SuSE Framework Solutions

Migrating from Microsoft Exchange 5.5 to the SuSE Linux Openexchange Server

SuSE Linux AG – Whitepaper

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1 Preface

This whitepaper outlines the SuSE Linux Openexchange Server migration process that migrates users' data from a Microsoft Exchange 5.5 server to the SuSE Linux Openexchange Server.

It is aimed at any Microsoft Exchange 5.5 administrator who is considering the options and potential benefits offered by migrating to the SuSE Linux Openexchange Server.

By examining the functionality offered by Microsoft Exchange 5.5 and the corresponding functionality in the SuSE Linux Openexchange Server, it shows what can be expected from such a migration in terms of affecting existing Microsoft Exchange 5.5 data and to a lesser extent how the equivalent functionality affects the user.

Naturally the migration procedure can be tailored to a company's individual needs to account for special requirements, however the procedure for common requirements is outlined here.

Any migration involving mission-critical applications is a major step with much at stake and the pros and cons offered by such a migration need to be fully considered. This paper is designed to show you that a migration to the SuSE Linux Openexchange Server can be made quickly and painlessly, with the minimum risk and absolute minimum of data loss.

2 Overview

Here we provide a brief overview of the benefits of migrating from an existing Microsoft Exchange 5.5 environment to the SuSE Linux Openexchange Server. This chapter also contains a look at the features offered by the SuSE Linux Openexchange Server.

Finally we'll examine what is involved in migrating a Microsoft Exchange 5.5 server to the SuSE Linux Openexchange Server.

2.1 Introducing the SuSE Linux Openexchange Server

The SuSE Linux Openexchange Server is a powerful new collaboration solution designed to assist you in communicating, sharing and organizing information in your business.

Making use of popular, well-established and stable open source technologies*, the SuSE Linux Openexchange Server provides the ultimate Groupware and e-mail solution incorporating the following features:

- Webmail
- personal organizer including contacts, addresses and a fully-featured calendar
- project management
- knowledge database
- discussion forum

Thanks to an easy-to-use and consistent Web-based user interface, even the complete computer novice with no computer experience apart from browsing the Internet will have no problems using the SuSE Linux Openexchange Server.

Incorporating rock solid UNIX-based security features, users have complete control over what information is private and what is accessible to others right down to the level of individual items. This assures the minimum of risk while at the same time the maximum flexibility over what should be shared.

Since the entire application can be used with nothing more than a web browser connected to the Internet, users can access the entire functionality of the SuSE Linux Openexchange Server securely due to the 128-bit SSL encryption algorithm. This combined with the fact that the SuSE Linux Openexchange Server can be used from practically all computer platforms such as Windows, MacOS, Linux and PalmOS makes the SuSE Linux Openexchange Server the ultimate solution in terms of security, portability and accessibility.

2.2 The Migration Itself

Migrating from Microsoft Exchange 5.5 to the SuSE Linux Openexchange Server is a quick and straightforward procedure.

The migration is performed by SuSE partners who carry out the whole process and are able to advise you about common queries or issues arising from the change to the SuSE Linux Openexchange Server.

Assuming that all users have been briefed about the changes and have been given a demonstration about using the SuSE Linux Openexchange Server, the transition from Microsoft Exchange 5.5 will be a smooth one.

* Postfix for the SMTP server and Mail Transfer Agent,
Cyrus for the IMAP Mail Delivery Agent,
the Apache web server and OpenLDAP LDAP server.

Timing

Migration will be performed in a clearly defined timeframe, preferably outside normal business days. The precise timeframe will be determined after analyzing the particulars of the Microsoft Exchange 5.5 server that will be migrated. However, assuming that there are no special unusual requirements (e.g. additional custom Microsoft Exchange 5.5 forms that should be included in the migration) or an exceptionally large number of users, the typical timeframe for a migration which includes testing should be around 2 days.

