Junk Mail folder or **No** to exclude junk mail from the migration process.
- **Migrate truncated mail**—If you're migrating mail archives and you retain truncated versions of the archived mail in the primary mail file, you should select **No** to allow the full version of the mail to be migrated later. The full version of the mail can't migrate if the truncated version already exists in the Google Workspace account. Otherwise, enter **Yes** in this field.

- **Group archived mail**—Allows you to group all archive mail under a top-level Gmail label called **Notes Archive**. For example, if you set this field to **Yes**, any mail in the Projects/Sales folder in a Notes archive database is given the label Notes Archive/Projects/Sales in Gmail.
- **Calendar processing status**—Select **Yes** to migrate calendar data for your users or **No** to not migrate this data. Optionally, set a date to identify the first date from which calendar data should be migrated. For example, you can set this value to migrate data from only the last year. The date entered is inclusive.
- **Contacts and groups processing status**—Select **Yes** to migrate contacts and groups data for your users or **No** to not migrate this data.

Note: For nonroaming users, personal contacts and groups can only be migrated if your users sync their personal address book with their mail files on the server. Refer to your Domino help for more information on how to sync address books in your environment. A roaming user's contacts and groups are migrated from the server based address book that is specified in the user's Person document.

Groups Archive

- **Date range**—Optionally, you can set date controls for mail migration. You can migrate mail from a specific date, up to a specific date, or between 2 dates. All dates are inclusive.
- **Migrate mail from**—Use one of the following options to identify the mail you want to migrate:
 - **All folders** (default)—Migrates mail from all folders.
 - **These folders only**—Migrates mail from only the folders specified in this field.
 - **All folders except these**—Migrates mail from all folders except the ones specified in this field.

If you select **These folders only** or **All folders except these**, enter the full hierarchical names of the folders. Use a backslash (\) to separate each folder level. Separate folder names with a comma.

Note: Mail in users' trash isn't migrated, regardless of which option you choose.

- **Migrate junk mail**—Select **Yes** to migrate mail from the Notes Junk Mail folder or **No** to exclude junk mail from the migration process.
- **Migrate truncated mail**—If you're migrating mail archives and you retain truncated versions of the archived mail in the primary mail file, you should select **No** to allow the full version of the mail to be migrated later. The full version of the mail can't migrate if the truncated version already exists in the Google Workspace account. Otherwise, enter **Yes** in this field.

Network tab

- **HTTP transport**—Only use **ServerXMLHttp** for small migrations, demonstrations, or proofs of concept. XMLHttp doesn't support any proxy options.
- **Proxy server**—Migrating through a proxy server isn't recommended. However, if your Domino migration servers connect to the web through a proxy server, enter that server's address and port number here.
- **Proxy credentials**—If your proxy requires credentials, enter the username and password.
- **Network time-outs**—Occasionally, you might experience time-outs between your servers and the Google servers. The normal behavior in these circumstances is for the system to exit early and wait for the next scheduled run. To maintain normal system behavior, leave this set to the default value of **On**. To ignore time-outs and have the system wait for the Google servers to respond, set this to **Off**. Only do this if you're experiencing regular time-outs.

Notifications tab

- **User provisioning**—If you intend to provision users with GWMHN, you can choose the temporary password length and provisioning email template to use during the process or leave the default values. Provisioning emails are automatically sent to each user's Notes account. Alternatively, you can route these emails to a single recipient by completing the **Recipient (Leave blank to send to Notes account):** field. This can be useful during testing.
- **Notifications status**—If you set this value to **Enabled**, a notification is sent to your users when the migration starts and finishes. The system also sends an email to your migration administrators if migrations fail, for example, because of a network time-out. Set to **Disabled** to prevent system notifications.

For information on notification templates, go to [Chapter 5: Managing a migration](#).

Advanced tab

- **Number of feeder databases/users per feeder**—The number of feeder databases you want to use on this migration server. The maximum is 10. Feeder databases are created automatically by the check feeders agent. For each feeder database, the system creates a corresponding mail-in database document in your Domino Directory.

Note: Do not create feeder databases manually using the template provided. If you do, they won't have key profile information which is needed for the system to function as designed.

- **Maximum number of users**—The number of users that each feeder database can process during a single run of the migrate agent. The default is 25. Users are processed one at a time. Each time

the migrate agent runs, it processes one user after another until it has processed the number specified here. As active users move to the complete status during one cycle, slots become free for other active users to be processed during the next migration cycle.

- **Formula to generate a user email address from a Person document**—Enter the name of the field in each Person document that contains the Google Workspace username for each user you're migrating. Usually this is the **InternetAddress** field, but you can use any field. The field is used to map Notes names to internet names during the migration of mail, calendar, and contact data. You can also enter a formula in this field. The formula is evaluated at runtime to map Notes names to Gmail addresses. For example, the formula `@LowerCase(ShortName)+"@example.com"` takes the first value in each user's ShortName/User ID field, converts it to lowercase, and appends @example.com to create the Gmail address.

Tip: Click **Check Formula** to validate your formula.

- **Formula to generate a group email address from a Group document**—Domino doesn't add SMTP addresses to groups by default. Notes group names must be converted to group email addresses for migration.

Enter the field name you want to use to generate the Google Groups email address. This is typically the **InternetAddress** field, but you can use any Group document field.

You can also enter a formula that's evaluated at runtime to map Notes names to a group address. For example, the formula `@LowerCase(ListName)+"@example.com"` takes the group name, converts it to lowercase, and appends @example.com to create the group address.

Tip: Click **Check Formula** to validate your formula.

- **Service unavailability (50x) handling**—Choose **Continue** if you want the migration process to continue following a 50x server response. Doing so ensures that any single piece of content that might cause a 50x response doesn't stall the migration agents and the process moves onto the next item in the queue.
- **Exit early**—If you're experiencing service unavailability errors, select this option to direct the migration agents to pause for at least 15 minutes before retrying.
- **Retry failed migration attempts**—Occasionally, a migrated item might trigger a Google 50x server response. When this happens, the item is retried when the next migration cycle starts. This can have a detrimental impact on migration performance, as an exponential back-off process is also activated. Use this field to specify how many times GWMHN should retry a single item of content before it's removed from the queue and marked as a migration error.
- **Add status views to source databases**—The system automatically adds migration status views to each source database. These views show what is yet to be processed, what has been migrated, migration errors, and so on. This setting turns the creation of these views on or off. Disabling the option can be useful if disk space is an issue.

