



Office for National Statistics

Lotus Notes to Exchange Online Migration Tool Overview

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Author	Gavin Morrison
Reviewer	Ian Stretton
Prepared for	Phil Holding
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Date	10 th September 2015
Contacts	w: www.risual.com
	e: gavinm@risual.com
	t: 0845 680 0077
	f: 01785 226555

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Version Control

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0.1	09/09/2015	Gavin Morrison	Stephen Masterson	First Draft
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Approvers

Version Approved	Name	Position	Date
1.0	Ian Stretton	Practice Manager @ risual	11/9/2015

1 Introduction

The Office for National Statistics (ONS) have engaged risual to evaluate migration tools for their upcoming migration from Lotus Notes to Exchange 2013.

The tool selected by ONS for evaluation was from Cloud Technology Solutions, CloudMigrator365 (CM365).

The purpose of this document is to provide the ONS with an indication of what can and cannot be migrated by CM365, considerations for migration and any expected changes in user experience either during the coexistence period or post migration.

2 Requirements

This section details the requirements for a migration solution, as agreed with ONS representatives.

2.1 Business Requirements

Table 1 - Business requirements

Code	Requirement
BR1	Migration activity must be completed within short timescales to avoid prolonged coexistence between the platforms.
BR2	Users must be able to view e-mail messages after migrating to Exchange.
BR3	Users must be able to view their personal contacts after migrating to Exchange.
BR4	Users must be able to view their calendar entries after migrating to Exchange.
BR5	Users must be able to modify, cancel or reschedule their existing meetings after migrating to Exchange.

2.2 Technical Requirement

Table 2 – Technical requirements

Code	Requirement
TR1	Provide a mechanism for migrating user mailboxes from Notes 8.5 to Exchange 2013.
TR2	Make as few changes as possible to the existing Notes / Exchange environment.
TR3	Allow flexibility during the migration to pre-stage data, roll back, and tweak views, databases etc.

2.3 Out of Scope

Table 3 – Out of Scope

Code	Exclusions
EX1	Encrypted Messages – A number of encrypted messages exist on the Notes system, and these cannot be decrypted by any migration tool. ONS will either decrypt these messages prior to migration, or allow them to remain in Notes.
EX2	Contact Synchronisation – By default, the Notes client does not store contacts on the server. ONS will need to synchronise these contacts with the Notes server prior to migration.
EX3	Mail Routing – Routing between the platforms is controlled using Clearswift Secure Email Gateway devices and will be configured to relay between the two platforms.
EX4	Distribution Groups – Rather than introduce the complexity of two-way group synchronisation, ONS will create mail contacts in Exchange to represent their distribution groups rather than migrating them as groups.
EX5	Resource Mailboxes – ONS have a custom room booking system, and the rooms / resources within this will not be migrated in the first instance.
EX6	Training – End user training and communications are out of scope for risual.

2.4 Assumptions

Table 4 – Assumptions	
Code	Assumption
AS1	All contacts will be synchronised to the Notes server prior to migration.
AS2	All notes users exist in Active Directory, and have the 'mail' attribute populated with their correct Notes internet email address.
AS3	All Notes recipients will be able to receive mail sent to a Notes-specific routing address, e.g. notes.ons.gov.uk.
AS4	All Exchange recipients will be able to receive mail sent to an Exchange-specific routing address, e.g. exchange.ons.gov.uk.
AS5	The source / target platforms have sufficient capacity to allow for migration.

2.5 Dependencies

Table 5 – Dependencies	
Code	Dependency
DP1	Prior to migration, all users need to be given mailboxes on Exchange.
DP2	CM365 requires a domain-joined server from which to run the migration.
DP3	Changes the to configuration of Clearswift Secure Email Gateway will be performed by ONS

2.6 Risks

Table 6 – Risks		
Code	Risk	Mitigation
RK1	Coexistence between platforms is not optimal (see user experience section), and may cause some user interruption during the coexistence period.	The migration window should be kept as short as possible to minimise coexistence issues.
RK2	Coexistence with Exchange and in-house applications has not been tested.	It is assumed that there are no Notes applications that require interaction with user's mail, other than having the ability to send mail. Users will retain an empty mailbox on Notes for the foreseeable future, so any integration should continue to function.

