TC/LINK-MX for Exchange 2000

MS Exchange 2000 Integration for
TOPCALL Communication Server

Technical Manual

Version 2.04.00
3rd Edition

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2. OVERVIEW

MS-Exchange is Microsoft's Enterprise Mail solution. It runs under Windows 2000 Server, and uses the Windows 2000 Active Directory to maintain its configuration data. Mailboxes and public folders are stored in the Web Store (part of the IIS). Exchange uses the Windows 2000 SMTP transport for message transmission.
A typical installation is large and can span a whole Windows 2000 forest.

Main requirements for TC/LINK-MX installation:
- If used with Exchange 2000, TC/LINK-MX must be installed on a computer running Windows 2000.
- It requires a standard TC/LINK-MX license and a standard Dirsync license (if dirsync is needed).

2.1 Special Features

- Performs bi-directional message transfer between the TOPCALL Server and Microsoft Exchange
- Adds address input templates for MAPI-based clients (e.g. Outlook 2000)
- Converts RTF (rich text format) message parts to TOPCALL image format upon sending
- File attachments can also be converted to TOPCALL image format
- Generates delivery and non-delivery notifications to Microsoft Exchange
- Does directory synchronization with the Active Directory
- Can use Microsoft Exchange as a backboning system between TOPCALL and other messaging systems (e.g. Lotus Notes, Groupwise, SAP, mainframes)
- Supports multibyte character sets (e.g. Japanese Kanji and Kana)

2.2 System Environment
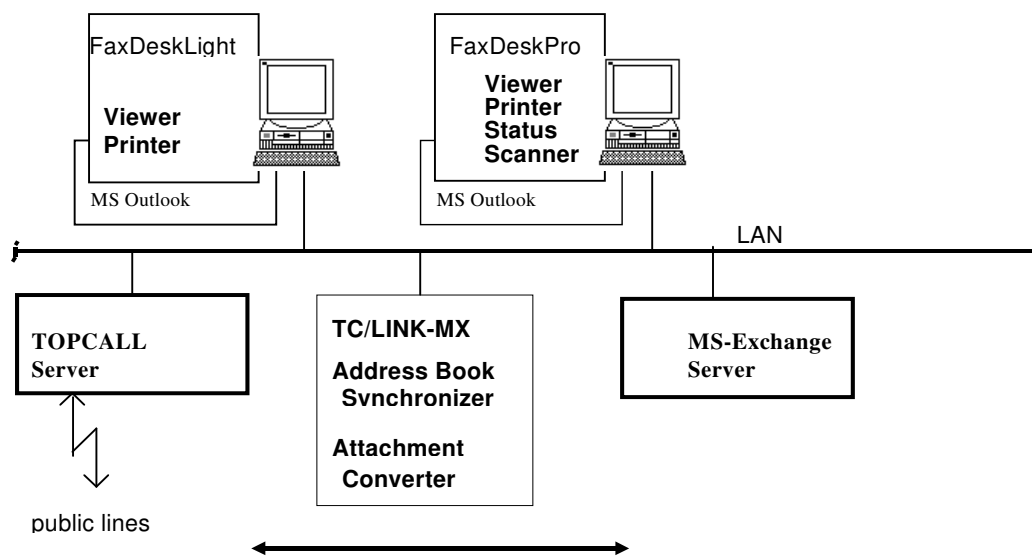
Figure 1: System Environment

3. PRODUCT DESCRIPTION

3.1 References and Conventions

A. <u>TC/LINK Manual, Version 2.01.00, December 2000</u>
    The TC/LINK Manual describes all common TC/LINK features.

ESM: Exchange System Manager

3.2 Requirements

Please consult Reference A for general TC/LINK requirements.

3.2.1 TC/LINK-MX Computer

- See TC/LINK manual for general requirements.
- Windows 2000 (Professional, Server or Advanced Server) SP1 or higher.
- On Windows 2000 Professional computers, the Windows 2000 Administration Tools must be installed separately. They can be found in file ADMINPAK.MSI on the Windows 2000 Server CD.
- The Exchange System Manager must be installed on the link computer. Select the component "Microsoft Exchange System Management Tools" in Exchange 2000 setup.

3.2.2 MS-Exchange Server

- MS-Exchange 2000 Server RC2 or higher. Tested with RC2 and RTM (build 4417.5).

3.3 Addressing

3.3.1 Addressing from TOPCALL to MS-Exchange

General address format: *tc_queue*:*mail_address*

The **mail_address** part of the address is an MS-Exchange address string.

Every address in Microsoft Exchange consists of an address type and an address string.
An MS Exchange mailbox has 1 native Exchange address and several EMAIL addresses. A message to this mailbox can use any of these addresses.

<u>Native Exchange Address</u>
The native Exchange address uses the address type "EX:" followed by the "legacyExchangeDN" attribute of the recipient mailbox. This is a hierarchical description of the mailbox object's position in the MS Exchange organization and includes the user's name as displayed in the users list of Active Directory Users and Computers.

With the default dirsync configuration, the native Exchange address is written to the shadow user's events and address list.

If not using dirsync, it is recommended to use the short format (see below) of the Native Exchange Address, as the "legacyExchangeDN" attribute can only be viewed via special utility programs (e.g. ADSIEDIT from the Windows 2000 support tools).

Example with Native Exchange address:

legacyExchangeDN:	*/o=Topcall/ou=First Administrative Group/cn=Recipients/cn=FS*
User Name:	*FS*
TOPCALL Queue:	*TCLMXQI*
TOPCALL Free Address:	*TCLMXQI:EX:/o=Topcall/ou=First Administrative Group/cn=Recipients/cn=FS*

In this context, user name means the name displayed in the right pane of Active Directory Users and Computers when viewing the list of users.

Short format of Native Exchange address:
For all mailboxes in the same administrative group as TC/LINK-MX, the link also accepts messages addressed in a short way via the user name.

Example with short form of Native Exchange address:
TOPCALL Free Address: *TCLMXQI:EX:FS*

Other Exchange address types

Other address types installed on MS Exchange servers are X400 and SMTP. When an Exchange user mailbox is created, it automatically gets an EMAIL-address of every installed address type.

A TOPCALL originator can send a message to any EMAIL-address of an Exchange user. For example, to his SMTP or X400 address.

Example with SMTP address:

SMTP Address:	*FS@Topcall.co.at*
TOPCALL Free Address:	*TCLMXQI:SMTP:FS@Topcall.co.at*

3.3.2 Originator Mapping

3.3.2.1 TOPCALL Shadow Users

The concept of TOPCALL Shadow Users guarantees that …
- every Exchange user has his default send options (including coversheet and costcenter) stored on TOPCALL.
- Messages from FAX or other mail systems connected to TOPCALL are routed to the Exchange user's mailbox.
- Exchange users can use Topdesk Pro to view folders on the TOPCALL server and to check the status of their outmail.
- Exchange users can use TOPCALL Workspace Extensions to access the TOPCALL archive.

The concept of TOPCALL Shadow Users means that …
- for every Exchange user, there is an equivalent user ("Shadow User") in the TOPCALL user store. The Shadow User's event settings (IN, DELNOTIF and NONDELNOTIF events) are used to route messages and notifications to Exchange.
- When sending a message from Exchange to TOPCALL, TC/LINK-MX replaces the originator address by the Shadow User's TOPCALL address book entry. Thus, the Shadow User's default send options are used, and the message is visible in the TOPCALL outbox of the Shadow User.
- TC/LINK-MX directory synchronisation automatically creates and updates the Shadow Users on TOPCALL.

3.3.2.2 Shadow User Recognition

TC/LINK-MX Dirsync builds the UserID of TOPCALL Shadow Users from a combination of Active Directory user attributes (as configured in setup).

When sending a message from MX to TOPCALL, TC/LINK-MX first tries to find the shadow user via the Native Exchange address. If this is not possible (shadow user created manually or TCOSS version below 7.22.00) TC/LINK-MX also builds the Shadow User ID from these mailbox attributes and looks for a TOPCALL user profile with this ID.

Note:
If the TCOSS version is below 7.22.00 or TC/LINK-MX is integrated with the TOPCALL Archive, TC/LINK-MX can only use a subset of the user attributes for the TOPCALL shadow user name: mailNickname, cn, fullname, givenName, sn, initials, legacyExchangeDN, displayName

3.3.2.3 Shadow User Recognition with TC Proxy Addresses (obsolete)

In previous releases, TC/LINK-MX setup installed a Proxy Address Generator on the Exchange server. With Exchange 2000, installation of Proxy Address Generators is disabled.

Nevertheless, when sending a message to TOPCALL, TC/LINK-MX is still able to recognize the originator's TC address as the Shadow UserID.

3.3.2.4 Special feature: Shadow user recognition by other proxy address

TC/LINK-MX can be configured to find the shadow user for an Exchange originator via another type of proxy address, for example MS or SMTP. This feature can be enabled via registry key:

Exchange\OverrideProxyForUserid (REG_SZ, default: "")

Set this registry value to "MS" to enable shadow user lookup by MS proxy addresses.

Remark:
For ordinary installations, this feature is not needed. It was introduced on request of a customer to solve a special problem: many existing shadow users on TOPCALL (from a previous installation of TC/GATE), MS users migrated to Exchange, no TC/LINK-MX dirsync wanted.

3.3.3 Addressing from MS-Exchange to TOPCALL

3.3.3.1 Address Types

After installation of TC/LINK-MX, several additional Exchange types (corresponding to the TOPCALL address types) can be used. The actual address type names can be selected during setup, their defaults are:

Exchange Address Type	TOPCALL Address Type
TC	SET_TC_ADDRESS
FAXTC	SET_FAX_ADDRESS
ATX	SET_TX_ADDRESS
FREE	SET_FREE_ADDRESS
ANOTES[1]	SET_FREE_ADDRESS with Notes Address
SMS	SET_FREE_ADDRESS with SMS Address
AB	For any object in TOPCALL's Address Book

In addition to these address types, TOPCALL recipients can also be addressed via the address types X400 and SMTP.
Due to a problem in the first version of Exchange 2000, MS addresses cannot be used.
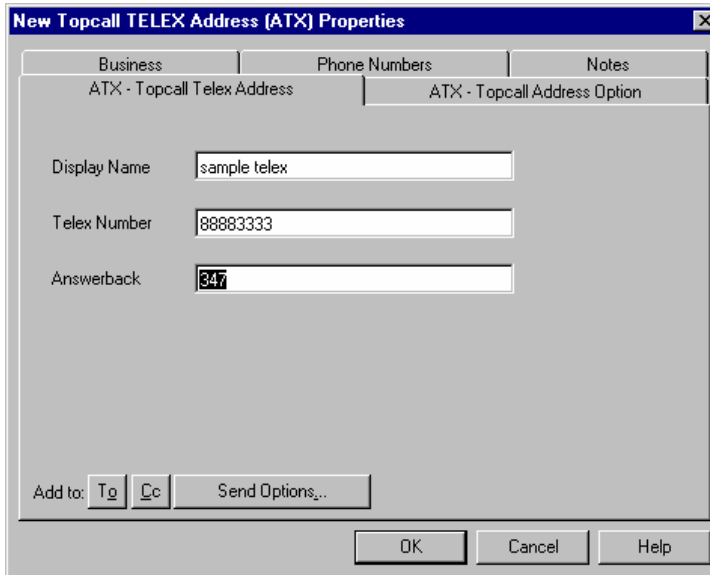
Exchange X400 addresses are mapped to TOPCALL X.400 addresses with a default X400 service.
Exchange SMTP addresses are either mapped via the algorithm described in section 3.3.3.4 or they are converted to TOPCALL FREE addresses with a default SMTP service.

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[1] This address types was called "NOTES" in previous releases. To avoid address space conflicts with the Microsoft Connector to Lotus Notes, the name was changed to "ANOTES".

3.3.3.2 Address Templates
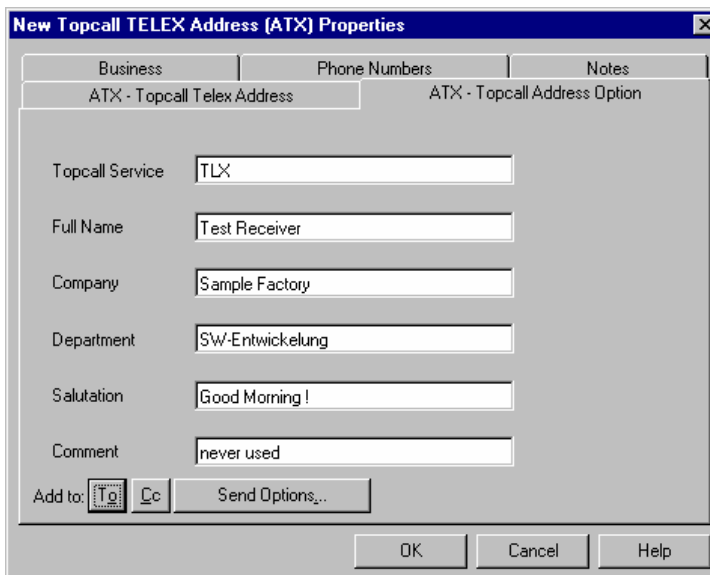
The Setup program installs address templates for the new address types. An address template is a window that lets you enter details of a specific address.

The TOPCALL address templates let the user enter a destination address and several details about the recipient: Name, Company, Department, Salutation, Comment. They also allow you to choose a special TOPCALL service for message transmission. If no service is specified, TC/LINK-MX uses the default service configured at setup time for this address type.

Figure 2: TOPCALL Telex Address Template

Figure 3: TOPCALL Telex Address Options

Usually, the Exchange client user will enter a TOPCALL address via an address template window and the address string is created automatically.

3.3.3.3 Addressing without Templates: TC/LINK-MX Syntax

A user of the Microsoft Exchange client can also enter an address directly at the To: or Cc: line of a new messsage, without using templates.

To distinguish this address from an address book entry, it must be written between [brackets].

Syntax for the TOPCALL address types:

Exchange Addresstype	Syntax for Exchange address	Example address entered at TO: field of Exchange client
TC	TC: userid(#fullname)(#service)(#node) (#company)(#department)(#salutation) (#freetext)	[TC:Maxi]
FAXTC	FAXTC: number(#fullname)(#service)(#answerback) (#company)(#department)(#salutation)(#freetext)	[FAXTC:66133857#Max Meier###Topcall]
ATX	ATX: number(#fullname)(#service)(#answerback) (#company)(#department)(#salutation)(#freetext)	[ATX:1234#Max Meier#TELEX#5678]
FREE	FREE: number(#fullname)(#service) (#company)(#department)(#salutation)(#freetext)	[FREE:max@xyz#Max Meier#SMTP]
SMS	SMS: number(#fullname)(#service) (#company)(#department)(#salutation)(#freetext)	[SMS:67890223]
ANOTES	ANOTES: number(#fullname)(#service) (#company)(#department)(#salutation)(#freetext)	[ANOTES:MAXI/DEPARTMENT1#Max Meier]
AB	AB: recipient id(#store name)	[AB: Maxi#User1]
	(Brackets) are used here to enclose optional parts of the address, THEY ARE NOT part of the address string ! E.g., (fullname) means "either fullname or nothing".	[Brackets] must be used to enclose the complete address string. Otherwise, the Exchange client will think that this is a name from the Exchange address book.

Address strings are parsed from left to right.

Note:
This addressing syntax is valid since version 1.09.00. With this address format, it is possible to do least-cost-routing via the Exchange MTA (e.g. by fax area code). The address format used in older releases of TC/LINK-MX is still supported, but not recommended. Take care that with the new syntax the order of parameters has changed and that the separator character is '**#**' instead of '**;**' !

The Outlook client does not allow colons in an address entered in the To: or Cc: line. This means that addresses like "FREE:TCLFIQI:fiperson" can only be specified in an address template.

3.3.3.4 Addressing without Templates: Internet Syntax

It is also possible to enter TOPCALL addresses without brackets in the "To:" field of the Exchange client.
The address must be entered in Internet style, in the following format:

Number@Service.TC or:
Number.Answerback@Service.TC

Number …… Fax or Telex number, or free address, or TOPCALL user id
Answerback . Fax or Telex answerback
Service ……. Valid TOPCALL service
TC …………. Dummy domain name (must match the address space configured for TC/LINK-MX on the Exchange server, see below)

If the number contains a @ character (e.g. for a Notes address), the number must be put between " characters (example: "Bernhard Schuetz/TC_VIE/TOPCALL@TOPCALL"@NOTES.TC).

With the default configuration, TC/LINK-MX interpretes every SMTP address in this way: If the first part of the domain name is a valid TOPCALL service name (e.g. TOPCALL, FAX, TLX etc.), the local part of the address is interpreted as the recipient's number (and answerback, if applicable).

This may cause problems if TC/LINK-MX is used for all messages to the Internet.
For example, a message to FS@topcall.co.at will never reach the intended recipient address.
Instead, TC/LINK-MX routes it to the local TOPCALL user FS.

Therefore, you can restrict this interpretation of SMPT addresses to a special destination domain, specified in registry key *Exchange\SMTPDomain.*

For example, if *Exchange\SMTPDomain* is TC, only messages to domain @TOPCALL.TC are sent to the local TCOSS users, and messages to other domains starting with a valid service name (e.g. topcall.co.at) are delivered correctly.

Configuration on Exchange:
In the Exchange System Manager (ESM), TC/LINK-MX must be given an additional SMTP address space: for example, all SMTP addresses with a domain ending in TC are routed via TC/LINK-MX.

This can be done via the context menu "Properties" of item "Link to TOPCALL" within the "Connectors" folder.
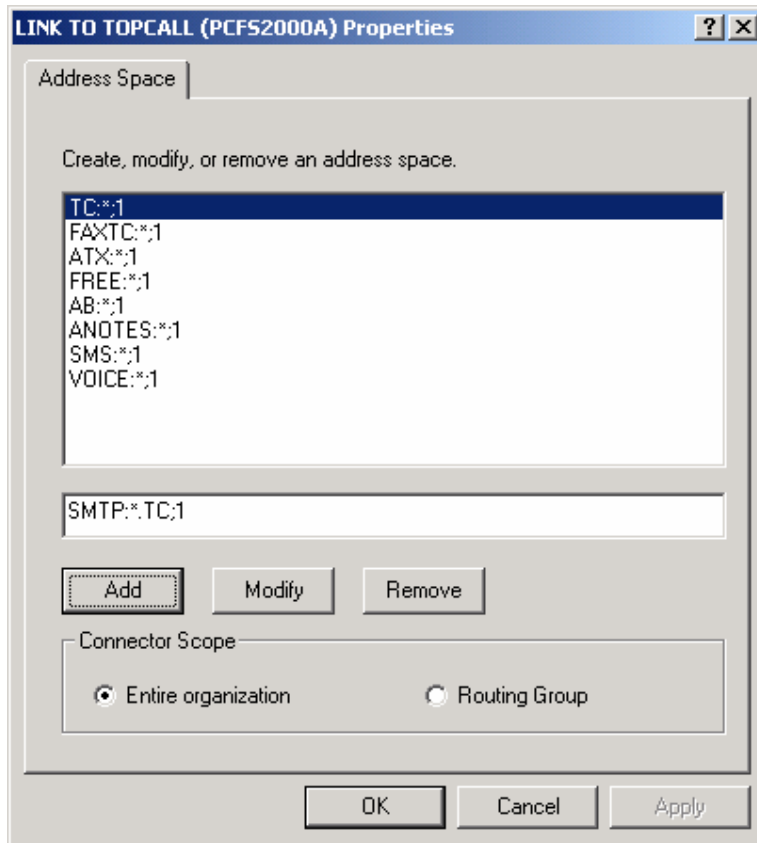
Figure 4: Adding SMTP address space

3.3.3.5 Addressing without Templates: via Outlook Contacts

If the connector's address space includes address type "FAX", TC/LINK-MX accepts messages sent to Outlook Contacts items of type "Business Fax", "Home Fax" or "Other Fax".
This works even if the link's standard fax address type is a different one (e.g. "FAXTC"). This means that you only have to add "FAX" to the address space, without running Setup or modifying the TC/LINK-MX registry.

With this type of addressing, only the fullname and the fax number of the recipient can be evaluated: The fullname is the name of the contact, the fax number is the content of field "Business Fax", "Home Fax" or "Other Fax" (respectively).

3.3.3.6 Recommended ways to send to other links

Link name	Addressing method(s)	Default TOPCALL service
TC/LINK-X4	X.400 Address template	Registry: TOPCALL\X400Service
TC/LINK-SM	Internet Address template or … To: user@domain	Registry: TOPCALL\SMTPService
TC/LINK-AC	Don't do it !!	
TC/LINK-WM	SMS Address template	Registry: TOPCALL\SMSService
TC/LINK-LN	Notes Address template installed with TC/LINK-MX Or directly (see 3.3.3.3)	Registry: TOPCALL\NOTESService
TC/LINK-SC, TC/LINK-GW, TC/LINK-FI, TC/LINK-MX, TC/LINK-MQ	Free Address template	Either use a mail system specific service or specify the queue in the address.

3.4 Send Options

TC/LINK-MX Setup installs templates for per-message options and per-recipient options. They allow input of TOPCALL-specific header information: send time and date, sending copy, resolution, headerline, cost center and TOPCALL coversheet.

Options that are explicitly set here override the corresponding options in TC/LINK setup and in the originator's TOPCALL default message template.

Options that are not set here are taken either from the originator's default message template or from TC/LINK-MX setup (see Reference A).

Note: The TOPCALL send options window does not include priority. The priority of a message can be set via the Importance value in the Exchange send options window.

3.4.1 Per-Recipient Options

The per-recipient send options can be entered via the "Send Options..." button in the Outlook Client's Address Book window:
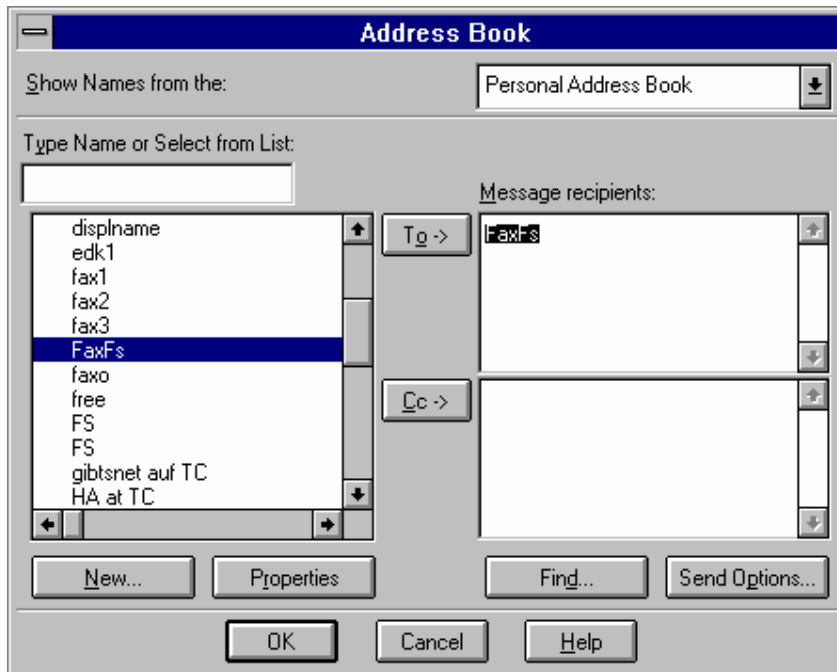
Figure 5: Selecting Per-Recipient Options

Figure 6: TOPCALL Per-Recipient Options

When entering this template, all edit fields and radiobuttons are blank. This means that the send options are set to default. TC/LINK-MX takes default send options from (in this sequence):
1) per-message options
2) the originator's default template
3) the options configured at TC/LINK-MX setup

Any input via the edit controls in this template overrides the defaults.

Figure 7: TOPCALL Per-Recipient Send Time (The caption of this window is defined by Exchange.)

The following per-recipient send options can be entered:
Resolution: high or normal resolution for sending
Headerline: send fax with or without headerline
Costcenter: cost center used for this recipient
Send Time: send time for this recipient
Send Date: send date for this recipient

Note:
Due to a problem in Exchange, it is not possible to store per-recipient send options in the address book.

3.4.2 Per-Message Options

The per-message send options can be entered via the menu item File / Properties: "Send Options …" in the "New Message" window of the Outlook client.
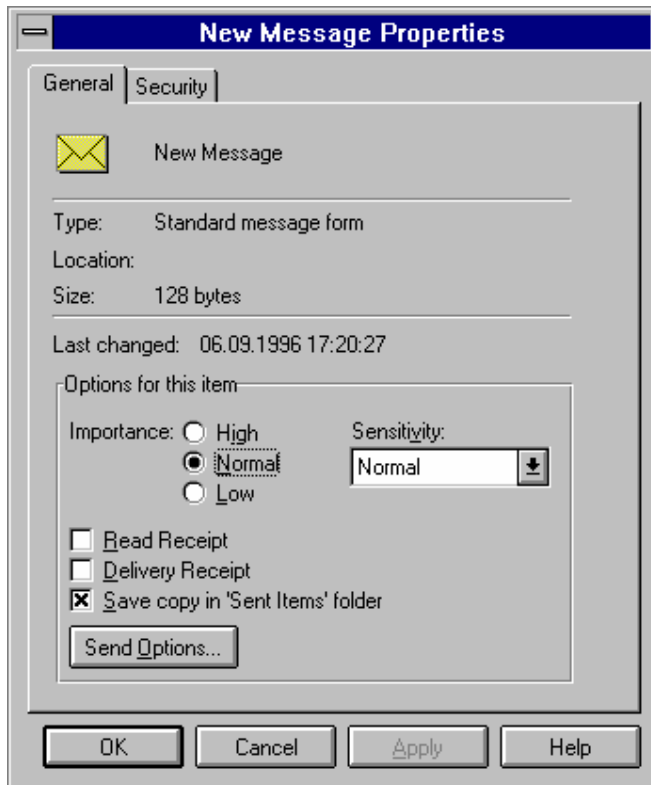
Figure 8: Selecting Per-Message Options
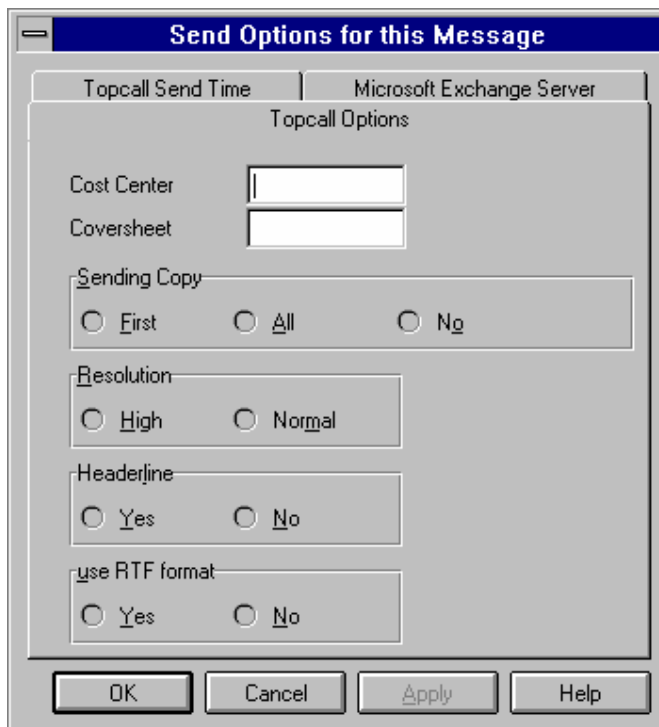
Figure 9: TOPCALL Per-Message Options
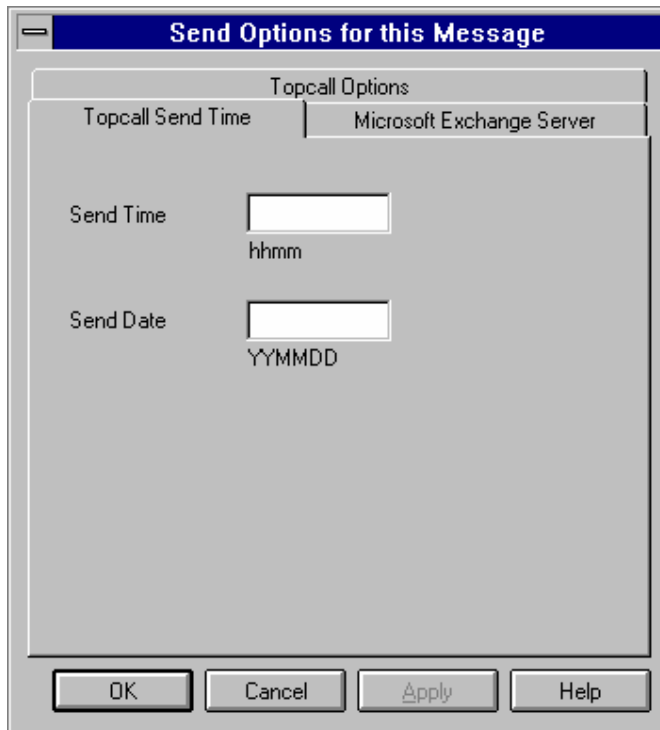
Figure 10: TOPCALL Per-Message Send Time

The following per-message send options can be specified:

Costcenter: default costcenter used for all recipients
Coversheet: a coversheet to be used
Sending Copy: sending copy for No, First or All recipients
Resolution: high or standard (default for all recipients)
Headerline: sending with or without headerline (default for all recipients)
Use RTF Format: enter N to disable richtext conversion for this message

Send Time: default send time
Send Date: default send date

The Coversheet field contains the TOPCALL file name of the coversheet (without the trailing "CVR").
By default, the coversheet is taken from the FIS folder. This default folder name is stored in the registry
key `General\CoverFolder`.
To specify a different folder, use the syntax *Foldername/Coversheet .*

There is no way to define a template within the per-message options page. If the originator is a
TOPCALL user, TC/LINK uses his default template for options that were not set explicitly. Any
authorizing recipients must be specified in the default template.