- **Expand Domino groups during Google Groups provisioning**—Group owners and members are populated from the information in your database ACLs and Domino directory. Nested groups in Domino are automatically applied to the group as a nested address. Enable this feature if you want each nested group expanded to its individual members. Enabling group expansion isn't recommended for the following reasons:
 - Groups are more difficult to maintain if they are made up of user email addresses only.
 - Each member and owner must be added individually to a group. Where group expansion is applied, this can add considerable overhead to the provisioning process.
- **Out of Office agent checks**—The system stamps each migrated mail message with a migration status value. In some rare instances, this update could trigger an out of office notification to the original sender of the message if the Out of Office agent is enabled. Because of this, the system doesn't process a user if the agent is enabled. You can override this behavior by setting this field to **Disabled**. This can be useful if you're migrating only calendar or contact data. If you're migrating mail, ensure that overriding the default behavior doesn't cause out of office notifications for any user that has the agent enabled.
- **Check and remove quotas before migration**—Set to **Enabled** to have the system remove quotas as part of its preprocessing checks. When mail quotas are used and a user's quota is nearly reached or exceeded, the system can't write the migration-status values back to the database. This causes the system to repeat the migration multiple times for affected users. The system automatically attempts to remove the quota on mail files as it processes them. For this process to work, you should ensure that the ID you use to sign the GWMHN templates is also listed as an administrator on each of your mail servers. Set to **Disabled** if you don't use quotas or you want to use Domino Administrator to remove quotas on all mail databases prior to migration.
- **User-level custom settings**—The custom settings field lets you expose another tab on your **Migration** profiles, which has a custom subform where you can place your own fields and controls to extend the functionality of the migration system. For more information, go to [Appendix 3: Custom Settings](#).
- **Delay between HTTP posts**—If you experience HTTP locks or service-unavailable responses from Google Workspace, you might need to increase this value to introduce a delay between successive posts. For optimum performance, keep the default value of 0.0.
- **Maximum mail size**—Sets the maximum message size allowed by Gmail. Messages greater than the size specified here won't be migrated.
- **Unknown From address**—Gmail requires a valid SMTP address in the **From** header of every message. Where a valid address cannot be derived from the Notes message, the value you enter here (for example, no-reply@example.com) is applied to the **From** header of the message. The

original Notes value is added to the **Sent by** header of the migrated message.

- **Additional mail forms**—If your mail files have forms other than Memo and Reply that meet the basic requirements of an email and you want to migrate those forms, enter the form names here. Each document is checked to verify that it has at least the From, SendTo, and Body fields. If any of these fields is missing, that message is excluded from the migration process.
- **Handling of email removed from Notes inbox**—In Notes, it's possible to remove a message from the inbox without placing it in a Notes folder. The message is visible in the **All mail** view in Notes. This option allows you to control how this message is filed at migration time. The default is to show the message in the Gmail inbox, but you can also specify a Gmail label under which to file the message.
- **Include label information when migrating to Vault**—Messages don't appear in the user account when migrating to Vault, and the system strips label information from messages to ensure that empty labels are not created in the Google Workspace account. Set this value to **Enabled** to keep the label information with the migrated message.

Note: This can result in empty labels in user mailboxes.

- **Wait period for mail "Sent to repository"**—Under normal circumstances, messages with the status **Sent to repository** are in the feeder database and before their status changes to **Migrated**. Occasionally, some messages might not reach the feeder database. This setting controls how long a message can remain at **Sent to repository** before the system checks the feeder database for the message. If it can't be located, the system resubmits it for migration.

Note: If a message is resubmitted but not migrated on the second attempt, it might be corrupt, and the Domino mail router cannot process it. If mail persists at this status and you can't fix the corruption, you must exclude the message from migration. Place the message into a folder in the Notes mail file and exclude this folder from the migration process. Do this by updating the **Migrate mail from** field on the migration profile.

- **Calendar migration test mode**—Configuring the system according to this guide will ensure that events migrate correctly, but an invalid configuration might require you to migrate your Notes calendars a second time. This can be difficult because Google Calendar rejects any attempt to add the same event multiple times. Even if you wipe Calendar, conflicts will still occur because stubs remain for a time, following event deletion.

Use Calendar migration test mode to test your configuration prior to running a full production migration of your Notes calendars. In test mode, the system applies a random identifier to each copy of an event. After you verify setup, you can wipe Calendar and move on to production migration, avoiding the possibility of conflicts.

When using test mode, follow these guidelines:

- Use test legacy and Google Workspace accounts where possible, then delete them.



- Don't run a test mode migration if you started a production migration or if any users started using Calendar.
- If using live accounts, remember to wipe Calendar before running your production migrations.

Note: The prefix [TEST MODE] applies to all events migrated in test mode, when fan-out still occurs. Deleting the organizer's event or wiping the calendar ensures the removal of all attendees' copies. If you migrate the organizer's and attendee's copy of the same event, the attendee's calendar will show the event twice.

- **Maximum thread size**—The maximum message (or document) size allowed when migrating to a group. Messages and documents greater than the size specified here won't be migrated.
- **Detailed migration event logging**—Set to **Enabled** to have the system log document-level events to a separate feeder log database created for each feeder. The log databases are in the same folder as the administration database.

When this setting is enabled, failures encountered during migration to the Google servers are also captured and stored as exception documents on the migration profiles. Only enable the setting to assist with a problem, because it can have a detrimental effect on performance.

Set to **Disabled** to prevent the system from logging document-level events.

- **Authentication, Token request, and Refresh token URLs**—The URLs used by the system to request access tokens for Google Workspace APIs during the migration process.
 - Important:** Don't change the values specified here unless advised to do so by Google support.
- **Trace token**—Trace tokens give Google support better insight into specific types of API errors. This field should remain empty, unless you have been provided with a trace token by Google support.

Configure the administration database ACL

Administrators

Grant your migration administrators Manager access to the administration database and assign all administrators the Admin role.

-Default- entry—This entry in the administration database is set to Manager when it is created. If you're using the invitation system and your users are updating their own profiles in the administration database, reduce this entry to Author and remove all role assignments. These users don't need document create or delete rights.

If your users don't need to update their profiles, don't grant them any rights. Reduce the -Default- entry to No Access and remove all role assignments.