As some typical examples, in 24 hours data from the following number of users may be fully migrated:
168 users with each user having 1000 e-mails/other items, 50 of which have attachments of 2 MB
OR:
31 users with each user having 10,000 e-mails/other items, 50 of which have attachments of 10 MB

Migration Components

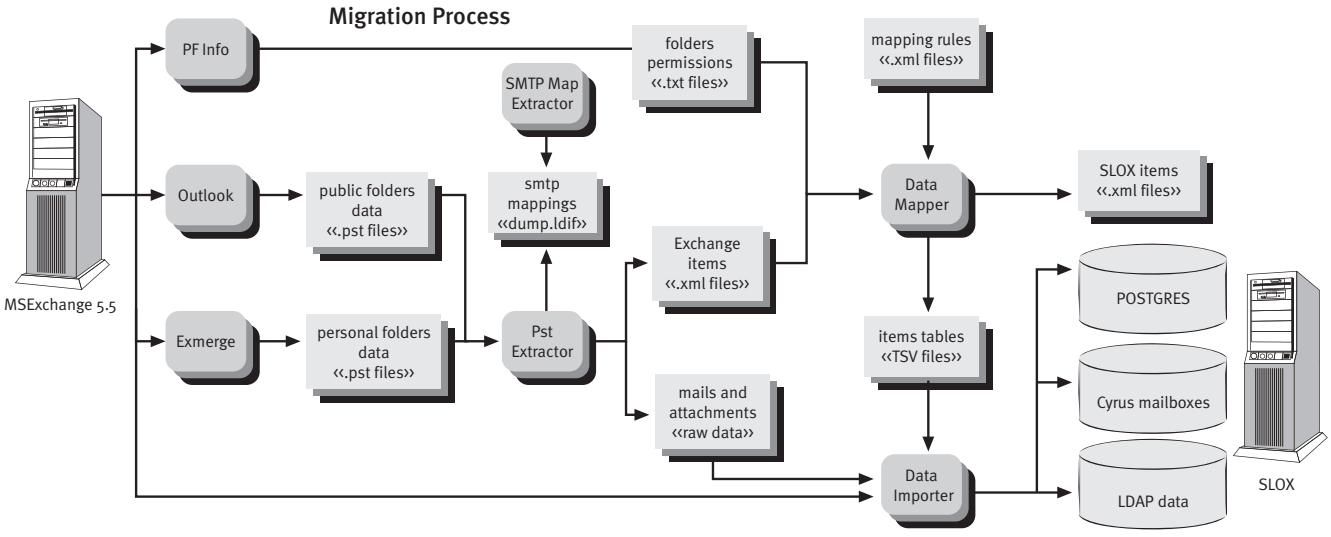
The migration itself is carried out by a number of software components designed to carry out specific steps:

Microsoft Outlook	Extracts public store data into Personal Information Store (.pst) files.
Microsoft Exmerge	Extracts private store data into .pst files.
Microsoft PFInfo	Extracts public store permissions.
PST Extractor†	Converts data from .pst files into intermediate file storage.
Data Mapper†	Transforms non-e-mail data from intermediate storage into a format suitable for importing into the SuSE Linux Openexchange Server.
Data Importer†	Imports user accounts, user data (including e-mails) into the SuSE Linux Openexchange Server.

