

Kofax Communication Server

TCLINK-MX7 Technical Manual

Version: 10.2.0



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1. OVERVIEW

1.1 Key Features of TC/LINK-MX7

- TC/LINK-MX7 connects the Kofax Communication Server to Exchange organizations. The connection is done via SMTP. Only communication with Exchange server version 2007 / 2010 / 2013 (CU1 or later)/2016 is supported.
- TC/LINK-MX7 enables Exchange users to access all services available on the Kofax Communication Server, e.g. send and receive faxes, receive voice mail, etc.
- As a member of the TC/LINK-SM product family, TC/LINK-MX7 supports all SMTP/MIME features provided by TC/LINK-SM: multiple parallel receive threads, binary attachments, extended character sets and enhanced delivery status notifications, optional SSL security
- As a successor of TC/LINK-MX 2000/2003, TC/LINK-MX7 supports most Exchange specific features that were supported by TC/LINK-MX 2000/2003: message classes, rich text message body, custom address types, multiple time zones
- TC/LINK-MX7 is member of the TC/LINK family and therefore has a unified architecture and all the common features (e.g. document conversion, configurable covers and templates, configurable address mapping, and so on).
- Support of Kofax Communication Server features like printing all incoming email, auto-forward feature, least cost routing, delayed sending, alerts (via shadow user profiles).

Important! The Kofax Communication Server and its components formerly used the name TOPCALL. Some screen shots and texts in this manual may still use the former name.

1.2 Architecture

For sending from Exchange to TC/LINK-MX7, you need a send connector on an Exchange Hub Transport server. This connector has a defined address space and one or more destination servers (the TC/LINK-MX7 computers). Setup creates a sample text file with the command for connector installation, which is done via the Exchange Management Shell. See section 3.2.4.1 for a detailed explanation.

For sending from TC/LINK-MX7 to Exchange, it is recommended to specify one (or more) Exchange server(s) as dedicated smart hosts. Alternatively, TC/LINK-MX7 can use DNS to find the recipient's home server.

For scalability issues (for fail over and load balancing), see section 3.3.

Restriction:

The Exchange server that TC/LINK-MX7 connects to must hold the Hub Transport Server role. Connections to Edge Transport Servers are currently not supported.

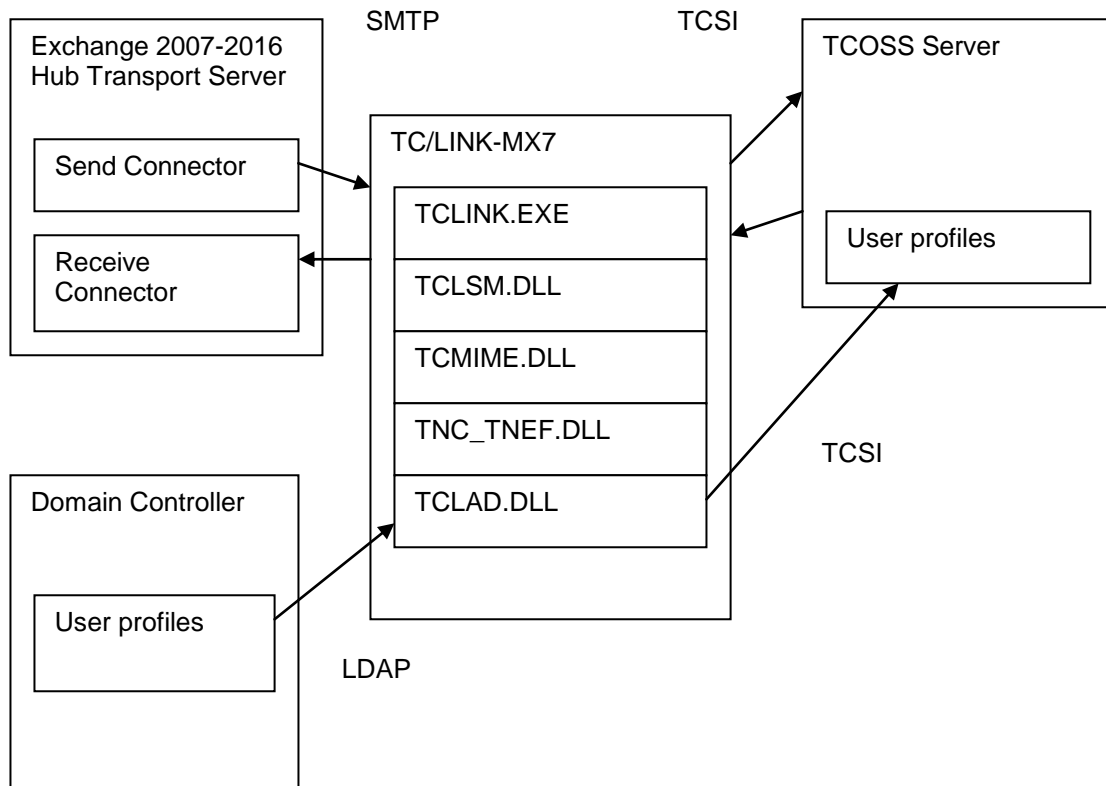
Figure:

The following drawing shows how TC/LINK-MX7 interacts with the Exchange server:

- It receives SMTP messages from the Exchange send connector and transfers them to KCS.
- It retrieves TCSI messages from KCS and converts them to SMTP messages that are sent to the Exchange server's receive connector
- If configured for dirsynchronisation, it reads user profiles from a domain controller and creates matching KCS shadow users.

Messaging can be made secure by using SSL.

This basic architecture is scalable, i.e. you can use several link instances and several Exchange servers.



1.3 License

You need licenses for “TC/LINK for Exchange 2007”. This is a user-based license type.

SSL is supported automatically and does not require any extra license.

1.4 Exchange Client Applications

TC/LINK-MX7 functionality has been tested with the following client applications:

- MS Outlook 2007
- MS Outlook 2013
- Outlook Web Access

Other client applications will probably work as well, but have not been tested.

1.5 Modules of TC/LINK-MX7

TC/LINK-MX7 is a member of the TC/LINK-SM product family, insofar as it shares two special link modules TCLSM.DLL and TCMIME.DLL with TC/LINK-SM.

TCLSM.DLL decides to use the TC/LINK-MX7 license if it finds the Exchange-specific registry value Exchange\EnableTnef.

TC/LINK-MX7 takes advantage of all common link files. In addition, it uses the following modules:

Module	Main tasks
TCLSM.DLL	<ul style="list-style-type: none">• Receiving from internet to temporary file• Transmission to the internet• Polling feature• Loop detection
TCMIME.DLL	Message conversion from / to MIME
TNC_TNEF.DLL	Exchange-specific features, like KCS-specific address types, rich text, special Exchange send options. <u>Note:</u> Transport Neutral Encapsulation Format or TNEF is a proprietary email attachment format used by Microsoft Outlook and Microsoft Exchange Server. An attached file with TNEF encoding is most usually called winmail.dat or win.dat and has a MIME type of Application/MS-TNEF.
SMTPEX.MAP	Address mapping rules

2. FEATURES

2.1 Addressing

TC/LINK-MX7 and Exchange use SMTP for message transfer. Therefore, all addresses must conform to the SMTP specifications. In general, an SMTP address has the format <localpart@mail-domain>. The "mail-domain" is used to route the message to the destination server, while the "localpart" usually identifies a single recipient mailbox on this server.

SMTP Addressing Character Set

SMTP addresses allow only a very limited character set: RFC 822 restricts the user-allowed characters to the ones not shaded in the following table:

HEX	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	.A	.B	.C	.D	.E	.F
0.																
1.																
2.	SP	!	"	#	\$	%	&	'	()	*	+	,	-	.	/
3.	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4.	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5.	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
6.	'	a	B	C	d	E	f	G	h	i	j	k	l	m	n	o
7.	P	q	R	S	t	U	v	W	x	y	z	{		}	~	

Note:

- Some addressing modes supported by TC/LINK-MX7 allow characters outside these limitations. See the following chapters for details.
- In general, the local part of the address is case sensitive while the mail-domain is not. Exchange treats the local part of email addresses in a case-insensitive way, whereas KCS addresses are case-sensitive.

Maximum SMTP Address Length

RFC822 limits the local part and the mail domain to a maximum of 64 characters each.

Total length of an internet mail address must not exceed 256 characters (critical especially for embedded X.400 addresses)

Note:

Some of the given restrictions may not apply to special environments (e.g., addresses with non-US-ASCII characters or very long SMTP addresses may work in some scenarios). However, it is strongly recommended to keep the RFC 822 addressing specifications to guarantee interoperability.

2.1.1 Message Addressing from Exchange to KCS

When sending to KCS services, you can use one of the TC/LINK-MX 2000/2003 compatible addressing modes from the table below. Existing address book entries created for TC/LINK-MX 2000/2003 can still be used.

Additionally, TC/LINK-MX7 supports an SMTP addressing syntax that allows national characters in the destination address (using the display name for the real address).

Addressing mode	Example	Restricted character set	TC/LINK-MX 2000/2003 compatible	Enabled by default
KCS-specific address types	[TC:müller]	NO	YES	YES
Fax addresses of Outlook contacts	[FAX:müller@86353]	NO	YES	YES
TC/LINK-MX compatible SMTP syntax	86353@FAX.kcs.company.com	YES	YES	YES

SMTP syntax using display name	'müller' <muellet@kcs.company.com>	NO	NO	YES
Standard SMTP addresses	support@microsoft.com	YES	NO	NO

All addresses used for sending to TC/LINK-MX7 must be part of the Exchange send connector's address space.

The installation script created during setup defines a connector address space that supports the first four address types.

To enable sending to other SMTP addresses, add a matching SMTP address space to the send connector properties (via Exchange Management Console / Exchange Admin Center).

To disable the FAX address space (for installations where another fax connector uses this address space), remove the FAX address space from the send connector properties (via Exchange Management Console / Exchange Admin Center).

2.1.1.1 KCS-Specific Address Types

Standard TC/LINK-MX 2000/2003 used to address templates for the following KCS-specific address types:

Exchange Address Type	KCS Address Type
TC	SET_TC_ADDRESS
FAXTC	SET_FAX_ADDRESS
ATX	SET_TX_ADDRESS
FREE	SET_FREE_ADDRESS
ANOTES	SET_FREE_ADDRESS with Notes Address
SMS	SET_FREE_ADDRESS with SMS Address
AB	For any object in the KCS Address Book

Exchange address type names are configurable; the above table contains the default names.

TC/LINK-MX7 also supports these address types. One-off addresses can be entered via the KCS address templates, or directly on the TO or CC line, using the following syntax:

Syntax:

Exchange Address Type	Syntax for Exchange address	Example address entered at TO: field of MS Outlook
TC	TC: userid(#fullname)(#service)(#node)(#company)(#department)(#salutation)(#freetext)	[TC:FS]
FAXTC	FAXTC: number(#fullname)(#service)(#answerback)(#company)(#department)(#salutation)(#freetext)	[FAXTC:66133857#Max Meier###Kofax]
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.

Advantages:

Compatibility with TC/LINK-MX 2000/2003

Easy-to-use address templates

Address and parameters can contain national characters.

Technical Information:

Exchange converts all addresses into SMTP addresses. Characters that are not allowed in an email address are encoded as hexadecimal numbers. TC/LINK-MX7 decodes the address and converts it into a valid KCS address.

Prerequisites:

The Exchange send connector address space must contain these address types.

This addressing syntax is supported even if the KCS address templates are not installed or not available (e.g. with the Outlook 2007 client).

2.1.1.2 Outlook Contacts

TC/LINK-MX7 accepts messages sent from MS Outlook to the "Business Fax", "Home Fax" or "Other Fax" address of Outlook contacts.

With this type of addressing, only the full name and the fax number of the recipient can be evaluated:

The full name is the name of the contact. The fax number is the content of field "Business Fax", "Home Fax" or "Other Fax" (respectively).

Technical Information:

Exchange converts all addresses into SMTP addresses. Characters that are not allowed in an email address are encoded as hexadecimal numbers. TC/LINK-MX7 decodes the address and converts it into a KCS Fax address.

Prerequisite:

The Exchange send connector must include address space "FAX".

2.1.1.3 TC/LINK-MX 2000/2003 Compatible SMTP Syntax

Recipient addresses can be specified in SMTP format, using the following syntax:

[Fullname#]Number[.Answerback]@Service.Domain

Examples:

86353@fax.tcservices.company.com

86353.tcint@fax.tcservices.company.com

'Annemarie Fischer#FS'@local.tcservices.company.com

Fullname	Full name (for cover sheet)
Number	Fax or telex number, or free address, or KCS user ID
Answerback	Fax or telex answerback
Service	Valid KCS service
Domain	Domain name (must match the address space configured for the Exchange send connector)

If the local part of the address contains one of the shaded characters from the SMTP character set table (e.g. '@' for a Notes address or a space character in the display name), the local part of the address must be put between double quote characters.

Example: "Bernhard Schuetz/VIENNA/KOFAX@LOCAL"@notes.tcservices.company.com

Only sub-domains of the link domain are interpreted as KCS addresses: e.g. for the link domain `tcservices.company.com`, use domain `fax.tcservices.company.com` for service `fax`.

Optionally, an alternative domain name can be configured.

Setup automatically adds the link domain and its sub domains to the list of routed domains (registry value `TCLSM\SMRouteDomains`).

Disadvantage: National characters cannot be used in the recipient number. If you use national characters in the address, the client application displays a more or less meaningful error message (e.g. "the operation failed").

Prerequisite:

The used domain and all its sub domains must be part of the Exchange send connector's address space.

2.1.1.4 **SMTP Syntax with KCS Address in Display Name**

Recipient addresses can be specified in SMTP format, using the display name for the recipient number: There are two possible syntax variants.

Syntax using one domain for all services:

`'[Fullname#]Number[.Answerback]' <Service @Domain>`

Examples:

'Max Müller#12345' <fax@tcservices.company.com>
 'Max Müller#86353.tcint' <fax@tcservices.company.com>
 'Max Müller#MM' <topcall@tcservices.company.com>

Syntax using service-specific sub domains:

`'[Fullname#]Number[.Answerback]' <#@Service.Domain>`

Examples:

'Max Müller#12345' <#@fax.tcservices.company.com>
 'Max Müller#86353.tcint' <#@fax.tcservices.company.com>
 'Max Müller#MM' <#@local.tcservices.company.com>

Fullname	Full name (for cover sheet)
Number	Fax or telex number, or free address, or KCS user ID
Answerback	Fax or telex answerback
Service	Valid KCS service
Domain	Domain name (must match the address space configured for the Exchange send connector)

Only sub-addresses of the link domain are interpreted as KCS addresses. Optionally, an alternative domain name can be configured.

Advantage: National characters can be used in the recipient number (but not in the service name).

Prerequisite:

The used domain must be part of the Exchange send connector's address space.

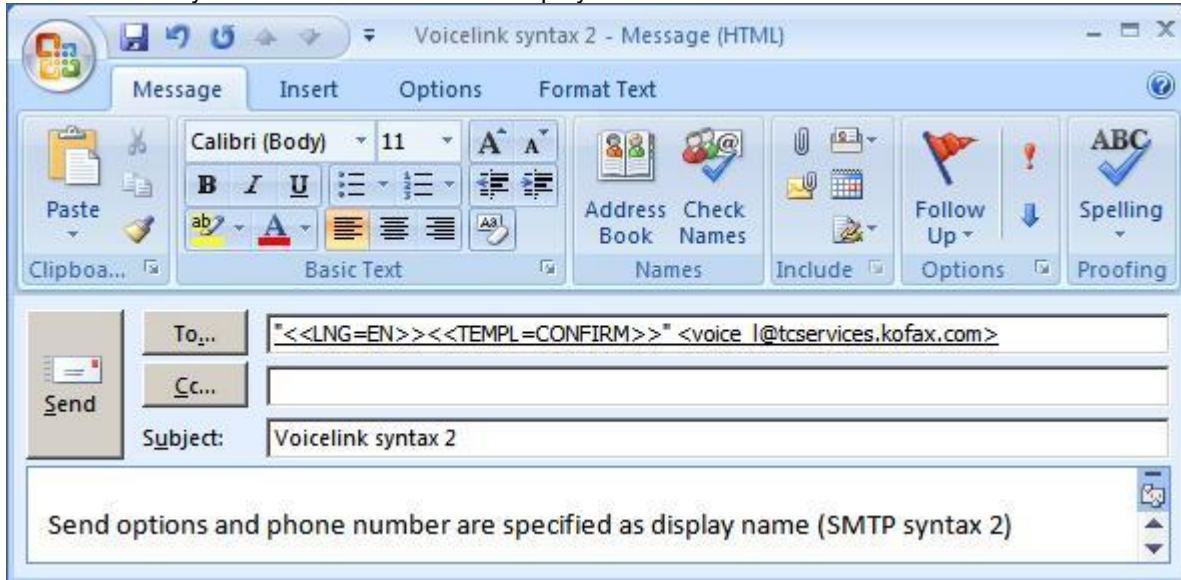
2.1.1.5 **Real SMTP Addresses**

You can configure the Exchange send connector to route other SMTP addresses via TC/LINK-MX7 as well. All addresses that do not match the above syntax definitions are regarded as real internet addresses and are sent via the configured SMTP service.

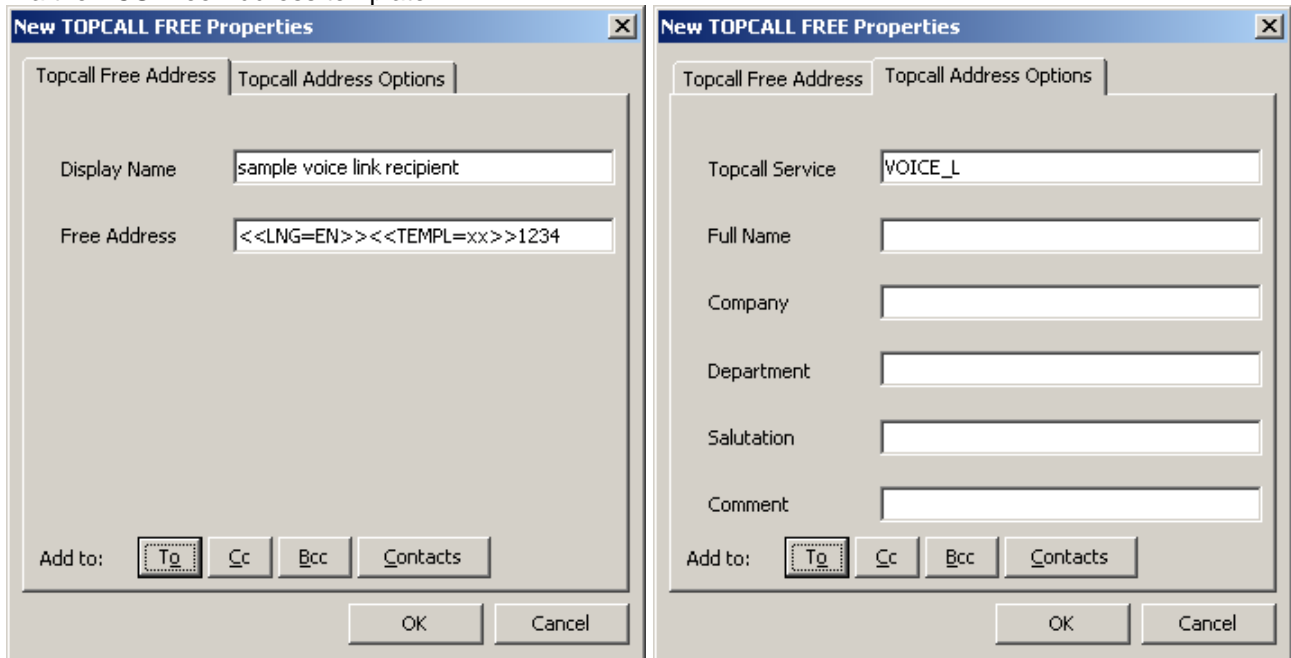
2.1.1.6 Hint: Sending to TC/VoiceLink2

When sending to TC/VoiceLink2, users may want to specify send options, e.g. "<<LNG=EN>>". The characters < and > are not compatible with SMTP addresses. There are two possible ways of entering such addresses:

- Via the SMTP syntax with KCS address in display name:



- Via the KCS Free Address template:



2.1.2 Message Addressing from KCS to Exchange

When sending to Exchange, recipient addresses consist of the KCS queue polled and the recipient's SMTP address. For sending to Exchange mailboxes, you can use any of the user's SMTP addresses.

A dedicated service for sending to Exchange is installed automatically. By default, its name is MX7 and its prefix is the queue with the TIF4 format character.

Typically, you will use this service for addressing.

E.g.:

Service name = MX7, service prefix = TCLMX7Q4:

When sending from TCFW, the recipient would be specified like this:

MX7,name@domain

To make replies work, TC/LINK-MX7 automatically builds a valid SMTP originator address for your message. There are two basic ways to configure your originator address:

- TC/LINK-MX 2000/2003 compatible SMTP syntax (default)
- SMTP syntax using display name

2.1.3 Originator Addresses When Sending to Exchange

2.1.3.1 TC/LINK-MX 2000/2003 Compatible SMTP Syntax

The first active address of the sender is converted to SMTP format, similar to the syntax described in section 2.1.1.3:

<Number@service.domain>

e.g. 123456789@FAX.tcservices.company.com

Number	Fax or telex number, or free address, or KCS user ID
Service	KCS service
Domain	Link domain name

Configuration:

To syntax is enabled if registry value Exchange\SmtpSyntaxToMail is 1 (enabled by default).

Disadvantage:

If there are national characters in number or service, the message might be accepted by Exchange, but cannot be replied to. If the number contains characters that are not conform in an SMTP address, TC/LINK-MX7 tries to build an SMTP-compatible address and automatically uses the following display name syntax:

[Fullname#]Number[.Answerback] <#@Service.Domain>

2.1.3.2 SMTP Syntax Using Display Name

The first active address of the sender is converted to SMTP format, similar to the syntax described in section 2.1.1.4:

Number <service@domain>

e.g. Müller <MX7@company.com>

Number	Fax or telex number, or free address, or KCS user ID
Service	Valid KCS service
Domain	Link domain name

Configuration:

To use this syntax for all messages sent to Exchange, set registry value Exchange\SmtpSyntaxToMail to 2.

Advantage:

The address can contain national characters.

Note:

National characters in the service name are not supported.

2.1.3.3 Display Name for Unknown User

In case of unknown user, the display name is fetched from the name of the transaction file.

NAME <Number>

e.g. Müller <Müller@company.com>

In case of known user, it will use the format specified in section 2.1.4.1.

Configuration:

To use this syntax for all messages sent to Exchange, set registry value Exchange\SmtpSyntaxToMail to 4.

Advantage:

It will fetch the display name from transaction file.

2.1.4 User Authentication

As the Kofax Communication Server offers access to many services (e.g. fax, telex, X.400), it is very important to control access to these capabilities. This access control is mainly based on the originator of a message, which might or might not be a KCS user.

2.1.4.1 Originator Is a KCS User

If TC/LINK-MX7 finds a KCS shadow user for the originator (shadow user has an inactive address that matches exactly the originator's email address), all rights settings, templates, etc., are taken from this user profile. In the user profile, you can control e.g. the restricted access to some services, the right to enter a number directly, or mandatory authorizers from the user template. A detailed description for the possible setup is given in the TC/LINK manual.

2.1.4.2 Originator Is No KCS User

If the search for a KCS shadow user fails, the rights and password setup will be taken from the configured "guest" user profile. You can, e.g.:

- configure this guest user to need authorization for sending faxes while all KCS users do not need it
- configure it to use the service "TOPCALL" only (only sending to KCS users will be allowed)

2.1.4.3 Authentication via Originator IP Address

TC/LINK-MX7 acts as a general SMTP server. Theoretically, any computer can connect to TC/LINK-MX7 and post a message.

As most Internet Mail clients give the possibility to enter any originator address without any verification, such a message could even bypass the originator rights check. To allow only the Exchange server(s) access to TC/LINK-MX7, you can configure the IP addresses that are allowed to connect to TC/LINK-MX7.

See 3.2.3.2 "IP Authentication Setup" for details on the configuration.

2.1.5 Message Relaying to Internet Recipients

By default, TC/LINK-MX7 accepts only messages to the link domain and its sub domains. For compatibility with old TC/LINK-MX 2000/2003 installations, a second domain (including sub domains) can also be configured. Setup configures registry value `TCLSM\SMRouteDomains` accordingly.

For installations where Exchange users send to any internet addresses via TC/LINK-MX7 (see addressing mode described in section 2.1.1.5), configure TC/LINK-MX7 to relay messages for all domains, by adding `*.*` to the list of routed domains (`TCLSM\SMRouteDomains`).

Example:

- A user sends a message addressed to `<nobody@nowhere.com>`.
- With routing enabled for all domains, TC/LINK-MX7 finds out that the destination domain (`"nowhere.com"`) does not match the own mail-domain (`"kcs.company.com"`), and therefore it will post the message addressed to `"SMTP, nobody@nowhere.com"`.
- The message will be sent out again via the link responsible for the SMTP service (usually TC/LINK-SM, optionally also TC/LINK-MX7).

2.2 Message Content

To send mail via an internet connection, all involved mail hosts must keep unified protocols and message formats (defined in various RFCs).

The TC/LINK-SM manual contains a short overview of

- the basic SMTP protocol
- the SMTP protocol extensions
- the MIME message format
- notification types

and explains which features are supported by TC/LINK-SM and related KCS link types.

This manual lists only Exchange-specific issues.

2.2.1 Exchange Message Classes

Customers who purchased KCS Voice Access can check their Exchange inbox via telephone. The Voice Access application classifies the messages according to their message class, and distinguishes between voice messages, faxes and emails. Setting different message classes for messages sent to Exchange is an optional feature of TC/LINK-MX7.

It is possible to install different Outlook forms for different message classes, so that e.g. a voice message is shown with a different icon in the inbox. TC/LINK-MX7 setup copies a sample form for voice messages (`IPM_NOTE_TCMSG_VOICE.FDM`) into the link directory. See section 7.2 for a description how the form can be installed.

Message class names are configured in the registry:

Registry value	Default	Description
<code>Exchange\MsgClassFax</code>	<code>IPM.NOTE</code>	Message class for faxes
<code>Exchange\MsgClassVoice</code>	<code>IPM.NOTE.TCMSG.VOICE</code>	Message class for voicemail
<code>Exchange\MsgClassEmail</code>	<code>IPM.NOTE</code>	Message class used for all other messages

2.2.2 Screenshots in SMTP Messages

With standard TC/LINK-SM, pictures that are part of the HTML message body are not rendered in their original position. E.g., if a message contains a screenshot, the resulting TCI message body contains a place holder (icon or file name) instead of the screenshot, followed by a file attachment (extension PNG or JPG) with the screenshot image. The result is even uglier for embedded calendar items from an Outlook client, which contain many single icons.

To avoid such troubles, TC/LINK-MX7 changes the temporary HTML file before it is printed, so that screen shots and icons are displayed in the correct positions and not as single objects. This behavior can be activated for TC/LINK-SM as well, using the following registry settings.

Prerequisites in TC/LINK configuration:

General\SupportMultipartRelatedHtml = 1

TCMIME\HtmlAsAlternative = 1


For messages composed via the MS Outlook client, this works only if the message was composed in HTML mode. Messages composed in RTF mode are still rendered in the ugly way described above.

2.2.3 Notifications

Several types of notifications exist in internet messaging. TC/LINK-MX7 is configured to support the notification types used by the Exchange server.

2.2.3.1 Delivery and Non-Delivery Notifications

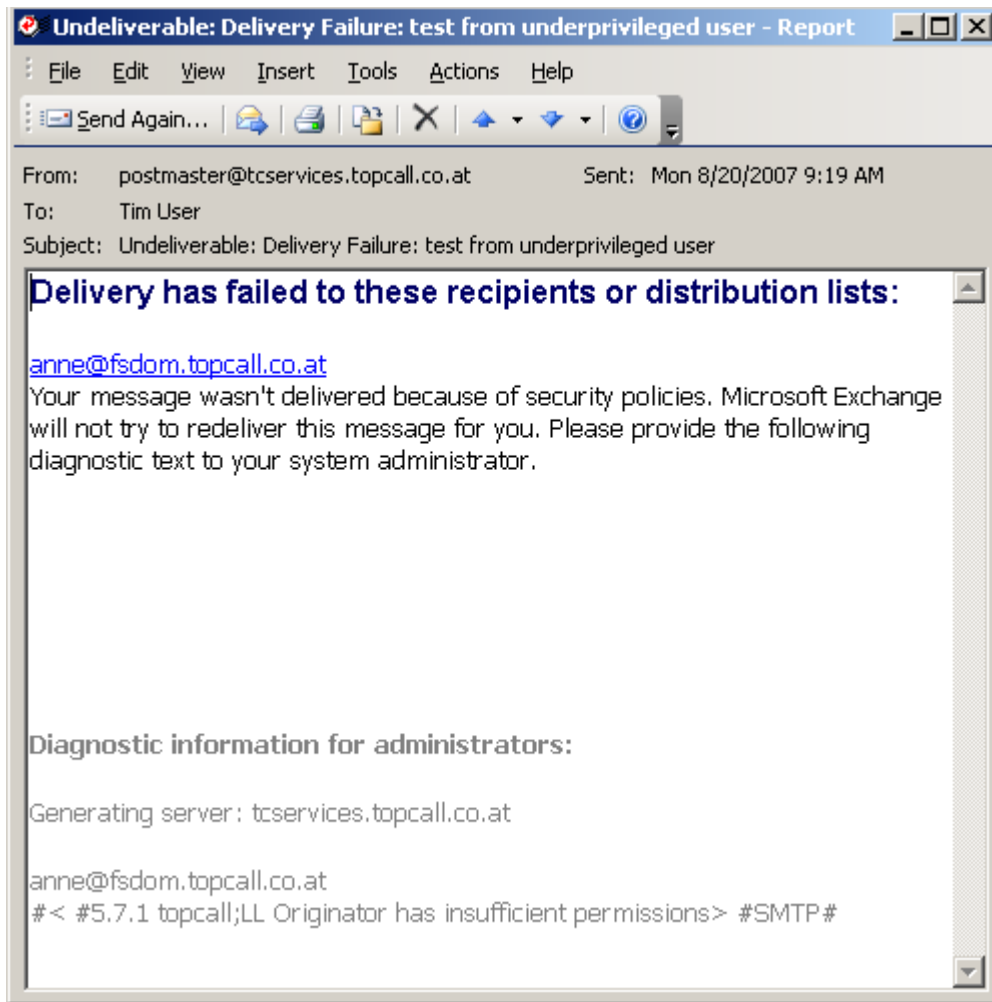
Exchange uses Advanced Notifications (according to RFC1891 to 1894) for delivery and non-delivery reports.