Register users & databases

After completing your setup form, you can register your users and databases for migration. The following table shows which Notes database types can be migrated to which Google Workspace services:

Notes data	Google Workspace account	Google Groups archive	Google Vault
User mail file	Yes	No	Yes
Mail-in database	Yes	Yes	Yes
Document library	No	Yes	No
Discussion database	No	Yes	No

Support for each Google Workspace service also depends on which method you use for registration:

Notes data	Single database	By server	From Directory	Import from file
User mail file	Google Workspace account, Vault	Google Workspace account, Vault	Google Workspace account, Vault	Google Workspace account, Vault
Mail-in database	Google Workspace account, Vault, Group archive	Google Workspace account, Vault, Group archive	Google Workspace account, Vault, Group archive	Google Workspace account, Vault
Document library	Group archive	Group archive	n/a	n/a
Discussion database	Group archive	Group archive	n/a	n/a

- **Single database**—Register supported Notes database types from any server one at a time. The profile will point at the actual instance of the database you choose to migrate.
- **By server**—Register supported Notes database types from a single server in bulk. The profiles will point at the server you choose to register from. This is useful when you're migrating batches of users or databases that have been copied out of the production environment.
- **From directory**—Select users or mail-in databases from the Domino Directory. The profiles point to the mail file specified in the person and mail-in database documents in the Domino Directory.
- **Import from file**—Import a list of users and mail-in databases. The profiles point to the mail file

specified in the person and mail-in database documents in the Domino Directory.

Status during migration

During the migration process, each profile's status changes in the following ways:

Status	Description
Draft	The user or database has been registered but has not yet been activated in the system. Regardless of registration method, the profile's initial status is always Draft.
Invited	An invitation-to-migrate email has been sent to the user. The email contains a link back to the profile in the administration database. The recipient can complete the profile and submit it for migration. This action changes the profile's status to Active.
Active	Notes data is in the process of being migrated.
Complete	Notes data has been successfully migrated.
Hold	An administrator has suspended the migration for the user or database. When the hold is released, the migration resumes from the point at which it was suspended.

Register single database

This section describes how to register a mail database for migration to a Google Workspace account and the differences between registering for migration to a Google Workspace account or to Google Groups.

1. Open the administration database.
2. Select one of the views under **Migration Profiles**.
3. Choose an option:
 - To migrate to a Google Workspace account, click **Register > For User Account > Single Database**.
 - To migrate to a Google Group, click **Register > For Groups Archive > Single Database**.
4. In the **User** field, click Add +.
5. Select a server > the mail database you want to register.
6. If the correct Gmail username is not displayed, enter the username in the **Values** column.
7. In the **Migration type** field, choose an option:
 - To migrate to the Google Workspace account, select **Mail**.
 - To migrate directly to Google Vault, select **Vault**.

Note: If you migrate to Vault, you can't migrate calendar or contact information.
8. In the **Status** field, choose an option:
 - To enable mail migration for this user, select **Yes**.

- To disable mail migration for this user, select **No**.
You can also enter a start date, end date, or both to set a time frame that determines what messages are migrated.
9. In the **Migrate mail** from field, choose an option:
 - To migrate mail from all folders, select **All folders**.
 - To migrate mail from only the folders you specify in this field, select **These folders only**.
 - To migrate mail from all folders except the ones you specify in this field, select **All folders except these**.
If you select **These folders only** or **All folders except these**, you must enter the full hierarchical names of the folders. Use a backslash (“\”) to separate each folder level and separate folder names with a comma.
 10. In the **Migrate junk mail** field, choose an option:
 - To migrate mail from this user’s Junk Mail folder in Notes, select **Yes**.
 - To exclude Junk Mail from the migration, select **No**.
 11. In the **Migrate truncated mail** field, choose an option:
 - To migrate truncated mail, select **Yes**.
 - To ignore truncated mail, select **No**.
 12. In the **Calendar settings > Status** field, choose an option:
 - To migrate this user’s calendar, select **Yes**.
 - To exclude this user’s calendar from migration, select **No**.
You can set a cutoff date so that only appointments after that date are migrated. The date selected is inclusive.
 13. In the **Contacts and group settings > Status** field, choose an option:
 - To migrate contacts and groups for this user, select **Yes**.
 - To exclude this user’s contacts and groups, select **No**.
 14. If you want to migrate archived databases, click the **Mail Archives** tab.
 15. In the **Archive databases** field, click Add +, then select the server and databases you want to migrate.
 16. In the **Group archived mail** field, choose an option:
 - To show all mail from the Notes archive databases in the Notes Archive label in Gmail, select **Yes**.
Folder names are retained and converted to labels beneath the Notes Archive label.
 - To treat Archived mail the same as mail from the primary mail database, select **No**.
The Notes Archive prefix isn’t added to the Notes folder names.
 17. When you have finished configuring the user profile, click **Save > Exit**.

The single database registration method also applies to migrating a database to Google Groups. The process is similar to the one described above. Keep the following in mind when registering a single database for migration to Google Groups:

- Use the **Register > For Groups Archive > Single Database** option.
- Normal users can't be migrated to a group.
- Vault migrations don't apply to group migrations.
- Calendars and contacts can't be migrated to Groups.

Register by server

To register supported databases on a single server:

1. Open the administration database and select one of the views under Migration Profiles.
2. Choose **Register > For User Account > By Server** or **Register > For Groups Archive > By Server** as required.
3. In the **Server** field, click Add +.
4. Select the server you want, then click **OK**.
5. In the **Folder path** field, enter the name of the folder that contains the users or databases you want to register.
6. In the **Recurse subdirectories** field, select **Yes** if you want to also register users or databases in subdirectories of the folder you named above.
7. Click **Register Now**.

Register from directory

To register users or mail-in databases from the Domino Directory:

1. Open the administration database and select one of the views under Migration Profiles.
2. Choose **Register > For User Account > From Directory** or **Register > For Groups Archive > From Directory** as required.
3. If you're migrating to Google Workspace user accounts, you can choose to register users or mail-in databases. If you're migrating to Google Groups, only mail-in databases are allowed.
4. Select one or more users or mail-in databases from the list and click **OK**.

Register from a file

Register from a file creates migration profiles for users and mail-in databases for migration to Google Workspace user accounts only. You can't use this method to register databases for migration to Google Groups.