3.4.3 Latest Delivery Time

With TCOSS version 7.30.00 or above, it is possible to set a Latest Delivery Time for a TCOSS send
order. As an equivalent option exists on Exchange, you can specify a latest delivery (message expiry)
time when sending from Exchange to TOPCALL and from TOPCALL to Exchange.

With older TCOSS versions, TC/LINK-MX ignores any time limits set by Exchange.

3.4.3.1 Messages from Exchange to TCOSS

There are two ways to set the Expiry Time for an Exchange message:

1) Via the Microsoft Exchange Server send options (File | Properties | Send Options | Microsoft Exchange Server):
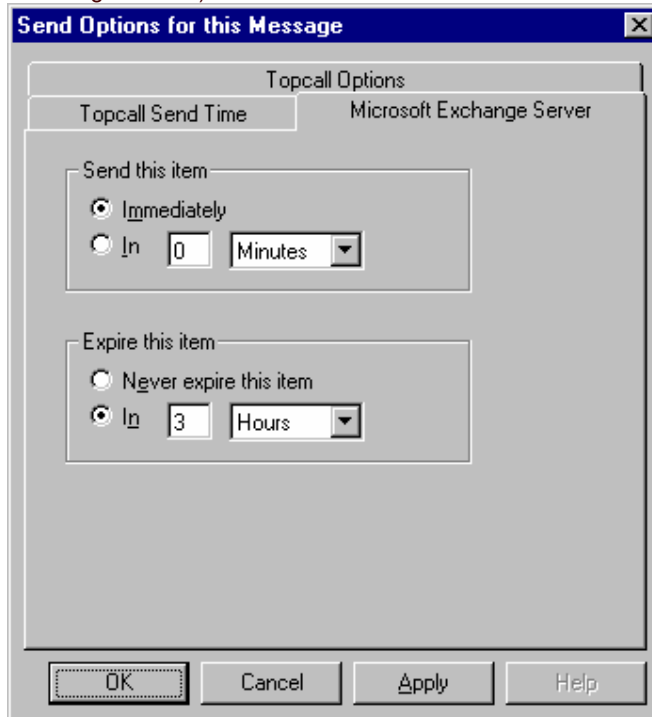
2) Via the Options button in Outlook (Outlook 97: Options page):
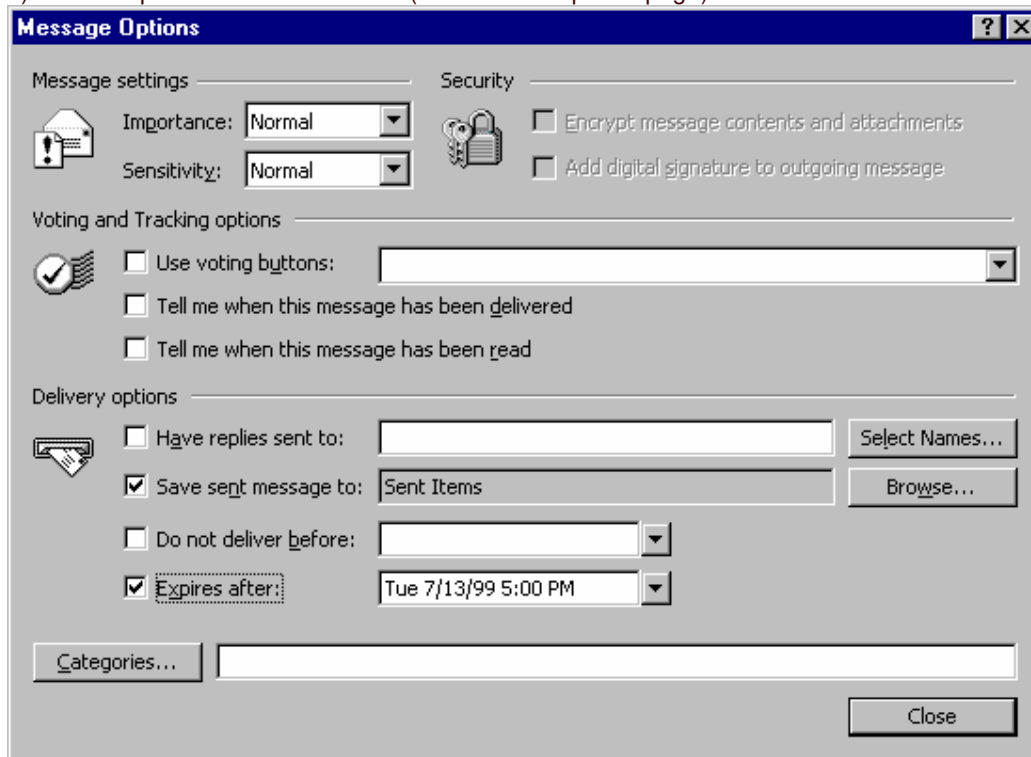
The Exchange Expiry time applies to all recipients of the message.

If the message expires, Outlook marks the original message in the originator's Sent Items folder as expired by strike-through characters.
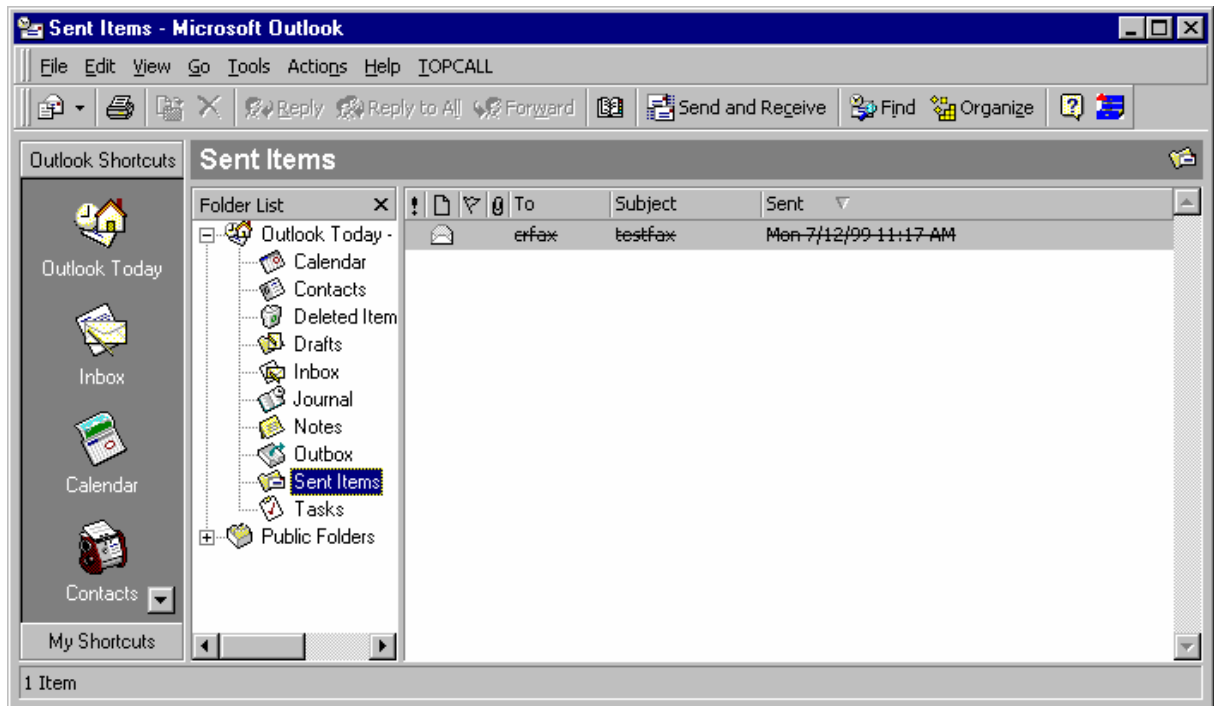
If the message was already passed to TC/LINK-MX before it expired, TCOSS terminates the send order on message expiry and creates a non-delivery notification. You can turn off this non-delivery notification by setting registry key `Exchange\NonDelForExpiry` (REG_DWORD, default 1) to 0.

3.4.3.2 Messages from TCOSS to Exchange

The expiry time of a TCOSS message can be set via TCSI field TIME_LATEST. If a message passed via TC/LINK-MX contains this field in the message header, TC/LINK-MX sets the Expiry Time of the resulting MAPI message accordingly.

Note:
With TCSI, you can set the expiry time both for the complete message and per recipient. With Exchange, the expiry time can only be specified for the complete message (all recipients). TC/LINK-MX therefore ignores all per-recipient settings in the TCOSS message and evaluates only the expiry time specified for the complete message (TIME_LATEST in message header).

If the Exchange Message Transfer Agent is not able to deliver the message before the Expiry Time, it discards the message. If TC/LINK-MX is configured to keep messages in status "at next node" (Topcall\NotifMail = 1) or if the message was sent registered by a TCFW user, TCOSS recognizes the time-out and terminates the TOPCALL send order. A subsequent non-delivery notification from the Exchange MTA is ignored.

If the registered message (sent by a TCFW user) is not read before it's expiry time, the TCOSS send order is also terminated. In addition, the Exchange message store deletes the message from the recipient's inbox. This can be disabled by setting registry key `Exchange\DeleteExpiredMsgInInbox` (REG_DWORD, default: 1) to 0.

3.5 Exchange Message Class

The MAPI property PR_MESSAGE_CLASS defines the type of an Exchange message. MAPI based clients (e.g. Exchange, Outlook) use different forms to display and edit different message types. A form is correlated to a specific message class; it defines the layout of the message, possible actions and the icon used to display the message in a folder view. Forms are either stored locally (per user) or on the MX server (organizational forms). If no form is installed for a message class, the client takes the default EMAIL form (correlated to message class IPM.NOTE).

Previous releases of TC/LINK-MX used the standard MAPI message class IPM.NOTE for sending to Exchange. Now, separate message classes can be configured for fax, voice and EMAIL messages. This is done via the following registry keys:

Registry key	Type	Default	Description
Exchange\ MsgClassFax	REG_SZ	IPM.NOTE	Message class for incoming image only messages. E.g. IPM.NOTE.FAX
Exchange\ MsgClassVoice	REG_SZ	IPM.NOTE.TCMSG .VOICE	Message class for incoming VOICE only messages (default is compatible with TC/VoiceMail)
Exchange \MsgClassEmail	REG_SZ	IPM.NOTE	Message class for all other message types. E.g. IPM.NOTE

Integration with TOPCALL VoiceMail
For proper cooperation with TC/VoiceMail, TC/LINK-MX must use a special message class for incoming voice messages (registry: `Exchange\MsgClassVoice`). The name of this message class must be the same as configured for TC/VoiceMail (`ExVoiceMsgClass`). Otherwise, TC/VoiceMail is not able to recognize Voice messages in the Exchange Inbox.
The default used by TC/VoiceMail is "IPM.NOTE.TCMSG.VOICE".

Incoming messages (TC to MX)

TC/LINK-MX chooses the message class according to the message contents. A message containing only TCI code gets the configured fax message class. A message containing only Voice data gets the configured voice message class. All other messages (containing binary data, text or a combination of formats) get the Email message class.

Outgoing messages (MX to TC)

TC/LINK-MX takes the message class set by the client and stores it in a correlation field of the resulting TOPCALL send order. When TCOSS returns a notification, TC/LINK creates an Exchange report with a message class matching the original message class.
E.g. REPORT.IPM.NOTE.FAX.DR (delivery report) or REPORT.IPM.NOTE.FAX.NDR (nondelivery report) if the original message type was IPM.NOTE.FAX.

Forms:
TC/LP does not contain special forms. You can create forms via the Outlook client.

Here is a short description how to create a form via Outlook 98 and Outlook 2000:
- Choose menu item "Tools | Forms | Design a Form"
- Select the Message form from the Standard Forms Library and press "Open".
- The form editor window is opened, you can modify the message window, add fields etc.
- Select the Properties pane and choose an icon for your form.
- Choose menu item "Tools | Forms | Publish Form As" and change the Display Name field: The new form's message class will be "IPM.NOTE." followed by the form display name
- Publish the form to the Personal Forms Library and test it.
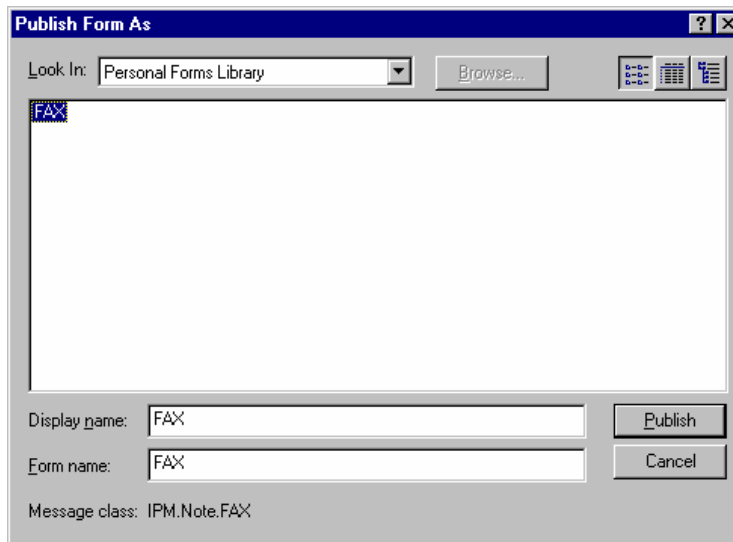
How to copy the form to the Organizational Forms Library:
- Make sure the Organizational Forms Library exists. In Exchange System Manager, locate the Public Folders container. If administrative groups are displayed, you must expand the administrative group in order to access the Folders container. Right click the container and choose "View System Folders" from the context menu. The existing Organizational Forms Libraries can be found below EFORMS REGISTRY. If there is no library for your language, create one via the context menu of the EFORMS REGISTRY container ("New" followed by "Organizational Form …"). Enter a name for the folder, and choose the appropriate language. Enter any other options and click OK.

- By default, Exchange 2000 grants all users Read Only rights on the EFORMS folder. To grant a user the ability to publish a form in the Organizational Forms Library, open the property page of the library, select the Permissions tab, click the button Client Permissions and grant the user Owner rights. Note: the permissions tab is not available during creation of the library.

- Use Outlook to copy the form from the Personal Forms Library to the Organization Forms Library:
  Outlook 98 and 2000: Tools | Options , Other, Advanced Options, Custom Forms, Manage Forms
  Outlook 97: Tools | Options, Manage Forms, Manage Forms

For more detailed information, please consult the MS Outlook documentation and Help.

Advantages of using different message classes:
- Messages can be sorted by message class in the client folder view
- Special message classes can be easily recognized via a special icon defined in a form
- Agents (e.g. Out of Office Agent, Inbox Agent) can perform different
  actions for different message classes
- Customers can use TC VoiceMail to access their voice mailbox via any standard telephone.

3.6 Notifications

3.6.1 Notifications into MS-Exchange

How to get notifications:

... on request:
As a default, Delivery Notifications to Exchange are only created if they were requested by the originator (Delivery Receipt checkbox in the General Message Properties screen).

NonDelivery Notifications are automatically requested by the originator's Exchange client.

… or always:
TC/LINK-MX can be configured to always return notifications (for delivery and / or nondelivery), regardless of what was requested by the originator.

This feature is configured via registry keys:
```
TOPCALL\SOForceDelNotif (REG_DWORD)
TOPCALL\SOForceNonDelNotif (REG_DWORD)
```

The default value for both keys is 0 (feature disabled).

Note: For automatic replies created by an out-off-office assistant, TC/LINK-MX ignores these settings.

… but no read and non-read notifications:
Read and non-read notifications are not supported by TC/LINK-MX.

Notification types:

At TC/LINK-MX setup, two different types of notifications can be configured:
- Exchange (Non)Delivery Reports
- TOPCALL (Non)Delivery Reports

Exchange (Non)Delivery Reports:
These are standard Exchange Reports. The originator of an Exchange Report is the System Administrator. The report text is a standard text defined by Exchange. The NonDelivery Report offers a "Send again …" button for easy send retries.

TC/LINK-MX setup offers the following alternatives for Delivery and Nondelivery:
- no Exchange Reports
- Exchange Reports

TOPCALL (Non)Delivery Reports:
These are text messages containing information about message transmission and (optionally) the original message or (if available) a sending copy.

TC/LINK-MX setup offers the following alternatives for Delivery and Nondelivery:
- no TOPCALL Reports
- TOPCALL Reports with transmission information only
- TOPCALL Reports with transmission information and text of the original message
- TOPCALL Reports with transmission information and the whole original message

3.6.2 Notifications from MS-Exchange

- If configured to set Messages to "at next node" (registry key `TOPCALL\NotifMail` is 1), TC/LINK requests (non)delivery reports from Exchange.

  <u>Exception:</u> if the recipient is not resident in the Exchange organization and has an address of type MS or SMTP, the TOPCALL message is terminated immediately.

- Otherwise (registry key `TOPCALL\NotifMail` is 0), TC/LINK terminates the TOPCALL message immediately after passing it to Exchange.

- For messages that were sent "registered" from TCFW, TC/LINK always requests (non)delivery and (non)read notifications from Exchange, regardless of the configuration.

- Notifications to TOPCALL are never sent as text messages, only the status of the mail entries on TOPCALL is changed.

3.7 Message Content

3.7.1 Text Format Conversions

3.7.1.1 Richtext Conversion

Text parts of the Microsoft Exchange message header can be in RTF (richtext) format.
TC/LINK-MX tries to convert RTF to TC image format via direct printing to the TOPCALL printer. If this fails for any reason, the ANSI version of the text block is evaluated.
The ANSI text version of the message body is also included in the message. Thus, a service that cannot handle TCI images (e.g. TELEX) can evaluate the message text.

Disabling Richtext for a Message
By default, the RTF message body is converted to image. To transmit a message as plain text, set "Use RTF Format" in the per-message options of the Exchange client to "No".

Disabling Richtext for the Link
There is a 'secret' registry switch to disable creation of RTF images.
If registry value `Exchange\NoRTF` (REG_DWORD) is set to 1, no RTF images are created.

Richtext and Coversheets
The TCI image created by richtext conversion starts on a new page.

By default, TC/LINK-MX uses the originator's coversheet even if a message starts with an RTF text block. This behaviour can be changed by setting registry value `General\CoverForRTF` to 0. Then the ONLYIMG coversheet is used for messages starting with an RTF block.

Richtext on FAX coversheet: Advanced RTF Conversion
TC/LINK-MX can be configured for Advanced RTF Conversion. This means that the RTF text of outgoing faxes starts on the coversheet and is automatically formatted by the fax channel.

Advanced RTF Conversion can not be configured on a per-message basis, it applies to ALL messages sent from Exchange.

Therefore, Advanced RTF Conversion only makes sense if TC/LINK-MX is used for sending FAXES from Exchange.

This feature can be selected in Setup, and can also be configured manually via the Link PC's registry database:

General\AdvancedRTFConversion (REG_DWORD): 0x1
General\RemoveRTFPages (REG_DWORD): 0x0

Setting General\AdvancedRTFConversion to 0x0 disables advanced RTF conversion.

For more information, see TC/LINK manual.

3.7.2 Image Format Conversions

See Ref. A.

3.7.3 Binary Format Conversions

See Ref. A. for a general description of document conversion.

3.7.3.1 Embedded OLE Attachments

The Exchange client allows to attach OLE objects to a message. If the document converter is configured to operate in foreground, these attachments can be converted to TCI format.

Conversion is attempted always, disregarding the capabilities of the TOPCALL service used.

Reason: the binary data within the OLE object cannot be viewed by the recipient; this is an OLE storage and not a document file.

The document converter launches a small OLE container application (TC_OLE.EXE) which in turn loads the application which created the OLE object. Via sent keystrokes, the application is forced to print the object.

Attention:
- **TCDCEXE must learn how to print an OLE attachment**.

This is true even for applications that required no learn mode in the traditional document converter operating mode. When converting an OLE object type for the first time, user interaction is necessary!

OLE Conversion works only if TCDCEXE runs in foreground mode.

In background mode, messages containing OLE attachments are rejected. Since release 1.10.00, TC/LINK can be configured to ignore OLE attachments if they cannot be converted (e.g. in background mode).

Configuration:
TC/LINK-MX writes the attached OLE data to a file and passes the file to the document converter. TCLINK and the document converter use the file extension "TCO" to distinguish OLE files from other files.

If this extension is used for something different, another (unused) extension can be configured in the registry value `General\OleExtension.` The same extension must be configured for processTCDCLINK in registry value `General\OLEEXT`:

`HKEY_LOCAL_MACHINE\Software\TOPCALL\TCLINKMX\General\OleExtension` = TCO
`HKEY_LOCAL_MACHINE\Software\TOPCALL\TCDCLINK\General\OLEEXT` = TCO

`General\IgnoreUnconvOleAtts` (REG_DWORD): Default 0
If set to 1, OLE attachments that cannot be converted by TCDC are ignored, the message is not rejected but does not contain this attachment.

3.7.3.1.1 OLE attachments containing static picture objects

Previous versions of TC/LINK-MX could not handle static pictures that were pasted (or dropped) into a new message via the MX or Outlook client. Static pictures are bitmaps or Windows metafiles.

Now, these embedded OLE objects (Metafile, Device-Independent Bitmap, Enhanced Metafile) are converted properly to TCI graphics.

Note: embedded OLE objects can only be converted with foreground document conversion !

During conversion, the picture is scaled so that it fits on a page.

By default, the conversions creates a left margin of 5 mm and an upper margin of 5 mm .
The default margins can be changed via registry keys:

Name	Meaning	Type	Default
TCDCLINK\TC_OLE\ LeftMarginPic	Left margin of picture printout (metafile, bitmap) in units of 1 mm	REG_DWORD	5
TCDCLINK\TC_OLE\ TopMarginPic	Upper margin of picture printout (metafile, bitmap) in units of 1 mm	REG_DWORD	5

Restriction for messages created by WordMail:

The MX clients (Exchange and Outlook) can be configured to use WinWord for editing new messages (also called WordMail editor). The above description does not apply to these messages.

If a message created via the WordMail editor contains a static picture object, the picture is part of the RTF message body created by WordMail (instead of being an OLE attachment as usual).

In previous releases, RTF conversion ignored these pictures. Now, TC/LINK-MX uses the document converter (application: WinWord) to convert RTF message bodies containing pictures.
To avoid version conflicts, this feature can be disabled via a registry key.

Name	Meaning	Type	Default
Exchange\ WordMailPictures	If nonzero, WinWord is used for conversion of RTF texts with pictures	REG_DWORD	1

With WordMail, the user can configure page format and margins. Therefore, the TCLINK configuration values for advanced RTF conversion are not applicable. This is the reason why advanced RTF conversion is disabled for messages converted via WinWord.

3.7.4 Option: Fax image visible in Outlook preview pane

The message preview pane of the Outlook client shows the message body of the selected message, including the cached image representation of embedded OLE objects.

Normally, messages sent to Exchange via TC/LINK-MX contain only file attachments. But, you can optionally configure TC/LINK-MX to convert certain attachment types to embedded OLE objects. Thus, it is possible to preview incoming fax messages without opening them. Of course, the image is also available after opening the message.
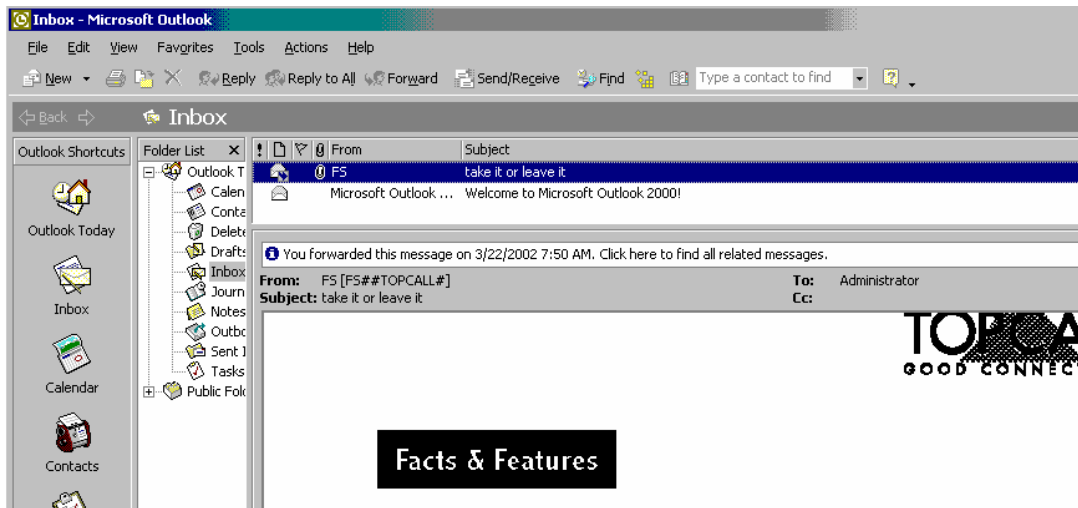
Prerequisites:
A file can only be embedded as an OLE object if the local computer holds an OLE-enabled application that can process the file.
In order to open the embedded OLE object from the Outlook client, the message recipient also needs the matching application, otherwise he can only see the image representation.

On a standard Windows 2000 TC/Link computer, the following image formats can be converted into OLE objects: TIFF, PCX, DCX (Imaging for Windows needed for all 3), BMP (MS Paint needed).