When TC/LINK-MX7 is configured to keep KCS send orders in status “Active-Forwarded”  (i.e. registry value *TopcallNotifMail* is 1), the link requests delivery and non-delivery reports from Exchange and does not terminate the send order before a matching report is returned.

RFC1891 Notifications from KCS to Exchange

TC/LINK-MX7 also understands delivery and non-delivery notification requests in messages from Exchange. With default configuration, TC/LINK-MX7 returns RFC1891 compatible notifications. MS Exchange converts these notifications into its own format, so that most of the notification text comes from Exchange configuration.

Non-Delivery Notification



The notification consists of two sections: an explanation for the end user (upper part), and diagnostic information for administrators (lower part). The last line of the diagnostic information contains the TCOSS error code and description (LL, Originator has insufficient permissions), as well as the delivery status code that TC/LINK-MX7 provided in the MIME notification (5.7.1).

The explanation for the end user comes from Exchange configuration, matches the user language and the delivery status code provided by TC/LINK-MX7.

TC/LINK-MX7 uses a configuration file to map TCOSS error codes to delivery status codes. The default path name of this file is C:\TCOSS\TCLP\DSNCODE_TCLINKMX7.INI. You can configure a different path in registry value TCMIME\DsnCodeFile. This is a standard INI file. The default configuration is as follows:

```
[DSN]
;this section contains mappings between TCOSS error codes and RFC 1894 Delivery Status Codes
; content conversion errors
LE=5.6.5
LG=5.6.5
LY=5.6.5
; recipient address errors
LH=5.1.1
LJ=5.1.1
; originator address errors
LI=5.1.7
LK=5.1.7
; permission and license problems
LL=5.7.1
```

```
M1=5.7.1
; virus found
LW=5.6.0
LZ=5.6.0
; TCOSS server inaccessible
LM=5.3.0
; latest delivery timeout
SO=5.4.7

; default status code used for all other errors
Default=5.4.0
```

The file contains a single section (DSN) with mappings between TCOSS error codes and delivery status codes.

On the Exchange hub transport server, an Exchange organization administrator can configure custom delivery status texts (even with HTML formatting), via the Exchange Management Shell command `New-SystemMessage`.

For example, the following command code creates an English message for Exchange internal recipients that matches delivery status code 5.9.0:

```
New-SystemMessage -DsnCode 5.9.0 -Text "<B>Error during fax transmission:</B> No fax machine detected" -Internal $True -Language en
```

In the INI file, you would map TCOSS error code XL to delivery status code 5.9.0:

```
XL=5.9.0
```

Delivery Notification

Delivery notifications also consist of text configured on the Exchange server.



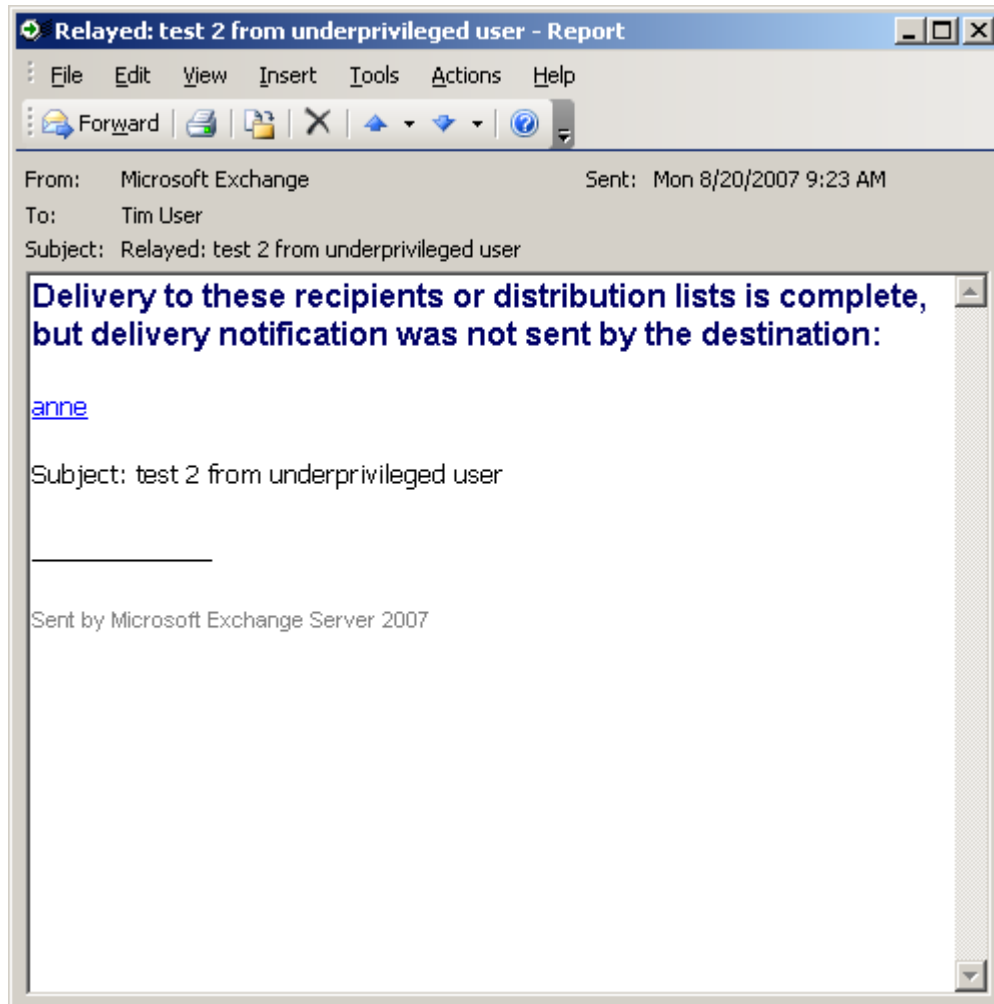
Known limitations of RFC 1891-1894 style notifications created by TC/LINK-MX7:

- The notification subject is a bit confusing ("Delivered: TOPCALL delivery notifications: <original subject>").
- Information from the KCS notification cover sheets is not available.
- The resend button in non-delivery notifications does not work.
- These notifications are only sent if the sender requested delivery notifications. Notifications forced in link configuration (SOForceDelNotif etc.) are simple text messages as explained below.
- These notifications do not show up in the Tracking tab of a message opened from the Sent Items folder in MS Outlook

Option: Text Notifications from KCS to Exchange

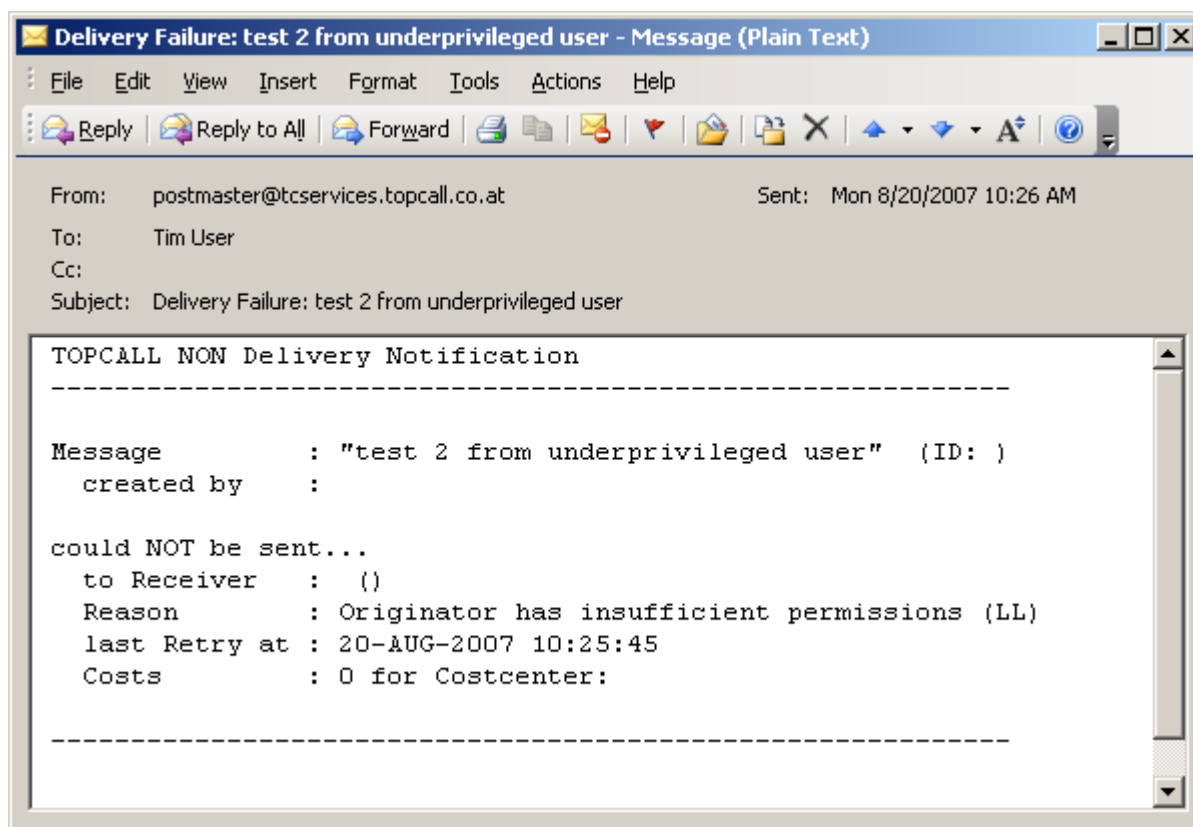
If the customer prefers the standard TC/LINK notification texts with KCS specific information like cost center and number of pages, you can configure TC/LINK-MX7 to support text notifications only, by setting registry value *TCLSMIMENotifFormat* to 0.

If TC/LINK-MX7 is configured this way, the Exchange server returns an intermediate relay notification for every message requesting a delivery notification:

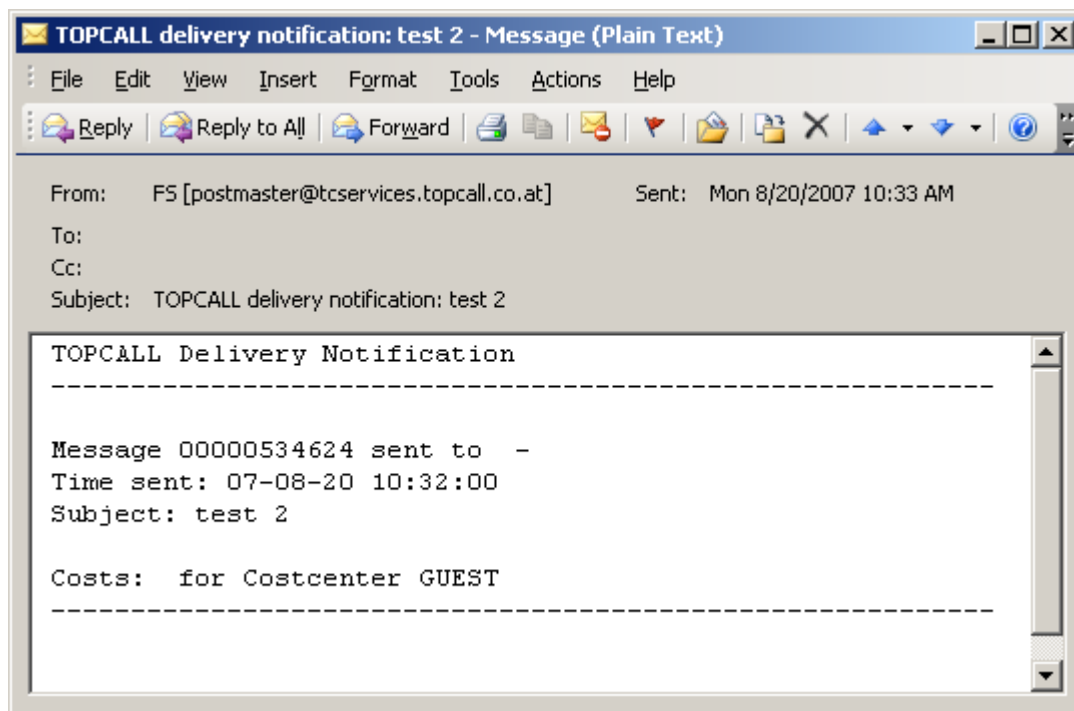


The real notifications from Kofax Communication Server are simple text messages, like the following:

Non-Delivery Notification



Delivery Notification





Known limitations of this configuration:

When sending to contacts from the Global Catalog, the KCS send order contains 2 recipients: an inactive TO recipient with the contact's SMTP address and an active BCC recipient with the real KCS address.

2.2.3.2 Read and Non-Read Notifications

Exchange uses Message Disposition Notifications (according to RFC2298) for read and non-read notifications.

TC/LINK-MX7 requests message disposition notifications from Exchange if a message was posted registered. This is different from TC/LINK-SM behavior, as TC/LINK-MX7 requests these notifications in addition to the above-mentioned delivery notifications.

Thus, a KCS send order posted registered stays at status  "Active-Forwarded" when the delivery notification arrives, and only when the message has been read by the recipient the status changes to  "Sent OK".

But this notification type is implemented asymmetrically:

TC/LINK-MX7 cannot create read or non-read notifications for messages sent to Kofax Communication Server. Such notification requests are ignored.

2.2.3.3 Notification Settings

To be able to serve notification requests from Exchange and to request (non)delivery and (non)read notifications from Exchange, TC/LINK-MX7 Setup writes the following configuration values.

- TCLSM\MIMENotifFormat = 3
- TCLSM\ExReadNf = 1

You can change TCLSM\MIMENotifFormat to 0 to get textual notifications instead of RFC 1891-1894 notifications, as described above. In this case, no additional read notifications are possible.

Other values of these two configuration values are not recommended.

2.2.3.4 Disabling Notification Requests per Recipient Domain

If Exchange is configured to support message relaying, TC/LINK-MX7 can be used to send messages via Exchange to the internet. It is not guaranteed that notifications are returned from all internet addresses. To avoid an accumulation of open send orders on KCS, you can restrict for which recipient domains TC/LINK-MX7 requests notifications.

A multi-string registry value *TCLSMNotifDomains* holds a list of fully qualified domain names. Every domain name specified here can have a leading or trailing * as a wildcard, e.g. "*.company.com" or "company.*". You can define this list either as a blacklist of domains that cannot return notifications, or as a white list of domains that do return notifications.

Registry value *TCLSMNotifDomainSyntax* decides how the list is interpreted:

- 0: List is not used at all. No restrictions for notification requests.
- 1: Request notifications ONLY for domains in this list
- 2: DO NOT request notifications for domains in this list

2.2.4 Message Conversion from Exchange to KCS

Different Message Layout When Using KCS Address Types

Under certain conditions, Exchange sends the message in a totally different format, namely wrapped into an attachment called WINMAIL.DAT. This happens, e.g., if you use address types other than SMTP for the recipients. In the resulting KCS message, embedded OLE attachments look different than in a normal email.

Message Body

The message body usually consists of a plain text version and a rich text or HTML version. TC/LINK-MX7 converts both into a single attachment with text and image alternative.

If the text cannot be converted without loss to the TCOSS character set, the text in original form is kept as an additional binary block within the message.

TC/LINK-MX7 Setup installs document conversion scripts for file extensions HTM and HTML. These scripts use Internet Explorer for conversion.

TC/LINK-MX7 is by default configured to start the HTML message body on the fax cover sheet. This is configured in registry value *General\AltImgOnFirstPage*, this configuration value also takes the page margins into account. If a different document conversion script shall be used, it must be copied manually to C:\TCOSS\TCLP\SCRIPT after running KCS setup, and the page margins configured in the mentioned registry value must be adjusted.

Attachments (e.g. attached documents, images, or also text attachments) are converted at the document converter if necessary (if any of the recipients lack binary capabilities, e.g. fax). Attachments need an appropriate application installed capable of printing them via the KCS printer driver.

Embedded OLE attachments extracted from WINMAIL.DAT can only be converted if the document converter runs in foreground.

Embedded Messages are by default kept as embedded messages (like with TC/LINK-SM). This is true also for message attachments extracted from WINMAIL.DAT. It depends on the receiving application, whether the embedded messages are resolved flatly (e.g. in a fax) or according to their hierarchical structure (when sent out to the internet again).

2.2.5 Message Conversion from KCS to Exchange

Text parts of the message are delivered as text and are converted to the best-fitting MIME character set.

Attachments are simply MIME encoded, without further conversion. Message attachments are by default kept as embedded messages.

Image parts (e.g. incoming fax pages) are delivered in any of GIF, TIFF, BMP, PCX, DCX, MODCA and TCI formats, according to the TC/LINK-MX7 setup.

2.2.6 Supporting SSL Connections (RFC2487)

Security has become more and more an important factor in SMTP transfers. A possibility to achieve security is to use the SSL/TLS protocol as defined in RFC 2487. Whenever the abbreviation SSL is used in this manual, it means exactly this protocol.

Transport Layer Security (TLS) and its predecessor, Secure Sockets Layer (SSL), are cryptographic protocols that provide secure communications on the Internet. There are slight differences between SSL 3.0 and TLS 1.0, but the protocol is substantially the same. The term "SSL" as used in this manual applies to both protocols.

TC/LINK-MX7 optionally supports secure connections over this protocol. If SSL was enabled during Setup, the following registry keys can be used for configuration:

(Location HKEY_LOCAL_MACHINE\Software\TOPCALL\TCLINKMX7\TCLSM\...)

Registry Key	Type	Default	Possible Values / Meaning
SMSendSecure	DWORD	0	0 SSL only used, if mail server requests it 1 SSL connection mandatory, when sending to domains from SMSendSecDomains 2 SSL connection always mandatory
SMSendSecDomains	Multi string	""	List of domains, for which a SSL connection must be used
SMRcvSecure	DWORD	0	0 SSL disabled 1 SSL connection mandatory when receiving from domains from SMRcvSecDomains 2 SSL connection always mandatory 3 SSL only used, if client requests is
SMRcvSecDomains	Multi string	""	List of domains, for which a SSL connection must be used
SMSDDMode	DWORD	0	Indicates whether the link should use SSL. If set to 1, the SSL feature will become available.
CertificatePath	SZ	C:\TOPCALL\SHARED	Folder holding PEM files for SSL connections. The files must be called rootcerts.pem, private.pem, certificate.pem

2.2.6.1 SSL Certificate used by TC/LINK-MX7

To use SSL, a certificate and private key is needed. There are two possibilities: You can either use the self-signed test certificate files included in KCS or use any others from a certificate authority (CA).

Self-Signed Certificate Delivered with TC/LINK-MX7

The certificate files delivered with the KCS are called Certificate_Selfsigned.PEM and Private_Selfsigned.PEM and are copied to the TOPCALL\SHARED folder. To use this certificate, rename the files to Certificate.PEM and Private.PEM. This test certificate is valid until 2027. It has two disadvantages:

- It is self-signed, therefore it will not be accepted if the Exchange server tries to verify the certification authority against a list of allowed authorities.
- It contains a hard-coded domain name (tclink-sdd-test-cert.topcall.com). If the Exchange server compares this domain name with the domain name assigned to TC/LINK-MX7, it will not accept the certificate.

Both checks are done if you configure TC/LINK-MX7 as running on a “Partner” server (see section 3.2.4.3).

Requesting SSL Certificates from a CA

To get a certificate, use the “OpenSSL” tool included in the package (C:\TOPCALL\SHARED) to generate a private key and certification request to order it by a CA like Thawte. You can do this by simply run following line:

```
openssl req -config openssl.cnf -new -nodes -keyout private.pem -out request.pem -days 365
```

Hint for Windows Server 2012: The path variable for OPENSSL must be set: Start the Command Prompt as an administrator and run the following command:

```
set OPENSSL_CONF=c:\Topcall\Shared \bin\openssl.cfg
```

You have to enter the required information, whereas the most important is the “Common Name”. There you should enter the mail domain (e.g. "tcservices.company.com"). The format of the requested certificate must be PEM.

Submit this request file to your certification authority, or use OpenSSL to create a self-signed certificate from the request.

To create a certificate with OpenSSL, you would enter, e.g.:

```
openssl x509 -req -days 7269 -in request.pem -signkey private.pem -out certificate.pem
```

For more information, visit the Thawte homepage and if you are interested in the OpenSSL tool: www.openssl.org.

Certificate File Locations for TC/LINK-MX7

Place the certificate and key files into the “TOPCALL\SHARED” directory and rename them to “certificate.pem” and “private.pem”.

To verify certificates, root certificates are needed. TC/LINK-MX7 expects them in a file “rootcerts.pem”, also in the “TOPCALL\SHARED” directory. If this file does not exist, TC/LINK-MX7 setup creates it and installs the root certificates from Thawte. If you get additional root certificates, just open “rootcerts.pem” and append the text from your new certificates to this one. You can add information lines between the certificates, like in this example:

```
-----END CERTIFICATE-----  
original filename: thawteCp.pem  
-----BEGIN CERTIFICATE-----
```

If the verification of a certificate fails, you will find an error code in the trace file. You can find a list of the error codes in the appendix (7.8).

The SSL connection is established via the OpenSSL library, which is under open source license, so it can be used for free.

Self-Signed SSL Certificate used by Exchange:

Exchange Setup creates a self-signed SSL certificate for the server. By default, SSL/TLS is enabled and Exchange allows any sending system to encrypt the inbound SMTP session. Exchange also tries SSL/TLS for all remote connections.

With default settings, TC/LINK-MX7 does not accept self-signed certificates when sending from KCS to Exchange, as the validation of the root certificate fails.

Installing a Certificate from a Certification Authority:

Exchange 2007:

To install a certificate from a certification authority (e.g. Windows Certificate Services, or Thawte), follow the steps described in this URL: <http://technet.microsoft.com/en-us/library/aa998840.aspx>

In short, these steps are:

- Generate a certificate request via the Exchange 2007 Management Shell command `New-ExchangeCertificate`, e.g.:
New-ExchangeCertificate -GenerateRequest -SubjectName "c=us, o=contoso corp, cn=mail1.contoso.com" -IncludeAcceptedDomains -Path c:\certificates\mail1.contoso.com.req
- Create a certificate file from the certificate request (via Windows Certificate Services, or via a third-party provider). In this example, the result is a file `C:\certificates\newcert.cer`.
- Install the issued certificate via the Exchange 2007 Management Shell command `Import-ExchangeCertificate`, e.g.:
Import-ExchangeCertificate -Path c:\certificates\newcert.cer | Enable-ExchangeCertificate -Services SMTP

Exchange 2010:

With Exchange 2010, you can use the Exchange Management Console:

- Highlight the server and launch the New Exchange Certificate Wizard.
- You are prompted to enter a display name for the new certificate.
- Accept default settings for the domain scope.
- When asked for the Exchange configuration, enable Mutual TLS Security for the Hub Transport Server role and enter the FQDN of the server (by default, the wizard suggests the domain name only!)
- When asked for the certificate domains, add the domain used by Exchange user email addresses. So the list of certificate domains should contain the FQDN of the server (used as CN) and the domain used for the Exchange email addresses.
- You are then prompted for details about the organization (these settings are not vital for the certificate, but must be provided).
- Specify the path name of the certificate request file.
- The Exchange Management Console creates the certificate request file.
- Create a certificate file from the certificate request (via Windows Certificate Services, or via a third-party provider).
- Get a root certificate from the provider, and install it to the Trusted Root Certificate Authorities store for the Exchange computer. This is done via the mmc snap-in "Certificates".
- In Exchange Management Console, highlight the new certificate and choose Complete Pending Request.
- On the Complete Pending Request wizard first page, locate the certificate received from the provider.
- After successful import of the certificate, highlight the certificate and click the link Assign Services to Certificate. Enable the certificate for the SMTP service only. When prompted to replace the existing SMTP certificate with the new one, you should accept.

Exchange 2013/Exchange 2016:

With Exchange 2013 or Exchange 2016, you can use the Exchange Admin Center (EAC):

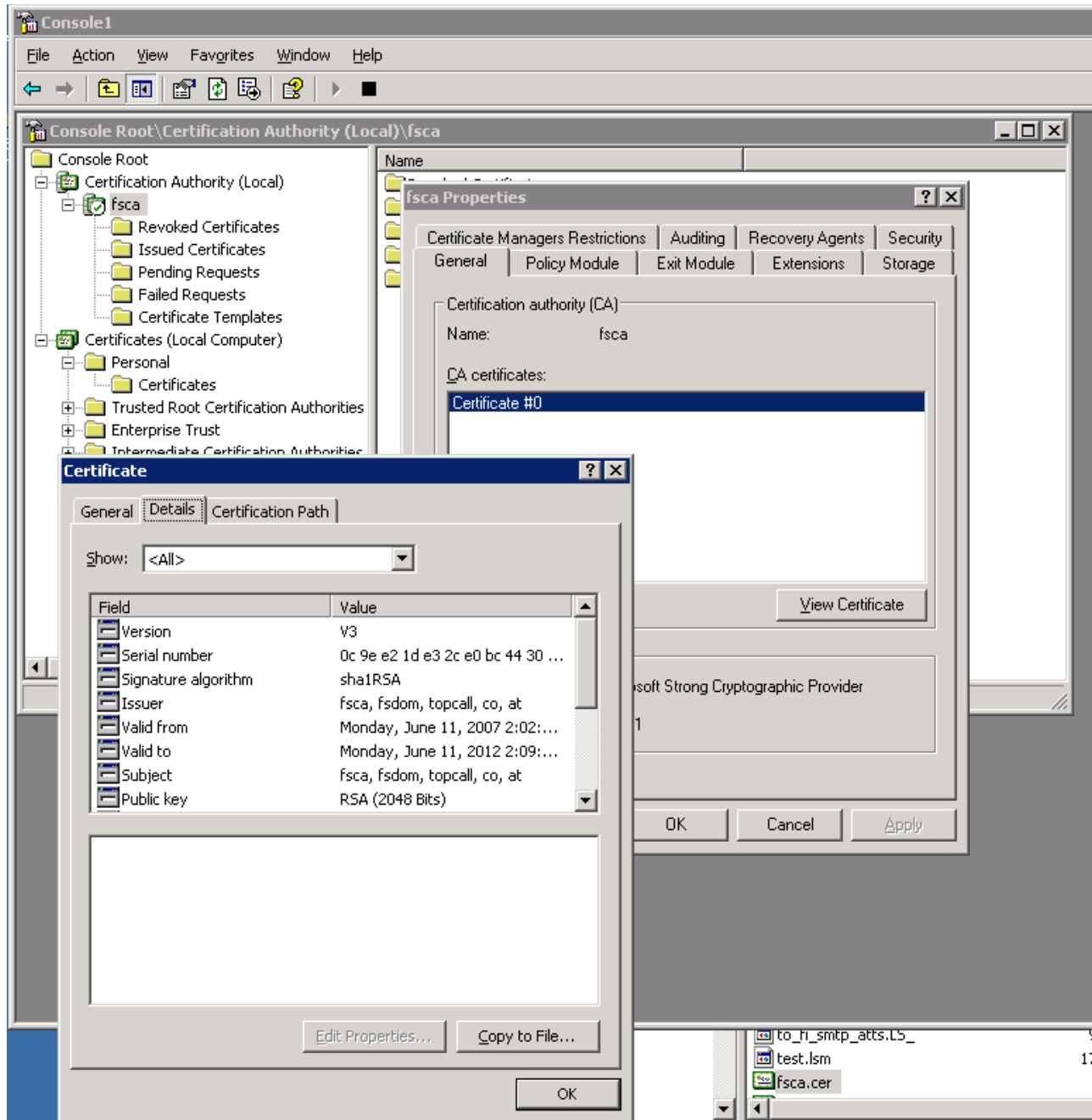
- Using a web browser, log on to the EAC (e.g. <https://mail.contoso.com/ecp>) as an Exchange administrator.
- On the Feature pane, select servers.
- Click the certificates tab.
- Select the server and add a new or existing certificate.
- Follow the wizard.
- Create a certificate file from the certificate request (via Windows Certificate Services, or via a third-party provider).
- Get a root certificate from the provider, and install it to the Trusted Root Certificate Authorities store for the Exchange computer. This is done via the mmc snap-in "Certificates".
- In EAC, select the new certificate and choose Complete Pending Request.
- On the Complete Pending Request wizard first page, locate the certificate received from the provider.
- After successful import of the certificate, select the certificate and edit its properties. Assign the SMTP service only for this certificate. When prompted to replace the existing SMTP certificate with the new one, you should accept.

Note: In order to assign services to the certificate, it is vital that the root certificate of the CA is member of the trusted root certificate authorities of the Exchange computer, and that the certificate revocation list of the CA is reachable.