1. Create a text file that includes the names of the users and mail-in databases that you want to import into the administration database.

Use the following format:

- Each name should be on its own line.
 - The users and mail-in databases must exist in the Domino Directory.
 - Each name must refer to a person or mail-in database document in the Domino Directory.
 - You can enter the name in Notes or internet address format.
2. Open the administration database.
 3. Choose **Register > For User Account > Import From File**.
 4. Navigate to the file that you created earlier and click **Open** to start the import.

Uninstalling GWMHN

To uninstall GWMHN:

1. Delete the administration database.
2. Delete the feeder databases.
3. Delete any log databases created by the system.
4. Delete the GWMHN template files from the server.
5. Delete the Gmail Feeder <xxx> mail-in database documents from your Domino directory, where <xxx> is the migration server name you're uninstalling.
6. Unregister and remove the Service Account DLL from your migration server. To do this:
 - a. Shut down the Domino server.
 - b. Start a command prompt in elevated mode (select **Run as an administrator**).
 - c. Change to the C:\Windows\System32 folder for 64-bit or the C:\Windows\SysWoW64 folder for 32-bit Domino.
 - d. Enter the **regsvr32.exe -u c:\Lotus\Domino\service_account_com_dll.dll** command (where C:\Lotus\Domino is your Domino program folder).
 - e. Delete the service_account_com_dll.dll files.
 - f. Restart the Domino server.

Upgrading GWMHN

We generally recommend fully uninstalling and then reinstalling the latest version of the software following the instructions in this document. However, in certain cases, and when instructed by Google support, it's possible to upgrade to the latest version of GWMHN by completing the steps below:

1. Disable migrations from the System setup document.



2. Delete the following templates from the migration server:
 - gmail-migration.ntf
 - gmail-feeder.ntf
 - gmail-log.ntf
3. Wait for all migration agents to complete execution and check that all feeder databases are empty.
4. Delete the existing feeder databases (gmail-feeder-1.nsf, gmail-feeder-2.nsf, ... gmail-feeder-10.nsf) and any feeder log databases from the migration server.
5. Copy the new release templates to the migration server and sign them with the same ID that you used when installing the previous version.
6. Replace the design of the administration database with the new Google Workspace Migration template (gmail-migration.ntf).
7. Enable the system from the System setup document.

What happens next

Within one hour, the system creates new feeders from the latest version of the Gmail feeder (gmail-feeder.ntf) template. The migration agents process any active users listed in the administration database.

If you encounter issues during the upgrade process, uninstall and reinstall the software as documented above.

Chapter 5: Managing a migration

When you have registered your users and databases, you're ready to begin the migration process with GWMHN.

Before you start migration, you should assess how much information will be migrated to your Google Workspace account from HCL Notes.

Gathering premigration statistics

GWMHN allows you to estimate how much data you intend to migrate to Google Workspace. Use this feature after your users and databases are registered, but before you begin migrations.

1. Select the **Statistics** view from the menu.
2. Select the profiles for the users and databases you want to gather statistics for and click **Get Statistics**.

GWMHN completes the following steps for all selected profiles:

1. Opens the databases referred to by the profile
2. Applies any date selection criteria specified on the profile and generates counts for documents that will be selected at migration time
3. Calculates the total amount of data in bytes (excluding any data that is outside the date criteria)
4. Produces a total figure for all mail, calendar entries, groups, and contacts in the databases

Because GWMHN needs to assess the size of each document to be migrated, the process can take some time. You must have access to the source mail files and databases and must be an allowable author of the migration profiles. If you don't have the required level of access, the system logs the event and moves to the next profile.

Only profiles with **Draft** or **Invited** status are shown in the **Notes Statistics** views. The figures in this view are meant to be used as estimates only and might not reflect the final migration size because:

- A message might have an illegal attachment type, which will be rejected at migration time.
- Folder exclusion rules aren't considered.
- Mail data in Notes is usually smaller than mail data in Google Workspace (because, for example, attachments that are compressed in Notes are decompressed and converted to Base64 format in Gmail).



If you want to view statistics for one particular content type, use **Show** to filter and gather statistics by content types.

Migration calculator

The system includes a calculator for you to estimate migration times and bandwidth requirements for sets of users and databases by applying migration rates to the Notes statistics gathered above.

To use the calculator:

1. Run a minimum of 10 test migrations to allow the system to derive actual migration rates.
2. Register a set of users or databases for your live migrations.
3. Gather the premigration statistics for these users and databases using the steps above.
4. Click **Calculator**.
5. Complete the table:
 - a. Select the number of migration servers you have at this location.
 - b. Select how many hours a day you will allow migrations to run.
 - c. Choose a MIME allowance.

This value allows for the percent increase in mail size while Notes mail is converted to MIME as part of the migration process.
6. Click **Calculate**.
7. Bandwidth and migration times are displayed.

The MIME allowance is added to the computed feed time. This time is then added to the preparation time to derive the total time required. The values are estimates only, and you should always monitor the actual migration rates and migration times and compare actual results with the results predicted by the calculator. If you have more than one location, run the calculator for each location separately to take into account differences in local bandwidth availability and network and server performance.

Migration times can be faster where HTTP compression is used during the migration process.

Activate users and databases

Newly registered users and databases are initially set to **Draft** status. Before information can be migrated, the status must be changed to **Active**.

Option 1: Activate multiple users or databases

1. Open the **Draft** view.
2. Select the profiles you want to activate and click **Activate**.

You can also activate multiple profiles at once with the **Admin–Status Override** action.

Option 2: Activate by invitation

This method applies only to mail users. It isn't applicable to mail-in, document library, or discussion databases.

1. In the administration database, open a Migration Profile view to display a list of Draft users.
2. Select the users you want to send invitations to, then click **Send > Invitation**.
3. Click **Choose mail template**.
4. Select **Invitation to migrate > OK**.

The invitation form is populated with information from the mail template. It also includes options for users to synchronize their address books, decrypt email, and start the migration.

5. Click **Invite Users**.

Each selected user is sent an invitation email with a link to their user profile in the administration database. The mail profiles move to **Invited** status.

Mail templates

You can create mail templates to serve as invitations to start the migration process, as reminders, or as other types of communication with your users. The following templates are provided and you can use them as is or as the basis for new templates:

- Account provisioned
- Invitation to migrate
- Migration reminder
- Migration started
- Migration completed
- Migration exited early

Create a mail template

1. Open the administration database.
2. Go to the **Notifications** tab on the **System setup** profile.
3. Click **New Email Template**.
4. Complete the settings:

Setting	Value
Title	Enter a title for the template. This value appears in any list of template choices.



