

Kofax Communication Server

TC/LINK Technical Manual

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The KOFAX logo is displayed in a bold, blue, sans-serif font. The letters are thick and closely spaced, with a modern, clean design.

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Preface

TC/LINK performs bi-directional message transfer between the Kofax Communication Server and a specific mail system. For outgoing faxes, TC/LINK automatically converts file attachments to KCS image format. For incoming messages, TC/LINK converts fax images to a selected standard graphic format.

Message transfer includes the transfer and creation of notifications. TC/LINK can also create and maintain KCS user profiles for the users of the remote mail system. This is called Directory Synchronization (DIRSYNC) - it can import data from the Lotus Notes, Microsoft Exchange and Windows Active Directory remote systems. TC/LINK-FI can also be used to import data from any system via TCFI Dirsync messages, CSV files, and LDIF.

TC/LINK modules are started by the TCSRVR service. They can be installed on any computer running Windows Server 2008 or Windows Server 2012 (Intel platform), be it Kofax hardware or a Windows-based mail server.

Several link modules can be run in parallel on several computers for high throughput. Each link module serves one connection and requires a separate license. Separate licenses are needed for Dirsync, for conversion of PCL5 or Postscript file attachments to KCS image format, and for conversion of KCS image format to GIF or PDF format.

TC/LINK can be controlled from remote via standard Microsoft and Kofax products.

This document describes the TC/LINK architecture for connections between TCROSS and Mail Systems. For each type of mail system there is a corresponding type of link module. This document covers only features common to all link types. For mail-system specific information refer to the mail-specific *TC/LINK documentation*.

The Kofax Communication Server setup contains the following link types:

- TC/LINK-FI (including TC/LINK-XML, TC/LINK-FM and TC/SOAP)
- TC/LINK-LN
- TC/LINK-OC
- TC/LINK-RS (in the Release Controller group)
- TC/LINK-SC
- TC/LINK-S
- ITC/LINK-SM
- TC/LINK-SDD
- TC/LINK-WM
- TC/LINK-MD
- TC/LINK-MQ
- TC/LINK-SJ
- TC/LINK-MFP
- TC/LINK-MX7

- TC/LINK-SC7

Note The Kofax Communication Server and its components formerly used the name TOPCALL. Some figures and texts in this manual may still use the former name.

Related Documentation

This document refers to the following documents:

- *Document Conversion Technical Manual*
- *Environment Guide - Platform System Manual*
- *LCUSW Manual*
- *LDAP Directory Synchronization Technical Manual*
- *TC Probe Agent Technical Manual*
- *TC/Archive Technical Manual*
- *TC/LINK Technical Manual*
- *TC/LINK-FI Technical Manual*
- *TC/LINK-LN Technical Manual*
- *TC/LINK-MFP Technical Manual*
- *TC/LINK-MQ Technical Manual*
- *TC/LINK-SC Technical Manual*
- *TC/MetaMail Configuration Manual*
- *TC/SNMP Technical Manual*
- *TCOSS Application Module Manual*
- *TCOSS Message Preprocessor Technical Manual*
- *TCOSS System Manual*
- *TCSI Technical Manual - Client Server Interface*
- *TOM Technical Manual*

The full documentation set for Kofax Communication Server is available at the following location:

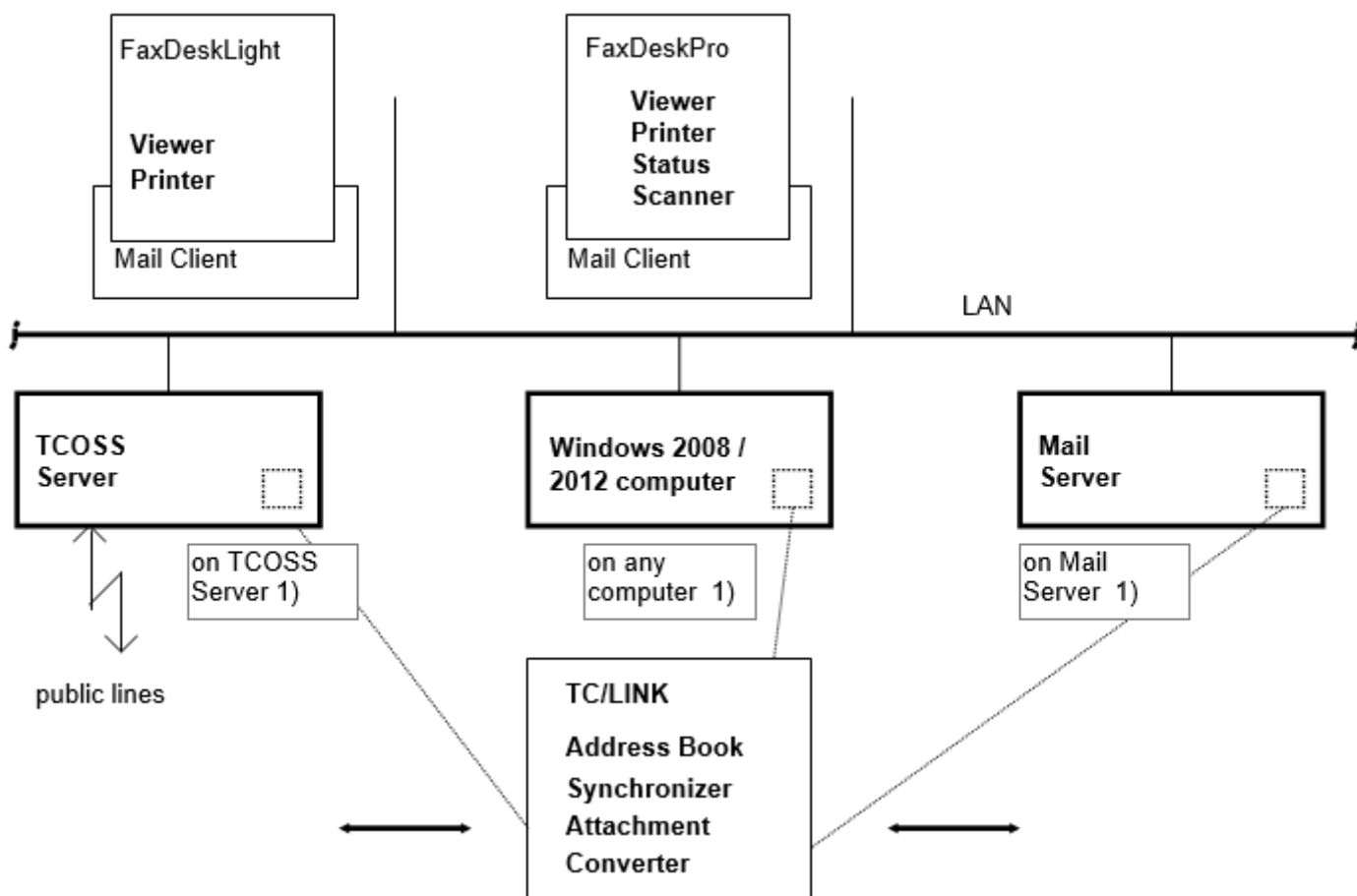
https://docshield.kofax.com/Portal/Products/en_US/KCS/10.3.0-SihMvq5oti/KCS.htm

Chapter 1

Overview

This section provides an overview of TC/LINK.

System Environment



Note TC/LINK may run on any Windows 2008 or 2012 computer (Intel platform), including the TCOSS server and the mail server.

Operation

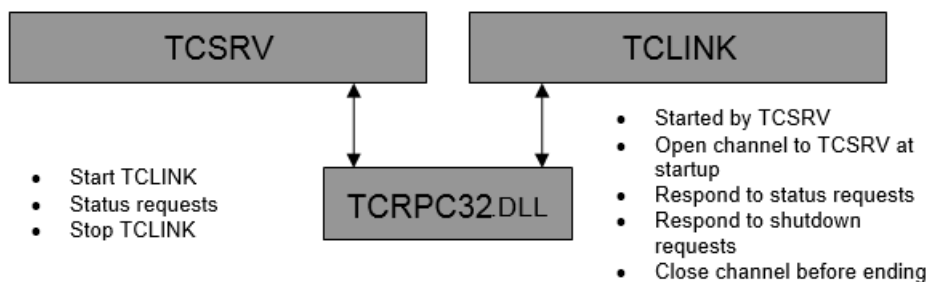
Every TC/LINK is a separate process started by the Windows service TCSRVR which is provided by TCOSS.

It polls the Kofax Communication Server and the mail server for new messages.

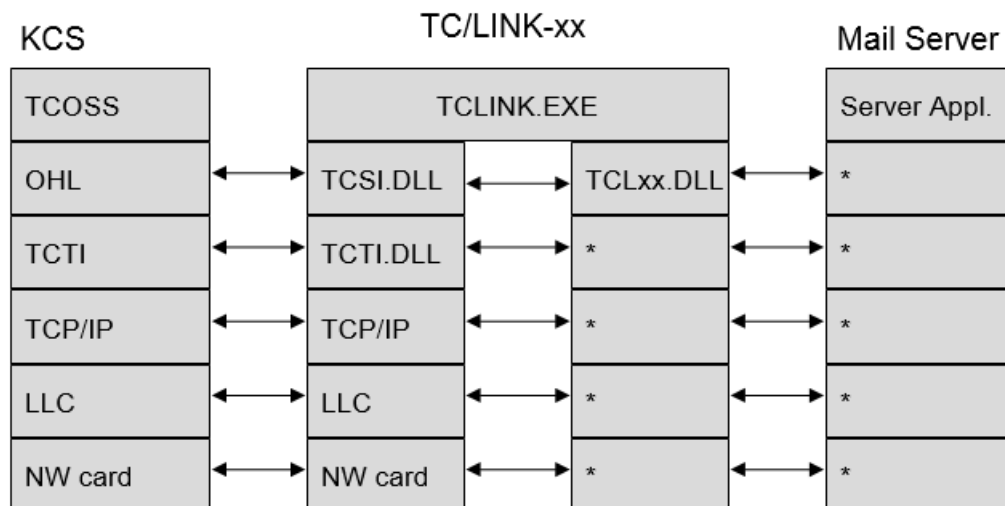
TC/LINKs include mail-system-specific code to retrieve messages from mail and post messages to the mail server, and to convert between KCS and Mail message format. All links use common code for general address mapping, attachment conversion, document conversion, notification handling, directory synchronization and communication with Kofax Communication Server.

Each link can be configured, started and stopped independently from any other links.

TC/LINK Interaction with TCSRVR



TC/LINK Communication (as a gateway between KCS and Mail Server)



System Interfaces

This section describes the system interfaces used by TC/LINK.

TC/LINK – Kofax Communication Server

TC/LINK uses TCSI as the interface to TCOSS.

TC/LINK logs in to KCS with a user ID configured at setup. Every link polls one or more KCS queues for outgoing messages. Different queues must be used for different image formats, such as TCLMXQI for TCI, TCLMXQB for BMP. You can install more than one link for each queue, and more than one queue for each link.

TC/LINK performs an “open for sending” on the message found in the queue, which locks the open message.

TC/LINK – Mail Server

The interface to the foreign mail system depends on the link type. According to the design of the foreign mail system, the link may be a file interface, a function call interface, a COM interface, and more.

Poll Cycle

TCLINK works in units called poll cycles. In every poll cycle, it fetches (= polls) all available messages from Kofax Communication Server and mail server. If there are no more messages on both sides, the poll cycle is over and TCLINK waits for a configured amount of time (registry: `General\PollCycle`).

In every poll cycle, TCLINK starts with polling the TCOSS server. After a maximum of 10 messages, it changes the direction and polls the mail server, again fetching a maximum of 10 messages. Then the direction is changed again and so on, until no more messages are available on both sides.

`General\MaxPollTC`: The maximum number of messages that is polled from TCOSS before changing the direction is configured in this registry value.

`General\MaxPollMail`: The maximum number of messages that is polled from the mail server before changing the direction is configured in this registry value.

These values do not affect working set size or CPU usage, nor do they change the overall transmission speed. They only affect the fact how soon TCLINK changes the polling direction. If you set one of these values to 0, no messages are polled from this side.

Setting one of these values greater than the other (example: `MaxPollMail` = 100 and `MaxPollTC` = 10), affects the relative transmission speed in conditions where a lot of messages are available on both sides. In our example, if 200 messages are available on both sides, the messages from the mail server will be delivered earlier than those from KCS. Nevertheless, all of them are delivered in one poll cycle. TCLINK polls:

```
100 msg from Mail, 10 msg from TCOSS, 100 msg from Mail, 10 msg from TCOSS, 0 from Mail, 10 from TCOSS, 0 from Mail, 10 from TCOSS, 0 from Mail, 10 from TCOSS, ..., 0 from Mail, 0 from TCOSS - end of the poll cycle
```


Addressing

This section describes the addressing of TC/LINK.

Addressing from KCS to Mail

General address format: `tc_queue:mail_address`

Messages to mail are addressed via a queue. A queue is a special KCS user without addresses.

The last character of the queue name (preceding the colon) is the format control character, which defines the format to which image parts of the document are converted:

- 'I' for TCI
- '0' for TIFF packbits
- '1' for TIFF uncompressed
- '2' for TIFF G3 with EOL
- '3' for TIFF G3 without EOL
- '4' for TIFF G4
- 'D' for DCX (Microsoft)
- 'P' for PCX (one attachment is created per page)
- 'B' for BMP (one attachment is created per page).
- 'M' for MODCA type 1 (with Resource Group and Invoke Medium Map)
- 'N' for MODCA type 2 (without Resource Group and Invoke Medium Map)
- 'G' for GIF
- 'F' for PDF
- 'C' for JPEG (one attachment is created per page)

The `mail_address` part is defined differently for each type of mail.

Addressing from Mail to KCS

The syntax for addressing messages from Mail to KCS depends on the linked mail system. For more information, consult the manual for your specific link.

Remark concerning X.400 Addresses

When posting a message to KCS, X.400 address strings may contain the following short names.

| Shortname | Meaning |
|-----------|-----------------------|
| C | Country |
| O | Organization |
| A | Administrative Domain |
| P | Private Domain |
| S | Surname |
| G | Given Name |

| Shortname | Meaning |
|----------------|---------------------------|
| Q | Generation Qualifier |
| I | Initials |
| OU1 to OU4 | Organizational Units |
| D=(type;value) | Domain Defined Attributes |

TC/LINK Address Mapping

The address mapping algorithms in TCLINK.EXE convert addresses between Mail and KCS format. A steering file with extension .MAP (called “map file”) holds rules for address conversion. Every link type has its own map file.

A map file contains four sections, for every type of address:

1. TO_TC_ORIG: Originator and inactive recipients of message to KCS.
2. TO_TC_RECP: Active recipients of message to KCS.
3. TO_MAIL_ORIG: Originator and inactive recipients of message to Mail.
4. TO_MAIL_RECP: Active recipients of message to Mail.

Every section can hold one or more sets of rules.

If you need changes for any reason, contact the Kofax support department. The necessary changes will be integrated in the default .MAP files to be available for all customers with the next release.

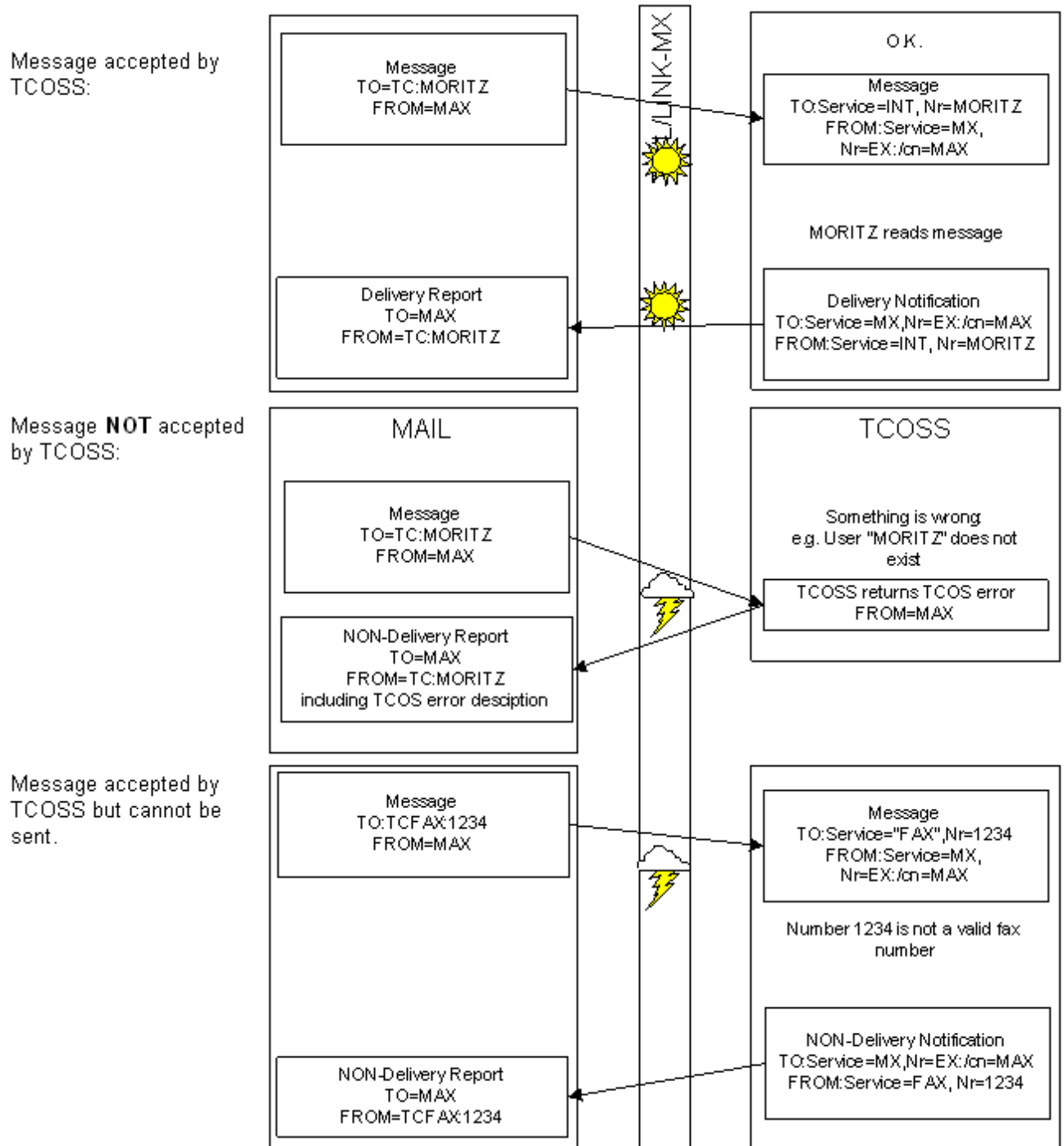
Chapter 2

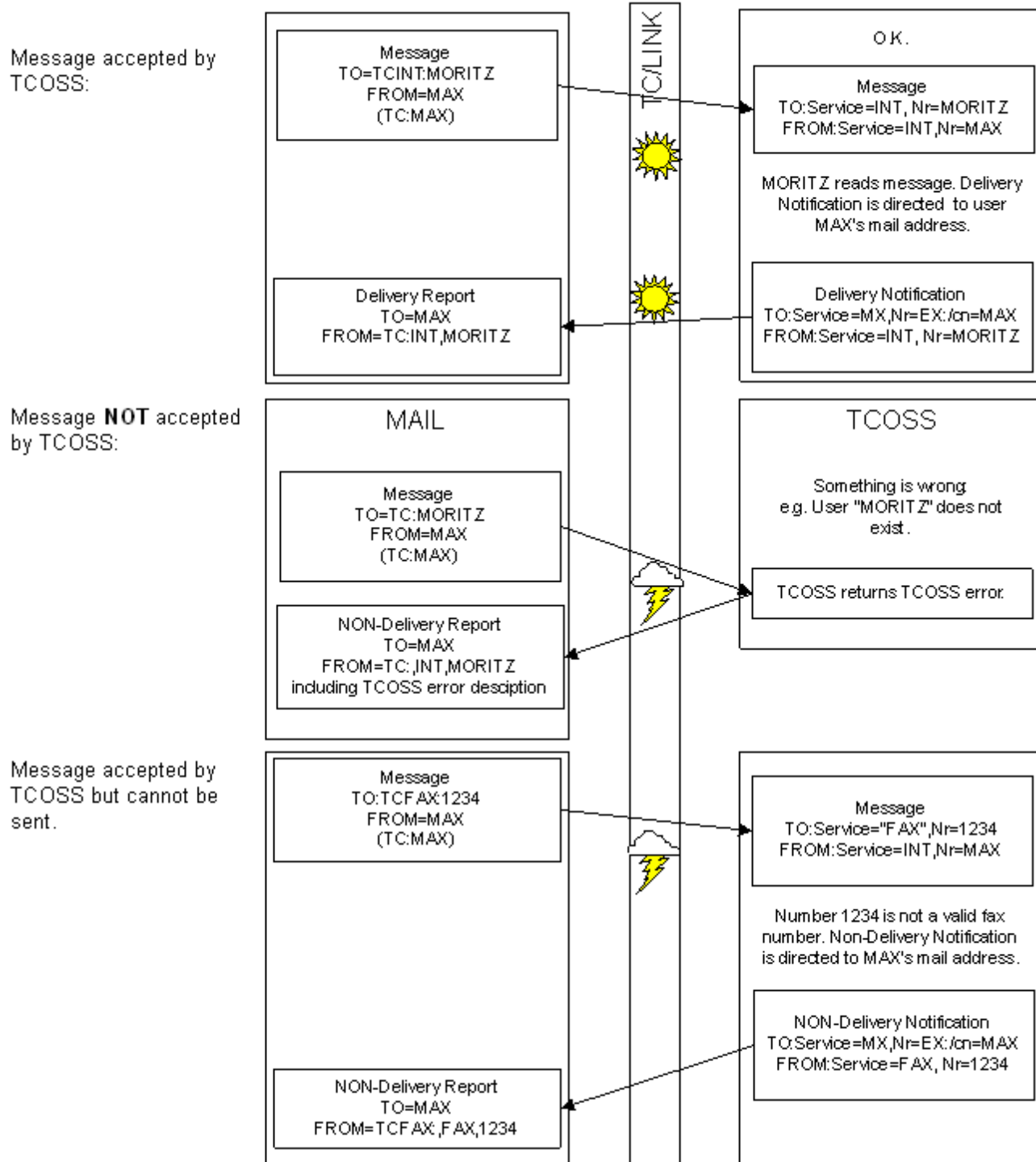
Product Description

This section describes the functionality of TC/LINK.

Message Transfer

The figures in this section explain message transfer scenarios between KCS and mail system. The mail address format used in these samples is a simplification of the MS-Exchange address format.

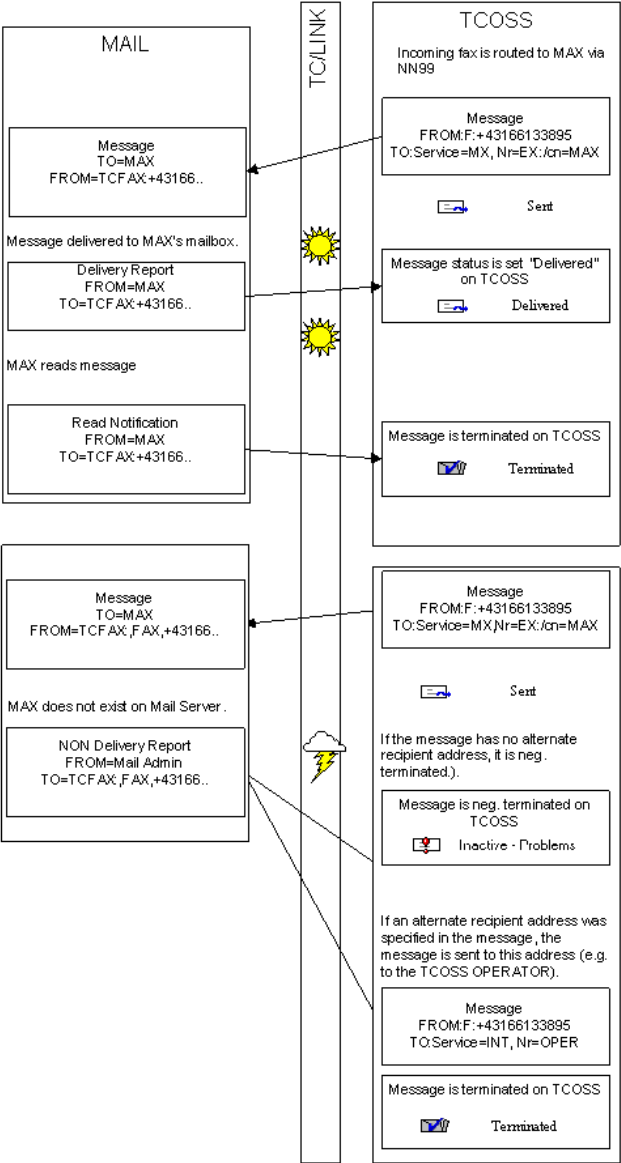
Mail to KCS (Originator is no KCS User)

Mail to KCS (Originator is KCS User)

Note The sender is also a KCS user; TC/LINK converts his mail address to KCS format.