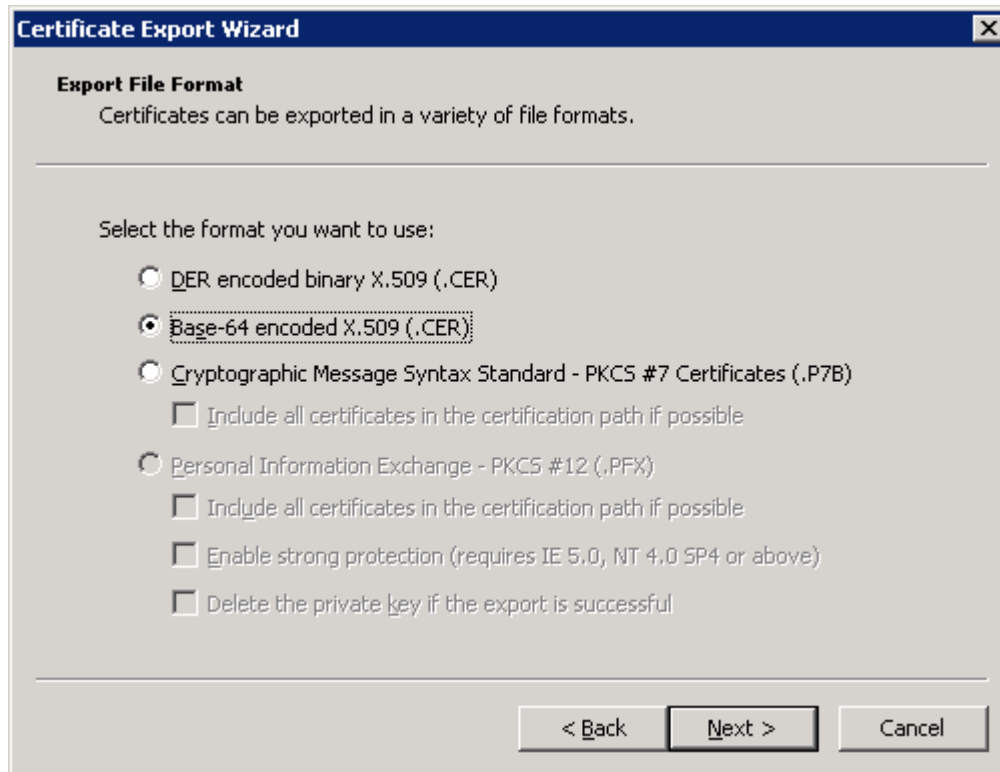
Then add the root certificate to the file ROOTCERTS.PEM in C:\TOPCALL\SHARED on the link computer:

If the certification authority is Windows Certificate Services, this is done as follows:

- Open the MMC snap-in "Certification Authority" and connect it to the certification server.
- Select the top level container below "Certification Authority", and open its property page.
- On the General tab of the property page, click button "View Certificate".
- In the Details panel of the Certificate property page, click button "Copy to File".



- The Certificate Export Wizard opens. Select export file format Base-64 encoded X.509 (.CER) and select an export file name. Proceed and export the file.



- Open the exported file with a text editor and paste the complete text into the file C:\TOPCALL\SHARED\ROOTCERTS.PEM.

Disabling Root Certificate Check:

Alternatively, you can configure TC/LINK-MX7 to bypass the root certificate check, by setting registry value *TCLSM\SMSSkipRootCertCheck* to 1.

2.2.7 Email Header in Body Text

Email header information like date, from, to, and subject can be added to the email body at the very beginning. This feature is available for TC/LINK-SM, TC/LINK-SDD, and TC/LINK-MX7.

For more information about installation, configuration, restrictions, and use refer to TC/LINK-SM / TC/LINK-OC Technical Manual.

2.3 Directory Synchronization

To create shadow users for the Exchange mailboxes, configure one instance of TC/LINK-MX7 for Active Directory synchronization (choose the "Microsoft Active Directory" synchronization from the Links group in KCS setup). This directory synchronization type is described in detail in the LDAP Directory Synchronization Manual.

2.3.1 Upgrading Old Exchange 200X Shadow Users

Upgrading Exchange 200X shadow users (created by TC/LINK-MX 2000/2003) for usage with TC/LINK-MX7 is easily done by running a full dirsync with TC/LINK-MX7. The new link must belong to the same link group as the TC/LINK-MX 2000/2003 instance that did dirsync before. This means that you have to modify the registry value *General\LinkGroup* before running full dirsync.

The first full dirsync changes the inactive Exchange addresses and the event addresses of the users from Exchange native format to SMTP format.

2.3.2 Attributes Exported from 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")
givenName	First name
initials	Initials
sn	Last name
displayName	Display name
description	Description
physicalDeliveryOfficeName	Office
telephoneNumber	Telephone number
mail	e-Mail
wWWHomePage	Web page
streetAddress	Street
postOfficeBox	P.O. Box
l (note: lower case L)	City
st	State/province
postalCode	Zip/Postal Code
co	Country/region
userPrincipalName	User logon name (includes domain)
sAMAccountName	user logon name (pre-Windows 2000)
homePhone	Home
pager	Pager
mobile	Mobile
facsimileTelephoneNumber	Fax
ipPhone	IP Phone
info	Notes
title	Title
department	Department
company	Company
proxyAddresses:XXXX:U	primary address of type XXXX within field E-mail addresses (U like uppercase, as the primary address has an uppercase address type name). Replace XXXX with the address type you need, e.g.: proxyAddresses:SMTP:U
mailNickname	Alias
cn	same as Fullname
legacyExchangeDN	same as Obj-Dist-Name in Exchange 5.5
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 Kofax Communication Server) 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 attribute 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 address type.

2.4 Message Transfer Details

2.4.1 Message / Notification Loops

As mail routing in the internet can be quite complex, loops may occur.

Example 1:

- A message is sent from an invalid originator address (e.g. typing mistake in a mail client setup) to a non-existing recipient.
- The mail server finds out that the recipient does not exist and sends back a non delivery notification to the (invalid!) originator address.
- As this notification is a plain-text message to an invalid address, it may cause another non-delivery notification to be generated, and so on, leading to looping notifications.

Example 2:

- A message is sent from a valid originator to a valid recipient.
- One of the DNS entries on the way to the recipient is wrong; therefore, the message is delivered back to the original mail server.
- The original mail server makes a DNS query, gets the same result as before, attempts delivery again → looping message.

TC/LINK-MX7 loop detection:

- The hop count is checked by means of counting the number of time stamps. If the configured maximum hop count is exceeded, the message is sent to the local postmaster.
- Notifications are detected by an empty "MAIL FROM:<>" address (as recommended by RFC821)
- Notifications for notifications are never sent; they are reported to the local postmaster instead.
- In addition, as some originators are known as misbehaving, you can configure a list of originators that shall never be notified. Simply add them (full address, "localpart@domain") to the multi string registry value TCLSM\NeverNotify!

2.5 Unicode Support

TC/LINK-SM can be integrated with UTF-8 based TCOSS systems without character loss. A single message can thus contain texts in different languages, e.g., Russian, Japanese, Chinese, etc.

With legacy TCOSS code pages (0, 1, or Windows code pages), the product works as before.

Unicode support affects all in-process modules loaded by the link instance. DLLs created by Professional Services (e.g. link exits) do not yet support Unicode. Therefore, the Unicode support feature can be deactivated in link Setup.

Recommendation: If the link instance uses any non-standard modules, deactivate Unicode support by clearing the checkbox in Setup.

For more information about Unicode support in KCS, refer to *Unicode Installation Guide*.

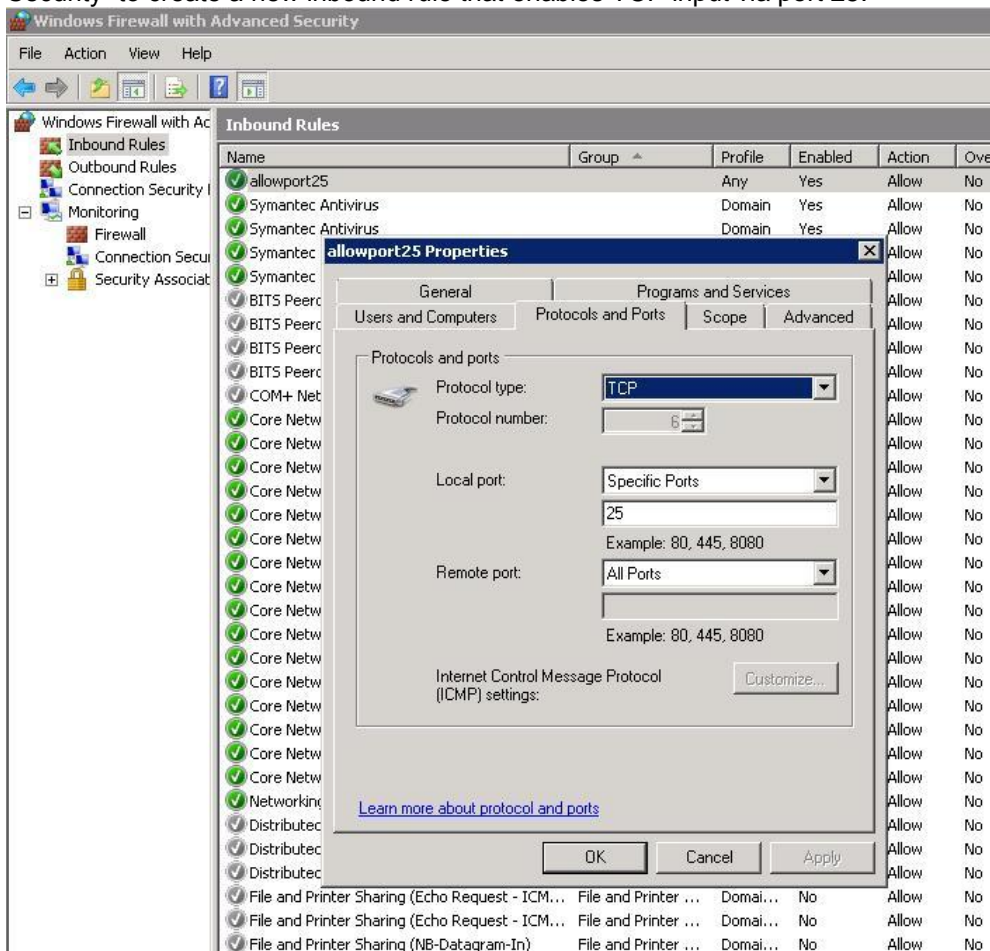
3. INSTALLATION

3.1 Prerequisites

Please consult the TC/LINK Manual for requirements not mentioned in this section (e.g. TCOSS version).
Special TC/LINK-MX7 prerequisites are the following:

- Operating System: TC/LINK-MX7 is only supported on Windows Server 2008 and 2012.
- For identification of TC/LINK-MX7, select a **mail-domain** first. This domain will be used when sending from Exchange to Kofax Communication Server. For a simple installation with only one link instance, you can use the PC name of the link computer. When using several parallel link instances, choose the same mail-domain name for all instances, it can be any name, e.g. tcservices.company.com. This domain name must be different from the mail domain of the Exchange users (but can be a sub domain).
- The TC/LINK-MX7 computer must be reachable by the Exchange server, either via a fixed IP address (configured in the Exchange send connector object or in the Exchange server's HOSTS file), or via DNS.
- The TC/LINK-MX7 computer must be able to reach the Exchange server(s) configured as smart hosts. Add these servers and their IP addresses to the local HOSTS file.
- SMTP requires a TCP/IP connection between the SMTP servers and clients. Set up the TCP/IP stack on the Link Server (Control Panel / Network / TCP/IP) correctly.
- Make sure that the firewall (if installed) enables SMTP connections between the Exchange server(s) and the link computer(s). You can check this with Telnet to "smtp"; if this does not work, contact the local firewall administrator.

Note: Input via port 25 is by default disabled. Use the administrative tool “Windows Firewall with Advanced Security” to create a new inbound rule that enables TCP input via port 25.



- Check that no other SMTP listeners are running on the link computer (e.g. IIS). You can do this via the command `netstat -ab`.
- TC/LINK-MX7 needs a dedicated temporary directory which is not used by any other application (“c:\temp” is NOT a valid choice). It is essential that this directory is not cleared automatically at link start (a folder below “C:\TCOSS\TCLP\TMP” is NOT a valid choice).
By default, this directory is C:\TCOSS\TCLP\WORK\<LinkName> e.g. C:\TCOSS\TCLP\WORK\TCLINKMX7. If you use a dedicated account for the link, give this user account full control on the directory.
- If you use a dedicated account for the link, add this user to the local Administrators group and give him the ‘Log On As A Batch Job’ permission.
- After all that, do not forget to reboot the TC/LINK-MX7 server to make all these settings effective.

3.2 Common Installation Steps

There are some configuration steps needed for all scenarios. They are described here.

3.2.1 Installation Steps on Kofax Communication Server

TC/LINK-MX7 automatically creates most of its dependencies on KCS (services, link queues, guest and “postmaster” users, notification and “onlyimg” covers, default templates). Only one KCS object must exist before the installation: the link user

- Create the Link user (“TCLINK”); this user is automatically present with new TCOSS installations (TC/SP 7.23 or higher).

3.2.2 TC/LINK-MX7 “Easy Installation”

See the TCLINK Manual for all common setup screens; TC/LINK-MX7 requires the following special parameters:

TC/LINK-MX7 - Setup SMTP and Exchange parameters

Enter or modify the parameters now

Fully Qualified Link Computer Name	<input type="text" value="link1.company.com"/>
Fully Qualified Link Domain Name	<input type="text" value="kcs.company.com"/>
Exchange Domain	<input type="text" value="company.com"/>
Service for sending to Exchange	<input type="text" value="MX7"/>
Fully Qualified Exchange Server Name (1)	<input type="text" value="ex1.company.com"/>
Fully Qualified Exchange Server Name (2)	<input type="text"/>
Fully Qualified Exchange Server Name (3)	<input type="text"/>
Fully Qualified Exchange Server Name (4)	<input type="text"/>
Fully Qualified Exchange Server Name (5)	<input type="text"/>

OK Cancel

Fully Qualified Link Computer Name (registry: *TCLSM\SMHostName*): This must be the name of the link server. The link computer and the Exchange servers hosting send connectors must be able to resolve this name to an IP address (either via DNS or via the Hosts file)

Fully Qualified Link Domain Name (registry: *TCLSM\SMLinkDomain*): This is the logical domain that Exchange uses for routing messages to TC/LINK-MX7. It does not have to be in DNS or Hosts file. If you have several

parallel link instances, all of them should use the same link domain name. Setup adds this domain and all sub domains (*) to the list of routable domains (*TCLSM\SMRouteDomains*).

Exchange Domain (registry: *Exchange\ExDomain*): This is the mail domain used in the primary SMTP addresses of the Exchange servers. Setup adds this domain to the list of routable domains (*TCLSM\SMRouteDomains*), as Exchange uses this domain for non-SMTP addresses, like FAX or FAXTC. Note: If the Exchange organization uses multiple mail domains, you have to configure them directly in the registry, by adding all of them to the multi string registry values *Exchange\ExDomain* and *TCLSM\SMRouteDomains*.

Service for Sending to Exchange (registry: *Exchange\OwnService*): The KCS service for sending to Exchange will be created at link start.

Fully Qualified Exchange Server Name (registry: *TCLSM\FixedRecipient*): If you install a new link instance, easy installation configures TC/LINK-MX7 for operation with smart hosts. In this screen, you can enter up to five Exchange servers as smart hosts. Specify the fully qualified domain names. (To configure more than 5 servers, use regedit and edit the value *TCLSM\FixedRecipient*).

3.2.3 TC/LINK-MX7 “Advanced Installation”

It is possible to fine-tune some parameters by running “Advanced Setup”. Please see the TCLINK Manual for all common configuration data.

3.2.3.1 TC/LINK-MX7 Advanced SMTP Parameters Setup

In advanced setup mode, the following mail-specific parameters can be configured:

The screenshot shows a Windows-style dialog box titled "TC/LINK-MX7 - Setup SMTP and Exchange parameters". Inside the dialog, the text "Enter or modify the parameters now" is displayed. Below this, there are several configuration fields:

- Fully Qualified Link Computer Name:** A text box containing "link1.company.com".
- Fully Qualified Link Domain Name:** A text box containing "kcs.company.com".
- Exchange Domain:** A text box containing "company.com".
- Direct Delivery:** A dropdown menu showing "disabled (use smarthost)".
- Service for Sending to Exchange:** A text box containing "MX7".
- Support own Address Types:** A dropdown menu showing "yes".
- IP Masking Option:** A dropdown menu showing "Do not use lists".

At the bottom of the dialog, there are three checkboxes:

- ☒ Integrated with TC/Voice Access
- ☒ Support Time Zones
- ☐ Enable SSL

At the very bottom, there are two buttons: "OK" and "Cancel".

Fully Qualified Link Computer Name (registry: *TCLSM\SMHostName*): This must be the name of the link server. The link computer and the Exchange servers hosting send connectors must be able to resolve this name to an IP address (either via DNS or via the Hosts file)

Fully Qualified Link Domain Name (registry: *TCLSM\SMLinkDomain*): This is the logical domain that Exchange uses for routing messages to TC/LINK-MX7. It does not have to be in DNS or Hosts file. If you have several parallel link instances, all of them should use the same link domain name.

Exchange Domain (registry: *Exchange\ExDomain*): This is the mail domain used in the primary SMTP addresses of the Exchange servers. Setup adds this domain to the list of routable domains (*TCLSM\SMRouteDomains*), as Exchange uses this domain for non-SMTP addresses, like FAX or FAXTC. Note: If the Exchange organization uses multiple mail domains, you have to configure them directly in the registry, by adding all of them to the multi string registry values *Exchange\ExDomain* and *TCLSM\SMRouteDomains*.

Direct Delivery (registry: *TCLSM\UseDNS*): By default, TC/LINK-MX7 uses one or more Exchange servers as smart hosts (can be defined later in setup).

Optionally, you can enable direct delivery instead, and you can select the level of DNS address resolution done by TC/LINK-MX7: "Hosts lookup" only resolves "A" records, and "MX" lookup means fully-featured address resolution.

Service for Sending to Exchange (registry: *Exchange\OwnService*): The KCS service for sending to Exchange will be created at link start.

Support own Address Types (registry: *Exchange\Templates*): Here you configure whether non-SMTP address types (e.g. FAX, FAXTC) shall be supported and whether KCS address templates shall be copied into a folder from which they can be installed. Choose between:

- "yes" (default) to allow KCS specific address types and copy the files needed for installation to a local folder
- "no" to forbid KCS specific address types

IP masking option (registry: *TCLSM\SMIPMasking*): TC/Link-MX7 gives the possibility for access restriction via IP authentication. You can select

- "Positive" (only IP addresses and -ranges entered in the next screen can send to TC/LINK-MX7)
- "Negative" (all IP addresses except the ones given in the next screen can send to TC/LINK-MX7)
- Disable IP authentication (default)

To ensure that only Exchange servers use TC/LINK-MX7, configure a positive IP list that contains only the Exchange servers where send connectors are installed. If other servers want to connect, TC/LINK-MX7 sends an SMTP error message and does not accept the connection.

Integrated with TC/Voice Access (registry: *Exchange\VoiceIntegration*): If integrated with TC/Voice Access integration, TC/LINK-MX7 uses different message classes for voice, fax and email messages. By default, this feature is disabled.

Support Time Zones (registry: *TCS\AutoTimeZone* and others): Here you can enable multiple time zone support as described in the TC/LINK manual. This feature is by default enabled, but depends on matching TCOSS configuration.

Enable SSL (registry: *TCLSM\SMSDDMode* and others): Here you enable or disable SSL support.

3.2.3.2 IP Authentication Setup

If you selected "Positive" or "Negative" IP Masking, an additional screen is displayed (example for "Positive" setting):

Please enter all IP addresses and ranges that should be allowed to access TC/LINK-MX7.

- The content of the list is of the form Format <Address>;<mask>;<domain>
- The <mask> operates similar to the "subnet mask" in the TCP/IP setup
- <mask> defaults to "255.255.255.255"
- <domain> defaults to "" (originator domain is not checked if this setting is empty)
- Do not enter leading zeroes (197.033.143.012 does NOT work!)
- Comments may be entered after the <domain> separated by at least one whitespace! Do not enter any blanks in or between IP addresses. For line comments, <Space> should exist only at the beginning of the line. String after <Space> should not contain any spaces.
- If only domain name is required (without IP address or subnet mask) then start the line with a semi-colon.

Examples (Positive authentication):

Entry	Effect
193.83.166.0;255.255.255.0 ex	only users in the range 193.83.166.xxx can access TC/LINK-MX7; ex is comment
197.33.143.12	allows this single IP address to access TC/LINK-MX7
0.0.0.0;0.0.0.0	any IP address can access TC/LINK-MX7
193.83.166.4;255.255.255.252	Allows only 193.83.166.4 .. 7 to access TC/LINK-MX7
193.0.0.0;255.0.0.0;company.com	Any IP address in 193.x.x.x with originator domain "company.com" can access TC/LINK-MX7

Example (Negative authentication):

Entry	Effect
0.0.0.0;0.0.0.0;spam.com	Does not accept any mail originated by <spam.com>

If you need to have more than ten entries, you can enter them via REGEDT32 (the multistring registry value "TCLSM\SMIPList"). The complete list is limited to 5000 characters in total.

It is also possible to store the list in a text file instead of the registry. First the link checks, if the file "domainlist.txt" exists in the C:\TCOSS\TCLP directory. In this case, the IP list is read from there.

An entry in the domain list file can have either the syntax explained above, or it can simply be the domain name or the complete email address. Leading spaces are not allowed.

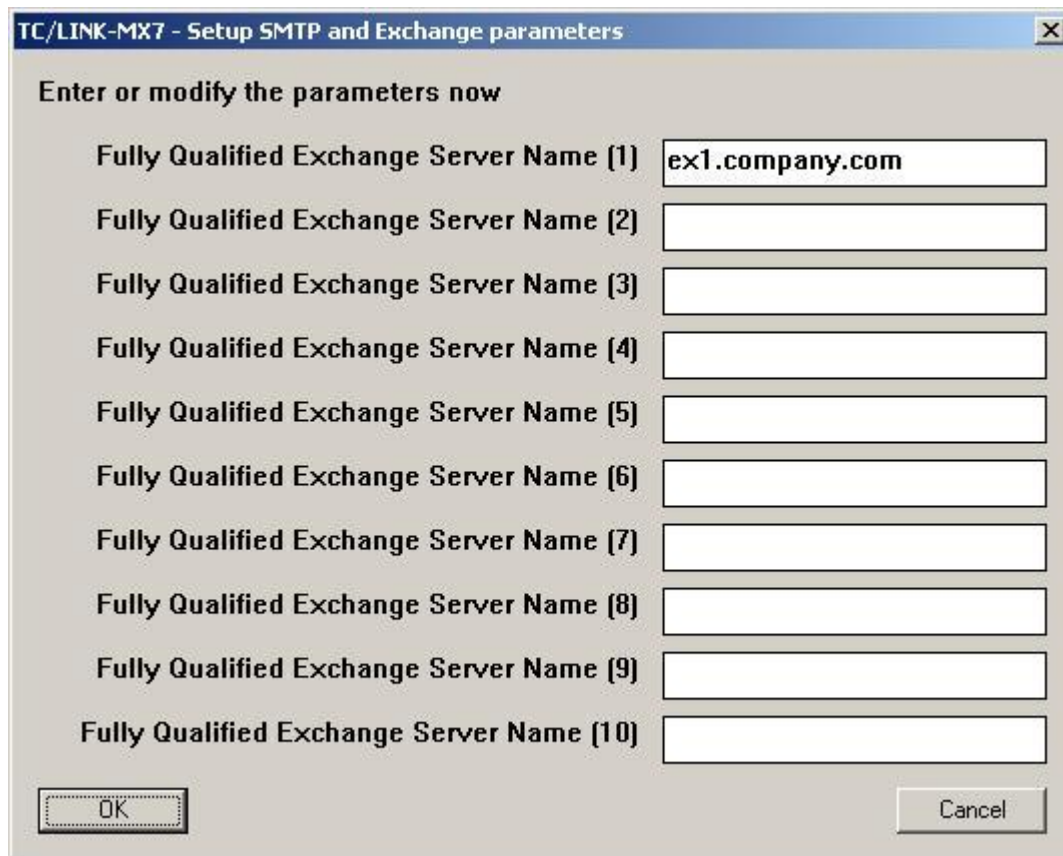
Example for a "domainlist.txt" file:

```
193.83.166.0;255.255.255.0 Kofax
;john@hotmail.com
;coolmail.com
```

If this list does not exist, the old registry key will be used. The functionality of the key "SMIPMasking" has not changed. So you can specify whether this list is to be used as a "good" or "bad" IP list.

3.2.3.3 **TC/LINK-MX7 Smart Hosts**

If configured for smart host delivery, you can enter up to 10 Exchange servers as smart hosts. Specify the fully qualified domain names or the IPv4 address (registry: TCLSM\SMFixedRecipient).



TC/LINK-MX7 - Setup SMTP and Exchange parameters

Enter or modify the parameters now

Fully Qualified Exchange Server Name (1)

Fully Qualified Exchange Server Name (2)

Fully Qualified Exchange Server Name (3)

Fully Qualified Exchange Server Name (4)

Fully Qualified Exchange Server Name (5)

Fully Qualified Exchange Server Name (6)

Fully Qualified Exchange Server Name (7)

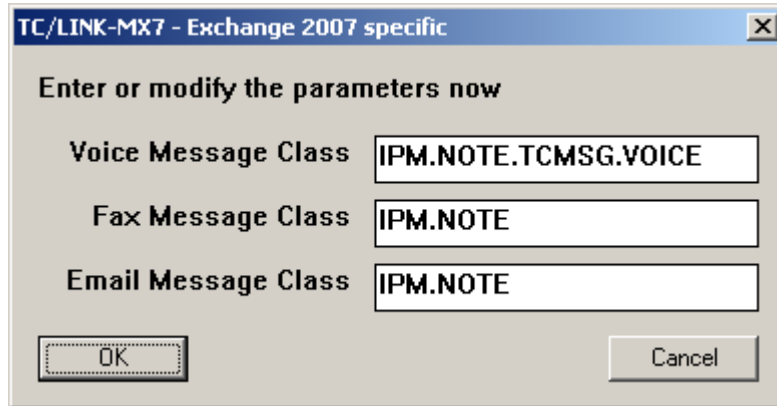
Fully Qualified Exchange Server Name (8)

Fully Qualified Exchange Server Name (9)

Fully Qualified Exchange Server Name (10)

OK Cancel

3.2.3.4 TC/LINK-MX7 Message Classes



TC/LINK-MX7 - Exchange 2007 specific

Enter or modify the parameters now

Voice Message Class IPM.NOTE.TCMSG.VOICE

Fax Message Class IPM.NOTE

Email Message Class IPM.NOTE

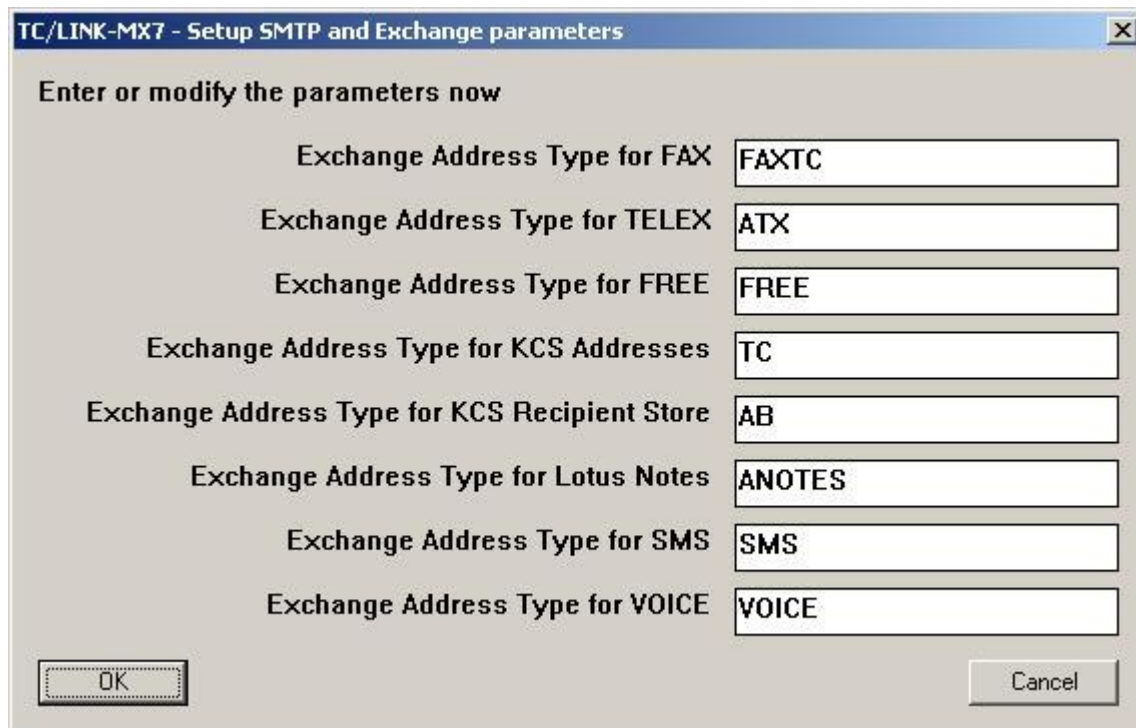
OK Cancel

If TC/Voice Access Support is configured, you can enter the Exchange message classes that shall be used for

- Voice Messages (registry: Exchange\MsgClassVoice)
- Fax Messages (registry: Exchange\MsgClassFax)
- Other Messages (registry: Exchange\MsgClassEmail)

3.2.3.5 TC/LINK-MX7 Address Types

If you selected support of non-SMTP address types, you are prompted to configure the address type names.



TC/LINK-MX7 - Setup SMTP and Exchange parameters

Enter or modify the parameters now

Exchange Address Type for FAX FAXTC

Exchange Address Type for TELEX ATX

Exchange Address Type for FREE FREE

Exchange Address Type for KCS Addresses TC

Exchange Address Type for KCS Recipient Store AB

Exchange Address Type for Lotus Notes ANOTES

Exchange Address Type for SMS SMS

Exchange Address Type for VOICE VOICE

OK Cancel

These configuration values are stored in the following registry values:

- Exchange\TypeFax
- Exchange\TypeTlx
- Exchange\TypeFree
- Exchange\TypeTc
- Exchange\TypeAb
- Exchange\TypeNotes
- Exchange\TypeSms

- Exchange\TypeVoice

3.2.3.6 TCP Trace / Hop Count / Message Limits Setup:

Enable TCP trace (registry: TCLSM\TCPDebug): Yes ... writes all data from / to the internet to the trace file. If switched on and with the general trace level set to 0x0, a plain SMTP/MIME trace will be created.

Maximum hop count (registry: TCLSM\MaxHopCount): Indicates the maximum number of hops before a message originally sent to SMTP is re-routed to the local post master as a problem report. Hops are counted by means of the MIME "Received:" timestamps.

Maximum message size from SMTP in bytes (registry: TCLSM\MaxSizeFromSmt): configures a limit for messages received from SMTP. Note that the limit is only applied if the connected client/host supports the EHLO/SIZE SMTP extension (RFC 1870).

Maximum message size to SMTP in bytes (registry: TCLSM\MaxSizeToSmt): configures a limit for messages sent to SMTP. If a MIME-encoded message is larger, it will be negatively terminated on KCS (error text: "SM: Message too large").