Include link to user profile	If you want the email based on the template to include a link to the user's profile, select Yes .
Greeting	Select or enter a greeting.
Name to user	Select the format for the name following the greeting: <ul style="list-style-type: none"> • First name only • Full name • None
Subject	Enter the subject for the message.
Content	Enter the body of the message. This can include rich-text elements and attachments.
Sign-off	Enter or select a closing for the message (for example, Regards).

5. Click **Save**, then click **Exit**.

The template is now available wherever you can select a template, including the **Send > Invitation** and **Send > Email** options.

Send invitations

You can only send invitations to users whose status is **Draft**. If you want to send an invitation to a user who has a different status, reset that user's status to **Draft**.

If you use the **Send > Invitation** option and select a user whose status isn't **Draft**, an invitation is not sent.

Manage body content

You can add tags to the mail-template Content field. The tags are replaced at runtime with the field values from the setup and user document types.

To add a tag to the Content field, enclose the appropriate document type in double chevrons (<<field name>>). For example: Migrations from <<SETUP.Site>> will begin on <<<SETUP.MigrationStartDate>> might return:

Migrations from Saturn will begin on 01/01/2020 (where Saturn is your migration server name).

Valid DocTypes are setup and user.

Note: There is also a special tag <<PASSWORD.GmailPassword>> you use to extract the user password that is generated by the provisioning component. This tag is only valid if included in the Provisioning

email template.

To find the field names for a document:

1. Right-click the document, then click **Document Properties**.
2. Click the **Fields** tab.

Manage mail files and databases

The system adds views to each mail file and database that it processes, so that you and your users can track migration progress. The 3 views (mail, calendar, and contacts) are added where content is being migrated to a Google Workspace account. Calendar and contacts views aren't created for Vault migrations or for migrations to a Google Groups archive. The following table outlines the different statuses applied to each type of document:

Status	Calendar	Contacts	Mail	Description
Unprocessed	✓	✓	✓	Document not yet processed by the migration system.
Sent to repository			✓	Mail has been routed to feeder database for further processing.
Repository error			✓	An error occurred when sending this email to the feeder database. The system will try again later.
Migrated	✓	✓	✓	Document sent to Google Workspace.
Migration error	✓	✓	✓	An error occurred when sending this document to Google Workspace.
Excluded			✓	Mail was excluded for one of the following reasons: Mail was excluded by the Migrate junk mail setting in the user profile. Mail was excluded by a folder exclusion rule. Mail was generated by the migration system. Mail contains an attachment not allowed by Gmail.

				<p>Mail was excluded by the Migrate truncated mail setting on the user profile.</p> <p>Mail was encrypted.</p> <p>Mail exceeds the size allowed by Google Workspace.</p> <p>Mail has a corrupt body and couldn't be processed by the migration system.</p> <p>The entry is mail stationery and not a valid message.</p>
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Resubmit data to Google Workspace

To resubmit content that failed to migrate:

1. Open the original mail file or database.
2. Select the appropriate Migration Status view.
3. Select the documents you want to resubmit to Google Workspace, then click **Migrate Again**.

To migrate a user or database that was successfully migrated and moved to **Completed** status:

1. Open the administration database and select the **Complete** view.
2. Double-click the profile that you want to reprocess.
3. Click **Migrate Again**.

The migration profile is set back to **Draft** status. After it's activated, previously migrated content is migrated again.

This action isn't the same as setting the profile back to **Active**, which migrates previously unprocessed content only. With the **Migrate Again** task, all data is reset to unprocessed and migrated again. Use this action with caution. Make sure you clear all mail, calendar, contacts, and group information from the Google Workspace account you're migrating to. If you're migrating content to a group, you should delete and recreate the group before migrating again.

Note: You can also flag multiple users for remigration from the Complete view using the **Admin > Migrate Again** action.

Decrypt mail

Because Gmail doesn't read encrypted mail, the system won't migrate this type of mail. Encrypted messages are visible in each user's mail database in the **Migration Status > Mail** view and are categorized as **Encrypted**. To migrate those messages, the mail database owner must first decrypt them.

Have the user follow these instructions to decrypt messages:

1. Open the **Migration Status > Mail** view.
2. Select all messages categorized as **Encrypted**.
3. Click **Decrypt Email** in the action bar.

The decrypted messages are migrated the next time the system processes the user.

Note: The invitation-to-migrate email includes the **Decrypt Email** button, and users can decrypt mail before they initiate the migration process.

Monitor database sizes

During the initial phase of migration, email and any documents that are being migrated to a Google Groups archive are routed through the feeder databases. This process generates a lot of internal email traffic on your network. With this in mind, monitor the following conditions daily:

- **The size of the MAIL.BOX databases**—Check whether the server has been able to compact these databases and, if not, compact them manually.
- **The size of the feeder databases**—Monitor these databases when you're migrating large amounts of information. Check that the server has been able to compact these databases, and if not, compact them manually or delete them when they are empty. The system automatically creates new feeders within one hour.
- **The indexes of the migration status**—Views can increase the original mail file or database size by as much as 35%. Make sure that you have enough disk space on your servers to accommodate this growth.

Chapter 6: Administration tools

You have administration tools available at the view level, as well as a number of agents you can run from the **Actions** menu.

Change a user or database status

You can override the system workflow and change the status of one or more users or databases.

1. In the administration database, open one of the Migration Profile views and select one or more profiles.
2. Click **Admin > Status Override**.
3. Select a new status.
4. Click **OK**.

Set migration cutoff dates

You can use this option to set migration cutoff dates for mail and calendar documents.

1. In the administration database, open one of the Migration Profile views and select one or more profiles.
2. Click **Admin > Set Cutoff Dates**.
3. Select **Yes** for each type of document for which you want to set a cutoff date.
Enter a date or click the calendar control to select a date.
4. Click **OK**.

To clear migration cutoff dates:

1. In the administration database, open one of the Migration Profile views and select one or more profiles.
2. Click **Admin > Set Cutoff Dates**.
3. Select **Yes** for each type of document for which you want to clear the cutoff dates.
4. Leave the date field blank.
5. Click **OK**.