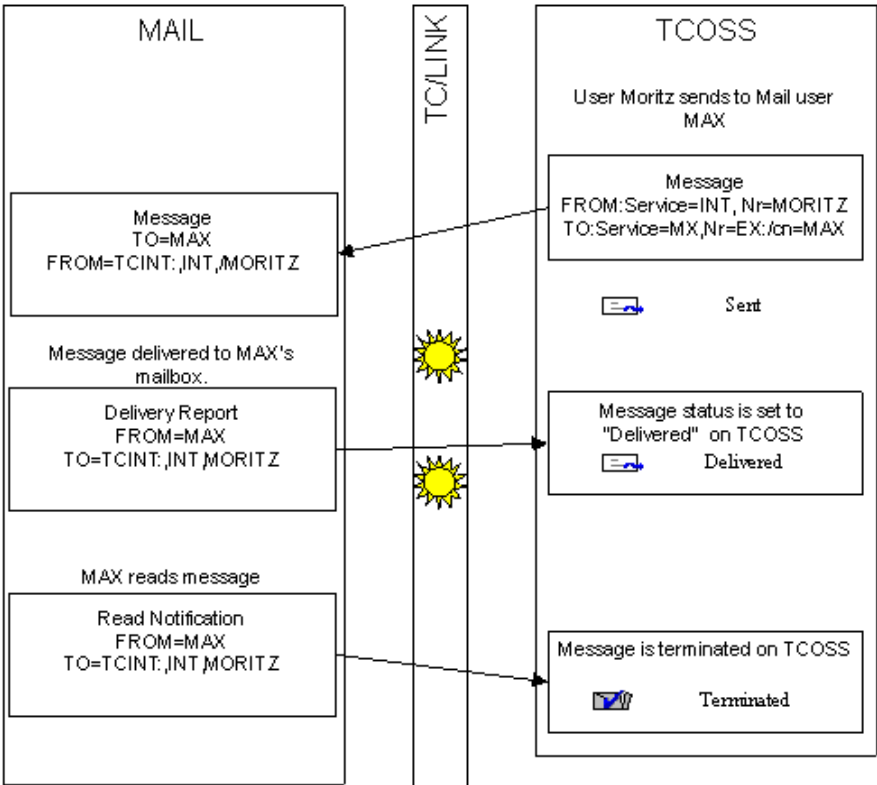
KCS to Mail: Incoming fax (originator is no KCS user)

Message accepted by MAIL:

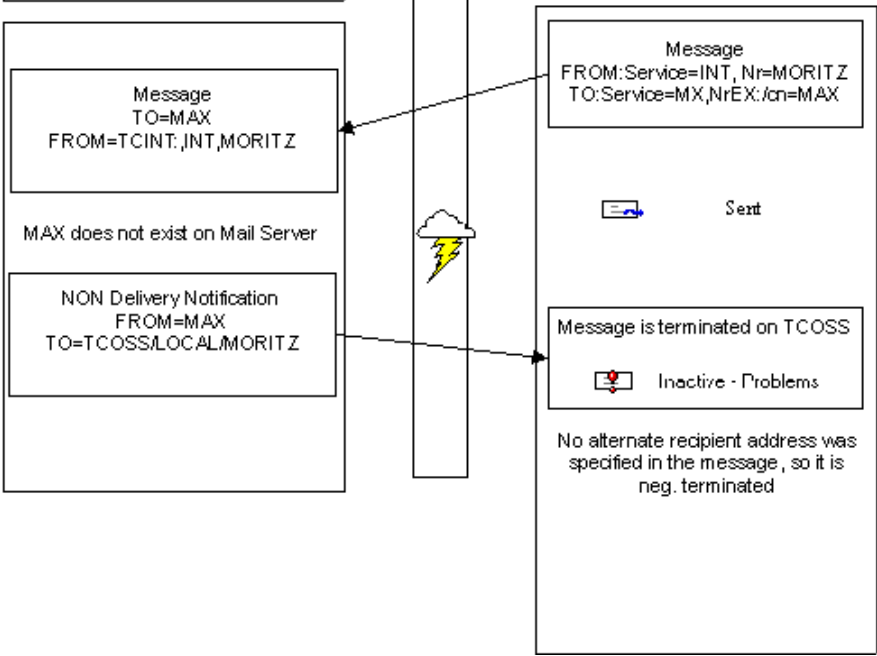


KCS to Mail: Originator is KCS user

Message accepted by Mail:



Message **NOT** accepted by MAIL:



Mail Originator Mapping

For full TC/LINK functionality, every user on the remote mail system should have a corresponding user profile on the Kofax Communication Server, the so-called KCS shadow user.

The shadow user profile is used to add default information to the message like cover sheets and additional default recipients. If a profile is found the message is also posted to TCOSS under this user account. This allows the system to apply the security restrictions configured for this user and better message tracking. TC/LINK uses mapping rules to determine the KCS shadow user from the originator address. Additionally the shadow user profile is used for TCOSS inbound routing.

When the mail user sends a message via TC/LINK, TC/LINK looks for a KCS shadow user profile of this person and takes any message defaults from the default template defined in the shadow profile.

The process of finding a KCS shadow user is called "Originator Mapping".

- In **TCOSS versions below 7.22.00**, the correlation between the user's mail system address and his KCS user ID (short name) is defined in the address mapping rules. Based on the KCS user ID TC/LINK searches for the shadow user profile.
- In **TCOSS 7.22.00 and above**, the Originator mapping is enhanced and allows a more flexible way to recognize KCS shadow users. TC/LINK supports an additional address mapping mechanism for the mail originator based on TCOSS proxy addresses. Proxy addresses are all the addresses specified for a specific user within the KCS (shadow) user profile. It is the combination of all the active and inactive addresses. By defining proxy addresses for KCS users, the shadow user recognition is independent of the user ID.

The new method of address mapping and inbound routing also increases the performance which results in higher throughput using less system CPU time.

Prerequisites

TCOSS version 7.22 or above

One shadow user for multiple mail systems

One shadow user can be used as shadow user for multiple mail products by adding proxy addresses to the user profile manually. Directory synchronization cannot be used to just add a proxy address to an existing user.

Note The notifications are sent to the mail system(s) according to the actions defined in the events panel of the user profile. It is not possible to route back notifications automatically to the mail system that generated the message. This requires one shadow user per mail system.

Example1

User Profile - FS-M1

Queue Length/Age/Pages alerting | Queue Length/Age/Pages logging | TC/WEB | TC/WEB Identity Rights

General | **Address** | Event | Rights | Manual Fax | Distributor | Authorize/Sign

Service: **SMTP** | Addr. no.: **4** | ☐ Active

Free address:

| Active | No | Service | Number |
|--------|----|---------|---------------|
| X | 1 | TOPCALL | FS-M1, |
| | 2 | FXI | 8127, |
| | 3 | SMTPIN | Fischer.M1, |
| | 4 | SMTP | fsm1@gmx.net, |

A TCfW user also wants to send faxes from his browser via TC/LINK-SM. The messages shall be visible in his outbox. This works if the own SMTP address in the browser is configured to "userid@localdomain". It also works with other addresses if a proxy address is added to the user profile.

- Old originator mapping: The own domain name is removed from the originator address. The user "fsm1" is searched but not found as user because the user ID is "FS-M1".
- Enhanced originator mapping: Just enter a SMTP proxy address and the user will be found.

Remark: The SMTPIN address is used for inbound routing only, not for sending of messages.

Example2

When sending messages from TC/LINK-SC, the originator information from SAP depends on the recipient address. When a SAP user sends a fax, the originator address is his fax number. When he sends to SMTP, the originator address is his SMTP address. By entering proxy addresses for all services, the shadow user will be found independent of the service used.

The dialog box 'User Profile - BR (Norbert Bartalsky)' contains several tabs: General, Address, Event, Rights, Manual Fax, Distributor, and Authorize/Sign. The 'Address' tab is active, showing a 'Service' dropdown set to 'SMTP', 'Addr. No.' set to '4', and an 'Active' checkbox. The 'Free Address' field contains 'Norbert.Bartalsky@sap.topcall.co.at'. Below this are 'Delete Addr' and 'Save Addr' buttons. A table lists address entries:

| A | No | Service | Number: |
|---|----|---------|---|
| X | 1 | TOPCALL | BR, |
| | 2 | FXI | 52, |
| | 3 | X400 | C=at;A=umi-at;P=topcall;O=sap;S=Bartalsky;GI=Norbert, |
| | 4 | SMTP | Norbert.Bartalsky@sap.topcall.co.at, |

At the bottom are 'OK', 'Save', and 'Cancel' buttons.

When sending to fax, the last two digits (number is configurable) of the originators fax number “52” are looked up. The user with the proper proxy address entry is found, user BR, and used as originator. For SMTP and X.400 addresses also proxy addresses are looked up. Independent of the originator representation, always the same shadow user is found.

Compatibility

Because all shadow users also have an address with service “TOPCALL”, specifying the user ID, the new method is fully compatible with old versions. Nevertheless you can disable this feature by setting the General\CompatibilityOldOrig (DWORD) registry key to 1. (Default is 0: the new feature is used.)

Attention

If you specify the proxy addresses with TCROSS less than 7.22, make sure that the events do not use the same service (service prefix) as used for the proxy addresses. Otherwise entries in the rr99 section **INBOUND could result in looping documents.

Tip The address map files (*.MAP) were modified to take advantage of this new feature. Make sure to update your (customized) MAP files.

Notifications

This section describes the TC/LINK notifications.

Notifications into Mail

TC/LINK requests notifications from TCROSS if the mail originator requested notifications. TCROSS can return delivery notifications and non-delivery notifications.

If a read notification is requested (for a send order sent “registered”), this only affects the time when TCOSS returns a delivery notification, that is, the delivery notification is sent when the message has been read. Additionally, this works only if the destination supports read notifications.

TC/LINK converts KCS delivery and non-delivery notifications to the mail system’s notification format and posts them to the remote mail system.

TC/LINK can be set up to include notification texts in reports. The texts contain KCS-specific information about success or failure of message transmission.

Notification texts are created by TC/LINK via special cover sheets stored in the TC/LINK user’s KCS message folder. TC/LINK includes these cover sheets in the report message. They can be created automatically by TCLINK. TC/LINK reads these cover sheets at link startup.

The notification can also contain a copy of the original message or the back received fax image, if this is configured in the TC/LINK setup.

For notifications containing the back received fax image, you can configure a page limit in the `Topcall\NotifBackRecPageLimit` registry value, so that for example, only the first sent fax page is returned with the notification. This works only if TC/LINK is configured to use the full content of the sending copy (`Topcall\DelNfOrigToMail=1`, `Topcall\DelNfOnlyText=0`). It is also essential, that the fax channels are configured for a full graphics back reception document (Config line 53, position 1 must be ‘3’ or ‘4’).

If the link returns the image of the complete message in a single file (because of configuration or because there is a sending copy), the file has a page break between the notification text and the image of the original message.

This page break can be suppressed by setting the `Topcall\NotifImageFirstPage` registry value to 1. This setting works in conjunction with the “ConvertToxxxx” registry key with options `CompleteIfGraphic`, `AlwaysComplete`, `PerDocument` and `PerAttachment`.

The *NotifImageFirstPage* feature is helpful for customers who are obliged by legal reasons to archive notifications that contain the start of the fax image on the first page. The setting should only be used if absolutely needed, because it has the following side-effects:

- The second page starts at the very top of the page.
- TCI images created with this setting are subject to scaling and can be interrupted by a series of empty pixel lines.
Scaling can be disabled by setting the `TCIMG32\force_NoPageFormatScaling` registry value to 1.

Default Delivery notification cover sheet

```
KCS Delivery Notification
```

```
-----  
Message $ENam$ sent to $Name$ $Add0INT$$Add0FAX$-$Lnote$  
Time sent: $Date1$ $Time1$  
Subject: $ERef$ Costs: $Cost$ for Costcenter $Cctr$  
-----
```

Default Non-delivery notification cover sheet

```
KCS NON Delivery Notification
```

```
-----  
Message :"$ERef$" (Filename: $ENam$)
```

```

Created by   : $UName$

could NOT be sent...
to Receiver   : $Name$ ($Txt$)
Reason       : $Lnote$ ($Laction$)
last Retry at : $Date2$ $Time1$
Costs        : $Cost$ for Costcenter: $Cctr$
-----

```

Note If you encounter problems with notifications check the following:

1. Notification templates are saved as **COVERS**.
2. Notification templates are saved in the **MESSAGE** folder of the TC/LINK user.
3. TC/LINK was restarted after changing the notification templates.

Variables used in notification cover sheets are case sensitive.

Variables \$Laction\$ and \$Lnote\$

In non-delivery notifications, variables \$Laction\$ and \$Lnote\$ hold information about the error reason. \$Laction\$ is a 2 character error code, \$Lnote\$ is a localized description of the error (taken from the error file TCxx.ERR).

If the non-delivery notification was created by TCOSS, the error code will be one of the codes described in the TCOSS system manual.

If TCLINK itself encountered an error, the non-delivery notification contains one of the following error codes.

| Error code (\$Laction\$) | Error description (\$Lnote\$) |
|--------------------------|--|
| LE | Image conversion failed |
| LG | Document conversion failed |
| LH | Wrong address format for recipient |
| LI | Wrong address format for originator or passive recipient |
| LJ | Recipient not accepted by TCOSS |
| LK | Originator not accepted by TCOSS |
| LL | Originator has insufficient permissions |
| LM | TCOSS server inaccessible |
| LY | Message conversion error |
| LX | Other error |
| LN | Syntax error (for messages rejected by the special mail DLL) |
| M2 | Rejected by XML Exit |

Note Error code LO (TCLINK cannot post) is not used any more.

Variable \$ExtError\$

The non-delivery cover sheet may contain the TCLINK-specific variable \$ExtError\$. In notifications created by TCLINK, \$ExtError\$ is replaced by an English text describing the reason why the message was rejected. Whenever possible, this text contains more information than \$Lnote\$.

For example, the error text may hold:

- the name of the attachment that could not be converted.
- a description of the error code returned by TCOSS.
- an invalid address.
- a hint which part of the message could not be converted.

If the notification was created by TCOSS, \$ExtError\$ is replaced by the contents of the field TS_LAST_MDA_NOTE (Response field in TCFW).

Retaining Original Response Field from ts_last_mda_note

To retain the original response for a non-delivery notification, create the `PreserveOriginalMDANote` registry key under `<linkname>\General` subkey.

- If set to 0 (default), the “ts_last_mda_note” field is replaced by the error description text as defined in the TC01.ERR file. This is also the existing behavior.
- If set to 1, the “ts_last_mda_note” field contains the original Response (error code) returned from TCLINK.

Note This registry key does not exist by default. Additionally, it assumes ‘0’ value, if key does not exist.

Variable \$LinkId\$

In immediate non-delivery notifications, this variable is replaced by the name of the link instance that processed the message.

Variable \$Computer\$

This variable is replaced by the name of the link computer.

Notification Subjects

The notification cover sheet subject can also contain variables. All standard TCSI cover variables can be used. Additionally, the variable \$Ref\$ can be used, TC/LINK will replace it by the subject of the original message (from the header).

If the subject of the notification cover sheet does not contain ‘\$’, the notification subject consists of a prefix, such as “Delivered”, followed by “: “ and the original message subject. If the notification cover sheet contains a subject, this subject is used as the prefix. If the notification cover sheet does not contain a subject, “DEL” is used as prefix for delivery notifications or “NONDEL” for non-delivery notifications. See the following table for examples.

| Notification cover sheet subject | Notification subject |
|----------------------------------|---------------------------------|
| “Delivered” | “Delivered: <original subject>” |
| “” | “DEL: <original subject>” |

| Notification cover sheet subject | Notification subject |
|----------------------------------|---|
| "Delivery Failure: \$ADD0\$" | "Delivery Failure: <active recipient number>" |

Note The cover sheet subject should not start with a variable, because this disables loop detection (see [Notification Loop Detection](#)).

Default Cover sheet names

| Link | For Delivery | For Non-delivery |
|-------------|--------------|------------------|
| TC/LINK-FI | FIDEL CVR | FINONDEL CVR |
| TC/LINK-LN | LNDEL CVR | LNNONDEL CVR |
| TC/LINK-MD | MDDEL CVR | MDNONDEL CVR |
| TC/LINK-MQ | MQDEL CVR | MQNONDEL CVR |
| TC/LINK-SM | SMDEL CVR | SMNONDEL CVR |
| TC/LINK-SC | SCDEL CVR | SCNONDEL CVR |
| TC/LINK-SI | SCDEL CVR | SCNONDEL CVR |
| TC/LINK-WM | WMDEL CVR | WMNONDEL CVR |
| TC/LINK-MX7 | SMDEL CVR | SMNONDEL CVR |

Notification Languages

TCLINK can be configured to support multiple languages for notification texts (notifications from KCS to the mail system). The following options are available with the `Topcall\NotifLanguageSupport` (REG_DWORD) registry value.

| Value | Description | Remark |
|-------|---|----------------------------|
| 0 | No multilingual notifications | Default. Best performance. |
| 1 | Multilingual notifications. The notification texts are defined globally. | |
| 2 | Multilingual notifications. The notification texts are defined per user (global texts as fallback). | |

Language-dependent notification texts are also stored as covers, either in the message folder of the link user (global notification texts) or in the message folder of the KCS shadow users (notification texts defined per user).

As TCOSS file names can only have 11 characters (including the CVR suffix for covers), the language-dependent notification names consist of:

- The first five characters of the standard notification cover name, such as LNNON and LNDEL instead of LNNONDEL CVR and LNDEL CVR.
- The two-character language code, such as 02 for German.
- The CVR suffix.

Notification text selection

1. If user-specific multilingual notifications are supported, TCLINK first searches the shadow user's message folder for a cover matching the shadow user's language (example: LNNON02 CVR).
2. As a fallback, TCLINK searches the shadow user's message folder for a cover with the default name (example: LNNONDEL CVR).
3. As a fallback, TCLINK searches the link user's message folder for a cover matching the shadow user's language (example: LNNON02 CVR).
4. As a fallback, TCLINK takes the standard cover from the link user's message folder (example: LNNONDEL CVR).

If configured to use only globally defined notification texts, TCLINK omits steps 1 and 2 of the above selection algorithm.

If multilingual notifications are disabled, or if the notification does not come from KCS or does not belong to a KCS shadow user, TCLINK uses only step 4 and takes the default cover.

For evaluation of the \$LNote\$ variable, TCLINK uses the error file (TCXX.ERR) matching the notification cover language, or – as a fallback – the error file matching the language configured for TCLINK.

Note Global notification covers (from the link user's message folder) and error files are read only at link start-up. When adding a global cover or error file, or after changing an existing one, you have to restart the link to make the changes effective.

Forced Notifications to Mail

In previous versions, the links only returned notifications to mail if the originator requested them. Now, TC/LINK setup lets you decide to FORCE delivery (or non-delivery) notifications for all messages, disregarding the message send options.

If this feature is activated, a mail originator does not need to request notifications when sending a message. He will automatically receive notifications (transmission report, sending copy) for recipients serviced by TC/LINK. No changes apply for recipients within the foreign mail system.

Configure this feature using the following registry keys.

| Name | Default | Type | Meaning |
|--------------------------------|---------|-------|---|
| TOPCALL \SOForceDelNotif | 0 | DWORD | <ul style="list-style-type: none"> • 0: Delivery notifications only if requested by the originator • 1: Delivery notifications for all messages |
| TOPCALL \SOForceNonDelNotif | 0 | DWORD | Send a non-delivery notification to mail as <ul style="list-style-type: none"> • 0: Non-delivery notifications only if requested by the originator • 1: Non-delivery notifications for all messages |

Send notification as normal message

Some mail systems, such as X400, do not support notifications with text and attachments. Therefore, notifications to X400 cannot contain the original message.

To solve this problem, TCLINK can be configured to send notifications as normal messages. Thus, an X400 user can receive a “notification message” with information about delivery of a fax he sent previously. Depending on link configuration, this message can include the fax sending copy.

Configure this feature using the following registry keys.

| Name | Default | Type | Description |
|-------------------------------|---------|-------|--|
| TOPCALL\ DelNfAsMessage | 0 | DWORD | Send a delivery notification to mail as <ul style="list-style-type: none"> • 0: Notification • 1: Message • 2: Notification and message |
| TOPCALL\ NonDelNfAsMessage | 0 | DWORD | Send a non-delivery notification to mail as <ul style="list-style-type: none"> • 0: Notification • 1: Message • 2: Notification and message |

Note Currently, this feature must not be used with TC/LINK-LN. Refer to the *TC/LINK-LN Technical Manual* for information about notification formats with Lotus Notes.

Notifications from Mail

If a message to Mail was posted “registered” by a KCS user, TC/LINK requests the maximum available notification level from mail.

The maximum available notification depends on the connected mail system. It may be a delivery notification or a read notification (default).

If the message was not posted “registered”, TC/LINK requests a default notification level as configured at setup (field **Set Entry AT NEXT NODE** in TC/LINK setup). If set up to keep TCROSS mail entries “AT NEXT NODE”, TC/LINK requests delivery / non-delivery notifications from mail. Otherwise, the TCROSS mail entry is terminated when it was passed to mail (minimum available notification level).

The following table shows how TC/LINK registry settings and TCFW send options together determine which notifications are requested from mail. If no notification is requested, TC/LINK immediately terminates the send order on KCS. In the column “Notification Requests” all notifications terminating the send order are displayed underlined.

Remarks:

TC/LINK-SC has the `ReadNotif` registry key to enable or disable read notification requests.

TC/LINK-MX7 always enables read notification requests, such as `ReadNotif = 1`.

With other links, read notification requests are disabled, such as `ReadNotif = 0`.

| TOPCALL\NotifMail | Registered message | ReadNotif | Notification requests |
|-------------------|--------------------|-----------|------------------------------------|
| 0 | No | 0 | None |
| 0 | No | 1 | None |
| 0 | Yes | 0 | DeINf, NonDeINf |
| 0 | Yes | 1 | DeINf, NonDeINf, ReadNf, NonReadNf |
| 1 | No | 0 | DeINf, NonDeINf |
| 1 | No | 1 | DeINf, NonDeINf |
| 1 | Yes | 0 | DeINf, NonDeINf |
| 1 | Yes | 1 | DeINf, NonDeINf, ReadNf, NonReadNf |

Error codes used by TCLINK

When TCLINK posts a notification to KCS, it updates the error code and error description of the corresponding TCOSS send order.

The following table holds error codes and descriptions created by TCLINK.

| Error code (\$Laction\$) | Error Description (\$Lnote\$) |
|--------------------------|--|
| LH | Wrong address format for recipient |
| LI | Wrong address format for originator or passive recipient |
| LY | Message conversion error |
| LX | Other error |
| LS | Terminated unread by recipient |
| LT | Registered message cannot be posted to mail |
| LU | Unregistered message cannot be posted to mail |
| LV | Message cannot be delivered to mail recipient |

The following values can also be found in the Error code field of messages, such as in the TCFW outbox or in the TC/Report database. These are not errors but descriptions of the message status.

| Error code (\$Laction\$) | Error description (\$Lnote\$) |
|--------------------------|--|
| LD | Delivered to mail recipient registered |
| LF | Delivered to mail recipient unregistered |
| LP | Posted to mail unregistered |
| LQ | Posted to mail registered |
| LR | Read by mail recipient |
| LS | Terminated unread by mail recipient |

Costs for Send Orders to Mail

TCLINK can be configured to set the costs for message transmission to the remote mail system. In general, costs are written to the KCS send order when it is marked as “Delivered”, “Read” or “Unread”. In special cases, send orders may also have costs when marked as “Undeliverable”.

The special mail DLL may calculate the costs itself and return them in any notification.

If TCLINK receives a delivery, read or unread notification without a cost value, it takes the transmission costs from the `General\CostsPerRecipient` registry value, only if this value is not zero.

| Name | Type | Default | Description |
|---------------------------|-------|---------|--|
| General\CostsPerRecipient | DWORD | 0 | Costs for transmission to 1 recipient. A value of 0 disables cost accounting. |

Attachments

This section describes how TC/LINK handles the attachments.

Order of Attachments

TC/LINK does not change the order of attachment and text items sent from mail to KCS.

The only exception is the treatment of JetForm Data Stream. If a JetForm Data Stream is recognized within a text item, it is converted to a binary attachment. This enables the document converter for processing JetForm Data Streams.

When sending from KCS to mail, TC/LINK keeps the order of text and image items, but file attachments are put to the end of the message.

As default, TC/LINK removes the cover sheet before passing a message to Mail.

If the message body contains image items and if the TCI format is used for sending to mail, the resulting message to mail will include a TCI image of the whole message content.

Printing Attachment on First Fax Page

When a fax message posted by TCLINK starts with a file attachment, the default behavior is to print the attachment after the cover page.

You can use the `General\AltImgOnFirstPage (MULTI_SZ)` registry value to define which attachments should be printed on the cover page. You can configure one line per file extension. Up to 64 extensions may be configured. If the registry value does not exist when TCLINK starts, TCLINK creates it.

You can also can define top and bottom margins that should be ignored on every page (similar to the advanced RTF conversion) and a maximum of trailing empty pixel lines on the last page.

The file extension is case-insensitive. For example, HTM is the same as htm.

You can specify file types converted by the document converter, such as DOC, HTML, as well as image types that are converted by TCIMGIO, such as TIF, BMP.

Syntax

`Extension[,topmargin,bottommargin,emptylines]`

Examples

| Configuration Value | Description |
|---------------------|---|
| HTML | The html attachment starts on the cover page. No margins are removed from the printed pages. |
| HTML,100,100,4 | The html attachment starts on the cover page. On each page, the top and bottom 10 mm are removed (header and footer areas). On the last page, only 4 trailing empty pixel lines are retained. |

This feature applies to an attachment only if it is the first element of the message. If there is message text or another attachment before this one, the file attachment is printed normally.

Useful values for the parameters

- `topmargin`: The size of the typical page header on a printed page. Should be below 1000 (10 cm).
- `bottommargin`: The size of a typical page footer on a printed page. Should be below 1000 (10 cm).
- `emptylines`: 0 if all empty lines shall be removed from the last page. To keep all trailing empty pixel lines, use a value above 3000.

Note Although this feature is similar to the advanced RTF conversion, it uses only the `AltImgOnFirstPage` registry value and does not depend on the registry settings (such as `AdvancedRTFConversion`, `RTFTopMargin`, `RTFBottomMargin`, `RTFMaxBlankLinesAtEnd`) used for RTF conversion.

By default, TCLINK uses the ONLYIMG template for messages starting with a file attachment. For a description of how this default can be changed, see [Product Description – KCS Message Templates](#).

Attachment Names

Some links support long attachment filenames (up to 220 characters). Others truncate attachment names to the standard DOS (8.3) filename convention. See the following table for details.

| Link type | Maximum filename length | Comment |
|-----------|-------------------------|---|
| FI | 220 | Special handling. Refer to the <i>TC/LINK-FI Technical Manual</i> and <i>TOM Technical Manual</i> for detailed information. |
| LN | 220 | |
| MQ | 220 | Special handling. Refer to the <i>TC/LINK-MQ Technical Manual</i> and <i>TOM Technical Manual</i> for detailed information. |
| SC | 12 | |
| SJ | 12 | |
| SM/OC | 220 | |

| Link type | Maximum filename length | Comment |
|-----------|-------------------------|---------|
| WM/MD | 12 | |

Note Applications used for document conversion may have problems with long file names.

Code Pages

KCS server versions below 9.2 can only use a single code page. This can be one of the two TCOSS code pages (0 for western Europe and US, 1 for eastern Europe) or a Windows code page, such as 932 for Japanese. The server can only store characters that can be represented in the configured code page.

Starting with release 9.2, the KCS server can be configured for UTF-8 support. With this configuration, the server can store the full range of 16-bit Unicode characters. The KCS Server API guarantees that the KCS Server recognizes client applications that support 16-bit Unicode. When dealing with client applications that do not support Unicode, the KCS server uses a fallback “legacy” code page, typically this is TCOSS 0.

