

# Kofax Communication Server

TC/LINK-MX7 - Integration with Exchange Online

Version: 10.3.0

Date: 2019-12-13

**KOFAX**

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## Chapter 1

# Overview

This document describes how TC/LINK-MX7 can communicate with a **standard Exchange Online** installation.

## About TC/LINK-MX7 Integration with Exchange Online

Microsoft Office 365, formerly known as Microsoft Business Productivity Online Services (short name BPOS) is a set of messaging and collaboration tools delivered as a subscription service. Office 365 offers rich capabilities without the need to deploy and maintain software and hardware on-premise. It includes Microsoft Exchange Online, Microsoft SharePoint Online, Microsoft Office Communications Online and Office Live Meeting.

The term “cloud” is often used when talking about Office 365. Cloud computing is Internet-based computing, whereby shared resources, software, and information are provided to computers on demand.

Office 365 is available as a standard subscription, providing core features of the above components, and as a dedicated subscription with additional features and more flexibility.

This document describes how TC/LINK-MX7 can communicate with a standard Exchange Online installation.

## Key Features of TC/LINK-MX7 Integration with Exchange Online

- TC/LINK-MX7 can provide email communication with Exchange Online mailboxes. The connection is done via SMTP.
- TC/LINK-MX7 enables Exchange Online 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
- Additionally, TC/LINK-MX7 can handle TNEF encoded messages (attachment winmail.dat) that are sometimes sent by Exchange servers.
- 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).
- No additional configuration on Exchange side is needed: no connectors, no SSL certificates

There are, nevertheless, some restrictions caused by the architecture of Exchange Online:

- Exchange Online supports only SMTP addresses. Therefore, custom address types like FAX or SMS cannot be used.
- Exchange Online does not support MAPI. As a consequence, Voice Access via telephone is not possible.
- Exchange Online does not return delivery notifications.

## Unicode Support

TC/LINK-MX7 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*.

## Architecture

Exchange Online users can receive emails from any mail server, provided that the server is not blocked via a block list. They can send emails to any mail address, provided that the mail domain can be found in the public DNS (typically via MX records).

TC/LINK-MX7 acts as a blind SMTP relay that connects TCOSS with the Exchange Online server cloud. It uses standard SMTP messages sent via port 25.

TC/LINK-MX7 must be configured to use MX record lookup; this is different from the standard TC/LINK-MX7 configuration. For a mail domain hosted by Exchange Online, the MX records point to mail.global.frontbridge.com. This is a group of servers acting as a mail relay to the Exchange Online server cloud.

No special configuration is needed in Exchange Online.

The main prerequisites for the TC/LINK-MX7 computer are:

- It must have access to the internet and to the public DNS.
- All domains serviced by TC/LINK-MX7 must be listed in the public DNS (MX or A records, pointing to the link computer).
- The TC/LINK-MX7 IP address must not be on the block lists used by Exchange Online.

For scalability issues (for fail over and load balancing), see section [Scalability, Fail-Over, Load Balancing](#).

## Block Lists

If the TC/LINK-MX7 computer happens to be on a block list, sending to Exchange Online will fail and the Response field of the TCOSS message (visible in the TCfW outbox folder) has a text like the following:

“5.7.1 Service unavailable; Client host [193.16.155.4] blocked using Blocklist 1”.

You can ask for removal of the block list entry by forwarding the original email to the following address:

[delist@messaging.microsoft.com](mailto:delist@messaging.microsoft.com)