Switch migration processing status for document types

You can use this option to switch migration processing status for mail, calendar, and contact or group

documents for specific users and databases. For example, if Mail processing status is set to **Yes** for a user and you choose **Admin > Toggle Mail Status**, then Mail processing status changed to **No**.

1. In the administration database, open one of the Migration Profile views and select one or more profiles.
2. Choose an option:
 - **Admin > Toggle Mail Status**
 - **Admin > Toggle Calendar Status**
 - **Admin > Toggle Contacts Status**

The processing status for each document type changes from its previous setting.

Disable roaming status

The system migrates a roaming user's personal contacts and groups from their server-based personal address book. If you prefer to migrate the contacts and groups from the user's mail file, you can remove all references to a user's roaming address book from the user profile. To disable roaming status:

1. In the administration database, open one of the Migration Profile views and select one or more profiles.
2. Click **Admin > Disable Roaming Status**.

The system now treats the user like a nonroaming user and migrates contacts and groups from the user's mail file. Disabling roaming status doesn't change the user's roaming status in the Domino directory.

Migrate again

To migrate a user or database that was successfully migrated and moved to **Completed** status:

1. Open the administration database and select the **Complete** view.
2. Double-click the profile that you want to reprocess.
3. Click **Migrate Again**.

The migration profile is set back to **Draft** status. After it's activated, previously migrated content is migrated again.

This action isn't the same as setting the profile back to **Active**, which migrates previously unprocessed content only. With the **Migrate Again** process, all data is reset to unprocessed and migrated again. Use this action with caution. Make sure you clear all mail, calendar, and contacts or group information from the Google Workspace account you're migrating to. If you're migrating content to a group, you should



delete and recreate the group before migrating again.

Actions menu agents

You also have access to the following agents from the Actions menu. To access the agents, select **Actions > Admin > <agent>**. Running the agents from the Actions menu doesn't override any default schedules.

- **Purge documents**—Runs the Purge Documents agent. Preset to run on each migration server at 1:30 AM.
- **System-integrity checks**—Runs a set of integrity checks against the system to make sure that all configuration documents are present. Also checks to see if there are any replication-conflict or save-conflict documents.

After you open the agent, click **Check System Integrity** and review the notes in the text field. If the agent identifies any problems, an email is sent to the global administrators. If you get warning messages, see the table below for information about how to resolve the problem.

Warning	Remedy
xxx migration profile conflicts found...	Open one of the Migration Profile views and resolve the conflict.
xxx password conflicts found...	<ol style="list-style-type: none">1. Open the (\$Passwords) view.2. Click Control + Shift > View > Go To.3. Select (\$Passwords).4. Locate the conflicts and delete them.

- **Check network**—Runs the Check Network agent. Allows you to test whether your Domino server can communicate with Google servers. Refer to the Migration Log database for the results of the network test.
- **Export configuration**—Use only if directed to by Google support.
- **Update project details**—Use only if directed to by Google support.
- **Run migration report**—Allows you to run a migration status report for one or more of your migration servers. Choose between a summary or a detailed report. The report is produced in CSV format for loading into Google Sheets.
- **Configure Developers console**—Use only if directed to by Google support.

Open a registered mail file or database

1. In the administration database, open one of the Migration Profile views and select a profile.
2. Click **Open > Database**.

Chapter 7:

Domino Directory migration

Provisioning Domino groups and resources

GWMHN allows you to create groups and resources in Google Workspace from the groups and resources you have stored in your Domino Directory.

Provisioning groups

The following actions can be performed only from a Notes Client for Windows.

1. Open the Directory Migration – Groups view.
2. Click **Load Groups**.
3. Choose which group types to load from the Domino Directory and click **OK**.
4. Select the groups once they have loaded and click **Provision Groups**.

These groups are created in Google Workspace.

Groups that are successfully created in Google Workspace are shown with a green flag. Failures are shown with a white flag. For more information, refer to the Migration Log database.

Provisioning resources

It's important that you populate the administration database with resource information before you start to migrate your users' calendars. If you don't, Notes addresses aren't mapped to Google Workspace addresses and resource information isn't captured during migration. The following steps can only be performed from a Notes Client for Windows.

Before you provision your resources, ensure that your Google Workspace sharing options have been set correctly.

1. Open your Google Admin console and choose **Apps > Google Workspace > Calendar > General settings**.
2. Click **Internal sharing options for secondary calendars**.
3. Select **Share all information > Save**.

Unless this field is set to **Share all information**, people who aren't managers of the resource will automatically have their invitations declined. For details, go to [Share room and resource calendars](#).



After your migrations, review your calendar resources sharing settings.

1. Open the Directory Migration – Resources view.
2. Click **Load Resources**.
3. Choose which resource types to import from the Domino Directory and click **OK**.
4. Select the resources and click **Provision Resources**.

The resources are migrated to Google Workspace.

Resources that have been successfully created in Google Workspace are shown with a green flag. Failures are shown with a white flag. To find out why a particular resource creation has failed, open the Migration Log database, locate, then expand the **Provision Resources** category.

Before you migrate Notes events that include resource bookings, you must change the Auto-accept invitations setting for each of the Calendar resources in Google Workspace. Do this manually for each resource:

1. Sign in to your Google Workspace account as a super administrator.
2. Open Google Calendar.
3. Copy the calendar address (for example, example.com_12345d636b6a656266e@resource.calendar.google.com) from the resource document in the administration database.
4. In Calendar, next to Other calendars, click Add + > **From URL**.
5. In the **URL of calendar** field, paste the calendar address from step 3.
The resource should now appear in your **My calendars** list.
6. From the menu, point to the Calendar resource name and select **Settings and sharing**.
7. Change the **Auto-accept invitations** value to **Automatically add all invitations to this calendar**.
8. Repeat the steps for each of your Calendar resources.

If you already provisioned your resources in Google Workspace and you want GWMHN to add resource addresses to the events that it migrates, load the resources into GWMHN as described above. Make sure you follow the process and don't attempt to provision the resources from GWMHN. Next, update each document by adding the appropriate Google Workspace address, which you can find in your Admin console. GWMHN converts the Notes resource names to Google addresses at migration time.

Don't delete the resource documents after they have been provisioned, because the values stored there are used during calendar migrations to ensure that rooms and resources booked in Notes are reflected in Calendar after migration.