TCLINK is responsible for converting textual data between the character set used by the remote mail system and the code page of the KCS server.

The TCLINK.EXE (common link module) uses 16-bit Unicode internally. The same is true for most special link modules, although some link types still use the configured PC code page.

| Link types | 16-bit Unicode Support |
|----------------------------|------------------------|
| SM, OC, SDD, SC7, MX7, MFP | YES |
| FI, XML | YES |
| WM, MD | YES |
| LN | YES |
| MQ | YES |
| RS | NO |
| SC | NO |
| SI | NO |
| SJ | NO |
| TCSOAP | NO |

Link types that support 16-bit Unicode can still be configured during Setup for not using Unicode. This can prove helpful if link exits from Professional Services are used. Only link exit modules delivered with KCS Setup are certified for Unicode support.

So from a practical standpoint, we can distinguish between two configurations:

- KCS Server uses UTF-8 and TCLINK uses Unicode => use KCS code page UTF-8
- KCS Server or TCLINK confined to a single code page => use KCS legacy code page

When TCLINK.EXE starts, it reads the KCS Server code page and its own configuration, and then decides which of the two options to use.

Link Using KCS Code Page UTF-8

With this configuration, the link automatically supports the full range of 16-bit Unicode characters in both directions: towards KCS server and towards the remote mail system.

Link Using KCS Legacy Code Page

With this configuration, the characters sent into TCOSS and retrieved from TCOSS are limited to the KCS legacy code page. Other characters are discarded.

TCLINK reads the TCOSS codepage from the KCS server and writes it to the `Topcall\CodePage` registry value. You can disable this automatic code page detection: set the `Topcall\CodePageAutoDetect` registry value to 0 and then configure the `Topcall\CodePage` value manually.

Depending on the link type, the code page used towards the remote mail system (registry `General\PCCodePage`) is either determined automatically by TCLINK or must be configured during Setup. You can disable this automatic code page detection of the remote mail system by TCLINK: set the `General\AutoDetectPCCodepage` registry value to 0 and then configure the `General\PCCodePage` value manually.

The following combinations are supported without character loss.

| KCS (legacy) code page | General\PCCodePage | Restriction |
|------------------------|------------------------|------------------------|
| 0 | 850, 1252 or 437 | |
| 1 | 852 or 1250 | |
| Any Windows code page | Same Windows code page | TOSS 7.25.00 or higher |

Euro Character

With TCOSS release 7.25.00 or higher, KCS links support the European currency symbol (“€”, Euro). The Euro character can be found in both TCOSS code pages at location 0xB1. The following specific installation steps are required for Euro characters:

- In order to use the € in user profiles, covers or similar, you need TCfW from KCS Client Applications, version 3.05.00 or higher.
- As the “€” is supported only on the ANSI codepage (1250 and 1252, at location 0x80), make sure to configure the correct PC codepage.

Note Refer to the *Link-specific release documentation* for restrictions on the use of the Euro character.

Customized Codepage Conversion

You can define custom codepage conversion tables for use from/to KCS. These conversions are defined by special text files, and can be modified by a simple ASCII editor.

Filenames of the conversion files

All conversion table files must be located in the `c:\topcall\shared` directory.

For the conversion from code page A to code page B the conversion table's file name is "AtoB.cnv", A and B being numbers (1 to 4 digits).

Example filenames

```
"850to0.cnv" replaces the built-in code page 850 to TCOSS 0 conversion
"0to850.cnv" replaces the built-in TCOSS 0 to code page 850 conversion
"1253to0.cnv" new conversion from Windows Greek to TCOSS 0
"0to1253.cnv" new conversion from TCOSS 0 to Windows Greek
"999to0.cnv" new conversion from custom defined code page 999 to TCOSS 0
"0to999.cnv" new conversion from TCOSS 0 to custom defined code page 999
"TC0toUni.cnv" replaces the built-in conversion between Unicode and TCOSS 0
"TC1toUni.cnv" replaces the built-in conversion between Unicode and TCOSS 1
```

For link types that use Unicode internally, only the TCxtoUni tables are relevant.

Conversion Table Format (single byte character sets)

A conversion table contains 256 hexadecimal values in 2-Byte ASCII notation, letters 'A' to 'F' may be in upper or lower case. Comments may be added after the conversion values.

Example conversion table ("0to1252.cnv")

```
00 01 02 03 04 05 06 07 08 09 0a 0b 0c 0d 0e 0f
10 11 12 13 14 15 16 17 18 19 1a 1b 1c 1d 1e 1f
20 21 22 23 24 25 26 27 28 29 2a 2b 2c 2d 2e 2f
30 31 32 33 34 35 36 37 38 39 3a 3b 3c 3d 3e 3f
40 41 42 43 44 45 46 47 48 49 4a 4b 4c 4d 4e 4f
50 51 52 53 54 55 56 57 58 59 5a 5b 5c 5d 5e 5f
60 61 62 63 64 65 66 67 68 69 6a 6b 6c 6d 6e 6f
70 71 72 73 74 75 76 77 78 79 7a 7b 7c 7d 7e d7
c7 fc e9 e2 e4 e0 e5 e7 ea eb e8 ef ee ec c4 c5
c9 e6 c6 f4 f6 f2 fb f9 ff d6 dc a2 a3 a5 50 83
e1 ed f3 fa f1 d1 aa ba bf 5f ac bd bc a1 ab bb
5f 80 b4 70 6f af af b7 a8 a8 b0 b8 b7 22 b8 af
70 a7 d0 69 48 d7 55 4c 4c b3 8c 6b de 54 6e 6e
6b a4 f0 f0 68 69 49 49 49 f8 9c be fe 74 6e 41
42 df 47 44 45 5a b5 45 54 49 4f 4b 4c d8 4d 4e
58 b1 4f 50 52 53 f7 54 b0 59 46 48 50 b2 6c 20
```

(Comment: This is the built-in TCOSS 0 to code page 1252 conversion table)

The character value in the source code page is used as an index into the conversion table to retrieve the code point in the destination code page. For example, TCOSS Euro sign ("€") is on 0xB1; this will be converted to line 0x0B (= 11, starting with zero), column 1, so the connected mail system will get character 0x80 (which is the Euro on the 1252 codepage).

Conversion Table Format (Unicode)

A Unicode conversion table contains 256 hexadecimal values in 4-Byte ASCII notation, letters 'A' to 'F' may be in upper or lower case. Comments may be added after the conversion values.

Example conversion table ("TC0toUni.cnv")

```
0000 0001 0002 0003 0004 03B1 03B2 03B3 03B4 03B5 03B6 03B7 03B8 000D 000A 000F
0010 0011 0012 0013 0014 0015 0016 0017 03BD 03BE 03BF 03C1 03C3 03C4 03C5 03C6
0020 0021 0022 0023 0024 0025 0026 0027 0028 0029 002A 002B 002C 002D 002E 002F
0030 0031 0032 0033 0034 0035 0036 0037 0038 0039 003A 003B 003C 003D 003E 003F
0040 0041 0042 0043 0044 0045 0046 0047 0048 0049 004A 004B 004C 004D 004E 004F
0050 0051 0052 0053 0054 0055 0056 0057 0058 0059 005A 005B 005C 005D 005E 005F
0060 0061 0062 0063 0064 0065 0066 0067 0068 0069 006A 006B 006C 006D 006E 006F
```

```

0070 0071 0072 0073 0074 0075 0076 0077 0078 0079 007A 007B 007C 007D 007E 03C7
00C7 00FC 00E9 00E2 00E4 00E0 00E5 00E7 00EA 00EB 00E8 00EF 00EE 00EC 00C4 00C5
00C9 00E6 00C6 00F4 00F6 00F2 00FB 00F9 00FF 00D6 00DC 00A2 00A3 00A5 20A7 0192
00E1 00ED 00F3 00FA 00F1 00D1 00AA 00BA 00BF 2310 00AC 00BD 00BC 00A1 00AB 00BB
03C2 20AC 00B4 03C8 03C9 00AF 02D8 02D9 00A8 00A8 02DA 00B8 00B7 02DD 02DB 02C7
03C0 00A7 0110 03B9 0126 00D7 0132 013F 0141 00B3 0152 03BA 00DE 0166 014A 0149
0138 00A4 0111 00F0 0127 0131 0133 0140 0142 00F8 0153 00BE 00FE 0167 014B 0391
0392 00DF 0393 0394 0395 0396 03BC 0397 0398 0399 03A9 039A 039B 00D8 039C 039D
039E 00B1 039F 03A0 03A1 03A3 00F7 03A4 00B0 03A5 03A6 03A7 03A8 00B2 03BB 0098

```

(Comment: This is the built-in TCOSS 0 to Unicode conversion table)

The character value in the TCOSS code page is used as an index into the conversion table to retrieve the code point in Unicode.

Note

- The common link modules use Unicode internally. When TCLINK.EXE converts text from registry, map file or language file to TCOSS code page, the conversion files TCxtoUni are relevant.
- Custom code conversion tables are loaded at the time of the first call to the conversion function and then kept in memory. To make changes effective, you need to restart all KCS applications running on the server.
- A maximum of 24 new conversion tables (in addition to the 8 built-in tables) is supported.
- The loading of custom defined or built-in code tables may be traced by setting the "...TOPCALL \TCLINKxx\TCSI\DebugLevel" to "0x8000" registry switch.

Message Text

TCfW text blocks: Text Items can be separated into more than one block in TCfW. If a message contains more than one block of text on TCfW, all text will be put into one block in the mail product.

Formfeed in mail message text: TCOSS character 0x0C (formfeed) in the text of a mail message is translated to a pagebreak of type LAST_USED.

Message Subject

If the subject of a message from KCS is empty (such as incoming fax), TCLINK builds a default subject.

The replacement string for an empty subject is configured in the `General\EmptySubject` registry key. The string may include the following variables:

- `$ReceivedFrom$`: "Received from <address>" (localized text from language file)
- `$FileName$`: TCOSS filename of the message
- `$Empty$`: An empty string (for TC/LINK-WM)

Restriction

The TCOSS Document Converter writes the fax TSI to the subject field of incoming faxes. Therefore, the `EmptySubject` registry setting does not apply for messages that passed the TCOSS Document Converter.

Special handling for send copy messages

By default, the subject of sending copy messages is treated like a normal message subject (registry key `General\EmptySubject` applies). A configuration key allows to use the subject of the original message. Set `General\CompatibilityTCGATEScopy` to 1 (default is 0) to receive sending copies with the original subject.

Registry keys for empty subject treatment

| Name | Type | Default | Description |
|---|-------|--|--|
| <code>General\EmptySubject</code> | SZ | <code>\$ReceivedFromSubject</code> \$ | Subject text, can include placeholders |
| <code>General\CompatibilityTCGATEScopy</code> | DWORD | 0 | <ul style="list-style-type: none"> 0: The <code>EmptySubject</code> key determines sending copy subject. 1: The sending copy gets subject of the original message. |

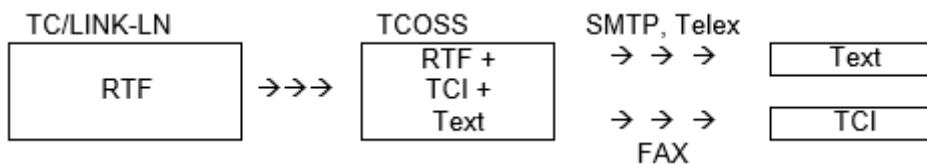
RTF Message Bodies

Messages sent from Lotus Notes and from MS Exchange usually have message bodies in RTF (rich text) format. TC/LINK-LN is able to convert RTF message bodies to KCS image format. Conversion is done via the KCS printer driver. Thus, it is possible to send the formatted text in a fax.

Depending on the TCOSS version, TC/LINK uses different algorithms for handling RTF message bodies.

Standard Handling

TCOSS supports the concept of alternative attachment contents. TC/LINK takes advantage of this capability.



- TC/LINK creates an attachment with the RTF data-stream as a binary content.
- If any recipient service has image capabilities, TC/LINK converts RTF to KCS Image Format (TCI) and adds the image as alternate attachment content.
- TC/LINK adds the text representation as another alternate attachment content.
- The TCOSS FAX module transmits only the TCI image to the fax recipient.
- The receiving TC/LINK (-SM in this example) takes (by default) only the text representation.

- Viewing the message via TCfW: To display all available alternatives TCfW 3.02.00 or higher is required. With older TCfW versions, the alternatives are removed when sending or forwarding messages.

Order of alternatives

By default, in the list of alternate contents, TC/LINK inserts the image alternative before the text representation. This is a good handling for most installations. But if messages are sent to the asynchronous channel, the text representation will be preferred against the image.

The `General\AltImgBeforeText` (DWORD) registry key can be set to 0 (default 1) in order to have the text representation before the image.

Alternative selected by receiving TC/LINK is configurable

Only one alternative representation of the message body is sent to a recipient on the remote mail system. The RTF format is proprietary and only known to a specific mail client, therefore it is not possible to send it to another mail client without changes. For example the Lotus Notes RTF is different to the Microsoft Exchange RTF.

The target format to use can be configured via the following registry key:

`General\FmtRTFBody` (SZ): Contains a sequence of format definitions. (Default: "TI")

See the following table for possible format definitions.

| Value in FmtRtfBody | Meaning |
|---------------------|---------------------------------|
| T | take text representation |
| I | take image representation |
| B | take original binary content |
| B(PDF) | take PDF representation |
| B(*) | take all binary representations |

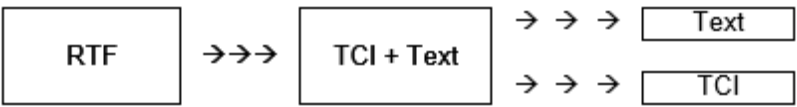
TC/LINK recognizes attachments containing RTF bodyparts and tries to find the best matching content representation in the defined order. If no matching alternative is available, the KCS send order is negatively terminated. Do not specify the binary (RTF) format, RTF attachments are not converted into RTF message bodies.

For example, if `FmtRTFBody` is "TI", TC/LINK tries to find a text representation, or (if not found) an image representation.

Handling with CompatibilityOldContent = 1

In former link versions, TCOSS versions below 7.08.01 were supported. These old TCOSS releases could not handle alternative attachment contents. Therefore, TC/LINK provided all message body formats needed by the recipients, and every representation was packed into a single attachment. Thus, it could happen that a recipient received the message body in more than one format.

This handling is only applied if `CompatibilityOldContent` is set to 1.



- Normally, TC/LINK only creates an attachment with the TCI image.
- If one of the message recipients cannot handle KCS image format, such as a Telex recipient, TC/LINK creates two attachments: the first attachment contains the TCI image, the second contains the message text.
- The TELEX channel transmits only the message text.
- All other recipients, such as TC/LINK, Fax, receive both attachments

Advanced RTF Conversion

TC/LINK can be configured to let the RTF text start on the cover page.

1. The KCS printer driver converts the RTF content to single images separated by page breaks.
2. TC/LINK cuts top and bottom margin from each image and removes (or changes) the page breaks. A stream of image blocks without page breaks, that corresponds to the original RTF content appears.
3. TCOSS inserts a cover sheet in front of the image blocks.
4. The Fax module inserts page breaks within the image blocks to make sure that no oversized pages are transmitted. Page breaks are only inserted when an empty image line is detected. Scanning for empty lines starts at the bottom margin configured for the Fax module. If no empty image lines are detected 3mm before the end of the page is reached, a page break is forced. Empty lines due to underlining or other formatting can result in unwanted page breaks.

You can enable Advanced RTF conversion by setting the `General\AdvancedRTFConversion` registry value to 1.

If notifications to mail shall contain backreception, configure the fax channel for full image backreception mode (config line 53 must be "3"). Otherwise, the backreception image may be garbled.

Other registry keys:

- `General\RemoveRTFPages`: Must be 0 if messages are sent to other recipients than fax.
- `General\RTFTopMargin`: Top margin (cut from image) in multiples of 0.1 mm.
- `General\RTFBottomMargin`: Bottom margin (cut from image) in multiples of 0.1 mm.
- `General\RTFMaxBlankLinesAtEnd`: See below.

Margins for different links:

| Link | RTFTopMargin |
|-------------|--------------|
| TC/LINK-MX7 | 0x00 |

| Link | RTFTopMargin |
|------------|--------------|
| TC/LINK-LN | 0x106 |

It is not useful to change the top and bottom margins, because they are set by default for the best match. If you change them, you will lose some text or get empty lines.

Note TC/LINK can be configured to create images in landscape format (for RTF text and document conversion) via the `TCDCLINK\General\PageOrientation` registry key.

TC/LINK-LN also offers an option to turn on landscape format for the current message only.

If TC/LINK is configured for landscape format by one of the above methods, Advanced RTF conversion is disabled for the current message.

Option to remove trailing empty pixel lines

If any text, such as a message disclaimer is automatically appended after the RTF message body, this option makes sure that there is no unnecessary page break between the RTF body and the disclaimer.

By default, the option is disabled and TC/LINK does not remove blank pixel lines from the RTF text.

You can configure the maximum number of trailing blank pixel lines via the `General\RTFMaxBlankLinesAtEnd` (DWORD) registry value. TC/LINK reads this value at startup and writes it back to the registry.

This value is interpreted as “normal mode pixel lines”. 1 line is 1/98 inch (0.0102 inch or 0.259 mm).

The following example shows how to add a message disclaimer via a mask.

- a. Define a mask `+MAIL5V/A+F` containing `X` followed by the message disclaimer, such as `X Message disclaimer text`.

Note Instead of “Message disclaimer text”, you can insert any text or image.

- b. Redefine the FAX service to uses the prefix `F:+F`.
- c. If TCLINK is configured for automatic creation of KCS dependencies, set registry value `Setup\ServiceFAX\Prefix` = `F:+F` (otherwise TCLINK cannot start).
- d. Set registry value `General\RTFMaxBlankLinesAtEnd` to 10 (if 2.59 mm of blank space shall remain in the message).

Restrictions:

- If you send a message with file attachments, the disclaimer will be after the last file attachment.
- When adding message content via a mask, the number of pages on the fax cover sheet may be wrong.

Text Directives

The text body of a message from mail can contain special text directives. The main purpose of these directives is to specify additional per-message send options.

Text directives are useful for links to messaging systems that do not provide a way to define per-message send options.

Some TC/LINKs provide a user interface that allows the originator of a mail message to enter send options, such as TC/LINK-LN. If text directives are used with these links, they override the per-message send options entered via the mail client.

Text directives are interpreted by TC/LINK when messages are transferred from mail to KCS.

All lines containing ++ directives can be preceded by blanks and must be written exactly as shown. Only one ++directive per line is allowed.

The line containing the ++ directive is not included in the text of the message posted to KCS (exception: TC/LINK-MX7 and TC/LINK-LN).

The `Topcall\Allow++` (DWORD) registry key can be used to disable text directives at all:

- 0: ++sequences are treated like normal text (not interpreted and not removed).
- 1: Only ++sequences at the beginning of a line or preceded by blanks are interpreted. (Default is 1)
The complete line is removed.

Option attachments

It is possible to attach option attachments into messages. Option objects are attached text files containing ++ sequences. TC/LINK recognizes them via their extension, which is configurable via the `General\OptFileExtension` registry key (default is 'OPT'). TC/LINK treats ++ sequences in option files the same as in the body of the message. After ++ sequence evaluation, TC/LINK discards the option attachment.

Note Special characters (umlauts, not printable characters) are not supported in option attachments.

Users may prepare their option files such as NIGHT.OPT or XCOVER.OPT with any text editor. When they send a message they just drop one or more of them onto the mail message.

RTF texts

If the message text is in RTF format (only possible with TC/LINK-MX7 and TC/LINK-LN), only the following ++directives within the RTF text are evaluated:

++CVR, ++TO, ++CC, ++BCC, ++FROM, ++COST, ++DATE, ++TIME, ++PRIO, ++PRIOTO, ++PRIOCC, ++HL, ++XLAT, ++PW, ++NOTIF, ++LD.

In this case, the ++lines are NOT removed from the Rich Text.

Use option attachments for ++directives that are not evaluated in RTF (++A4H, ++A4Q, ++BDH, ++BDQ, ++LFx, ++BSx or ++INC) or that shall not be visible in message text.

If TC/LINK transmits the plain text version (because the message goes to a TELEX, for instance), all ++directives are evaluated.

++INC, ++CVR

TC/LINK interprets ++INC and ++CVR lines contained in the text of messages coming from Mail. When TC/LINK finds such a line, it puts a reference to a TCOSS file or cover sheet into the message.

++CVR

With ++CVR, only files saved as cover sheets (CVR) are inserted.

You can use only one ++CVR line in a message. If there are more ++CVR lines, the last one will be used. ++CVR disables insertion of any text or cover defined in the originator's default template.

Cover sheets are always inserted at the top of a message.

++INC

With ++INC, a file from a TCROSS folder is inserted into the message. You can use any number of ++INC lines in one message.

Syntax:

```
++INC [folder/]file name[/comment]
```

```
++CVR [folder/]file name[/comment]
```

Note Folder and comment are optional.

If the folder is omitted, the default folder configured in the `General\CoverFolder` registry key is used. The default value for this key is "FIS".

The comment field is displayed in the message window of TCfW.

If a cover sheet is specified with ++CVR, it will override any cover sheet defined in a template or via the mail client.

++TO, ++CC, ++BCC, ++FROM

When sending a message from Mail, you can address the message from within the text itself. If a ++TO, ++CC, ++BCC or ++FROM address is used in the text body, the corresponding items in the message header will be ignored. If you specify a ++TO as receiver in the message, all TO entries in the original message header will be ignored, and so on.

The syntax for ++TO, ++CC, ++BCC, ++FROM is exactly the same as in the Message window of TCfW with one exception. Since TC/LINK is not interactive, it cannot prompt the user to correct an address. So if any address information in these fields is ambiguous, the message will be rejected.

Syntax:

```
++?? User ID
```

or

```
++?? [full name,][service,]number[,answerback]
```

?? means TO, CC, BCC or FROM

Note Full name, service and answerback are optional.

Items are checked from left to right. So if you specify two items, but no service, they will be interpreted as full name and number, not number and answerback.

If no service is specified, TC/LINK uses the default FAX service configured at setup.

The `TOPCALL\Allow++FROM` is a special registry key to enable ++FROM directives. This key is initialized to 1 by setup. When set to 0, ++FROM directives are not evaluated.

Notifications from KCS:

Notifications for ++TO, ++CC and ++BCC recipients are sent as text messages including the text from the delivery / non-delivery cover sheets.

Reason: The originating mail system does not know these recipients and might be confused by notifications for them.

For a standard configuration, it depends on the mail system whether notifications are requested for recipients entered via ++ commands.

| Link Type | Notifications for ++ recipients |
|---|--|
| TC/LINK-FI | As requested in message header (per message) |
| TC/LINK-LN | As requested by originator |
| TC/LINK-MQ | As requested in message header (per message) |
| TC/LINK-SC, TC/LINK-SI | No |
| TC/LINK-SJ | No |
| TC/LINK-SM, TC/LINK-OC TC/LINK-SDD, TC/LINK-MX7, TC/ LINK-SC7 | Depends on SMTP protocol used: No notification if message uses RFC1891 notification request |
| TC/LINK-WM, TC/LINK-MD | No |

The `TOPCALL\SOForceDelNotif` and `TOPCALL\SOForceNonDelNotif` configuration settings can be used to force notifications for all recipients (including those created via ++ commands).

Immediate notifications:

If a message containing ++ recipients cannot be posted to KCS, the immediate non-delivery notification relates to the “real” recipient (which is known by the foreign mail system).

If the originator of a message is replaced by a ++FROM originator, and if the message cannot be posted to KCS, an immediate non-delivery notification is sent to the “real” originator.

++COST

A cost center is defined for every send order TC/LINK creates. It is defined via the ++COST directive.

Syntax:

```
++COST Costcenter
```

Note If TC/LINK is configured to check user rights and the originator does not have the right to change cost center, TC/LINK ignores the ++COST directive.

++DATE, ++TIME

You can specify the sending time and date with the ++DATE and ++TIME directive. The ++ signs must start at the leftmost column in the text body of the message.

Syntax:

++DATE [yy]mmd (default: current year)

++TIME hhmm[ss] (default: 00 seconds)

You can omit the year in the ++DATE and the seconds in the ++TIME directive. The time must be specified in 24-hour format.

++PRIO, ++PRIOTO, ++PRIOCC

For using the low tariff times for faxing, ++PRIO can be specified. Select ++PRIO HIGH, ++PRIO LOW or ++PRIO NORM. The priority can be abbreviated by H, N, or L. Instead of "HIGH/NORM/LOW" you can use "A/B/C". You can specify the "TO" and the "CC" priority separately by using: ++PRIOCC ... and ++PRIOTO

Syntax:

For high priority:

++PRIO HIGH

++PRIO H

++PRIO A

For normal priority:

++PRIO NORMAL

++PRIO N

++PRIO B

For low priority:

++PRIO LOW

++PRIO L

++PRIO C

The same applies to PRIOTO and PRIOCC.

Note The ++ commands are interpreted sequentially. So, if you specify ++PRIO LOW first and ++PRIOTO HIGH second, the resulting priority for CC is LOW.

If you specify ++PRIOTO HIGH first and then ++PRIO LOW, both priorities will be low.

++HL

The ++HL directive tells TC/LINK whether a fax header line shall be inserted into this message. Valid parameters are YES (abbreviated Y) and NO (N).

Syntax:

++HL YES

++HL Y

++HL NO

++HL N

++A4H, ++A4Q, ++BDH, ++BDQ

These text directives can be used to insert a page break into the message text. By choosing one of the four commands, you define the page format for the next page:

- ++A4H: Next page is A4
- ++A4Q: Next page is A4 landscape
- ++BDH: Next page is letter
- ++BDQ: Next page is letter landscape

++LF0 to ++LF3, ++BS0 to ++BS3

TC/LINK supports the TCOSS text styles, such as bold, underline and subscript via these directives. This is done in the same way as the TCOSS UAS channel does.

Each command changes the text style of the following line only. This new feature mainly can be used for all applications that are sending plain text messages, like TC/400 via TC/LINK.

Refer to the *TCOSS System Manual* for details.

++XLAT

With the ++XLAT directive, TC/LINK can be forced to “translate” an embedded message in a message from mail to the format used by TCFW. This directive is only needed when sending an embedded message via TC/LINK-SM.

++PW

If the `TOPCALL\NeedPWD` registry key is set to 1, every mail originator must be authenticated via a password specified in the ++PW directive.

Syntax:

```
++PW Password
```

Note KCS users specify the password from their KCS user profile; other originators specify the password of the KCS guest user.