The quality of the cached image depends on the application. E.g, for TIFF, PCX and DCX, the Wang (Kodak) Imaging component produces a small image of the first page. For BMP, MS Paint produces a detailed image of every page. This makes the preview more readable, but the attachment size larger (assume a factor 5 between TIF and BMP), because the bitmap is stored twice (as content and as preview).

Restrictions

No preview with Outlook forms containing script code
Outlook forms containing script code cannot be displayed in the Outlook preview pane. Therefore, this option cannot be used with the enhanced Outlook forms delivered as part of the TOPCALL Client Package. The form used for message display depends on the message class. The message class used for incoming faxes is stored in registry key *Exchange\MsgClassFax*, default is IPM.NOTE.

No embedded TIF files if Office XP installed on the link computer
If the Office XP tool "Microsoft Office Document Imaging" is installed on the link computer, the TIF extension is mapped to this tool, which is not designed for OLE. Therefore, no embedded TIF objects can be created.

Imaging for Windows not part of Windows XP
The component "Imaging for Windows" is not part of Windows XP. When using the TIF format, recipients on Windows XP computers will not be able to open the attachment.

Forwarding to Internet recipients: only preview available

When a message containing an embedded OLE object is forwarded via the Internet Mail Connector, only Outlook recipients can receive the embedded OLE attachment as it is. Other recipients, using e.g. Outlook Express, receive a BMP attachment (OLEx.BMP) that contains only the preview. This means for the TIF format: only a small (unreadable) representation of the first page is available.

Forwarding via TC/LINK-MX: foreground TCDC needed:
If the message is forwarded or replied via TC/LINK-MX, the foreground document converter is needed for converting the embedded OLE attachment back to Topcall fax format.

Recommended Settings:
- It is recommended to use the BMP format, because it has several advantages:
- The preview is readable.
- MS Paint is still available in Windows XP, and the mapping of BMP to MS Paint is not deleted when installing Office XP.
- When forwarding the message to an Internet recipient, the image is still readable.

Configuration:
The new feature must be enabled explicitly. A new multistring registry key *Exchange\RenderEmbedded* holds a list of file extensions. By default, this list is empty, so you must configure file extensions (e.g. "BMP" for BMP files) manually via a registry editor.

When TC/LINK-MX processes an incoming message and encounters an attachment with one of the configured extensions, it tries to convert the attachment to an embedded OLE object. If this is not possible, a normal file attachment is created.

3.8 Directory Synchronization (Dirsync)

Active Directory synchronization is described in detail in the LDAP Directory Synchronization Manual and in the TC/LINK-MX Manual. This section mentions only the most important differences compared with the Exchange 5.5 dirsync.

For a general description of Dirsync, see Reference A).

3.8.1 Installation

To configure TC/LINK-MX for directory synchronization with Exchange 2000, choose the "Microsoft Active Directory" synchronization in TC/LP setup.

3.8.2 Strategy for upgrading old shadow users

Every object in the Active Directory has a unique binary ID (attribute objectGUID). When an object is deleted from the directory, it looses most of its attributes (except objectGUID) and is copied to a special directory. This means that TC/LINK dirsync must use the objectGUID attribute to find the shadow user for an Active Directory user.

This attribute did not exist in previous Exchange versions. Instead, TC/LINK-MX used the Obj-Dist-Name attribute to correlate Exchange users and TOPCALL shadow users.

When upgrading an existing Exchange 5.5 shadow user for use with an Exchange 2000 based TC/LINK-MX, the link must first locate the TOPCALL shadow user via the former Obj-Dist-Name (stored in Active Directory as attribute legacyExchangeDN), and then store the Exchange user's objectGUID as the new correlation information of the shadow user.
This action must be started explicitly by setting registry key *Dirsync\ADUpgradeFromExch5* to 1.
Then, every subsequent dirsync looks up existing users and changes their correlation fields.
When transition to Exchange 2000 is finished, you can manually reset the registry key to 0.

3.8.3 Configuration data only in TC/LINK registry

If TC/LINK-MX is installed on an Exchange 5.5 server, part of the dirsync parameters are stored in the Exchange directory and can only be changed by editing the link's "Options" property page in the Admin program.
With Exchange 2000, all dirsync parameters reside in the TC/LINK-MX registry (subkey Dirsync). Therefore, only 1 tool (TC/LINK-MX Setup or a registry editor) needs to be used to modify dirsync settings. If several links share the same connector, dirsync can be disabled via the registry keys defined for LDAP dirsync.

3.8.4 Shadow user names

With TC/LINK-MX dirsync for Exchange 5.5, only a few user attributes can become part of the shadow user name, and up to 10 registry keys are used to store the naming syntax.

With Exchange 2000, the name of a TOPCALL shadow user can contain a combination of all printable attributes of the Active Directory user profile. These components can be separated by blanks or other fixed characters.
In the registry, the shadow user naming syntax is stored as one string parameter (*UserIDFormula*).

3.8.5 Dirsync scope

With Exchange 5.5, you can choose to synchronize users from the local site or from the complete organization.

In Exchange 2000, there are no sites any more. Users belong to domains (or to an organizational unit situated below a domain). Domains are organized in hierarchies of domain trees and forests.

TC/LINK-MX Active Directory synchronization can be configured to cover users from the local domain, from a specific domain tree or from the entire forest (i.e. the complete Exchange organization).

3.8.6 Server List

Similar to the Exchange 5.5 dirsync, Active Directory synchronization lets you specify a list of home servers as an additional restriction to the dirsync scope. Dirsync then covers only users whose mailboxes reside on these servers.
Active Directory synchronization evaluates this list locally, therefore no equivalent of registry key *DSChkServerLocally* is needed.

3.8.7 No TrustLevel

With Exchange 2000, there is no trust level attribute for dirsync. Instead, you can use the LDAP filter expression to specify additional dirsync criteria.

3.8.8 Dirsync subjects: Users and Contacts

Exchange 2000 dirsync can cover users (Active Directory mailbox-enabled users) and contacts (Active Directory mail-enabled contacts).
It is possible to fine-tune dirsync criteria by changing the LDAP filter expressions used to define "users" and "contacts".

3.8.9 Dirsync time and type

As usual, dirsync can be run in regular intervals. With Exchange 5.5, you can configure a daily dirsync (at a fixed time). With Exchange 2000, it is also possible to do an update dirsync in shorter intervals (from 1 minute to 24 hours).

Note:
Although the dirsync interval can be shorter than 1 day, the "update system files" is done only once per day (for performance reasons).

As with previous versions, TC/LINK-MX can also do an immediate (full or update) dirsync.

3.8.10 Deletion of objects that went out of scope

You can restrict the dirsync scope via several parameters. Configurable LDAP filter rules, dirsync starting point, list of home servers etc. define which subset of the Active Directory is imported to TCOSS.

If a mail user's attributes or position in the directory are changed, or if the TCLINK configuration is changed, it may happen that a user who was covered by a previous dirsync is not part of the dirsync scope any more.

Full dirsync can be configured to automatically delete shadow users for mailboxes that went out of dirsync scope. This feature must be explicitly enabled via the registry key *Dirsync\FullDirsyncDeletes*. When you configure it for the first time, you should perform the following steps:

- TC/LINK uses the link group and the date and time of the last dirsync to recognize which objects must be deleted. If several instances of TC/LINK are used for LDAP dirsync, check to which link group they belong (registry key *General\LinkGroup*).

  Using several links with identical dirsync settings is not recommended because this is unnecessary overhead. If, in spite of this, there are multiple links that do dirsync with identical settings, they must belong to the same link group, and the FullDirsyncDeletes feature must be enabled for all of them.

  If there are instances with different dirsync settings they must belong to a different link group, otherwise their shadow users may be deleted by mistake.

- Set registry key *Dirsync\FullDirsyncDeletes* to 1. You need not restart the link.

- Do a full dirsync by setting registry key *Dirsync\Immediate* to 1 (if there are multiple links with identical settings, you only have to do it in one instance). You need not restart the link.

After changing the dirsync scope or making large changes in the LDAP directory, you can trigger a full dirsync (and deletion of unused shadow users) by setting *Dirsync\Immediate* to 1.

When deleting a shadow user, TC/LINK writes the following eventlog entry:

Code	Severity	Description	Corrective Action	Parameters
5145	Information	Full dirsync deleted user / recipient %1.	This TCOSS object was deleted because it had left the dirsync scope.	%1: user/recipient ID

Note:
If the mail user entered the dirsync scope of another link, it will be subject of the other link's dirsync.
The shadow user will not be deleted by the original link after the other link changed the object.
If both actions (link 1 deleting the user, link 2 updating it) occur simultaneously, one of them will fail.

3.8.11 Attributes exported from the Active Directory

Unfortunately, the attribute names have changed from the Exchange 5.5 native directory to the Active Directory. Here is a list of user attributes that are recommended for use with Active Directory dirsync.

Attribute name (as used for Active Directory dirsync)	Attribute description (displayed in English version of "Active Directory Users and Computers")	Old Attribute name (Exchange 5.5)
givenName	First name	Given-Name
initials	Initials	Initials
sn	Last name	Surname
displayName	Display name	Display-Name
description	Description	Description
physicalDeliveryOfficeName	Office	Physical-Delivery-Office-Name
telephoneNumber	Telephone number	Telephone-Number
mail	e-Mail	
wWWHomePage	Web page	WWW-Home-Page
streetAddress	Street	Street-Address
postOfficeBox	P.O. Box	Post-Office-Box
l (note: lower case L)	City	Locality-Name
st	State/province	State-Or-Province-Name
postalCode	Zip/Postal Code	Postal-Code
co	Country/region	Country-Name
userPrincipalName	User logon name (includes domain)	
sAMAccountName	user logon name (pre-Windows 2000)	
homePhone	Home	Telephone-Home
pager	Pager	Telephone-Pager
mobile	Mobile	Telephone-Mobile
facsimileTelephoneNumber	Fax	Telephone-Fax
ipPhone	IP Phone	
info	Notes	Comment
title	Title	Title
department	Department	Department
company	Company	Company

proxyAddresses:XXXX:U	primary address of type XXXX within field E-mail addresses Replace XXXX with the address type you need, e.g.: proxyAddresses:SMTP:U, proxyAddresses:X400:U	Proxy-Addresses
mailNickname	Alias	Mail-nickname
cn	same as Fullname	Common-Name
legacyExchangeDN	same as Obj-Dist-Name in Exchange 5.5	Obj-Dist-Name
distinguishedName	LDAP distinguished name (unique, defines current position of user within the Active Directory)	
objectGUID	32 char hex string, unique, remains the same if the user is moved to another position	

Note:
Attribute names are case-sensitive !

There are more user attributes available, and the customer can also extend the Active Directory schema and define more attributes. You can use the tool TCADUTIL (part of TC/LP) to display all attributes defined for users. If TCADUTIL is passed the name of a local domain user as a parameter, it also displays the attributes' values for the specified user, as they are evaluated by dirsync.

Attributes with multiple values:
Please note that several attribute types are unsupported by dirsync ("unsupported data type" in the attribute value column). If an attribute has multiple values ("YES" in column multivalued), dirsync uses the most recently changed value. The order of values in "Active Directory Users and Computers" may be different, therefore it is not recommended to use multivalued attributes for dirsync.

An exception is the attribute "proxyAddresses" which holds all addresses of a mailbox.
An Exchange mailbox may contain several addresses of a given address type, but only one of them (the primary address) is used as the default reply address. In the "Active Directory Users and Computers" console, the primary address is displayed bold and with an uppercase address type. Other (non-primary) addresses have a lowercase address type.

With LDAP dirsync, attribute "proxyAddresses:<addresstype>:U" refers to the primary address with a given addresstype.

3.8.12 Mailsystem

Theoretically, the Active Directory may hold users belonging to different mail systems. Therefore, Active Directory Dirsync does not use a static mail system but sets the mail system of a shadow user identical to the dirsync template used.
The default templates installed for Active Directory Dirsync belong to Exchange.

3.9 Integrated Archiving Support

TC/LINK-MX can be configured to include the native Exchange message when sending to TOPCALL. **This is optional and is only useful if TC Integrated Archiving is used**.

With normal configuration, Exchange messages forwarded from MX to TOPCALL do not contain: Exchange send options, embedded messages in their original format (they are resolved flatly), embedded OLE objects in original format, linked OLE objects and other (less important) MAPI properties.

When configured to keep the native Exchange message, the message retrieved from the archive via TC Integrated Archiving is displayed as it was sent (including the components mentioned above).

See TOPDESKPRO TC/ARCHIVE Release Description for further details on Integrated Archiving.

Attention:

- Keeping the native Exchange message makes only sense if TC/ARCHIVE is used.
- If TC/LINK-MX keeps the native Exchange message, the resulting TOPCALL send order may be between 14 and 24 % larger than with normal configuration (for a 1 page text message). With longer text messages, the size difference is less, because MAPI stores the message text in compressed format.
  This affects message throughput and storage requirements.
- File attachments are not stored as part of the native message (they are displayed correctly in the client, though). Embedded OLE objects and embedded messages are part of the native message and therefore increase the size of the Topcall send order.

Registry key for configuration:
`Exchange\KeepCompleteMsg` (REG_DWORD): Default 0

Binary representation of message body contains:
0 …. Only the RTF text
1 …. the original MAPI message (without file attachments)

3.10 Voice Integration

The TC/VoiceMail application allows Exchange users to access Voice messages from their Exchange inbox, via any touch-tone telephone. This only works if the TOPCALL shadow user profile holds the user's mailbox number.

The following changes must be done to include the mailbox number in TC/LINK-MX dirsync:

Choose Exchange mailbox attribute to hold mailbox number:

For example, use the pager number (attribute pager) to hold the mailbox number (extension only !).

Add the attribute to TC/LINK-MX configuration:

Add the attribute to the List values in registry subkey Dirsync. In our example, the value would be:

```
List01=displayName
List02=company
List03=department
List04=facsimileTelephoneNumber
List05=legacyExchangeDN
List06=pager
```

Add mailbox number to the Dirsync Default User:

Edit the Dirsync Template User profile via TCFW. Add an inactive address with service "VOICE" to the Address window. In the field "Free Address" enter the placeholder for the mailbox number, in our example this is "$pager$.

Do not replace or remove the existing TOPCALL, FAX and EXCHANGE addresses !

Attention: If there is no service VOICE on the TCOSS server, you have to install TC/VoiceMail first.

Additionally, set registry key *USRIO\KeepFaxPassword* to 1, otherwise dirsync will overwrite the fax password.

Make sure that registry key *USRIO\ClientSettings* is 1, otherwise dirsync will overwrite the voice prompts.

Run dirsync:

Make sure that the Exchange user profiles hold their mailbox numbers. Then run a full dirsync to update the TOPCALL shadow user profiles.

3.11 Exchange Clusters

It is now officially allowed to connect TC/LINK-MX to an Exchange cluster. The only restriction is that the link computer itself MUST NOT be part of a cluster.

When connecting the link to an Exchange cluster, specify the name of the Virtual Exchange Server during TC/LINK-MX Setup (instead of a physical server name).

3.12 Error recovery

In early releases of TC/LINK-MX, a crash during conversion of a message from Exchange (e.g. due to a software error) could lead to endless restarts (and crashes) of TCLINK.EXE.

Since version 1.09.00, TC/LINK-MX checks if it has crashed before during conversion of a message from Exchange. If it aborted three times in conversion of the same message, TC/LINK-MX deletes this message from the Exchange server queue and sends a non-delivery notification to the originator.

This means that an error that causes TCLINK.EXE to crash affects only one message and does not disable link operation.

Note:
The maximum number of conversion attempts (default: 3) can be configured in registry key `Exchange\MaxProblemsToTC` (REG_DWORD). If this key is set to 0, error recovery is disabled.

4. INSTALLATION

TC/LINK-MX installation in a large Exchange environment

1. <u>TC/LINK-MX needs only be installed once in the organization.</u> The routing information of the TC/LINK-MX gateway is replicated to the other locations. TC/LINK-MX installation creates address templates for various TOPCALL address types. The address templates are available to all servers in the organization.

The installation of TC/LINK-MX is described step by step in the following sections.

2. <u>Several modes of parallel operation of TC/LINK-MX instances</u> connected to the same MX organization are supported. See section 7 for more information.

3. <u>This chapter describes a standard TC/LINK-MX installation</u>. If you want to install TC/LINK-MX at an Application Service Provider (ASP), please read also the special recommendations in section 6.

4.1 Step 1: license key(s)

Get licenses keys from TOPCALL International and apply them to the TOPCALL server. See TC/LINK manual for more information about needed licenses.

4.2 Step 2: TCOSS version

Check if the TCOSS version of the TOPCALL server is sufficient.
The minimum TCOSS version can be found in the TC/LINK manual.

4.3 Step 3: create TOPCALL link user

Use TCFW to create the link user on TOPCALL.
This user **must have a local address**.

Note:
On a newly installed TOPCALL server with TCOSS version 7.22.00 or above, there is already a link user called "TCLINK" (password TCLINK).

In this example, the name of the link user on server "CHARLIE" is "MXLINK", with password "MXLINK".

Information needed later:	
TC Server:	CHARLIE
Linktype:	TCP/IP
TC User:	MXLINK
TC Password:	MXLINK

4.4 Step 4: Prepare link computer

If installing TC/LINK-MX on the Exchange server itself, no special preparative steps must be taken. Otherwise, the following software and security requirements must be met:

Required software on the link computer:
- Windows 2000 (Professional, Server or Advanced Server)
- Windows 2000 service pack 1 must be applied.
- On Windows 2000 Professional computers, the Windows 2000 Administration Tools must be installed separately. They can be found in file ADMINPAK.MSI on the Windows 2000 Server CD.
- The Exchange System Manager must be installed on the link computer. Select the component "Microsoft Exchange System Management Tools" in Exchange 2000 setup.

Link computer domain:
The link computer must either belong to the same domain as the Exchange server, or to a domain that has a trust relationship with the Exchange server's domain.

If both belong to the same domain, TC/LINK-MX can run under the local system account.
Otherwise, it must use a domain user account.

Link computer security settings (if no dedicated link user):

If TC/LINK-MX shall use the local system account, you must add the link computer to the security group "Exchange Domain Servers". Additionally, if Dirsync is used, the link computer must be part of the "Domain Admins" group.
Both can be done via the administrative tool "Active Directory Users and Computers": Right click the computer in the Computers list, choose Properties in the context menu, and select the "Member of" tab. Click the button "Add" and add both groups to the list.

After adding the computer to the "Exchange Domain Servers", you may need to log off and log back on. You should also stop and restart all Exchange services to flush the directory cache (or else wait 10 minutes for it to expire). If there are multiple domain controllers in the forest, it may also be necessary to wait for directory replication to complete.

4.5 Step 5: Create Windows 2000 link user (optional)

If TC/LINK-MX shall use a dedicated domain user account, you must make sure that this user exists and has the appropriate permissions.

You can create the user via "Active Directory Users and Computers". It is not necessary to give him an Exchange mailbox.

This user must be given the following permissions on the mailbox store where TC/LINK-MX shall be installed:
- List Contents
- View Information Store Status
- Send As
- Receive As

As there can be multiple mailbox stores on an Exchange server, it is even possible to create a separate store only for TC/LINK-MX. Thus, you avoid granting the link user access to other mailboxes.

Granting permissions on Exchange mailbox stores:
Start the Exchange System Manager (ESM). On the ESM console, you will find the Servers group. If ESM is configured to display Administrative Groups, you must open the administrative group where the server belongs to, in order to see the Servers list. In the Servers list, double click the icon of this Exchange server. A list of storage groups is displayed. Every storage group can hold up to 5 stores (mailbox stores or public folder stores). Select a mailbox store for the TC/LINK-MX mailbox.
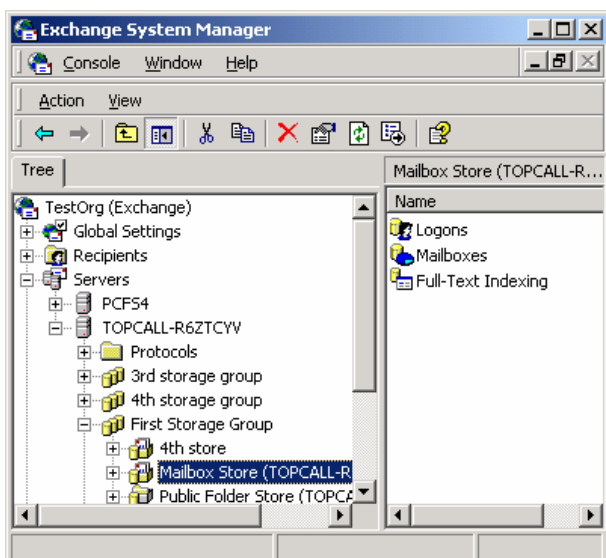
Choose "Properties" in the store's context menu and open the "Security" tab.
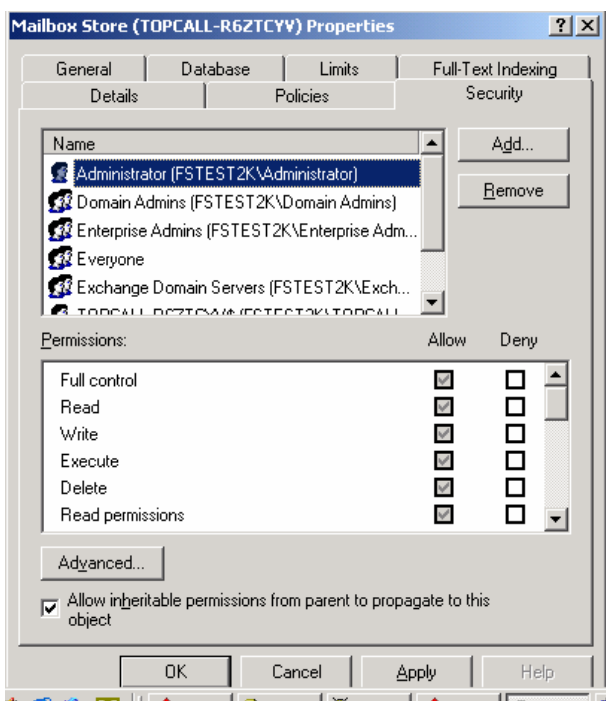
Click the button labelled "Add…" and select a Windows 2000 user account for TC/LINK-MX. This account need not be mail-enabled.
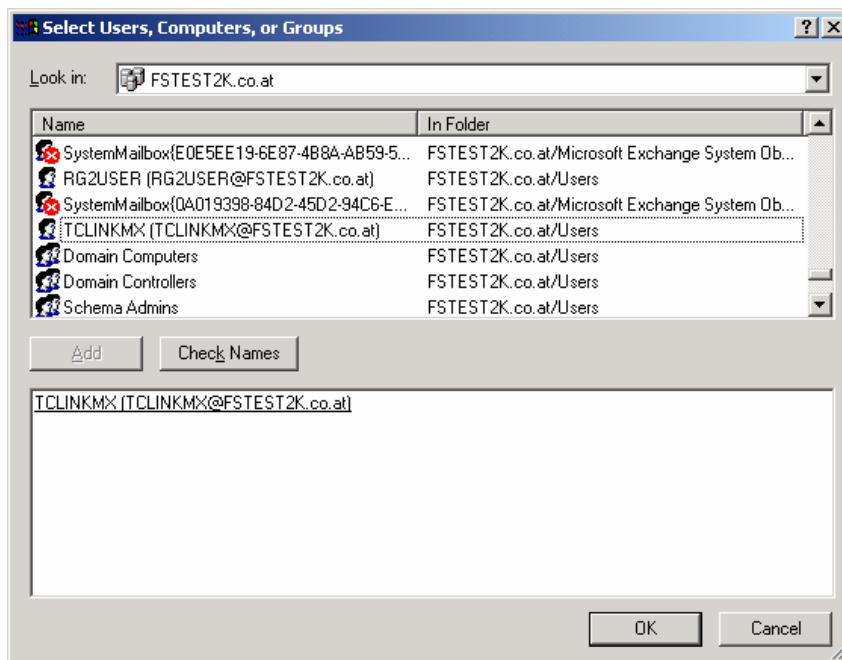
Click OK and activate the "Allow" checkboxes in the Permissions list for "List Contents", "View Information Store Status", "Send As" and "Receive As". Then click OK to store the changes.
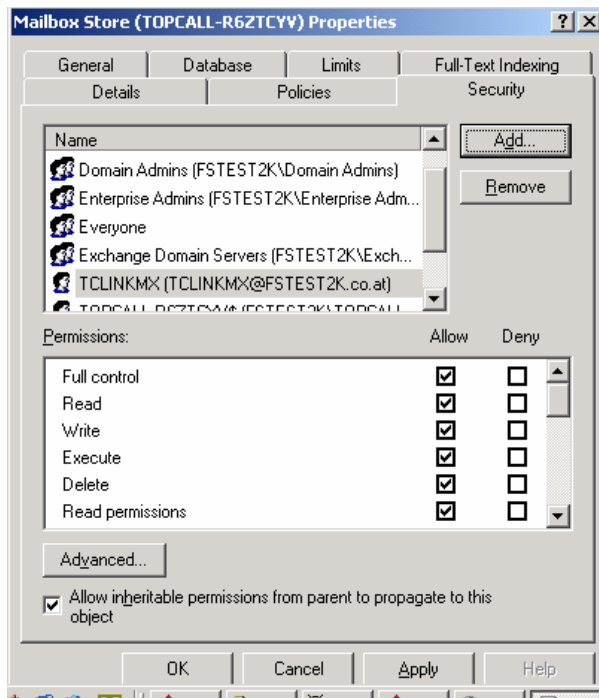
After you change permissions, you may need to log off and log back on. You should also stop and restart all Exchange services to flush the directory cache (or else wait 10 minutes for it to expire). If there are multiple domain controllers in the forest, it may also be necessary to wait for directory replication to complete.

Granting NT permissions:
If TC/LINK-MX shall run dirsync, the link user must be a member of the "Domain Admins" security group. This can be done via the administrative tool "Active Directory Users and Computers": Right click the user in the Users list, choose Properties in the context menu, and select the "Member of" tab. Click the button "Add" and add the "Domain Admins" groups to the list.

On the link computer, the user must be a member of the local Administrators group:
If the link computer is a domain controller, this can also be done via "Active Directory Users and Computers".
If the link computer is a normal Windows 2000 computer, you must use the administrative tool "Computer Management" (item "Local Users and Groups").

The user must also have the right to "log on as a batch job" on the link computer:
If the link server is a domain controller, start the administrative tool "Domain Controller Security Policy", on a normal Windows 2000 computer, user "Local Security Policy" instead.

Highlight the item "User Rights Assignment" (below Security Settings | Local Policies).
Double click the right "log on as a batch job", click "Add" and choose the appropriate user account.

4.6 Step 6: Create TCDCEXE user (optional)

This step is only needed if TC/DC runs in foreground !

As described in TC/LINK manual, the foreground document conversion needs an NT user account that automatically logs in to the link computer and runs an application called TCDCEXE. This user account (here referred to as "TCDCEXE user" must be created before setup. As a start, he should have user rights. Later, you can remove rights that are not needed.

Information needed later:	
TCDCEXE User:	TCCP1
TCDCEXE Password:	
TCDCEXE Domain:	TCINTNTDM

4.7 Step 5: Install applications for document converter

On the link PC, install all applications used in the customer's environment whose documents will be used for outgoing faxes. If document conversion shall run in foreground, use the TCDCEXE user account to install these applications. Otherwise (TC/DC runs in background) use an administrator's user account.

Make sure that these applications do not display any starting message boxes, tips of the day etc.

4.8 Step 6 (optional): Install JetForm Files

If you intend to use TC/LINK-MX with JetForm Integration, you must install several JetForm files on the link PC. Please read the TC/LINK manual (Installation chapter) for more information.