3 Technical Overview

This section gives a high level technical overview of the technical steps and changes to perform migration testing and to configure limited coexistence between the platforms. These steps are high level and further changes may need to be made to the production environment as the migration is scaled out.

3.1 Mail Flow

In the test environment, Exchange relayed all messages to Notes, and Notes relayed all messages to Exchange. There was no internet connectivity and no perimeter scanning devices.

All mailboxes on Notes were configured to accept e-mail to a @notes.ons.gov.uk address, and all mailboxes on Exchange were configured to accept e-mail to a @exchange.ons.gov.uk address.

Before a user is migrated to Exchange, their Exchange mailbox will have a forwarder to Notes (using @notes.ons.gov.uk). After a user is migrated to Exchange, their Notes mailbox will have a forwarder to Exchange (using @exchange.ons.gov.uk).

3.2 Remote Domains

Exchange uses a proprietary format for rich text e-mails, called Transport Neutral Encapsulation Format (TNEF). Notes has support for converting TNEF data into rich text, but it is preferable to prevent Exchange from using it on messages destined for Notes.

A remote domain will be configured on Exchange for 'notes.ons.gov.uk' with the 'TNEFEnabled' flag set to false. This will cause Exchange to strip TNEF encoding before the message is relayed to Notes.

3.3 Mail Quotas

Quotas on Exchange should be set at a high level until the migration has completed, or should be set significantly higher than the Notes quota. This will avoid any migration failures caused by hitting Quota limits. If the quota's are set in Exchange to unlimited, this can cause issues if a mailbox or a number of mailboxes develop issues during the migration and can consume all the storage in Exchange. Setting a quota of some level will at least ensure that no one mailbox can consume too much or all of the storage thus effecting all users.

3.4 Notes Access Control

The CM365 service account will require 'Manager' access to all mail files to perform the migration.

Extreme care should be taken with the credentials for this service account as it has complete and unrestricted access to all Notes data.

3.5 Impersonation

CM365 uses Exchange Web Services (EWS) to access Exchange mailboxes. The migration should be run using a service account, and the service account should be granted the 'ApplicationImpersonation' role using the 'New-ManagementRoleAssignment' PowerShell cmdlet.

Extreme care should be taken with the credentials for this service account as it has complete and unrestricted access to all Exchange data.

3.6 Throttling Policy

Exchange 2013 throttles EWS requests to prevent a single user overwhelming a server. This is useful in production, but can severely limit the throughput of a migration. The service account used by CM365 should be granted a new throttling policy.

A throttling policy should be created for CM365, and all of the EWS / RCA restrictions set to null (unlimited).

3.7 Prepare Mailboxes

All existing Active Directory users will need to be given a mailbox from day one to allow data synchronisation to take place. To ensure the users have representation in the GAL, all users should be given mailboxes, rather than only enabling mailboxes at the time of a migration batch.

The ONS e-mail address policy gives out e-mail addresses based on the user's mail alias. Therefore, when creating mailboxes, it is important that an appropriate alias is created.

In testing, the alias was generated programmatically by selecting the local part of the Windows E-Mail Address (i.e. the 'mail' field in Active Directory).

Once the mailbox is created, a forwarder will need to be set to ensure any mail sent from Exchange users is sent back to Notes.

This can be done in PowerShell, as shown in this example:-

```
Get-User -OrganizationalUnit 'testons.local/ONS/Exchange Test Users' | % {
    $NewMailbox = $NewAlias = $null
    $NewAlias = ($_.WindowsEmailAddress.ToString().Split('@'))[0]
    $NewMailbox = Enable-Mailbox `
        -Identity $_.Identity `
        -Alias $NewAlias
    Set-Mailbox `
        -Identity $NewMailbox.Identity `
        -DomainController $NewMailbox.OriginatingServer `
        -ForwardingSMTPAddress ($NewAlias + '@notes.ons.gov.uk')
}
```

3.8 Data Migration (First Pass)

At the start of the data migration, all Exchange mailboxes have forwarders to Notes mailboxes, and the Notes mailboxes have no forwarders. CM365 is configured to migrate all data from Notes into Exchange, for all mailboxes. At this point, no users will access this data, and the purpose of this migration is only to pre-stage the data for second (and subsequent) passes.