See also: user rights and guest user.

++REF

This directive sets the message subject. If used in message text, the rest of the line starting with “++REF” becomes the message subject.

++NOTIF

This directive can be used to request notifications from KCS.

Syntax:

| | |
|--------------|--|
| ++NOTIF NO | Disable notifications for this message |
| ++NOTIF POS | Only delivery notification for this message |
| ++NOTIF NEG | Only non-delivery notification for this message |
| ++NOTIF BOTH | Both delivery and non-delivery notification for this message |

++NOTIF overrides the notification requests in the message header. It also overrides the `SOForce` registry settings.

++LD

This directive sets the latest delivery timeout for the message.

Syntax:

```
++LD [yy]mmdd:hhmm[ss]  
or  
++LD hhhmm
```

The first syntax variant sets an absolute timeout. Default values for the optional parameters are current year and 00 seconds.

The second syntax variant sets a relative timeout, based on the time when the message is posted to TCOSS.

++DIGISIGN

This directive requests a digital signature for the message.

Syntax: ++DIGISIGN [layout-info]

A signature will be created for the area after the ++DIGISIGN line (until next ++DIGISIGN command or end of the message).

The optional parameter layout-info is the name of a layout message on KCS (**Syntax:** Foldername/Filename).

Refer to the *TCOSS Message Preprocessor Technical Manual* for details.

Implementation details:

When TC/LINK encounters this command, it inserts a SET_DIGI_SIGN object into the message and stores the optional parameter layout-info in the TS_XFIELD element (see the *TCSI Technical Manual - Client Server Interface*).

Text Directives in Binary Attachments

TC/LINK can be configured to search for ++sequences in binary attachments. This is important for link types connecting to SAP, where the message text is often provided in Postscript, PCL or PDF format.

Supported features

TCLINK.EXE evaluates all ++sequences except the page and line layout commands (++A4H, ++A4Q, ++BDH, ++BDQ, ++LFx, ++BSx).

Documents included via ++INC commands are appended after the attachment (whereas ++INC sequences in normal text would be replaced by the included TCOSS documents).

Configuration

The `General` registry subkey of TC/LINKs can contain a subkey `Attachments`, holding sub-trees for all extensions of files to be scanned for ++sequences. The following examples apply to Postscript and PCL5 files, but also other file extensions can be scanned for text directives.

Configuration must be done manually via the following registry values of the `General\Attachments\<Extension>` registry key.

| Name | Type | Default | Description |
|-------------|-------|---------|--|
| ++Check | DWORD | 0 | 1: enable search of ++ commands 0: disable search of ++ commands |
| Mode | DWORD | 0 | 0: include ++ command in file 1: remove ++ command from file 2: remove line containing ++ command 3: replace ++ command by <i>ReplaceChar</i> |
| ReplaceChar | DWORD | 0x00 | replacement character for mode 3 |
| EndChar | DWORD | 0x20 | character that terminates the ++ command |
| Unicode | DWORD | 1 | Recognize Unicode ++ commands |

As binary attachments need not be line-oriented and some commands may consist of several words, a terminating character (*EndChar*) can be configured. This character (default: blank) terminates the ++ directive, that is, it is interpreted as the first character after the ++ directive.

If a linefeed is encountered before the next terminating character, the linefeed is regarded as the end of the ++ directive.

Example for PCL (General\Attachments\PCL registry key):

```
++Check = 1
Mode = 0x3
ReplaceChar = 0x20
EndChar = 0x20
```

Example for PS (General\Attachments\PS registry key):

```
++Check = 1
Mode = 0x1
ReplaceChar = 0x0
EndChar = 0x20
```

Entering ++ commands in binary files

Normally, the ++ sequences are not entered directly by the user. Instead, special SAP R/3 printer model templates shall be used. In these templates, ++sequences can be defined as printer control strings that are automatically created at the beginning of a document. Printer control strings are part of the SAP R/3 printer type and can be edited with standard SAP tools.

The above examples assume that the ++ command is followed by a space which must be added explicitly.

Image Format Conversions

For each main graphic format supported by TC/LINK, there is a separate registry sub key with two values:

| Name | Type | Description |
|-----------------|------|--|
| InputExtensions | SZ | Input file extensions for sending from mail system to KCS. All files with these extensions are recognized correctly. If the value is empty, TCLINK will not use TCIMGIO for this file format. All extensions in the list are separated by comma and are case-insensitive. For example, TIF,TIFF |
| OutputExtension | SZ | One extension for output files (message from KCS to mail system), such as TIF. Maximum length: 4 characters Image files created by TCLINK will have this extension. |

The following table shows the default settings for all supported graphic formats. All mentioned registry keys are below the *General* key.

| Key | InputExtensions | OutputExtension | Remarks |
|--------|-----------------|-----------------|---|
| FmtBMP | BMP | BMP | |
| FmtDCX | DCX | DCX | |
| FmtGIF | | GIF | Conversion from GIF to FAX is not possible. |
| FmtJPG | JPG,JPEG | JPG | |

| Key | InputExtensions | OutputExtension | Remarks |
|--------|-----------------|-----------------|---|
| FmtMDA | MDA | MDA | |
| FmtPCL | PCL | | Conversion from FAX to PCL is not possible. |
| FmtPCX | PCX | PCX | |
| FmtPDF | PDF | PDF | |
| FmtPS | PS | | Conversion from FAX to PS is not possible. |
| FmtTCI | TCI | TCI | |
| FmtTIF | TIF,TIFF | TIF | |
| FmtTXT | TXT | | Conversion from FAX to TXT is not possible. |

These configuration values replace the registry values, such as ExtFmt1, ExtFmt2, that existed in previous versions.

The registry values are not written at the setup, but by TC/LINK itself (after startup).

At the first link start after upgrading from a previous version, TCLINK modifies the default InputExtensions and OutputExtensions in the following way:

- If an ExtFmt value contains a non-standard extension for a format, this extension will be appended to the InputExtensions list and copied to the OutputExtension value.
- If there is no ExtFmt value for one of the formats TCI, TIF, PS, PCL, BMP, DCX, MDA, PCX and TXT, the InputExtensions list for this format will be emptied. TCLINK assumes that the value has been removed on purpose (to force conversion via TCDC).
- After upgrading from a previous version, TCLINK removes the ExtFmt values and works with the new configuration values. The upgrade logic described above will be executed only if at least the ExtFmt1 registry value exists.

From KCS:

When transmitting a message to the remote mail system, TC/LINK converts all TCI graphics to image file attachment(s). The graphic format depends on the queue name (see [Addressing from KCS to Mail](#)). The file extension is taken from the OutputExtension registry value (for the specific graphic format).

Images longer or wider than A4 (210 x 297 mm) are scaled to fit A4. Scaling does not change the aspect ratio.

Conversion results in images that are always 210 mm wide, with 1728 horizontal dots. If the input image is narrower than A4, its margins will be padded with white upon conversion.

Resolution:

For messages from KCS, the resolution defined in the Topcall\FineMode registry key is used.

Problems Directory

You can configure a problems directory for image conversions. In this directory, TC/LINK will store graphic files, such as Postscript files, that could not be converted.

This feature must be enabled explicitly via the following registry values (below the link's registry value):

| Name | Type | Default | Description |
|---------------------|------|---------|--|
| TCIMG32\ProblemPath | SZ | | Path name of problems directory. If empty, no problem files are created. |
| TCIMG32\ProblemSize | SZ | 1000 | Maximum size of problems directory (in KB). If 0, no problem files are created. |

Note

- If a file named filename.ext is to be copied to the problems directory and there is a file of the same name in it, then our file is renamed to *filename_0.ext* and copied. If *filename_0.ext* also already exists then it is renamed to *filename_1.ext* and so on.
- If a file is not copied to the problems directory because the `ProblemSize` limit is reached, an entry is written to the event log. The corresponding EventID is 1034.
- If the path configured in `HKLM\SOFTWARE\TOPCALL\<link instance>\TCIMG32\ProblemPath` does not exist, it will be created.

Sending from Mail to KCS

Attachments in the following formats can be converted to the KCS internal format (TCI) without using the document converter:

TCI, Text, TIFF, BMP, PCX, DCX, MODCA, JPG, Postscript (special license), PCL5/PCL6 (special license), PDF.

Note When converting TCI files to fax format, certain ++ commands, such as ++A4H, are resolved. But the text conversion (configured via format character T) does not resolve any ++ commands.

For details on this type of image conversion, refer to the "Image to TCI Conversion" section in the *Document Conversion Technical Manual*. This section only contains issues specific to TCLINK.

All graphical attachments must be black and white; colored graphics are not supported. Graphical attachments can be of any size horizontally and vertically, except TCI, which is always 1728 dots wide.

TC/LINK recognizes the format of the attachment from the file extension. The `InputExtensions` registry values below `General\FmtBMP`, `General\FmtTIF` and others, determine the mapping between attachment names and graphic formats.

To force conversion via TCDC, remove the extension from the `InputExtensions` key.

Image Perfection (VRS)

Kofax Image Perfection (Virtual Rescan = VRS) is a built-in feature of TCLINK. It is used for enhancing fax image, TIFF, PDF and JPG attachments in different scenarios.

No additional license is needed.

By default, VRS is only enabled for MFP related link types. With other link types, it is disabled by default; it can be enabled via a checkbox in Setup or by changing the `TCIMG32\VRS\Enable` registry value to 1.

Image Perfection for TCI, TIFF or PDF alternatives

TC/LINK optionally uses VRS when creating TCI, TIFF or PDF alternatives for message bodies and file attachments. If you are using the feature “Email Header in Body Text” which creates an HTML header at the beginning of the message body, the created HTML header can be subject to VRS as well.

The VRS feature is controlled by the following registry values.

| Name | Type | Default | Description |
|----------------------|----------|---------|--|
| General\VrsForImg | DWORD | 0 | Possible values: 0: Disabled 1: Enabled for all file types 2: Enabled for all file types in VrsFileTypes 3: Enabled for all file types NOT in VrsFileTypes |
| General\VrsFileTypes | MULTI_SZ | | Contains file extensions (without leading dot), acts as whitelist or blacklist, depending on value of VrsForImg |

To find the correct VRS settings for enhancing TCI alternatives, TCLINK searches for a VRS use case matching the address of the first recipient without binary capabilities.

To find the correct VRS settings for enhancing TIFF or PDF alternatives, TCLINK searches for a VRS use case matching the address of the first recipient with binary capabilities.

Thus, you can define special VRS settings for fax images.

Image Perfection for TIFF, PDF or JPG attachments received from a mail system

TC/LINK optionally uses VRS to enhance TIFF, PDF or JPG attachments received from the mail system.

This feature is controlled by the following registry value.

| Name | Type | Default | Description |
|-------------------|-------|---------|---|
| General\VrsForBin | DWORD | 0 | Possible values: 0: Disabled 1: Enabled |

To find the correct VRS settings for enhancing these attachment types, TCLINK searches for a VRS use case matching the address of the first recipient with binary capabilities.

Image Perfection for inbound faxes forwarded to a mail system

TC/LINK optionally uses VRS to enhance received faxes that are forwarded as TIFF or PDF files to a mail system. The binary content of the attachment is replaced with the result of VRS, even if no image conversion is needed for the message, such as a simple email.

This feature is controlled by the following registry value.

| Name | Type | Default | Description |
|-------------------|-------|---------|---|
| General\VrsToMail | DWORD | 0 | Possible values: 0: Disabled 1: Enabled |

To find the correct VRS settings, TC/LINK searches for a use case matching the recipient fax number.

Image Perfection for TIFF or PDF attachment sent to a mail system

TC/LINK optionally uses VRS to enhance TIFF or PDF file attachments sent to the mail system.

This feature is controlled by the `General\VrsToMail` registry value (see above).

Depending on the file extension, TC/LINK uses the VRS settings defined for use case `ReceivedTiff` or `ReceivedPdf`.

VRS Use Cases

TC/LINK can be configured to use different image perfection settings for different scenarios. For example, for incoming faxes, configure automatic rotation and removal of blank pages, whereas for outbound faxes, enhance readability of colored images.

Use cases can be configured in a file on TCOSS. The name of this TCOSS file is configurable via the `General\VrsUseCaseFile` registry value. With MFP-based links, the default value is “MFPTEMPL/VRSUCID”. For all other link types, it is empty by default.

In the use case file, each use case is described on a separate line, and fields on each line are separated by a colon (':').

Syntax of a single line:

```
UCID: service-name, address
```

Where:

- The first field `UCID` is the use case ID. It is case-insensitive and must not contain any white space characters, such as spaces or tabs.
- The second field `service-name, address` describes the recipient address of the message. It is defined by a service name and an address, separated by a comma character. The service name and address are case insensitive. Anything following the comma separator is treated as address. At the beginning or the end of the address, you can use the wildcard character ('*') which matches either zero or more characters.

Use cases for inbound faxes have the value “Received” instead of a service name (see the last example below).

Empty lines and lines starting with '#' are treated as comments and are therefore ignored. All white space characters, such as blanks and tabs are also ignored.

Examples of UCID definitions:

```
# messages sent to KCS user ASCENT
ScanToUser: TOPCALL, ASCENT

# messages sent to FAX numbers in Vienna/Austria
FaxVienna: FAX, 00431*

# other fax messages
Fax: FAX, *

# SMTP mail messages for domain kofax.com
Mail: SMTP, *@kofax.com

# Inbound fax to extension 430
MyFax: Received, *430
```

Use-case lookup for messages from mail system to TCOSS

When receiving a message from an MFP or from a mail system, TC/LINK checks the recipient addresses to decide which representations of the attachment must be included in the resulting KCS send order.

| Recipients with binary capability | Recipients without binary capability | Include TCI alternative | Include binary content |
|-----------------------------------|--------------------------------------|-------------------------|------------------------|
| 0 | 1 or more | Yes | No ¹ |
| 1 or more | 0 | No | Yes |
| 1 or more | 1 or more | Yes | Yes |

For each content representation, TC/LINK tries to find a match between the recipients needing this content and the use-cases defined in the use-case file. This search starts with the first active address of the first active recipient, and stops as soon as a match is found. This means that the VRS settings from the first found VRS use case are used for message processing, even if the message has more than 1 recipient. When sending one document to several recipients requiring different VRS settings, it is therefore recommended to send several individual messages, so that every recipient gets the best matching image format.

If no match is found, no VRS is done for this content representation.

Use-case lookup for messages from TCOSS to a mail system

When processing a received fax, TC/LINK tries to find a use case matching the destination fax number.

Fixed use case names for VRS on TIFF or PDF attachments sent to a mail system

When processing a TIFF or PDF binary attachments in a message from TCOSS, TCLINK looks for VRS settings matching the fixed use case names "ReceivedTiff" and "ReceivedPdf".

¹ This is not standard TC/LINK behavior, and is only done if a use-case file is defined.

VRS Profiles

When TCLINK knows which use case is applicable, it tries to find the settings for this use case in a VRS profile. A VRS profile is a TCOSS file that holds VRS settings for one or more use cases.

For MFP related links, there are several profiles, each matching a certain MFP device type. The VRS profile name is defined in the MFP user profile on TCOSS.

All other link types use a single VRS profile, the name of which is configured in the `General \VRSSettingsFile` registry value.

In the VRS profile, each use case is described on a separate line, and the fields on each line are separated by a colon (':') character.

Syntax of a VRS profile line:

```
UCID: [key=value],...
```

Where:

- The first field `UCID` is the use case ID. It is case-insensitive and must not contain any white space characters, such as spaces or tabs.
- The second field `[key=value],...` contains the VRS settings for the use case, as comma-separated name/value pairs. The VRS parameter names are case sensitive.

Note

- Empty lines and lines starting with '#' are treated as comments and are therefore ignored. All white space characters, such as blanks and tabs are also ignored.
- Comment lines must start with a # character in the first column.
- A default setting (without UCID) cannot be defined immediately after a VRS parameter or comment. It must be either at the start of the file, or it must be preceded by an empty line.

Reason:

When saving a profile via TCFW, line wrapping can occur. As a result, a long comment like the following will be misinterpreted as a single comment line followed by a default setting ("AutoDeskew=0,ColorGamma=128").

```
#AutoBrightness=1,AutoCrop=0,BWContrast=205,AdvancedClarity=1,AutoOrientation=1,
EdgeAddr=1,AutoDeskew=0,ColorGamma=128
```

Example of a VRS profile with settings for three use cases and a default setting:

```
# VRS parameter settings for ScanToAscent
ScanToAscent: AutoBrightness=1,AutoCrop=0,BWContrast=205,AutoOrientation=1

# PDF output for emails
ScanToPdf: AutoBrightness=1,AutoCrop=0,BWContrast=205,AutoOrientation=1

# VRS parameter settings for invoice fax messages
FaxVienna: AutoBrightness=1,AutoCrop=0,BWContrast=205,AdvancedClarity=1

# VRS parameter setting if VRS is enabled and UCID definition does not exist
AutoBrightness=1,AutoCrop=0,BWContrast=205,AdvancedClarity=1,AutoOrientation=1
```

VRS Parameters

Information about possible VRS parameters is available in the TCLINK VRS Configuration Manual. That manual also explains how the VRS configuration can be maintained and tested via the VRS Wizard application.

Restriction: When sending landscape pages as fax from mail system via TCLINK, VRS setting “AutoOrientation” is not applied, pages are not rotated.

PDF Conversion

The Datalogics PDF Library (currently used version: 9.0.1) is used by the TCIMGIO module to perform the PDF-to-TCI conversion. This library supports the PDF 1.7 specification.

No extra selection for PDF conversion is required at the TC/LINK installation.

If VRS is active, the PDF-to-TCI conversion is done by VRS and not by the Datalogics PDF Library.

Note These two PDF rendering methods are fairly different, so the resulting TCI images can also be different in case of non-searchable color/grayscale PDFs.

- The Datalogics PDF Library uses the “dithering” method, whereas VRS uses “thresholding” to convert the colored PDF elements to black-and-white bitmap pattern.
- VRS maintains the readability of texts (OCR or human), whereas, the Datalogics PDF Library achieves a good quality of photo/picture elements (example: passport photograph).

Resolution

For messages to KCS, the resolution is defined in the send options of the message (or the message template, as a fallback). In previous versions, the resolution was determined by the default resolution of the printer driver.

If you experience strange effects concerning the output of document conversion, please try if changing the resolution helps.

Alternative Contents

Standard Handling

- With standard configuration, the original file attachment is always included in the message.
- If any recipient service does NOT provide binary capabilities, TC/LINK converts the file to KCS Image Format (via TCIMGIO). TC/LINK adds the image as an alternate content.
- The TCOSS Fax channel transmits only the TCI representation
- A receiving TC/LINK transmits either the binary (default) or the TCI representation
- KCS users receive both alternatives. To display all available alternatives TCfW 3.02.00 or higher is required. With older TCfW versions, the alternatives are removed when sending or forwarding messages.
- Transmitting binary attachment data does not always make sense. For example, incoming faxes might be forwarded via another TC/LINK to persons using a different graphics viewer. The `General`

`\AltExtSuppressBinary` registry key can hold a list of file types (extensions) which are transmitted as image only.

For these files, TCLINK always creates an image representation (disregarding service capabilities and other registry settings). Adding an extension to this key ensures that a file attachment with this extension can be viewed with the recipient's default graphics viewer.

Compatibility

In previous versions, image attachments, such as BMP, TIF, DCX, were always converted to TCI image code. Now, the binary content is maintained and conversion is only done if one recipient does not support binary attachments.

By default, the `General\AltForceImgtoTCI` (DWORD) registry key is set to 0. You can set this key to 1 to force creating the alternative TCI content independent of the recipients. All graphic attachments are automatically converted to TCI format. The original file attachment is not included in the message. All recipients get only the TCI image.

The same algorithm was used in former link releases if the TCOSS version was below 7.08.01.

Sending from KCS to Mail

This section describes how to send mail from KCS to Mail.

Possible Image File Formats

The graphical format can be defined in the IN-actions of the mail user's KCS user profile as: TCI, TIFF Packbits, TIFF Uncompressed, TIFF G3 with/without EOL, TIFF G4, DCX, PCX, BMP, MODCA type 1, MODCA type 2, GIF, PDF, JPEG.

Depending on message content, TCLINK configuration and graphic format, the conversion produces one or more graphic file attachments.

Images longer or wider than A4 (210 x 297 mm) are scaled to fit A4. Scaling does not change the aspect ratio.

Conversion results in images that are always 210 mm wide, with 1728 horizontal dots. If the input image is narrower than A4 its margins will be padded with white upon conversion.

Resolution:

For messages from KCS, the resolution defined in the `Topcall\FineMode` registry key is used.

Render Image or Binary Attachments or Both?

The desired message content depends on the remote system. In a message to an email recipient (via TC/LINK-SM), keeping the original file attachments intact will probably be the best choice. On the other hand, TC/CCD connects to Ascent Capture and has to deliver TIFF or PDF files. For some link types, it may be needed to render the original file attachment and its graphic representation.

Images without binary representation

All images that have no binary representation are converted to the graphical format preferred by the mail user. This applies, for example, to incoming faxes and images in messages created by TCFW.

Binary attachments with image alternative

Upon reception of a file attachment with image alternative (as created by TC/LINK), TC/LINK sends one or more alternative representations of the attachment to the remote mail system.

The target formats can be configured separately for HTML/RTF message bodies (registry value `General\FmtRtfBody`) and for file attachments (registry value `General\FmtFileAttachment`). If no matching alternative is available, the original binary file is sent.

Each of these registry values contains a sequence of format definitions. See the following table for possible format definitions.

| Value | Meaning |
|--------|----------------------------|
| T | Text representation |
| I | Image representation |
| B | Original binary content |
| B(PDF) | PDF representation |
| B(TIF) | TIF representation |
| B(*) | All binary representations |

Several formats can be concatenated with logical operators & (and) and | (or). & is stronger than |. Brackets () can be used if necessary. Whitespace characters are ignored.

In the absence of these operators, it is assumed that an 'or' operator is used. For example, "BI" is interpreted as "B|I".

When several formats are concatenated with the 'or' operator, only the first matching format is used. Formats concatenated with the 'and' operator are all used. See the following table for examples.

| Value | Explanation |
|--------------|--|
| IB | Image or original binary file |
| I B | Image or original binary file |
| I&B | Image and original binary file |
| I B(TIF) | Image or TIFF alternative |
| (I B(TIF))&B | Image or TIFF alternative, and additionally the original binary file |
| I&B(*) | Image and all binary representations |
| I&B(*)&T | All representations of the attachment |

If TC/LINK transmits the image representation of the attachment, the image is converted to the recipient's preferred graphic format, as explained below.

Note Format 'T' may only be available for some file attachments created by TC/LINK. Therefore it is recommended to use it only in combination with the other formats to allow a fallback format.

Number of Image Files

Most graphical formats support multiple pages per file. Some older formats, such as BMP, support only single page files.

Depending on the configuration, TC/LINK can render one image file for the complete message, one file per page, one file per document or even a single file containing only the first page.

A set of registry values below the `General` subkey defines the conversion results (Image to file) for the supported graphic formats.

The registry values are treated as case insensitive. If a registry value is invalid, TC/LINK uses the default value, and writes back the default value to the registry.

These registry keys apply only to sending from KCS to the remote mail system.

| Registry key | Default | Remarks |
|-----------------------------|--------------------------------|---|
| <code>ConvertToBMP</code> | <code>SinglePage</code> | Only <code>SinglePage</code> and <code>FirstPage</code> are supported |
| <code>ConvertToPCX</code> | <code>SinglePage</code> | Only <code>SinglePage</code> and <code>FirstPage</code> are supported |
| <code>ConvertToPDF</code> | <code>CompleteIfGraphic</code> | All options are supported. |
| <code>ConvertToTCI</code> | <code>CompleteIfGraphic</code> | This registry key applies to subformat I only. All options are supported. |
| <code>ConvertToTCIJ</code> | <code>MultiPage</code> | This registry key applies to subformat J only. All options are supported. |
| <code>ConvertToTIF</code> | <code>MultiPage</code> | Applies to TIF subformats 0, 1, 2, 3 and 4. All options are supported. |
| <code>ConvertToGIF</code> | <code>MultiPage</code> | Only <code>SinglePage</code> , <code>FirstPage</code> and <code>MultiPage</code> are supported. |
| <code>ConvertToMODCA</code> | <code>MultiPage</code> | Applies to subformats M and N. Only <code>SinglePage</code> , <code>FirstPage</code> and <code>MultiPage</code> are supported. |
| <code>ConvertToDCX</code> | <code>MultiPage</code> | Only <code>SinglePage</code> , <code>FirstPage</code> and <code>MultiPage</code> are supported. |

See the following table for possible values.

| SinglePage | 1 attachment per image |
|----------------------------------|--|
| <code>MultiPage</code> | 1 attachment for every contiguous sequence of image pages |
| <code>PerDocument</code> | 1 attachment per attached file, 1 attachment for message body (may be text or image) |
| <code>PerAttachment</code> | 1 attachment per attached file (message body is ignored) |
| <code>CompleteIfGraphic</code> | If message contains at least 1 graphic block: 1 attachment containing text and graphics from the complete message |
| <code>AlwaysComplete</code> | Without regard to message contents (also for text-only messages): 1 attachment containing text and graphics from the complete message. |
| <code>AlwaysComplete:XXXX</code> | Option <code>AlwaysComplete</code> with modifiers, see below. |

Conversion options: PerDocument and PerAttachment

These conversion options are only possible for image formats TIFF (all variants), PDF and TCI. Both options force TC/LINK to create one image file for every attachment that has a TCI alternative.

With the `PerDocument` conversion option, TC/LINK creates an additional image file for the message body (even for plain text message), which can also include a cover sheet.

With the `PerAttachment` conversion option, TC/LINK does not render the message body. All representations of the message bodies (text, image, binary, in the main message and in attached messages) are suppressed with this option.

There is one exception to this behavior: If a notification contains a sending copy, TC/LINK ignores the original message content and creates a single image file with the complete sending copy image. With default settings, this file also contains the notification text.

If TC/LINK shall ignore the sending copy and process the original message content instead, set the `Topcall\DelNfOrigToMail` and `Topcall\NonDelNfOrigToMail` registry values to 2. With this configuration, the `PerDocument` and `PerAttachment` options will also apply to notifications.