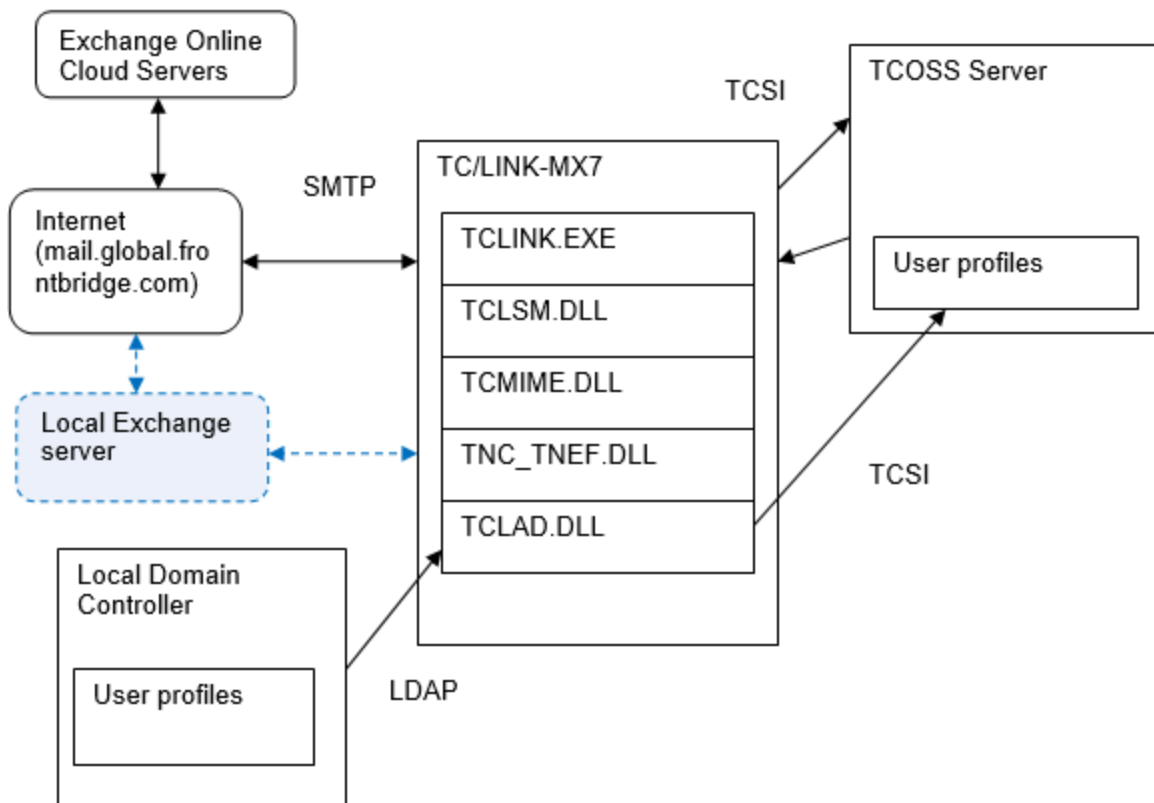
## Architecture Diagram

The following drawing combines two types of integration:

- The solid lines show how TC/LINK-MX7 communicates with mail domains hosted by Exchange Online.
- The dashed lines show the message flow during migration from a local Exchange organization to Exchange Online. In this phase, some mailboxes are still hosted locally, and the MX records for the Exchange mailboxes point to a local Exchange server. The local Exchange server forwards emails to those mailboxes that already have been migrated to Exchange Online.

Directory synchronization is only possible for user profiles stored on a local domain controller.

Messaging can be made secure by using SSL.



## 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.

## Exchange Client Applications

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

- MS Outlook 2007
- Outlook Web Access

## 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"><li>• Receiving from internet to temporary file</li><li>• Transmission to the internet</li><li>• Polling feature</li><li>• Loop detection</li></ul>
TCMIME.DLL	Message conversion from / to MIME
TNC_TNEF.DLL	Exchange-specific features, like KCS-specific address types, rich text, special Exchange send options.  <b>Note</b> 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



## Chapter 2

# Features

This section describes the features.

## 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

RFC 822 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 adhere to the RFC 822 addressing specifications to guarantee interoperability.

## Message Addressing from Exchange Online to KCS

When sending to KCS services, you can use one of the addressing modes from the table below.

Addressing mode	Example	Restricted character set	TC/LINK-MX 2000 / 2003 compatible	Domains registered in DNS
SMTP syntax using display name	'86353' [fax@kcs.company.com]	NO	NO	1 (kcs.company.com)
TC/LINK-MX compatible SMTP syntax	86353@FAX.kcs.company.com	YES	YES	1 per service (e.g. fax.kcs.company.com) + 1 for the main domain (kcs.company.com)

The mail domains used for sending to TC/LINK-MX7 must be registered in the public DNS. At the time of writing this document, an A record was sufficient.

### SMTP Syntax with KCS Address in Display Name (Recommended)

Recipient addresses can be specified in SMTP format, using the display name for the recipient number:

Syntax (using one domain for all services):

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

#### Examples:

'Max Müller#12345' [fax@kcs.company.com]

'Max Müller#86353.tcint' [fax@kcs.company.com]

'Max Müller#MM' [local@kcs.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 be registered in DNS)

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

**Prerequisite:** The used domain must be registered in the public DNS.

### 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*

86353@fax.kcs.company.com

86353.tcint@fax.kcs.company.com

“Annemarie Fischer#FS”@local.kcs.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.

Only sub-domains of the link domain are interpreted as KCS addresses: e.g. with link domain kcs.company.com, use domain fax.kcs.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” in Outlook 2003).