Calendar resources are populated from event information that is held in your users' calendars. The system doesn't migrate events that have been added directly into the Domino Resource Reservations database.



Chapter 8: Troubleshooting

Logging

The migration agents that run in the feeders write summary and statistical information to agent log documents in the administration database and to each migration profile. Processing information for each profile can be viewed by using the Migration Events action at the view level or by selecting the Activity Log tab on the profile.

The GWMHN tool logs:

- Processing errors (for example, a failure to migrate because the migration agents couldn't access the original Notes mail file or database) are written to the migration profiles and are shown in the Processing Failures view.
- Activity of the agents that run in the administration database (for example, the Directory Registration and User Provisioning agents) is logged in a Notes Log database, which can be found in the same folder where the migration software is installed.
- Details about all content migrated is recorded in a log database for each feeder, if you enable detailed migration event logging. Migration exceptions are also captured on the migration profile when detailed logging is enabled.

How GWMHN handles errors

In general, high-level errors such as those associated with accessing resources on the Domino server or signing into Google Workspace are written to the logs and migration profile.

Low-level errors (for example, failure to migrate a particular message) are shown as an increment to the error count for the user or database (see **Migration Profiles > With Errors** view). Optionally, you can see these errors:

- In a separate Notes document and visible from the **Exceptions** tab on the migration profile
- As error events in the Detailed Event logging database that is used by each feeder

Error types

Initial communication errors

Before the system attempts to migrate any content, it performs a check to verify that GWMHN and the

Google Account have been configured correctly. If this check fails, data isn't migrated.

The most common causes for failure are:

- Invalid scope URLs added to the Admin console
- Invalid Google domain or OAuth parameters added to GWMHN
- Local proxy or firewall restrictions

If GWMHN and the Google Account are correctly configured and content isn't migrating, you should check that there are no firewall or proxy restrictions on your network that prevent the migration server from reaching the URLs specified in the GWMHN system setup profile.

You can check your network connectivity by running the **Check Network** agent from the **Actions - Admin** menu in the migration administration database.

Note: Google does not provide support for internal network issues. You must work with your own network team to resolve these issues.

Network errors

When a network error occurs, the actual HTTP error (for example, network time-out) is written to the migration log. If you have enabled notifications, an email notification is sent that includes a link to the migration log.

A network error is considered an unrecoverable early-exit error.

User and database processing failures

User or database processing failures occur when GWMHN can't process a registered user or database.

When this type of failure happens, the migration profile is visible in the **Migration Profiles > Processing Failures** view. The most common causes of a processing failure are:

- User or group doesn't exist
- Account suspended
- Update forbidden for mail, calendar, contacts, groups, or labels
- Can't remove mail file quota
- Out of office agent enabled
- Database open error
- Access checks failed
- Reset database failure



- Label creation failure
- Unable to get access token

Processing failures can occur at activation time and other failures can occur during processing. Migration profiles that are locked remain active. The system continues to process the migration, retrying during each migration cycle until the error is resolved.

Some errors clear automatically. For example, a user's profile can lock if the system attempts to migrate too many events for that user in a short time. This situation can result in a **Calendar Update Forbidden** response. Over time, the quotas reset, the profile moves out of the Processing failures view, and the migration finishes.

Other locks, such a **Database open** error, must be resolved by the Notes administrator before the system can proceed with the migration.

Migration errors

A migration error occurs when a single Notes document (mail, event, contact, group, or application document) can't be migrated successfully. In this case, the error count on the migration profile is incremented, and the original document is marked as a migration error. If you have enabled detailed migration event logging, the content and the Google server response are captured in an exception document, which can be accessed from the **Exceptions** tab on the migration profile. It includes a link to the original content that failed to migrate.

Early-exit errors

An early-exit error often results from a network failure. Common causes of an early-exit errors are:

- HTTP 503 error - Service unavailable
- MS XML error 213
- Domain suspended
- Admin quota exceeded

When an early-exit event occurs, GWMHN records the reason in the agent log and, if notifications are enabled, an email is sent to the administrators advising that the GWMHN agents had to shut down early.

How to respond to errors

For errors that involve individual users or databases, check the migration profile for any authorization problems and the **Migration Profiles > Processing Failures** view.

For low-level content migration problems, check the **Migration Profiles > With Errors** view to identify the problem accounts. Then check the **Migration Status** views in original Notes files to see which documents have failed to migrate.

General troubleshooting

I have registered users, but nothing is happening

You might also see the following entries in the server log:

- AMgr: Agent 'Migrate' in 'gmail-Feeder-1.nsf' does not have proper execution access, cannot be run
- AMgr: Agent 'migrate' in 'gmail-Feeder-1.nsf' encountered error: Error validating user's agent execution access

The GWMHN templates were not signed before you installed the tool. You need to sign the administration database and each of the feeder databases with a trusted ID (server ID is recommended).

I see “Notes error: Unable to open Name and Address Book...”

Make sure that the server where the mail file resides has the migration server listed as trusted.

My migration quits with an error in the Domino server log

You see this error in the server log: Agent printing: ** Feed terminated: Microsoft Http / Network error occurred **.

When the occasional HTTP-connection time-out occurs, the next migration run resumes from the point at which it left off. You can set the system to ignore network time-outs. For more information, go to [Network tab](#).

Log message: “The connection with the server was terminated abnormally”

This can be caused by your internal network blocking the URLs to which the system is posting data. Check that these URLs are not blocked for your migration servers.



During migration, I see a “Status code 403” error

The error displays “Status code 403 - The user has exceeded their quota, and cannot currently perform this operation.” Contact [Google support](#) to troubleshoot this error.

I have fewer migrated messages in Gmail than I had in my Notes inbox

Notes messages that are replies to one another are threaded together as a conversation in Gmail. Where you might have several Notes messages that are replies back and forth around the same subject, you have one Gmail conversation that comprises all those messages. So the number of migrated messages in Gmail might be smaller than the original number in Notes.

How do I migrate a user’s email to a real account after a test?

1. Change the user’s Gmail user name in their migration profile. Go to [Register single database](#).
2. Click **Migrate Again** to reset all of the mail in that user’s mail file. Go to [Resubmit data to Google Workspace](#).

I have a user whose status seems to be stuck in Active

1. Open the mail database for that user.
2. Click **Views > Migration Status**, then check the **Calendar**, **Contacts**, and **Mail** views to see whether the migration has encountered an error or is just proceeding more slowly than expected.