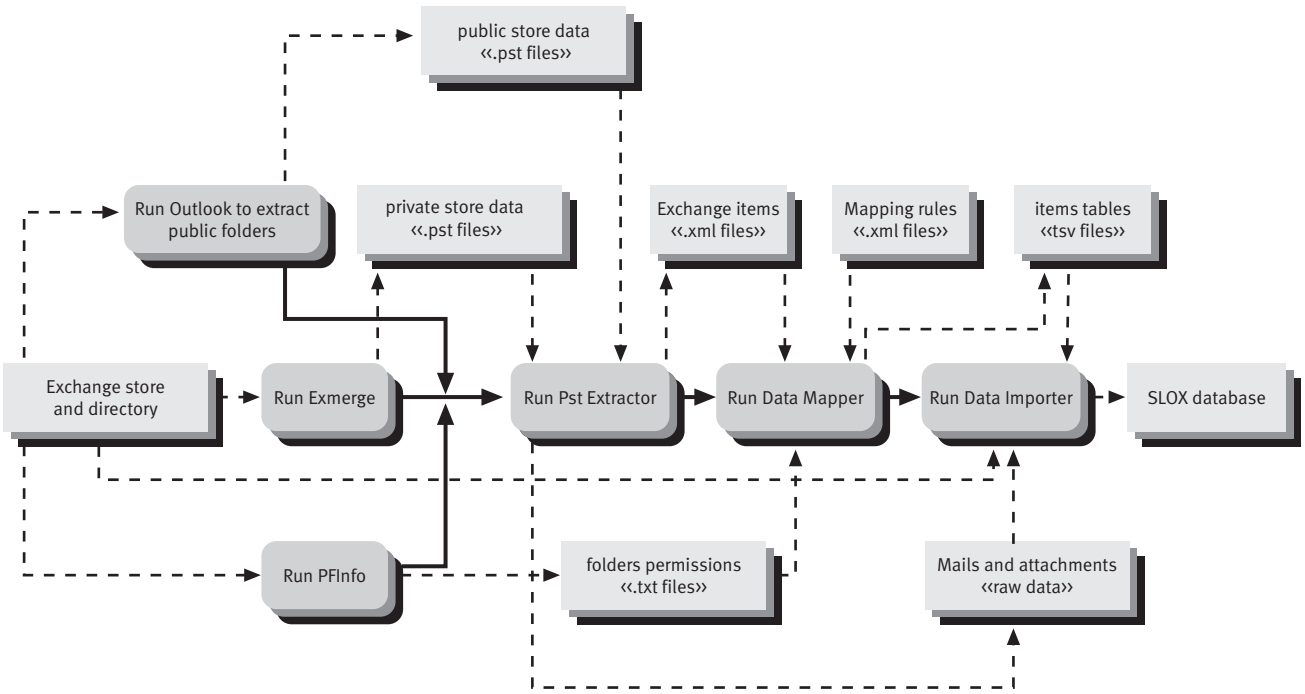
Migration Steps

The following diagram shows how the different components interact with each other during all stages of the migration, and shows how intermediate data is passed from one component to another.

† developed for SuSE AG, by Sava Systeme GmbH



The following diagram shows the order in which migration components may be run:



3 Migrating Microsoft Exchange 5.5 Data

Data in Microsoft Exchange 5.5 that is to be migrated originates from one of three places: the directory store, the private store or the public store.

This chapter briefly examines these three data sources along with an overview of how Microsoft Exchange 5.5 deals with access permissions.

3.1 Directory Store

The Directory Store provides Exchange-specific user information such as the list of all users and their personal information. This includes:

- e-mail addresses,
- contact details
- user permissions

This data is exported from Microsoft Exchange 5.5 during migration by extracting information from the Microsoft Exchange 5.5 server and importing it into the SuSE Linux Openexchange Server via LDAP.

3.2 Private Store

The Private Store contains the large majority of users' data in Microsoft Exchange 5.5. All data which is not stored in public folders is found here – by default only the owner of the data has a right to access it. This includes the following items:

- e-mails
- calendar items
- tasks
- contacts
- notes

Private store data is migrated by exporting and processing Personal Information Store (.PST) files from the Microsoft Exchange 5.5 server, one .PST file for each user.

Once this data is processed it is imported into the SuSE Linux Openexchange Server user account and the access permissions are set to reflect the fact that it is the user's private data (see below).

3.3 Public Store

The Public Store contains all data that has been created by Microsoft Exchange 5.5 users in their public folders intending the data to be made accessible for others. Any item type which is normally private may be placed in the public store:

- e-mails
- calendar items
- tasks
- contacts
- notes

As with private store data, public store data is migrated by exporting and processing a Personal Information Store (.PST) file from the Microsoft Exchange 5.5 server which contains all public data stored in the server. Public Store data is imported into the SuSE Linux Openexchange Server user accounts of the users who first created the data and their access permissions are set to reflect the original public access permissions (see below).