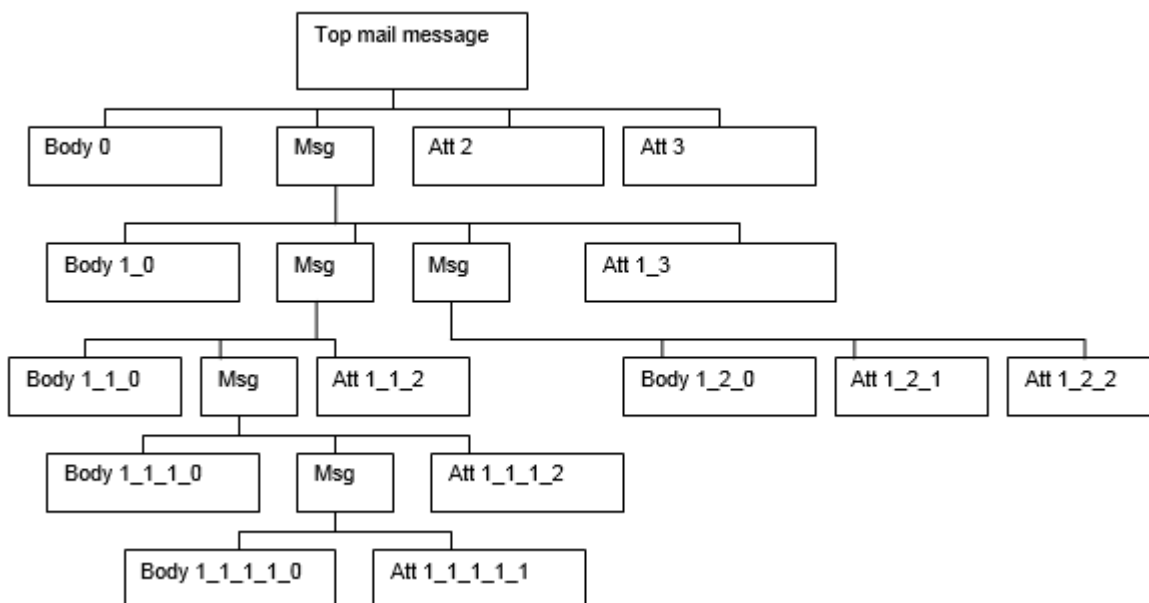
Additional information: Attachment position

For every attachment (includes HTML or RTF message bodies), TC/LINK optionally stores the attachment's position within the message in the TCSI field, `TS_CONTENT_ID`.

The main message body gets a `TS_CONTENT_ID` value of "0", the other immediate sub-elements will be "1", "2", "3" and so on.

If one of these sub-elements, such as 2, is an attached message, it has in turn a message body (2_0) and attachments (2_1 and more).

Example:



If an attachment has binary and image representations, they all get the same content ID.

The `TS_CONTENT_ID` field has a maximum length of 268 characters. The position value will be truncated to this length. For normal emails, this should be long enough.

Note

This was implemented for TC/CCD (interface to Ascent Capture), as Ascent processes each attachment individually and therefore risks to lose context information. It must be explicitly enabled for TC/CCD, as the original content-id of the attachment is overwritten (might be important for other destinations, such as TC/LINK-SM).

The feature is configurable via the following registry values.

| Registry value | Type | Default | Description |
|-------------------------|-------|---------|--|
| General\AttPosEnabled | DWORD | 0 | 1: Store the attachment position in TS_CONTENT_ID 0: Do not store the attachment position |
| General\AttPosSeparator | SZ | " " | Separator character for attachment position values. Only effective if AttPosEnabled = 1 |

Additional information: Attached messages (PerDocument)

With the PerDocument conversion option, it is possible to add per-message information about an attached message (such as subject, sender, recipient) at the top of the body text image of the attached message.

Note This is only possible if image conversion is done when sending from KCS to the mail system. This information cannot be added to an image file created by the TIFF printer.

TCLINK uses TCOSS cover sheet technology for this purpose. You can define a cover sheet that controls which information is added.

| Registry value | Type | Default | Description |
|---------------------|------|---------|--|
| General\AttMsgCover | SZ | | Empty: No additional per-message information stored. Folder/Filename: The specified cover sheet is used for adding per-message information (example: TCLINK/ EMBMSG). |

In the cover sheet, you can use the header variables (for originator and recipient) and the variable \$ERef\$ (for the message subject).

Conversion option: AlwaysComplete

This conversion option offers additional "modifiers" that are used in TC/LINK-SDD. Specify these modifiers by setting the registry key to "AlwaysComplete:" followed by a list of modifier-characters.

| Modifier character | Description |
|--------------------|--|
| T | Original text is not copied to message body. |
| B | Original binary attachments are not part of the message. |
| S | For messages only: create a sending copy. |

| Modifier character | Description |
|--------------------|--|
| N | For notifications only: notification cover is not part of the image. |

The modifiers are described in detail in the following paragraphs.

Use the `AlwaysComplete` option (with optional modifiers) to create a single graphic file containing the complete message, even if the message contains only text.

Recommended settings for Secure Document Delivery are:

- “AlwaysComplete:TBS” for TC/LINK-SDD
- “AlwaysComplete:TBN” for the sending link

Note If TC/LINK-SDD is used for sending PK7 signed attachments (email signature created by TCDCSIGN), use “AlwaysComplete:ST”. Otherwise, the PK7 attachment is removed.

Optionally disable additional message content (modifiers T and B)

If you use the “AlwaysComplete” conversion option without modifiers, the resulting email contains a graphic attachment holding the complete message, but it may contain additional components:

- Original message text (and text from optional cover sheet)
- Original binary attachments (if there is no image alternative)

This means that at least the message text is duplicated: It is part of the graphic attachment, and it appears in the message body of the email.

You can suppress these additional message components by using the “AlwaysComplete” conversion option with modifiers T and B.

Optional sending copy (modifier S)

Important This feature requires TCROSS version 7.41.00 or above.

TC/LINK-SDD can be configured to create a sending copy, consisting of the image of the complete message, as it was transmitted to the next SMTP node. This feature must be enabled explicitly, via modifier S of the “AlwaysComplete” conversion option.

Note The sending copy is only created if the originator requested a sending copy.

Additional notes:

- **Restrictions for certain graphic formats:** JPEG conversion cannot be configured - these attachments are always converted in “SinglePage” mode (1 file per image); BMP and PCX only support the “SinglePage” and “FirstPage” modes; GIF, DCX and MODCA conversion do not yet support the “CompletfGraphic” and “AlwaysComplete” modes.
- **Include cover sheet in image:** If TC/LINK shall include the cover sheet in the image, set the `General\CompatibilityNoCover` registry key to 0, and `Topcall\IncludeCover` to 1. This only applies to “AlwaysComplete”, “CompletfGraphic” and “PerDocument”.
- **Attachment file extensions:** The file extension is taken from the `OutputExtension` registry value (for the specific graphic format).

Optional Descriptive Text

TC/LINK can be configured to insert a descriptive text in front of the image attachment, such as a hint how to open the attached graphics file.

Depending on the graphic format, TC/LINK takes this description from a text file in the application directory (C:\TCOSS\TCLP). The syntax for the textile names is "DESCR_X.TXT", where X is a placeholder for the graphic format character (last character of the TCOSS queue name).

Additionally, the feature works for PK7 attachments (digitally signed attachments). For this purpose, there must be a text file DESCR_7.TXT.

If the file does not exist, is empty or contains only whitespace characters, nothing is inserted into the message.

The file must be written using the ANSI code page configured for the link computer.

Example for DESCR_F.TXT:

```
"This PDF attachment can be opened with Acrobat PDF Reader Version 4.0. Acrobat PDF
reader is a free, distributable software. You can download it from the ADOBE web site:
http://www.adobe.com/products/acrobat/readermain.html".
```

Special Topics

Suppressing Leading Form Feed

If the message starts with an image created by image conversion (TCIMGIO), TC/LINK can optionally remove a leading form feed in the first attachment. This can be done by setting the `General\SuppressLeadingPageBreak` (DWORD) registry key to 1. (default: 0).

Note For this feature to work, the image attachment must be the very first component of the message (no text).

Binary attachments with OCR alternative

Incoming faxes can contain text alternatives created by OCR (Optical Character Recognition).

TC/LINK offers three possible ways of including OCR text into the message:

1. The OCR text is converted to a single binary attachment; individual pages are separated by form feed characters
2. Every single page of the OCR text is converted to a binary attachment
3. The OCR text is part of the message text

The resulting file attachments (from option a and b) have unique names. The following registry keys let you configure name prefix and extension for all link types except for TC/LINK-FI.

| Name | Type | Default | Description |
|-------------------|-------|---------|--|
| General\OcrToMail | DWORD | 1 | 0: Do not include OCR texts. 1: Include OCR texts |

| Name | Type | Default | Description |
|--------------------------|-------------------|---------|--|
| General\OcrRendering | DWORD | 0 | 0: Convert OCR text to a single file attachment. 1: Convert every page to a file attachment. 2: Append OCR text to message text. |
| General\OcrFileName | SZ max 5 chars | OCR | First 5 characters of file name for OCR attachment |
| General\OcrFileExt | SZ max 3 chars | TXT | Extension for OCR attachment |
| General\OcrPageSeparator | DWORD | 12 | Page separator character. Only valid if OcrRendering is 0. |

Note Link types with a file interface (FI and AC) use special algorithms to create unique names for attachment files. Therefore, the `OcrFileName` and `OcrFileExt` registry keys do not apply to these links. With TC/LINK-FI, the “real” file name can be found in the APPLICATION parameter of the transaction file.

Content based VRS auto-rotate

When TC/LINK is configured to deliver faxes to email in TIFF or PDF format, then TC/LINK can optionally rotate the fax pages to automatically achieve proper content-based orientation for each page. TCIMGIO uses Kofax VRS to perform this modification on the fax image.

Configuration:

1. Configure the Fax reception format to TIFF or PDF.
2. Install VRSCOMPONENTS 2.01.03 on the link machine.
3. Set the <link>\TCIMG32\FaxAutoOrientation Registry setting to 1.

The reason of a failed rotation can be checked in the trace file. (VRS error.)

Binary Format Conversions (TC/DC)

TC/LINK uses the KCS document converter (TC/DC) to convert attached documents in a mail message to TCI graphic. This conversion is only done if necessary, that is, if at least one recipient does not accept binary attachments.

For details on document conversion, refer to the *Document Conversion Technical Manual*. This manual mainly contains information that relates to links only.

Document conversion is done by printing the document to the printer “Topcall Fax to TCDC”, which produces TCI output. For this purpose, an application capable of printing the document type is needed. The document type is derived from the attachment extension. If TC/LINK encounters an attachment without an extension, it uses a default extension configured in the `General\DefaultExtension` (SZ) registry key, usually “BIN”.

For each type of attached document, an application capable of printing must be installed at the link computer.

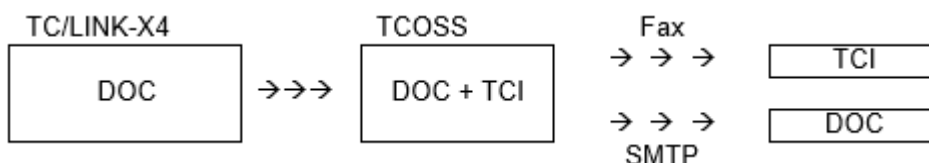
If document conversion fails, the sender receives a non-delivery notification.

Document conversion, RTF conversion and OLE conversion use the same mechanisms. To enable operation of links in parallel, the conversion is locked. If any conversion is active, other conversions are locked and do not become active until the current conversion is finished. This can cause a performance reduction.

Alternative Representations of Binary Attachments

The way how the resulting TCI graphic is packed into the message was changed during the history of link versions.

Standard Handling



- TC/LINK creates a binary attachment from the file attachment. If any recipient service does NOT provide binary capabilities, TC/LINK uses the document converter to convert the file to KCS Image format (TCI).
- TC/LINK adds the image as an alternate content.
- The TCOSS Fax module transmits only the TCI graphic.
- A receiving TC/LINK transmits either the binary (default) or the image representation. See [Render Image or Binary Attachments or Both?](#) for details on how this is configured.
- KCS users can view both alternatives via TCfW (version 3.02.00 or higher is required). With older TCfW versions, the alternatives are removed when sending or forwarding messages.
- The `General\AltExtSuppressBinary` registry key can hold a list of file types (extensions) which are transmitted without a binary representation. For these file types, document conversion is always done, disregarding service capabilities and other registry settings. Adding a file extension to this key ensures that a file attachment with this extension can be viewed with the recipient's default graphics viewer.

Compatibility:

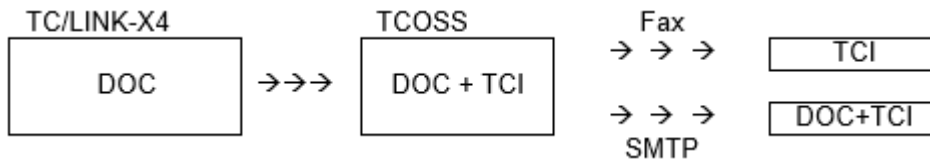
Because all conversion results are available as alternative content, this method is compatible with old versions. Nevertheless you can disable this feature by setting the registry value given below:

`General\CompatibilityOldContent` (DWORD) to "1". (Default: 0 – the new feature is used.)

Non-Standard Handling

Former versions of TC/LINK used this method if connected to a Kofax Communication Server with TCOSS versions below 7.08.01. The present links do not support these old TCOSS versions any more.

For compatibility, the old way of packaging TCI alternatives is still supported and can be configured by setting the `CompatibilityOldContent` registry key to "1".



- TC/LINK creates a binary attachment from the file attachment. If any recipient service does NOT provide binary capabilities, TC/LINK uses the document converter to convert the file to TCI format.
- The image is packed into an individual attachment: The resulting message contains the binary attachment followed by an attachment with the TCI graphic.
- The TCOSS Fax module transmits only the TCI graphic.
- A receiving TC/LINK transmits both attachments.
- KCS users receive both attachments.

Full Text Index for Binary Attachments

Customers using the KCS Archive often want to do a full text search including file attachments, in order to find received or sent documents in a comfortable way. TC/LINK with TC/ARCHIVE provides this functionality for several types of file attachments:

- TC/ARCHIVE includes alternative text content of attachments in the full text search index.
- The KCS Document Converter is able to extract text content from certain Office documents. The text is added to the message as an additional alternative content.
- This is possible if document conversion is done via scripting (OLE Automation). This feature is not available with keyboard emulation.
- Native applications, such as Word and Excel, are used to open the attachment and save it as plain text (similar method to image conversion).
- Saving as plain text is done in the same pass as image conversion (printing the document), this means an attachment is only opened once and impact on performance is kept to a minimum.
- Only attachments for which an application exists that is able to convert them to plain text and save to file are supported. The customer must provide these applications. Scripts for Word and Excel are delivered with the package.
- By default, document conversion is only done if at least one recipient of the message cannot handle binary attachments. In order to provide full text search for all send orders, TC/LINK can /be configured to do document conversion always (registry key `AltForceBinToTCI`, see below).
- During setup you can specify to install scripts with or without generation of text alternatives.

Configuration

| Registry key | Type | Default | Description |
|------------------------------|-------|---------|---|
| General \AltForceBinToTCI | DWORD | 0 | <ul style="list-style-type: none"> • 0: Document conversion only if a recipient cannot handle binary attachments, such as fax. • 1: Document conversion always (slows down performance) |

Prerequisites

TCOSS 7.08 or higher (to support alternative contents)

TC/ARCHIVE 1.03.00 from Server Package 7.23.00 or higher (to use alternative contents for index)

Option: Color PDF Alternative for Attachments and RTF Body Text

It is possible to configure TC/LINK to create a color PDF alternative for every attachment or RTF message body.

By combining this feature with a TC/LINK-SDD, you can use the KCS system as a mail relay that converts incoming messages to color PDF and then relays the PDF messages to the real recipients.

PDF conversion is done via a PDF printer of customer choice installed on the operating system. Refer to the *Document Conversion Technical Manual* for details. It explains which PDF printers can be used.

Enable Creation of Advanced PDF Attachments in TCLINK

Conversion of file attachments and RTF message body (for messages from Exchange or Lotus Notes) is done when a message enters the TCOSS server via a link.

The link instance that receives the message must be configured to create a PDF alternative, by setting the `General\AltForceBinToPDF` registry key to 1 (default = 0).

PDF conversion is configured once for all messages received by this link instance, regardless of attachment type or destination address.

In addition to the PDF conversion, the standard document conversion (to KCS image format) takes place in certain cases, such as sending to fax recipients.

If the conversion fails, the message cannot be delivered and a non-delivery notification is returned (if requested).

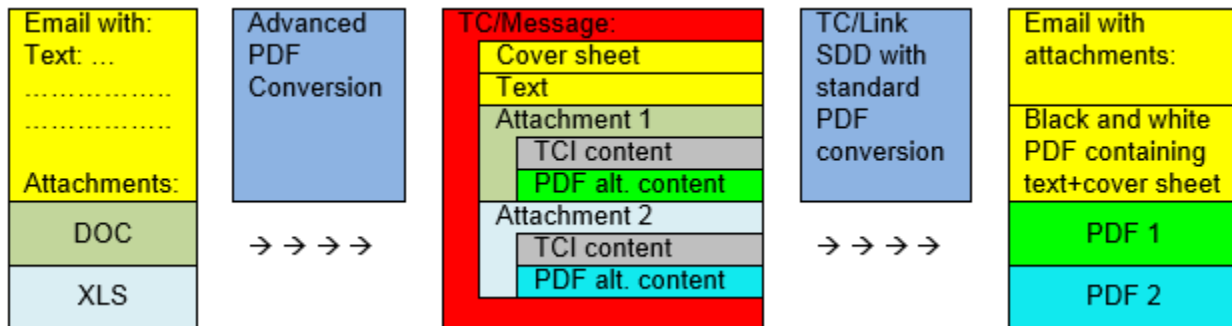
Conversion Result

TCLINK posts the message to TCOSS. Every file attachment (and also the RTF message body) has an additional alternative content holding the PDF representation. The MIME content type of this alternative is "application/pdf".

How the PDF alternative is used depends on the message recipient:

- In TCfW text view, you can open the original content or any alternative content. The image view shows the TCI alternatives.
- The fax module ignores the PDF alternative and takes only the image representation.
- The telex module ignores the PDF alternative and takes only the text representation (if existing).
- If the message is sent to another link instance, this link can be configured to take the PDF alternative instead of the original binary content, or to transfer both (2 attachments).

Example:



Receiving Link

With standard TC/LINK settings, the receiving link takes the original document and ignores all alternatives.

TC/LINK-SDD by default takes only the image alternative.

Therefore, the receiving link must be explicitly configured to take the PDF alternatives of all attachments and of the RTF message body. This is possible via new constants in the `General\FmtFileAttachment` and `General\FmtRtfBody` registry keys.

These registry values define the order in which TCLINK evaluates alternative contents of attachments and message body. They contain strings consisting of the characters B, I and T. For example, "BIT" means prefer binary representation (if not existing, take image or text).

An attachment can have several binary representations, such as the original Word document and a PDF alternative. You can define which binary representation shall be used by adding the extension in brackets after the 'B' character. '*' instead of an extension indicates that TCLINK can take all binary representations, thus creating 2 attachments, such as DOC and PDF.

Examples:

| Value in FmtFileAttachment | Meaning |
|----------------------------|---------------------------------|
| B | take original binary content |
| B(PDF) | take PDF representation |
| B(*) | take all binary representations |

Recommended Configuration:

Install TC/LINK-SDD with default settings, then set the following registry keys via a registry editor:

```

General\FmtFileAttachment = B(PDF)
General\FmtRtfBody = B(PDF)
General\ConvertToPdf = AlwaysComplete:ST
  
```

Restrictions

With TC/LINK-LN, the message body can be printed only once. The `General\RtfPrintModeLN` registry value decides how the message body is handled. Value 2 enables PDF printing.

The resulting PDF file is restricted to the abilities of the PDF printer used. For example PDF printer Acrobat PDFWriter does not support bookmarks, comments and links.

For each attachment, one PDF file is generated. Currently, it is not possible to have one PDF file generated for all attachments (PDFs are not merged).

It is not possible to have PDF content overlaid with TCOSS overlays.

TCOSS cover sheets are not supported with advanced PDF. This requires standard PDF conversion to be configured on the outbound TC/Link and will result in a separate black and white PDF file. For document converter specific restrictions, refer to the *Document Conversion Technical Manual*.

JetForm integration is not supported on 64 bit systems.

Prerequisites

The PDF printer must be installed on link computer.

Installation

Sending link (Advanced PDF conversion)

- Decide which PDF printer product will be used (see *Document Conversion Technical Manual*) Obtain the license for the chosen PDF printer and install it.
- Install TC/LINK via Kofax Communication Server setup.
- Configure PDF printer. Example: `Start / Settings / Printers and Faxes / Printer Properties` of the installed printer (setting output filename or output folder or printing options if necessary)
- Define PDF printer manually in the `TOPCALL\TCLINKxy` registry folder (subkeys `PDFPrinter` and `PDFPrinter/Parameter`), see *Document Conversion Technical Manual*.
- Set the following registry value below the link's `General` subkey:
`AltForceBinToPDF (DWORD) = 1`
- Allow the TCSRVS service to INTERACT WITH DESKTOP.

Receiving link (TC/LINK-SDD)

- Install TC/LINK-SDD with default settings. Poll the F queue.
- Change the following registry keys via a registry editor:

```
General\FmtFileAttachment = B(PDF)
General\FmtRtfBody = B(PDF)
General\ConvertToPdf = AlwaysComplete:ST
```

Performance

The following test was done on a Pentium III, 500MHz system with 128-MB RAM.

| Test document | Acrobat PDFWriter 5.0 | TOPCALL Fax to TCDC printer |
|-------------------|-----------------------|-----------------------------|
| 2 page .doc file | 9/100 seconds | 21/100 seconds |
| 70 page .doc file | 8 seconds | 16 seconds |

| Test document | Acrobat PDFWriter 5.0 | TOPCALL Fax to TCDC printer |
|--------------------|-----------------------|-----------------------------|
| 529 page .doc file | 65 seconds | 150 seconds |

This means that the printer “TOPCALL Fax to TCDC” needs on average 2.2 times more time for printing than the Acrobat 5.0 printer.

We can use these figures to make a projection on the performance of, for example, TC/Link-MX with advanced PDF conversion.

| Test document | Messages per hour with standard document conversion | Calculated messages per hour for Advanced PDF |
|-------------------------|---|---|
| No document conversion | 18962 | 18962 |
| 2 page .doc attachment | 486 | 1037 |
| 70 page .doc attachment | 299 | 645 |

Note The performance data for advanced PDF conversion is based on a calculation. Only the time needed for PDF printing was measured.

Option: TIFF Alternative for Attachments

TC/LINK can be configured to produce TIFF image output for certain messages. This is decided on recipient basis. For example, recipient “TOPCALL, Ascent” requires TIFF image, so the Document Converter is called using the TIFF printer settings.

The use cases defining which service/number pair requires a TIFF are stored in a message on TCOSS.

For messages that also need KCS Image (TCI) output, both TCI and TIFF output is created. For example, message with two recipients: (fax and TOPCALL,Ascent).

If a TIFF image is needed, TC/LINK converts attachments to TIFF via the KCS TIFF printer – even if the attachment would usually be converted via TCIMGIO. TIFF attachments are converted as well, in order to have the correct resolution and TIFF subtype. In this case, the original TIFF content is replaced by the file created by the TIFF printer.

Only PDF attachments can be converted to TIFF without printing. When converting PDF to TIFF via the Datalogics library, TC/LINK still uses the same settings (resolution, color, TIFF format) as configured for the TIFF printer.

Registry

The `General\PrintUseCaseFile` registry value holds the folder and file name (as `<folder>/<filename>`) of the TCOSS configuration message. Default value is empty.

If this registry value exists, TIFF output is created according to the use cases defined in the configuration message.

Use-Case Definitions

Each use case is described in a separate line of the configuration message. Fields in each line are separated by a colon (':') character.

The first field is the use#case#id (UCID), which is case insensitive. The UCID is interpreted as the name of the TIFF printer. Thus, several TIFF printers with different settings can coexist.

The second field lists the recipient addresses for which the use case applies. It is defined by a service name and an address, separated by a comma character. The service name and address are case insensitive. Anything following the comma separator is treated as address. At the beginning or the end of the address, you can use the wildcard character (*) which matches either zero or more characters.

Empty lines and lines starting with '#' are treated as comments and are therefore ignored. In UCID, service and number, leading and trailing white space characters like blanks and tabs are ignored.

Syntax of a use-case definition:

```
UCID: service-name, address
```

Examples of use-case definitions:

```
# TIFF output for messages sent to user ccd
```

```
TOPCALL TIFF to TCDC: TOPCALL, ccd
```

```
# TIFF output for emails to company.com
```

```
TOPCALL TIFF to TCDC: SMTP, *@company.com
```

Sample use-case definition:

If configured for automatic creation of KCS dependencies, TC/LINK creates a sample use-case definition message UCIDTIFF in the message folder of the link user. This message contains the above examples as comments.

To enable use-case lookup, edit the UCIDTIFF message according to the syntax description, and change the General\PrintUseCaseFile registry value from empty to TCLINK/UCIDTIFF.

Use-Case Lookup

The specified address is compared with the recipient address after address mapping. The following examples are for TC/LINK-SM.

| Address entered in email client | Address after address mapping | Matching use case found |
|-----------------------------------|------------------------------------|-------------------------|
| someone@company.com | SMTP,someone@company.com | YES |
| ccd@linksm.company.com | TOPCALL,ccd (from user profile) | YES |
| TOPCALL#ASCENT@linksm.company.com | TOPCALL,ASCENT | YES |
| xy@linksm.company.com | SMTPIN,xy (user xy not found) | NO |

If there are several recipients, the first matching TIFF printer will be used. The search for use cases starts with the first active address of the first active recipient. As soon as a use case is found, any use cases matching the remaining recipients are ignored.

Error Handling

If the printer specified in the use-case definition does not exist, for example, due to a typing mistake in the use-case message, no TIFF output is generated. TCLINK writes an event log warning (internal warning, event ID 5116) that contains the error description ("printer not existing") and the printer name.

Errors during TIFF printing are treated like other document conversion errors, that is, the message is rejected.

Restrictions

With TC/LINK-LN, the message body can only be printed once. The `General\RtfPrintModeLN` registry value decides how the message body is handled. Value 3 enables PDF printing.

JetForm Data Stream Conversion

Restriction: JetForm Data Stream Conversion is not supported on 64-bit systems!