4.9 Step 7: Run TC/LP SETUP

Now you should have all collected all information needed to fill in the Setup checklist (page 114).
Log on to the link PC with a domain account who is a member of the local administrators group and the Domain Admins group and has at least "Administrator" rights on the Exchange organization.

(You can edit the Exchange rights via ESM, with option "Delegate control .." from the context menu of the organization node.)

Start SETUP.EXE from TOPCALL Link Package.
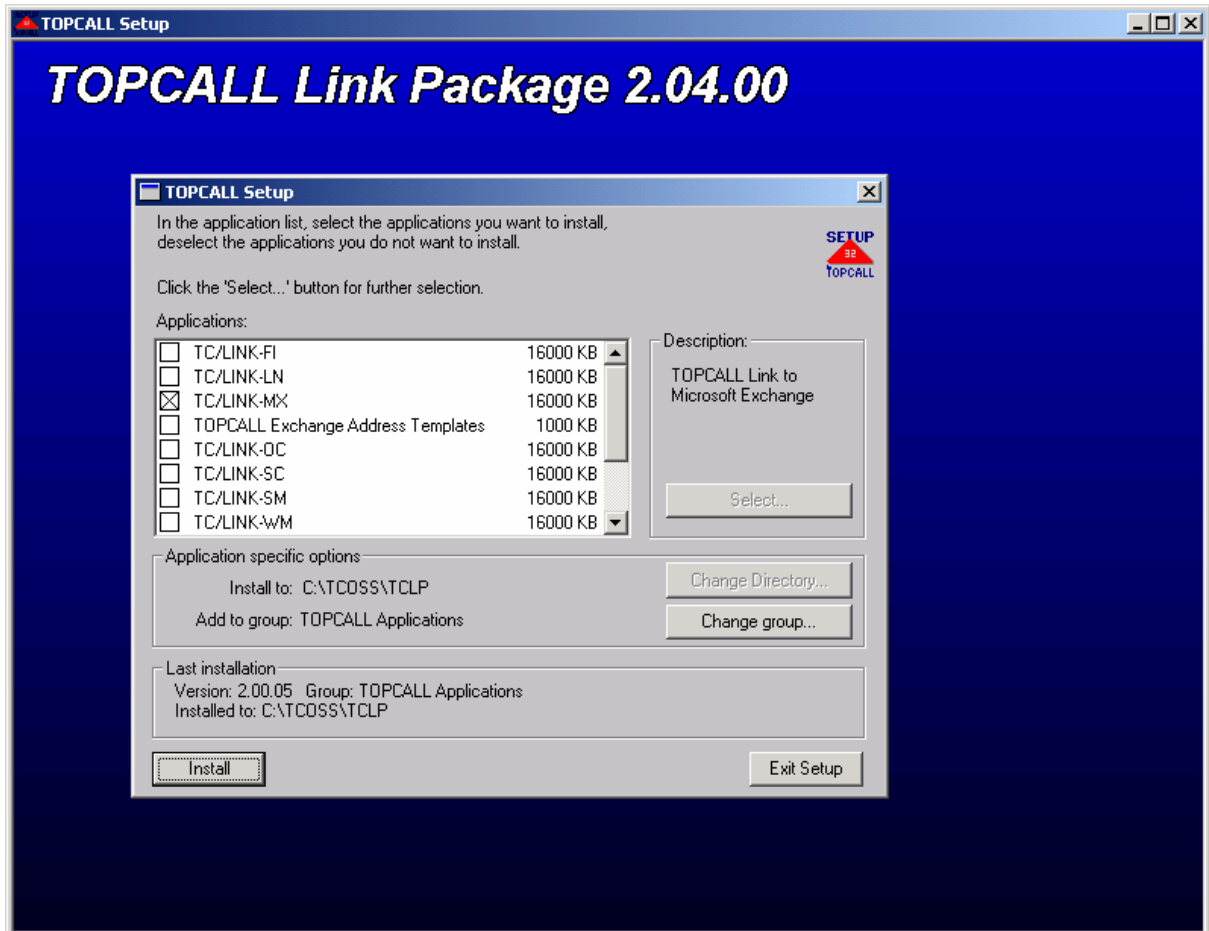
Figure 11: TC/LP Setup

The first setup screen displays the available link types. The selected TC/LINKs are installed into the directory C:\TCOSS\TCLP.

For installation of TC/LINK-MX, you only need to select TC/LINK-MX. The option "Topcall Exchange Address Templates" is NOT needed.

Figure 12: Exchange Server Version

The first Setup screen asks for the Exchange server version.

Exchange Server Version (registry Exchange\ServerVersion):
• BELOW Exchange 2000
• Exchange 2000 or ABOVE

Select "Exchange 2000 or ABOVE".

Then you are asked to close all other applications. This means that no links or other TOPCALL programs are allowed to run during setup. The document converter executable (TCDCEXE) must also be closed.

<u>**New names for registry subtrees:**</u>

From TC/LP version 1.07.02 onwards, all link names start with "TCLINK" followed by the 2-character link code (e.g. TCLINKMX, whereas the old name was TCLX). This is also the name of the link's registry key.

<u>Advantage:</u>
The new names are more intuitive and can be located easier in the registry database.

If an older version of TC/LINK-MX (using subkey TCLX) was installed, the registry subkey is now renamed automatically to TCLINKMX.

<u>**Installation Modes:**</u>

TC/LP setup offers two installation modes:
• Easy installation
• Advanced installation

On the following pages, chapters describing setup screens available only in advanced Setup are marked with "ADVANCED".

Easy Installation
Easy installation is selected by unchecking the checkbox "Configure Advanced Features" in the first setup screen.
Use this mode for a typical installation. This means:

<u>For a new installation:</u>
• Only 1 connector per Exchange server can be created via "Easy Installation"

- standard link names: directory name = "TCLINKMX (server name)", display name = "Link to Topcall (server name)"
- standard names for Exchange address types
- all address templates installed, in English and German
- standard notification settings: Exchange and TOPCALL (with complete original message) notifications on delivery and on non-delivery

For an update installation:
- Setup takes the following configuration parameters from the existing configuration:
  Link names, address type names, selection which templates shall be installed, notification settings.

Advanced Installation

Advanced installation is selected by checking the checkbox "Configure Advanced Features" in the first setup screen.

Use this mode
- To create a non-standard installation (e.g. more than 1 link per server, only a subset of address templates wanted, non-standard names for Exchange address types, non-standard notification settings)
- If you want to change one or more of the mentioned parameters during an update (e.g. remove address templates)

In advanced installation mode, there are additional setup screens asking for more information.

4.9.1 Basic Parameters
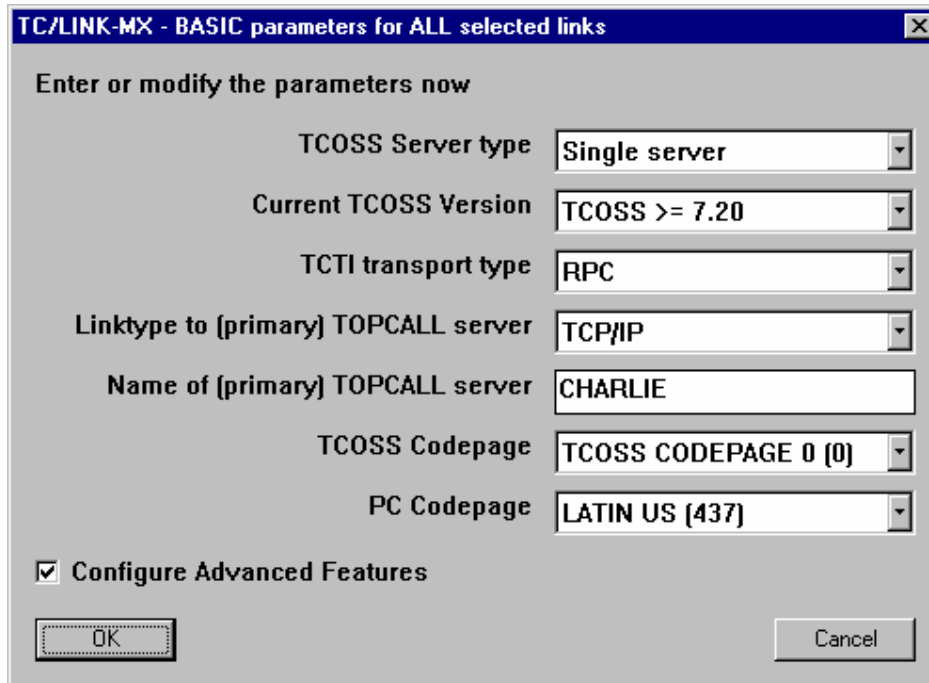
Figure 13: Basic parameters

TCOSS server type: Available choices are "Single Server" and "Tandem (Alternative Path)".

Current TCOSS version: Part of the information asked by setup depends on the TCOSS version. Please choose the best matching alternative:

"TCOSS >= 7.20.00" or
"TCOSS >= 7.08.00 and < 7.20"

TCTI transport type: (Registry: `TCTI\Transport`) Available transport types are RPC and Native.

Linktype to (primary) TOPCALL server: (Registry: `TOPCALL\Path`) Available Linktypes are NETBIOS, TCP/IP, IPX/SPX and LOCAL.

Information from step 3: Linktype: TCP/IP

Name of (primary) TOPCALL server: (Registry: `TOPCALL\Path, TOPCALL\Server`) Enter the computer name or the TCP/IP address in dotted format (e.g. 165.27.144.111). In our example, the name of the TOPCALL server is "CHARLIE".

Information from step 3: TC Server: CHARLIE

TCOSS Code Page: (registry `HKLM\Software\TOPCALL\TCLPSetup\Parameters\Codepage, TOPCALL\Codepage`)

Specify the installation code page of the TOPCALL System. Available options:
TCOSS CODEPAGE 0 (0) (default)
TCOSS CODEPAGE 1 (1)
JAPANESE (932)

PC Codepage: (registry `HKLM\Software\TOPCALL\TCLPSetup\Parameters\PCCodepage`)

This is the code page for the text messages coming from and going to the Mail system. Available options:

LATIN US (437)
LATIN 1 (850)
LATIN 2 (852)
JAPANESE (932)

When writing the PC codepage to `General\PCCodepage` (evaluated by TC/LINK), Setup takes the ANSI equivalent of the specified DOS codepage.

Configure advanced features: If this checkbox is not checked, setup only asks for the most vital information.

4.9.2 Basic Parameters (alternative server) (optional)

The following window is only displayed if the TCOSS server type is "Tandem":
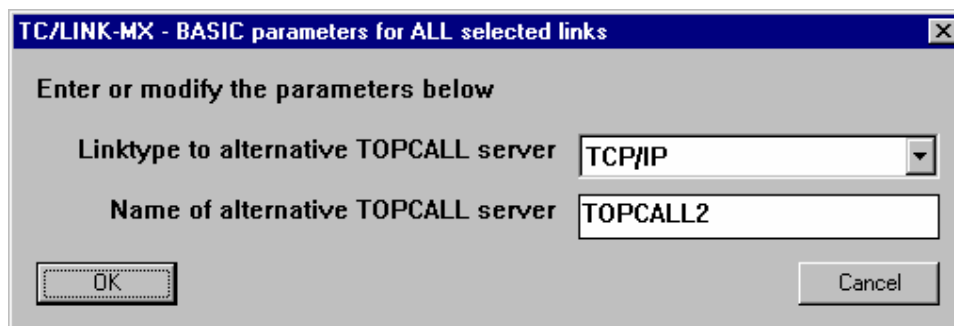
Figure 14: alternative TOPCALL server

Linktype to alternative TOPCALL server: (Registry: `TOPCALL\Path`) Used only with TOPCALL Model 65 or Model 165.

Name of alternative TOPCALL server: (Registry: `TOPCALL\Path`) Used only with TOPCALL Model 65 or Model 165.

Note: To allow alternative routing, registry value `TOPCALL\Path` can contain alternative pathes separated by '|' characters, for example "TCP/IP,CHARLIE|TCP/IP,TOPCALL2".

4.9.3 Document Converter Settings
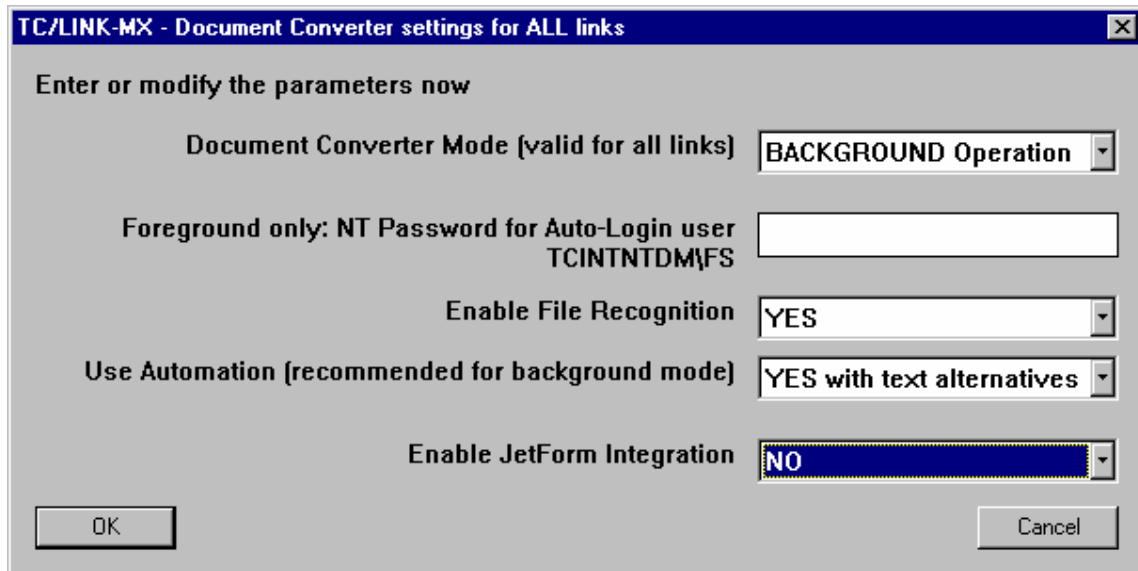
Figure 15: Document converter settings

Document Converter Mode:
Choose foreground or background operation mode.

Foreground only: NT Password for Auto-Login user:
If foreground operation is selected, setup configures Windows NT to automatically login the current user. Therefore, the NT password of the current user is needed. If the document converter shall use a different user profile, you can leave this field empty and configure Auto-Login manually later (see section 4.10).

Enable File Recognition: (registry `TCDCLINK\General\FileRecognitionPresent`)
If set to YES, TC/DC will use the FileReporter program to find the type of an attachment without a registered filename extension. This feature was created for TC/LINK-X4 and is not really needed for TC/LINK-MX. A special license is needed for file recognition.

Use Automation (recommended for background mode):
Available options:
- NO
- YES with text alternatives (Default)
- YES without text alternatives

If enabled, TC/DC uses automation for conversion of the following document types: WinWord 97, Excel 97, PowerPoint 97, Lotus Word Pro 97, Lotus 1-2-3 97, Freelance Graphics 97.

If configured to add text alternatives, TC/LINK also creates a text representation of the attachment. This means, if the message is archived via TOPCALL Archive, full text search (for the text of the document) is available.

Enable JetForm Integration (registry `TCDCLINK\JetForm\EnableJetForm`, default: NO)
If YES is selected, Setup enables JetForm integration and displays another window for JetForm configuration.
Attention: The JetForms program files must be installed separately (see TCLINK manual).

Foreground operation mode:
After selecting foreground operation mode, you are reminded to change the Auto-Login configuration after Setup: Setup configures an automatic logon for the current user. This makes sense for most links, but is not ideal for TC/LINK-MX: TC/LINK-MX is installed by an Exchange Administrator. If

TCDCEXE shall use the profile of a less privileged user, change the Auto-Login configuration manually after setup (see section 4.10).
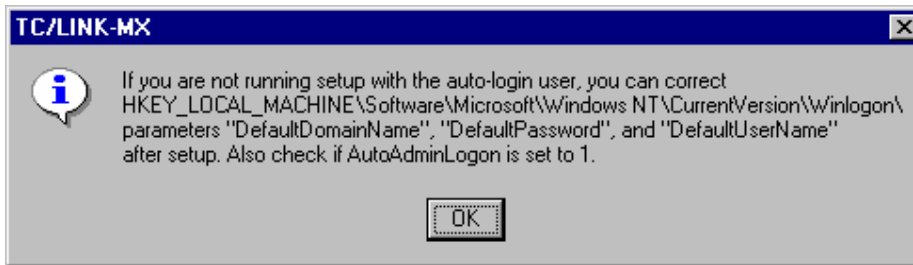
Background operation mode:
If TC/DC is configured for background operation, Setup disables any automatic logon that was configured before. Nevertheless, if TCDC foreground operation was installed before, TCDCEXE must be removed from the startup group manually. This is important, because only 1 instance of TCDCEXE is allowed to run on a single computer.
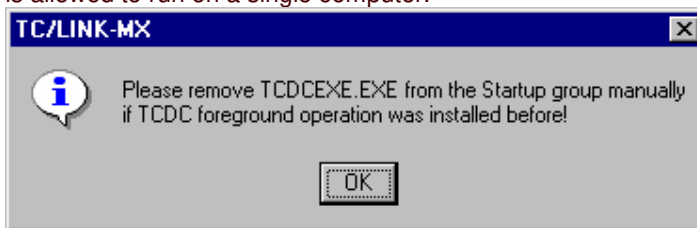
4.9.4 Configure JetForm Integration

This setup screen is only available if JetForm Integration is enabled.
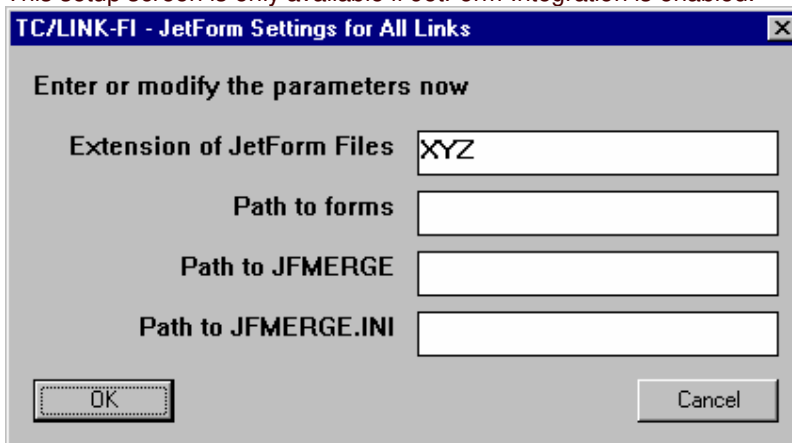
Figure 16: JetForm Settings

Extension of JetForm Files (registry: `TCDCLINK\JetForm\Extension`, default: XYZ)
Please enter an extension which is not used by another application on the system. This extension is used by the Document Converter and by the TCLINK to recognize JetForm Data Files.

Path to forms (registry: `TCDCLINK\JetForm\FormsPath`)
The path to the forms used by JFMERGE to create the output. Although this directory may also be located on a network drive, it is recommended to use a local directory to avoid problems with inaccessible network drives, insufficient security and so on.

Path to JFMERGE (registry: `TCDCLINK\JetForm\JFMergePath`)
The path where JFMERGE is located. Please enter the full path (e.g. *C:\JETFORM\JFMERGE.EXE*).

Path to JFMERGE.INI (registry: *TCDCLINK\JetForm\JFMergeIni*)
Please enter the full path of the JFMERGE.INI file.

4.9.5 Licensing reminder

All licenses are stored on the TCOSS server and must be entered via LICENCES.EXE. In older TC/LP versions, it was possible to store license keys on the link server (if the TCOSS version was below 7.08.00).

If this is an upgrade of such an old installation, Setup writes the existing licensing information into a file (C:\TCOSS\TCLP\LINKKEY.OLD) and displays a messagebox. LINKKEY.OLD will contain the information needed for running LICENCES.EXE.
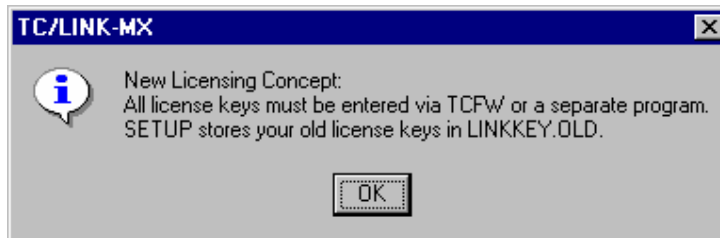
4.9.6 TOPCALL Link User
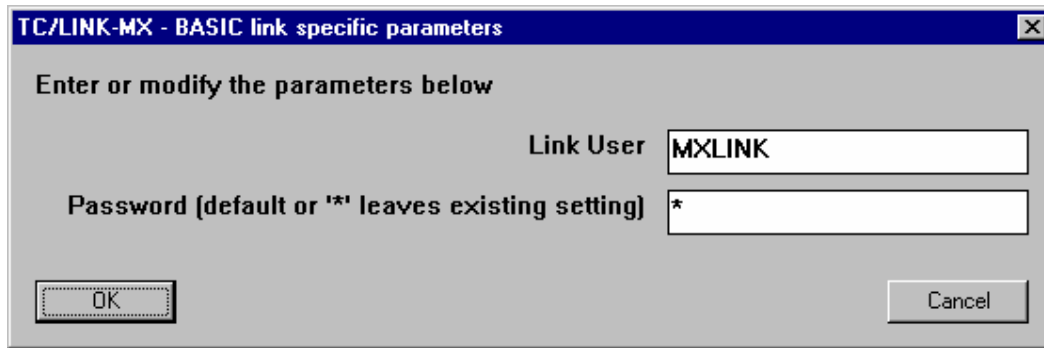
Figure 17: TOPCALL link user

Link User: (Registry: `TOPCALL\User`)Used for login to the TOPCALL server.

Information from step 3:
TC User: MXLINK

Password: (Registry: `TOPCALL\Internal`) Used for login to the TOPCALL server.

Information from step 3:
TC Password: MXLINK

Setup stores the password in encrypted format. If the link user password is changed after setup, the new password can also be written to the registry as plain text.

4.9.7 ADVANCED: Link Specific Parameters

This setup screen is available only in Advanced Setup.

Figure 18: Link specific parameters

Link Queue (without format character): (Registry: `TOPCALL\Queue`) TCLINK polls the TOPCALL queues starting with the name entered here. The name of the queue user on TOPCALL consists of this name with an additional last graphics format character (e.g. enter "TCLMXQ" for TCI Link Queue "TCLMXQI"). Depending on the last character, images will be converted to the graphics format defined by the last character (e.g. images sent to TCLMXQ3 will be converted to TIFF G3 without EOL).

Default: TCLMXQ

Default Graphic Format: (Registry: `TOPCALL\NotifGraphic`) Determines which default graphic format is used in notifications to mail. This value must be one of the image formats polled by TC/LINK-MX (entered in the next field). Default: I

Image Formats polled by TC/LINK-MX: (Registry: `Setup\QueueFormats`) Here you define which graphic formats can be used when sending incoming faxes to Exchange. For every graphic format, there must be a queue user on TOPCALL. If configured for automatic creation of TOPCALL dependencies (see below), TCLINK creates these queue users automatically.

Possible formats are:
TCI (I or J), TIFF (0 to 4), BMP (B), PCX (P), GIF (G), DCX (D), PDF(F) or MODCA (M or N)

Default: queues for all image formats are created.

Poll Cycle (seconds): (Registry: `General\Pollcycle`) Defines the time TCLINK waits after performing a full transfer cycle for all activated mails. Default: 30

Note: Do not make the poll cycle too short, as this will slow down TOPCALL performance. Recommended value: between 30 and 60 seconds.

Set Entry AT NEXT NODE: (Registry: `TOPCALL\NotifMail`) If set to YES, TOPCALL requests notifications (delivery, nondelivery) when sending a message to mail.The mail entry will be terminated at the receipt of a (non)delivery notification.

If set to NO, TC/LINK terminates a message from TOPCALL after successfully passing it to the remote mail system. Default: YES

Enable Document Converter: (Registry: `General\DocConv`) Enable or disable the document converter. The document converter is used to convert attached document files to TCI format. Default: YES

Support MetaMail: (Registry: `General\ExitDLL, Topcall\FetchSingleSendOrder`)

TC/MetaMail is a fully integrated service of the TOPCALL System. The concept of MetaMail means that actual content (complete message or single attachments) remains on the TOPCALL server while only a small reference is transferred between the TOPCALL System and third-party mail environments.

To the third party mail environment this small reference is just like any other email message, but it is much smaller than the average message containing fax, voice or binary (Word, Excel, Acrobat, etc.) attachments.

MetaMail must be enabled in TC/LINK configuration and in the Topcall user profiles of the end users.

To disable MetaMail Integration, clear registry value `General\ExitDll` and set registry value `Topcall\FetchSingleSendOrder` to 0.

See the MetaMail Configuration Manual for more information.

Create dependencies on TCOSS server: (Registry: `Setup\CreateDependenciesTopcall`) If selected, TCLINK creates all needed TOPCALL objects automatically after startup. Default: NO

Create dependencies on mail server: (Registry: `Setup\CreateDependenciesMail`) Ignored for TC/LINK-MX. Exchange dependencies are always created. Default: NO

4.9.8 ADVANCED: Security Settings

This setup screen is available only in Advanced Setup.
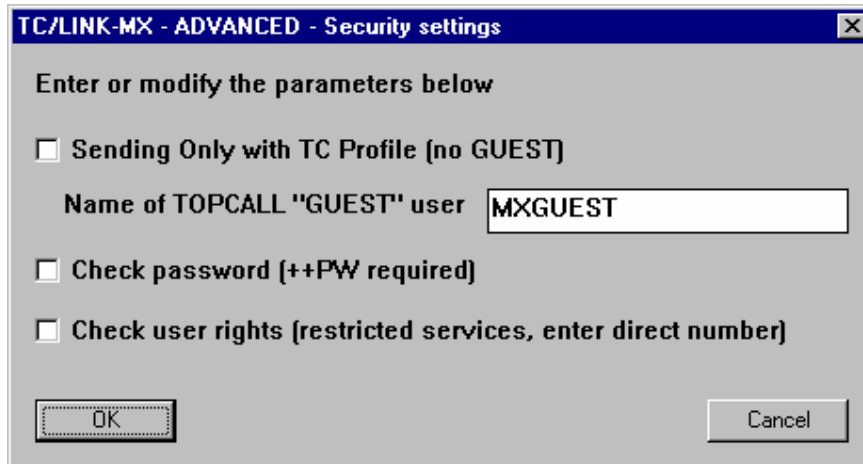
Figure 19: Security settings

Sending Only with TC Profile: (Registry: `TOPCALL\ChkDisSend`) If this checkbox is selected, only users configured in the TOPCALL user store are allowed to send from Exchange. If a user who is not allowed to send via TOPCALL tries to send, TCLINK will return a non-delivery notification.

Default: not selected

Name of TOPCALL "GUEST" user: (`Registry: TOPCALL\GuestUser`)
The name of a TOPCALL user profile holding the rights and default options for non-TOPCALL users. If there is no guest user defined, TC/LINK takes the default send options for non-TOPCALL users from the TC Link user.
See TC/LINK manual for more information about Guest user, password checking and rights checking.