3.4 Data Access Permissions

Data access permissions in Microsoft Exchange 5.5 depend on which store the data is located in:

- Private Store data is inaccessible to anyone but the data's owner
- Public Store access permissions depend on the access permissions explicitly set on the folder where the data is stored. Users may choose to set the permissions according to predefined roles (Owner/ Publishing Editor/Author...) or they may choose to define their own access permissions.

During migration all permissions regarding the access to user data is extracted along with the data itself. This enables the access rights to be reproduced after migration.

4 Migrating Microsoft Exchange 5.5 Functionality

In this chapter we examine the different functionality offered by Microsoft Exchange 5.5 and state the equivalent SuSE Linux Openexchange Server functionality with a view to migrating data which exploits the Exchange functionality to the SuSE Linux Openexchange Server.

Although the large majority of Microsoft Exchange 5.5 data may be migrated, sometimes data may undergo slight modifications. This is explained here as well as the Microsoft Exchange 5.5 features that have no counterpart in the SuSE Linux Openexchange Server.

In the case of any data loss during migration, the migration operator is notified in the form of a migration analysis log file. Data loss is likely to occur with information stored in Microsoft Exchange 5.5 fields which do not have a matching SuSE Linux Openexchange Server field. If data loss is unacceptable for certain such fields, it is sometimes possible to fine tune the field mappings by hand.

4.1 Directory Information

Microsoft Exchange 5.5 makes directory information freely to anyone querying the server. Such information includes:

- list of all Exchange users and user groups
- e-mail aliases
- public information such as user names, telephone numbers, e-mails, departments etc.
- address books

During migration this information is extracted from Microsoft Exchange 5.5, processed into a suitable format and finally imported into the SuSE Linux Openexchange Server. The old Microsoft Exchange 5.5 users and user groups are created and all other information relating to them is set including e-mail aliases.

4.2 E-Mails

The following e-mail functionality in Microsoft Exchange 5.5 has an equivalent functionality in the SuSE Linux Openexchange Server:

- the sending/receiving of e-mails in HTML or simple text
- the sending/receiving of e-mails with one or more attachments

Migration of e-mails including e-mails with attachments is accomplished without any problems. In the case of e-mail attachments, the MIME type information is retained.

In the SuSE Linux Openexchange Server, as in Microsoft Exchange 5.5, users can arrange their e-mails hierarchically in folders. However, in contrast to Microsoft Exchange 5.5 where mails are stored in the Exchange Database, in the SuSE Linux Openexchange Server they are stored in UNIX directories and as such benefit from the high level of security offered by UNIX. Access to these directories is enabled through the Cyrus IMAP daemon.

During migration, access to these directories is set depending on the original Microsoft Exchange 5.5 e-mail folder access (see above). Thus users' e-mails may be migrated in their original folders and with all attachments, but please note the following points:

- E-mails originating from non-SMTP connectors will have their addresses rewritten to valid SMTP e-mail addresses if the sender or the receiver is on the Exchange machine that is migrated. Otherwise, there is no way during migration of translating non-SMTP e-mail addresses into valid SMTP addresses. Such mails are migrated but with incomplete addresses (e.g. fred instead of fred@acompany.com)
- Electronically signed and encrypted e-mails can be migrated without problems; however there is no in-built support for electronic signing and encrypting in the SuSE Linux Openexchange Server.
- Microsoft Exchange 5.5 e-mail filters may not at present be migrated.

4.3 Appointments, Meetings and Events

In Microsoft Exchange 5.5 all these items are entries on the user's calendar. Their characteristics are described as follows:

- Appointments represent activities that do not involve other people or resources.
- Meetings represent activities that involve the creator plus one or more other person or resource.
- Events are appointments that last one or more whole days.

All three items are similar in that a user can set a reminder for them at any arbitrary time and date. In addition to this, Microsoft Exchange 5.5 calendar items may be set to repeat periodically.

The similarities between these Microsoft Exchange 5.5 items are such that in the SuSE Linux Openexchange Server they are all regarded as the same item – an Appointment.