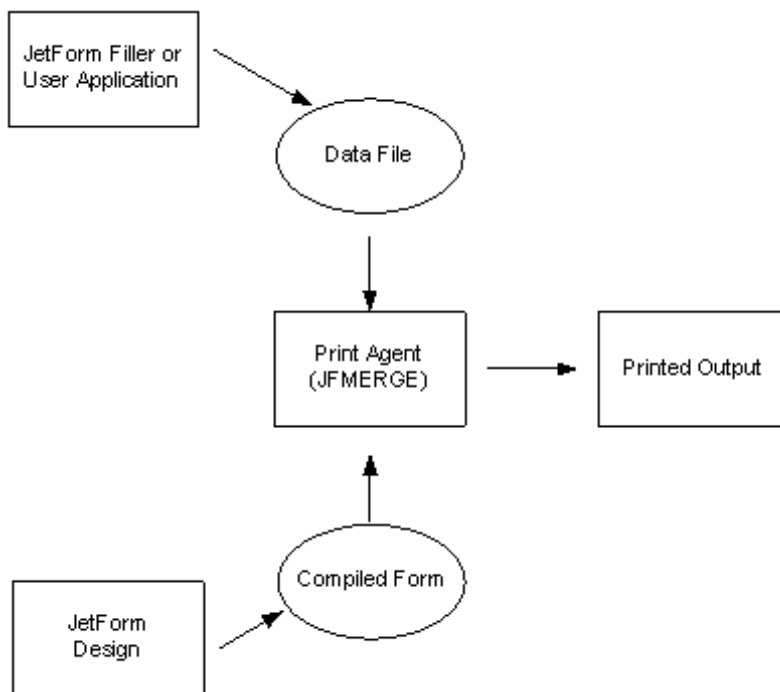
Background

JetForm is one of the leaders in Forms management and resolution. JetForm takes a forms-centric view; the idea is to provide the enterprise with one common system for managing forms, independent of platform or application.

Their product JetForm Central connects to various products like SAP R/3 (via print spool), J.D. Edwards and PeopleSoft. JetForm Central is a server-based forms application that enables you to manage and administer your electronic forms in a networked environment.

JetForm Central processes business transactions, such as print tasks, report enhancements, email messages, calculations, data conversions, and transactions from JetForm Filler or any client application. The files JetForm Central processes are referred to as transaction files. While running, JetForm Central periodically scans the collector directory for new transaction files. The transaction files must use the file extension that JetForm Central scans for, as specified in its configuration file. When an application submits a transaction file to JetForm Central, it can continue regular operation without further concern about the transaction.

JetForm Central uses so-called Agents to fulfill its tasks. One of these agents is the Print Agent. The Print Agent is the merge component of JetForm Central. Using intelligent merge technology, Print Agent enables applications to use printers to print data merged with electronic forms designed and compiled in JetForm Design. JetForm Central launches the Print Agent when a print task is written to the JetForm Central collector directory. The Print Agent can also be spawned by an application, invoked by a command file, or run from the system prompt.



Applications, which use JetForm, are configured to create the JetForm tagged format (^JOB) output.

This format holds no layout information reducing thus the amount of data transferred to the real necessary information.

Layout information is then added in JetForm Merge (part of JetForm Central), creating resolved documents. The resolved documents can be sent to printers.

Additional to the usage of printer as output device, JetForm also offers solutions for different Fax Vendors. For example, the forms may be designed that they produce a transaction file in TC Open Message Format (TOM) together with the processed form. The information is taken from the special tags (^FAX) inside the JetForm Data Stream.

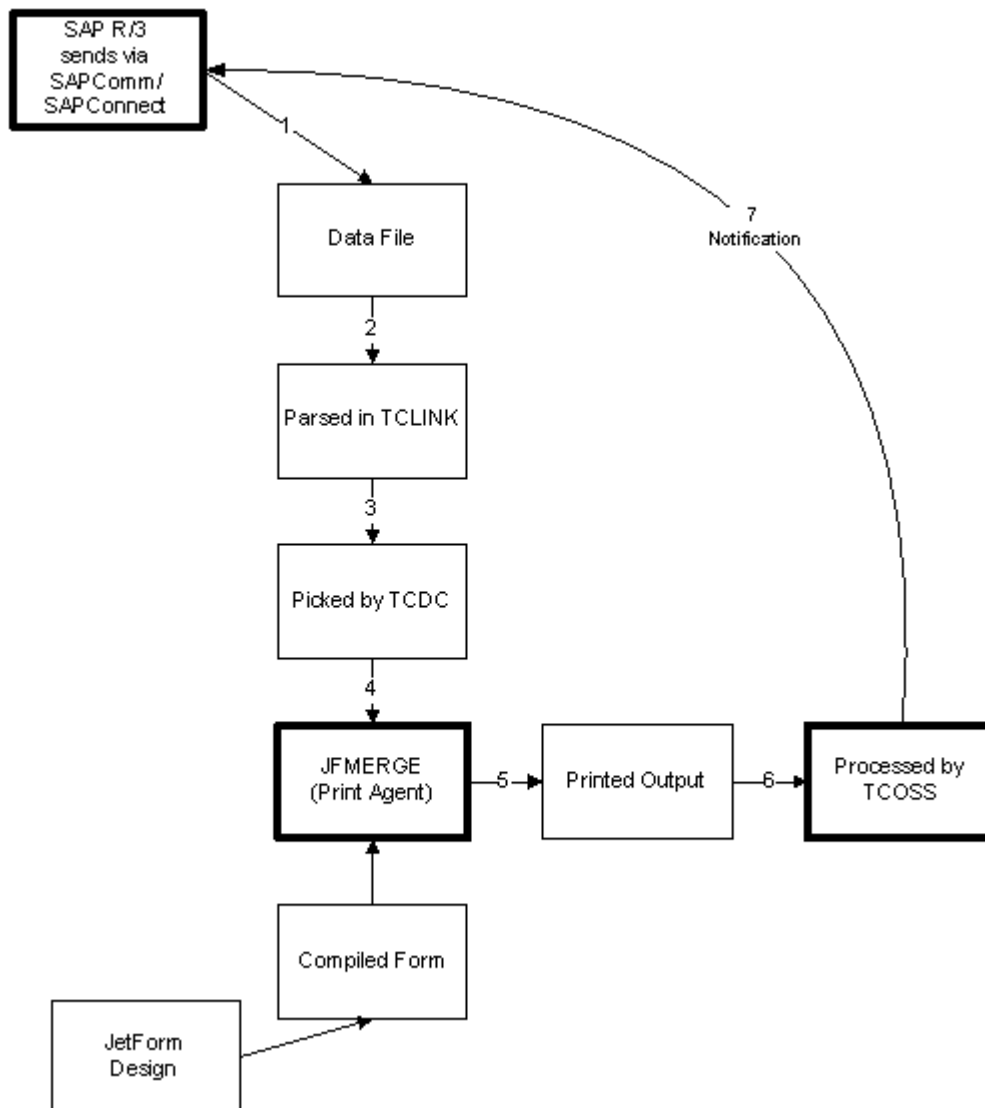
This "old" solution has a severe drawback, because KCS is connected 'behind' JetForm Central, the user functionality is limited, especially notifications cannot be sent back to the originator.

KCS JetForm Integration

It is better to let JetForm Merge run as part of the KCS document converter.

This means, for example, that JetForm Central is not needed to pick up SAP R/3 output of the JetForm Data Stream, instead, TC/LINK-SC can be used (the KCS document converter handles forms processing with JetForm Merge) and that KCS can send notifications back to R3.

The following diagram shows the KCS JetForm Integration with R/3.



In general JetForm can become part of the KCS solution in any environment. The KCS environment system can accept JetForm tagged format input from any source (SAPconnect, SAPcomm, File Interface, from IBM's MQ series or any other connected system) and resolve the 'Jet' forms. For all these sources JetForm output can be mixed with other message types.

Implementation

Detecting JetForm - Data

There are two possible ways of how JetForm Data is passed to the link. It comes either as simple message body text or as attachment.

1. **JetForm Data in the message body:** TCLINK checks each text block if the first line contains ^JOB statement. Leading spaces are discarded and the check is done case-insensitive. After finding such

a text line, the message body text is converted to a binary attachment. The extension for this binary attachment can be defined per link instance with the `General\JetFormExtensionForBody` registry key or for all link instances with the TCDCLINK registry key, `TCDCLINK\JetForm\Extension`.

Using alternative token instead of ^JOB: If you use an application that creates a first line that does not start with ^JOB but with another token that marks the start of the JetForm data stream, configure this token in the `TCDCLINK\JetForm\JobPrefix` registry key.

Note This works only with a special (nonstandard) JetForm version.

2. **JetForm Data as attachment:** Attachments with JetForm Data must have the correct extension to be treated correctly.

Resolving ^fax lines

^fax lines contain only a copy from the information passed with the message header. Therefore all ^fax lines are removed from the JetForm Data Stream.

Example:

```
^JOB ZJ_ORD_EN -AFXON -AXPSON
^fax TO_FAX_NUM "5554321" TO_FAX_CC_NUM "5551234"
^fax FROM_FAX_NUM "5550001" FROM_NAME "Chris White" RETRY 4
^fax SUBJECT "Contract for Computer Workstations"
^FIELD TESTFIELD
TEST
ABC Street
VIENNA W1234
```

is parsed and converted to

```
^JOB ZJ_ORD_EN -AFXON -AXPSON
^FIELD TESTFIELD
TEST
ABC Street
VIENNA W1234
```

JetForm and TCOSS Pagebreak Commands

If the JetForm Data Stream is passed, for example, via the SAPComm Interface (TC/LINK-AC), it happens that ++FF commands are included. Lines with these commands have no meaning within a JetForm Data Stream and must therefore be removed.

`RemovableTCPPageBreaks`: This registry key enables (1) or disables (0) the removing of such page break commands.

All other commands are not removed. By using the [Text Directives in Binary Attachments](#) feature of the general link, they can be interpreted correctly by the link.

Example:

```
^JOB ZJ_ORD_EN -AFXON -AXPSON
^FIELD TESTFIELD
TEST
ABC Street
VIENNA W1234
++FF
^FIELD NAMEFIELD
MICKEY MOUSE
```

is parsed and converted to

```
^JOB ZJ_ORD_EN -AFXON -AXPSON
^FIELD TESTFIELD
```

```
TEST
ABC Street
VIENNA W1234
^FIELD NAMEFIELD
MICKEY MOUSE
```

Note The TOPCALL/Allow++ registry key has no influence on this feature.

Converting JetForm Data Streams

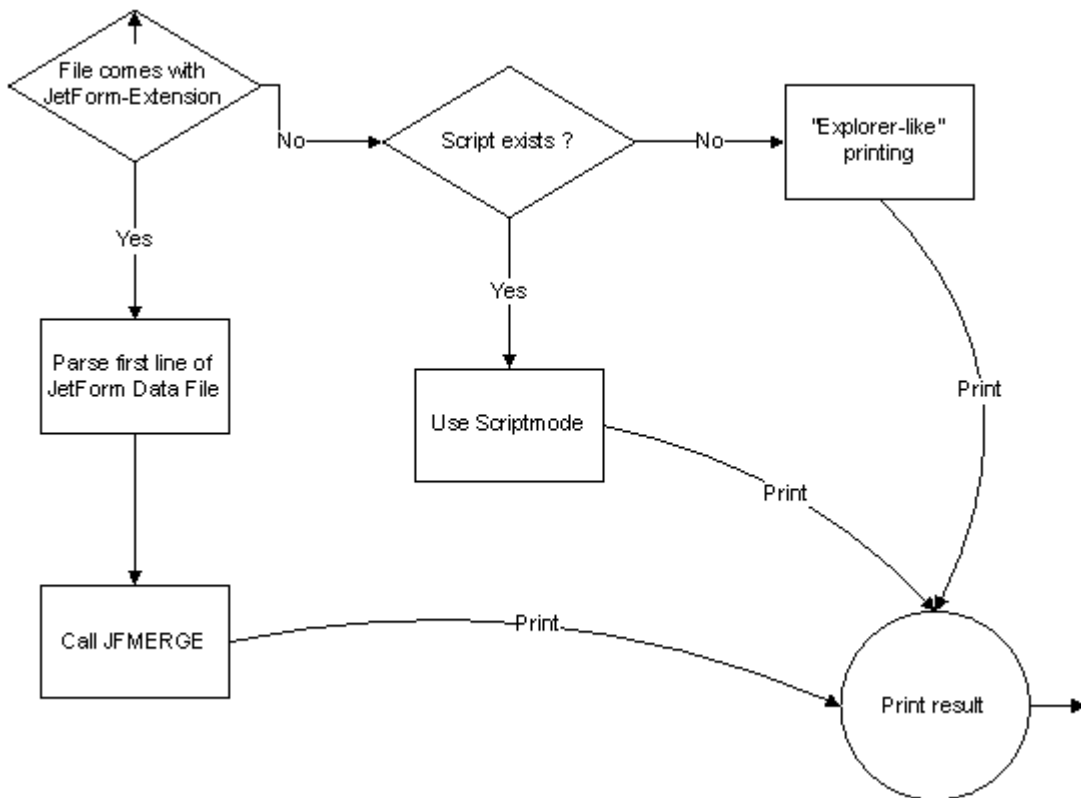
JetForm uses an application called JFMERGE to merge the JetForm form information with the JetForm Data Stream. This application normally produces a Postscript or a PCL, which is printed by a PS or PCL printer. In order to use these forms without any changes for the KCS environment, the KCS document converter is used to process the resulting PS or PCL file.

As a result it is necessary to have not only a valid JetForm license but also a valid Postscript or PCL license to use the KCS JetForm integration. Especially the Lincoln Converter for Postscript or PCL must be present in the system.

You can also create forms that use the KCS Fax Printer as output device (instead of a Postscript or PCL printer). With this, you can easily by-pass font problems with Japanese or Chinese Characters.

For such "TCI-forms", JFMERGE must be called with the option *-z"TOPCALL FAX to TCDC"* (without /q).

The following diagram shows how Document Converter treats the JetForm Data Stream.



A special file extension is introduced to recognize JetForm-Data files. Files with this extension skip the normal treatment in the TCDC32 DLL, that means the search for scripts or an application capable for printing is skipped.

The module TCDCKEY.DLL (the DLL responsible for calling the "print" application) also uses the special file extension to recognize JetForm-Data files. If such a file is found, the first line (the ^JOB line) is parsed.

The first parameter after the ^JOB is the name of the form file, the rest of the parameters are taken without changes.

JFMERGE is then called with the following parameters.

| Parameter | Meaning |
|---------------------------|---|
| <formfile> | Name of the form file, taken from the data file |
| <datafile> | Name of the data file |
| <original options> | Original options, options passed later bypass these options eventually, especially the -z option. |
| -aii<INI File> | The INI-File as taken from the registry |
| -j | Skips the starting banner |
| .afp<Path to forms> | The path to the forms directory as taken from the registry |
| -z"TOPCALL FAX to TCDC"/q | Print to the KCS Printer (form compiled for JetForm printer) |

| Parameter | Meaning |
|-------------------------|--|
| -z"TOPCALL FAX to TCDC" | Print to the KCS Printer (form compiled for KCS printer) |
| -asl01 | Skip first line of the data file (the ^JOB line), without this parameter all command line options would be overwritten |
| -n00 | Log everything |
| -v-10 | Writes trace messages produced as a result of a ^trace command in the Data Stream, as well as internal trace messages intended for use by JetForm. |

Afterwards the normal TCDC process captures the print output.

Support Multiple JetForm Configurations

It is also possible to define multiple JetForm file extensions with different configuration settings. Thus, it is possible to support different JetForm directories, depending on the name of the JetForm data attachment.

If the support is enabled (`General\JFMultipleExtensionsEnable` is set to 1) the extensions found in `General\JFMultipleExtensions` are used as valid JetForm extensions.

The settings for each possible extension are searched at `HKLM\SOFTWARE\TOPCALL\TCDCLINK\JETFORM.<EXTENSION>`.

This mechanism ensures that each JetForm Extension can have its own configurations.

Example:

If `JFMultipleExtensions` contains ABC,DEF and GHI, the following registry keys are searched for specific extensions:

```
HKLM\SOFTWARE\TOPCALL\TCDCLINK\JETFORM.ABC
```

```
HKLM\SOFTWARE\TOPCALL\TCDCLINK\JETFORM.DEF
```

```
HKLM\SOFTWARE\TOPCALL\TCDCLINK\JETFORM.GHI
```

It is not necessary to duplicate each JetForm setting, the fallback for missing entries is the normal `JETFORM` key.

Example:

To use different Form directories add the *FormsPath* key to the extension-specific subkeys:

```
HKLM\SOFTWARE\TOPCALL\TCDCLINK\JETFORM.ABC
FormsPath "C:\FORMABC\"
```

```
HKLM\SOFTWARE\TOPCALL\TCDCLINK\JETFORM.DEF
FormsPath "C:\FORMDEF\"
```

```
HKLM\SOFTWARE\TOPCALL\TCDCLINK\JETFORM.GHI
FormsPath "C:\FORMGHI\"
```

All other values are taken from `HKLM\SOFTWARE\TOPCALL\TCDCLINK\JETFORM`

Note

- The registry keys must be added manually to enable this feature.
- This does not apply if the JetForm data is part of the message body.

JetForm Error handling

JFMERGE writes the results of its operation into a file called JETFORM.RSP. This file is normally taken by the JetForm Central and processed. Now if JFMERGE fails to produce a print output, TCDC falls into a time-out after normal waiting period. The Document Converter reads the response file and writes the content into its trace file. Additionally, a new Event Log entry is introduced.

| Code | Severity | Description | Corrective Action |
|------|----------|------------------------------|--|
| 2055 | Error | JFMERGE has failed to print. | Check the TCDC trace file for the possible reason. |

Support for the JetForm Job Management Database

The Job Management Database (JMD) is used by JetForm Central to assign the correct application for processing a certain JetForm Data Stream.

It takes the Job name from the ^JOB line and looks in the Job Table part of the JMD Database what to do with this file.

A line in the job table has the following format.

| Parameter | Meaning |
|-----------------|---|
| !f | This line belongs to the Job Table. |
| <Job name> | A logical name assigned to a transaction. The job name appears in the ^job command on the job card for the transaction file, and in the Job Table. JetForm Central links the job name with the Job Table to determine how to process the transaction file. |
| <Printer name> | Specific printer to be used |
| <Form file> | Name of the JetForm form |
| <Preamble file> | An optional file of commands or data that JFMERGE processes before the contents of the data stream. |
| <Macro number> | A number assigned to a form macro or template when the form is downloaded to the printer. Macro number 1 specifies that the macro is temporary. A macro number greater than 1 downloads the form macro to the printer as a permanent macro; the permanent macro remains in the printer memory until the printer is reset. |
| <Load flag> | Tells JetForm Central what to do with the compiled form. |
| <Task id> | The logical name for the executable program that JetForm Central launches, identified either by a job step on the Job Table or by the -axx option on the job card. |
| <Input file> | Name of the input file |
| <Output file> | Name of the output file |
| <On error> | Tells JetForm Central what to do in case of an error. |
| <Comments> | Description of this line |

Entries with an asterisk ("*") indicate that the default value is used or that the parameter is ignored.

Implementation

TCDC uses only the entry for the Form file and the entry for the Preamble file; the other entries are ignored. TCDC is configured via the registry to use the JMD database.

JFMERGE is called with the following parameters.

| Parameter | Meaning |
|---------------------------|--|
| <formfile> | Name of the form file, taken from the JMD file |
| <datafile> | Name of the data file |
| <original options> | Original options, options passed later bypass these options eventually, especially the -z option. |
| -aii<INI File> | The INI-File as taken from the registry |
| -j | Skips the starting banner |
| .afp<Path to forms> | The path to the forms directory as taken from the registry |
| -apr<PreambleFile> | Name of the Preamble File (only if not "*") |
| -z"TOPCALL FAX to TCDC"/q | Print to the KCS Printer (form compiled for JetForm printer driver) |
| -z"TOPCALL FAX to TCDC" | Print to the KCS Printer (form compiled for KCS printer driver) |
| -asl01 | Skip first line of the data file (the ^JOB line), without this parameter all command line options would be overwritten |
| -n00 | Log everything |
| -v-10 | Writes trace messages produced as a result of a ^trace command in the data stream, as well as internal trace messages intended for use by JetForm. |

The bold line shows changes to the JFMERGE call without JMD file.

An asterisk ("*") at the position of the Preamble file means that this parameter is not used.

Example:

The following entries in the Job Table:

```
!f ZUPOJFX1 * c:\forms\zupojfx.mdf c:\forms\zupo.pre 1 T JFMERGE * * C "US Purchase Order Fax"
```

and the following Job Card:

```
^JOB ZUPOJFX1 -AFXON -ASS5
```

leads to the following call of JFMERGE

```
JFMERGE c:\forms\zupojfx.mdf <DATAFILE> -AFXON -ASS5 -aii<INI-FILE> -j -afp<FORMDIR>  
-aprc:\forms\zupo.pre -z"TOPCALL FAX to TCDC"/q -asl01 -n00 -v-10
```

If the JMD support is disabled, the example above would lead to the following call and therefore to an error:

```
JFMERGE ZUPOJFX1.MDF <DATAFILE> -AFXON -ASS5 -aii<INI-FILE> -j -afp<FORMDIR>  
-z"TOPCALL FAX to TCDC"/q -asl01 -n00 -v-10
```

TCDC cannot process other tasks than Print Agent (JFMERGE) tasks, Job Table entries with another Task Id are rejected and lead to an error message.

Error handling

The following entry is written to the event log in case of an error.

| Code | Severity | Description | Corrective Action |
|------|----------|---|--|
| 2059 | Error | Job %1 is not for JFMERGE. Only JFMERGE Jobs are allowed. | Change the entry in the JMD job table. |

JetForm and TCARCHIVE

Since the JetForm Data Stream itself is not readable without the JetForm-Form, it is possible with the TCARCHIVE Version 2.00 or higher to replace the original JetForm Data Stream with resulting image and then to remove the JetForm-Data stream. (Refer to the *TC/Archive Technical Manual* for a description of this process). With this process only unchangeable image is preserved for legal purposes.

To make full-text search in binary data possible, TCARCHIVE needs a textual representation of this data. The `ArchiveContent` registry key enables (1) or disables (0) the creation of the textual representation. Internally a copy of the JetForm Data Stream with the correct extension (TXT) is created so that the TCARCHIVE index building process can find it.

JetForm Log File

The JetForm applications write various messages into a log file. The name of the log file is specified in the JFMERGE.INI. The following two settings are important.

| Name | Section | Default | Meaning |
|-------------|-----------|---------------------------|------------------------------|
| LogFile | [JetForm] | <JFMergePath>jfserver.log | Path to the log file |
| LogFileSize | [JetForm] | 100000 | Size in byte of the log file |

If these two entries cannot be found in the INI-File they are created using the default values.

TCDC maintains the log file size based on the value `LogFileSize` in the configuration file. One generation of the log is kept for historical purposes. When, at the end of a transaction, the log file has grown in size to meet or exceed the `LogFileSize` setting in the configuration file, TCDC deletes the older generation log file, renames the current log file to a file extension of .BAK and starts a new log file.

This is exactly the way JetForm Central treats the log file.

JetForm: Troubleshooting

If JFMERGE fails, please check the normal trace. If this provides no hint for the reason of the failure, please send the JetForm Data File and JetForm Form File to the Support for further checking. Without the form file it is impossible to check for the reason.

JFMERGE.INI file

The JFMERGE.INI File contains various settings, which apply if no command line parameter overwrites. The explanation can also be found in the INI file.

JetForm Configuration

In order to integrate JetForm in the Document Converter, the following registry keys are necessary to detect JetForm data files and to process them correctly.

Location: HKEY_LOCAL_MACHINE\SOFTWARE\Topcall\TCDCLINK\JetForm

| Name | Type | Default | Description |
|---------------------|-------|---------|--|
| ArchiveContent | DWORD | 1 | Enables (1) or disables (0) the creation of text alternative for the KCS Archive Server. |
| EnableJetForm | DWORD | 0 | Enables (1) or disables (0) the JetForm integration for the whole link computer. |
| Extension | SZ | .XYZ | All files with this extension are treated as JetForm Data Files. Make sure that there are no applications using this extension for their documents. Also take care that you do not use an extension name already used for the KCS Image Formats. |
| FormsPath | SZ | | Path to JetForm forms. |
| JFMergePath | SZ | | Path to JFMERGE.EXE, the application used to merge the form information with the Data Stream. Note Must contains the complete path together with the EXE file For Example: C:\JETFORM\SERVER\JFMERGE.EXE |
| JFMergeIni | SZ | | Path to the INI-File for JFMERGE.EXE. Note Must contain the complete path together with the name of the INI file. Example: C:\JETFORM\SERVER\JFMERGE.INI |
| JobPrefix | SZ | ^JOB | Start token for JetForm data stream recognition |
| RemoveTCPPageBreaks | DWORD | 1 | Enables (1) or disables (0) removing of lines with ++A4H, ++A4Q, ++BDH, ++BDQ, and ++FF commands |
| JMDEnable | DWORD | 0 | Enables (1) or disables (0) the JMD support for the KCS Archive Server. |
| JMDPath | SZ | | Path to the JMDNote: Must contain the complete path together with the name of the JMD file. Example: C:\JETFORM\SERVER\JFSERVER.JMD |
| ContentCheck | DWORD | 0 | Enables (1) or disables (0) the check for Postscript/PCL files. |
| EnableQueuePrinting | DWORD | 1 | Enables (1) or disables (0) the /q option for JFMERGE. |

XML Attachment Parsing

When receiving a message from a mail system, TC/LINK optionally validates the first XML attachment and writes name and namespace of the XML root node to the message header.

This feature is used for importing XML data to Kofax Capture via TWS and KCC. It is currently only useful in this context.

XML parsing is done via a special type of exit DLL, which is invoked between address mapping and document conversion.