Default: empty

Check password (++PW required): (Registry `TOPCALL\NeedPWD`)
If selected, every mail originator must provide a password via the ++PW text directive. For non-TOPCALL-users, this is the password of the guest user profile
Default: not selected

Check user rights: (Registry `TOPCALL\CheckRights`)
If selected, TC/LINK checks the mail originator's rights for cost center change, direct number use and services use. In this case, non-TOPCALL users are only allowed to send if a guest user profile exists and grants them sufficient rights.
Default: not selected

4.9.9 ADVANCED: Sendoptions to TOPCALL

This setup screen is available only in Advanced Setup.
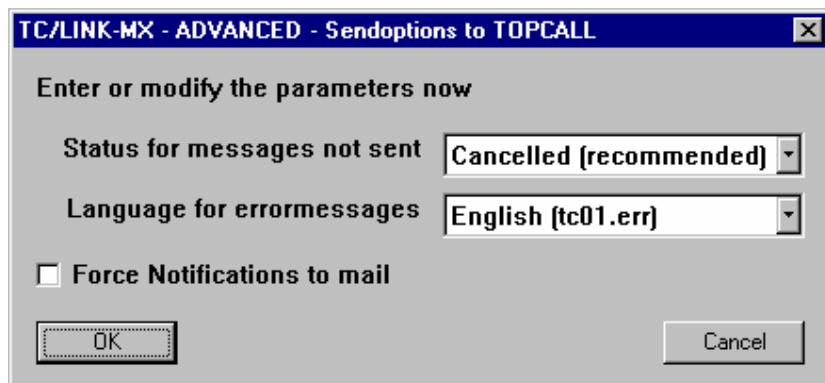
Figure 20: Sendoptions to TOPCALL

Status for messages not sent: (Registry `TOPCALL\ArcNeg`, `TOPCALL\DelEnvNeg`, `TOPCALL\DelEntNeg`)
If a message sent from Exchange cannot be delivered, the TOPCALL sendorder can either be cancelled (default) or set to "Inactive-Problems".

Language for errormessages: (`Registry: General\Language`) Determines the language used for certain string constants in messages sent to Exchange. (for example: the error descriptions in non-delivery notifications). Default: English

Force Notifications to mail: (Registry: `TOPCALL\SOForceDelNotif`, `TOPCALL\SOForceNonDelNotif`)
If selected, TOPCALL returns notifications (delivery, non-delivery) for all messages from Exchange, independent of the notification level requested by the originator. Default: not checked

4.9.10 ADVANCED: Troubleshooting / Traces

This setup screen is available only in Advanced Setup.
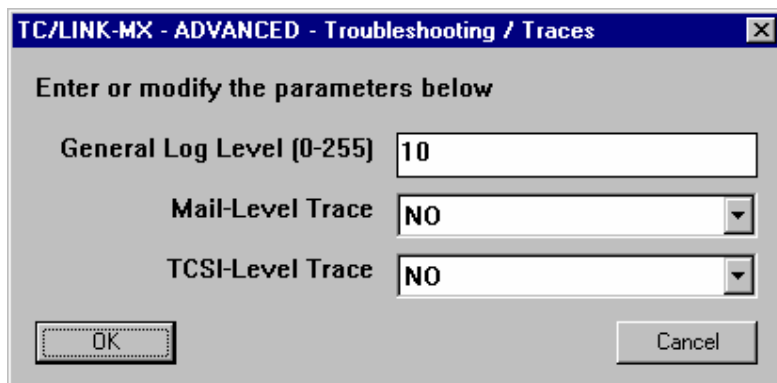
Figure 21: Troubleshooting / Traces

General Log Level: (Registry: `General\TraceLevel`) Determines how much information is written to the tracefile. The value may be from 0 to 256. Deactivate the log for normal operation. Default: 10

Mail-Level trace: (Registry: `General\MailDebug`) Determines whether the messages passed between the mail-specific DLL and TCLINK.EXE are written to the tracefile. Default: NO
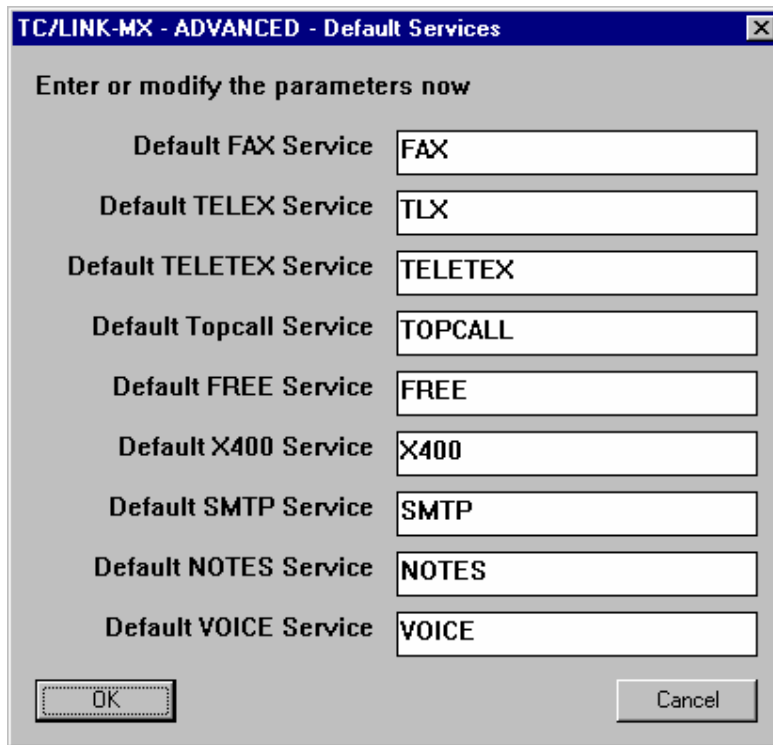
NOTE: Activating the mail-level trace slows down TCLINK. This option MUST be deactivated for normal operation.

TCSI-Level Trace: (Registry: `TOPCALL\TCSIDebug`)
Determines whether the messages passed between TCLINK.EXE and the TCOSS server are written to the tracefile. Default: NO

NOTE: Activating the TCSI-level trace slows down TCLINK. This option MUST be deactivated for normal operation.

4.9.11 ADVANCED: Default Services

This setup screen is available only in Advanced Setup.

```
TC/LINK-MX - ADVANCED - Default Services           [×]

  Enter or modify the parameters now

       Default FAX Service      | FAX       |

     Default TELEX Service      | TLX       |

   Default TELETEX Service      | TELETEX   |

     Default Topcall Service    | TOPCALL   |

       Default FREE Service     | FREE      |

       Default X400 Service     | X400      |

       Default SMTP Service     | SMTP      |

     Default NOTES Service      | NOTES     |

     Default VOICE Service      | VOICE     |

       [   OK   ]                        [  Cancel  ]
```

Figure 22: Default services

Here you can configure the default services stored in the registry `TOPCALL\xxxService`.

These services are used if the mail originator did not explicitly specify a TOPCALL service but only an address type.

TCLINK uses the Default FAX Service for FAX recipients, the Default TELEX Service for TELEX recipients, and so on.

Notes:
1. The default Teletex service is not used by TC/LINK-MX, as Teletex addresses are not supported any more.
2. If automatic creation of TOPCALL dependencies is enabled, the default services for address types FREE, TOPCALL, FAX and TELEX are created after link start.

4.9.12 ADVANCED: File Extensions

This setup screen is available only in Advanced Setup.

Figure 23: File extensions

Here you can configure all file extensions that are recognized as image or as text attachments by TCLINK. Image attachments can be converted to TOPCALL Image format without using the document converter (see TC/LINK manual). Note that files not contained in this list are not recognized as image files, and are sent to the document converter or stored in binary form. The listbox displayed in the last line shows all valid Format characters.

Attention:

Fill this list from top to bottom, do not insert empty lines. TCLINK regards an empty line as the end of the list.

It is possible to define more than one graphic format for one file extension. E.g. you can specify that the extension ".BIN" can contain "TCI" and "TIF" graphic format.

4.9.13 ADVANCED: Lincoln Converter

This setup screen is available only in Advanced Setup.

<u>Reminder Messagebox (Lincoln Converter needed)</u>
If JetForm Integration is enabled and no PS or PCL converters were installed during the last TC/LP Setup, a message box reminds you to install at least one of these converters.
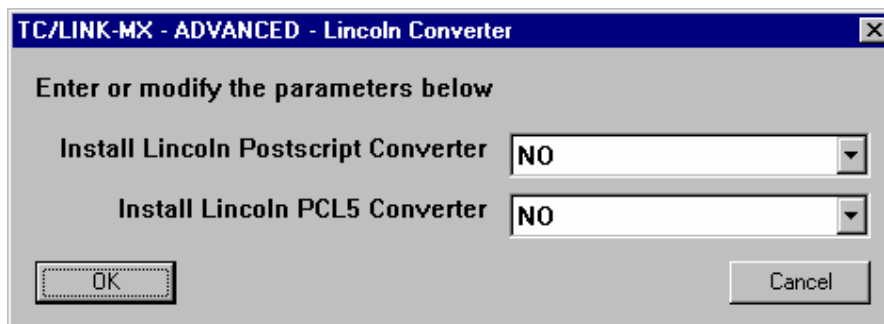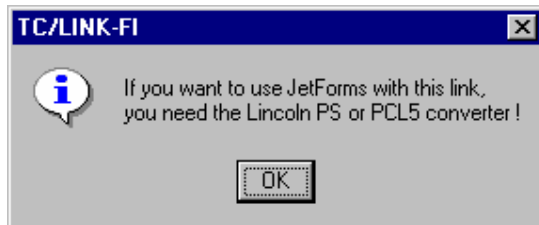
Figure 24: Lincoln converter

Install Postscript Converter:
Choose YES to copy the Lincoln Postscript converter files to your harddisk. If the Postscript converter license key is valid, TC/LINK can then convert Postscript attachments in messages from mail.

Install PCL5 Converter:
Choose YES to copy the Lincoln PCL5 converter files to your harddisk. If the PCL5 converter license key is valid, TC/LINK can then convert PCL5 attachments in messages from mail.

4.9.14 Directory Synchronization Type
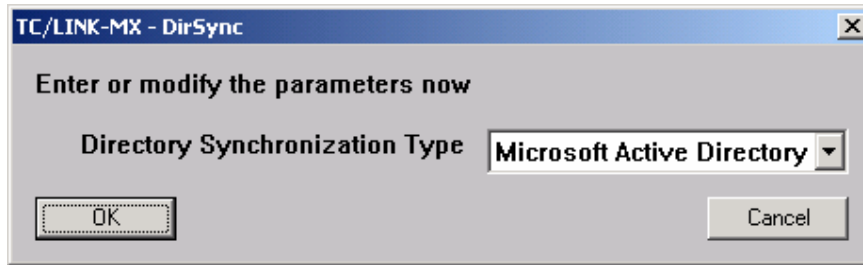
Figure 25: Directory Synchronization Type

Directory Synchronization Type (registry: Dirsync\Type):
Available choices are:
- None
- Microsoft Active Directory
- IPlanet/Netscape Directory

For Dirsync with Exchange 2000 choose "Microsoft Active Directory".

4.9.15 ADVANCED: Common Dirsync Parameters

This setup screen is available only in Advanced Setup.
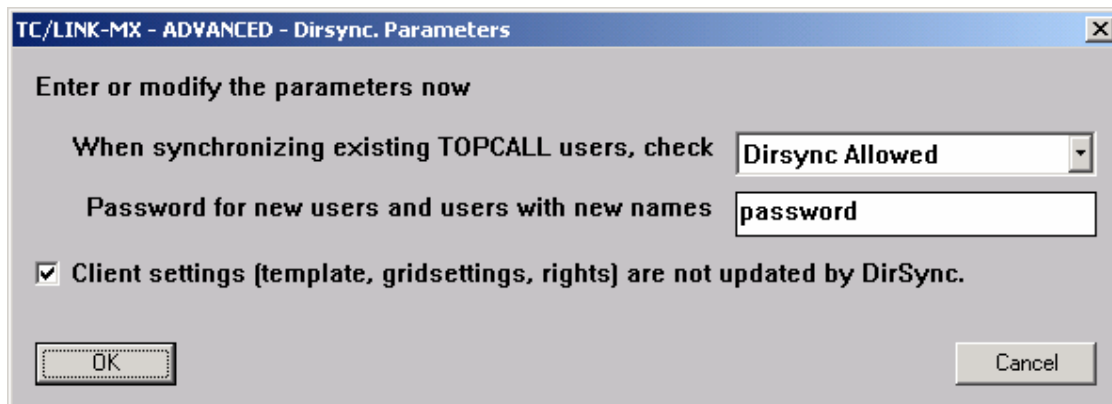
Figure 26: Common dirsync parameters

When synchronizing existing TOPCALL users, check (registry: USRIO\ChangeAllUsers):
Here you can specify if existing TOPCALL users shall be changed by dirsync. Possible values:

Setup text	Registry value	Description
Dirsync Allowed	2	Synchronize existing users if dirsync allowed flag is set
User Belongs to	3	Synchronize existing users if mail system matches
BOTH	0	Synchronize existing users if mail system matches and dirsync allowed flag is set
NONE	1	Synchronize existing users without checking anything

If you configure dirsync to use various templates belonging to different mail systems, choose "Dirsync Allowed".

Password for new users and users with new names (registry `USRIO\DefaultPassword`):
Password for new TOPCALL users. Default: password

Client settings (template) are not updated by DirSync (registry `USRIO\ClientSettings`):
If this checkbox is unchecked, variables ($variable$) are evaluated in the Default Template field of the dirsync shadow user.
Default: checked (client settings not updated).

4.9.16 LDAP Dirsync Options

If you chose "Microsoft Active Directory" dirsync, you have to configure further dirsync options.
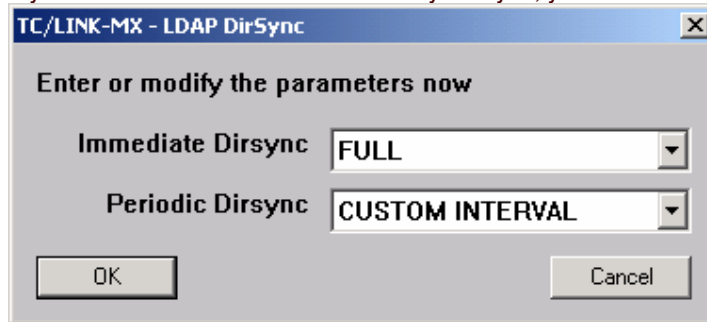
Figure 27: LDAP Dirsync Options

Immediate Dirsync (registry: Dirsync\Immediate):
Here you can order one immediated dirsync after the next start of TCLINK.

Possible values:
- NO (default)
- FULL
- CHANGES

Periodic Dirsync (registry: Dirsync\Periodic):
Here you can configure a periodic update dirsync.

Possible values:
- OFF (default)
- DAILY
- CUSTOM INTERVAL

4.9.17 Daily Dirsync

If you selected a daily dirsync, a dialog box lets you enter the exact time of day:
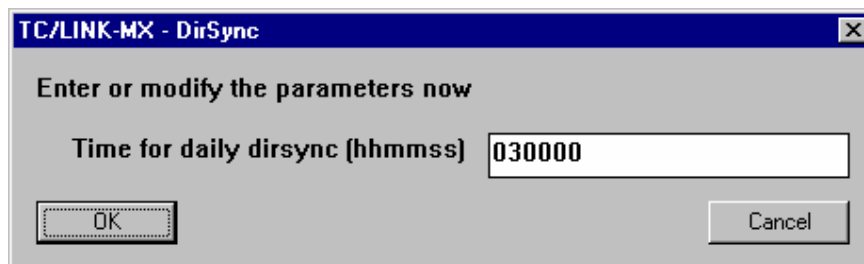
Figure 28: Daily Dirsync

Time (hhmmss) for daily dirsync (registry: Dirsync\Time):
Enter a time (hh=hours: 00 - 23, mm=minutes: 00 - 59, ss=seconds: 00 - 59).
Daily update dirsync will take place at time specified here. Default: 030000 (3am)

4.9.18 Periodic Dirsync with custom interval
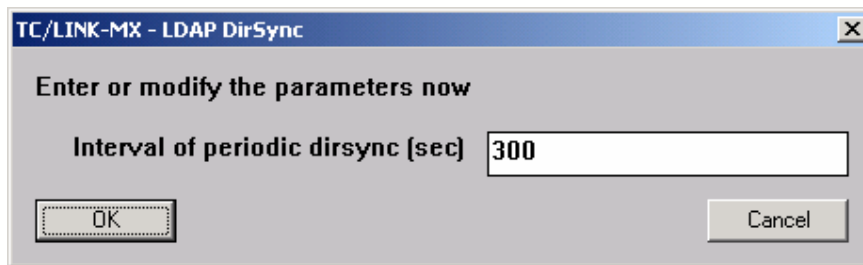
Figure 29: Custom Dirsync Interval

Interval for periodic dirsync (sec) (registry: Dirsync\Interval):
This option is only displayed if you selected custom dirsync intervals. Please specify how many seconds TC/LINK shall wait between subsequent dirsyncs.
The configured interval is not allowed to exceed 24 hours.
The actual interval used by TC/LINK depends on message throughput (no dirsync during message transfer).

Default: 300 sec

Note: If TC/LINK is configured to update system files, this is only done once per day (at the time configured in DIRSYNC\Time, default is 3 am). The reason is that update of system files has a severe impact on TC/LINK performance.

4.9.19 Active Directory Dirsync Configuration
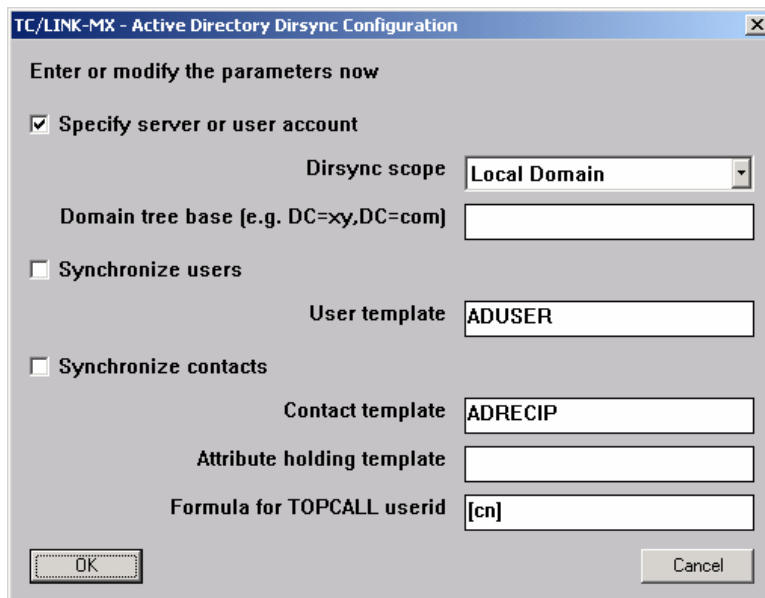
Figure 30: Active Directory Dirsync

Specify server or user account:
This option is only needed in an Application Service Provider configuration, where Dirsync shall be run against a remote forest. If you select this option, you are prompted to specify the name of a domain controller and a user account that shall be used for dirsync.

Dirsync scope (registry: Dirsync\ADScope):
Choose the scope of directory synchronization.

Possible values:
- Local Domain
- Global Catalog
- Domain Tree

Domain tree base (registry: Dirsync\ADTreeBase):
Only needed if scope is "Domain Tree". Setup asks for the domain tree that shall be synchronized.
Please enter the LDAP path for the Domain tree base (e.g. "DC=topcall,DC=co,DC=at").

Synchronize users (registry: Dirsync\UserExport):
Choose if "users" shall be synchronized.

User template (registry: Dirsync\UserTemplate):
If users shall be synchronized, you can define here the default dirsync template for users. This default template can be overridden by a user-specific template configured via "attribute holding template". Dirsync without a dirsync template is not possible.

Synchronize contacts (registry: Dirsync\RecipientExport):
Choose if "contacts" shall be synchronized.

Contact template (registry: Dirsync\RecipientTemplate):
If contacts shall be synchronized, you can define here the default dirsync template for contacts. This default template can be overridden by a contact-specific template configured via "attribute holding template". Dirsync without a dirsync template is not possible.

Attribute holding template (registry: Dirsync\TemplateAttribute):
Here you can specify an Active Directory attribute that holds the dirsync template name. If this attribute exists and is not empty for a user (or contact), TC/LINK dirsync will interpret the attribute content as the dirsync template name for this object.
You can find out valid attribute names via the utility "tcadutil" which is part of TC/LP.
"tcadutil.exe" can be started from directory USRIO on the TC/LP Setup disk.

Formula for TOPCALL userid (registry: Dirsync\UserIDFormula):
This mandatory input option defines how TC/LINK builds the TOPCALL userid of a shadow user. The userid can contain various Active Directory user attributes. In this input field, you can specify any combination of fixed text and attribute names in [brackets].
You can find out valid attribute names via the utility "tcadutil" which is part of TC/LP.

Default:[cn]

4.9.20 Server and user account for Dirsync
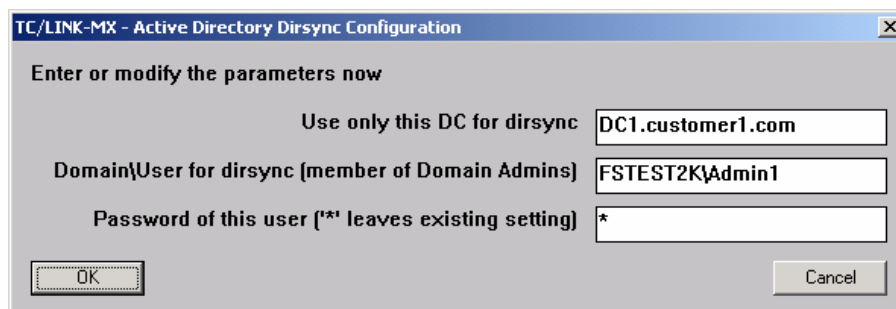
Figure 31: Server and user account for Dirsync

This setup screen appears if you enabled the checkbox "Specify server or user account".

Use only this DC for dirsync (registry: Dirsync\ADDCName):
Specify the name of the domain controller, including the full domain name. Please note that the link computer must be able to find the IP address of this domain controller, either via DNS or via a local hosts file.

If you enter a value into this field, Setup also sets registry key *Dirsync\ADAllowOtherDC* to 0. This means that if this domain controller is unavailable, dirsync will not try to locate another domain controller.

If the dirsync scope is NOT "Local Domain", the specified domain controller must be a Global Catalog server.

Domain\User for dirsync (member of Domain Admins) (registry: Dirsync\ADUserId):
Enter the domain and user id of a Domain Admin from the customer's domain.

Password of this user ("*" leaves existing setting) (registry: Dirsync\ADPassword):
Enter the password of this user. It will be stored encrypted.

4.9.21 Active Directory: Attributes

Figure 32: Active Directory Attributes

Use this setup page to define which Active Directory attributes are needed for dirsync. Setup allows to define up to 18 attributes as dirsync parameters (a second page is available). They are stored in the registry as *Dirsync\List01* to *Dirsync\List18*. If more attributes are needed, they can be entered manually via the Windows NT registry editor (*Dirsync\List19* etc.).

You do not need to specify the attributes defined in the formula for TOPCALL userid (*Dirsync\UserIDFormula*) in this list.

In the sample user template on TOPCALL, the dirsync parameters can also be referenced via their sequential number, e.g. 1 instead of $displayName $.

Default: If Active Directory dirsync is installed for the first time, Setup configures a set of attributes corresponding to the ADUSER template installed by TC/LINK (see screen shot).

Note :
If Active Directory dirsync is installed for the first time, TC/LINK installs a dirsync template user "ADUSER". If this is an upgrade and a dirsync template user already exists, it is not changed.

4.9.22 ADVANCED: Virus Check

This setup screen is available only in Advanced Setup.

Figure 33: Virus Checker Options

Virus check ... (registry `General\VIRCheckMsgFromMail`, `General\VIRCheckMsgFromTC`):
Enable or disable virus check for different directions.
Possible values:
- DISABLED (default)
- MSG FROM MAIL
- MSG FROM TOPCALL
- BOTH

Send message infected by virus (registry `General\VIRSendInfectedMessage`):
Choose whether a message infected by a virus shall be sent to it's recipient(s).
Possible values:
- YES
- NO (default)

Inform operator (registry `General\VIRInformOperator`):
If set to YES, TC/LINK sends a report message to the operator, when a virus was detected.
Possible values:
- YES (default)
- NO

Operator (registry `General\VIROperator`):
Operator name (if TOPCALL user) or address (service,address).
Default: "OPERATOR"

Include virus in report (registry `General\VIRSendInfectedAttToOperator`):
If set to YES, the infected attachment is included in the report to the operator
Possible values:
- YES
- NO (default)

Include virus in notification (registry `General\VIRSendInfectedAttToOrig`):
If set to YES, the infected attachment is included in the non-delivery notification sent to the originator.
Possible values:
- YES
- NO (default)

Include virus in message (registry `General\VIRSendInfectedAttToRecp`):
If set to YES, the infected attachment is included in the message sent to the recipient
Possible values:
- YES
- NO (default)

Virus checker path (registry `General\VIRCmd`):
Path name of virus checker software.
Default: "C:\Win32App\Toolkit\wfindv32.exe"

Virus checker parameters (registry `General\VIRCmdParameters`):
Command line parameters for virus checker.
Default: "$TCVF$ /SILENT /Report=$TCVR$ /!LFS /PACK /UNZIP /NOBOOT /NOPART /NOEXIT"

Virus checker working directory (registry `General\VIRWorkingDirectory`):
Working directory for virus checker.
Default: "C:\Win32App\Toolkit"

4.9.23 ADVANCED: Notifications to Exchange

This setup screen is available only in Advanced Setup.

Figure 34: Notifications to Exchange

TC/LINK-MX can return two kinds of notifications for messages from Exchange: Exchange (Non)Delivery Reports and TOPCALL (Non)Delivery Reports. As described in section 3.6.1, the TOPCALL reports are text messages containing information about (non) delivery and (optionally) the original message or a sendcopy.

Exchange delivery reports (registry: `Exchange\ExDelNf`):
Choose if TC/LINK-MX shall return an Exchange delivery report on message delivery. (default: YES)

Exchange non-delivery reports (registry: `Exchange\ExNonDelNf`):
Choose if TC/LINK-MX shall return Exchange non-delivery reports. (default: YES)

TOPCALL delivery reports (Text) (registry: `TOPCALL\DelNfTxtToMail`, `TOPCALL\DelNfOrigToMail`, `TOPCALL\DelNfOnlyText`):

Here you can select which type of TOPCALL delivery report shall be returned. Possible values are:
NONE   no TOPCALL delivery report
Without original msg   TOPCALL delivery report with delivery coversheet text only
With original msg text   TOPCALL delivery report with coversheet text and original message <u>text</u>
With full original msg   TOPCALL delivery report with coversheet and complete original message

Default: *With full original msg*

If the recipient of the original message was a fax and if a sending copy was requested, the TOPCALL delivery report "with full original msg." will contain a sending copy instead of the original message. This is the graphic image of the fax that was sent.

This setup item sets the following registry values under subkey TOPCALL:

	DelNfTxtToMail	DelNfOrigToMail	DelNfOnlyText
NONE	0	0	0
Without original msg	1	0	0
With original msg text	1	1	1
With full original msg	1	1	0

TOPCALL non-delivery reports (Text) (registry: `TOPCALL\DelNfTxtToMail`, `TOPCALL\DelNfOrigToMail`, `TOPCALL\DelNfOnlyText`):

Here you can select which type of TOPCALL nondelivery report shall be returned. Possible values are:

NONE   no TOPCALL nondelivery report
Without original msg   TOPCALL nondelivery report with delivery coversheet text only
With original msg text   TOPCALL nondelivery report with coversheet text and original message <u>text</u>
With full original msg   TOPCALL nondelivery report with coversheet and complete original
message

Default: *With full original msg*
If the recipient of the original message was a fax and if a sending copy was requested, the TOPCALL non-delivery report "with full original msg." will contain a sending copy instead of the original message. This is the graphic image of the fax that was sent.