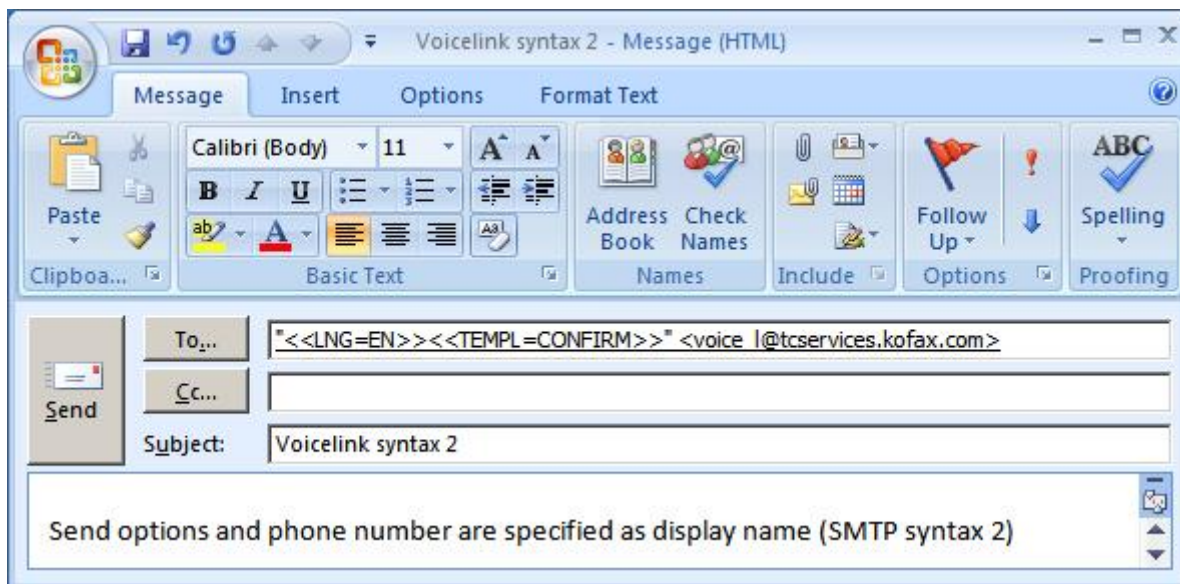
**Prerequisite:** The used domain and all its sub domains must be registered in the public DNS.

## 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.

The address can only be entered via the SMTP syntax with KCS address in display name:



## Message Addressing from KCS to Exchange Online

When sending to Exchange, recipient addresses consist of the KCS queue polled and the recipient's SMTP address.

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.

For example:

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:

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

## Originator Addresses When Sending to Exchange

This section describes the originator addresses when sending to exchange.

### SMTP Syntax Using Display Name (Recommended)

The first active address of the sender is converted to SMTP format, similar to the syntax described in section [SMTP Syntax with KCS Address in Display Name](#) :

*Number [service@domain]*

*e.g. Müller [LOCAL@kcs.company.com]*

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

#### **Configuration:**

This syntax must be configured explicitly, as it is not the default. To enable it, set registry value Exchange \SmtpSyntaxToMail to 2.

#### **Advantages:**

The address can contain national characters.

Only one externally visible domain is needed.

**Note** National characters in the service name are not supported.

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

This syntax is used as a default after a new TC/LINK-MX7 installation. For integration with Exchange Online, it is not recommended.

The first active address of the sender is converted to SMTP format, similar to the syntax described in section [TC/LINK-MX 2000/2003 Compatible SMTP Syntax](#):

*[Number@service.domain]*

*e.g. 123456789@FAXkcs.company.com*

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

#### **Configuration:**

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

#### **Disadvantages:**

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 automatically uses the display name syntax described below.

You need one additional domain listed in the public DNS per originator service.

## 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.

### 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.

### 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; for example:

- 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)

### 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 certain servers access to TC/LINK-MX7, you can configure the IP addresses that are allowed to connect to TC/LINK-MX7.

See [IP Authentication Setup](#) for details on the configuration.

## 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.

## 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 screenshots 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 (creates additional binary attachments for the pictures) or

General\SupportMultipartRelatedHtml = 2 (no binary attachments for the pictures)

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.

## Notifications

This section describes the notifications.

### Notifications from Exchange Online

Unfortunately, it is not possible to get real delivery notifications from Exchange Online. The intermediate servers (global.frontbridge.com) do not support delivery status notifications. Therefore, messages sent to Exchange Online are terminated right after transmission via SMTP.

### Notifications to Exchange Online

When an Exchange Online user requests a (non)delivery notification for a message to KCS, two messages are returned:

A “relayed” notification created by the Exchange cloud server is returned first.

The message text is “Delivery to these recipients or distribution lists is complete, but delivery notification was not sent by the destination:”, followed by the recipient name.

As soon as the TCOSS send order is terminated, the user gets a textual (non)delivery notification from KCS.

### Notifications During Email Coexistence Phase

During migration from on-site Exchange to Exchange Online, there will be a phase when some mailboxes are already migrated to Exchange Online and others are still on local Exchange servers. The MX record for the Exchange mail domain still points to the local Exchange server, which forwards

messages sent to migrated mailboxes to Exchange Online. In this situation, the migrated users receive “relayed” notifications for these forwarded messages, because TC/LINK-MX7 requested delivery status notifications.

The TCOSS send order is terminated when the message is delivered to the local Exchange mailbox (i.e. before it is forwarded to Exchange Online).

## 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).

## 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.

## Supporting SSL Connections (RFC2487)

TC/LINK-MX7 optionally supports secure connections over the SSL/TLS protocol defined in RFC 2487. 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

## 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 remote server tries to verify the certification authority against a list of allowed authorities. At the moment, the Exchange online servers accept self-signed certificates.
- It contains a hard-coded domain name (tclink-sdd-test-cert.topcall.com). If the remote server compares this domain name with the domain name assigned to TC/LINK-MX7, it will not accept the certificate.