Appointments in the SuSE Linux Openexchange Server offer practically all the functionality that the corresponding Microsoft Exchange 5.5 items offer and as such data of these types may be migrated without problems. Please note, however, the following points:

- The SuSE Linux Openexchange Server does not support yearly recurring calendar items. Any Microsoft Exchange 5.5 calendar items (appointments, meetings or events) that are set to recur yearly are themselves migrated but their yearly recurrence is not.
- Reminders to appointments in the SuSE Linux Openexchange Server appear as e-mails sent to the relevant user or users and can only be set to occur at fixed number of hours/minutes before the appointment is due to start. This is in contrast to Exchange 5.5 where a reminder is in the form of a popup that occurs at an arbitrary user-defined time and date before the start of the calendar entry (in the case of appointments and meetings) or before the end of the calendar entry (in the case of events). During migration from Microsoft Exchange 5.5 a reminder time is converted to the nearest SuSE Linux Openexchange Server reminder time.
- As with Microsoft Exchange 5.5 calendar entries (appointments, meetings and events), SuSE Linux Openexchange Server appointments may also be set to repeat periodically as long as they are not yearly recurring

4.4 Contacts

In Microsoft Exchange 5.5 users can create a Contact to store detailed information about a person. Such information may include personal information such as the contact's birthday and business-related information such as a business fax number. It may additionally contain information relating to the contact's business address, home address and one other address.

Once created, a Microsoft Exchange 5.5 user can send e-mails to the new contact by selecting the contact from his or her address book.

In the SuSE Linux Openexchange Server a user can similarly create a contact after having created a business address for the contact. In this way multiple contacts with the same address (e.g. employees at the same business) may be conveniently grouped together. As in Microsoft Exchange 5.5, once a new contact is created, it may be selected when the user wants to send an e-mail to the contact.

MIGRATING FUNCTIONALITY

Since in the SuSE Linux Openexchange Server a contact needs to have an address before it is created, care is taken during migration of an Microsoft Exchange 5.5 contact that the business address of the contact does not already exist – if it does then the contact is added to the address, however if the address does not yet exist then it is created along with the migrated contact.

The possibility that a Microsoft Exchange 5.5 contact may have up to three addresses (Home, Business or Other) or optionally none at all needs to be accounted for during migration. The following table shows all these possibilities and explains what has happened during migration in each case:

Microsoft Exchange 5.5			The SuSE Linux Openexchange Server
Home	Business	Other	
			A new default business address containing the contact is created with its private address as the Exchange contact's Home address.
X			A new default business address containing the contact with its private address is created.
	X		The business address is searched for. If it doesn't exist, a new business address containing the contact is created. Otherwise the contact is added to the existing business address.
		X	A new default business address is created containing the contact with its private address as the Exchange contact's Other address.
X	X		The business address is searched for. If it doesn't exist, a new business address containing contact is created with the contact. Otherwise the contact is added to the existing business address. In both cases, the contact is created with its private address as the Exchange contact's Home address.
X		X	A business address is searched for that is the same as the Exchange contact's Other address. If it doesn't exist, a new business address which is the same as the Exchange contact's Other address is created. Otherwise the contact is added to the existing business address. In both cases, the contact is created with its private address as the Exchange contact's Other address.
	X	X	The business address is searched for. If it doesn't exist, a new business address containing contact is created with the contact. Otherwise the contact is added to the existing business address. In both cases, the contact is created with its private address as the Exchange contact's Other address.
X	X	X	The business address is searched for. If it doesn't exist, a new business address containing contact is created with the contact. Otherwise the contact is added to the existing business address. In both cases, the contact is created with its private address as the Exchange contact's Home address and with the contact's other address as the Exchange contact's Other address.

The large majority of the information stored in Microsoft Exchange 5.5 relating to contacts is able to be stored in the SuSE Linux Openexchange Server and as such contacts are able to be migrated without problems.

4.5 Notes

A Note in Microsoft Exchange 5.5 is simply the electronic form of a piece of paper onto which a user can write something.