This setup item sets the following registry values under subkey TOPCALL:

	NonDelNf TxtToMail	NonDelNf OrigToMail	NonDelNf OnlyText
NONE	0	0	0
Without original msg	1	0	0
With original msg text	1	1	1
With full original msg	1	1	0

<u>Example:</u>
In our sample installation, TC/LINK is configured to return only Exchange reports on message delivery.

On non-delivery, TOPCALL reports are selected, as they give more information than the Exchange reports. Exchange non-delivery reports are also selected, because they give the user the possibility to resend the original message.

4.9.24 Setup Exchange

Attention: Part of this setup screen is available only in Advanced Setup.

Figure 35: Setup Exchange

Exchange server name: (Registry: *Exchange\Server*)
Enter the name of the Exchange server where the TC/LINK-MX connector and its mailbox shall be installed.
Note: Setup suggests the name of the local computer.

Link Display Name: (Registry: `Exchange\DisplayName`) **ADVANCED**
This is the name of the link, as displayed by the Exchange Admin program. If multiple connectors are installed in the same Exchange routing group, they must have different display names. (default: "Link to TOPCALL (local computer name)").

Remarks:
This does not apply to multiple links sharing one connector (for failsave operation, see section 7.1) !

Link Directory Name: (Registry: `Exchange\CommonName`) **ADVANCED**
This is the "internal" name of the link within the Active Directory. If multiple connectors are installed in the same Exchange routing group, they must have different directory names. (default: "TCLINKMX (local computer name)")

Remark:
This does not apply to multiple links sharing one connector (for failsave operation, see section 7.1) !

Leave existing Exchange objects unchanged (registry: `Exchange\SkipMode`): **ADVANCED**
This option allows skipping the installation of components on the Exchange server.

Setup option	Value in registry	Description
"none" (default)	0	All Exchange objects are (re)installed
"proxy addresses"	1	Ignored, no proxy address generators installed anyway
"templates"	2	Existing address and options templates are preserved
"all except connector"	3	Only the connector object is (re)installed, all other objects are preserved
"all"	4	No Exchange objects are (re)installed
"special"	5	Objects listed in Exchange\SkipList are preserved

If option "special" is chosen, all items listed in the multi-string registry value Exchange\SkipList are left unchanged. Possible values in Exchange\SkipList:

Value	Items left unchanged
ProxyAddresses	Existing proxy address generators and proxy addresses
Connector	Connector object (routing table, dirsync options)
FAXTemplate	Fax address template + per recipient options *
TELEXTemplate	Telex address template + per recipient options *
FREETemplate	Free address template + per recipient options *
ABTemplate	Topcall addressbook template + per recipient options *
TCTemplate	Topcall address template + per recipient options *
NOTESTemplate	Notes address template + per recipient options *
SMSTemplate	SMS address template + per recipient options *

*) If per-message send options were installed together with this address type, they are also left unchanged.

By default, the SkipList contains all possible items.
Registry key Exchange\SkipList must be edited via a registry editor.

You can skip installation of Exchange objects if you …
- … add an instance of TC/LINK-MX to an already existing Exchange connector (skip "all")
- … add an instance of TC/LINK-MX to an organization where TC/LINK-MX is already installed (skip "all except connector")
- … want to preserve an existing address template, e.g. a FAX address template from another provider (choose "special" and specifiy the template in registry entry Exchange\SkipList)
- … repeat an installation just for changing some non-Exchange-specific settings (skip "all")

Service to send via this link (registry: `Setup\ServiceEXCH\Name`): **ADVANCED**
The name of a service that will be automatically created at link start. This service can be used to send to Exchange mailboxes located in the same administrative group as the link, using the default graphic format.

Default: EXCHANGE, this default name is also used in the dirsync templates installed by TCLINK.
When choosing a different name, please change the service name also in files ADDSU_RS.ASC and ADDSU_DS.ASC (in Setup subdirectory) before starting TC/LINK-MX.

Note:
If a service with this name already exists, it is not overwritten. If the prefix of the existing service is different, automatic creation of dependencies will abort with an error. In this case, please change the service prefix via TCFW.

Archive Recipient (disabled if empty) (registry `Topcall\ArchiveName`): **ADVANCED**
Default: TCARCHIVE
Can be used to enable TOPCALL Integrated Archiving. Prerequisites for Integrated Archiving are
TCOSS 7.24.02, TOPCALL Archive Server, TC/Archive Integration for Exchange.
If Integrated Archiving is not used, set this input field empty.
Otherwise, TC/LINK will create a TOPCALL user with this name. The TC/Archive mail client forwards
all messages (BCC) to this TOPCALL user. TC/LINK recognizes the Archive user and guarantees that
the message is archived correctly.

Advanced RTF Conversion (registry `General\AdvancedRtfConversion`): **ADVANCED**
Default: NO
If Advanced RTF Conversion is enabled (YES), the text of an outgoing fax starts on the coverpage.
See TCLINK manual for more information.

If you did not choose the option to skip "all" Exchange objects, a message box prompts you to stop all
parallel instances of TC/LINK-MX during installation. Any links using a connector while it is being
deleted and reinstalled by Setup may run into problems !

Use domain user for TC/LINK-MX:
Here you can choose to use a Windows 2000 account for TC/LINK-MX (instead of the Local System
account). If you enable this option, Setup will prompt you to enter account information (domain, user
ID, password).

Domain controller (if Exchange in remote forest) (registry Exchange\DCName): ADVANCED
This field shall be left empty in standard installations. It is only needed if the Exchange server is in a
different Windows 2000 forest than the link computer (useful for application service providers).

If you use this field, enter the complete name (including the domain) of a remote domain controller.
Setup will connect to this domain controller when it creates the Exchange connector object in the
customer's Active Directory.
Please note that the link computer must be able to find the IP address of this domain controller, either
via DNS or via a local hosts file.

The following window is only displayed if you did not select Active Directory dirsync:
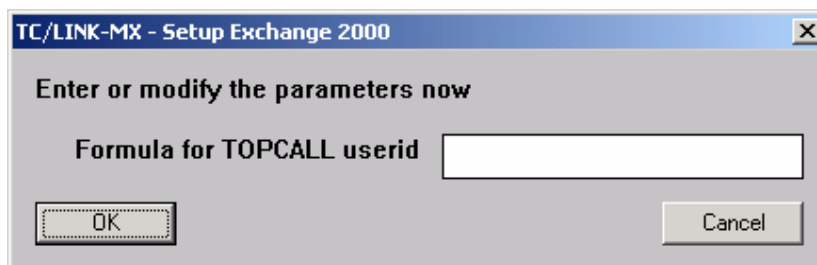
Figure 36: Formula for TOPCALL userid

Enter a valid format string for the TOPCALL userid (needed for finding the shadow user for a message
originator). See section 3.8.4 for more information.

The following window is only displayed if you chose to use a domain user for TC/LINK-MX:
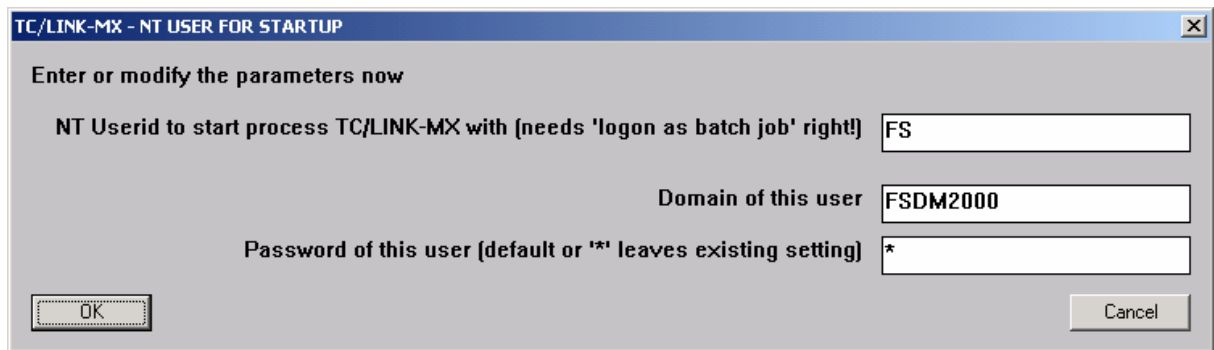
Figure 37: NT user for startup

Enter domain, userid and password of the user account that TC/LINK-MX shall use. This account must have special permissions on the mailbox store where TC/LINK-MX is installed (see section 4.3). If the link shall run dirsync, the account must also be a part of the "Domain Admins" group.

On the local machine, the specified user must be member of the Administrators group and be granted the right to logon as a batch job.

The following window asks you to stop all other TC/LINK-MX instances using the same Exchange connector. This is necessary because Setup modifies the connector object.
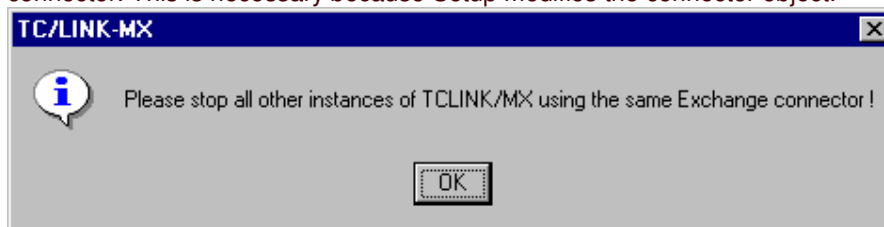
4.9.25 ADVANCED: Languages for Address Templates

This setup screen is available only in Advanced Setup.

Figure 38: Selecting Languages

(registry: `Exchange\FixLangX, Exchange\FreeLangX`)
This screen allows to choose for which languages the address templates are installed.
Default: English and German.

The first three listboxes can be used to select English, German or French templates, these are built-in choices. (The French templates are not yet translated and contain English text.)

Templates can be translated to other languages at a local basis.

The remaining 7 edit fields can be used to specify any other language that shall be supported. To correctly specify a client language, you must know the numeric code of this language, and the name of the language as used in the Exchange Server directory.
To install the English version of the templates for a language, the syntax is
*NumericCode***:***LanguageName*

If you have translated the template files to a new language, use the syntax
*NumericCode***:***LanguageName***:***SpecialCharacter*
(SpecialCharacter is the terminating character of the template file names).

NumericCode and *LanguageName* can be obtained from the following list:

401:Arabic	410:Italian	41d:Swedish
404:Chinese Traditional	411:Japanese	41e:Thai
405:Czech	412:Korean	41f:Turkish
406:Danish	413:Dutch	424:Slovenian
407:German	414:Norwegian	42d:Basque
408:Greek	415:Polish	804:Chinese Simplified
409:English	416:Brazilian	809:English (UK)
40b:Finnish	418:Romanian	816:Portuguese
40c:French	419:Russian	c0a:Spanish
40d:Hebrew	41a:Croatian	
40e:Hungarian	41b:Slovak	

4.9.26 ADVANCED: Exchange Address Types

This setup screen is available only in Advanced Setup.

Figure 39: Exchange address types

This screen allows to change the address types used by Exchange for TOPCALL addresses.
DO NOT LEAVE THESE FIELDS BLANK !
They are needed for the link to work correctly. Settings in this screen do not affect the creation of address templates !

The figure above shows the default address type names.
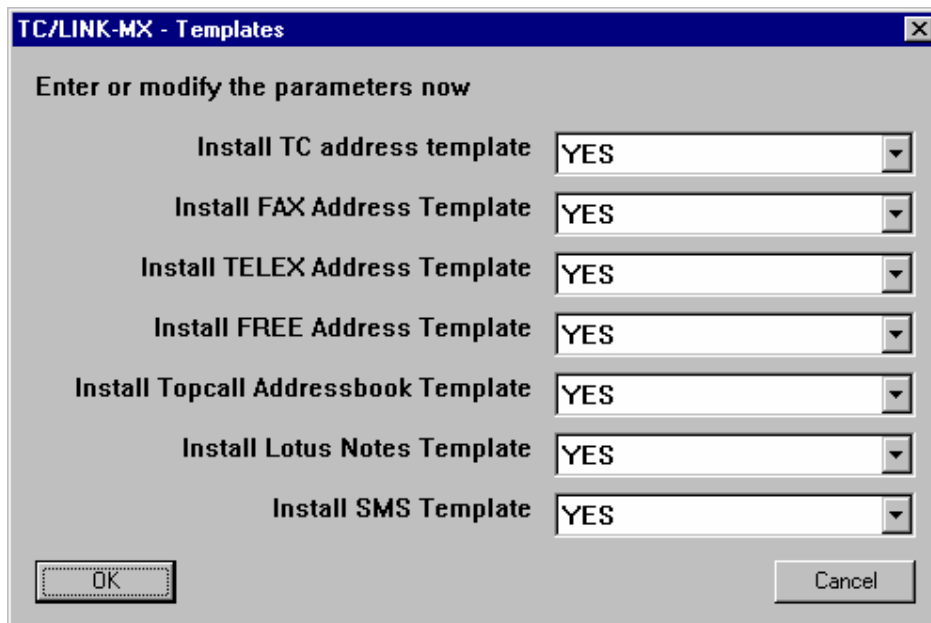
Attention:
The maximum length of an address type name is 8 characters. Longer names lead to an error later in Setup.
Try to avoid name conflicts with address templates used for other connectors (e.g. other fax connectors may also offer address templates for FAX and SMS).

To preserve an existing address template for one of these address types, use registry keys
`Exchange\SkipMode` and `Exchange\SkipList` (see section 4.9.24).

4.9.27 ADVANCED: Selecting Address Templates

This setup screen is available only in Advanced Setup.

Figure 40: TC/LINK-MX Templates

In this screen, you can select address templates that will be installed on the Exchange server. These templates will be available for the complete Exchange organization.

Defaults: YES for all templates
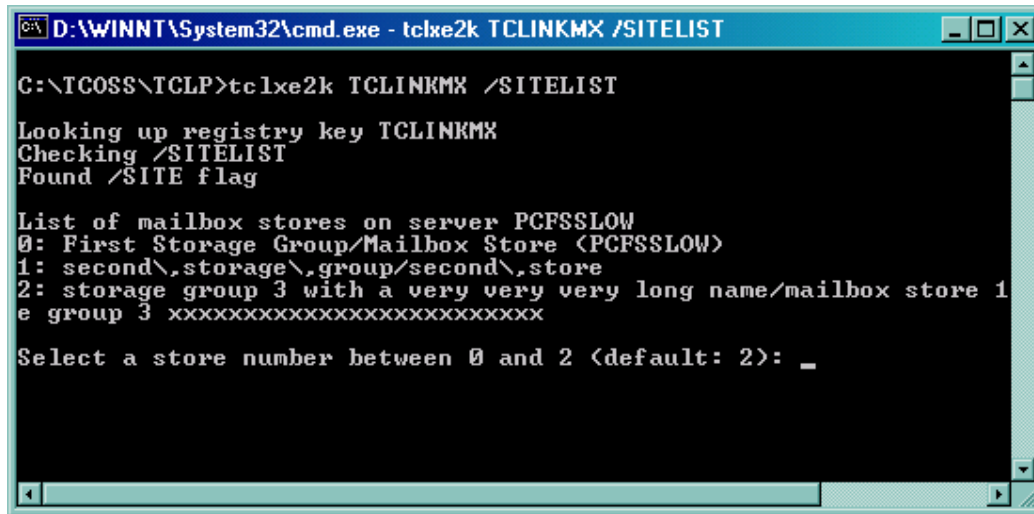
4.9.28 Installation of components in the Active Directory

The interactive part of Setup is followed by the installation of components in the Active Directory. Setup starts a console program (TCLXE2K.EXE) which installs address templates and a connector in the Exchange organization.

First, the console program tries to find the position of the Exchange server (local computer) within the Exchange organization and checks which mailbox stores are available on this server.

Setup then lets you select the mailbox store from a list.

The selected mailbox store name is written to registry key *Exchange\MailboxStore*.

```
C:\TCOSS\TCLP>tclxe2k TCLINKMX /SITELIST

Looking up registry key TCLINKMX
Checking /SITELIST
Found /SITE flag

List of mailbox stores on server PCFSSLOW
0: First Storage Group/Mailbox Store (PCFSSLOW)
1: second\,storage\,group/second\,store
2: storage group 3 with a very very very long name/mailbox store 1
e group 3 xxxxxxxxxxxxxxxxxxxxxxxx

Select a store number between 0 and 2 (default: 2): _
```

Figure 41: Choose mailbox store

Then Setup installs the objects in the Active Directory. This is also done via TCLXE2K.EXE.
The program logs its actions in a separate logfile (C:\TCOSS\TCLP\TCLXSTP.ERR), and also writes to the standard TC/LINK-MX tracefile.

If it encounters a severe problem, setup displays the log file and aborts with an error.

4.9.29 Information messagebox concerning parallel installations

At the end of Setup, a message box tells you to set registry key `General\LockMechanism` to 1 if the Exchange connector is shared between multiple instances of TC/LINK-MX (failsave installation, see section 7.1).

> **TC/LINK-MX**
>
> If you are installing multiple links to use the same Exchange connector, please set registry key General\LockMechanism to 1 !
>
> OK
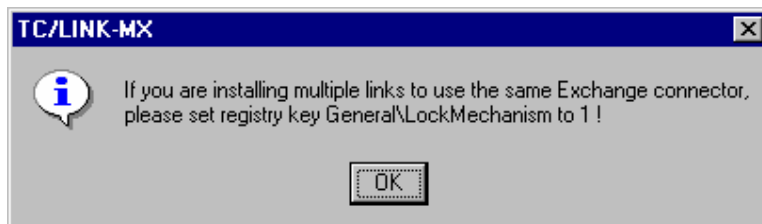
4.9.30 Information messagebox concerning TC/LINK-MX snap-in
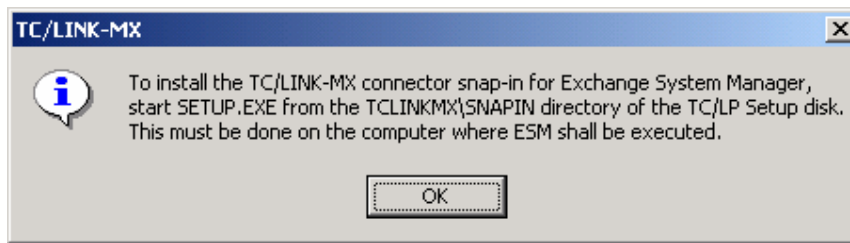
In order to see the connector in the ESM console, a special Snap-In must be installed on the computer where ESM is executed. You must install the Snap-In manually on the computer used to administer the connector. This is done as follows:

- Only on NT 4: Run ADS.EXE from the TC/LP Setup media (directory USRIO).

- Run SETUP.EXE from directory TCLP\SNAPIN on the TC/LINK-MX computer.

4.10 Step 15: Configure foreground document converter (optional)

If TC/DC is installed for foreground operation, link setup copies the TCDCEXE application (part of the document converter) into the startup group of the user who runs SETUP32 and configures an automatic login for this user. For the other links, this user is the TCDCEXE user. But in case of TC/LINK-MX, setup must be called by an account with Exchange Administrator rights.

Therefore, after setup, it is necessary to:

- remove the TCDCEXE from the administrator's Startup group
- write name, password and domain of the TCDCEXE user to registry values `DefaultUserName`, `DefaultPassword` and `DefaultDomainName` below `HKEY_LOCAL_MACHINE\Software\Microsoft\WindowsNT\CurrentVersion\Winlogon`
- log off and (automatically) log in as the TCDCEXE user
- put C:\TCOSS\TCDCEXE into the TCDCEXE user's startup group

Information from step 9:	
TCDCEXE User:	TCCP1
TCDCEXE Password:	
TCDCEXE Domain:	TCINTNTDM

5. AFTER TC/LINK-MX INSTALLATION

5.1 Changes for Dirsync

5.1.1 Using existing TOPCALL users as shadow users

If existing TOPCALL users shall be used as shadow users for Exchange mailboxes, they must be given:

- Events (IN, DELNOTIF, NONDELNOTIF) to either the native Exchange address (you can omit the "EX:" if using the standard EXCHANGE service) or one of the user's Email addresses. The events shall be active and set to auto-termination.

- **ONLY for TCOSS version 7.22 and above:** an inactive address with service EXCHANGE and the legacyExchangeDN of the mailbox as an address

The legacyExchangedN of a mailbox can be determined via the ADSIEDIT utility. You can also build it from the names of the Exchange organization, the administrative group and the user.
The formula is "/o=<org>/ou=<admingroup>/cn=Recipients/cn=<name>"
<org>   Placeholder for organization name
                       (see TC/LINK-MX registry key Exchange\Organization)
<admingroup>   Placeholder for administrative group name
<name>   User name as displayed in the right pane of Active Directory Users and Computers

5.2 TOPCALL objects created automatically

The following TOPCALL objects are created automatically by TC/LINK-MX, if automatic creation of TOPCALL dependencies is enabled:

Description	Default name	Registry subkey	More information
Guest User		Setup\GuestUser	TC/LINK manual
Archive User	TCARCHIVE	Setup\ArchiveUser	TC/LINK manual
Default Free Service	FREE	Setup\ServiceFREE	TC/LINK manual
Default TOPCALL Service	TOPCALL	Setup\ServiceTC	TC/LINK manual
Default Fax Service	FAX	Setup\ServiceFAX	TC/LINK manual
Default Telex Service	TLX	Setup\ServiceTLX	TC/LINK manual
Default Service for Exchange Users	EXCHANGE	Setup\ServiceEXCH	Is used in dirsync templates, prefix is default queue + "EX:"
Dirsync template user	ADUSER	Setup\ LDAPUserTemplate	LDAP dirsync manual
Dirsync template recipient	ADRECIP	Setup\ LDAPRecipTemplate	LDAP dirsync manual
Default template	DEFTEMP in link user's message folder	Setup\DefaultTemplate	Used for guest user and dirsync template user. Should also be default template for link user (configure manually via TCFW !)
Delivery Coversheet	LXDEL CVR in link user's message folder	Setup\DelNotifCover	TC/LINK manual
NonDelivery Coversheet	LXNONDELCVR in link user's message folder	Setup\NonDelNotifCover	TC/LINK manual
Virus report cover (for non-delivery)	REPDEL CVR in link user's message folder	Setup\NonDelNotifReport	TC/LINK manual
Virus report cover (for delivery)	REPNODELCVR in link user's message folder	Setup\DelNotifReport	TC/LINK manual
ONLYIMG template	ONLYIMG in link user's message folder	Setup\OnlyImgTemplate	TC/LINK manual

These objects are only created if they do not yet exist.

If automatic creation of TOPCALL dependencies is disabled, you should make sure that these objects exist on TOPCALL.

6. ASP RECOMMENDATIONS

The "Topcall for Application Service Providers" concept allows hosting of multiple customers on a single hardware platform (multiple instances of TCOSS, TC/Archive and links) while keeping the customer data completely separated.

For TC/LINK-MX, this means:
- Multiple instances of TC/LINK-MX can run on 1 computer.
- Every link process can connect to a different Exchange organization and to a different TCOSS instance.
- The Exchange server can be located either at the ASP or at the customer, provided that there is a constant network connection between the link server and the Exchange server.

How to run multiple instances of TC/LINK-MX on the same computer:
- Copy the TC/LP Setup to a local directory.
- Before installing an instance, edit file DEFAULTS.INI (from DISK1): in the section [TCLINKMX_INSTANCE], change the registry subkey name (e.g. from TCLINKMX to TCLINKMX1) and the display name (e.g. from TC/LINK-MX to TC/LINK-MX1).
  Change the name of section [TCLINKMX] to the new subkey name, e.g. TCLINKMX1.
- Then start Setup to install this instance of TC/LINK-MX.

This must be repeated for every instance.
Note: When reinstalling or updating the links, always check the DEFAULTS.INI parameters before starting setup!

How to configure TC/LINK-MX for a TCOSS instance on a storage server:
- In TC/LP Setup, select TCTI transport type RPC and Linktype TCP/IP.
- Enter a logical server name when asked for the name of the TOPCALL server. This logical name is the name of the TOPCALL server, followed by a colon and a constant defining the port number of the TCOSS instance.

for example:

logical TOPCALL server name	description
STORAGE1:TCOSS	first TCOSS instance on server STORAGE1
STORAGE1:TCOSS1	second TCOSS instance on server STORAGE1
STORAGE1:TCOSS2	third TCOSS instance on server STORAGE1

General issues if TC/LINK-MX is in a different domain than the Exchange server

In general, TC/LINK-MX can only connect to Exchange via a permanent network connection. A dial-up connection to the Exchange server is NOT supported.

In addition to this fundamental prerequisite, NT security issues must be considered.

Exchange 2000 is based on Windows 2000 security. In order to connect to Exchange, the Windows 2000 account running TC/LINK-MX needs special permissions on the Exchange server.

These permissions can only be granted if the account is known to the Exchange server's domain, this means either the account belongs to the domain itself or to a trusted domain.

The following recommendation tries to avoid unnecessary security leaks. It relies on one-way trust relationships that keep the domains of different customers separate. Additionally, it keeps the customer's domain invisible for the ASP domain. (The ASP domain is visible for the customer, but the customer does not need to know any passwords for ASP users)

For completeness, this documentation also mentions an alternative configuration, which is possible but not recommended. Although it is slightly easier to configure, the disadvantage is that the ASP administrator has access to the customer's domain and also needs to know a password of a user from the customer's domain.

Please note that, with any of these configurations, the user running TC/LINK-MX must be granted Administrator rights on Exchange. Therefore, it is possible to manage the site via an Exchange System Manager console run on the link computer. This cannot be avoided.

Recommended configuration for Exchange 2000
Step 1:
Create a one-side trust relationship between the domains (customer domain trusts ASP domain).

Configuring the trust relationship in the ASP domain:

To configure the trust in the ASP domain, start "Active directory domains and trusts". Right click the ASP domain and choose "Properties" from the context menu.