A default implementation of this exit type is installed by Setup. It consists of three files:

- C:\TCOSS\TCLP\XmlExit.dll (the exit DLL)
- C:\TCOSS\TCLP\XmlValidator.dll (contains XML validation code)
- C:\TCOSS\TCLP\XmlExitConfiguration.xml (configuration file)

XML parsing is by default disabled. To enable it, the full path names of the exit DLL and its configuration file must be written into the following registry values.

| Name | Type | Default | Description |
|-----------------------|------|---------|---------------------------------|
| General\XmlExit | SZ | | Path name of Exit DLL |
| General\XmlExitConfig | SZ | | Path name of configuration file |

Configuration

The default configuration provided in XmlExitConfiguration.xml is:

```
<?xml version="1.0" encoding="UTF-8"?>
<!--Sample XML file generated by XMLSpy v2013 (x64) (http://www.altova.com)-->
<XMLExit xsi:noNamespaceSchemaLocation="XMLExit.xsd"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <ExtensionTypes>text/xml, .xml, text/oxi, .oxi</ExtensionTypes>
  <ConfiguredServices>
    <SenderService></SenderService>
    <RecipientService></RecipientService>
  </ConfiguredServices>
  <SchemaMustExist>DISABLED</SchemaMustExist>
  <SchemaPath></SchemaPath>
  <RejectMessage>false</RejectMessage>
  <EmbeddedMessage>false</EmbeddedMessage>
</XMLExit>
```

You can change the configuration settings via a text editor or XML editor.

| XML node name | Description | Additional remarks |
|--------------------|---|---|
| ExtensionTypes | This comma separated list defines which attachments are regarded as XML. The list can hold MIME content types and file extensions (with leading dot). | Content type information is only available in messages received via SMTP based links. |
| ConfiguredServices | Can be used to restrict XML parsing based on sender or recipient service. Holds two comma separated lists of KCS service names. The XML Exit compares the first active address of sender and active recipients against these lists. XML parsing is only done if the sender address and at least one recipient address match the configured services. If a list is empty, any service matches. If a list contains one or more values, only the service names from the list match. | In the default configuration, both lists are empty and no service based restrictions are done. When referring to services, this means the service names after address mapping. |
| SenderService | List of sender services | |
| RecipientService | List of recipient services | |
| SchemaMustExist | Controls the optional validation against a schema. The following values are possible: DISABLED - validation is disabled OPTIONAL - validation is done if schema exists REQUIRED - validation is necessary | The location of schema files is defined in SchemaPath. |
| SchemaPath | Full path name of a directory holding schema files and sample XML files. | |
| RejectMessage | Defines how to handle XML processing errors. Possible values: true - send order is terminated negatively on error false - send order is sent, but contains no header information about XML attachment | |
| EmbeddedMessage | Defines how to handle XML attachments in embedded messages. Possible values: true - XML processing is done recursively (embedded message also holds information about its first XML attachment) false - embedded messages are not parsed for XML information | |

Validation against a schema

The optional schema validation feature relies on XML schema files (.xsd) and XML sample files (.xml).

The directory configured in the "SchemaPath" setting must have a subfolder for each type of XML content that shall be validated. The subfolder names are not relevant, but each subfolder must contain two files with fixed names: sample.xml (a sample XML file) and schema.xsd (the schema).

Error handling

XML parsing can fail. Possible reasons for failure are (among others):

- XML data not well-formed.
- Schema validation required, but no schema found.
- Schema validation required or optional, but XML data not matching the schema.
- XML exit configuration file missing or corrupted.

The “RejectMessage” configuration setting defines whether the message shall be rejected or sent in case of XML parsing errors.

TC/LINK writes the following error information to the message.

| If RejectMessage is... | Error code (\$Laction) | Error description (\$Lnote) |
|------------------------|------------------------|-----------------------------|
| true | M2 | Rejected by XML Exit |
| false | M3 | XML Attachment ignored |

Embedded Mail Messages (SMTP Based Links Only)

This description only applies to SMTP based link types.

A message from Mail to KCS can contain embedded messages, which may in turn contain embedded messages. In the resulting TCOSS message, the embedded message remains a distinct object (is not resolved flatly).

Kofax Communication Server may be used as a backbone to transfer messages from one Internet segment to another. In this case, the embedded message is preserved unchanged and the Internet recipient gets a normal embedded Internet message.

Embedded SMTP Messages Sent to KCS

Using KCS as a backbone between mail systems

TC/LINK transfers the embedded message using a special internal format defined for TC/LINK. TC/LINK marks such as embedded message by setting the TS_APPL_ID field to “TCLINK”.

Using KCS to send fax or telex

If one of the message recipients does not support binary documents, TC/LINK automatically translates the embedded message to the format normally used by KCS.

Translation of embedded messages means:

- Binary attachments are converted to image (via TCIMGIO or TCDC).
- ++ sequences are evaluated
- There is NO address mapping.
- The hierarchical structure of the embedded message is maintained.

TC/LINK can also be forced to translate the embedded message to this format by putting the ++XLAT sequence into the text of the mail message (not of the embedded message).

Embedded SMTP Messages Received from KCS

Currently, only TC/LINK-SM supports reception of embedded mail messages. The other links are likely to support it in the future.

The `General\EmbeddedMessages` configuration parameter specifies (to TC/LINK) how to treat embedded mail messages.

- If set to 1, and if the embedded message contains the “TCLINK” mark, TC/LINK passes the embedded message to mail as it is.
- If set to 0, TC/LINK resolves embedded messages flatly (via TCSI text view) and translates image parts to the file format defined by the recipient queue.

Known Restrictions

The following restrictions might be removed in a future version:

- As embedded messages must be treated differently for KCS recipients and for mail recipients, one mail message containing embedded messages should contain either Internet recipients or other recipients, such as Fax, but not both together.
- Embedded TCOSS messages inserted via TCFW are now resolved flatly.

KCS Message Templates

KCS message templates are sample messages stored in the TCOSS message store. They can be used to define defaults for cover sheet, recipients, send options and message content.

The following tables show how these defaults are derived from the KCS templates. A detailed explanation is given below.

Cover sheet and message content

Cover used for messages starting with TEXT

| General \ OnlyImgOverride | 1. If template specified in msg. | 2. Else if no template specified in msg. | 3. Else if cover specified in msg. | 4. Else no template or no cover specified in msg. |
|----------------------------------|---|---|---|--|
| Any value | Cover from specified template | No cover | Specified cover | Cover from default template |

Cover used for messages starting with IMAGE or BINARY

| General \ OnlyImgOverride | 1. If template specified in msg. | 2. Else if no template specified in msg. | 3. Else if cover specified in msg. | 4. Else no template or no cover specified in msg. |
|----------------------------------|---|---|---|--|
| 0 (default behavior) | Cover from specified template | No cover | Specified cover | Cover from ONLYIMG template |

| | | | | |
|--------------------|-------------------------------|-----------------------------|-----------------------------|-----------------------------|
| 1 (Always ONLYIMG) | Cover from ONLYIMG template | Cover from ONLYIMG template | Cover from ONLYIMG template | Cover from ONLYIMG template |
| 2 (Never ONLYIMG) | Cover from specified template | No cover | Specified cover | Cover from default template |

For each case the steps 1 to 4 are checked to determine which cover is used.

Default send options and recipients

| | Explicit template | Default template / text message | Default template / image message | NO template |
|---------------------------|-------------------|---------------------------------|----------------------------------|-------------|
| Default send options from | explicit template | default template | default template | none |
| Default recipients from | explicit template | default template | default template | none |

At trace level 10 or above, TCLINK writes the name of the currently used message template to the trace file. For example, "Using send options from template USER1/TEMPLATE".

Explicitly Specified Template

For some links, the mail client (or extensions provided with links) allows to specify a message template. TC/LINK takes defaults for cover sheet, message content, send options and message recipients from this template.

If the explicitly specified template name is "NO", TC/LINK uses no defaults for cover sheet, message content, send options and message recipients.

Default Template

If the template is not specified explicitly, TC/LINK takes default send options and message recipients from a default template.

If the originator of a message is a KCS user, TC/LINK opens his or her default template. TC/LINK can be configured to ignore the default template of the originator, by setting the `Topcall\UserSpecificDefaultTemplate` registry value to 0.

If the originator is not the KCS user or if TC/LINK is configured to ignore the originator's default template, the default template of the guest user (specified in setup) is used instead.

Any send options that are not defined within the message from mail are taken from this template.

If a cover sheet is not defined in the message and if the message does not start with an image block, the cover sheet is also taken from this template. All recipients from the template are added to the message recipients.

When TC/LINK cannot send a message to KCS because the default template is missing or corrupt, the following extended error description is available in the non-delivery notification (if the notification cover contains variable \$ExtError\$): "Default template missing or corrupt, please save it again."

The same text is also written to the TCLINK trace file (at any trace level).

ONLYIMG Template

The cover sheet of the default template is only used if there is at least one line of text at the start of the message.

If the message starts with an image or binary attachment and if no template or cover sheet is specified in the message, TC/LINK inserts the cover of the ONLYIMG template.

Option: ONLYIMG overrides specified template

You can force TC/LINK to take the ONLYIMG cover even if a cover or template was specified in the message by setting the `General\OnlyImgOverride` (DWORD) registry key to 1 (default is 0).

Option: ONLYIMG never

You can disable the use of the ONLYIMG cover sheet by setting the `General\OnlyImgOverride` (DWORD) registry key to 2. Then, all messages are treated like a text message and the ONLYIMG cover is NEVER used.

Option: User-specific ONLYIMG template

You can use the ONLYIMG template stored in the message folder of the message originator by setting the `TOPCALL\UserSpecificOnlyimg` (DWORD) registry key to "1" (default is 0). If the ONLYIMG template does not exist in the originator's message folder, the ONLYIMG template of the TC/LINK user is used as default.

Note Enabling this feature will result in lower performance. It is not possible to cache the templates of all users, so they have to be opened each time a message is sent. This causes transmission overhead even if the message originator does not have the template stored in his message folder.

Send Options

This section describes the Send Options.

Methods to Set Send Options

1. Send Options set via the Mail Client

Most mail systems allow to specify notification requests and message priority. Some mail system also have a "Latest Delivery" or "Expiry Time" option, which is evaluated if TCROSS 7.30.00 or higher is used.

2. Send Options set via Mail Client Extensions

Some links, for example TC/LINK-LN, allow to define additional send options (per message and / or per recipient). Refer to the special link documentation for details.

3. Send Options set via ++Directives

++Directives override send options set in steps "1" and "2".

The message text may contain ++ directives to set the following:

- Priority for TO recipients
- Priority for CC recipients
- Priority for all recipients
- Cost center
- Cover sheet
- Send date and time
- Fax header line
- Notification requests

4. KCS Message Template

If the originator specified a certain template for this message, or if he has a default template defined on TCOSS, the following parameters are taken from this template, provided that they were not specified in steps "1", "2" and "3". If the user did not specify a template for this message and if he does not exist on KCS, the template of the guest user will be used instead.

- Priority for TO recipients
- Priority for CC recipients
- Send date and time
- Cost center
- Sending copy
- Resolution
- Fax header line
- Cover sheet
- Latest delivery time (only with TCOSS version 7.30.00 or above)

5. TC/LINK setup

The following parameters are taken from link setup if not specified in step "2". They are the ultimate default options for the send order, used for all send options that were not specified before.

- Archive (pos/neg)
- Delete Envelope (pos/neg)
- Delete Entry (pos/neg)
- TCOSS default send options
- Notification requests

Note The Fax channel overrides the resolution defined in the send options, if the message contains any TCOSS-based components (cover sheet, overlay, included FIS document, and the rest) with high resolution graphics. In this case, the fax is always sent in fine mode.

Sending Copy Events

In previous versions, TCLINK.EXE automatically requested sending copy events for every recipient needing a notification. Now, the behavior is as follows:

- If no sending copy is requested for this recipient (in the send options of the message) then no sending copy event is requested from TCOSS.
- If a sending copy is requested and the originator is a KCS user, TCLINK assumes that this user has correct sending copy event settings in his profile and requests the sending copy event in any case.
- If a sending copy is requested and the originator is no KCS user, sending copy events are only requested for recipients needing a notification by default. Thus, "sending copy messages" to mail system users are not created. Sending copies are only received as the content of a notification. You can override the default behavior by setting the `TOPCALL\BackRecForAll` (DWORD) registry value to 1 (default is 0). TCLINK then requests a sending copy, which is transmitted to mail as incoming message.

Cover Sheet

TC/LINK does not check if the cover sheet selected for the message (via ++CVR or mail client) exists on KCS, because this would decrease performance. If a non-existing cover sheet was specified, the resulting message will have no cover sheet.

At trace level 10 or above, information about cover sheet usage is written to the trace file:

- For explicitly specified cover: Using cover ...
- For default cover: Using cover from template ...

Cost Center

The following table shows the order in which TC/LINK tries to find the cost center for a message to KCS.

| Step | Per recipient | Per message |
|------|--|---|
| 1* | Per recipient send options from client | --- |
| 2* | ++COST | ++COST |
| 3* | Per message send options from client | Per message send options from client |
| 4* | From template (one of the following): <ul style="list-style-type: none"> • Explicitly specified template • Originator default template • Guest user default template • Link user default template Remark: Only if cost center is not ""(blank) | From template (one of the following): <ul style="list-style-type: none"> • Explicitly specified template • Originator default template • Guest user default template • Link user default template Remark: Only if cost center is not "" (blank) |
| 5 | From user profile: (one of the following) <ul style="list-style-type: none"> • Originator (cost center or user id) • Guest user (cost center or user id) • Link user (cost center or user id) | From user profile: (one of the following) <ul style="list-style-type: none"> • Originator (cost center or user id) • Guest user (cost center or user id) • Link user (cost center or user id) |

Steps marked with * only apply if change of cost center is allowed.

Option to Limit Sending Priority

Sending priority for messages from mail can be limited via the `TOPCALL\LimitPriority` registry key.

- If set to 1, the priority specified in the mail message is limited to the originator's default priority settings (from default template of shadow user or guest user).
- If set to 0 (default), there is no priority limit.

Thus, high priority sending can be restricted to a group of privileged users.

Note

- If the priority specified in the message is lower than the default priority, TC/LINK uses the lower priority.
- Some mail systems allow to specify the KCS message template used for sending. In these cases, the priority limits from the specified template apply.

Latest Delivery Time

With TCOSS version 7.30.00 or higher, it is possible to specify a "latest delivery time" when posting a message to the TCOSS server. This is a timeout for the message to reach its positive completion. Like other send options, the latest delivery time can be set for the whole message or separately for each recipient. If the value set is less than 1 year, it is taken as a relative value and added to the intended send time. Otherwise it is an absolute time specification. The default (= the highest possible value) for the latest delivery time is 610119:031407, which is a date in the year 2061.

If the latest delivery timeout expires, the message is negatively terminated and a non-delivery notification is returned to the originator (if requested).

Sending to KCS

With TC/LINK-FI, TC/LINK-MQ, and TC/LINK-LN you can specify the latest delivery time for messages posted to KCS. With TC/LINK-FI and TC/LINK-MQ, the timeout can be set both for the complete message and on a per-recipient basis. In MS Exchange and Lotus Notes, you can only set a global timeout (for all recipients of the message).

If no latest delivery time is specified in the message, TCLINK takes the settings from the message template.

Sending to Mail System

When sending a message to the remote mail system, latest delivery time settings of the TCOSS message are transferred with the message and are evaluated according to the capabilities of the mail system.

For instance, TC/LINK-FI and TC/LINK-MQ pass the timeout as parameters EXTIME and EXDATE (or EXTIMEREL) in the transaction file header and in the recipient sections.

If the latest delivery timeout expires on TCOSS, the message is negatively terminated. If a notification from mail arrives after the timeout, it is ignored by TCOSS.

Note The time when a send order reaches its positive completion depends on link settings and on per message send options. See the table in [Notifications from Mail](#) for more information.

Link Types Supporting Latest Delivery

| Link Type | Direction | Comment |
|-------------|----------------|-------------------------------|
| TC/LINK-FI | to TC, from TC | per message and per recipient |
| TC/LINK-LN | to TC | per message |
| TC/LINK-MQ | to TC, from TC | per message and per recipient |
| TC/LINK-MX7 | to TC, from TC | per message |

With link types that are not listed in this table, you cannot set a latest delivery time when creating a message via a mail client. Nevertheless, the per-message latest delivery time can be configured in the message template stored on TCOSS.

You can send messages with latest delivery timeouts to all link types. If the latest delivery timeout expires on TCOSS, the message is negatively terminated. If a notification from mail arrives after the timeout, it is ignored by TCOSS.

Message Retries

The user can configure dedicated break codes for the following five 2-character fatal error codes using the `TOPCALL\FatalErrorRetryMappingFromTC` registry key.

| Error Code | Description |
|------------|--|
| LI | Wrong address format for originator or passive recipient |
| LH | Wrong address format for recipient |
| LX | Other error |
| LV | Message cannot be delivered to mail recipient |
| M1 | License limit reached |

The registry key gets created at TC/LINK startup and the default break code value of all the errors is set to '0' (LV=0 LX=0 LH=0 LI=0 M1=0.)

The break code value can be set from 1 to 5. Based on this value, the message retries are initiated. In case of invalid entries in this registry key, the error is written to the event log.

Note You cannot specify the number of retries. Retries are done according to the retry table configured in TCOSS (config lines 43 to 47).

KCS Services

This section describes the KCS services.

Originators and Inactive Recipients

TC/LINK converts the services of the originator and inactive recipients to the most suitable services. TC/LINK always uses the service with the most suitable prefix.

An incoming fax with original service "FREE", number "F:12345", will be converted into the service "FAX", number "12345", provided this service exists and is defined with the prefix "F:". This logic is used in both directions.

Therefore, the mail system must be configured to accept any KCS service in the originator of a message.

Active Recipients

In previous versions, TCLINK ignored the original service and looked for a service matching the queue of the localized recipient address. If several services with identical prefix existed, TCLINK used the first one (in alphabetical order).

Now, TCLINK still analyses the localized recipient address. But, it also checks which service was specified in the message header. If this service still exists and matches the recipient address queue, it will be used.

Otherwise, the same logic as in previous versions is applied (see last example in table below).

Example: Services existing on KCS

| Service name | Service prefix |
|--------------|----------------|
| ATCFI | TCLFIQI: |
| BTCFI | TCLFIQI:B |
| CTCFI | TCLFIQI:B |
| SMTP | TCLSMQI: |

Additionally, all addresses starting with TCLFIQI:S are routed to the TCLSMQI queue via rr99.

Example: Messages sent

| Recipient address | Resulting address in previous versions | Resulting address in new version |
|-------------------|--|----------------------------------|
| ATCFI,B1 | BTCFI,1 | ATCFI,B1 |
| BTCFI,1 | BTCFI,1 | BTCFI,1 |
| CTCFI,1 | BTCFI,1 | CTCFI,1 |
| ATCFI,SX@Y.com | SMTP,X@Y.com | SMTP,X@Y.com |

Configuration

TCLINK creates a registry value `Topcall\KeepRecp2MService` (REG_DWORD).

Possible values are:

- 0: TCLINK looks for matching service (old behavior)
- 1: Default (new behavior)

Directory Synchronization (Dirsync)

This section describes the Directory Synchronization.

Native or LDAP Dirsync

This section covers the standard TC/LINK directory synchronization, as provided by TC/LINK-FI, TC/LINK-LN and TC/LINK-MQ.

As an alternative to this native dirsync mechanism that is restricted to certain mail systems, TC/LINK also offers directory synchronization with the following type of LDAP directory: Windows Server Active Directory.

Although most of the features described in this documentation apply to all dirsync types, there are special features available only for LDAP Dirsync.

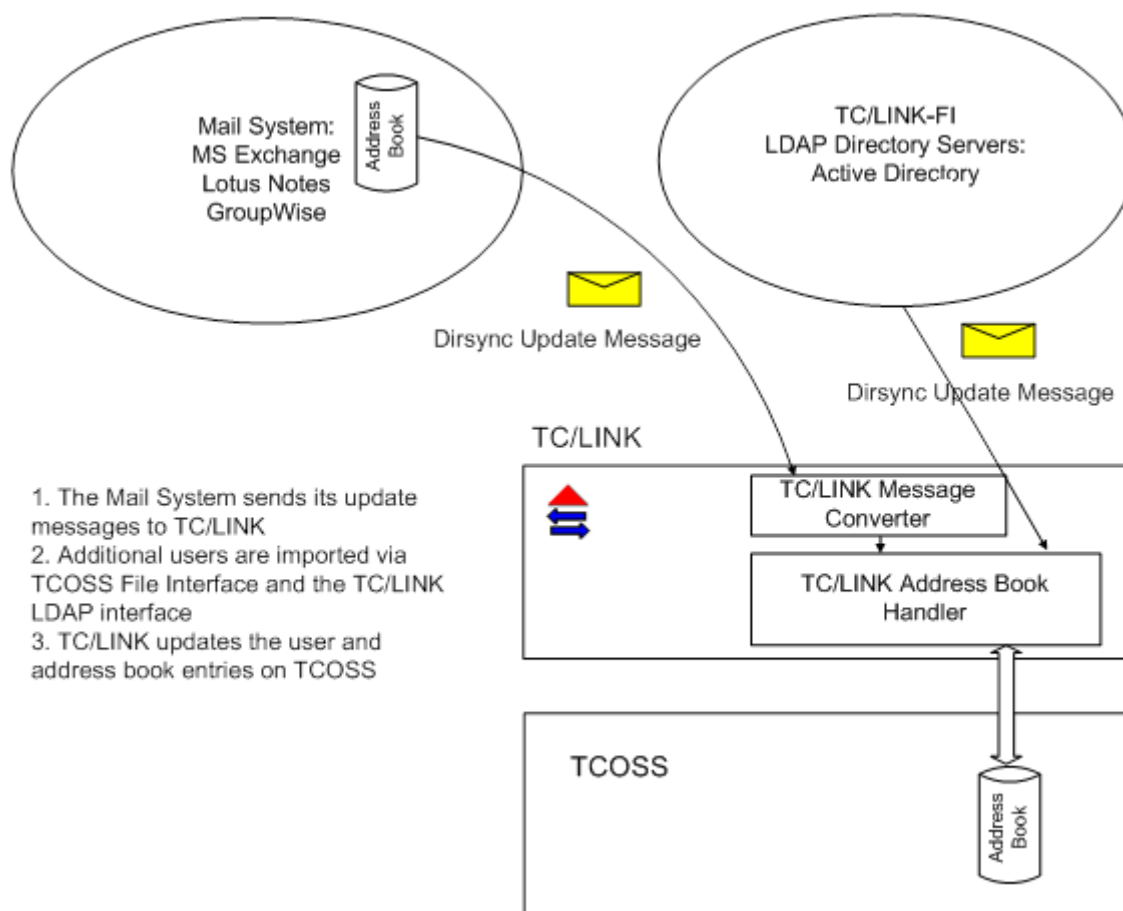
LDAP Dirsync is not covered by this documentation. A separate LDAP Directory Synchronization Technical Manual is available.

Overview

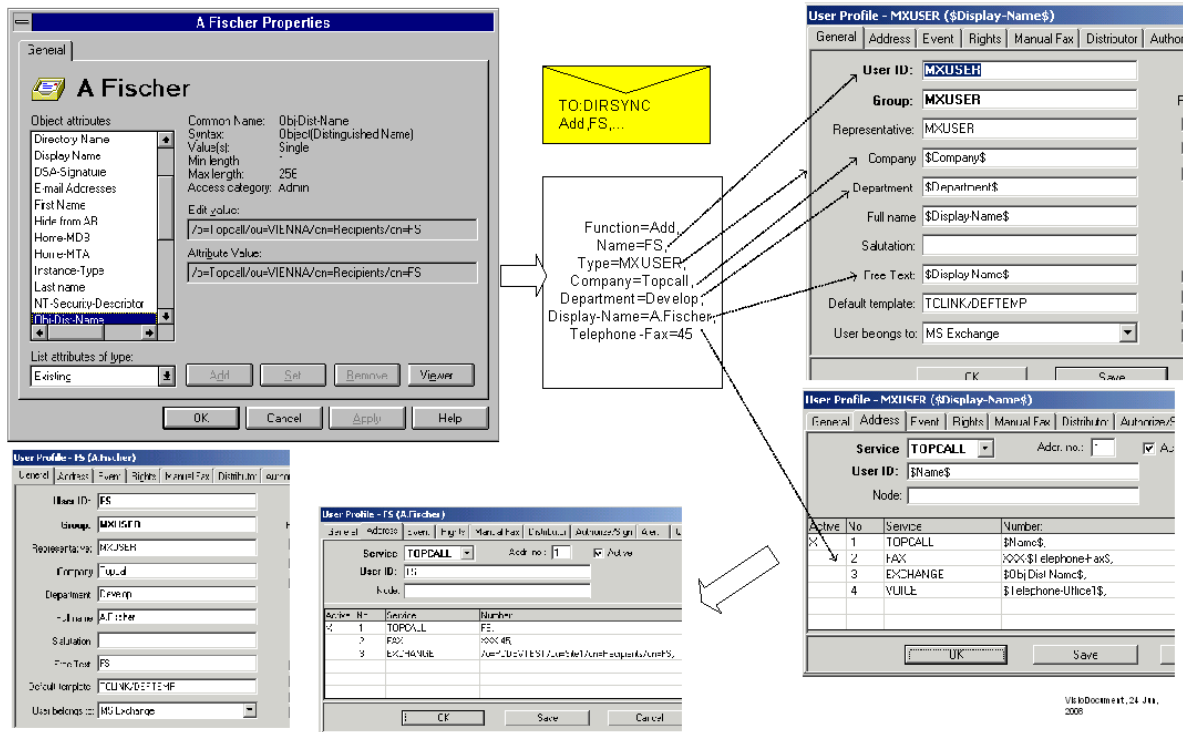
Dirsync imports users and addresses from the remote mail system into the TCOSS user store and address store. Currently, Dirsync does not support exporting information from TCOSS to the remote mail system.

A special license is needed for Dirsync.

Dirsync (DS) is done via special Dirsync messages.



The following figure shows the flow of information with Dirsync, it uses MS Exchange as a sample mail system.



Dirsync Message

A Dirsync message consists of text lines (strings). With most link types, Dirsync messages are created automatically. With TC/LINK-FI you can also create a Dirsync message via a text editor and then copy it to the Dirsync directory. This is the reason why this manual contains detailed information about the dirsinc string syntax.

Note Dirsync messages are not counted by KCS Monitor.

Parameter String

Each line contains information about one user, encoded as a list of item names and values separated by commas. Item names are optional. Every blank is considered as part of an item value. Do not insert blanks before or after a value. The item names are not case sensitive.

Example:

```
Function=Add,Name=Maxi
Mayer,Type=MXUSER,Telephone-Fax=899,Department=Sales,Company=United
Brains,Obj-Dist-Name=/o=UB/ou=Vienna/cn=Recipients/cn=MM,Display-Name=Maximilian
Mayer, Newname=Maxi Mayer,Corr=/o=UB/ou=Vienna/cn=Recipients/cn=MM
```

Rules

- The first 3 items are the "Function", "Name" and the "Type". They have a special meaning and cannot be accessed via an index. Other items with special meaning are Newname and Corr.