In the SuSE Linux Openexchange Server the equivalent to a Note is a Pinboard Note. In addition to being able to add information to the body of a pinboard note, it may contain a describing name which is how the creator (and others if it is made public) first sees the pinboard note before opening it.

Notes in Microsoft Exchange 5.5 are migrated by the original text being converted to both the description and the body of the pinboard note.

4.6 Tasks

A Task in Microsoft Exchange 5.5 represents a task or a job that needs to be done. They are organized in lists and may be assigned to a certain person.

A Job is the SuSE Linux Openexchange Server equivalent of a task and has much of the functionality of a task in addition to the fact that it may be created in the context of a larger entity, a Project (which may keep track of multiple jobs)

Tasks are migrated to the SuSE Linux Openexchange Server, but please note the following points:

- Reminders to jobs in the SuSE Linux Openexchange Server appear as e-mails sent to the relevant user or users and can only be set to occur at a fixed number of days before the job is due to start. This is in contrast to Exchange 5.5 where a reminder is in the form of a popup that occurs at any arbitrary time and date. During migration from Microsoft Exchange 5.5 a reminder time is converted to the nearest SuSE Linux Openexchange Server reminder time.
- The SuSE Linux Openexchange Server does not support the concept of a recurring job.

4.7 Item Attachments

In Microsoft Exchange 5.5 files may be uploaded to any type of item except a Note. Such a file is called an Item Attachment.

The same thing may be done in the SuSE Linux Openexchange Server by first creating the item (appointment, meeting, job etc.), and then creating another item called a Document which in the SuSE Linux Openexchange Server is an item containing a file. The file can then be uploaded here and finally the document and the migrated item can be linked.

This is how attachments to items are migrated to the SuSE Linux Openexchange Server. After migration it is easy to keep track of which documents contain what attachments because the linked document is given a description during migration containing the name of the original Microsoft Exchange 5.5 item.

4.8 Folder Permissions

Access permissions on items in Microsoft Exchange 5.5 depend firstly upon whether or not the item is found in Public Folders. If it is not then the item is inaccessible by default to anyone except for the item's owner. If the item is in a Public Folder then access to the item is dependent upon how access is defined for the containing folder. It follows that all items in the same public folder must have the same access permissions.

To facilitate the setting of access permissions to items in Microsoft Exchange 5.5 public folders, certain predefined roles are available with preset permissions (read/write/execute) such as the Owner who has complete access to items, the Reviewer who only has read access to items etc.

In contrast to item access permissions in Microsoft Exchange 5.5, the SuSE Linux Openexchange Server has a much more flexible and powerful approach. There is no distinction between public and private working areas – rather access permissions may be set directly on folders and the items they contain (except in the case of e-mails).

During migration, in the case of data originating in public folders, access permissions on folders and items are formed based on the original Microsoft Exchange 5.5 role and are summarized in the table below.

Exchange Role	E-Mail Folder	Item/Folder
	list/read/insert/ create subfolder/ delete	read/modify
Owner	lricd	rm
Publishing editor		
Editor	lrid	
Publishing author	lrci(d)	
Author	lri(d)	
Nonediting author	lri	
Reviewer	lr	r
Contributor	li	–
None	–	

Note that permissions in brackets, e.g. (d) apply only if the user is also the owner. Note also that the e-mail access permissions are in fact IMAP access permissions.

In the case of data originating from a private folder then only the owner has access to the data.

4.9 Contact Links

In Microsoft Exchange 5.5 a user may choose to associate different types of items (appointment, event, meeting) with one or more contacts. This may be, for example, to denote people that are involved with the item.

Users in the SuSE Linux Openexchange Server may also associate contacts with items in the same ways that any two SuSE Linux Openexchange Server items may be associated with one another, by using links.

These associations are migrated as links between the migrated Microsoft Exchange 5.5 item and the migrated contact.

4.10 Exchange Features Currently Unsupported

In the SuSE Linux Openexchange Server the following Exchange functionality is at present unsupported: recurring tasks, yearly recurring calendar items, journal items, delegates, categories, user-defined subfolders (apart from e-mail subfolders and item attachments) and user-defined distribution lists.