### Requesting SSL Certificates from a CA

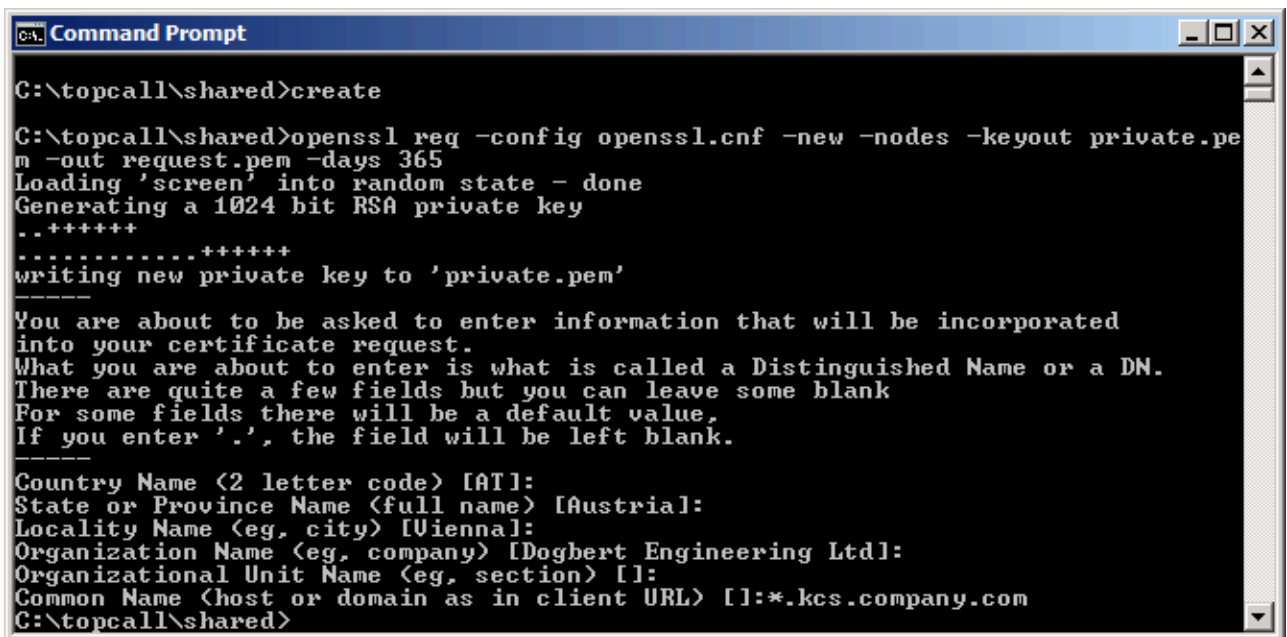
First create a certificate request, using the CREATE.BAT utility installed in the Shared directory on the link computer.

This utility asks for several parameters, the most important one is the Common Name. The Common Name must refer to the correct domain (or domains) used by TC/LINK-MX7.

The Common Name for the certificate request depends on the SMTP syntax used for sending (Exchange \SMTPSyntaxToMail):

For Exchange\SmtptSyntaxToMail = 2, you enter the link domain name (e.g. "kcs.company.com").

For Exchange\SmtptSyntaxToMail = 1, you enter the link domain name plus sub domains (e.g. "\*.kcs.company.com").



```
C:\topcall\shared>create
C:\topcall\shared>openssl req -config openssl.cnf -new -nodes -keyout private.pem -out request.pem -days 365
Loading 'screen' into random state - done
Generating a 1024 bit RSA private key
..+++++
.....+++++
writing new private key to 'private.pem'
-----
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [AU]:
State or Province Name (full name) [Austria]:
Locality Name (eg, city) [Vienna]:
Organization Name (eg, company) [Dogbert Engineering Ltd]:
Organizational Unit Name (eg, section) []:
Common Name (host or domain as in client URL) []*.kcs.company.com
C:\topcall\shared>
```

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

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

### Creating a certificate with OpenSSL

To create a certificate with OpenSSL, you would enter, for example:

```
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](http://www.openssl.org).

**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
```