Click the lower "Add" button to add an item to the list of "Domains that trust this domain".
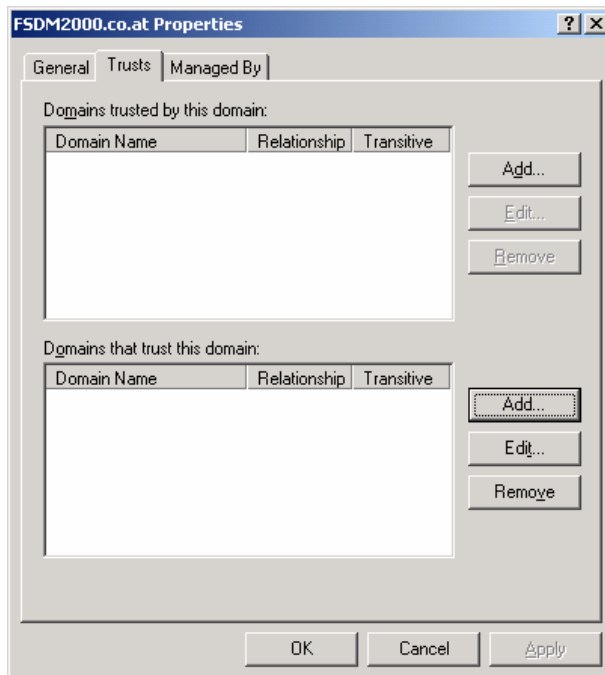
Enter the name of the customer's domain, and a password.
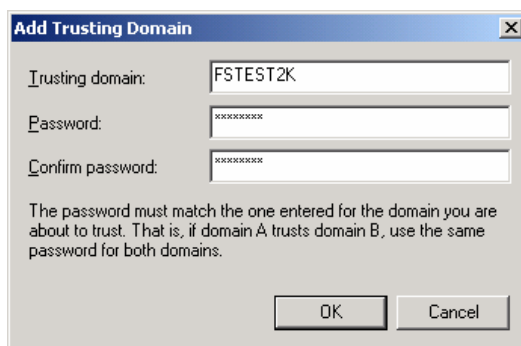
A message box asks you if you want to verify the new trust. It is not necessary to verify the trust.
As a result, the customer's domain shows up in the list of "Domains that trust this domain".
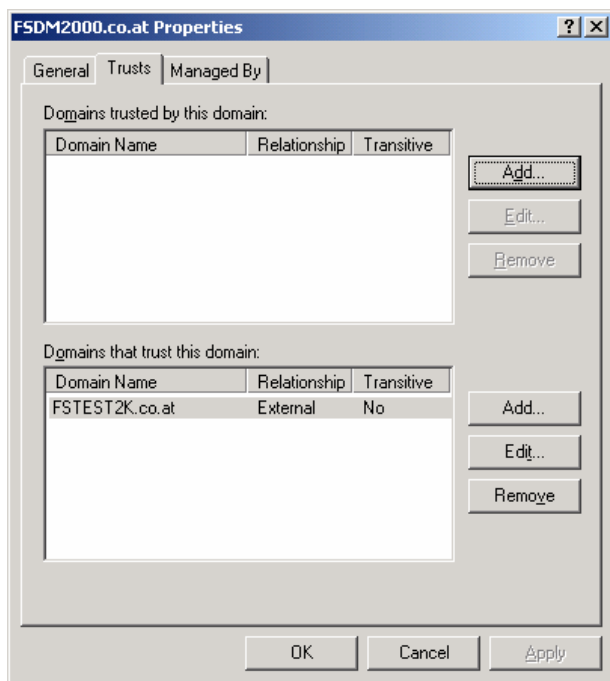
Configuring the trust relationship in the customer's domain:

In the customer's domain, the administrator must start "Active directory domains and trusts", open the "Properties" window of the customer's domain (as described above) and add an item to the list of "Domains trusted by this domain" (upper "Add" button).
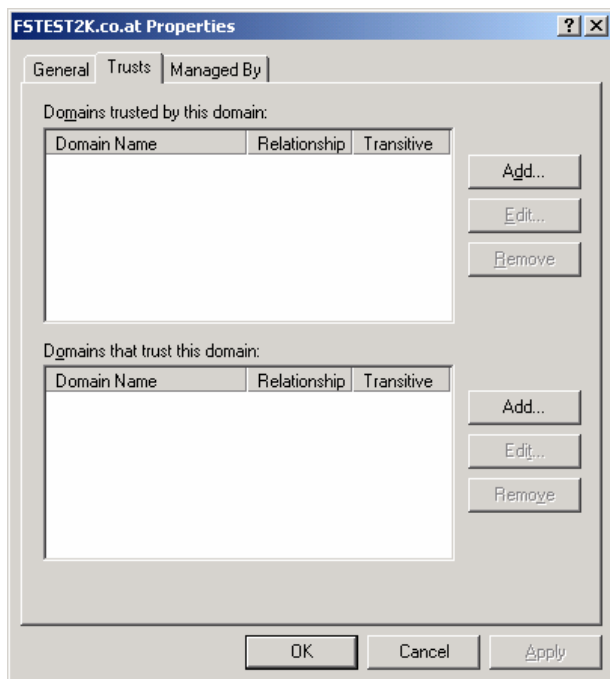
Then, he must enter the name of the ASP domain and the same password.
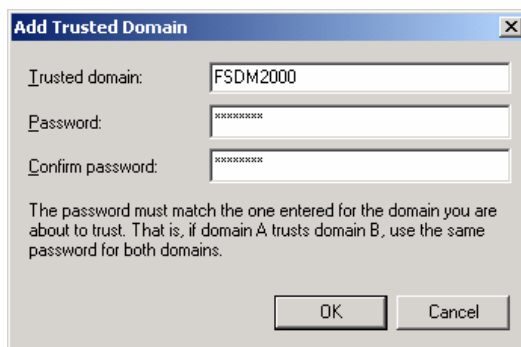
If the password matches, a message box tells him that the trust has been verified.
As a result, the ASP domain shows up in the list of "Domains trusted by this domain".
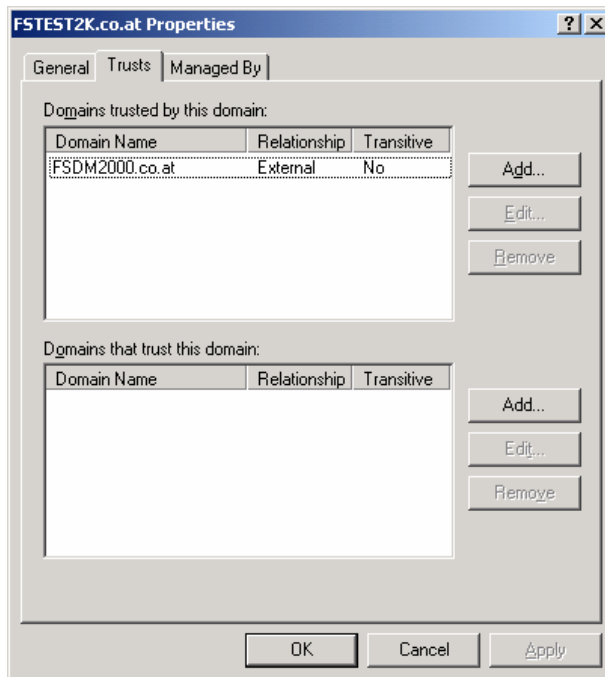
The ASP domain is now visible to the customer domain, whereas the customer domain is not visible to the ASP domain.

In the following steps, a certain ASP domain user will be granted permissions for objects in the customer's Exchange organization. It is recommended to create a special user for this purpose. The ASP must tell the name of this user to the customer. This user will be used to run TC/LINK-MX Setup and the TC/LINK-MX process itself.

Step 2:
The customer domain must grant the mentioned ASP domain user Administrator rights on the Exchange organization.

This is done via the Exchange System Manager console, which is started on a computer of the customer's domain. After right clicking the icon of the Exchange organization and choosing context menu item "Delegate control …", the Exchange Administration Delegation Wizard is started.

The button "Next >" in the wizard's start screen leads to a window, where the administrator can add the user to the list of users and groups who control the organization (button "Add…").
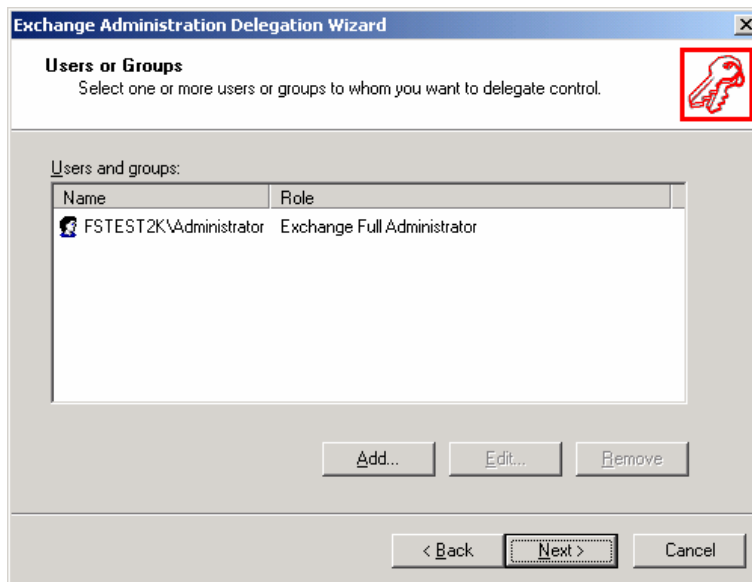
In the "Delegate Control" window, the administrator must click "Browse…" and select the user from the ASP domain's user list. The appropriate role for the user is "Exchange Administrator".
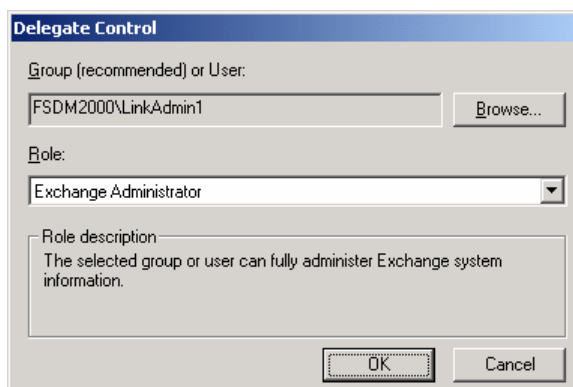
After clicking "OK" the list of users and groups is updated.
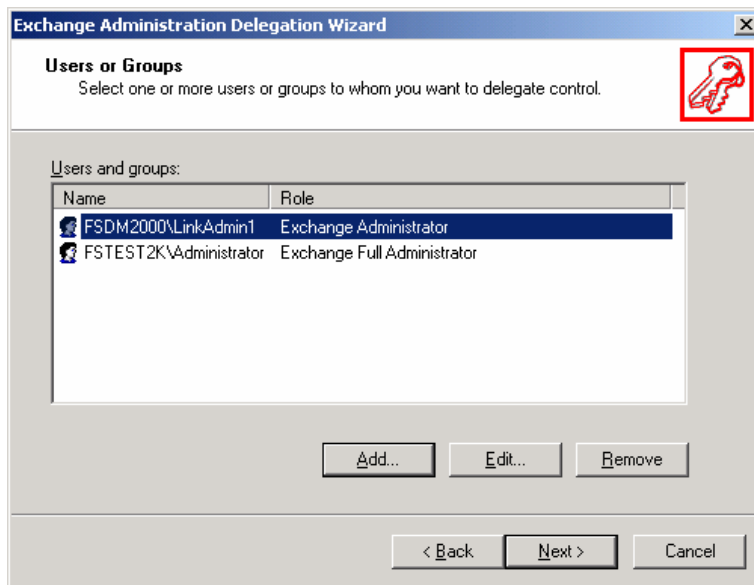
Click "Next>" and then "Finish" to exit the wizard.

Step 3:
The customer domain must grant the same user special permissions for the mailbox store where TC/LINK-MX shall be installed (see section 4.3). If security issues shall be minimized, it is possible to use a mailbox store exclusively for TC/LINK-MX, so that it is guaranteed that the ASP user cannot access any user mailboxes.

This is also done via the "Exchange System Manager", started on a machine in the customer's domain.

The procedure of granting permissions to a mailbox store is described in detail in section "Step 5: Create Windows 2000 link user (optional)", page 38.

Step 4:
On the link computer, grant the ASP user the permission to "log on as a batch job" and make him a member of the local Administrators group. For this purpose, you must log on to the link computer using a domain administrator account.

Start the administrative tool "Active Directory Users and Computers" and open the mentioned user account. In the "Member Of" property page, click "Add…" and add the user to the group called "Administrators".

To grant the permission to "log on as a batch job", start the administrative tool "Local Security Policy" (if this computer is a domain controller, use "Domain Controller Security Policy" instead.) The following picture shows where to find this right in the Windows 2000 Local Security settings.

Double click the right "log on as a batch job", click "Add" and choose the appropriate user account.
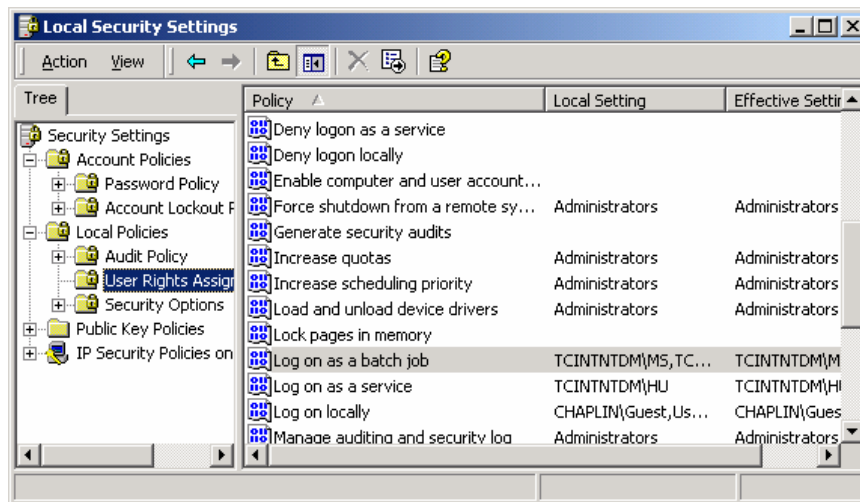
You will need to reboot the link computer to make the permission effective.

Step 5:
Log on to the link computer with the selected user account and run TC/LP Setup.

Dirsync Configuration

If you configure TC/LINK-MX for dirsync against the Active Directory, you must also specify a domain controller of the customer's domain, and a user account from the customer's domain who is a member of the Domain Admins group.

This is necessary because TC/LINK-MX runs as a user of the ASP domain and therefore is not able to find a domain controller of the customer's domain automatically.

Additionally, only Domain Admins can access the "Deleted Objects" section in the Active Directory. Users from trusted domains cannot be added to the Domain Admins group. Therefore, you must specify a domain admin account here.

Select the checkbox "Specify server or user account" in the Active Directory Dirsync Configuration screen. You are then prompted to specify the name of a domain controller and a user account that shall be used for dirsync.

Use only this DC for dirsync (registry: *Dirsync\ADDCName*):
Specify the name of the domain controller, including the full domain name. Please note that the link computer must be able to find the IP address of this domain controller, either via DNS or via a local hosts file.

If you enter a value into this field, Setup also sets registry key *Dirsync\ADAllowOtherDC* to 0. This means that if this domain controller is unavailable, dirsync will not try to locate another domain controller.

If the dirsync scope is NOT "Local Domain", the specified domain controller must be a Global Catalog server.

Domain\User for dirsync (member of Domain Admins) (registry: *Dirsync\ADUserId*):
Enter the domain and user id of a Domain Admin from the customer's domain.

Password of this user ("*" leaves existing setting) (registry: *Dirsync\ADPassword*):
Enter the password of this user. It will be stored encrypted.

Exchange 2000 Configuration

In the "Setup Exchange 2000" screen, enter the complete name (including the domain) of one of the customer's domain controllers in the field "Domain controller". This can be the same name as specified for Dirsync.

Setup will connect to this domain controller when it creates the Exchange connector object in the customer's Active Directory.

Please note that the link computer must be able to find the IP address of this domain controller, either via DNS or via a local hosts file.

Alternate configuration for Exchange 2000 (not recommended)

Create a one-side trust relationship between the domains (ASP domain trusts customer domain). This is done via the administrative tool "Active directory domains and trusts". The usage of this tool is explained above. The trust relationship must be configured on both sides using the same password.

The customer domain is now visible to the ASP domain, and Setup and TC/LINK-MX must be run via an account of the customer domain (ASP administrator must know the password). The ASP domain is NOT visible to the customer domain.

The customer domain must grant the account used for TC/LINK-MX Administrator rights on the Exchange organization (via ESM, see above).

The same user must have special permissions for the mailbox store where TC/LINK-MX shall be installed (via ESM, see above).

If TC/LINK-MX shall run dirsync against the Active Directory, this user must also be a member of the Domain Admins group (via "Active directory users and computers", see above).

Grant this customer user the permission to "log on as a batch job" on the link computer and make him a member of the local Administrators group (see above).

Log on to the link computer with this userid and run Setup. As TC/LINK-MX already uses an account of the customer's domain, it is not necessary to specify a domain controller or a user id for dirsync.

7. PARALLEL OPERATION OF TC/LINK-MX

For load sharing and fault tolerance, several modes of parallel operation of TC/LINK-MX instances connected to the same MX organization are supported. All instances must be on connected to the same TOPCALL server (single or tandem).

The operation modes described below are typical examples and can be combined for large installations.

7.1 Mode 1: Multiple instances share one connector
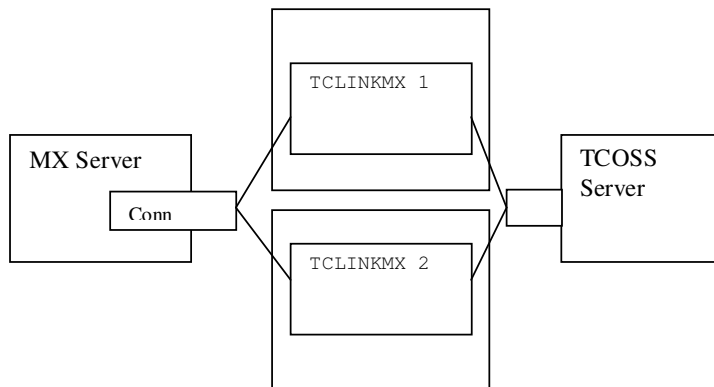
Benefits: Load sharing and failover

Description:
All instances poll the same MX connector queue and the same set of TCOSS queues. If one instance fails the others take over automatically.

Installation:
All instances of TC/LINK-MX must have an identical configuration.
Registry key *General\LockMechanism* must be set to 1 after Setup, to enable locking of MX messages while they are processed by a link instance.
Registry key *General\LinkGroup* must hold the same value for all instances.
It is recommended to install the Exchange objects only once, and to skip installation of Exchange objects when installing additional instances of TCLINKMX.

Objects on Exchange:
1 connector, 1 set of address templates

It is recommended to enable dirsync only in 1 instance.

7.2 Mode 2: Multiple connectors in the same organization
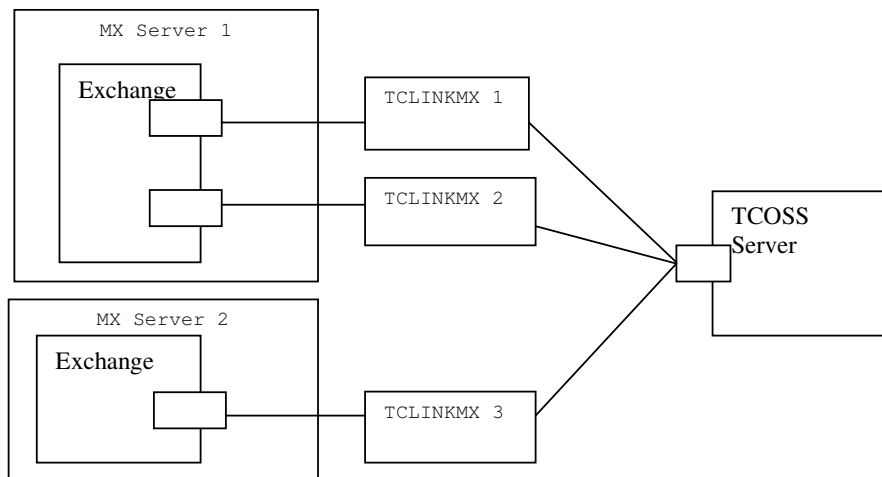
Benefits: Load sharing

Description:
Multiple TC/LINK connectors within the same organization (may be on the same server) are used for message transfer. For outgoing messages, the MX MTA tries to use a connector on the local server. If there is none, a connector on a different server (preferrably in the same routing group) is used.

No automatic failover: if one instance fails, Exchange keeps sending messages to this connector. The connector must be disabled manually by an administrator (set costs in address space to a higher value).

Installation:
If there are several TC/LINK-MX connectors in the same administrative group, they must have different names.
The MX address type names must be identical for all links.
All instances must poll the same set of TCOSS queues.
Registry key *General\LinkGroup* must hold the same value for all instances.
It is recommended to install all Exchange objects when installing the first link, and to skip "all except gateway" when installing the other instances.

Objects on Exchange:
Several connectors (with identical address space), 1 set of address templates.

Note:
If several instances of TC/LINK-MX connected to 1 MX server (like for Server1) shall be used for failover, it is recommended to use only one connector (see 7.1).

7.3 Message locking if multiple links share a connector

Message locking:

To allow sharing of a connector by multiple links (see 7.1) a locking mechanism for messages in MTS_OUT was implemented.

Note:

The message locking mechanism temporarily creates files starting with "LOC" in the TOPCALL link user's message store. Therefore, links sharing the same connector must use the same TOPCALL link user.

Message locking must be enabled manually via a registry editor.

Registry keys:

Name	Meaning	Type	Default
General\ LockMechanism	Must be 1 if TC/LINK-MX shares the MX connector with another TC/LINK-MX. Enables locking of messages from Exchange.	REG_ DWORD	0
General\ LockTimeout	Timeout for message locking (hours)	REG_ DWORD	6

7.4 Overview of Exchange Message Routing

The MX MTA uses a cost factor (defined in the connector address space) for message routing. If several connectors support the same address type, the connector(s) with the lowest cost factor is used for sending.

TC/LINK-MX Setup sets the costs for all Topcall addresses to 1.

From this preselection of available connectors, the MTA chooses the "nearest" connector: Connectors on the same server or in the same site (as the message originator) are preferred.

If there are more than one "best matching" connectors (e.g. several on one server), the MTA distributes outgoing messages randomly among them.

When an instance of TCLINKMX is turned off, any instances using the same connector will continue picking up messages.

If there are no other instances polling the same connector, the Administrator must set the cost factor of this connector to a higher value. Otherwise, the MX MTA continues delivering messages to the connector's outgoing queue. Exchange does not detect if a connector stops picking up messages from it's queue. When the connector is turned on again, restore the original cost factor.

8. PERFORMANCE DATA

The following performance data were measured with Exchange 5.5.

TOPCALL Server: NT 4.0, Pentium III 600 MHz, 512 MB RAM, TCOSS 7.37.00, Model 218
Link Server: NT 4.0, Pentium III 600 MHz, 128 MB RAM
Exchange Server: same computer as Link Server, Exchange 5.5 SP3

TC/LINK-MX: 1.19.03, the only link active, no trace

Test description	Messages / hour	Pages / hour
Test 1: text msg (1 page) Mailsystem -> Topcall	18962	
Test 2: msg with (1 page) Word attachment Mailsystem -> Topcall	486	
Test 3: msg with 70 page Word attachment Mailsystem -> Topcall	299	20940
Test 4: msg with 1 page RTF text Mailsystem -> Topcall	825	
Test 5: text msg (1 page) Topcall -> Mailsystem	20210	
Test 6: fax (1 page) Topcall -> Mailsystem	12255	

Tests 2 and 3 were made with document conversion. If it is disabled, the performance is much better.

9. OPERATING

9.1 Monitoring TC/LINK-MX Performance

In addition to the general TCLINK counters (see TC/LINK manual), setup installs the following counter for performance counter object TCLINKMX:

Messages in MTS_OUT:
This counter displays the total number of messages in the MTS-OUT folder of the link.
(Outgoing Exchange messages waiting for transfer by TC/LINK-MX.)

9.2 Registration Database

Exchange-specific configuration parameters are stored in the subkey:
HKEY_LOCAL_MACHINE\Software\TOPCALL\TCLX\Exchange.

9.2.1 Parameters needed to logon to Exchange

The following parameters shall only be changed via SETUP, because they are part of the link configuration stored on the Exchange server.

CommonName (REG_SZ)
Internal name of the link, as used by the Exchange MTA

DisplayName (REG_SZ)
Name of the link, as displayed by the Exchange System Manager program

Server (REG_SZ)
Machine name of the Exchange server computer.

Site (REG_SZ)
Part of the legacyExchangeDN attribute of the connector object

StorageGroup (REG_SZ)
Storage group for TC/LINK-MX mailbox

Store (REG_SZ)
Store for TC/LINK-MX mailbox

ServerVersion (REG_SZ)
2000 for Exchange 2000

NoNotif4AddressTypes (REG_MULTI_SZ)
List of address types for which no notification is requested. Default: MS SMTP
(These values are always set by Setup).

9.2.2 Parameters used for Address Type mapping

The following parameters should only be changed via SETUP, because they must be written to the Exchange server.

RECIPIENT (REG_SZ)
Exchange address type for TOPCALL Recipient. Only used if the TOPCALL Recipient address template is installed.

FAX (REG_SZ)
Exchange address type for TOPCALL FAX.

FREE (REG_SZ)
Exchange address type for TOPCALL FREE addresses.

SMS (REG_SZ)
Exchange address type for SMS addresses

TC (REG_SZ)
Exchange address type for TOPCALL Internal addresses.

TX (REG_SZ)
Exchange address type for TOPCALL Telex addresses.

NOTES (REG_SZ)
Exchange address type for Lotus Notes addresses.

VOICE (REG_SZ)
Exchange address type for Voice addresses

9.2.3 Parameters evaluated only by Setup

FixLang1 to 3 (REG_SZ)
Used by Setup, to select languages for Address Templates.

FreeLang1 to 7 (REG_SZ)
Used by Setup, to select languages for Address Templates

AddrTypeForOptions (REG_SZ) (default "")
Exchange address type for which the Topcall send option template is installed.

InstallFAX (REG_DWORD)
0 if the TOPCALL Fax Address template shall not be installed

InstallFREE (REG_DWORD)
0 if the TOPCALL Free Address template shall not be installed

InstallSMS (REG_DWORD)
0 if the SMS Address template shall not be installed

InstallSTORE (REG_DWORD)
0 if the TOPCALL Recipient template shall not be installed

InstallTC (REG_DWORD)
0 if the TOPCALL Address template shall not be installed

InstallTX (REG_DWORD)
0 if the TOPCALL Telex Address template shall not be installed

ProgramVersion (REG_SZ)
Version of TC/LINK-MX components installed on the Exchange Server.

LongTemplateName (REG_DWORD) (default 0)
If 1, the display name of the address templates includes the address type.

InstError (REG_DWORD) (default 0)
If 1, an error has occurred during installation

CopyError (REG_DWORD) (default 0)
If 1, Setup could not copy some files to the MX server and asks the user to do it manually.

OldFax (REG_SZ) (default "")
Written by Setup (copied from original value of Fax)

OldFree (REG_SZ) (default "")
Written by Setup (copied from original value of Free)

OldTC (REG_SZ) (default "")
Written by Setup (copied from original value of TC)

OldNotes (REG_SZ) (default "")
Written by Setup (copied from original value of Notes)

OldRecipient (REG_SZ) (default "")
Written by Setup (copied from original value of Recipient)

OldTX (REG_SZ) (default "")
Written by Setup (copied from original value of TX)

OldSMS (REG_SZ) (default "")
Written by Setup (copied from original value of SMS)

ProgramVersion (REG_DWORD)
Not used any more

SkipMode (REG_DWORD) (default 0)
Skips installation of Exchange objects (see section 4.9.24)

SkipList (REG_MULTI_SZ) (default: all objects)
Applies only if SkipMode is 5. List of Exchange objects that shall not be changed by Setup.

Organization (REG_SZ)
Exchange organization

AdministrativeGroup (REG_SZ)
Administrative group for TC/LINK-MX

RoutingGroup (REG_SZ)
Routing group for TC/LINK-MX

DCName (REG_SZ)
Special domain controller to be used by Setup.

MailboxStore (REG_SZ)
The mailbox store selected for TC/LINK-MX.

9.2.4 Parameters used for Dirsync (subtree Dirsync)

ADUpgradeFromExch5 (REG_DWORD) (default: 0)
Set to 1 if old Exchange 5.5 shadow users shall be upgraded to Exchange 2000 shadow users.
After transition to Exchange 2000 has been completed, set the value back to 0 via a registry editor.

Other parameters see LDAP Dirsync manual

9.2.5 Additional Parameters

AutomaticMessageTypes (REG_MULTI_SZ) (default "Rules")
When TC/LINK-MX gets a message from mail with a type containing one of these strings, it orders no notification from TOPCALL. Thus, message loops for automatic replies (e.g. from Inbox assistant) are avoided.