E-mail rules, although they exist in the SuSE Linux Openexchange Server as filters determining which e-mail folder incoming mails are sent to, may not currently be migrated. Distribution lists are currently not supported but will be implemented in the next minor release of version 4.0.x of the SuSE Linux Openexchange Server.

4.11 Localization Issues

Special characters such as German characters with an umlaut are partially supported in the SuSE Linux Openexchange Server. Users can add such characters in items and create user-defined folders with special characters. Support for special characters in user names is currently limited. If a Microsoft Exchange 5.5 user name has such characters, then they are converted to standard ISO-8859-1 characters during migration. For example, “ä” is converted to “ae”, “scharfes s” is converted to “ss” etc.

5 Fallback and Safety Procedures

5.1 Pilot Migrations

In large organizations, if required it is possible to migrate only a small set of users before a complete migration. This will enable the migrated users to test their migrated user data and at the same time to get familiar with using the SuSE Linux Openexchange Server, perhaps with the purpose of training others.

In most cases pilot migrations should include a selected group of users (for example, a department) having minimal groupware interactions with the rest of the organization. It may include complex data reflecting typical usage of Exchange from within the company, which once migrated and analyzed, the overall success of the SuSE Linux Openexchange Server may be assessed. Until a later date, when a full migration is carried out, e-mails received on Exchange for the migrated users can automatically be forwarded to the SuSE Linux Openexchange Server.

5.2 Planning and Timing a Migration

To ensure minimum disruption to users, a migration should be carried out at the beginning of a weekend so as to maximize the time available for the migration. Obviously it is preferable to carry out the migration at a period of low activity when there is a low chance of users needing the e-mail and services provided by Microsoft Exchange 5.5.

Users should be notified well in advance of the migration and of the changes affecting them. They should also be notified of the time and date when the migration will commence, since after this point any changes made to the Microsoft Exchange 5.5 server will not be replicated in the SuSE Linux Openexchange Server. It may be decided that to prevent this from occurring,it would be advisable to shut down the Microsoft Exchange 5.5 server, or at least prevent it from being used as an e-mail server.

5.3 Backing Up Exchange Data

Prior to the migration the Microsoft Exchange 5.5 server should be fully backed up. Although the program used – Exmerge – for extracting user data from Microsoft Exchange 5.5 for migration is provided by Microsoft for extracting data in the proprietary Microsoft Personal Storage (.PST) format, it is highly advisable to take precautionary measures by backing up the old Microsoft Exchange 5.5 databases to a tape or to some other medium. The backup should be a full backup.

Alternatively the Microsoft Exchange 5.5 databases may be copied to another hard disk or backup medium. In this case all files are backed up including log files.

5.4 Performing the Migration

Having backed up the Exchange data, the migration itself may be done without any additional safety precautions apart from optionally retaining the intermediate files that are created during migration (.PST files and temporary data storage files).

The migration is performed by extracting Exchange data into .PST files, converting them into temporary storage and finally by reading the data, converting it to a SuSE Linux Openexchange Server compatible format and importing it into the SuSE Linux Openexchange Server.

This last step creates a log file containing any information that was lost during importing to the SuSE Linux Openexchange Server. Such data loss is usually due to fields that are available in Microsoft Exchange 5.5 but have no equivalent in the SuSE Linux Openexchange Server. Such fields are unmapped by default.

In the case of any data loss the log file clearly shows how many times data from a particular field was lost and if this is an unacceptably high number then you have the possibility of tuning the SuSE Linux Openexchange Server importer to re-map the unmapped Microsoft Exchange 5.5 field to a valid SuSE Linux Openexchange Server field, and the importing may be initiated once again using the data in temporary storage.

5.5 After the Migration

Once the migration is completed the SuSE Linux Openexchange Server should be up and running containing all the old Microsoft Exchange 5.5 users with their migrated data.

At any time after the migration the old Microsoft Exchange 5.5 server should be in a state where it may brought back online, however obviously this state will not reflect any changes made to the SuSE Linux Openexchange Server since migration.