### Creating a certificate with Microsoft Certificate Services

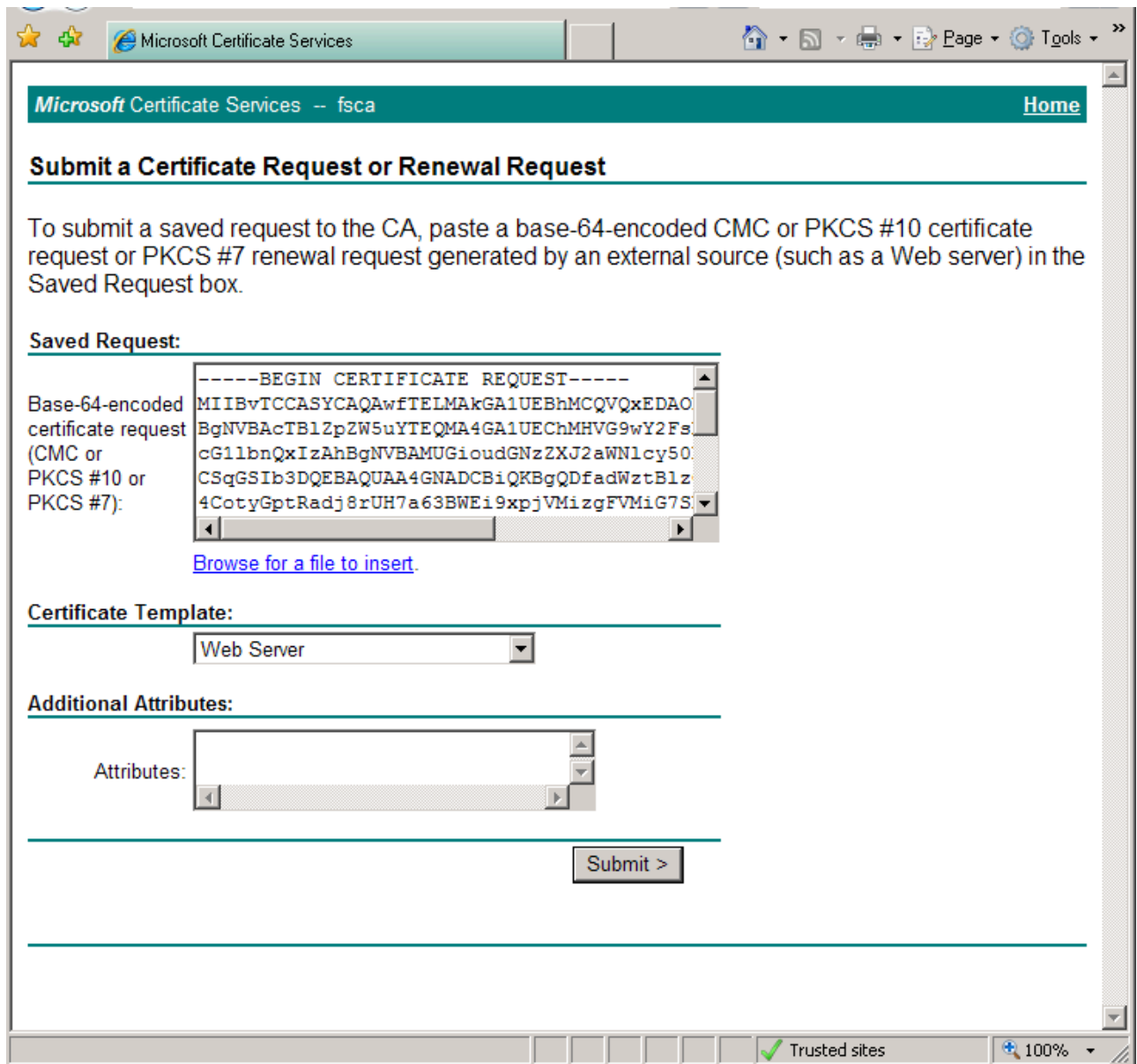
Open the web page of the Microsoft Certificate Server, using an URL like the following:

<http://servername/certsrv/>

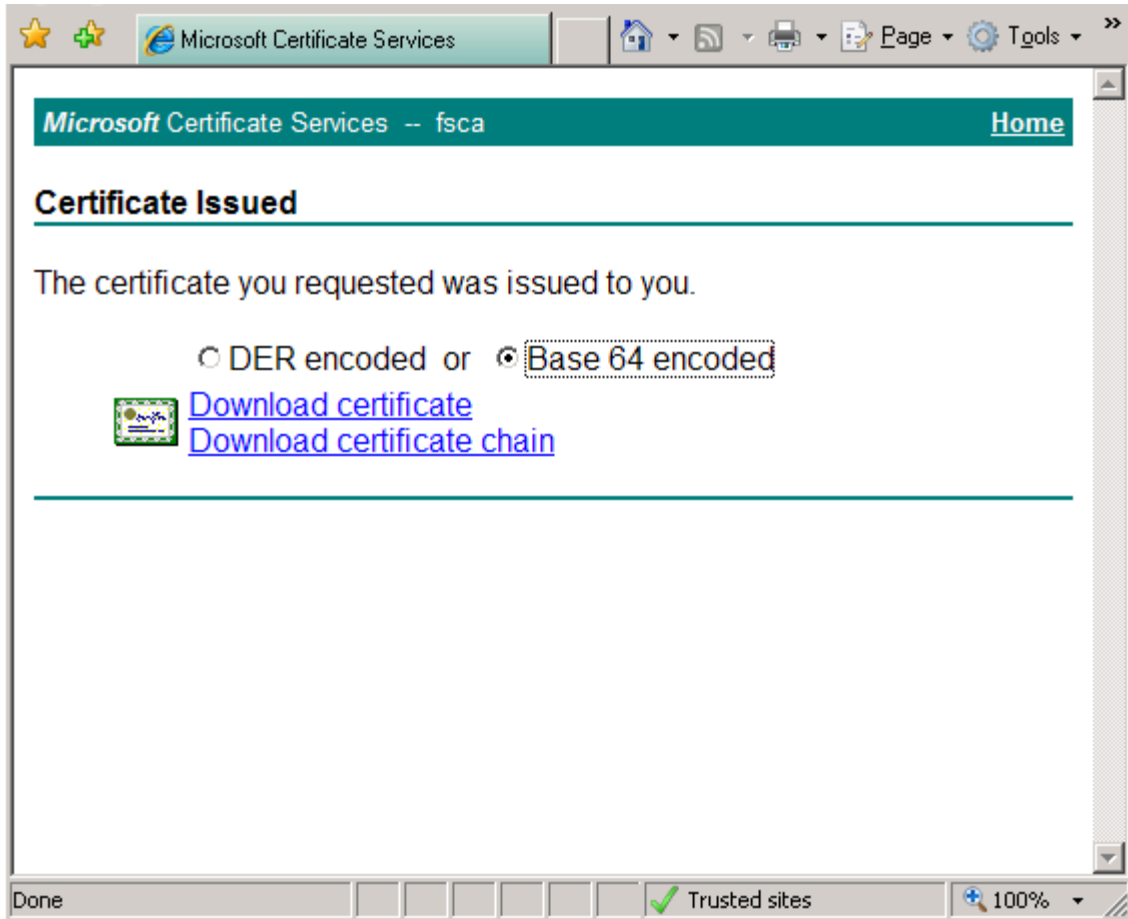
Choose “Request a certificate”, followed by “Advanced Certificate Request”.

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 window is displayed:



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.

#### **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 TC/LINK-MX7 manual.

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 Relay Servers

The relay servers at mail.global.frontbridge.com can have self-signed SSL certificates. 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.

Therefore, you should disable the root certificate validation by setting registry value *TCLSM \SMSkipRootCertCheck* to 1.

## Directory Synchronization

Directory Synchronization is only possible for users stored in the local Active Directory.

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.

## 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.

## Attributes Exported from the Active Directory

Here is a list of user attributes that are recommended for use with Active Directory dirsync.

<b>Attribute name (as used for Active Directory dirsync)</b>	<b>Attribute description (displayed in English version of “Active Directory Users and Computers”)</b>
givenName	First name
initials	Initials
sn	Last name
displayName	Display name
description	Description
physicalDeliveryOfficeName	Office

<b>Attribute name (as used for Active Directory dirsync)</b>	<b>Attribute description (displayed in English version of "Active Directory Users and Computers")</b>
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
altRecipient	Mail flow settings   Delivery options   Forward to During transition from on-site Exchange to Exchange Online, the altRecipient attribute of migrated users contains their Exchange Online mail address.
mailNickname	Alias
cn	same as Fullname
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.

## Chapter 3

# Installation

This section describes the installation.

## Prerequisites

Please consult the TC/LINK Manual for requirements not mentioned in this section (e.g. TCROSS 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 Online to Kofax Communication Server. This domain must be reachable from the outside, so there must be at least a DNS A record for it, pointing to the link computer. The domain name must be different from the mail domain of the Exchange users (but can be a sub domain).

If you want to specify the TCROSS service as part of the domain name, you need additional DNS records for the service-specific sub domains (e.g. fax.kcs.company.com, sms.kcs.company.com).