Combine all text blocks to a single block (registry: MIME\SingleTextBlock): If checked, TC/LINK-SM will put all text of the message to SMTP together and position it at the beginning of the message. All attachments follow after the text block.

3.2.4 Final Installation Steps

After performing scenario-specific setup steps, you should do the following:

- Set the trace level to a low value for optimum performance
- Configure access rights if necessary
- For high reliability, configure TC/LINK-MX7 to run as a service (controlled by TCSRVS); be sure to configure automatic start-up for TCSRVS.
- Reboot the TC/LINK-MX7 server to check for automatic start-up.
- Configure send connector(s) on Exchange
- Change permissions for the receive connector(s) on Exchange
- Optionally, install KCS address templates in Active Directory
- If using a non-standard document converter script for HTML, install the script and adjust page margin configuration (see section 2.2.4).

3.2.4.1 Installing the Exchange Send Connector

Setup copies a text file TCLINKMX7-NewSendconnector.txt to the link directory. This file contains the command for installing an Exchange send connector according to the parameters selected during Setup.

Example:

```
New-SendConnector TCLINKMX7 -AddressSpaces:FAX:*,TC:*,FAXTC:*,ATX:*,
FREE:*,ANOTES:*,SMS:*,VOICE:*,AB:*,SMTP:*.kcs.company.com
```

```
-DNSRoutingEnabled:$false -SmartHosts:ex1.company.com
-MaxMessageSize:unlimited -Port:25
```

The table below shows how this command is to be interpreted:

TCLINKMX7	Send connector name, by default same as the link instance name
-AddressSpaces	<p>Defines the address spaces that the send connector supports. Contains the link domain and sub domains and (if configured for non-SMTP address types) the KCS-specific address types and the address type FAX.</p> <p>Note: The full syntax of an address space definition is: <code><ConnectorScope>:<AddressSpaceType>:<AddressSpace>;<AddressSpaceCost></code></p> <p><u>ConnectorScope</u>: This parameter is optional. The only valid value is "Local", - with this value you specify that the connector can only be used by other Hub Transport servers that reside in the same Active Directory site as the source Hub Transport server on which you install the connector. If you omit the ConnectorScope qualifier, the connector can be used by all Hub Transport servers that exist in the whole Exchange organization. Example: <code>-AddressSpaces:Local:FAX:*;Local:TC:*</code></p> <p><u>AddressSpaceType</u>: This is either SMTP (for internet address spaces) or the name of a non-SMTP address type, such as "FAXTC".</p> <p><u>AddressSpace</u>: For SMTP address spaces, the domain name system (DNS) wildcard character (*) as defined in RFC 1035 can be used, such as "*", "*.com.", or "*.contoso.com", for example. For non-SMTP address spaces, wildcard characters (*) and other characters can be used, such as "*contoso.com" or "@contoso", for example.</p> <p><u>AddressSpaceCost</u>: The valid input range for the cost is 1 to 100. A lower cost indicates a better route. This parameter is optional. If you omit the AddressSpaceCost qualifier when you enter an address space by using the complete syntax, a cost of 1 is assumed.</p>
-DNSRoutingEnabled	Is set to False because the link PC is defined as smart host
-SmartHosts	<p>Defines the list of smart hosts that the send connector can use. Setup suggests the local link computer. In a redundant environment with parallel link instances, you can replace it with a comma-separated list of several link computers.</p> <p>To use non-SMTP address spaces like FAXTC, the link servers must be defined as smart hosts.</p>
-MaxMessageSize	If you want to limit the message size for sending from Exchange to KCS, replace "unlimited" with a defined size (examples: 10MB, 10GB).
-Port	Defines the port where TC/LINK-MX7 listens for incoming connections

The New-SendConnector command allows additional parameters, the sample command created by Setup contains only the most vital settings. Experienced Exchange administrators can adjust the command to their needs, but must take care that address spaces and port match the TC/LINK-MX7 configuration values.

To install the send connector, log on to the Exchange server where the connector shall be installed. You must be delegated the Exchange Server Administrator role and must be a member of the Administrators group of the Exchange transport server. Open the Exchange Management Shell and paste the command text into it. Then press Enter. If all works fine, the Exchange Management Shell responds with an output like the following:


```
Machine: vm-pcfs-ex7 | Scope: FSDOM.LOCAL
[PS] C:\Documents and Settings\Administrator\FSDOM>New-SendConnector TCLINKMX7 -
AddressSpaces:FAX:*,TC:*,FAXTC:*,ATX:*,FREE:*,ANOTES:*,SMS:*,VOICE:*,AB:*,SMTP:*.
.kcs.company.com -DNSRoutingEnabled:$false -SmartHosts:link1.company.com -MaxMes
sageSize:unlimited -Port:25

WARNING: column "Enabled" does not fit into the display and was removed.

Identity  AddressSpaces
-----
TCLINKMX7 <SMTP:*.kcs.company.com;1, AB:*;1, VOICE:*;1, SMS:*;1, ANOTES:*;1,...

[PS] C:\Documents and Settings\Administrator\FSDOM>_
```

Once the send connector is installed, you need not reinstall it.

You can use the Exchange Management Console/Exchange Admin Center to:

- Add SMTP address spaces
- Add or remove smart hosts (i.e. link servers)
- Add or remove source servers (i.e. Exchange servers that send via this connector)
- Remove the send connector

Section 3.3 contains several screenshots explaining send connector configuration via the Exchange Management Console/Exchange Admin Center.

You can use the Exchange Management Shell command `set-Sendconnector` to change other properties of the send connector.

3.2.4.2 Exchange Receive Connector Permissions (Anonymous)

Every Exchange Hub Transport Server has a default receive connector for accepting inbound SMTP connections. Normally, this connector allows only other Exchange servers to connect. The easiest way to enable messaging from TC/LINK-MX7 to Exchange is to add the “Anonymous Users” to the permissions group list of the receive connector:

Exchange 2013/Exchange 2016

In the Exchange Admin Center, click mail flow > receive connectors; select the default hub transport and edit it.

[Exchange admin center](#)

rules delivery reports accepted domains email address policies **receive connectors** s

Select server: HUEXSRV1.huexdom.local

+ ✎ 🗑️ ↺ ...

NAME	STATUS	ROLE
Client Frontend HUEXSRV1	Enabled	FrontendTransport
Client Proxy HUEXSRV1	Enabled	HubTransport
Default Frontend HUEXSRV1	Enabled	FrontendTransport
Default HUEXSRV1	Enabled	HubTransport
Outbound Proxy Frontend HUEXSRV1	Enabled	FrontendTransport

On the security tab, select Anonymous users and click Save.

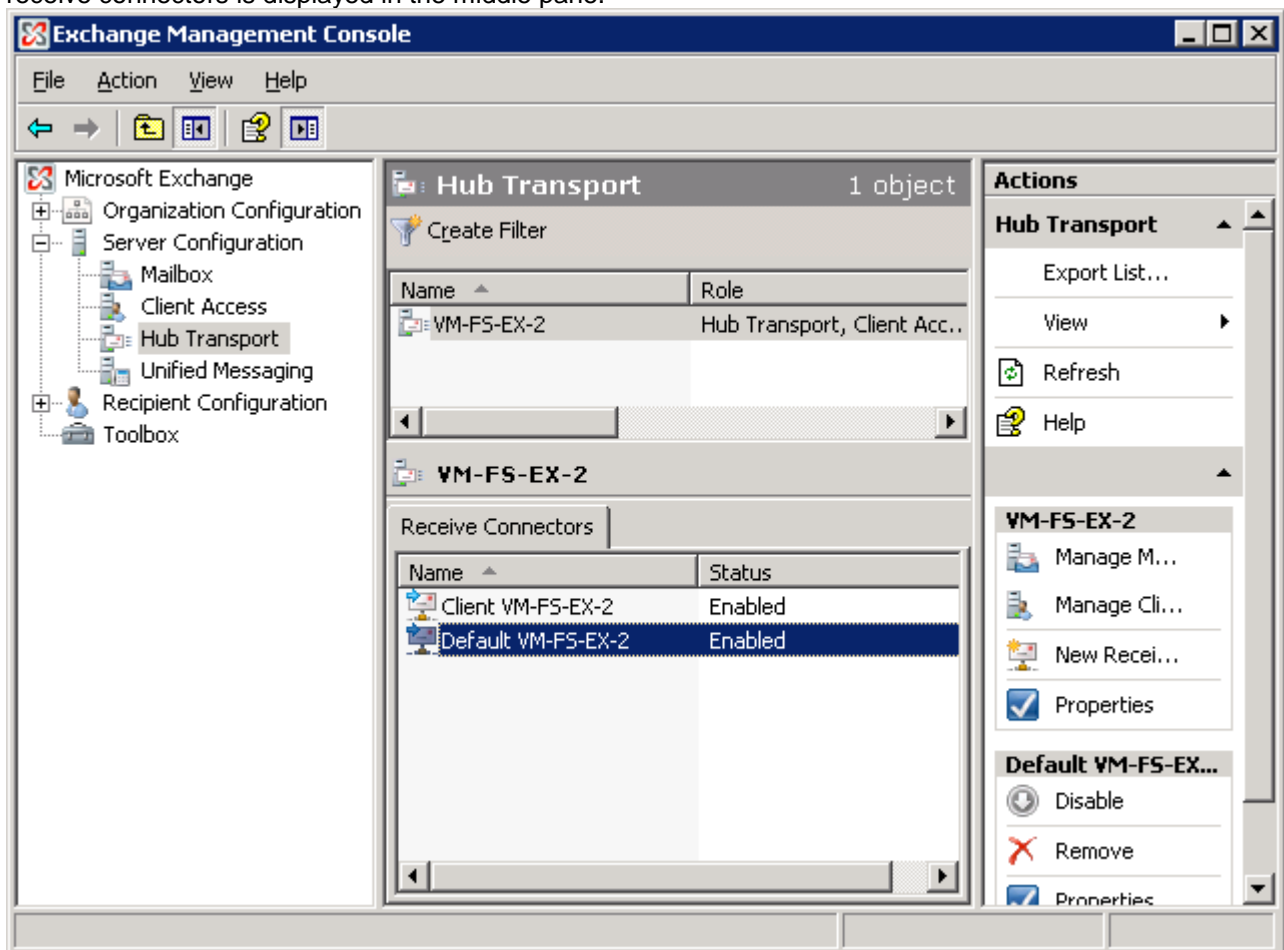
Permission groups:

Specify who is allowed to connect to this receive connector.

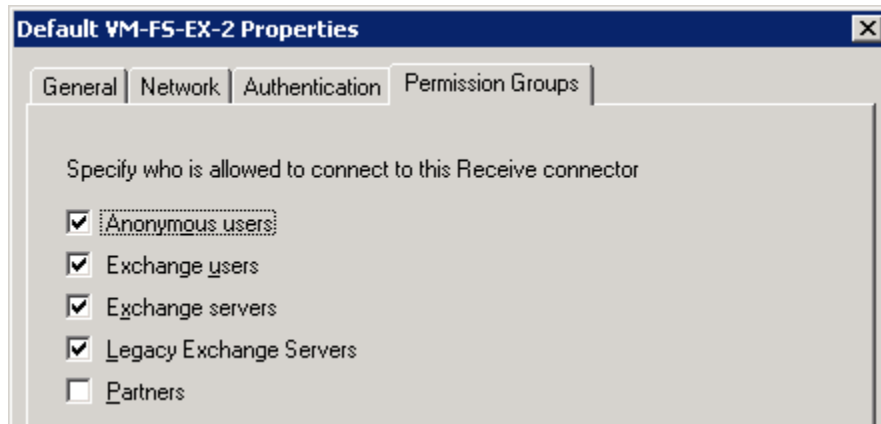
- ☒ Exchange servers
- ☒ Legacy Exchange servers
- ☐ Partners
- ☒ Exchange users
- ☒ Anonymous users

Exchange 2010

In the Exchange Management Console, open the Hub Transport container of the Server Configuration. The list of receive connectors is displayed in the middle pane.



Select the Default receive connector of the Exchange server used as a smart host, and edit the connector properties.



Open the Permissions Groups panel of the property page and mark the first checkbox (Anonymous users). Save the changes.

3.2.4.3 **Exchange Receive Connector Permissions (Partners)**

The permissions settings described above are not very secure, as they let any server send to the Exchange server. A more secure setting, although more complicated to configure, is to define the link server as a partner server. This is described in this section.

Configuring link domain(s) as partner domain(s):

To regard a mail server as a partner server, Exchange must find the originator domain (from the SMTP protocol element MAIL FROM) in the list of secure receive domains. The domains in this list are regarded as partner domains, but they are only allowed to send using SSL, and their SSL certificate must include the domain name.

Use the Exchange Management Shell commandlet Set-TransportConfig to add all possible originator domains to this list.

Note: Here is the first problem! With the default SMTP syntax, the KCS service is part of the domain name, so you need one entry for every possible originator service, e.g. tlx.kcs.company.com, fax.kcs.company.com etc. With the alternative SMTP syntax that uses display names (Exchange\SmtptSyntaxToMail = 2), you need only the link domain in this list.

Set-TransportConfig changes settings for the whole Exchange organization. That is why it must be invoked by a user who has the Exchange Organization Administrator role.

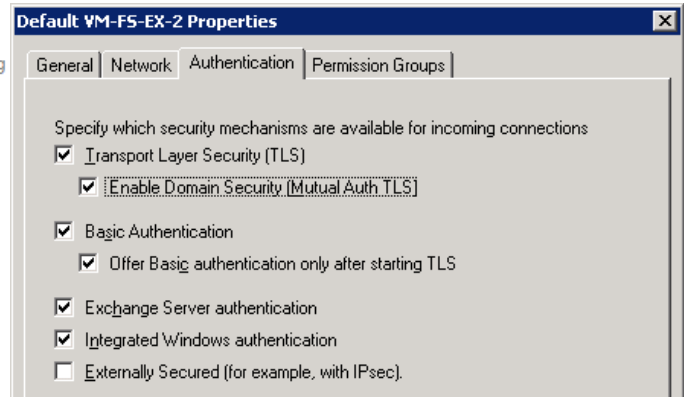
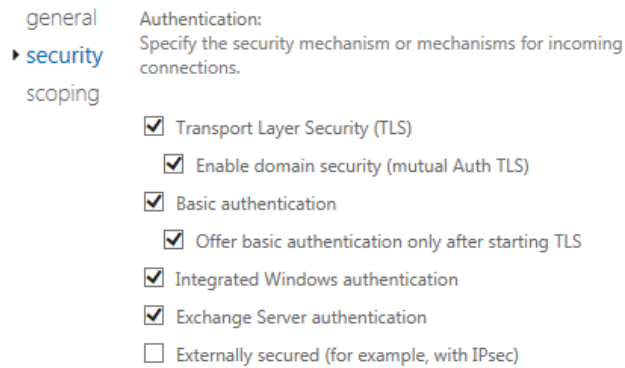
Syntax:

```
Set-TransportConfig -TLSReceiveDomainSecureList:<domainname>[,<domainname>]
```

Example:

```
Set-TransportConfig - TLSReceiveDomainSecureList:kcs.company.com
```

Setting TLS security for the Receive Connector



Then you must enable domain security for the Receive Connector, as shown in the screen shots above.

Configuring Receive Connector permissions

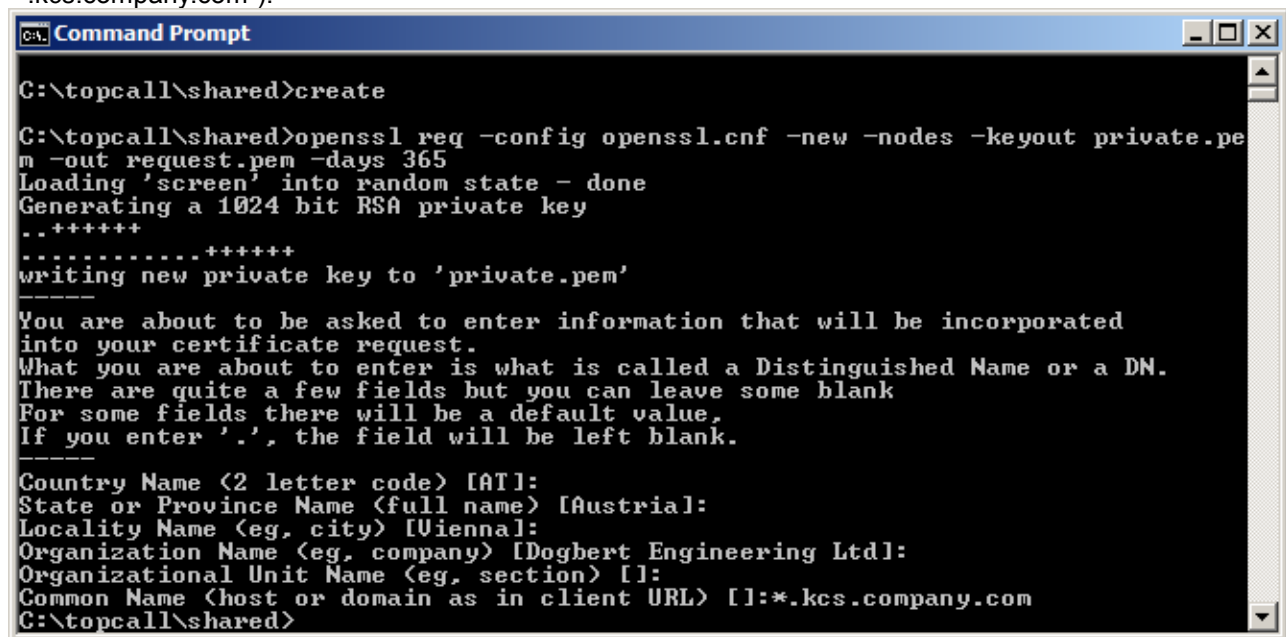
In the permission groups property page of the Receive Connector (see screen shot in previous section), select Partners instead of Anonymous Users.

SSL Certificate for TC/LINK-MX7

The SSL certificate used by TC/LINK-MX7 must refer to the correct domain (or domains). Additionally, the Exchange server must trust the certification authority. This section describes how you can create a certificate using Microsoft Certificate Services.

First create a certificate request, using the CREATE.BAT utility installed in the Shared directory on the link computer.

The Common Name for the certificate request depends on the SMTP syntax used for sending (Exchange\SMTPSyntaxToMail):
 For Exchange\SMTPSyntaxToMail = 2, you enter the link domain name (e.g. "kcs.company.com").
 For Exchange\SMTPSyntaxToMail=1, you enter the link domain name plus sub domains (e.g. "*.kcs.company.com").



CREATE.BAT creates a text file REQUEST.PEM in the Shared directory.

Open the web page of the Microsoft Certificate Server, using an URL like the following:

<http://servername/certsrv/>

Choose "Request a certificate", followed by "Advanced Certificate Request".

Then choose "Submit a certificate request by using a base-64-encoded CMC or PKCS#10 file, or submit a renewal request by using a base-64-encoded PKCS#7 file".

The following dialog is displayed:

The screenshot shows a web browser window titled "Microsoft Certificate Services". The address bar shows "Microsoft Certificate Services -- fsca". The page has a "Home" link in the top right. The main heading is "Submit a Certificate Request or Renewal Request". Below this, a paragraph states: "To submit a saved request to the CA, paste a base-64-encoded CMC or PKCS #10 certificate request or PKCS #7 renewal request generated by an external source (such as a Web server) in the Saved Request box." The "Saved Request:" section contains a text area with a base-64-encoded certificate request. To the left of the text area, the text "Base-64-encoded certificate request (CMC or PKCS #10 or PKCS #7):" is displayed. Below the text area is a "Browse for a file to insert." link. The "Certificate Template:" section has a dropdown menu set to "Web Server". The "Additional Attributes:" section has an "Attributes:" label and an empty text area. At the bottom right of the form is a "Submit >" button. The browser's status bar at the bottom shows "Trusted sites" and "100%".

Microsoft Certificate Services -- fsca [Home](#)

Submit a Certificate Request or Renewal Request

To submit a saved request to the CA, paste a base-64-encoded CMC or PKCS #10 certificate request or PKCS #7 renewal request generated by an external source (such as a Web server) in the Saved Request box.

Saved Request:

Base-64-encoded certificate request (CMC or PKCS #10 or PKCS #7):

```
-----BEGIN CERTIFICATE REQUEST-----
MIIBvTCCASYCAQAwfTElMAkGA1UEBhMCQVQxEDAO
BgNVBACTB1ZpZW5uYTEQMA4GA1UEChMHVG9wY2Fs
cG11bnQxIzAhBgNVBAMUGioudGNzZXJ2aWN1cy50
CSqGSIb3DQEBAQUAA4GNADCBiQKBgQDfadWztBlz
4CotyGptRadj8rUH7a63BWE19xpjVMizgFVMiG7S
-----
```

[Browse for a file to insert.](#)

Certificate Template:

Web Server

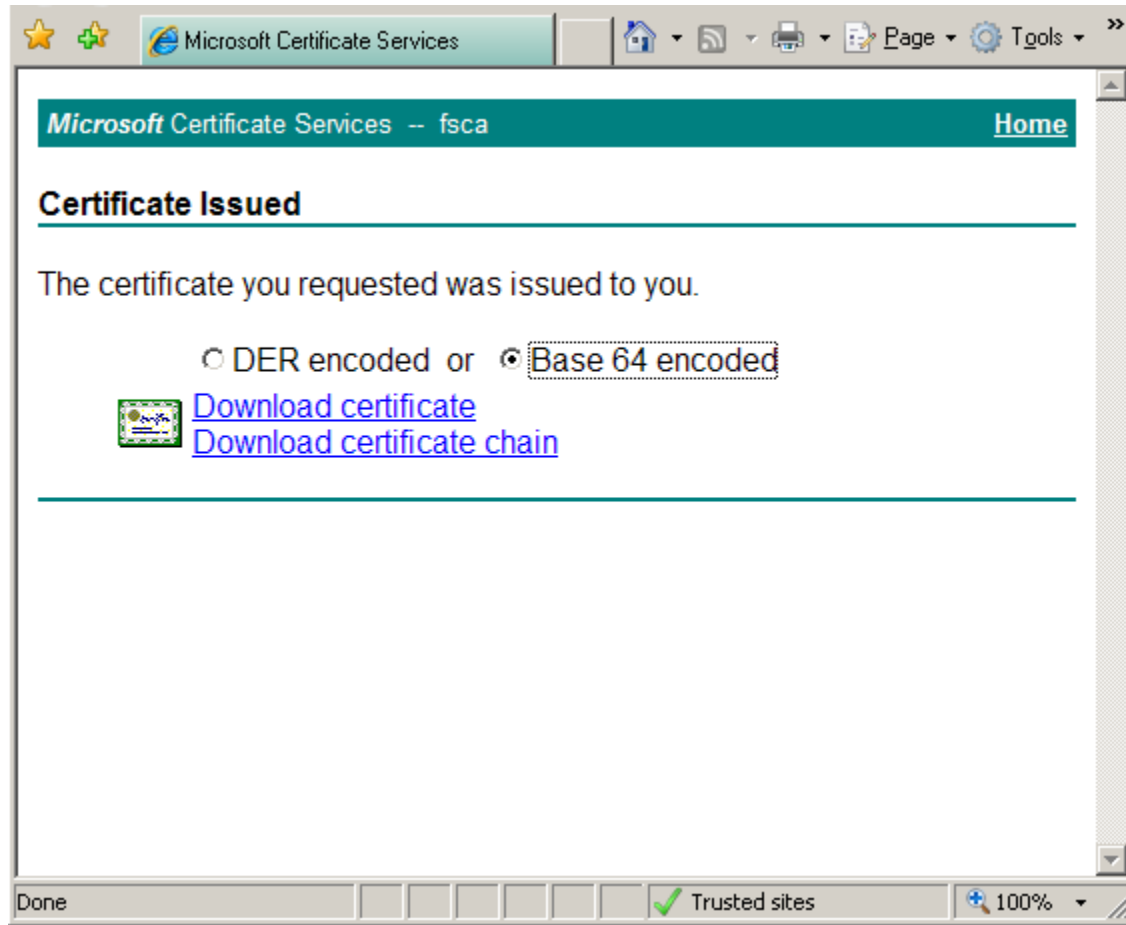
Additional Attributes:

Attributes:

[Submit >](#)

Trusted sites 100%

Open the file REQUEST.PEM and paste its text content into the text field titled "Saved Request:". Choose certificate template "Web Server", and click Submit.



In the Certificate Issued screen, choose format Base 64 encoded and click Download certificate. Save the certificate file as CERTIFICATE.PEM to the Shared directory on the link computer.

Add the root certificate of the Windows Certificate Services authority to file ROOTCERTS.PEM, as described in section 2.2.6.

Using Postmaster as notification originator

With these settings, Exchange checks every SMTP originator against the list of secure receive domains, and against the SSL certificate used by TC/LINK-MX7. This means that notifications coming from address <> (default notification originator used by TC/LINK-MX7) are not allowed. Therefore, you must force TC/LINK-MX7 to use the postmaster of the link domain as originator of notifications. This is done by setting registry value *TCLSMNotifyMailFrom* to 1.

3.2.4.4 Installing KCS Address Templates

If you select support of "own address types" during installation, setup copies the KCS address template files to the folder C:\TCOSS\TCLP\MXTEMPLATES on the link computer. Here you find a batch file InstallTemplates_TCLINKMX7.bat (if your link instance has a different name, TCLINKMX7 will be replaced by the instance name). You can use this batch file to install or remove address templates for a selected language. Only the files in the MXTEMPLATES folder are needed, so you can copy the folder to another 32-bit Windows 2008 computer and install from there.

To install address templates, you must log on using an Exchange Organization Administrator account. This must be a user of the forest where Exchange is installed.

Open a command prompt as an administrator and change directory to the MXTEMPLATES folder or a local copy of it. To install the US-English version of all address templates, simply type:

InstallTemplates_TCLINKMX7 E -L:409:English

The templates can later be uninstalled by adding the postfix `-REMOVE` to the installation command:

InstallTemplates_TCLINKMX7 E -L:409:English -REMOVE

Installing other language versions:

Like in a TC/LINK-MX 2000/2003 installation, every language version of the templates is identified by an identity character (e.g. E for English, G for German, F for French), a 3-digit language code (409 for US English, 407 for German etc.) and a display name.

Setup installs the English and the German version of the KCS address template files.

A so-called French set of template files is also installed, they have the correct file names (ending with character F), but the texts are in fact in English.

You can create other language versions, in the same way as described for TC/LINK-MX 2000/2003.

You do not have to provide the per-message and per-recipient option texts, as these options are not supported any more with TC/LINK-MX7. InstallTemplates expects all template files in the same folder.

When invoking InstallTemplates, you specify the language identity character as the first parameter. The second parameter holds the 3-digit language code and the display name for the language container in Active Directory. (The display name is only used if the container did not exist before.) Both parameters must be specified in the syntax:

`-L:<languagecode>:<displayname>`

For German language, the correct syntax is therefore:

InstallTemplates_TCLINKMX7 G -L:407:German

Installing the address templates from another forest (in an ASP environment):

You can also call the template installation batch job when logged on as another user, even from a different forest. But in this case, you must specify additional parameters: a domain controller from the Exchange forest, the user id and password of an Exchange Organization Administrator.

These additional parameters must be specified after the language parameters, using the following syntax:

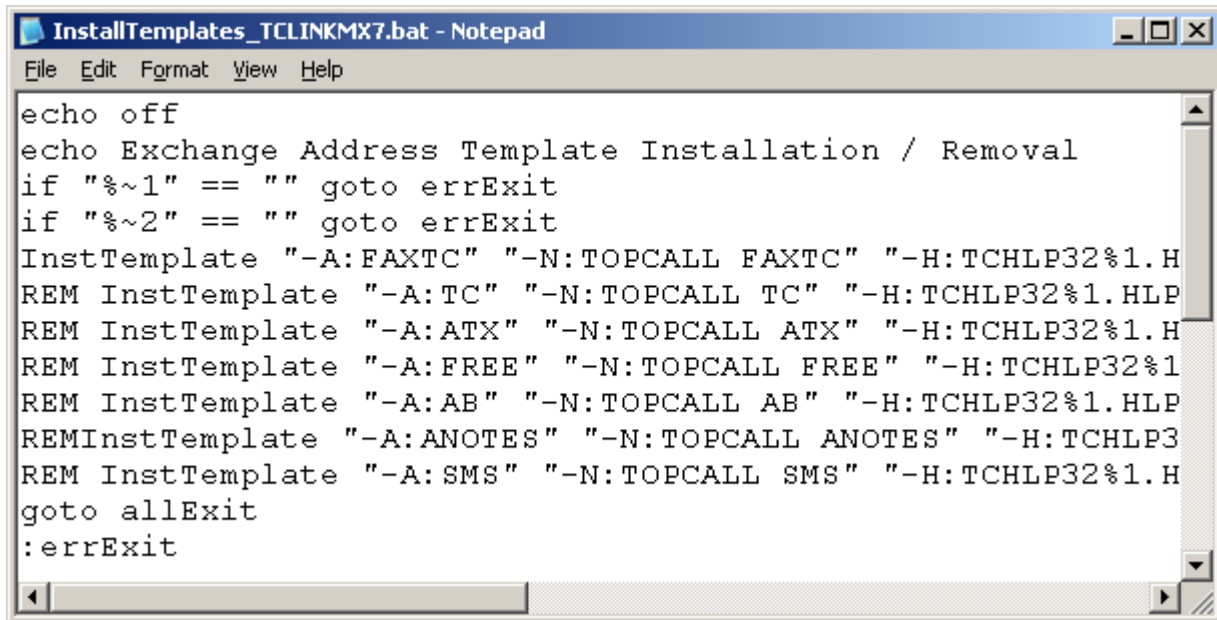
`-D:<domaincontroller> -U:<domain\userid> -P:<password>`

e.g.:

-D:dc1.company.com -U:company\User -P:mypassword

Installing only a subset of the address templates:

To install (or remove) only a subset of the templates, e.g. only the FAXTC template, edit the batch job and type "REM " at the beginning of lines referring to unwanted templates:



```
InstallTemplates_TCLINKMX7.bat - Notepad
File Edit Format View Help
echo off
echo Exchange Address Template Installation / Removal
if "%~1" == "" goto errExit
if "%~2" == "" goto errExit
InstTemplate "-A:FAXTC" "-N:TOPCALL FAXTC" "-H:TCHLP32%1.H
REM InstTemplate "-A:TC" "-N:TOPCALL TC" "-H:TCHLP32%1.HLP
REM InstTemplate "-A:ATX" "-N:TOPCALL ATX" "-H:TCHLP32%1.H
REM InstTemplate "-A:FREE" "-N:TOPCALL FREE" "-H:TCHLP32%1
REM InstTemplate "-A:AB" "-N:TOPCALL AB" "-H:TCHLP32%1.HLP
REMInstTemplate "-A:ANOTES" "-N:TOPCALL ANOTES" "-H:TCHLP3
REM InstTemplate "-A:SMS" "-N:TOPCALL SMS" "-H:TCHLP32%1.H
goto allExit
:errExit
```

In the above print screen, you also see that the display name of the address template is specified in the batch file, using the parameter with prefix -N. You can change the display name in the batch file, if needed.