DeleteExpiredMsgInInbox (REG_DWORD): 0 or 1 (default)
1: An expired message from TCOSS is deleted from the recipient's inbox.

NonDelForExpiry (REG_DWORD): 0 or 1 (default)
0: If a message from Exchange expires, no nondelivery notification is created.

NoRTF (REG_DWORD): 0 or 1
Disable richtext conversion.

MachineType (REG_SZ)
Machine type of the Exchange server (i386 or alpha).

MSOrigMapping (REG_SZ): 2, 4 or 8
Mapping option between MSMAIL addresses and TOPCALL shadow user profiles.

MSNetwork (REG_SZ)
If MSMAIL users shall be able to reply to messages from TOPCALL, write the MSMAIL network address used for sending to TOPCALL into this registry key.

LastMtsIdToTC (REG_SZ) (default: empty)
Holds the Exchange message ID during message conversion.
Used for error recovery, do not change !

MaxProblemsToTC (REG_DWORD) (default: 3)
Maximum number of crashes during conversion of the same Exchange message.

NoProxyAddresses (REG_DWORD) (default: 0)
1 if TC/LINK-MX was installed without "TC" proxy addresses. Is used by setup and by dirsync.

SendRetriesToTC (REG_DWORD) (default 0)
Used internally for error recovery, do not change

KeepCompleteMsg (REG_DWORD) (default 0)
Used for Integrated Archiving, if 1, the complete Exchange message is stored.

LeaveProfile (REG_DWORD) (default 0)
If 1, TC/LINK-MX does not delete it's MAPI profile. Only for debugging !

RtfLeftMargin (REG_DWORD) (default 0x7f)
Left margin for RTF message body (in units of 0.1 mm)

RtfRightMargin (REG_DWORD) (default 0x7f)
Right margin for RTF message body (in units of 0.1 mm)

RTFTopMargin (REG_DWORD) (default 0)

Normally not used, only for compatibility.

RTFBottomMargin (REG_DWORD) (default 0)
Normally not used, only for compatibility.

MustLogon (REG_DWORD) (default 0)
Do not change !

ObjectGuid (REG_SZ) (default "")
Not used any more

FolderCleared (REG_DWORD) (default 0)
Not used any more

WordMailPictures (REG_DWORD) (default 1)
If nonzero, WinWord is used for conversion of WordMail messages with static embedded pictures.

OverrideProxyForUserId (REG_SZ) (default "")
If set to "MS", TC/LINK-MX locates shadow users via their MS proxy address.

VirusLockout (REG_SZ) (default: "IPM.Anti-Virus.Lockout")
Some virus checkers used on Exchange servers temporarily rename messages to a special message class. The default value for this key is the message class used by NAI Groupshield. TC/LINK ignores messages of this class.

ErrorPath (REG_SZ) (default: "C:\TCOSS\TCLP\ERRTCLINKMX")
Directory used for error files.

ErrorDirSize (REG_DWORD) (default: 1000)
Maximum size of the error file directory in Kbytes.

IgnoreBodyIfOnlyAtt (REG_DWORD) (default: 1)
If 0: TC/LINK-MX creates a text alternative of the message body even if the message holds only attachments (text alternative contains attachment file name)

ServerVersion (REG_SZ)
Must be "2000" for Exchange 2000 and above.

MsgClassesSigned (REG_MULTI_SZ) (default: IPM.Note.SMIME.MultipartSigned)
MAPI message classes for signed messages.

SMTPDomain (REG_SZ) (default "")
Can be used to restrict the special SMTP addressing mechanism to certain domains.

RenderEmbedded (REG_MULTI_SZ)
Holds a list of file extensions. TC/LINK-MX tries to create embedded OLE objects for attachments with these extensions.

9.2.6 Special TCLINK or TCDC parameters used by TC/LINK-MX

HKLM\Software\TOPCALL\TCLINKMX\General\LockMechanism (REG_DWORD) (default 0)
Must be 1 to share a connector with another link instance.

HKLM\Software\TOPCALL\TCLINKMX\General\LockTimeout (REG_DWORD) (default 6)
Timeout for message locking in hours.

HKLM\Software\TOPCALL\TCLINKMX\General\SignedName (REG_SZ) (default SIGNED.P7S)

TCLINK uses this attachment name for signed messages.

HKLM\Software\TOPCALL\TCDCLINK\TC_OLE\LeftMarginPic (REG_DWORD) (default 5)

Left margin of picture printout in units of 1 mm.

HKLM\Software\TOPCALL\TCDCLINK\TC_OLE\RightMarginPic (REG_DWORD) (default 5)
Right margin of picture printout in units of 1 mm.

9.3 TC/LINK-MX Property Page

The TC/LP Setup disks include a Setup program for the TC/LINK-MX MMC Snap-In. The Snap-In allows changing the TC/LINK-MX address space via Exchange System Manager.
TC/LINK-MX is displayed as a node in the Connectors below the local administrative group and routing group. You can access the address space property page by right-clicking the TC/LINK-MX icon and choosing "Properties" in the context menu.

9.3.1 Address Space Window

This property page is very simple and will be replaced by the standard Exchange connector property pages as soon as Microsoft makes them available for third party connectors. This page is currently only available in English language.
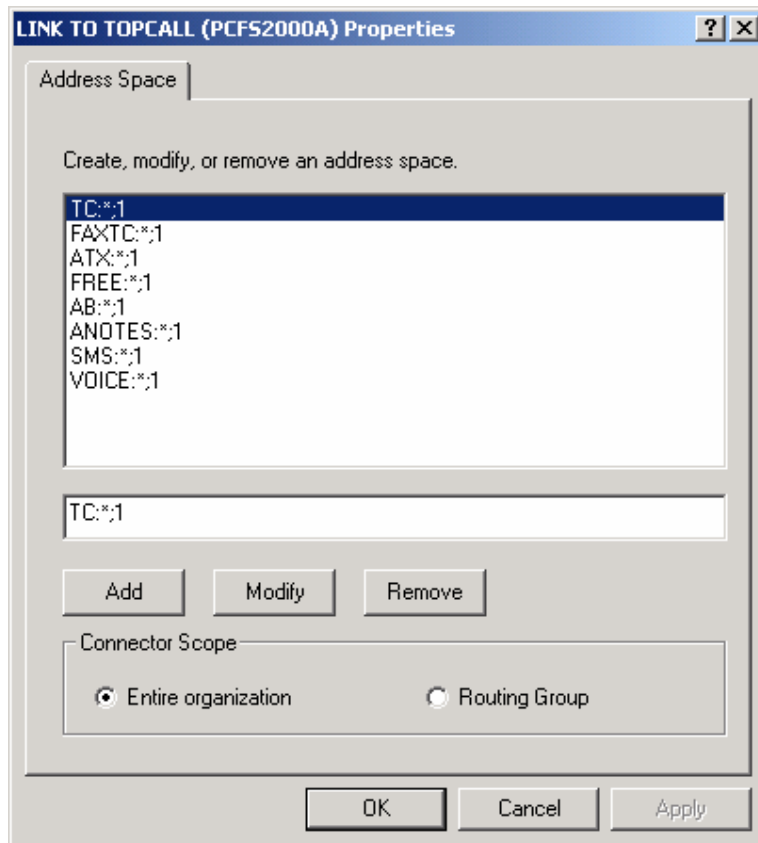
A listbox displays the address spaces defined for TC/LINK-MX. Every entry is in the syntax:
<AddressType>:<Address>;<Cost>
To change an address space definition, select it in the listbox, edit it in the text field below the listbox and click the modify button.
To add an address space definition, write it to the text field below the listbox and click the add button.
To remove an address space definition, select it in the listbox and click the remove button.

You can also select the connector scope, i.e. whether TC/LINK-MX shall be available for the entire organization or only for the local routing group.

Note:
The Snap-In must be installed locally on the computer that runs Exchange System Manager. TC/LP Setup does not install the Snap-In. Section 4.9.30 describes how to install it.

9.4 Troubleshooting

If TC/LINK-MX has problems accessing the Exchange server, use Control Panel/Services or the Server Manager on the Exchange server computer to check if the required Exchange Core Components are running (see list in section 11.6).

Use Event viewer and trace files for problems on TOPCALL side. Tracelevel 100 provides a full trace. See TC/LINK manual for additional trace possibilities.

MS Exchange problems are logged to the Application event log on the Exchange server. The amount of information logged can be configured in Exchange System Manager via the "Diagnostic Logging" panel of the server property page.

9.4.1 Directory ERRTCLINKMX

If TC/LINK-MX encounters a severe error while processing a message from Exchange and it is not possible to return a non-delivery notification to the originator, the message is saved to a file. It can be viewed with Outlook or Exchange client. In previous versions, such files were written to directory C:\TCOSS\TCLP\ERRTCLINKMX and no further action was taken.

Now, additional configuration options allow to select the location of the error directory and its maximum size. If the maximum size is reached, no more files are written.

Registry Keys:

Exchange\ErrorPath (SZ): directory used for error files (default: C:\TCOSS\TCLP\ERRTCLINKMX).
Exchange\ErrorDirSize (DWORD): maximum size for the directory in KB (default: 1000)

Eventlog messages:

Code	Severity	Description	Parameter Description
13027	Warning	A message from Exchange could not be processed and no notification could be created. The message was written to file %1. The file can be viewed via Outlook or Exchange client.	%1 ... Filename
13028	Warning	A message from Exchange could not be processed and no notification could be created. The limit of %1 KB of the error directory %2 is reached. No further files are written to this directory. Please remove some files.	%1 … size limit of error directory %2 … path of error directory

10. TRANSLATING ADDRESS TEMPLATES

Setup allows to install address templates for multiple Exchange client languages.

The installation disk includes English and German templates, and a toolkit which allows translating the templates to other languages.

The toolkit contains several files with names like *E.WTX. These are the Unicode sourcefiles of the English templates. You can edit them with NOTEPAD.

What can be changed in the WTX-File:

Please change only the text at the end of lines which contain "DTCT_PAGE" or "DTCT_LABEL".

Renaming the WTX-File:

To distinguish the template from existing templates, change the 'E' in the file name *E.WTX to some other character which is not yet used.
Pre-defined characters are E (for English), F (for French) and G (for German).
Let us assume that you translated the templates to Dutch language and renamed them to *D.WTX.

Compiling the WTX-Files:

The new files and TEMPLATE.EXE must be in the same directory. TEMPLATE.EXE is a Microsoft utility for compiling Exchange templates. The syntax for this utility is different for address templates and options templates.

In our example using Dutch templates, you have to enter the following commands:

(for address templates)
template   TCD.WTX   TCD.BLT
template   TCFAXD.WTX TCFAXD.BLT
template   TCTXD.WTX   TCTXD.BLT
template   TCSMSD.WTX TCSMSD.BLT
template   TCFREED.WTX TCFREED.BLT
template   TCSTORED.WTX TCSTORED.BLT
template   TCNOTESD.WTX TCNOTESD.BLT
template   TCSMSD.WTX TXSMSD.BLT

(for options templates)
template   -m TCPMSGD.WTX   TCPMSGD.BLT
template   -m TCPRECPD.WTX TCPRECPD.BLT

Translating the Helpfile:

Subdirectories HELP6 and HELP97 of the address template toolkit contain tools to create a helpfile for the address templates. You need either Word 6.0 or Word 97 for editing the helpfile.
With Word 6.0, use the utilities in directory HELP6; - with Word 97, use those in directory HELP97.

- Edit and translate ATCH_E.DOC. You may translate and change everything except the context keys. You can change the filename, but it must start with "A".
- If you are familiar with the TCFW helpfile, you probably know the macro "*MakeRTFForHelp*".
- Edit macro *MakeRTFForHelp*: there is a line referring to file C:\TCFWDOC\MAN_HELP\HELP\TCHLP32.RTF. This is the path name of the resulting helpfile. Change it according to your environment.
- Run macro *MakeRTFForHelp*

- Compile the helpfile:

Word6 users type "hc tchlp32.hpj" at the command prompt.
Word97 users use the makehh.bat batchjob.
A file TCHLP32.HLP is created. Rename this file according to your language (e.g. English is TCHLP32E.HLP, etc.). The last character of the filename must be the same as for your template files. In our example the name of the Dutch helpfile would be TCHLP32D.HLP.

- Copy the resulting helpfile to the directory where TCLINK-MX is installed.

Attention:

The *MakeRTFForHelp* macro sometimes cuts the last character off from a context key. In this case the Help Compiler will create a warning that not all context keys are existing. In this case, append a blank to the context key text.

Installing Templates and Helpfile

Copy the resulting files to the directory where TC/LINK-MX is installed.

Run Setup and choose "Topcall Exchange Address Templates".
When choosing languages for the address templates, use the first free edit field to select the language you want to install. Type:
413:Dutch:D
to select Dutch language. The D at the end of the line is the terminating character of the file names.

11. HINTS

11.1 Changing Exchange Address Type Names

If the names of the Exchange address types are changed, setup automatically deletes templates for the old address types.

11.2 Per Message Send Options

In Exchange, a send options template is part of the address template for an address type. Setup installs the TOPCALL per-message send options as a part of the first address template installed during setup. By default, this is the "Topcall FAX Address" template.

It is also possible to explicitly specify the address template with which the per-message send options shall be installed. This is done via registry value `Exchange\AddrTypeForOptions`. If this registry value exists before SETUP is started, the per-message send options will be installed as a part of the address template for the address type stored in `Exchange\AddrTypeForOptions`.

Example:
`Exchange\AddrTypeForOptions` = TCSTORE
-> TOPCALL per-message send options template is installed as part of the "Topcall Addressbook" template.

11.3 Multiple sets of address templates

When installing multiple instances of TC/LINK-MX using different address types (e.g. FAXTC1, FAXTC2 etc.), you should take care with the installation of address templates:

By default, the Topcall Sendoptions Template (per message) is installed once for every set of address templates. Thus, multiple instances of the "Topcall Sendoptions" window would be available in the Exchange client.

Recommendation:
Before installing the second and all following links, set registry value `Exchange\AddrTypeForOptions` to some dummy value (e.g. "UNUSED"). Then the sendoptions template will not be installed again.

11.4 Display names of address templates

The name of any TOPCALL address template (selectable in the client when creating a new address) can now include the Exchange address type. Normally, for example, the fax template is displayed as "Topcall Fax Address", but now it can optionally be installed as "Topcall Fax Address (FAXTC)".

This feature can be enabled by setting registry key `Exchange\LongTemplateName` (REG_DWORD) to 1 (default is 0) before installing the address templates.

11.5 Send Options Problems

Missing send options templates can be due to the following Exchange Server problem:
If the routing table of an Exchange server contains multiple routes for a given address type, e.g. "MS", the logic of send option templates for all address types alphabetically "after" this address type is disturbed. Therefore, the default names of the Exchange address types used by TC/LINK-MX have been changed.

If the send options are missing in your installation, try to re-install TC/LINK-MX using a FAX address type name that comes early in alphabet, e.g. FAX or AFAX. By default, the per-message send options template is installed as a part of the fax template. Also try to create a new MAPI profile after this change.

11.6 MS Exchange Core Components, WinNT Services

The MS Exchange Server consists of four core components, which are WinNT services. For proper operation of the Exchange Server (and therefor the TC/LINK-MX) all four core components **must** be running:

Core Component Name	WinNT Service Name	Comment
Exchange Routing Engine	Microsoft Exchange Routing Engine	• Processes Exchange routing information
Exchange MTA Stacks (MTA)	Microsoft Exchange MTA Stacks	• Delivers messages to other Exchange Servers, • routes messages, • maps addresses
Exchange Information Store (IS)	Microsoft Exchange Information Store	Store for messages and other user-created messages: • Private Information Store • Public Information Store
Exchange System Attendant (SA)	Microsoft Exchange System Attendant	• Updates Directory within the site • Builds routing tables • Generates foreign e-mail addresses for new recipients (e.g. TC proxy addresses)

There might be other components installed and running as well.
Pls. note that lack of physical memory and a "small" page file will cause some of these services to die silently! More than 128 MB RAM and 228 MB page file are a good point to start from.

11.7 Exchange Least-Cost Routing

In an installation with several connectors servicing the same Exchange address type, the least-cost routing capabilities of the Exchange MTA can be used.

In the following example, the address type "FAX" is serviced by several connectors. These may be several instances of TC/LINK-MX or any other connector using this address type.

Their address spaces are, for instance:

Connector	Address Type	Address	Cost
Link to Topcall 1	FAX:	0044*	1
Link to Topcall 1	FAX:		2
Link to Topcall 2	FAX:	0031*	1
Link to Topcall 2	FAX:		2

When sending a fax, the fax number must be the complete number (including country code). Then Exchange will route all faxes to numbers with country code 0044 via "Link to Topcall 1" and all faxes to numbers with country code 0031 via "Link to Topcall 2". All other faxes will be routed randomly via one of both connectors.

Note:
The address space of the link(s) must be configured in the Address Space panel of the connector property page in Exchange System Manager.

11.8 How to ignore OLE Attachments with background TCDC

With the background document converter, OLE attachments cannot be converted to TOPCALL format. Normally, messages containing OLE attachments are then rejected (non delivery notification). TC/LINK can be configured to ignore OLE attachments that cannot be converted. This may be an issue with Integrated Archiving, when all Exchange messages are processed by TC/LINK-MX.

Registry key for configuration:
`General\IgnoreUnconvOleAtts` (REG_DWORD): Default 0
If set to 1, OLE attachments that cannot be converted by TCDC are ignored, the message is not rejected but does not contain this attachment.

Note:
If `Exchange\KeepCompleteMsg` is 1, the complete message (including OLE attachments) is also stored in MAPI format and can be retrieved via the Archive client.

11.9 Custom MAPI properties used by TC/LINK-MX

Per Message:

Description	Property Tag	Values
Resolution	0x57130003	0=normal, 1=high
Send time	0x5719001E	String (hhmm)
Send date	0x571A001E	String (YYMMDD)
Sending copy	0x57110003	4=first, 2=all, 1=no
Coversheet	0x5715001E	String
Cost center	0x5712001E	String
Headerline	0x57140003	0=no, 1=yes
No RTF	0x571D0003	0=with RTF, 1=without RTF

Per recipient:

Resolution	0x5F130003	0=normal, 1=high
Send time	0x5F19001E	String (hhmm)
Send date	0x5F1A001E	String (YYMMDD)
Cost center	0x5F12001E	String
Headerline	0x5F140003	0=no, 1=yes
Address	0x6701001E	String
Answerback	0x6702001E	String
Service	0x6703001E	String
Fullname	0x6704001E	String
Company	0x5F01001E	String
Department	0x5F02001E	String
Salutation	0x5F03001E	String
Free text	0x5F04001E	String

11.10 How to uninstall the Exchange objects

11.10.1 Removing Active Directory objects

The program TCLXE2K.EXE (installed by Setup to C:\TCOSS\TCLP) offers an option to delete the TC/LINK objects from the Active Directory. Open a command prompt, change to directory C:\TCOSS\TCLP and type:
TCLXE2K.EXE TCLINKMX /DELETE

This operation removes the connector and the address templates from the Active Directory

11.10.2 Removing the connector mailbox

The mailbox of TC/LINK-MX must be removed separately, via the Exchange System Manager. Select the mailbox store where TC/LINK-MX has been installed. If you right click the Mailboxes node, a context menu offers the option "Run cleanup agent". Start the cleanup agent, it will mark the mailbox of the connector as deleted. Then select the connector mailbox, and choose "Purge" from its context menu. This action deletes the connector mailbox.

11.10.3 Removing the MMC Snap-In

The TC/LINK-MX MMC Snap-In is responsible for displaying TC/LINK-MX and its property page in Exchange System Manager. You can uninstall the Snap-In via Control Panel | Add/Remove Programs. Remove the item called TCMXSNAP.

11.11 Additional information written to TCARCHEX.INI

TC/LINK-MX writes part of its configuration settings to a file TCARCHEX.INI (located in directory C:\TCOSS\TCLP). This file is evaluated by TC/CP setup (TCClientLight for Exchange) and TC/SP setup (TC/VoiceMail). In the future, TCARCHEX.INI will also be used by a special TOPCALL message form for MS Outlook (and its components). For installation instructions concerning TCARCHEX.INI see TC/CP and TC/SP release documentation.

Layout of TCARCHEX.INI:

[Exchange]

Key	Corresponding registry key in TC/LINK-MX	Used by
AddrTypeFax	Exchange\Fax	TC/Address
AddrTypeTelex	Exchange\TX	TC/Address
AddrTypeTC	Exchange\TC	TC/Address
AddrTypeFree	Exchange\FREE	TC/Address
AddrTypeNotes	Exchange\NOTES	TC/Address
AddrTypeSMS	Exchange\SMS	TC/Address
AddrTypeAB	Exchange\RECIPIENT	TC/Address
MsgClassVoice	Exchange\MsgClassVoice	Setup (future versions)
MsgClassFax	Exchange\MsgClassFax	Setup (future versions)
MsgClassEmail	Exchange\MsgClassEmail	Setup (future versions)
NoRTF	Exchange\NoRTF	TC/RichText
RTFLeftMargin	Exchange\RTFLeftMargin	TC/RichText
RTFRightMargin	Exchange\RTFRightMargin	TC/RichText
WordMailPictures	Exchange\WordMailPictures	TC/RichText

[Topcall]

Key	Corresponding registry key in TC/LINK-MX	Used by
GuestUser	Topcall\GuestUser	TC/Options
User	Topcall\User	TC/Options
UserSpecificOnlyImg	Topcall\UserSpecificOnlyImg	TC/Options

CodePage	Topcall\CodePage	Common
FaxService	Topcall\FaxService	TC/Address
FreeService	Topcall\FreeService	TC/Address
NotesService	Topcall\NotesService	TC/Address
TcService	Topcall\TcService	TC/Address
SMSService	Topcall\SMSService	TC/Address
TelexService	Topcall\TelexService	TC/Address

[General]

Key	Corresponding registry key in TC/LINK-MX	Used by
CoverForRTF	General\CoveForRTF	TC/Options
OnlyImgOverride	General\OnlyImgOverride	TC/Options
AdvancedRTFConversion	General\AdvancedRTFConversion	TC/RichText
ExtFmt1-9	General\ExtFmt1-9	TC/RichText
RemoveRtfPages	General\RemoveRtfPages	TC/RichText
SuppressLeading PageBreak	General\SuppressLeading PageBreak	TC/RichText
PCCodePage	General\PCCodePage	Common
ArchiveRecipient	Topcall\ArchiveName	TC/CP Setup
EXService	Setup\ServiceEXCH\Name	TC/CP Setup
FaxService	Exchange\Fax	TC/CP Setup
FreeService	Exchange\FREE	TC/CP Setup
GatewayProxy	String built from Exchange\TCUserid, Exchange\TCUserid2-9	TC/CP Setup
TCPassword	Usrio\DefaultPassword	TC/CP Setup
TCService	Exchange\TC	TC/CP Setup
TlxService	Exchange\TX	TC/CP Setup
TCServer	Topcall\Server	TC/CP Setup
TCServerPath	Topcall\Path	TC/CP Setup
VoiceService	Exchange\VOICE	TC/SP Setup
NotesService	Exchange\NOTES	Setup
SMSService	Exchange\SMS	Setup
VoiceMsgClass	Exchange\MsgClassVoice	TC/SP Setup

12. RESTRICTIONS

12.1 General restrictions

The following restrictions also apply if you connect TC/LINK-MX to Exchange 5.5.

12.1.1 Exchange forms not supported

TC/LINK-MX does not convert Exchange forms. Forms other than the standard mail format might not be transmitted correctly.

12.1.2 (Non)Read notifications to Exchange not supported

TC/LINK-MX does not create read- or nonread notifications to Exchange.

12.1.3 OLE objects only with foreground TCDC

Embedded OLE objects in messages from Exchange can only be converted if TCDCEXE runs in foreground mode. With background document conversion, TCLINK returns a non-delivery notification for a message containing OLE objects.

12.1.4 Restrictions in combination with TC/LINK-LN

If TC/LINK-MX and TC/LINK-LN are used together, Lotus Notes users cannot use the native X.500 Exchange addresses. The Notes client interpretes this address format in a wrong way and truncates the address.

When sending from Notes to Exchange, use one of the MX user's EMAIL addresses as the recipient, e.g. his SMTP address or TC proxy address.

When a Notes user receives a message from an MX user, reply will only work if the MX user has a TOPCALL Shadow User or if he has a TC proxy address.

12.1.5 MS Excel OLE attachments

If TC/LINK-MX is used to transfer Excel OLE attachments, the document converter MUST NOT be configured to start Excel automatically.

Reason: If Excel stays open all the time, it changes it's window title with every OLE attachment printed (…- Book1, …- Book2, …- Book3 etc.) and TC/DC can thus never learn the correct window title.

12.1.6 Why TC sendorders may remain unterminated

- If an Exchange user appears twice in the recipient list of a TOPCALL message, Exchange returns only one notification. The second send order on TOPCALL is not terminated.

- When sending a message from TOPCALL to a connector on the Exchange server (e.g. Internet Mail Connector, MSMAIL Connector), Exchange does not request a delivery notification. If TC/LINK-MX is configured to wait for notifications (`TOPCALL\NotifMail` = 1) and the recipient's address type is not part of the list stored in registry key `Exchange\NoNotif4AddressTypes`, the sendorder on TOPCALL will not be terminated.

12.1.7 Sendoptions not stored in address book

Due to a problem in Exchange, it is not possible to store per-recipient send options in the address book. See MS Knowledgebase article Q171099.

12.1.8 RTF conversion: only subset of formats supported

TC/LINK-MX uses the Microsoft Richedit control for conversion of the RTF message body. According to Microsoft, this control supports only a subset of the RTF formats.

For example, double underline (created by the WordMail editor) is not supported and is converted to single underline.

12.2 Special restrictions for Exchange 2000

The following restrictions are due to problems in Exchange 2000 server or missing documentation. They might be removed in one of the next releases of TC/LINK-MX or Exchange 2000.

12.2.1 Cannot take over MS address space

Exchange 2000 does not permit TC/LINK-MX to take over the address space MS.

This means, you cannot use the MS syntax when sending via TC/LINK-MX.

12.2.2 OLE attachment problems with message from remote routing group

If a message containing an OLE attachment, originating from a remote routing group, is sent to a contact serviced by TC/LINK-MX, only the first page of the OLE attachment is part of the resulting message (shows up as BMP attachments).

12.2.3 Bitmap in WordMail message from remote routing group disappears

If a message created via the WordMail editor and containing a pasted bitmap (e.g. a screenshot), is sent to TC/LINK-MX from a remote routing group, the bitmap is ignored completely.

13. SETUP CHECKLIST

TCOSS Server CPU number	
Link Server CPU number	
TCOSS version	
Link Server license or TC/LINK-XX license	Key: Expire Date: Registrations:
Postscript license (optional)	Key: Expire Date: Registrations:
PCL5 license key (optional)	Key: Expire Date: Registrations:
GIF license key (optional)	Key: Expire Date: Registrations:
File Reporter license key (optional)	Key: Expire Date: Registrations:
Dirsync license key (optional)	Key: Expire Date: Registrations:
TOPCALL Server Name	
Link Type to TOPCAL Server, transport type PRC or Native	
Seconary TOPCALL Server Name (for tandem servers only)	
Link Type to secondary TOPCALL Server (for tandem servers only)	
TOPCALL Link User Name	
TOPCALL Link User Password	
NT TCDCEXE User Name (foreground TCDC only)	
NT TCDCEXE User Password (foreground TCDC only)	
NT TCDCEXE User Domain (foreground TCDC only)	
EXCHANGE Server Name	
Windows 2000 user for TC/LINK-MX (optional)	
Password of this user	
Domain of this user	

14. INDEX