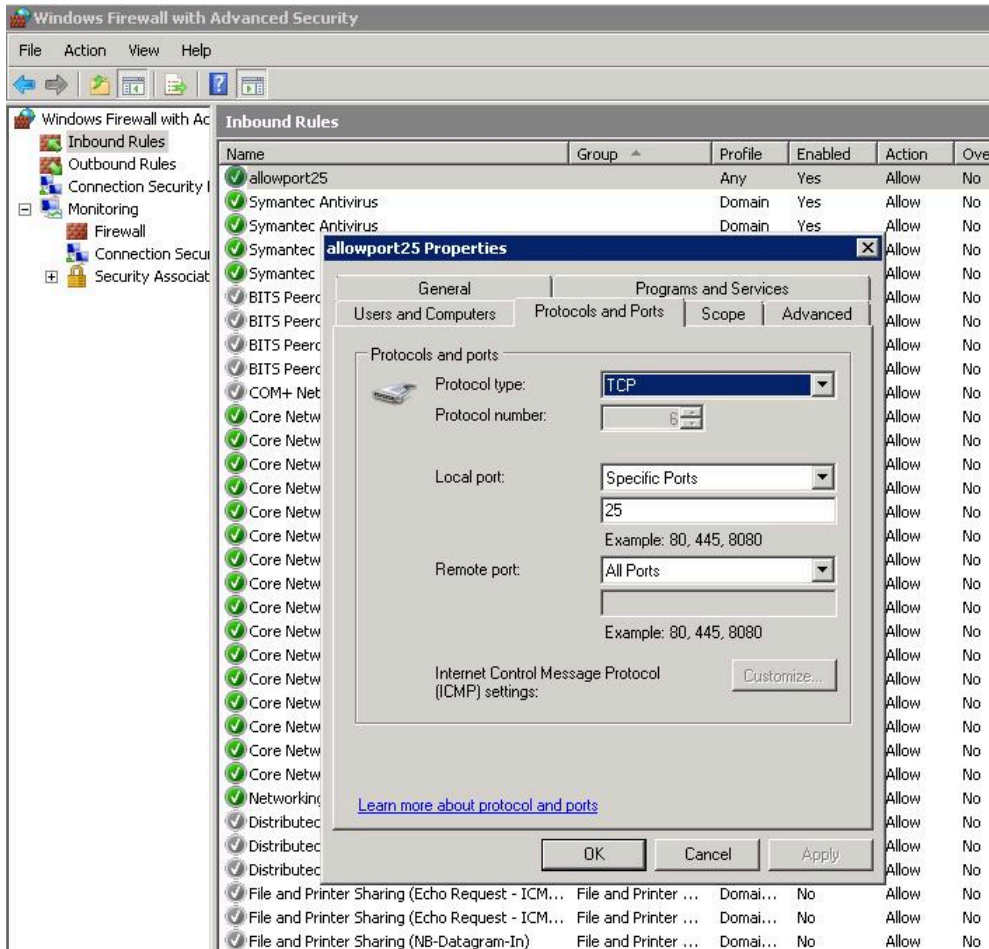
When using several parallel link instances, use the same mail-domain name for all instances.

- In order to find MX records for domains hosted by Exchange Online, the TC/LINK-MX7 computer must have access to information stored on public DNS servers.
- 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.



- The TC/LINK-MX7 computer must be able to exchange SMTP messages (port 25) with the internet. 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:\TEMP\

- 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.

## Common Installation Steps

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

### 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).

### TC/LINK-MX7 "Advanced Installation"

You need the advanced installation mode, because some non-standard settings are required.

The screenshot shows a dialog box titled "TC/LINK-MX7 - BASIC parameters". It contains the following fields and values:

KCS type	Single server
Current TCOSS Version	TCOSS >= 7.20
TCTI transport type	RPC
Linktype to [primary] KCS	TCP/IP
Name of [primary] KCS	KCServer
TCOSS Codepage	0
PC Codepage	437

At the bottom, there is a checkbox labeled "Configure Advanced Features" which is checked. Below the checkbox are "OK" and "Cancel" buttons.

## TC/LINK-MX7 “Advanced Installation” – SMTP and Exchange Parameters

TC/LINK-MX7 - Setup SMTP and Exchange parameters

Enter or modify the parameters below

Fully Qualified Link Computer Name: link1.company.com

Fully Qualified Link Domain Name: kcs.company.com

Exchange Domain: company.com

Direct Delivery: via MX records

Service for Sending to Exchange: MX7

Support own Address Types: no

IP Masking Option: Do not use lists

Integrated with TC/Voice Access

Support Time Zones

Enable SSL

OK Cancel

**Fully Qualified Link Computer Name** (registry: *TCLSM\SMHostName*): This must be the name of the link server. The link computer 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 domain used for routing messages to TC/LINK-MX7. It must be registered in the public DNS. If you have several parallel link instances, all of them must use the same link domain name.

**Exchange Domain** (registry: *Exchange\ExDomain*): This setting is only used during the migration from on-site Exchange to Exchange Online. In this phase, this configuration value holds the mail domain used in the primary SMTP addresses of the Exchange users. Setup adds this domain to the list of routable domains (*TCLSM\SMRouteDomains*), as a local Exchange installation 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*): Please change this setting to “via MX records”.

**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*): Exchange Online supports only address type SMTP. Therefore, you should set this configuration value to "no".

**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 certain servers use TC/LINK-MX7, you can configure a positive IP list. 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*): Voice Access is not supported in combination with Exchange Online.

**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.

## 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 IPv4 addresses in the range 193.83.166.xxx can access TC/LINK-MX7; ex is comment
204.231.192.41	allows this single IP address to access TC/LINK-MX7 (this is the IP address that global.frontbridge.com uses for sending)
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 *SMIPList* registry key will be used. The functionality of the key "SMIPMasking" is the same for registry based list and file based list. So you can specify whether this list is to be used as a "good" or "bad" IP list.

## TCP Trace / Hop Count / Message Limits Setup:

TC/LINK-MX7 - Setup SMTP parameters

Enter or modify the parameters now

EnableTCP trace

Maximum hop count

Maximum message size from SMTP in bytes (0=no limit)

Maximum message size to SMTP in bytes (0=no limit)

Combine all text blocks to a single text block

**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\MaxSizeFromSmtpl): 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\MaxSizeToSmtpl): 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.