3.3 Scalability, Fail-Over, Load Balancing

3.3.1 Multiple Exchange Servers

You can use [multiple Exchange servers for sending to TC/LINK-MX7](#):

Configure an Exchange send connector with several source servers. If the source transport servers of the Send Connector are in the local AD site (on other Hub Transport Servers), Exchange does load balancing by round-robinning among these source transport servers. Fault tolerance is accomplished by failing over to the next source transport server, if the current one is unavailable.

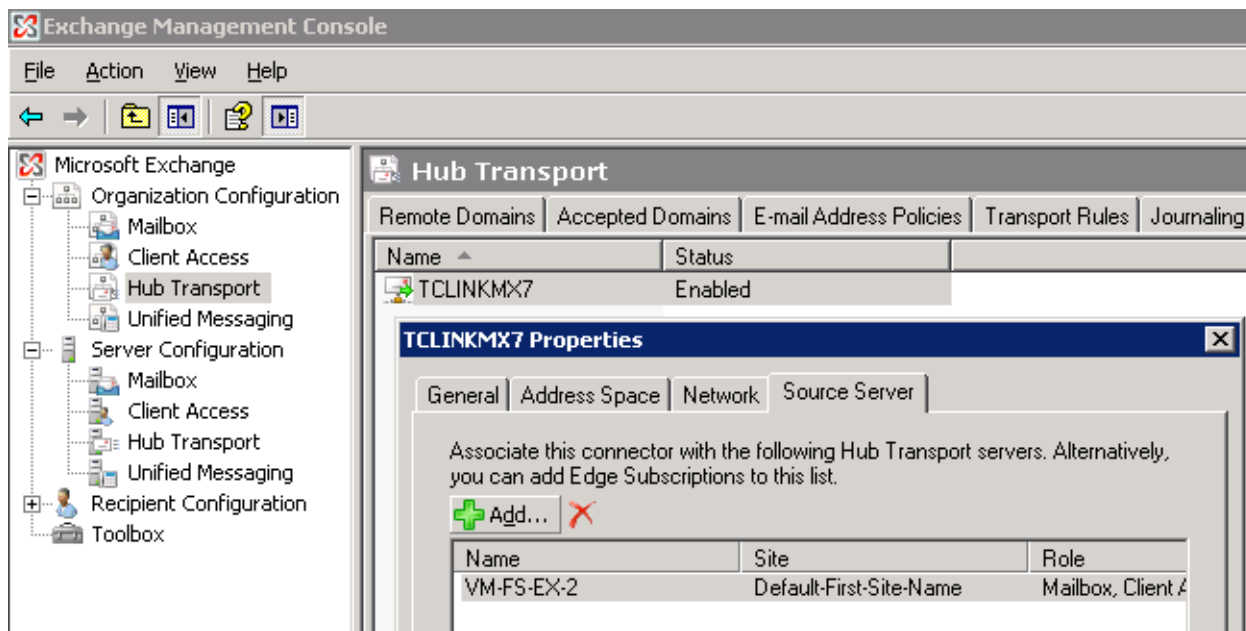
Load balancing is not done if the local transport server is already a source server of the send connector (e.g. sender mailbox is located on a source server of the send connector).

Configuration:

Exchange 2007

Open the Organization Configuration in the Exchange Management Console and select the Hub Transport node. On the right window pane, open the Send Connectors tab.

Select the TCLINKMX7 send connector and open its properties. On the Source Server panel, add another Hub Transport Server to the list of source servers.



Exchange 2013/Exchange 2016

TCLINKMX7

*Address space:

Specify the address space or spaces to which this connector will route mail.

general

delivery

▸ **scoping**

+ -

TYPE	DOMAIN	COST	
SMTP	*.kcs.huexdom.local	1	^
AB	*	1	
VOICE	*	1	
SMS	*	1	v

☐ Scoped send connector

*Source server:

Associate this connector with the following servers containing transport roles. You can also add Edge Subscriptions to this list.

+ -

SERVER	SITE	ROLE	VERSION
HUEXSRV1	huexdom...	Cafe, Mailbo...	Versio...

Alternatively, you can use the Exchange Management Shell commandlet `Set-SendConnector` for this purpose, e.g.:

```
Set-SendConnector TCLINKMX7 -SourceTransportServers VM-FS-EX-1, VM-FS-EX-2
```

You can use multiple Exchange servers for receiving messages from TC/LINK-MX7:

Configure multiple smart hosts in the TC/LINK-MX7 registry value TCLSM\SMFixedRecipient (or via Setup). For every Exchange server specified as smart host, make sure that the default Receive Connector's permission group contains anonymous users.

3.3.2 Multiple Link Servers

For sending from Exchange to TC/LINK-MX7, you can configure the Exchange send connector to use several link servers as smart hosts. If a send connector has multiple smart hosts defined, load balancing and fail over are accomplished using these smart hosts.

Parallel link instances must have the same link domain name (TCLSM\SMLinkDomain).

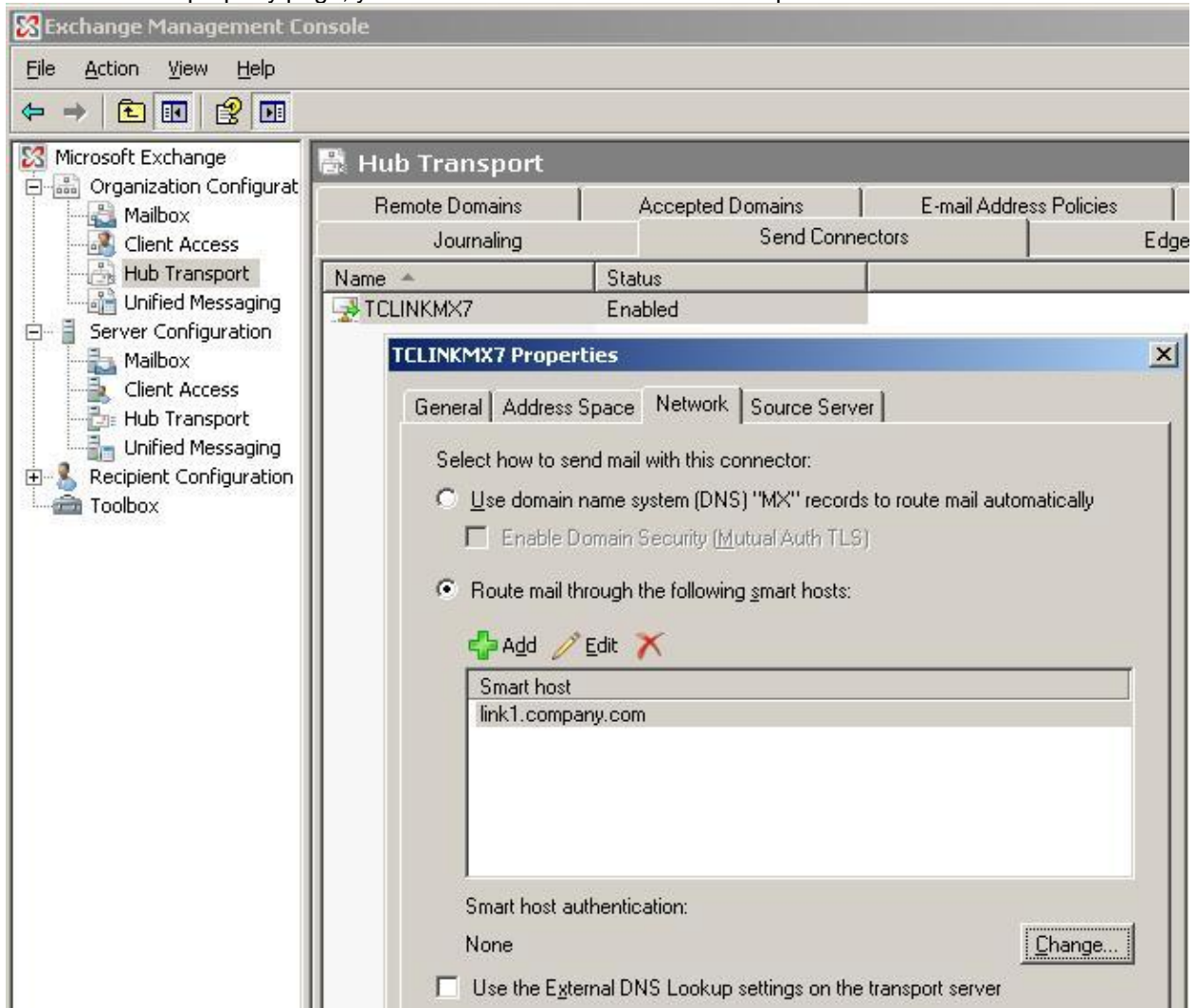
Configuration:

Exchange 2007

Open the Organization Configuration in the Exchange Management Console and select the Hub Transport node. On the right window pane, open the Send Connectors tab.

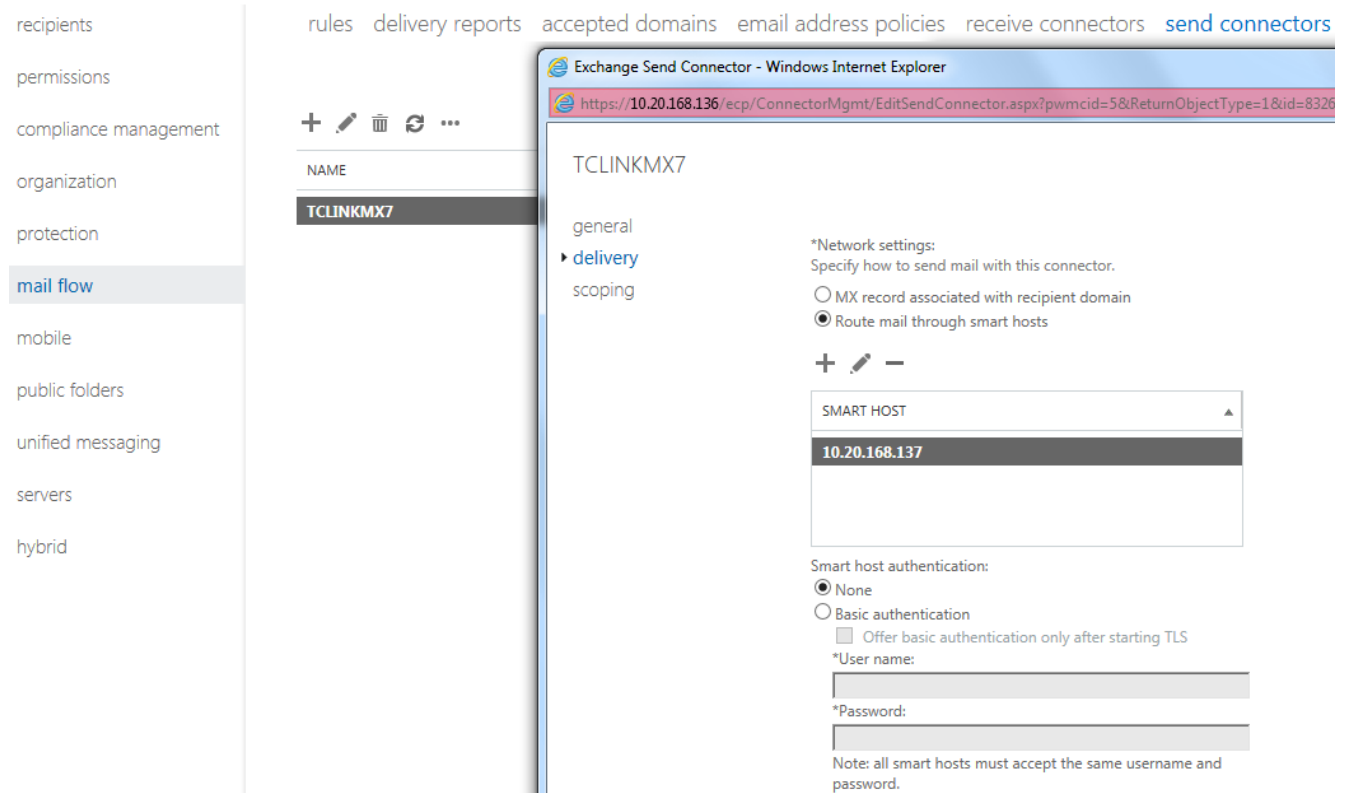
Select the TCLINKMX7 send connector and open its properties.

On the Network property page, you can add other TC/LINK-MX7 computers as smart hosts:



Exchange 2013/Exchange 2016

Exchange admin center



Alternatively, you can add smart hosts via the Exchange Management Shell commandlet `Set-SendConnector`, e.g.:

`Set-SendConnector "TCLINKMX7" -SmartHosts link1.company.com,link2.company.com`

The order of smart hosts in the send connector properties is not important.

For sending from KCS to TC/LINK-MX7, configure several instances of TC/LINK-MX7 with the same set of Exchange server smart hosts, but use a different order of these smart hosts, so that each instance has a different preferred smart host, yet may fail over to another one.

3.3.3 Multiple TC/LINK-MX7 Instances on the Same Workstation – Single IP Address

To allow different configuration parameters for SMTP (e.g. different Exchange organizations), several instances of TC/LINK-MX7 can be run in parallel on the same machine.

For the setup, the following steps are required:

- Edit the Defaults.ini file for every instance as described in the TC/LINK manual.
- Run the setup for every instance of TC/LINK-MX7.
- Enable incoming connections only on one single link (all other must have the "maximum connections" parameter `TCLSM\SMMMaxConn` set to zero).

Note: It is theoretically possible to enable multiple listeners by configuring different TCP/IP port numbers (every TC/LINK-MX7 instance uses a different port number). This port number must match the port number configured for the Exchange send connector.

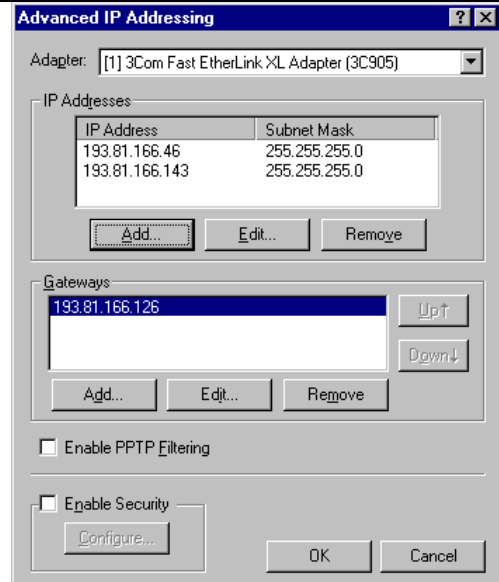
3.3.4 Multiple TC/LINK-MX7 Instances on the Same Workstation – Multiple IP Addresses

If multiple TC/LINK-MX7 instances are installed on a PC with multiple LAN adapters, or multiple IP addresses, you can bind each instance of TC/LINK-MX7 to a unique IP address directly. Therefore, one receiving link can be installed per available IP address of the server.

To do this, fill the registry key TCLSM\OwnIPAddress of every installed instance with the desired IP address.

3.3.4.1 Configuration for Multiple IP Addresses on Single LAN Adapter

In the “Control Panel/Network/Protocols/TCP/IP Protocol/Properties/IP Address/Advanced” screen, there is a possibility to configure multiple IP addresses for a single LAN adapter:



Example:
Two TC/LINK-MX7 instances shall be installed on the same computer.

Resulting “OwnIPAddress” registry keys:

```
TCLSM\OwnIPAddress=193.81.166.46
TCLSM\OwnIPAddress=193.81.166.143
```

3.3.4.2 Configuration for Multiple LAN Adapters

In the same control panel screen, you can configure different IP addresses for different network adapters (use the “Adapter” drop-down list).

For the TC/LINK-MX7 instance enter the desired IP address to the registry key TCLSM\OwnIPAddress.

3.3.4.3 Notes on “Multi-Homed” Operation

- Make sure that the used IP addresses are really available on the connected network! Any IP address conflicts will prevent TC/LINK-MX7 from proper operation. Any problems will be reported in the event log and the TC/LINK trace file.
- Do not enter leading zeros or blanks for the IP addresses.
- Note that the assigned IP address is used for all mail activity of the corresponding TC/LINK-MX7 (DNS queries, SMTP traffic inbound and outbound, “open line” feature). It does not have any influence on the TCTI connection to the Kofax Communication Server.
- Missing, empty or invalid “OwnIPAddress” entries result in behavior described in 3.3.3 “Multiple TC/LINK-MX7 Instances on the Same Workstation – Single IP Address”.

3.3.5 ASP Environments

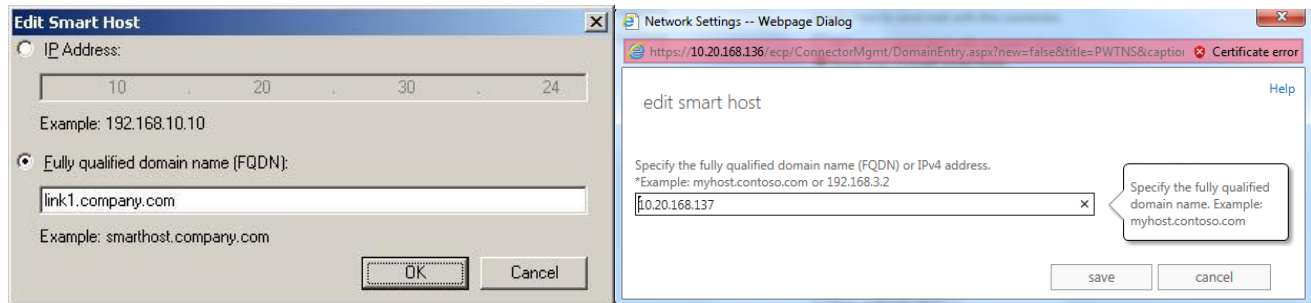
You can install multiple instances of TC/LINK-MX7 (connecting to different Exchange organizations) on the same computer, provided that

- they use different logical IP addresses or different ports for receiving

- you specify the correct credentials and target domain controller for dirsync

For non-standard ports, modify the installation command before installing the send connector: change “-Port:25” to the number corresponding registry value TCLSM\Port2TC.

To use a specific IP address, edit the smart host definition of the send connector via the Exchange Management Console; change from FQDN to IP address and specify the correct IP address from registry value TCLSM\OwnIpAddress.



3.4 Special Features

TC/LINK-MX7 is a variant of TC/LINK-SM, and thus supports a lot of special features implemented in TC/LINK-SM, e.g. different character sets, configurable MIME types for attachments, SMTP protocol options. For a detailed list and description of these features, please consult the TC/LINK-SM manual, section **Special Features**.

3.5 Installation Hints

3.5.1 Templates

For sending to Exchange from TCfW or another TC/LINK, it is recommended to use text-only templates. Any graphical part such as a company logo or a signature will be converted to the graphical format of the TC/LINK-MX7 queue for this send order.

3.5.2 Exchange Message Size Limits

TC/LINK-MX7 Setup installs a sample text <LinkName>-NewSendconnector.txt in the link directory; this file contains the command text for installing the Exchange send connector via the Exchange Command Shell. If you use this text without modifications, the send connector has no message size limits.

You can define a size limit by changing the parameter MaxMessageSize from “unlimited” to e.g. “100MB”. If you remove the parameter, Exchange uses the default maximum message size (10 MB). This size limit affects messages sent from Exchange to Kofax Communication Server.

3.5.3 Upgrade from TC/LINK-MX 2000/2003 to TC/LINK-MX7

This section assumes that the customer already had TC/LINK-MX 2000/2003 installed.

TC/LINK-MX 2000/2003 supports a mixed environment, provided that the connector mailbox is on an Exchange server version 2000 or 2003. As soon as the last Exchange 2000 or 2003 connector server has been replaced by an Exchange 2007 or later server, TC/LINK-MX 2000/2003 cannot be used and must be replaced by one or more TC/LINK-MX7 instances.

Recommendations for TC/LINK-MX7 installation and configuration:

- Accept the default queue names and service names suggested by Setup. Do not reuse the TC/LINK-MX 2000/2003 queues and the existing Exchange service.

- If TC/LINK-MX 2000/2003 was configured for SMTP addressing, configure the link domain name (TCLSM\SMLinkDomain) for the new TC/LINK-MX7 instance equal to the SMTP domain used by TC/LINK-MX 2000/2003 (Exchange\SmtpDomain).
- If TC/LINK-MX 2000/2003 used the KCS specific address types, like FAXTC, or the fax addresses of Outlook contacts, select "Support own Address Types" = "yes", and configure the same address type names as TC/LINK-MX 2000/2003 used.

Recommendations for dirsync settings:

- Set the link group name (General\LinkGroup) equal to the link group used by TC/LINK-MX 2000/2003.
- During the migration/upgrade, it is recommended to set the registry values Dirsync\FulldirsyncDeletes to "0" for both TC/LINK-MX 2000/2003 and TC/LINK-MX7. Without this change, full dirsync done by MX7 will delete again the users synchronized by MX or vice versa.
- TC/LINK-MX7 dirsync uses different templates: MX7USER for users, MX7RECIP for contacts. Add any customizations done for TC/LINK-MX 2000/2003 to these templates, but do not delete the SMTP addresses.
- Add any customizations done for TC/LINK-MX 2000/2003 dirsync to the TC/LINK-MX7 registry, but do not delete the list value "proxyAddresses:SMTP:U".
- Do a full dirsync to change the shadow user profiles. This assures that events are routed to TC/LINK-MX7 and that originator mapping works. Existing message folder contents and voice greetings of the user are preserved.

Other recommendations:

- Remove any references to the old Exchange service from the KCS configuration (e.g. event addresses of other users, rr99)
- Then delete the Exchange service and the KCS queues used by TC/LINK-MX 2000/2003.

3.5.4 Integration with TC/VoiceAccess

Installation

TC/LINK-MX7 Setup creates a file TCARCHEX-TCLINKMX7.INI from where TC/VoiceAccess setup can read common parameters (message class and address type names).

In an Exchange organization without servers of version 2003 or below, the mailbox of the TCECP process user will be on an Exchange server. Setup asks for the server name, the user name and the Exchange Site DN. The Exchange Site DN can be determined via the tool TCADUTIL (installed on the link server running dirsync). Log on to the link server and open a command prompt in folder C:\TCOSS\TCLP. Run tcadutil, specifying the name of the TCECP process user as a parameter. Redirect output to a file.

Example:

TCECP runs under the credentials of user TCSPIMX, who is under the Recipients container.
Run: "tcadutil TCSPIMX >tcspimx.txt"

Open the output file (tcspimx.txt) and locate the line that holds the legacyExchangeDN:

```
legacyExchangeDN,"/o=FSX1/ou=Exchange Administrative Group  
(FYDIBOHF23SPDLT)/cn=Recipients/cn=TCSPIMX",true,true,true,true
```

The first part of this legacyExchangeDN value (starting with "/o" and ending before "/cn") is the Exchange Site DN that must be entered in Setup. In this example, the Site DN is:

/o=FSX1/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)

The following screenshot shows how to enter the setup parameters:

TC/VoiceAccess - Exchange SPI

Enter or modify the parameters below

Mailbox: TCSPIMX

Exchange Server: VM-FS-EX-2

Exchange Version: 2000 or above

Exchange Site DN: /o=FSX1/ou=Exchange Admi

Full path of TCARCHEX.INI: c:\tcarchex-tclinkmx7.ini

Directory for temporary files: C:\TEMP

Windows UserId for TCECP [admin rights on MX]: TCSPIMX

Windows Domain for TCECP: FSDOM

Password (default or '*' leaves existing setting): *****

OK Cancel

After Setup, change the following registry values below HKLM\Software\TOPCALL\TCECP:

Registry Key	Value	Description
SPI\Exchange	MX7	Service used by TC/LINK-MX7
SPI\Exchange\ExAddrTypeEX	SMTP	Exchange address type that matches this service
SPI\Exchange\TCQueue	TCLMX7Q	Base queue name used by TC/LINK-MX7

Note:

For full support of the SMTP addressing syntax in TC/VoiceAccess, you need a module update of TCSPIMX.DLL (version 1.04.00).

With this version, the following new registry values allow configuration of SMTP addressing

Registry Key	Type	Default	Description
SPI\Exchange\SMTPDomain	SZ	""	For correct translation of SMTP addresses in the user's inbox. Set this value to the TC/LINK-MX7 domain (TCLSM\SMLinkDomain).
SPI\Exchange\SMTPDomainOut	SZ	""	This affects new messages that TC/VoiceAccess creates. If this value is empty, the KCS specific address syntax is used, e.g. FAXTC for Fax. If the SMTP syntax shall be used, set this value to the TC/LINK-MX7 domain (TCLSM\SMLinkDomain or Exchange\SmtpDomainIn)

3.5.5 The Role of the Postmaster

All error messages (e.g. hop count exceeded, conversion from/to SMTP failed) and messages which cannot be routed correctly will go to the postmaster's in box. Also administrative messages from postmasters of other mail domains or users will often be sent to the postmaster.

- Make sure to check this mailbox regularly.
- Make sure that the postmaster has no events set in his user profile. Otherwise, there is the chance of message looping!

3.6 Troubleshooting

The TC/LINK-SM manual contains a Troubleshooting section explaining Windows tools that can also be used for diagnosing TC/LINK-MX7 messaging problems.

4. OPERATION

4.1 Viewing and Changing TC/LINK-MX7 Setup

The current configuration of TC/LINK-MX7 can easily be viewed and modified by running its Setup program again. Some advanced settings are only available via registry editor; see 7.1 "Registry Keys Used by TC/LINK-MX7" for a complete listing!

Please consult the TC/LINK Manual for general configuration items.

4.2 SMTP Security Considerations

To increase security, you can

- Install a virus checker on the Exchange servers (a product integrated with Exchange)
- Disable macro execution in the applications installed on the link server
- Restrict access to KCS services requiring document conversion
- Configure a "Good IP" list allowing only Exchange servers to send via TC/LINK-MX7

For further security hints, see the TC/LINK-SM manual.

4.3 Monitoring TC/LINK-MX7 Operation

There are currently four possibilities to watch TC/LINK-MX7 operation:

- On the local machine only: Configure the "Interact with desktop" right for TCSRVR (Control Panel / Services / TCSRVR / Properties). Then you will see the console window of TC/LINK-MX7 on the desktop.
- On local and remote machine: The KCS monitor (TCMON32) can be used to view operation of TC/LINK-MX7. It gives also an indication of messages sent/received and notifications sent/received.
- On local and remote machine: The Windows performance monitor can be used to monitor TC/LINK-MX7 operation, if performance counters are enabled for it.
- On remote machine: If you install TC/SNMP on the TC/LINK-MX7 workstation, you can watch operation of TC/LINK-MX7 via SNMP tools like HP Openview. See the TC/SNMP documentation for details on SNMP support!

As all of them are implemented in the general part of the Link, see the general TC/LINK Manual for details.

4.4 Summary of Error Conditions and Retries Behavior

4.4.1 KCS to Exchange

There are certain error conditions when a message cannot be delivered to SMTP or a notification is received indication any delivery problem. Some of them are temporary – therefore, retries should be done. Some are definitely permanent – retries do not make sense.

Error Condition	Action	TCfW Outbox "Response" field (TS_LAST_MDA_NOTE)
Message coding to MIME failed	No retries; "inactive – problems"	"Message coding error"
Tempfile write error	TCOSS Retries (BREAK2)	"Disk Write Error"
Error connecting to mailserver	TCOSS Retries (BREAK2)	Winsock error code (e.g. "10061" ... connection refused)
Any temporary SMTP error (code 4xx)	TCOSS Retries (BREAK2)	SMTP error message (e.g. "access denied")
Any fatal SMTP error (code 5xx)	No retries; "inactive-problems"	SMTP error message (e.g. "unknown recipient")
Looping message detected	No retries; forward to postmaster	"Hop count exceeded"
Looping notification detected	No retries; forward to postmaster	"Notification loop detected"
DNS resolution failed (temporary)	TCOSS Retries (BREAK2)	DNS error message (e.g. "Nameserver failed")
DNS resolution failed (fatal)	No retries; "inactive-problems"	DNS error message (e.g. "nonexisting domain")
a message is too large for transmission	No retries; "inactive – problems"	"message too large"
RFC1894 delivery status notification indicates a temporary failure	TCOSS Retries (BREAK2)	From notification (e.g. "connection failed")
RFC1894 delivery status notification indicates a fatal failure	No retries; "inactive – problems"	From notification (e.g. "host unknown")

In addition, the general part of the Link fills the "Error" field with a more general error indication ("LV ... message cannot be delivered to mail recipient"). This string comes from the language file, while all "Response" messages either come from a distant host (language unknown), or are hard coded English messages.

4.4.2 Exchange to KCS

For any errors during message transmission, the sending host is responsible for initiating retries.

If any error occurs in the special modules after the message is acknowledged by TC/LINK-MX7 (... the "250 OK" after transmission), then the MIME source text of the message is forwarded to the local postmaster as a "SMTP problem report".

5. PERFORMANCE

5.1 Test Environment

Unfortunately, no physical Exchange server was available for performance tests. Tests were done with a VMware-based Exchange server which was also a domain controller. On the other hand, the Exchange server was used only for the performance tests and had no other tasks to do.

Performance data on a real life system are supposed to be better than those presented here.