3.9 Data Migration / Cutover

When ONS are ready to cutover a group of users, a final data migration will take place. CM365 will be configured to only migrate data that was received since the last migration pass. This is done to reduce the amount of time to complete the final pass, as otherwise, CM365 would need to evaluate each item in a mailbox to determine whether it had already been migrated or not. CM365 will not duplicate items in the event that the date ranges overlap.

Once the migration is completed, the mailbox is up to date, the forwarder on Exchange can be removed, and replaced with a forwarder on Notes. The user may then begin to use their mailbox.

It should be noted that any data that was deleted in Notes since the first migration pass will not be deleted in the Exchange mailbox.

3.10 Shared Address Books

Some groups of users make use of 'shared address books'. These users are able to see certain contacts, and 'local' distribution groups. These will be migrated, in the short term, to Shared Mailboxes on Exchange.

To achieve this using CM365, the mail file will need to be associated with a person document in Notes, as CM365 will only migrate data to / from users. Rather than add this to the existing Notes address

book, they can be added to a secondary (hidden) address book, which CM365 can make use of in its configuration file.

3.11 CloudMigrator365 Hardware Requirements

At least one server will need to be allocated to install and run CM365 from. The specifications provided by CM365 indicate that the following minimum requirements should be met:-

- 2x Core CPU
- 4GB RAM
- ~100GB HDD

Storage speed is the priority, as the messages are cached locally as they are transferred between systems. Capacity is not a problem as they are held for a matter of seconds. Adding more than 4GB RAM is not required as the application runs in 32-bit mode.

A server at each of the two primary ONS Sites, Newport and Titchfield, would avoid having to transfer data across the WAN and increase migration throughput. From a licensing point of view, CM365 is per-user and can be installed on an unlimited number of servers.

3.12 Internet Access

The migration server will need access to the internet to validate the license for CM365. This can be done through a proxy server, and CM365 will use the Internet Explorer proxy settings, or settings can be explicitly stated in the config.

3.13 CloudMigrator365 Configuration

The following tables highlights any CloudMigrator365 configuration that was changed from default as part of the testing (excluding usernames, passwords, server addresses).

Table 7 – Destination Platform Server Settings - Exchange

Configuration Item	Value	Comment
Authentication Method	NTLM	Basic authentication was not enabled on the EWS Virtual Directory.

Table 8 – General Migration Settings - General

Configuration Item	Value	Comment
Send Migration Statistics	FALSE	This prevents the tool from reporting migration metrics back to the vendor.

Table 9 – General Migration Settings - Common

Configuration Item	Value	Comment
Prefix Common ID	FALSE	This prevents the tool from changing common appointment IDs on migration. Disabling it is required for calendar 'coexistence'.
Address Book Groups	TRUE	This is required to migrate groups within personal contacts.

Table 10 – Destination Platform Migration Settings - Exchange

Configuration Item	Value	Comment
PowerShell Init Script	'Basic' authentication changed to 'Kerberos'.	This changes the authentication method used to connect to Exchange Management Shell.

4 User Experience

This section provides an overview of the user experience of the three different types of item migrated. It is designed to highlight the changes users will experience during and after migration.

The coexistence between the platforms is limited, and keeping the migration window as short as possible will greatly improve the user experience.

4.1 Mail

Overall, the user experience for mail is good. Aside from encrypted messages, and the slight different in 'look and feel' between old and new messages, messages are almost identical to how they were on the Notes platform.