## Final Installation Steps

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

- If you plan to use only one domain for TC/LINK-MX7 (instead of service-specific sub domains), open a registry editor and set registry value *Exchange\SmtplSyntaxToMail* to 2.
- Set the trace level to a low value for optimum performance
- Configure access rights if necessary
- Configure TC/LINK-MX7 to run as a service (controlled by TCSRv); be sure to configure automatic start-up for TCSRv.

- Reboot the TC/LINK-MX7 server to check for automatic start-up.
- If using a non-standard document converter script for HTML, install the script and adjust page margin configuration (see section [Message Conversion from Exchange to KCS](#)).

## Scalability, Fail-Over, Load Balancing

This section provides information about scalability, fail-over and load balancing.

### Multiple Exchange Servers

Exchange Online services are delivered from geographically dispersed Microsoft data centers. Each data center houses a reliable, redundant infrastructure needed to support the service.

### Multiple Link Servers

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

For fail-over and load balancing on the link side, you can configure multiple MX records for each domain used by the link (one per domain and link server).

Another option is to use a Windows NLB cluster (network load balancing), as described in detail in the TC/LINK-SM Manual. In this case, the MX record holds the common IP address of the NLB cluster, and the cluster handles load balancing and fail over.

## 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 Technical Manual*, section **Special Features**.

## Installation Hints

This section provides additional information about installation.

### Exchange Online Message Size Limits

The message size limit for Exchange Online is 25 MB, including attachments.  
(<http://www.microsoft.com/en-us/office365/exchange-online.aspx>)

## 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.



## Chapter 4

# Operation

This section provides the information about operation of TC/LINK-MX7.

## 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 “[Registry Keys Used by TC/LINK-MX7](#)” for a complete listing!

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

## SMTP Security Considerations

To increase security, you can

- 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 certain servers to send via TC/LINK-MX7

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

## Summary of Error Conditions and Retries Behavior

This section provides summary of error conditions and retries behavior.

### KCS to Exchange Online

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 Condition	Action	TCfW Outbox "Response" field (TS_LAST_MDA_NOTE)
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"

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.

## Exchange Online 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".

## Known Problems

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

## 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.

## 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.

## 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.

## 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.

## Chapter 5

# Appendix

This section provides additional information about TC/LINK-MX7.

## 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.

Registry Key	Type	Default	Possible Values / Meaning
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.
SMDebug	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 " <a href="#">IP Authentication Setup</a> " 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

Registry Key	Type	Default	Possible Values / Meaning
SMMaxConn	DWORD	1	maximum number of simultaneous incoming connections
SMMaxRecipients	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.

Registry Key	Type	Default	Possible Values / Meaning
TCPDebug	DWORD	0	1 ... Write all data from/to SMTP to the trace file
UseDNS	DWORD	Default: 0 Setting needed for Exchange Online: 2	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:\TCOSSITCLP\DSNCODE_TCLINKMX7\DSNCODE_504	File with mappings between TCOSS error code and RFC 3464 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.

Registry Key	Type	Default	Possible Values / Meaning
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	ISO_8859_1	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 does) 1: insert embedded messages hierarchically (standard TC/LINK-SM behavior)
EnableTnef	DWORD	1	Send and receive Winmail.dat files



Registry Key	Type	Default	Possible Values / Meaning
ExDomain	Multistring		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. Not supported with Exchange Online (setting is ignored)
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.TCMSMESSAGE	Message class for voice messages sent to Exchange
OwnService	String	MX7	Service for sending to Exchange
Separator	String	#	Separator character for non-SMTP addresses
SmtptDomainIn	String		Additional domain for sending from Exchange to KCS
SmtptSyntaxToMail	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 (recommended for Exchange Online)
Templates	DWORD	1	Used during Setup only. 1 ... support KCS address types 2 ... install address templates Not supported with Exchange Online (setting is ignored)
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 Not supported with Exchange Online (setting is ignored)

### 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

Registry Key	Type	Default	Possible Values / Meaning
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

## 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.

## Checklist for Setup

KCS CPU number <sup>1</sup>	
TCOSS version	
TC/LINK-MX7 license <sup>1</sup>	Key: Expire Date: Registrations:
Postscript license <sup>1</sup> (optional)	Key: Expire Date: Registrations:
PCL5 license key (optional )	Key: Expire Date: Registrations:
GIF license key (optional)	Key: Expire Date: Registrations:

<sup>1</sup> 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.

<b>KCS CPU number<sup>1</sup></b>	
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 (Windows 2008/2012)	
TCDCEXE User Password (Windows 2008/2012)	
TCDCEXE User Domain (Windows 2008/2012)	

## 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 < <a href="http://www.isi.edu/publications.html">http://www.isi.edu/publications.html</a> >.