Exchange 2007 Server:

Running on VMware 64 bit virtual hardware.
4GB RAM, 2CPU, 1.0 GHz reserved for this virtual machine.
1 GBpS network connection

MS Windows Server 2003 R2 SP2

Link Server, hosting TCOSS as well:

1.60 GHz, 3.25 GB RAM
1 GBpS network connection

MS Windows Server 2003 R2 SP2

TCOSS Version 7.80.04

Model 155/21x

10 C0 Channels

Max. 900000 send entries, 10000 user entries, 7000 address book entries

TC/LINK-MX7 Version 2.27.01, with 10 parallel receive connections, poll cycle 10 seconds, trace level 2.

SSL disabled, notifications disabled.

Interact with desktop enabled.

Winword started automatically at document converter startup.

5.2 Sending

Tests were done sending emails from KCS to one Exchange server. Each test run consisted of 100 send orders that were already waiting in the link queue.

Each test run was done 5 times and an average was taken.

Test description	Time needed for 100 messages	Messages per hour
Plain text 1 page (4KB)	57.61 sec	6249.0
Word attachment 1 page (64KB)	67.33 sec	5346.9
Word attachment 70 page (1.90MB)	1294.20 sec	278.1

5.3 Receiving

Tests were done sending emails from one Exchange server to the link computer.

Test emails were posted via Exchange command shell scripts while TCLINK was not running.

TCLINK was started when all messages were waiting in the Exchange SMTP queue. Then the Exchange queue was set to "retry".

Thus, the figures below reflect only messaging between Exchange and KCS, and do not take mail client actions into account.

Each send test consisted of 100 messages, and was done 5 times.

5.3.1 Receiving without document conversion

Test description	Time needed for 100 messages	Messages per hour
Plain text 1 page (4KB)	8.81 sec	40845.0
Word attachment 1 page (64KB)	25.87 sec	13915.3
Word attachment 70 page (1.90MB)	584.56 sec	615.8

5.3.2 Receiving with Document Conversion

Test description	Time needed for 100 messages	Messages per hour
Plain text 1 page (4KB) + HTML alternative	136.79 sec	2631.7
Word attachment 1 page (64KB)	111.39 sec	3231.7
Word attachment 70 page (1.90MB)	1373.91 sec	262.0

5.4 Conclusions to Speed Up TC/LINK-MX7

5.4.1 General Information About TC/LINK-MX7

The general link software can only process messages sequentially – one after another. Therefore, if one message takes longer the others have to wait. Thus, installing more than 1 link instance can speed up the performance, especially for sending to Exchange.

One of the key factors in working with TC/LINK-MX7 is the connection to the Exchange server. The time that TC/LINK-MX7 needs to establish a connection to the server depends on network conditions and current load on the Exchange server. It is therefore not really predictable.

When receiving messages with document conversion, document conversion is the bottleneck. Installing 2 link instances on the same PC both using document conversion does not speed up the performance. To avoid this: install several link instances on different PCs (1 link per PC).

Bottleneck during sending:

The main bottleneck is the sequential message transfer between link computer and Exchange server. Connecting to the Exchange server can also be a bottleneck.

Bottleneck during receiving:

SMTP message transfer is done in parallel, but then the received messages are processed sequentially, the main bottleneck is document conversion

Disabling interact with desktop also speeds up the performance.

5.4.2 How to Speed Up TC/LINK-MX7

- **Sending (KCS to Exchange)**

Get the highest possible network bandwidth between link PC and Exchange hub server
Install several links on same PC or different PCs

- **Receiving (Exchange to KCS)**

Configure several parallel receive connections

Without document conversion

Install 2 Links on same PC or 1 Link per PC

With document conversion

Install 1 Link per PC

6. RESTRICTIONS

See also the TC/LINK-SM manual, section **Restrictions**.

6.1 Known Problems

For general problems of TC/LINK-SM related link types, see the TC/LINK-SM manual, section **Known Problems**.

6.1.1 Mixed Recipient Formats in Message from Exchange

If a message from Exchange contains a recipient with non-SMTP address type and an SMTP recipient, Exchange delivers both recipients separately. As a result, TC/LINK-MX7 receives 2 messages, each with one active recipient.

In the KCS send order, the address of the inactive recipient has service MX7 and an address in the format used by Exchange.

E.g.:

Recipient 1: FS@tcfi.kcs.company.com

Recipient 2:[FAXTC:12345]

Resulting TCOSS send order 1

To (active) TCFI,FS

To (inactive) MX7,IMCEA-FAXTC+2012345+23+23FAX+23+23@company.com

Resulting TCOSS send order 2

To (active) FAX,12345

To (inactive) MX7,FS@tcfi.kcs.company.com

This does not happen if the same addressing syntax (SMTP or non-SMTP) is used for all recipients.

6.1.2 Empty Message Body Handling

If the plain text version of an Exchange message body is empty (i.e. whitespace only), the TCI message body is discarded, to prevent unnecessary page breaks in outgoing faxes. This implies that the ONLYIMG template is used for such a message.

Tip: You can disable removal of empty body using the registry value RemoveEmptyBody. See *Registry Keys Used by TC/LINK-MX7*.

6.1.3 Link Exit – Possible Compatibility Problems

Although TC/LINK-MX7 supports link exits in general, link exits that were developed especially for TC/LINK-MX 2000/2003 may need to be adapted before usage with TC/LINK-MX7. Two possible reasons for compatibility problems are:

- Extended MAPI is not available on the link computer, as TC/LINK-MX7 does not use it.
- The address syntax is different, the message does not contain Exchange-internal addresses (legacyExchangeDN) any more.

6.1.4 Spam Emails Relayed to KCS Use TC/LINK-MX7 Licenses

The TC/LINK-MX7 license works on a per-user basis:

- When sending to Exchange, a separate registration is needed for every destination address.
- When sending from Exchange to KCS, a separate registration is needed for every originator address.

The above also applies if Exchange acts as a messaging relay between the Internet and KCS. Therefore, it is essential to configure Exchange in a way that relaying of spam mail from the internet to Kofax Communication Server is not possible.

6.1.5 No Support of RTF Messages with OLE Attachments

Correct handling of these attachments needs foreground document conversion. For this reason, RTF messages with OLE attachments cannot be converted under Windows Server 2008 and newer operating systems. This restriction applies only to message format RTF; HTML messages with OLE attachments are supported.

6.2 Hints

6.2.1 Outlook 2003 Access to Exchange 2007 / 2010

In an Exchange organization without Exchange 2003 or 2000 servers, support for Outlook versions prior to version 2007 is optional. Exchange 2007 per default has no public information store (public folders). Outlook 2003 or earlier versions depend on public folders and therefore cannot be used. As Outlook 2007 does not provide non-SMTP address templates, it makes no sense installing them in such a scenario.

Exchange setup asks whether Outlook 2003 clients shall be supported. If this option is selected, Exchange setup installs a public information store.

After installation, the Exchange administrator can allow Outlook 2003 clients, by installing a public folder tree via the Exchange Management Console commandlet **New-PublicFolderDatabase**.

Use this command at an Exchange 2007 server that has the Mailbox Server role, logged on as a domain account who is local Administrator and has been delegated the Exchange Server Administrator role.

The command needs two mandatory parameters, the name of the storage group and the name of the public folder database.

Example:

New-PublicFolderDatabase -StorageGroup "First Storage Group" -Name "Public Folders"

Notes:

There can only be one public folder database per server.

The new database must be mounted before it can be accessed, this can be done via the Exchange Management Console.

Outlook 2003 is not supported by Exchange 2013.

6.2.2 Reactivating Exchange Queues

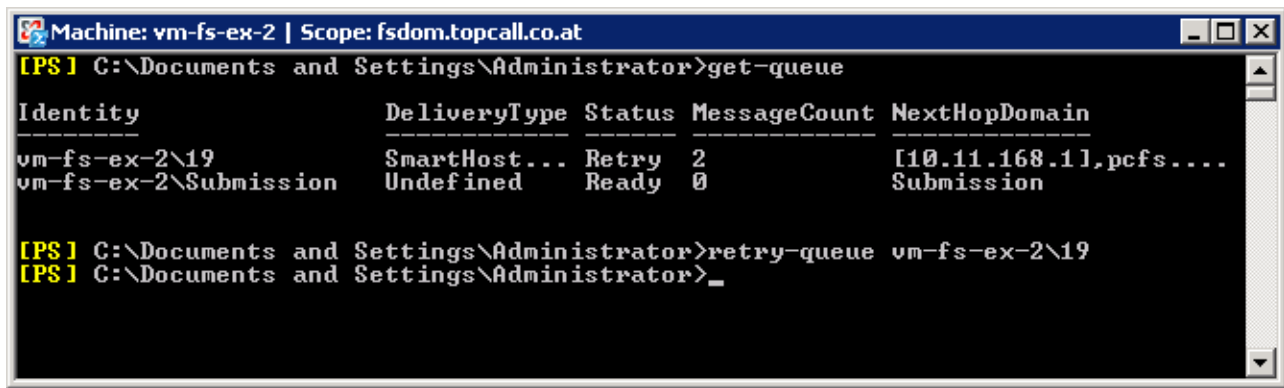
If the Exchange send connector is not able to connect to a TC/LINK-MX7 instance, it stores the message(s) in a retry queue. Depending on the length of the downtime, it may take some time until Exchange retries to connect. Once TC/LINK-MX7 is up again, you can force a send retry via the following commands in the Exchange Management Shell.

First, find out the queue name where the messages are stored, by running commandlet get-queue.

The queue can be recognized by its NextHopDomain, which contains the TC/LINK-MX7 server name(s).

Then run a retry-queue command for this queue.

Example:



```
Machine: vm-fs-ex-2 | Scope: fsdom.topcall.co.at
[PS] C:\Documents and Settings\Administrator>get-queue

Identity                DeliveryType Status MessageCount NextHopDomain
-----
vm-fs-ex-2\19           SmartHost... Retry      2          [10.11.168.11],pcfs....
vm-fs-ex-2\Submission   Undefined   Ready      0          Submission

[PS] C:\Documents and Settings\Administrator>retry-queue vm-fs-ex-2\19
[PS] C:\Documents and Settings\Administrator>_
```

The Queue Viewer in the Exchange Management Console offers similar possibilities.

7. APPENDIX

7.1 Registry Keys Used by TC/LINK-MX7

TCLSM.DLL uses the following Registry keys:

(Location HKEY_LOCAL_MACHINE\Software\TOPCALL\TCLINKMX7\TCLSM\...)

Registry Key	Type	Default	Possible Values / Meaning
Authentication	DWORD	0	1 ... use SMTP AUTH (see TC/LINK-SM manual), not recommended for TC/LINK-MX7 0 ... do not use SMTP AUTH
CertificatePath	SZ	C:\TOPCALL\SHARED	Folder holding PEM files for SSL connections. The files must be called rootcerts.pem, private.pem, certificate.pem
DNSFile	String	""	The full filename of the DNS file (including path)
ExReadNf	DWORD	1	Support additional read notifications 1 ... support additional read notifications 0 ... do not support additional read notifications
IgnoreDelNotifReq	DWORD	0	0: delivery notification request is not ignored 1: delivery notification request is ignored
MaxSizeFromSMTP	DWORD	0	Max. message size accepted from SMTP (in bytes; 0 = no limit)
MaxSizeToSMTP	DWORD	0	Max. message size to be delivered to SMTP (in bytes; 0 = no limit)
MIMENotifFormat	DWORD	0 (default if registry value not existing at link start, with default settings TC/LINK-MX7 setup sets this value to 3)	default notification format (outgoing) 0 .. plain text notifications only 1 .. Notifications using "Return-Receipt-To" 2 .. Notifications using "Rr" 3 .. Notifications according to RFC 1891..1894 (default) 4 .. Notifications according to RFC 2298
NeverNotify	Multistring	""	You may enter a list of SMTP addresses (MAIL FROM:<> parameter) that shall never be notified. If a notification is to be sent to this address, it is sent as a problem report to the local postmaster.
NotifDomains	Multistring	""	List of domains that can (or cannot) return a notification. Registry value NotifDomainSyntax defines whether this list is used and whether it is a positive or negative list.
NotifDomainSyntax	DWORD	0	0 ... disabled 1 ... notifications only for domains in the NotifDomains list 2 ... notifications for all domains except those in the NotifDomains list
NotifyMailFrom	DWORD	0	0 ... on a notification, "MAIL FROM" is empty (MAIL FROM:<>) 1 ... MAIL FROM:<postmaster@linkdomain>
OwnIPAddress	String	""	Empty (or invalid) ... explicit binding disabled. Any valid IP address binds the corresponding instance of TC/LINK-MX7 to this address!
Port2SMTP	DWORD	0	SMTP port number used for sending to SMTP (0 = default port 25)
Port2TC	DWORD	0	SMTP port number used for reception from SMTP (0 = default port 25)
SetHTMLCharSet	DWORD	0	Set it to 1, if the TC/LINK-SM should add the character set information to the HTML header
SignedMailsToExchange	DWORD	0	See TC/LINK-SM manual for a description of this feature, which is not relevant for TC/LINK-MX7.
SMDDebug	DWORD	0	Must be manually created. If set to 1, then the LINK-MX7 does not remove intermediary files, which are created for reception and sending, but renames them to .LS_ and .TS_. This can be used for error finding, but should be disabled afterwards, as it fills up the hard disk.
SMFixedRecipient	Multistring	-	Full domain names or IPv4 addresses of the used smart hosts. Messages to Exchange will be delivered to the first available server from this list.
SMHostName	String	-	Hostname of TC/LINK-MX7. Must be reachable by the Exchange send connector.

SMIPList	Multistring	""	A list of IP addresses for access control. See 3.2.3.2 "IP Authentication Setup" for syntax!
SMIPmasking	DWORD	2	IP address access control logic 0 .. "good": only IPs/domains matching at least one entry of the list can access KCS 1 .. "bad": only IPs/domains NOT matching any list entry can access KCS 2 ... Disabled
SMLinkDomain	String	-	Mail-domain name of Link PC
SMMMaxConn	DWORD	1	maximum number of simultaneous incoming connections
SMMMaxRecipients	DWORD	100	Here the maximum recipient count can be entered. Upper limit is 1000.
SMPollCycle	DWORD	0	Poll mail server (first entry in SMFixedRecipient list) every <nn> seconds 0 ... disable polling
SMPostMaster	String		If not empty, the value is used as "mail from" address in notifications to Exchange.
SMRcvSecDomains	Multistring	""	List of domains, for which a SSL connection must be used
SMRcvSecure	DWORD	0	0 ... SSL disabled 1 ... SSL connection mandatory, when receiving from domains from SMRcvSecDomains 2 ... SSL connection always mandatory 3 ... SSL only used, if client requests it
SMRouteDomains	Multistring	""	All domains listed here will be accepted. Wildcards can be used. Setup sets this key according to the addressing syntax chosen during installation. This registry key is ignored, if SMRouteEnable is set to 0.
SMRouteEnable	DWORD	0	Must be set to "1" to allow access to KCS services (are specified as sub domains)
SMRxTimeout	DWORD	60000	Reception Timeout from SMTP (ms) until connection is closed. The timeout is reset any time data is received from SMTP
SMSDDMode	DWORD	0	Indicates whether SSL is enabled. TC/LINK-MX7 supports SSL without an extra license.
SMSendSecDomains	Multistring	""	List of domains, for which a SSL connection must be used
SMSendSecure	DWORD	0	0 ... SSL used only if mail server requests it 1 ... SSL connection mandatory, when sending to domains from SMSendSecDomains 2 ... SSL connection always mandatory
SMSkipRootCertCheck	DWORD	0	If 1, TC/LINK does not verify the Exchange server certificate against a list of accepted root certificate. Thus, even self-signed certificates are accepted.
SMTempDir	String	-	Temporary Directory for TCLSM.DLL internal message transfer (exclusively used per link!)
SMTxTimeout	DWORD	60000	Sending Timeout to SMTP (ms) until connection is closed. The timeout is reset any time data is successfully sent to SMTP.
TCPDebug	DWORD	0	1 ... Write all data from/to SMTP to the trace file
UseDNS	DWORD	0	0 ... disable direct delivery (use smart host) 1 ... enable direct delivery via HOSTS file (A-records) 2 ... enable direct delivery via MX- and A- records

TCMIME.DLL uses the following Registry keys:

(Location HKEY_LOCAL_MACHINE\Software\TOPCALL\TCLINKMX7\TCMIME\...)

Registry Key	Type	Default	Possible Values / Meaning
AttachmentFilter	Multi string	""	Here you can specify the file types which should be removed, e.g. "exe vbs bat"
BinaryCoding	DWORD	0	0 .. base64 1 .. 8 Bit (not supported anymore)
ConvertSubject	DWORD	0	This key enables the mime.dll to convert special characters in the subject field. Characters which are not in the SMTP character set will

			be replaced with a “*”. This is a TC/LINK-SM option that ensures that SMTP servers not supporting the “=?ISO-8859-1?Q” marker get valid message subjects. Not recommended for TC/LINK-MX7. See TC/LINK-SM manual. 0 ... disabled 1 ... enabled
DSNCodeFile	String	C:\TCOSS\TCL\P\DSNCODE_TCLINKMX7.INI	File with mappings between TCOSS error code and RFC 1891-1894 delivery status code. If this file does not exist, all errors are mapped to delivery status code 5.0.0.
FilterText	String	“An attachment was removed due to mail restrictions!”	Here you can specify the alternative text which is inserted into the mail in order to explain the missing attachment.
HTMLAsAlternative	DWORD	1	1 ... HTML message body with text and image alternative 0 ... HTML message body according to registry value PreferredAltContent
IgnoreDate	DWORD	0	Set it to 1, if you want to activate this feature. See TC/LINK-SM manual.
InlineContentTypes	Multi string	text/plain text/html text/enriched	A list of MIME content types that shall get a “Content-Disposition: Inline” when sending from KCS to Exchange.
MaxLineLength	DWORD	150 (50 ... 1000 is valid)	Indicates the maximum line length in SMTP messages sent by TC/LINK-MX7.
MaxRecursion	DWORD	3	Maximum level of attached message recursion (Rest is appended as plain text)
MimeFileExtensions	Multi string	“”	Changes File Extensions (for example: “rfc822 eml” the file “message.rfc822” will be changed to “message.eml”)
MIMETypes	Multi string	“”	Lists filename extensions and associated MIME type/subtypes.
PreferredAltContent	String	“”	This option is mainly for standard TC/LINK-SM, it should be empty for TC/LINK-MX7, thus forcing TC/LINK-MX7 to provide text and html alternatives for the message body.
ReplyToService	String	“”	The name of the service which will be searched for in the user profile. See TC/LINK-SM manual.
SaveUnknownTextBlock	DWORD	1	If set to 0, the duplicated body will disappear.
SingleTextBlock	DWORD	0	0 ... multiple text blocks allowed 1 ... all text put to single text block (to SMTP)
TextCoding	DWORD	0	0 .. 7 Bit (quoted-printable) 1 .. 8 Bit (not supported anymore)

Note:

- All TCMIME configurations (except MIMETypes and MaxRecursion) are only effective when sending from KCS to Exchange! TC/LINK-MX7 accepts any valid text/binary coding, lines up to 1095 characters, any number of text blocks, ...
- All TCMIME configurations are reloaded per message conversion; therefore, you need not to restart TC/LINK-MX7 when changing TCMIME configuration.
- All TCMIME configuration values are created (and filled with default values) when TC/LINK-MX7 is started the first time. Existing values are not overwritten.

TNC_TNEF.DLL uses the following Registry keys:

(Location HKEY_LOCAL_MACHINE\Software\TOPCALL\TCLINKMX7\Exchange \...)

Registry Key	Type	Default	Possible Values / Meaning
CodePage	String	UTF-8	Codepage for conversion of national characters in non-SMTP addresses.
EmbeddedMessages	DWORD	1	0: insert embedded messages from Winmail.dat flatly (like TC/LINK-MX used to do) 1: insert embedded messages hierarchically (standard TC/LINK-SM behavior)
EnableTnef	DWORD	1	Send and receive Winmail.dat files
ExDomain	Multi string		Exchange mail domain(s). Used for validity check of KCS specific address types. If the Exchange system has several mail domains, configure all of

			them here.
MsgClassEmail	String	IPM.NOTE	Message class for emails sent to Exchange
MsgClassFax	String	IPM.NOTE	Message class for faxes sent to Exchange
MsgClassVoice	String	IPM.NOTE.TCM SG.VOICE	Message class for voice messages sent to Exchange
OwnService	String	MX7	Service for sending to Exchange
RemoveEmptyBody	DWORD	1	Handling of empty text body in a message 1 – Empty text body is removed 2 – Empty text body is not removed
Separator	String	#	Separator character for non-SMTP addresses
SmtDomainIn	String		Additional domain for sending from Exchange to KCS
SmtSyntaxToMail	DWORD	1	Addressing syntax for originator addresses KCS -> Exchange 1 ... specify service and number in local part of address 2 ... specify number in display name, service in local part 4... specify name in display name, number in address
Templates	DWORD	1	Used during Setup only. 1 ... support KCS address types 2 ... install address templates
TypeAb	String	AB	Address type for KCS address book entries
TypeFax	String	FAXTC	Address type for fax addresses
TypeFree	String	FREE	Address type for free addresses
TypeNotes	String	ANOTES	Address type for Notes addresses
TypeSms	String	SMS	Address type for SMS addresses
TypeTc	String	TC	Address type for KCS users
TypeTlx	String	ATX	Address type for telex addresses
TypeVoice	String	VOICE	Address type for voice
VoiceIntegration	Integer	1	Support VoiceAccess

The most important general TCLINK registry values are

(Location HKEY_LOCAL_MACHINE\Software\TOPCALL\TCLINKMX7\...)

Registry Key	Type	Default	Possible Values / Meaning
General\Tracelevel	DWORD	-	General trace level
General\MailDebug	DWORD	-	1 ... dump all TCSI objects transmitted between TCLINK.EXE and special mail DLL
General\PCCodePage	DWORD	-	PC codepage configured on the Link server
General\SupportMultipartRelatedHtml	DWORD	1	1 ... build a single TCI alternative for a HTML message body with embedded pictures 0 ... standard TC/LINK-SM handling: 1 TCI block for the message text, additional TCI blocks for embedded pictures.
Topcall\TCSIDebug	DWORD	-	1 ... dump all TCSI objects sent from/to KCS
General\TimeZoneToMail	String		UTC ... enable time zone support
General\CoverForRtf	DWORD	1	1 ... cover from default template is used if message starts with RTF or HTML text 0 ...onlyimg cover is used if message starts with RTF or HTML text.

Note:

- TC/LINK-MX7 must be stopped and restarted before these changes become effective!
- See the TC/LINK Manual for all common setup

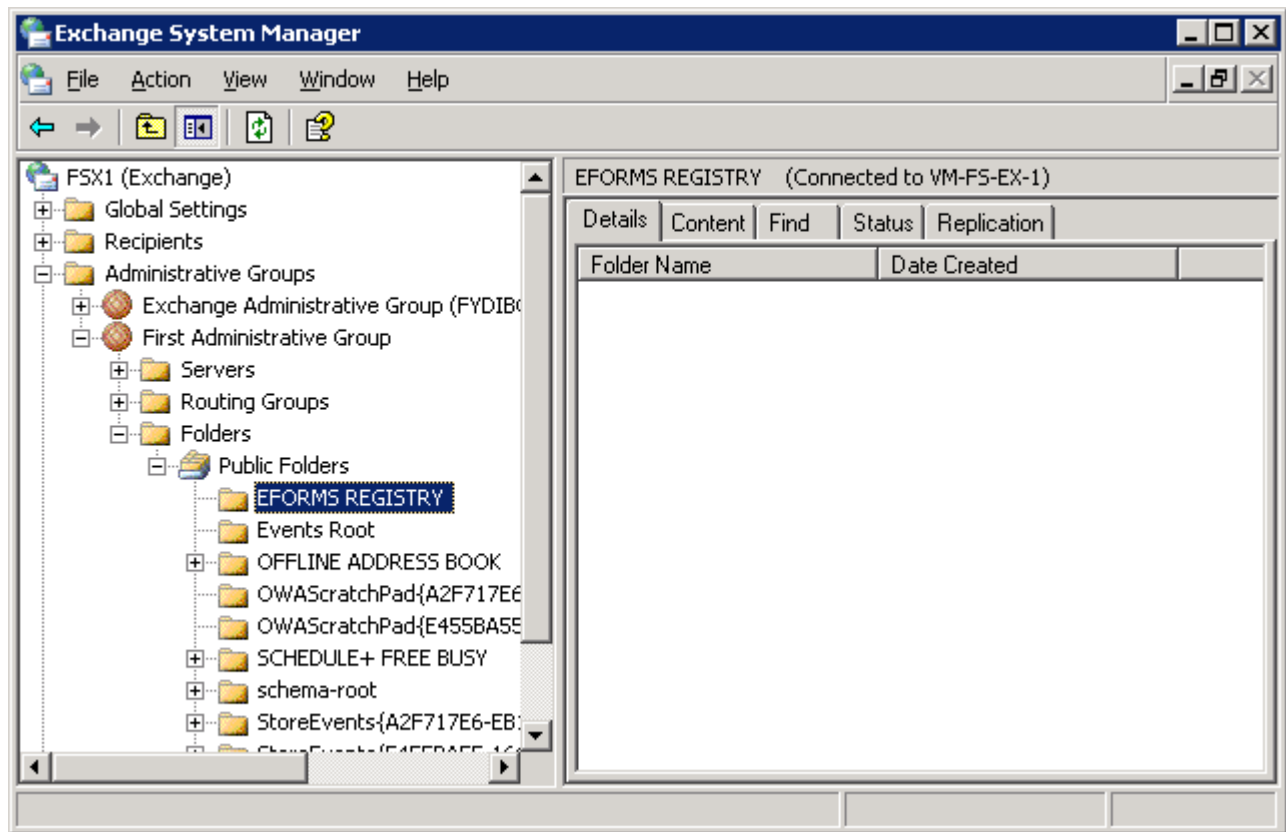
7.2 Installing the Sample Voice Message Form (Exchange 2007 only)

This section explains how the sample voice message form delivered with TC/LINK-MX7 setup can be installed in the organization forms library. The organization forms library might not exist, therefore the first step is creating an organization forms library. This is done in different ways for a pure Exchange 2007 organization or a mixed Exchange organization with older Exchange server versions. The second step is installing the form into the organization forms library.

We encountered problems installing an organization forms library in a pure Exchange 2010 organization. Therefore, this feature is not supported with Exchange 2010 and later.

7.2.1 Creating an Organization Forms Library in Exchange 2003

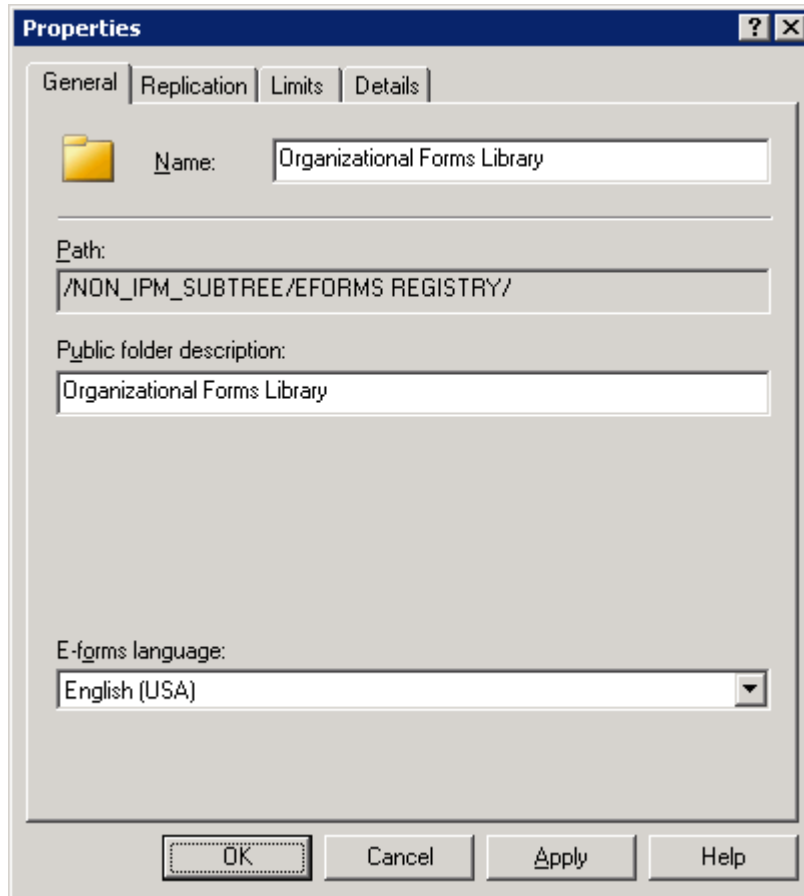
As an Exchange Administrator, start the Exchange System Manager and right-click the Public Folders container. Select "View System Folders" in the context menu.



This makes several sub folders visible. The Organization Forms Library is supposed to be below the EFORMS REGISTRY folder. If an Organizational Forms Library matching the client language already exists, you can proceed with step 2. Otherwise, you must create a new Organizational Forms Library:

Step 1: New Organizational Forms Library

Right click the EFORMS REGISTRY container. In the context menu, choose “New” , followed by “Organizational Form”.

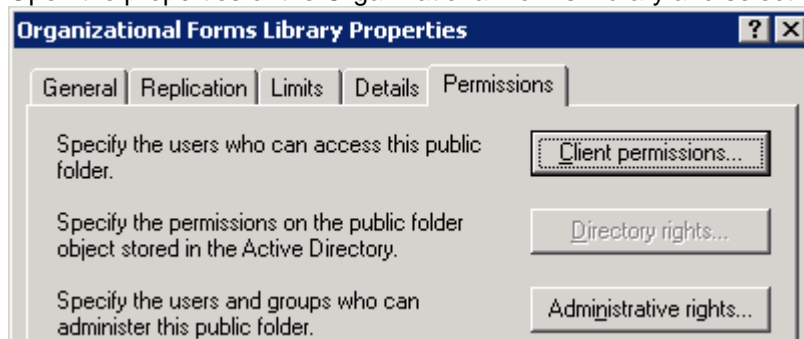


In the properties window, enter a Name and select a language (must match the client language). Click OK.