Table 11 – User Experience - Mail

Task	Behaviour
Send an unencrypted e-mail from Notes to Exchange	Mail is relayed to Exchange.
Send an unencrypted e-mail from Exchange to Notes.	Mail is relayed to Notes.
Send an encrypted message from Notes to Exchange.	Not possible, message will need to be sent unencrypted.
Send an encrypted message from Exchange to Notes.	Not possible, message will need to be sent unencrypted.
Lookup a notes user in the Global Address List.	Notes users will appear in the GAL as a normal Exchange mailbox.
Lookup an Exchange user in the NAB.	Exchange users will continue to appear in the NAB as a normal Notes mailbox.
View e-mail message in Exchange mailbox.	Message appears as it does in Notes. The 'reply' / 'forwarding' block in <i>existing</i> message threads will continue to be shown in the Notes format rather than the Exchange / internet format.
View e-mail message sent from a Notes delegate in Exchange mailbox.	The 'From' field in Exchange only shows the delegates e-mail address. For example, if John Smith sent a mail on behalf of Jane Doe on Notes, only John Smith's name would be present on Exchange. NOTE: The above is due to be resolved in an upcoming CM365 update.
View encrypted e-mail message in Exchange mailbox.	Message subject, sender and date/time appears, but the message body is blank with no indication that the message was encrypted. Subject to EX1, ONS will either decrypt messages before migration or leave them in Notes.

View folder structure in Exchange mailbox.	Folders are populated from the Notes mailbox and appear in the root of the Exchange mailbox.
View read / unread status in Exchange mailbox.	Messages that were read will remain read and unread messages will be unread.
Reply to an existing e-mail message in Exchange.	The recipient addresses have been resolved from Notes addresses to SMTP addresses, so replies to existing e-mails work as expected.

4.2 Calendar

The user experience for calendars is mixed, particularly so during coexistence. Calendar items are migrated, including their recurrence pattern, meeting attendees, locations etc.

However, during the coexistence period, automatic updates of calendar items between platforms does not function correctly. This will cause some user interruption during the coexistence period, which is detailed below.

Table 12 – User Experience - Calendar

Task	Behaviour
View a recurring meeting in Exchange mailbox.	If the recurring meeting had a 'simple' pattern, i.e. every Wednesday for four weeks, it will be migrated as a recurring meeting. If the recurrence pattern is complex, the meetings will be migrated as individual items.
View a non-recurring meeting in Exchange mailbox.	Meeting displays as it did in Notes, with the date / time fields mapped to the equivalent fields in Exchange, and the location of the meeting in Notes mapped to the location field in Exchange.
As the organiser of a meeting, update an existing meeting with a new time.	If all meeting attendees are on Exchange, they will receive the updated meeting invitation and their calendar will be updated. If a meeting attendee is still using Notes, they will receive the update to their meeting, but their calendar will not automatically be updated and the Notes client will throw an error on opening the message.
As the organiser of a meeting, view the attendees of an existing meeting.	Attendees show correctly, and are matched back to the relevant Active Directory user.
As a meeting attendee still using Notes, where the meeting organiser is on Exchange, send a response to an existing meeting (i.e. Accept / Decline).	The Exchange user (the organiser) will receive an e-mail informing them of the update, but the attendee list will not automatically update.

4.3 Contacts

The migration of contacts is straightforward, and data in Exchange post migration appears almost identical to the source data.

Table 13 – User Experience - Contacts

Task	Behaviour
View contacts in Exchange mailbox.	Contacts appear as they did on Notes, with the Notes fields mapped appropriately to Exchange fields.
View contact Groups in Exchange mailbox.	Contact groups appear as they did on Notes. All members of the groups are also added to the default Calendar view, as Groups on Exchange are used to organise contacts, rather than acting as containers for them.
Send e-mail to contact in Exchange mailbox.	Message is delivered as expected.
Send e-mail to contact group in Exchange mailbox.	Message is delivered as expected.

5 Appendix

5.1 Terms and conditions

For risual limited, Terms and Conditions please see the following website.

<http://www.risual.com/Pages/Terms-of-Business.aspx>

5.2 About risual

risual are a customer first, Microsoft technology company with a proven track record in delivering innovative solutions to meet business needs. Leveraging the capabilities across Microsoft's cloud and on premise solutions, risual's Consultancy and Support teams offer our public and commercial customers an end to end service, transforming the way their businesses operate, reducing cost whilst driving productivity enhancements.

Winners of Microsoft UK Partner of the Year 2015, further demonstrating our commitment to delivering innovative solutions to our customers, risual will tailor a Microsoft solution to support your business needs.