I can’t register a user. Error shows “Unable to locate Persons document in Domino directory”

First, check to see whether you’re able to register other users. If you can’t register any users, the Domino directory file name might not be recorded correctly in the System setup profile. Alternatively, you might have created the GWMHN admin database on the client instead of the server.

If you can register other users but not this specific one, add the database title as an additional entry to the **User** name field on this user’s Person document. Afterward, refresh the views in the Domino directory. You can do this by entering the **Load updall names.nsf** command into the server console on the migration server.

Links to Notes’ documents don’t show correctly in Gmail

Set up your Domino server so that links to Notes’ documents are clickable in Gmail. Edit the Messaging Configuration Document for the outbound SMTP server:

1. Open **MIME > Conversion options > Outbound** tab.

2. In the **Message content** field, set the value to **From Notes to HTML** or **From Notes to plain text or HTML**.
3. Using the Domino server console, enter the **Tell router update config** command.

Internal “Notes 4005” error

The user has changed the folder type to **Shared, Private on First Use** causing label creation to fail for a folder. This folder type can cause an internal “Notes 4005” error when accessed by the migration agents.

Additional help

For additional troubleshooting information, go to:

- [Troubleshoot build errors](#)
- [Troubleshoot email issues](#)

Appendix 1:

Extended character support

To configure the system to support extended character sets (such as Japanese, as defined in ISO- 2022-JP):

1. Open the Domino Directory, then open the **Configuration > Messaging > Configurations** view.
2. Edit the configuration documents that apply to your mail servers and to any server that is hosting the administration and feeder databases:
 - a. Click the **Basics** tab.
 - a. Set the **International MIME Settings for this document** field to **Enabled**.
 - b. Click the MIME tab, then click the **Settings by Character Set Groups** tab.
 - c. Check the **For outbound message options below use all possible choices (Advanced users)** box.
 - d. Use the **MIME settings by character set group** menu to select the character set group you want.
 - e. Under **Outbound Message Options**, set **Header and Body Encoding** to **Quoted Printable**.
 - f. Save your configuration document.
3. Repeat the steps for any server involved in the migration process not covered by the document you just modified.
4. When you have updated all of the configurations, restart the affected servers.

Appendix 2:

Working with GWMHN API

The feeder databases include a script library, Custom Events, that includes routines designed to let you interact with the GWMHN API. The routines are described below.

Warning: Custom API code can interfere with the normal operation of the system. Google takes no responsibility for and provides no support for any system in which custom API code that has been shown to interfere with normal operations was deployed.

PostFinaliseUser (userProfile As NotesDocument)—Called after all email, calendar, and contacts or group entries have been successfully migrated to Google Workspace and the mail profile has the status of complete. Passes in the user's mail profile.

PostMigrateUser (userProfile As NotesDocument)—Called immediately after each user has been processed by the migration module. Because it can take multiple cycles to fully migrate a user, this routine can be called multiple times for a user. Passes in the user's mail profile.

PostMigrateUsers—Called at the end of each migration run.

PostUpdateRepository—Called at the end of each repository (feeder database) update.

PostUpdateRepositoryUser (userProfile As NotesDocument)—Called immediately after the repository (feeder database) has been updated for each user. Passes in the user's mail profile.

Function QueryFinaliseUser (userProfile As NotesDocument) As Integer—Called after all email, calendar, and contacts or groups entries have been successfully migrated to Google Workspace and just before the profile is set to complete. Return False to skip the user. Return True to let processing proceed. Passes in the user's mail profile.

Function QueryMigrateUser (userProfile As NotesDocument) As Integer—Called for each user prior to migrating content to Google Workspace. Return False to skip the user. Return True to let processing proceed. Passes in the user's mail profile.



Function QueryMigrateUsers () As Integer—Called just before the feeder begins to process its first database. Return False to abandon the operation. Return True to let processing proceed.

Function QueryUpdateRepositry () As Integer—Called just before the system populates the mail repository to convert Notes email to MIME email. Return False to abandon the operation. Return True to let processing proceed.

Note: All of the events listed above can also be used to interact with the processing of mail-in, document library, and discussion databases.

Appendix 3: Custom settings

The system includes a custom subform that can be used to add additional fields and programming logic to your migration profiles. The Custom Settings tab isn't automatically displayed on your migration profiles. It's enabled from the Advanced tab of the System Setup form.

Warning: Custom settings should only be added by an experienced Notes developer, because this code can interfere with the normal operation of the system. Google takes no responsibility for and provides no support for any system in which custom subform code that has been shown to interfere with normal operations was deployed.

A common use of the subform is for the presentation of additional information about each user. This information can be derived from the logic of the form (for example, Domino Directory lookups for organizational details based on Notes name) or by using the API.

Appendix 4: Quick Setup wizard

When you create the administration database, you can complete a normal or quick setup. The normal setup process is described in [Create the administration database](#).

To perform a quick setup:

1. Click **Choose a setup > Quick Setup**.
2. Confirm your Domino directory file name is correct, choose your Domino server time zone, then click **Next**.
3. Enter your primary domain name and administrator's email address.
4. Click **Next**.
5. Click **Get Authorization Code**, sign in to your Google Workspace Account as a super administrator and, if asked, grant GWMHN access to your account. Copy the code.
6. Click **Get Access Token > Next**.
7. Click **Create Project**.

The following project tasks are completed:

- Creates a project in the Google Developers console
 - Enables the APIs used by GWMHN
 - Creates a service account
8. Click **Next**.
 9. Click the **Manage API Client Access** page link.
This will take you to your Google Admin console.
 10. Add the Client ID and scopes from the Quick Setup wizard to this page and click **Authorize**.

Configure the Domino Directory

In step 1 above, there is a **Configure Domino Directory** option. This optional step covers the configuration tasks in [Prepare the installation computer](#).

The following values are updated in the migration server document:

- Sets daytime and nighttime concurrent agents to **10**.
- Sets daytime and nighttime maximum agent runtimes to **1440**.
- If the signer of the GWMHN templates is a user, adds the username to the following fields:
 - Administrators
 - Sign or run unrestricted methods and operations

The following values are updated in the server configuration document:

- Sets number of mailboxes to 2.
- Sets message content to HTML.

Note: If the server does not have its own configuration document, this step must be completed manually.