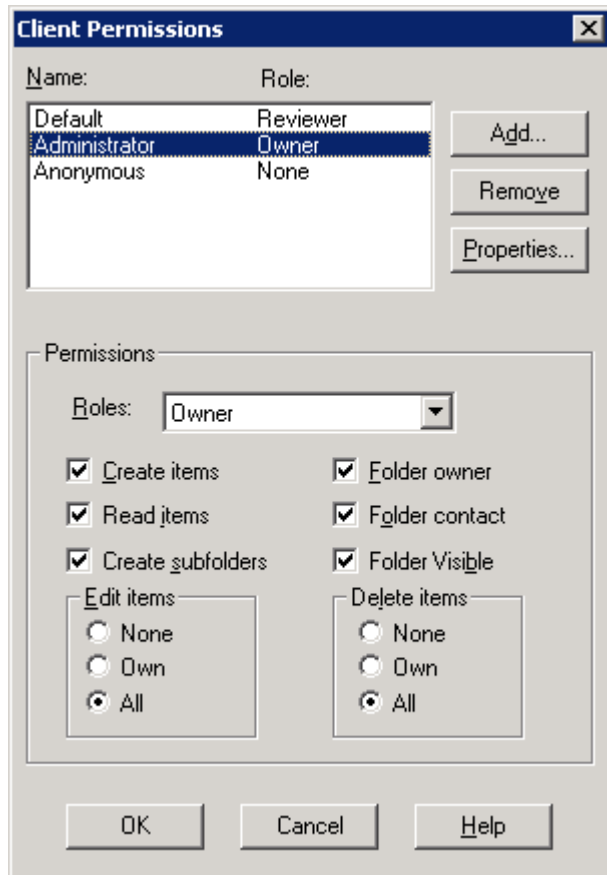
Step 2: Permissions

By default, normal users have read-only permissions on the Organizational Forms Library. The following actions are necessary to grant a user the permission to publish a form:

Open the properties of the Organizational Forms Library and select the Permissions tab.



Click the Client Permissions button.



Add the user to the list of names and roles via the Add button, and choose the Owner role. Then click OK and close the Organizational Forms Library Properties dialog.

7.2.2 Creating an Organization Forms Library in Exchange 2007

Here, the installation of an Organizational Forms Library is rather complicated, as this is not integrated into the Exchange Management Console. You must use the Exchange Command Shell and the MFCMAPI tool:

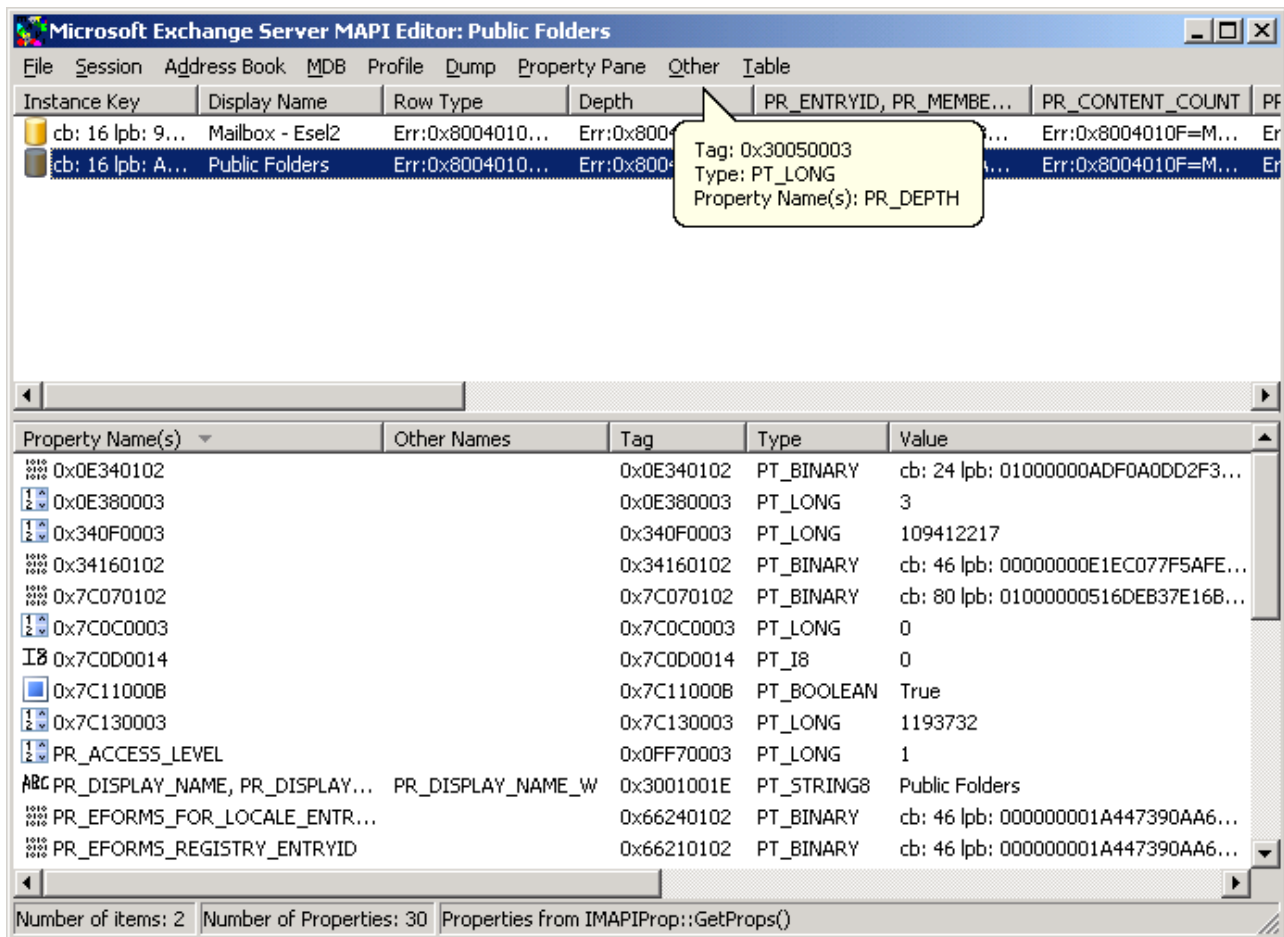
Step 1: New Organizational Forms Library

Use the New-PublicFolder commandlet to create the library:

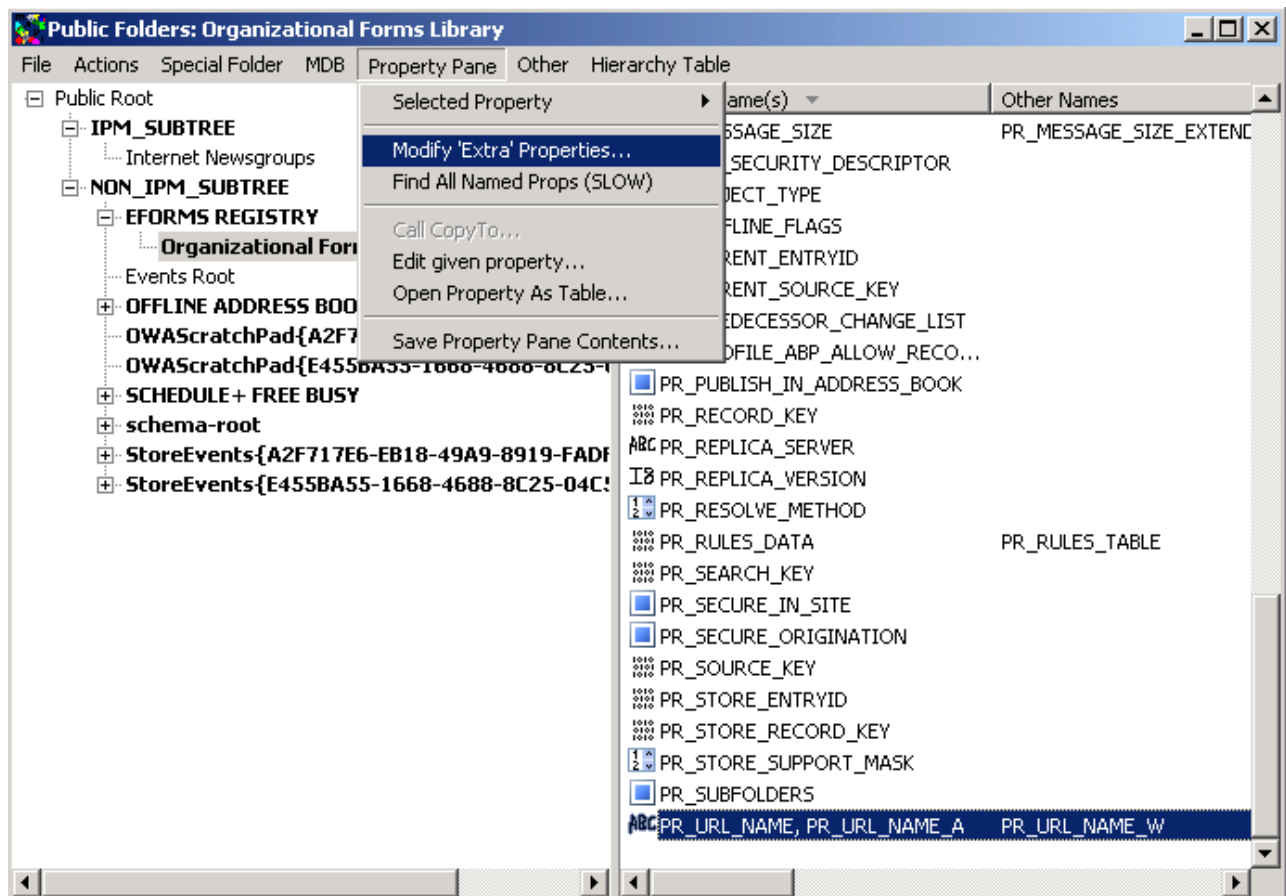
```
New-PublicFolder -Path "\\NON_IPM_SUBTREE\EFORMS REGISTRY" -Name "Organizational Forms Library"
```

To set the language of the forms library, you need the Microsoft Exchange Server MAPI Editor (MFCMAPI), which can be downloaded from the Microsoft web page.

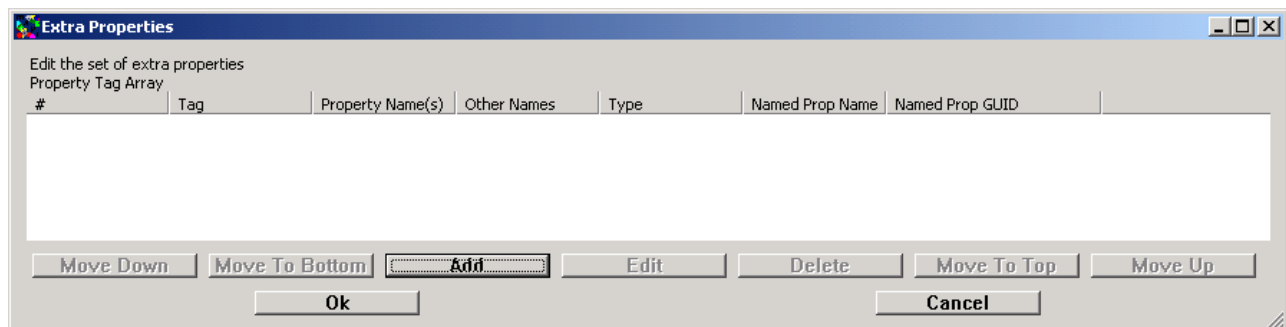
On a computer where Outlook is already installed, start the MFCMAPI application. Select a MAPI profile and open the Public Folders container.



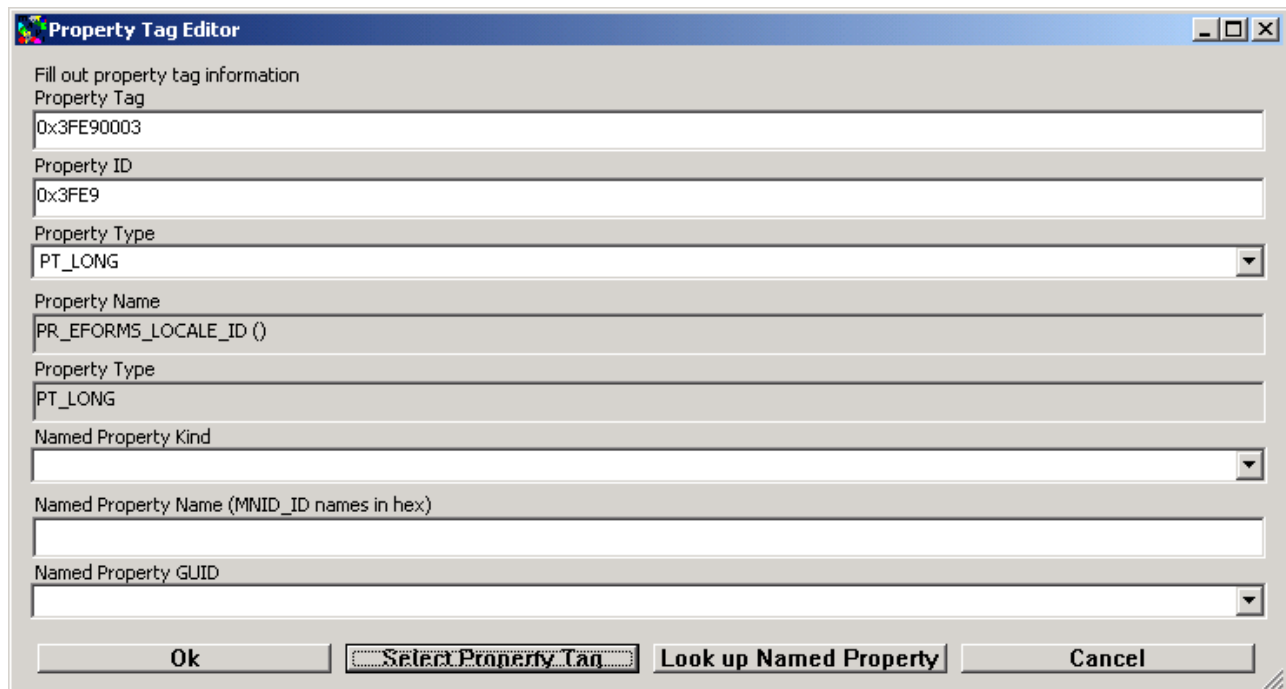
Double click the Public Folders object.



Move to the Organizational Forms library and choose menu item Property Pane | Modify 'Extra' Properties.



Click Add.



Property Tag Editor

Fill out property tag information

Property Tag
0x3FE90003

Property ID
0x3FE9

Property Type
PT_LONG

Property Name
PR_EFORMS_LOCALE_ID ()

Property Type
PT_LONG

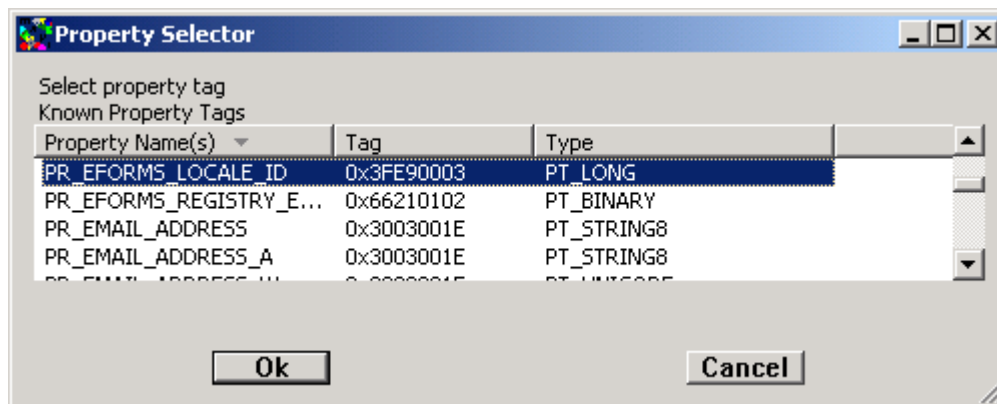
Named Property Kind

Named Property Name (MNID_ID names in hex)

Named Property GUID

Ok Select Property Tag Look up Named Property Cancel

Click Select Property Tag.



Property Selector

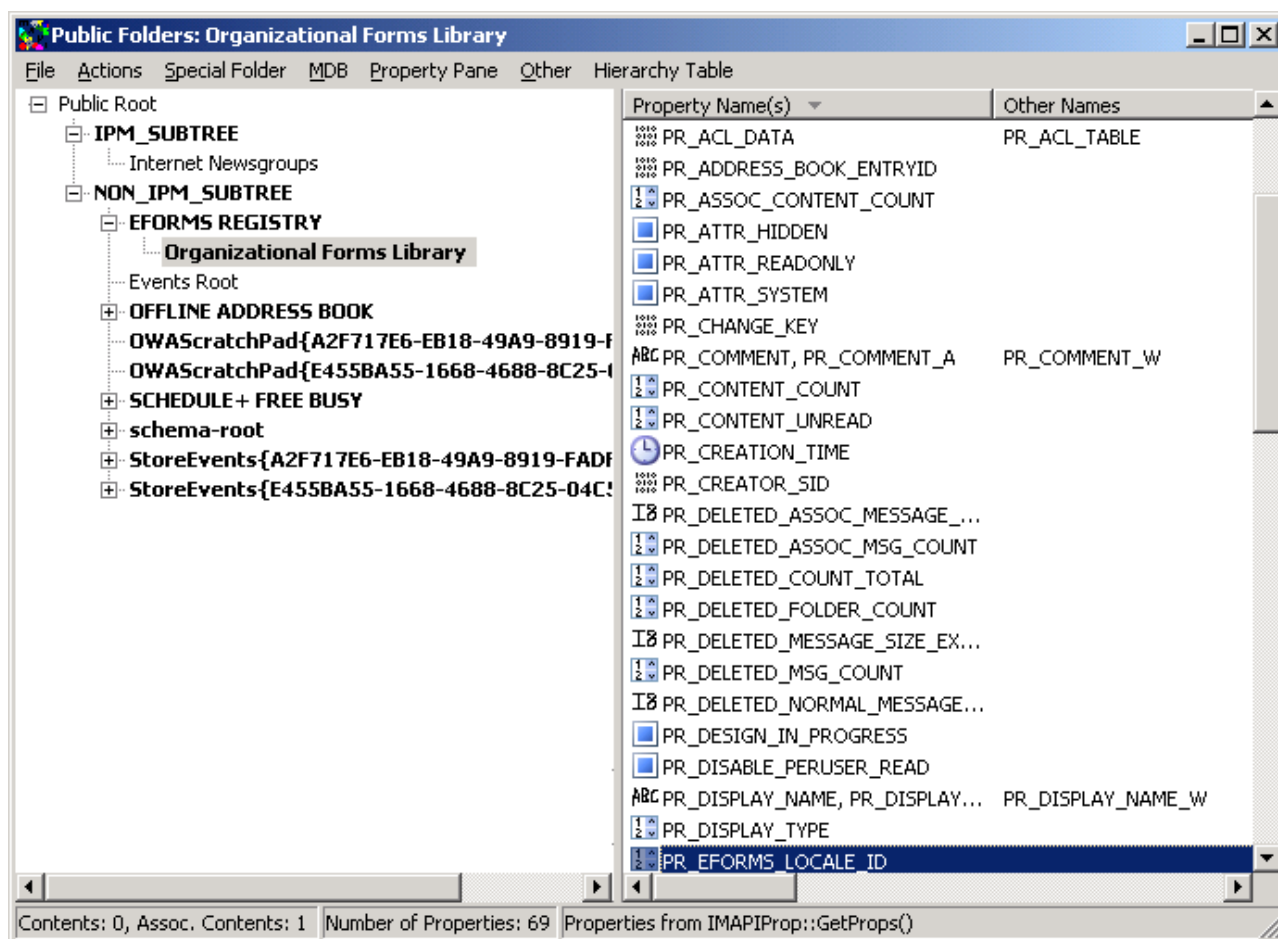
Select property tag

Known Property Tags

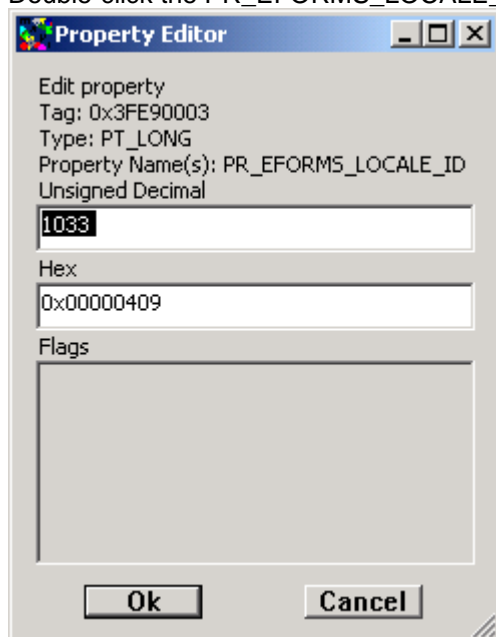
Property Name(s)	Tag	Type
PR_EFORMS_LOCALE_ID	0x3FE90003	PT_LONG
PR_EFORMS_REGISTRY_E...	0x66210102	PT_BINARY
PR_EMAIL_ADDRESS	0x3003001E	PT_STRING8
PR_EMAIL_ADDRESS_A	0x3003001E	PT_STRING8
PR_EMAIL_ADDRESS_W	0x3003001E	PT_UNICODE

Ok Cancel

In the Property Selector, choose PR_EFORMS_LOCALE_ID and click OK twice.



Double-click the `PR_EFORMS_LOCALE_ID` and enter the language code (e.g. 0x409 for US-English).



Save the changes and close the application.

Step 2: Permissions

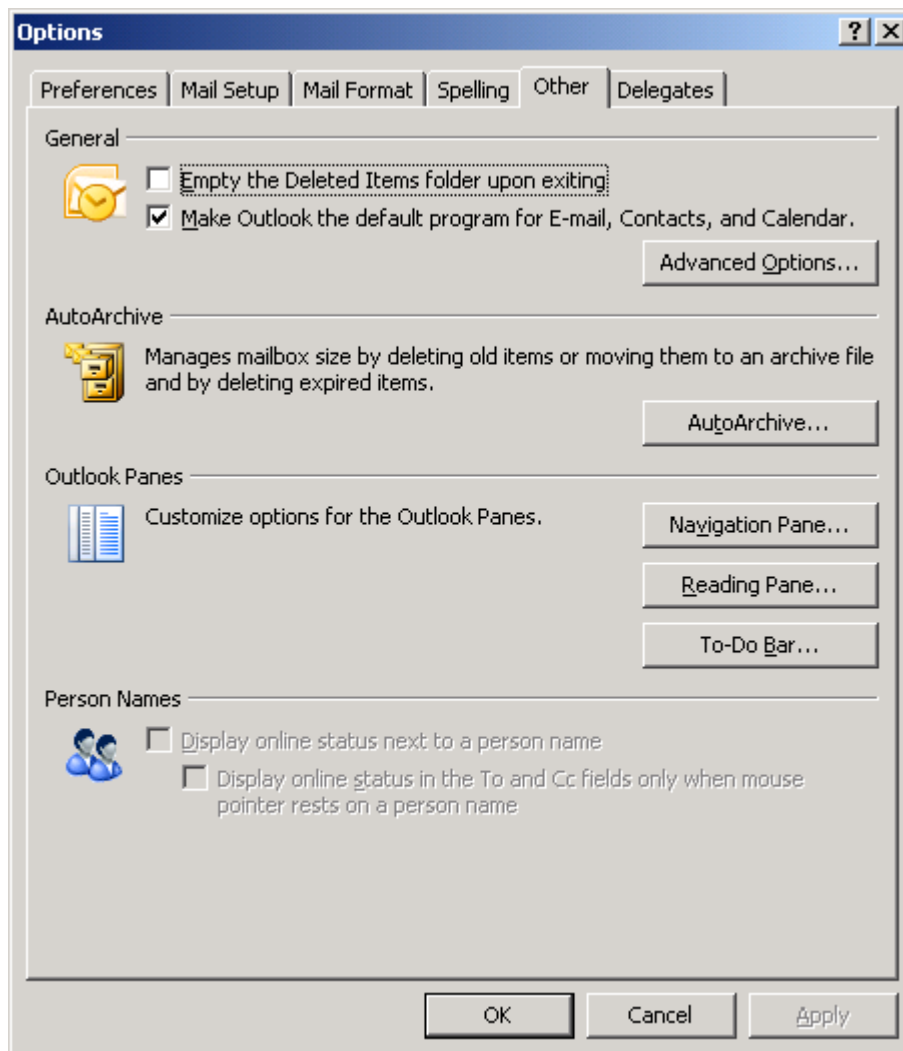
Use the commandlets "Set-PublicFolder", "Add-PublicFolderClientPermission" and "Add-PublicFolderAdministrativePermissions" to change the permissions.

7.2.3 Installing the Form into the Organization Forms Library

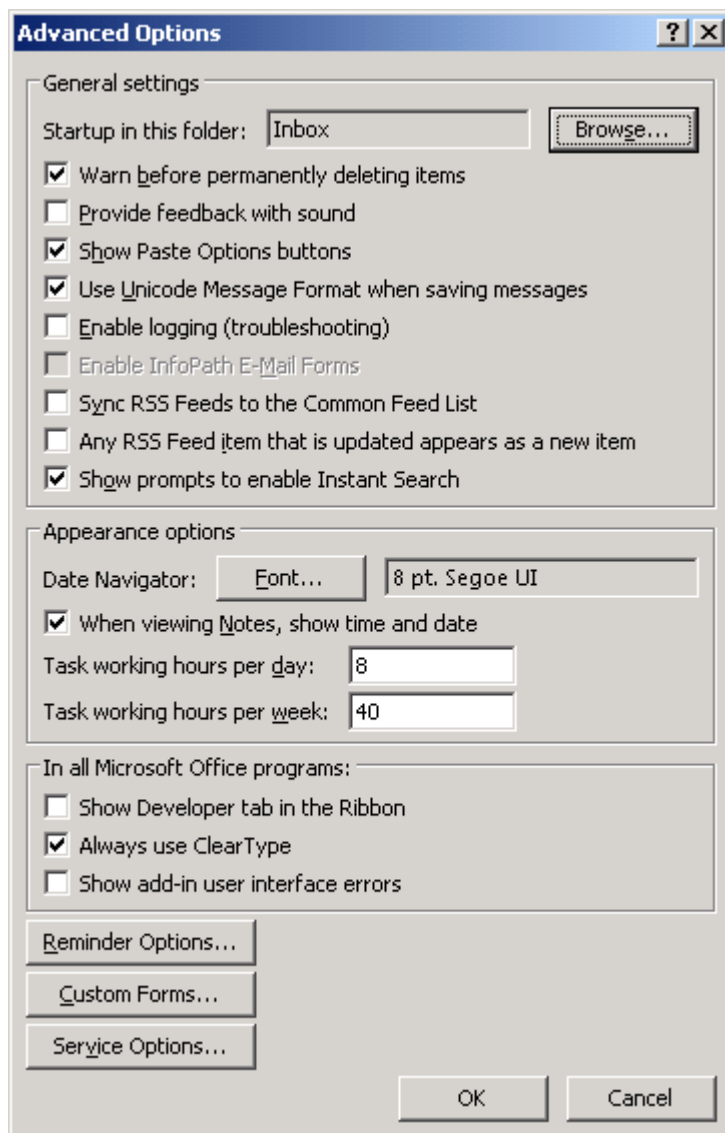
Once the Organizational Forms Library exists, you can use Microsoft Outlook to copy the Voice form there. In the following example, we use Outlook 2007.

TC/LINK-MX7 setup copies a sample Voice message form file IPM_NOTE_TCMSG_VOICE.FDM to the folder C:\TCOSS\TCLP on the link computer.

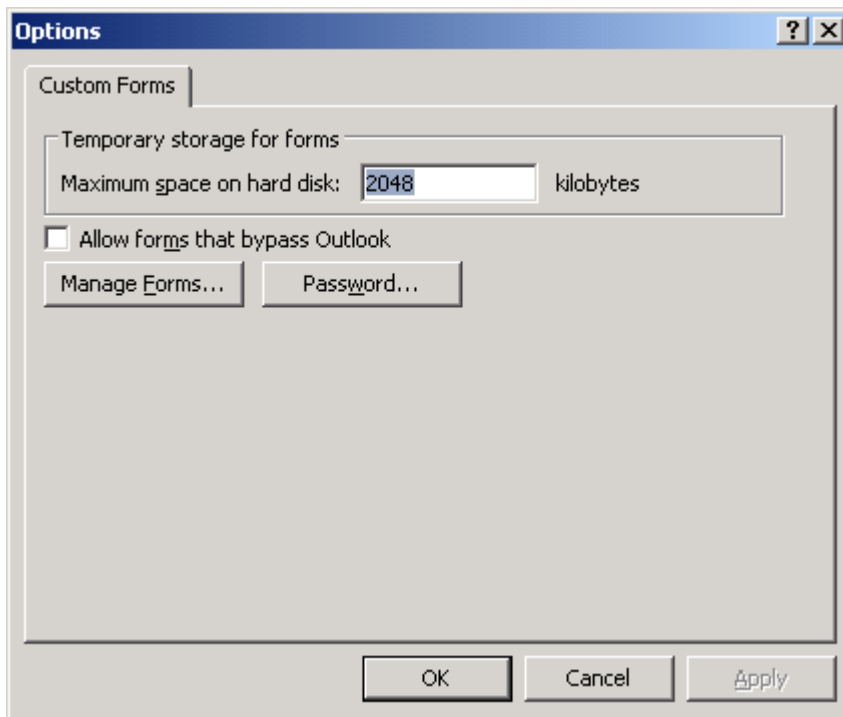
In the Outlook client, choose menu item Tools | Options, and select the tab Other in the options dialog.



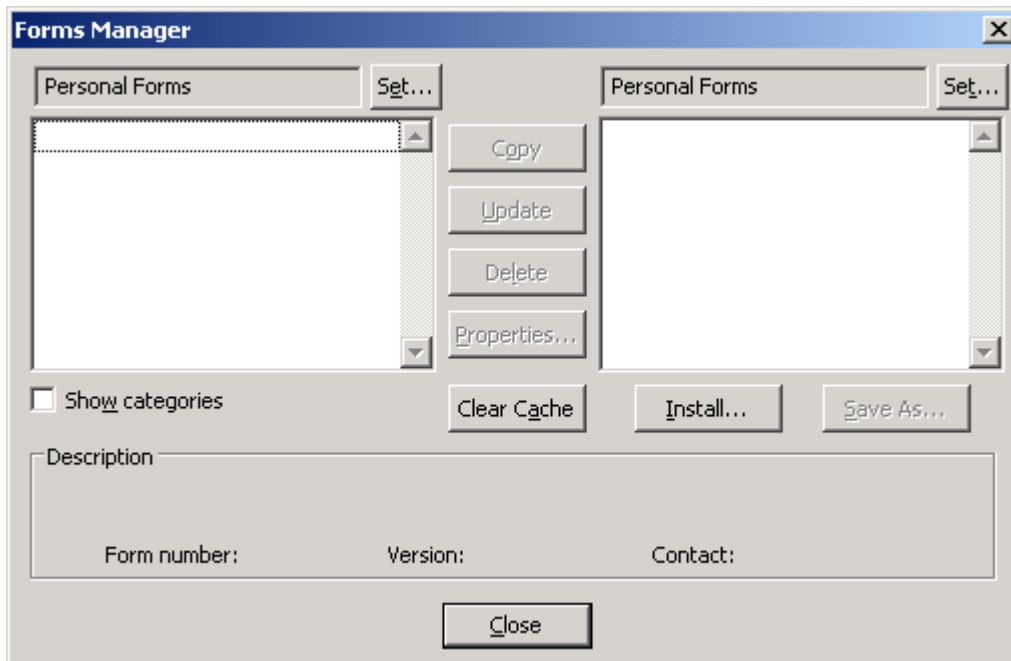
Click the button Advanced Options.



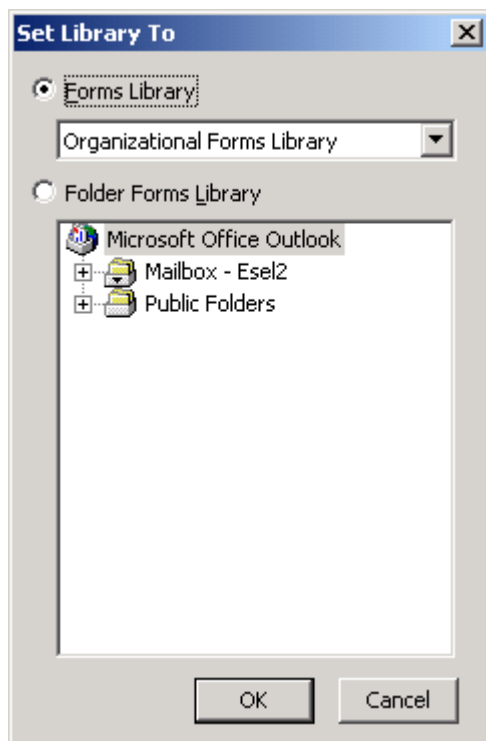
Click the button Custom Forms.



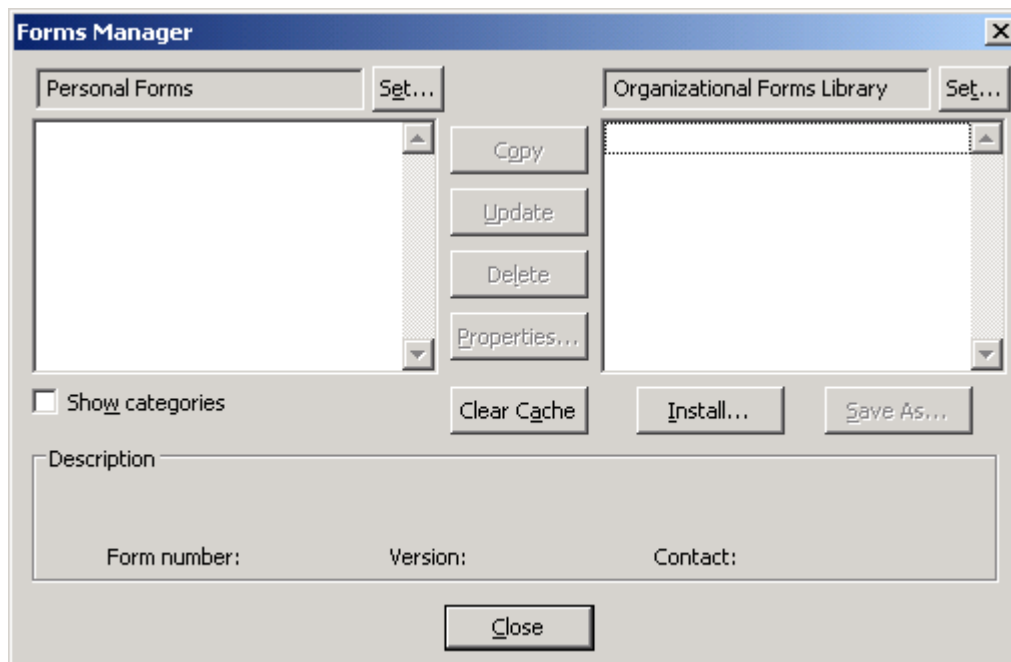
Click the button Manage Forms.



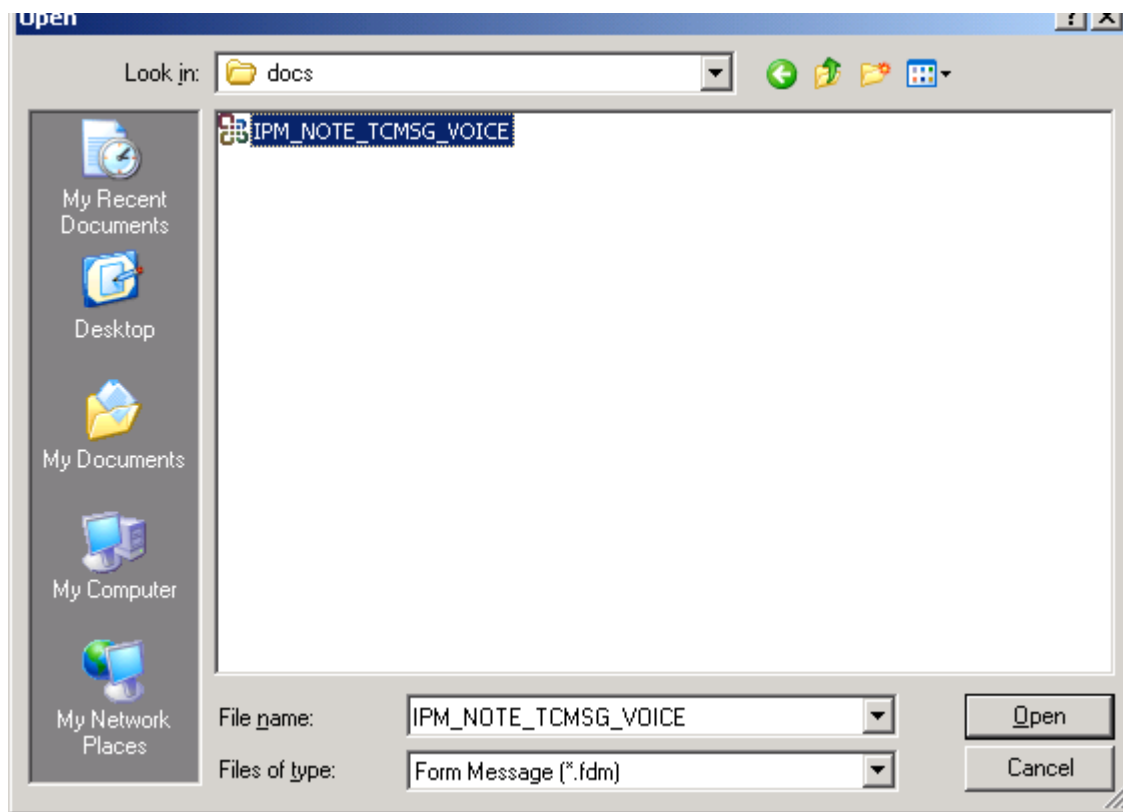
The Forms manager is opened. On the right side, use the Set button to select the Organizational Forms Library.



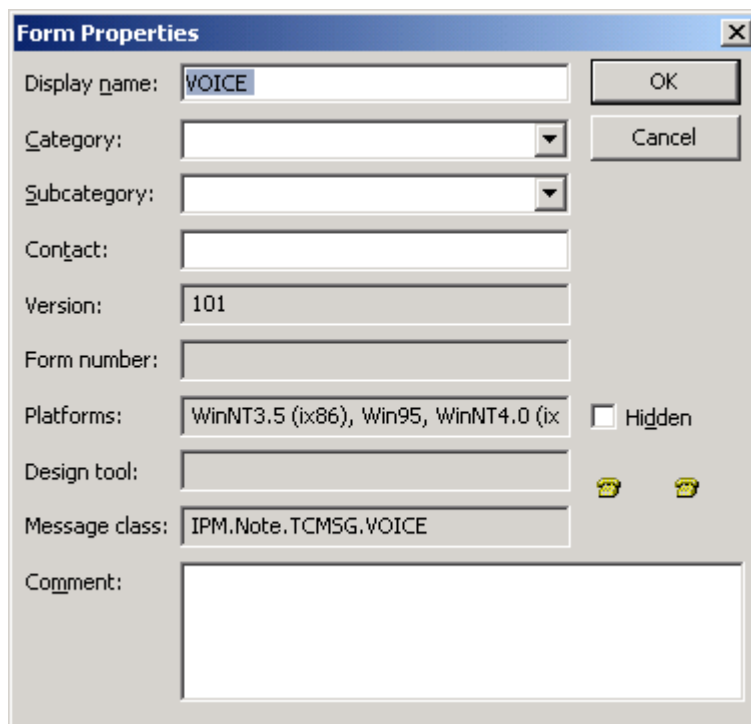
Click OK.



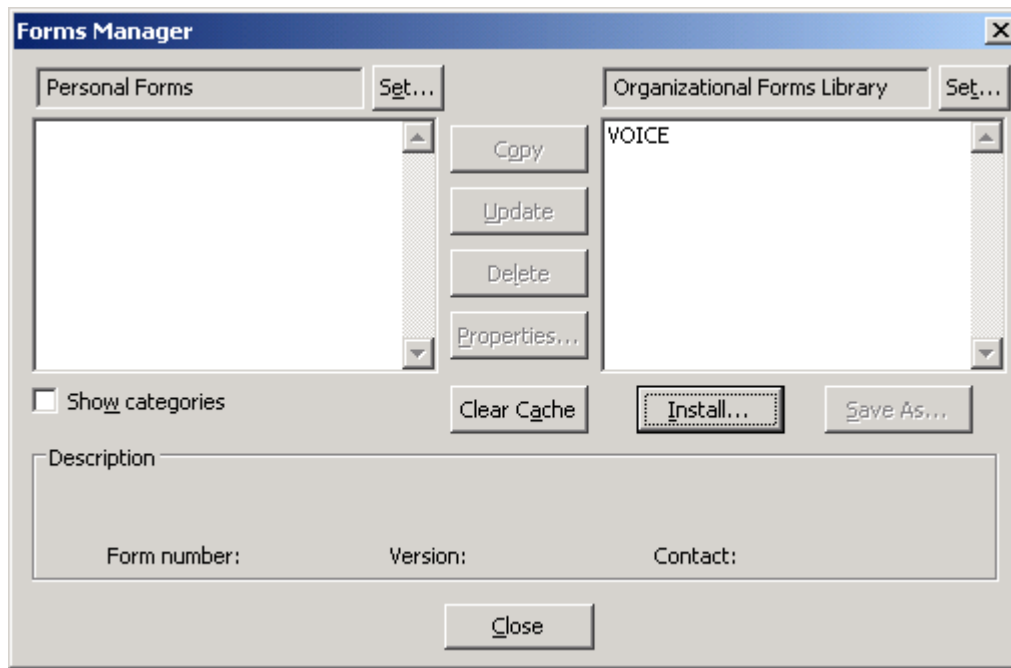
Click Install.



In the File Open dialog, select the file IPM_NOTE_TCMSG_VOICE.FDM, and click Open.



The form properties (including the message class) are displayed. Click OK.

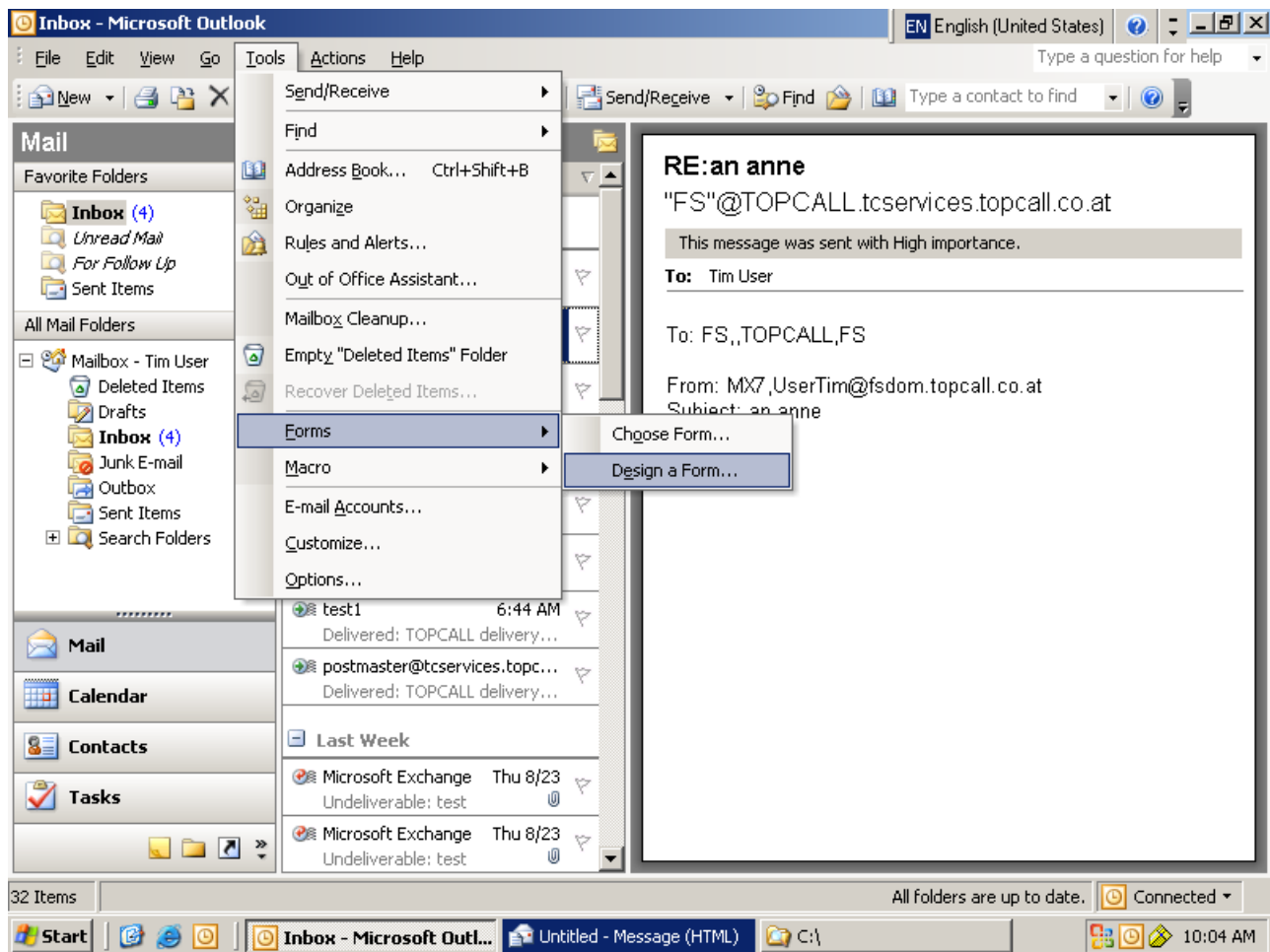


The form is now installed and you can close the open dialog windows.

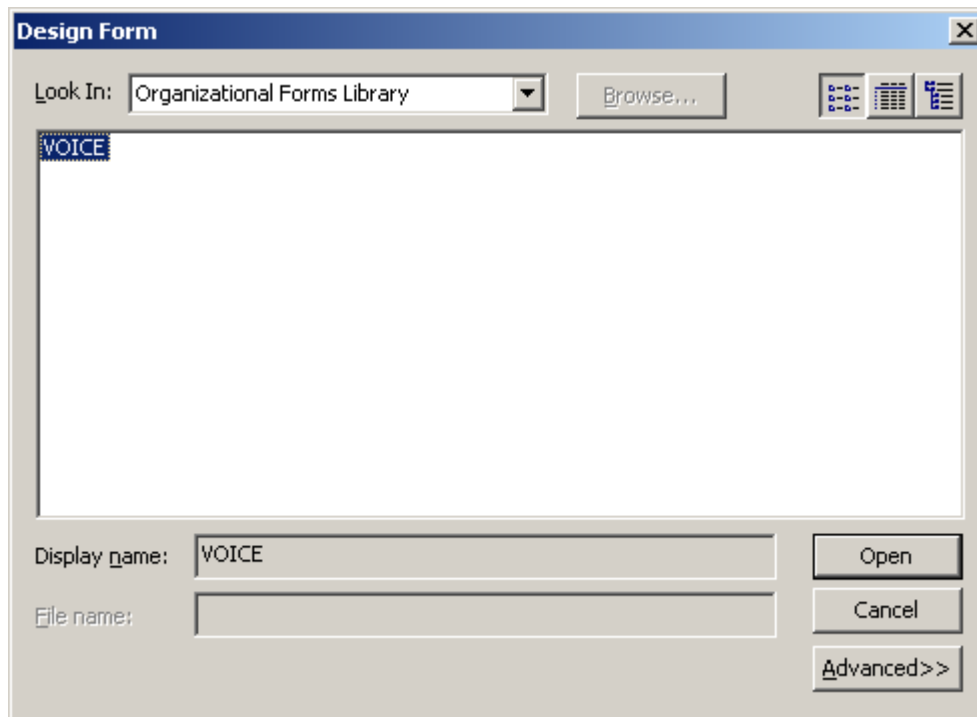
7.3 Creating an Outlook Form

You can create your own forms via the Outlook client's built-in forms designer. This section explains how to make a sample fax form out of the sample voice form.

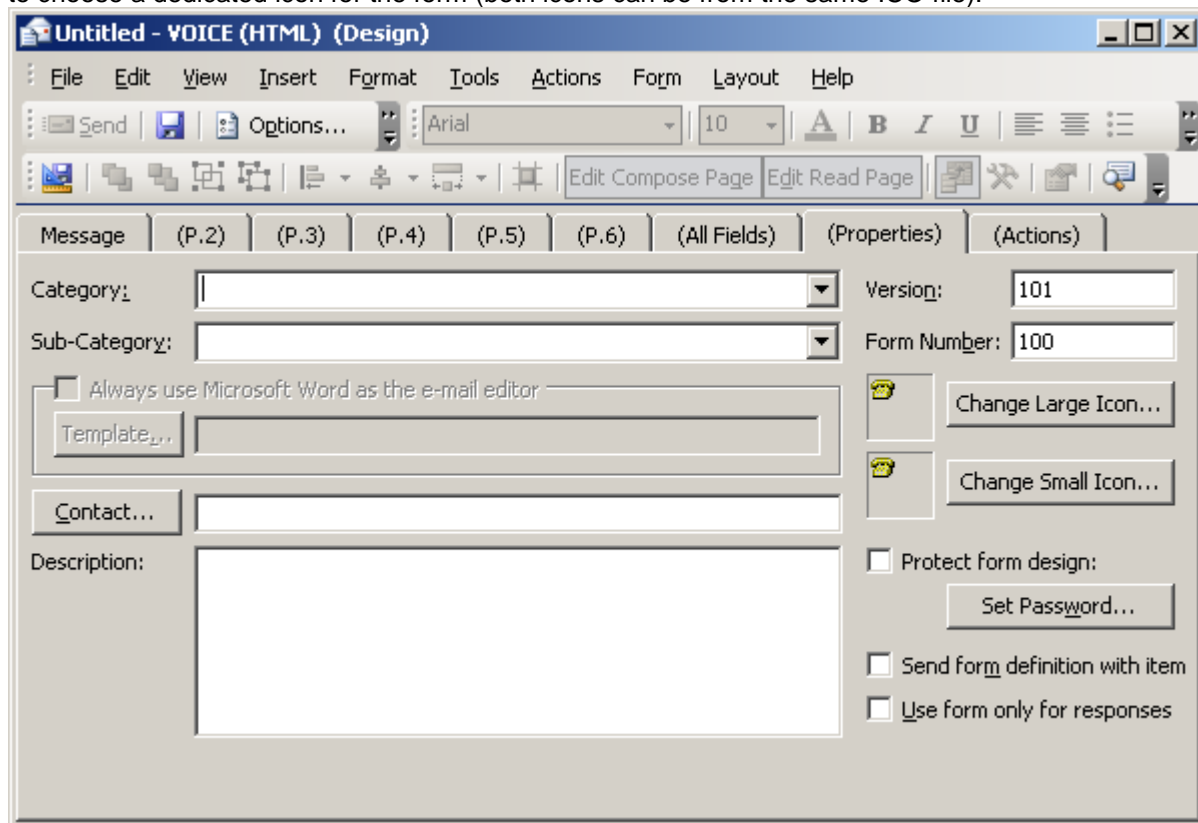
Once you have installed the sample voice form, you can open it for design via the Outlook menu item Tools | Forms | Design a form.



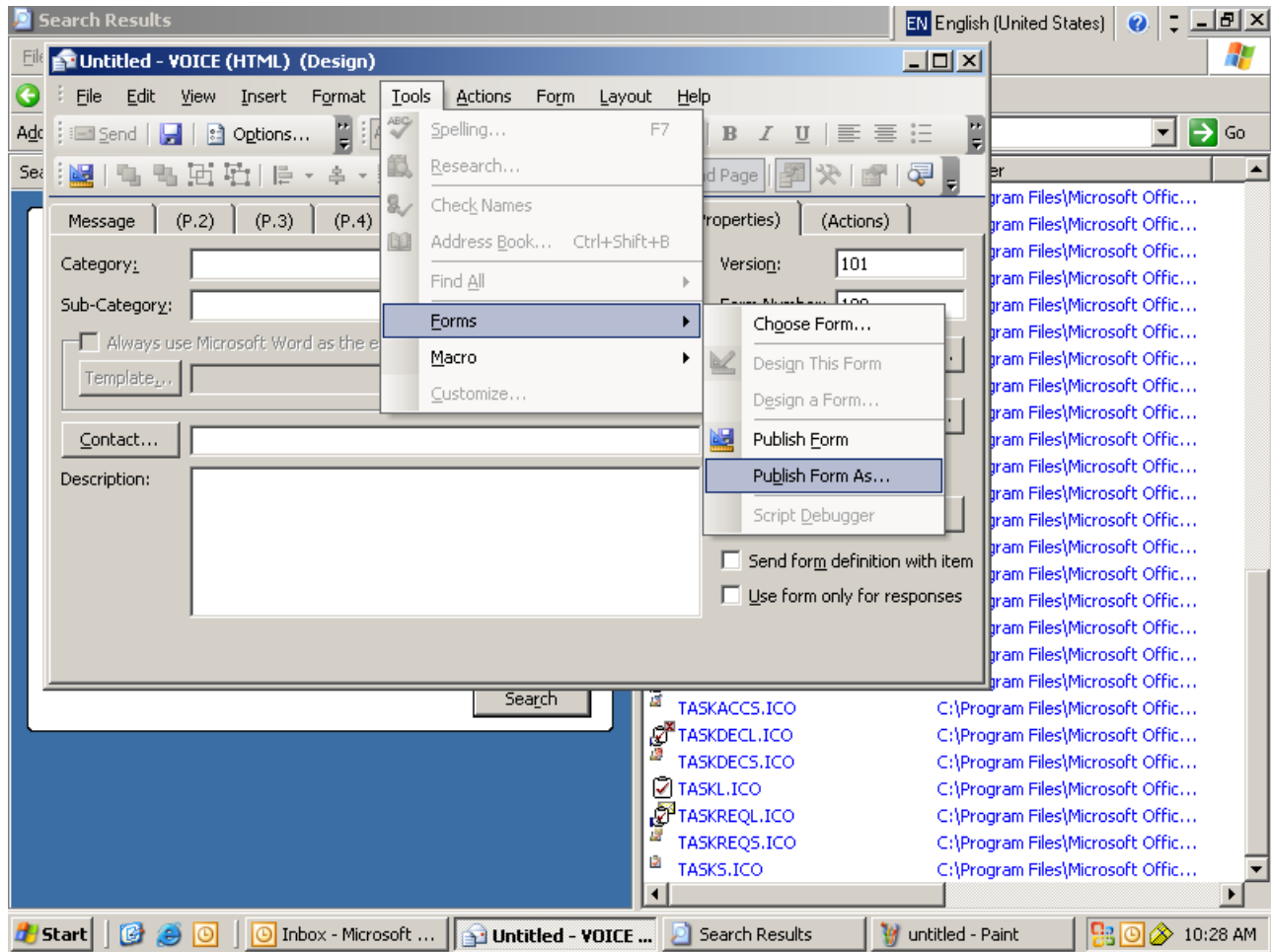
Choose the voice form from the container where you installed it (e.g. the Organizational Forms Library) and click Open.



The form designer is opened. In the Properties tab, use the buttons Change Large Icon and Change Small Icon to choose a dedicated icon for the form (both icons can be from the same ICO file).



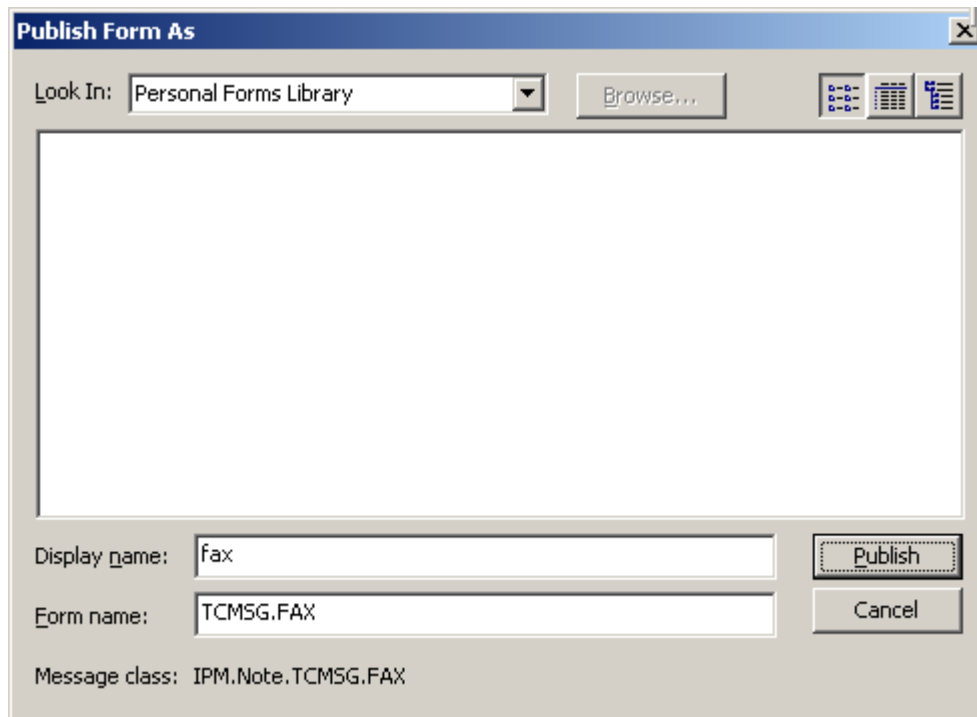
After changing the icons, choose menu item Forms | Publish Form As to publish the modified form for a different message class.



To publish the form, you must associate it with a message class.

The message class is composed from "IPM.Note." followed by the form name. In this example, the form name is TCMSG.FAX, so the form is published for message class IPM.Note.TCMSG.FAX.

Choose a location where the form shall be published (Organizational Forms Library if the form shall be available for all users, Personal Forms Library for first tests).



Click Publish. When asked whether the form definition shall be stored with the form, choose No. When asked whether the message shall be saved, choose No as well.

All that remains to do now is to enter the message class IPM.Note.TCMSG.FAX in registry value Exchange\MsgClassFax of TC/LINK-MX7. Then restart the link.

7.4 References

The TC/LINK-SM manual contains additional technical information about the DNS concept, anti-spamming measures, firewalls, SSL error codes and applicable RFC standards.

7.5 Checklist for Setup

KCS CPU number ¹⁾	
TCOSS version	
TC/LINK-MX7 license ¹⁾	Key: Expire Date: Registrations:
Postscript license ¹⁾ (optional)	Key: Expire Date: Registrations:
PCL5 license key (optional)	Key: Expire Date: Registrations:
GIF license key (optional)	Key: Expire Date: Registrations:
Dirsync license key (optional)	Key: Expire Date: Registrations:
Kofax Communication Server Name	
Link Type to KCS, transport RPC or Native	
Secondary KCS Server Name (for tandem servers only)	
Link Type to secondary Server (for tandem servers only)	
KCS Link User Name	
KCS Link User Password	
TCDCEXE User Name (foreground TCDC only)	
TCDCEXE User Password (foreground TCDC only)	
TCDCEXE User Domain (foreground TCDC only)	
Own Mail Domain Name	
Exchange Server name(s)	

1) For TCOSS versions older than 7.08 in combination with KCS tandem servers these licenses have to be entered for both CPU numbers of the primary and the secondary KCS server.

7.6 Glossary

The following abbreviations and terms are frequently used in this manual:

Abbreviation	Meaning
ISP	Internet Service Provider; the company that offers you access to the internet
SMTP	Simple Mail Transfer Protocol; The mail delivery protocol of Internet Mail
MIME	Multipurpose Internet Mail Extensions; the mail format of Internet Mail
TCP	Transmission Control Protocol; stream-oriented network connection used for SMTP
IP	Internet Protocol; lowest level of connectivity objected here
DNS	Domain Name System; the system to resolve host names to IP addresses (the "A" record), and other so-called "resource records"
MX record	"Mail Exchanger" resource record. Part of DNS; maps a mail domain to responsible host names.
POP3	Post Office Protocol Version 3: Simple protocol for users to fetch their mail from a server
IMAP4	Internet Mail Access Protocol Version 4: Advanced protocol for mail server access
RFC	Request For Comment. Documents for internet standardization procedures; available e.g. from < http://www.isi.edu/publications.html >.