- Valid functions are "Add", "Modify", and "Delete". The function can be abbreviated with the first character. (The difference between Add and Modify is that there will be a warning in the event log, if an existing user should be added or a nonexistent should be modified).
- Type is the name of the Dirsync template (on KCS) that shall be used. The template can be either a KCS user (for importing users) or a KCS address book entry (for importing address book entries).
- In order to check if there is already a shadow user for this dirsinc line, the algorithm uses the items Corr and Name: Corr is the mail-system specific unique ID of this user. If item Corr exists, Dirsync searches for a TCOSS object with this value (stored in the TS_CORREL_1 field of the address). If there is no Corr parameter or the search yields no results, Dirsync looks for a TCOSS object with the specified name.
- In order to determine the name of the resulting (modified) TCOSS object, the algorithm uses the items Newname and Name. If item Newname exists, its value is stored as the new name of the TCOSS object. If there is no Newname parameter, the Name parameter is used instead.
- If the name of an item is missing, the Dirsync template can use its index, such as \$1\$ instead of the name. Index counting is 1-based and starts with the first element after item Type.
- For the Delete function, only Name (or Corr) and Function are necessary, all other parameters are ignored.
- If using an index in the dirsinc template, make sure that the sequential order of items in the dirsinc string is always the same, even if a value is missing. For example, if our Exchange user had no fax number, the dirsinc string would start with:

```
"Function=Add,Name=Max Maier,Type=MXUSER,,Department="
```

In our example, the items are interpreted as follows.

| (Index) Item | Value | Comment |
|------------------|-------------------------------------|---------------------|
| Function | Add | |
| Name | Maxi Mayer | (old) KCS user name |
| Type | MXUSER | |
| (1)Telephone-Fax | 899 | DID number |
| (2)Department | Sales | Department Name |
| (3)Company | United Brains | Company Name |
| (4)Obj-Dist-Name | /o=UB/ou=Vienna/cn=Recipients/cn=MM | Exchange address |
| (5) Display-Name | Maximilian Mayer | Fullname |
| (6) Newname | Maxi Mayer | (new) KCS user name |
| (7) Corr | /o=UB/ou=Vienna/cn=Recipients/cn=MM | unique ID |

Dirsync Templates

Dirsync can add per-user values to various fields of KCS user profiles, such as DID, Cost center, Company, Department, and Salutation. Before starting dirsinc, a template user profile must be created on KCS. This profile holds information about which parameters from the dirsinc string shall be copied to which user profile fields.

The name of the template user must be identical to the Type parameter of the dirsinc string. Any text enclosed by \$ signs, such as \$item\$ will be replaced by information from the dirsinc string. This can be:

- a complete item value: Specify the item name between \$ signs, such as \$Company\$ to get the complete company field.
- part of an item value: Specify a complete formula between \$ signs, such as \$RT(Company,2)\$ to get the 2 rightmost characters from the company field. See the **String Functions** section for more information about possible formulas.

Some fields in the TCFW user profile are very small, for example cost center (12 characters), FAX pincode, FAX password. When creating the template, you have to fill in the name of the corresponding variable in the foreign mail system, which may be considerably longer. If the position of the variable within the dirsinc string is not defined (for example, in TC/LINK-LN dirsinc), a special mapping of variable names must be used:

Registry subkey *USRIO* may contain a multi-string value *MapField*, which defines a correlation between mail system variable names and the placeholders used in the KCS template user profile. For example, the string “OFN=OfficeFaxPhoneNumber” specifies (to the dirsinc process) that the Lotus Notes variable *OfficeFaxPhoneNumber* is referred to as \$OFN\$ in the template.

String Functions

It is possible to copy parts of an attribute value into a KCS user profile field, such as the last two characters, or the first four characters.

Six simple string functions can be used in the template user profiles. Their syntax is described in the tables below.

- **Functions RT, LF, MID (copy substring based on index)**

In the following table, the result in the “Example” column is based on a value “MyNiceComment” in variable “comment”.

| Function | Syntax | Example | Parameters |
|--|------------------------------------|--|---|
| Copy right <len> characters | \$RT(<variable>,<len>)\$ | \$RT(comment,2)\$ Result: “nt” | <variable> : dirsinc attribute <len> : number of characters |
| Copy right <len> characters, ignoring special characters | \$RT(<variable>,<len>,<ignored>)\$ | \$RT(comment,2,”n”)\$ Result: “et” | <variable> : dirsinc attribute <len> : number of characters <ignored>: list of ignored characters |
| Copy left <len> characters | \$LF(<variable>,<len>)\$ | \$LF(comment,2)\$ Result: “My” | <variable> : dirsinc attribute <len> : number of characters |
| Copy left <len> characters, ignoring special characters | \$LF(<variable>,<len>,<ignored>)\$ | \$LF(comment,2,xyz)\$ Result: “MN” | <variable> : dirsinc attribute <len> : number of characters <ignored>: list of ignored characters |
| Copy <len> characters starting at position <start> | \$MID(<variable>,<start>,<len>)\$ | \$MID(comment,3,4)\$ Result: “Nice” | <variable> : dirsinc attribute <len> : number of characters <pos> : start index in variable (1-based) |

| Function | Syntax | Example | Parameters |
|---|---|--|--|
| Copy <len> characters starting at position <start>, ignoring special characters | \$MID(<variable>,<start>,<len>,<ignored>)\$ | \$MID(comment,3,4,N)\$ Result: "iceC" | <variable> : dirsyntax attribute <len> : number of characters <pos> : start index after removing ignored characters (1-based) <ignored>: list of ignored characters |

- **Functions RTC, LFC, MIDC (copy substring based on separator)**

With these functions, you can search for a separator substring and extract all characters before or after this separator.

For instance, you can extract the domain part of an email address (using the '@' as a separator), or even the root domain of an email address (using the '.' character as a separator).

The functions are similar to the existing functions RT, LF and MID, - instead of the length and position you specify the separator string.

The examples in the following table show how the variable "mail" that holds the values "joseph.koller@recos.ch" can be used.

| Function | Syntax | Example | Parameters |
|---|--|---|--|
| Copy right characters after separator | \$RTC(<variable>,<separator>)\$ | \$RTC(mail,@)\$ Result: "recos.ch" | <variable> : dirsyntax attribute <separator> : string or character before selection |
| Copy right characters after separator, ignoring special characters | \$RTC(<variable>,<separator>,<ignored>)\$ | \$RTC(mail,@,".")\$ Result: "recosch" | <variable> : dirsyntax attribute <separator> : string or character before selection <ignored>: list of ignored characters |
| Copy left characters until (excluding) separator | \$LFC(<variable>,<separator>)\$ | \$LFC(mail,@)\$ Result: "joseph.koller" | <variable> : dirsyntax attribute <separator> : string or character that follows the selection |
| Copy left characters until (excluding) separator, ignoring special characters | \$LFC(<variable>,<separator>,<ignored>)\$ | \$LFC(mail,@,".")\$ Result: "josephkoller" | <variable> : dirsyntax attribute <separator> : string or character that follows the selection <ignored>: list of ignored characters |
| Copy characters between separators | \$MIDC(<variable>,<separator1>,<separator2>)\$ | \$MIDC(mail,...)\$ Result: "koller@recos" | <variable> : dirsyntax attribute <separator1> : string or character before selection <separator2> : string or character after selection |
| Copy characters between separators, ignoring special characters | \$MIDC(<variable>,<separator1>,<separator2>,<ignored>)\$ | \$MIDC(mail,...,@)\$ Result: "kollerrecos" | <variable> : dirsyntax attribute <separator1> : string or character before selection <separator2> : string or character after selection <ignored>: list of ignored characters |

Behavior

- **Behavior if no separators found:**

- \$RTC\$ selects the whole string.
- \$LFC\$ selects the whole string.
- \$MIDC\$ selects an empty string.

- **Behavior if several separators found:**

A variable may contain several instances of a separator, such as a@b@c@d holds 3 instances of the separator @.

The standard behavior in such a case is:

- RTC: selects the substring right from the last separator ("d").
- LFC: selects the substring left from the first separator ("a").
- MIDC: selects the substring between the first occurrence of separator1 and the last occurrence of separator2, such as \$MIDC(mail,@,@)\$ would select "b@c".

Optionally, you can specify the sequential number of the separator. This is done by setting the separator between " " characters and specifying the sequential number after the closing " .

Negative numbers are used for counting from the end of the string (-1 = the last occurrence).

The following examples use the variable "mail" with value "a@b@c@d").

Example 1:

\$MIDC(mail,"@"1,"@"2)\$ selects "b".

Example 2:

\$RTC(mail,"@"2)\$ selects "c@d".

Example 3:

\$LFC(mail,"@"-1)\$ selects "a@b@c".

Example 4:

\$LFC(mail,"@"-2)\$ selects "a@b".

Notes

- Using special characters:

Parameters <variable>, <separator> and <ignored> can be enclosed between " " characters. This is necessary if they include a comma, bracket (), or the dollar sign \$.

For example: \$RTC(address,"")\$

This formula is replaced by the substring that follows the first comma in the address field.

- Option to ignore certain characters:

As you see in the table, every function has an optional parameter <ignored>. Here you can specify a list of characters that shall be ignored. These ignored characters will not be part of the result.

Please note that you can only specify single characters that are ignored. It is not possible to remove a specific sequence of characters, such as the number "10", using the <ignored> parameter. The function \$MIDC(comment,...,10)\$ removes all occurrences of characters "1" and "0".

- Ignoring the double apostrophe " is not possible

- Up to now, the name of the variable was surrounded by \$ characters, such as \$company\$. With the new substring functions, the \$ characters surround the complete formula, such as \$LF(company,5)\$.

- A field in the user profile can contain several function calls, such as \$LF(comment,2)\$-\$MID(comment,7,2)\$

The result would be “My-Co”.

- Nested function calls are NOT allowed.
- For the following special dirsnc variables, these functions are NOT allowed:
name, USRIO_mailsystem, type, newname, corr, newcorr, function
- You can use these functions in mapfields.
For example, the MAPFIELD string “EXT3=RT(homePhoneNumber,3)” allows to use \$EXT3\$ in the template user profile instead of \$RT(homePhoneNumber,3)\$
- Case sensitivity:
Separators and ignored characters are handled in a case-sensitive way.

Empty Values

If a value is empty in the value-item string and the variable should be replaced in a List object (e.g. the list of the IN-events), then the whole list entry is removed from the list. For example, if you do not want a printout of incoming message for a specific user, you can leave the printer name in the user profile empty. In this case, the inaction for the printout is omitted.

Exception:

Empty values in X400 addresses and postal addresses are allowed.

User Templates

A sample template for Microsoft Exchange users imported by Dirsync.

The dialog box is titled "User Profile - MXUSER (\$Display-Name\$)". It features a tabbed interface with the following tabs: "Queue Length/Age/Pages alerting", "Queue Length/Age/Pages logging", "TC/WEB", "TC/WEB Identity Rights", "General", "Address", "Event", "Rights", "Manual Fax", "Distributor", and "Authorize/Sign". The "General" tab is currently selected.

Fields and options in the "General" tab include:

- User ID:** MXUSER
- Group:** MXUSER
- Location:** (empty text box)
- Representative:** MXUSER
- Company:** \$Company\$
- Department:** \$Department\$
- Full name:** \$Display-Name\$
- Salutation:** (empty text box)
- Free Text:** \$Display-Name\$
- Default template:** TCLINK/DEFTEMP
- User belongs to:** MS Exchange (dropdown menu)
- VRS Profile:** (empty text box)
- Language:** English (01) (dropdown menu)
- Time Zone:** (empty dropdown menu)
- Visible in outbox:** ☐
- Password:** (masked with asterisks)
- Retype password:** (masked with asterisks)
- ☒ Change own password
- ☐ Password never expires
Password will never expire
- ☐ Change password at next login
- ☐ Lock account
Account is not locked
- Cost center:** \$NAME\$
- ☐ Dirsync allowed
- ☐ Reject all messages
- ☐ Logging of all send attempts
- ☐ Number locking

Buttons at the bottom: OK, Save, Cancel.

Fields **Dirsync Allowed** and **User belongs to** need not be initialized to a special value, because TCLINK sets these fields automatically when creating a new user:

Dirsync Allowed is enabled for all users created by dirsinc.

User belongs to is by default set according to the link type (e.g. users created by TC/LINK-LN belong to Lotus Notes). But TC/LINK can be configured to set the **User belongs to** field according to the corresponding field in the dirsinc template user profile. This is done by setting the `Dirsync \MailSystemFromTemplate` registry key to 1.

The address must contain the value `$Name$`. Otherwise you cannot send mail.

User Profile - MXUSER (\$Display-Name\$)

Queue Length/Age/Pages alerting

Queue Length/Age/Pages logging

TC/WEB

TC/WEB Identity Rights

General

Address

Event

Rights

Manual Fax

Distributor

Authorize/Sign

Service

TOPCALL

Addr. no.:

1

☒ Active

User ID:

\$Name\$

Node:

Delete Addr

Save Addr

| Active | No | Service | Number: |
|--------|----|----------|------------------------|
| X | 1 | TOPCALL | \$Name\$. |
| | 2 | FAX | XXX-\$Telephone-Fax\$. |
| | 3 | EXCHANGE | \$Obj-Dist-Name\$. |
| | | | |
| | | | |
| | | | |
| | | | |

OK

Save

Cancel

The "in", "delivery" and "non-delivery" actions are routed to MS-Exchange:

User Profile - MXUSER (\$Display-Name\$)

Queue Length/Age/Pages alerting

Queue Length/Age/Pages logging

TC/WEB

TC/WEB Identity Rights

General

Address

Event

Rights

Manual Fax

Distributor

Authorize/Sign

Event:

In

Service

EXCHANGE

Free address:

\$Obj-Dist-Name\$

☒ Active

☒ Auto termination

☐ Registered

Filter

all

No

Archive entry

Used for:

Sender service:

(All)

Delete Addr

Save Addr

Recipient number:

(All)

Delivery type:

(All)

Move Up

Move Down

| Active | Event: | Service | Number: | Archive entry | Auto | Registe | D |
|--------|--------------|----------|--------------------|---------------|------|---------|----|
| X | In | EXCHANGE | \$Obj-Dist-Name\$. | No | X | | (A |
| X | DelNotif | EXCHANGE | \$Obj-Dist-Name\$. | No | X | | (A |
| X | Non-delNotif | EXCHANGE | \$Obj-Dist-Name\$. | No | X | | (A |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

OK

Save

Cancel

This template will be used to create the User.

User Profile - Maxi Mayer (Maximilian Mayer)

Queue Length/Age/Pages alerting

Queue Length/Age/Pages logging

TC/WEB

TC/WEB Identity Rights

General

Address

Event

Rights

Manual Fax

Distributor

Authorize/Sign

User ID: Maxi Mayer

Group: MXUSER

Location:

Representative: MXUSER

Company: United Brains

Department: Sales

Full name: Maximilian Mayer

Salutation:

Free Text: Maximilian Mayer

Default template: Built-in default template used!

User belongs to: MS Exchange

VRS Profile:

Language: English (01)

Time Zone:

☐ Visible in outbox

Password:

Retype password:

☒ Change own password

☐ Password never expires

Password will never expire

☐ Change password at next login

☐ Lock account

Account is not locked

Cost center: MAXIMAYER

☐ Dirsync allowed

☐ Reject all messages

☐ Logging of all send attempts

☐ Number locking

OK

Save

Cancel

The new KCS user has the following addresses.

User Profile - Maxi Mayer (Maximilian Mayer)

Queue Length/Age/Pages alerting | Queue Length/Age/Pages logging | TC/WEB | TC/WEB Identity Rights

General | Address | Event | Rights | Manual Fax | Distributor | Authorize/Sign

Service: **EXCHANGE** Addr. no.: **3** ☐ Active

Free address: **/o=UB/ou=Vienna/cn=Recipients/cn=MM** Delete Addr Save Addr

| Active | No | Service | Number: |
|--------|----|----------|--------------------------------------|
| X | 1 | TOPCALL | Maxi Mayer, |
| | 2 | FAX | -899, |
| | 3 | EXCHANGE | /o=UB/ou=Vienna/cn=Recipients/cn=MM, |
| | | | |
| | | | |
| | | | |

OK Save Cancel

The events defined for the new KCS user are as follows.

User Profile - Maxi Mayer (Maximilian Mayer)

Queue Length/Age/Pages alerting | Queue Length/Age/Pages logging | TC/WEB | TC/WEB Identity Rights

General | Address | Event | Rights | Manual Fax | Distributor | Authorize/Sign

Event: **In** Service: **EXCHANGE**

Free address: **/o=UB/ou=Vienna/cn=Recipients/cn=MM** ☒ Active ☒ Auto termination ☐ Registered

Filter: **all** Negative Archive entry

Used for: Sender service: **(All)** Delete Addr Save Addr

Recipient number: **(All)** Delivery type: **(All)** Move Up Move Down

| Active | Event: | Service | Number: | Archive entry | Auto | Registe | D |
|--------|--------------|----------|------------------------------|---------------|------|---------|----|
| X | In | EXCHANGE | /o=UB/ou=Vienna/cn=Recipient | Negative | X | | (A |
| X | DelNotif | EXCHANGE | /o=UB/ou=Vienna/cn=Recipient | Negative | | | (A |
| X | Non-delNotif | EXCHANGE | /o=UB/ou=Vienna/cn=Recipient | Negative | | | (A |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

OK Save Cancel

Address Book Templates

You can simply add address entries to the system address book, if you specify a Type (name of a template) that is not a user, but only a recipient.

The following is an example with alternate numbers:

The dirsync string is similar to the string used for creating a KCS user, only the Type parameter is different:

```
Function=Add,Name=Maxi
Mayer,Type=MXRECIP,Telephone-Fax=899,Extension-Attribute-1=PRINTER,Extension-
Attribute-2=Good
Morning!,Department=Sales,Company=United
Brains,Extension-Attribute-3=MM,Obj-Dist-Name=/o=UB/ou=Vienna/cn=Recipients/
cn=MM,Comment=Maximilian
Mayer,Extension-Attribute-4=66133895,Extension-Attribute-5=66133821,Extension-
Attribute-6=,Extension-Attribute-7=11388UB,Extension-Attribute-8=,Extension-
Attribute-9=
```

Address template stored on TCOSS.

| Active | No | Service | Number |
|--------|----|---------|--------|
| X | 1 | FAX | \$9\$ |
| X | 2 | FAX | \$10\$ |
| X | 3 | FAX | \$11\$ |
| X | 4 | TLX | \$12\$ |
| X | 5 | TLX | \$13\$ |
| X | 6 | TLX | \$14\$ |

Resulting address book entry.

| Active | No | Service | Number |
|--------|----|---------|-----------|
| X | 1 | FAX | 66133895, |
| X | 2 | FAX | 66133821, |
| X | 3 | TLX | 11388UB, |
| | | | |
| | | | |
| | | | |

Note The missing fax and telex alternative addresses are deleted in the list.

Importing entries into private address books

It is possible to create private address book entries (user address book, group address book) via dirsinc, provided that the TCLINK KCS user has read and write permissions for system user profiles and system address book.

Every group or user that receives address book entries via dirsinc needs its own dirsinc template in the private address book. The user or group and the dirsinc template must exist before the private address book entries are synchronized. The address book entries are created in the address book where the template is.

The type parameter in the dirsinc string must contain the address book name, a separator character, and the template name.

The type parameter must be specified in this way for every dirsinc operation, also for deleting objects.

Configuration:

The separator character can be configured in the `USRIO\AddressBookSeparator` (REG_SZ) registry value. If this registry value is empty or not existing, the feature is disabled.

For native TC/LINK-FI and TC/LINK-MQ dirsinc, specify the template name as part of the dirsinc line (see examples below). For other dirsinc types, you can configure a default dirsinc template and an attribute of the mail user profile containing the dirsinc template name for the individual user.

| Dirsync type | Registry key for the default recipient template | Registry key for template attribute name |
|------------------|---|--|
| Lotus Notes | Notes\DSTemplate | No registry key, but a per-user dirsinc template can be specified in an attribute called TEMPLATE. |
| Active Directory | Dirsync\RecipientTemplate | Dirsync\TemplateAttribute |
| LDIFF | Dirsync\UserTemplate | Dirsync\TemplateAttribute |

In the following examples, the forward slash '/' is used as separator character.

Example with Active Directory Dirsync:

User ALBERT has a dirsinc template called TEMPLATE in his private address book.

All Windows contacts to be synchronized into his address book have the value "ALBERT/TEMPLATE" in the "comment" field.

The `Dirsync\TemplateAttribute` registry key has the value "comment".

Examples with TC/LINK-FI Dirsync:

User ALBERT has a dirsinc template called TEMPLATE in his private address book.

The following dirsinc line for TC/LINK-FI imports an address book entry called XY:

```
A,Name=XY,Type=ALBERT/TEMPLATE,Company="XYZ",Faxnumber="*43 1 863530"
```

Group SALES has a dirsinc template called TEMPLATE in its private address book.

The following dirsinc line for TC/LINK-FI imports an address book entry called XY:

```
A,Name=XY,Type=SALES/TEMPLATE,Company="XYZ",Faxnumber="*43 1 863530"
```

You can still create system address book entries by omitting the address book name and the separator.

The following dirsinc line imports a system address book entry called ABC:

```
A,Name=ABC,Type=FIRECIP,Faxnumber="*43 1 86353"
```

Fields Handled in a Special Way

Password

The password field is never updated by dirsinc. When a new user is added, the password is copied from link configuration (Registry `USRIO\DefaultPassword`).

Default template

By default, this item can only be changed via TCfW. To configure update of the default template (and other related objects) during dirsinc, change registry value `USRIO\ClientSettings` to 0 (default is 1).

Signature

When a new user is added, the signature is copied from the template user. As this is binary data, it cannot be updated by dirsync. An exception to this rule is LDIF dirsync. With this dirsync type it is possible to import a binary image into the signature field (see LDAP Directory Synchronization Technical Manual).

Fax Password

TC/VoiceMail uses the TCOSS fax password for voice mailbox access. The fax password can be changed via telephone and via TCfW. Normally, dirsync overwrites these changes, even if the fax password in the dirsync user template is blank.

For Voice Integration, dirsync can be configured to leave the KCS user's fax password unchanged. This is done via registry key *USRIOKeepFaxPassword* (DWORD), default=0. By setting this value to 1, the fax password is excluded from dirsync. When creating a new user, the fax password is taken from the dirsync template.

Allow Dirsync

There is a risk that Dirsync overwrites existing users/addresses that are maintained with TCfW. To avoid this, there is a checkbox labeled Allow Dirsync in the General section of the User maintenance screen and in the address book screen. The TC/LINK Dirsync process only changes objects where this checkbox is checked. All other objects can only be changed via TCfW.

Time Zone

- **Time zone information in user profiles:** The user profile entry has been extended with a field that holds information about the user's time zone. The field is only 4 characters long, - it stores a short name for the time zone. The short name matches a time zone that is defined in the TCOSS server standard time zone file A:tz99 or alternatively in the routing directory A:rr99, both located in the System folder. If you use TCfW for editing the user profile, you see a display name instead of the short name of the time zone.
- **Time zone information in dirsync template user profiles:** The time zone field can also be subject to directory synchronization. For this purpose, it is necessary to edit the time zone of the dirsync template user. This is possible in TCfW starting with KCS Client Apps version 08.01. Open the dirsync template user profile and select time zone "(UTC 00.00h) - \$TZ\$" from the list box. After storing the

user profile, the time zone field holds the value \$TZ\$ (the first part of the value displayed in TCfW is only a comment).

Extracting and mapping time zone information from mail user attributes

As there is probably no user attribute called TZ in the mail server's directory, the variable TZ must be mapped to an existing user attribute via the HKLM\Software\TOPCALL\<LinkName>\Usrio\MAPFIELD registry key.

In the TC/LINK registry, create (or modify) the multi string value USRIO\MAPFIELD and correlate the TZ variable with a user attribute that holds information about the user's time zone (see examples at the end of the chapter).

This attribute can either contain the 4 digit time zone code itself, such as CET, UTC or other names, defined in tz99.

As an alternative, the attribute can hold a text that can be mapped to a 4 digit time zone code via the MAP2ZONE section in rr99 (for details see TCOSS Application Module Manual).

The MAP2ZONE mappings used for dirsnc must be prefixed with "D\$", such as D\$Vienna,CET

The string between D\$ and the comma is replaced with the time zone name that follows the comma.

In this example, “Vienna” is mapped to “CET”.

Note If mapping to a time zone fails the system default time zone is used.

The ~ character may be used as a wildcard. For example:

D\$+43~,CET

In this example, all values starting with “+43” are mapped to time zone “CET”.

Note Only 32 characters (including the prefix) are allowed before the comma. To map attributes with longer values, use dirsyntax string functions (see example 4 below).

Example 1: Attribute “TimeZone” holds the time zone names as defined in tz99 or rr99.

| | |
|----------------|--|
| USRIO\MAPFIELD | Values in MAP2ZONE section in rr99 Not needed for dirsyntax |
| TZ=TimeZone | |

Example 2: Attribute “Location” holds a city name, such as “Vienna”. The city names can be mapped to time zones.

| | |
|----------------|--|
| USRIO\MAPFIELD | Values in MAP2ZONE section in rr99 |
| TZ=Location | D\$Vienna,CET D\$London,UTC D\$Amsterdam,CET |

Example 3: Attribute “OfficePhoneNumber” holds the person’s normalized phone number. The first digits of the phone number (country code, area code) can be mapped to time zones.

| | |
|----------------------|---|
| USRIO\MAPFIELD | Values in MAP2ZONE section in rr99 |
| TZ=OfficePhoneNumber | D\$+43~,CET D\$+44~,UTC D\$+31~,CET |

Example 4: The first 3 characters of the “PhoneNumberAndComment” attribute holds the country code, which in turn can be mapped to a time zone.

| | |
|---------------------------------|--|
| USRIO\MAPFIELD | Values in MAP2ZONE section in rr99 |
| TZ= LF(PhoneNumberAndComment,3) | D\$+43,CET D\$+44,UTC D\$+31,CET |

The LF function is a general feature of directory synchronization. It selects a specified number of characters (in this example: 3) from the left margin of the specified attribute (in this example: PhoneNumberAndComment). For more information about LF and other string manipulation functions that can be used with dirsyntax, refer to the TC/LINK Technical Manual.

Note With some link types, such as LDAP Dirsync, only attributes configured in the link registry are exported via dirsinc. In these cases, add the attribute name to the list in the registry.

Examples:

LDAP Dirsync exports only attributes listed in registry keys

HKLM\Software\TOPCALL\<LinkName>\Dirsync\List01 up to

HKLM\Software\TOPCALL\<LinkName>\Dirsync\List99.

Objects with Standard TCOSS Names Cannot Be Created

With previous versions, it was possible that dirsinc created users with names, such as “F”, “01” or “+ENVELOPE”. In TCOSS, these are the names of channels and system users.

TCOSS operation can be severely disturbed if users with such names exist. For example, if a user “F” exists, all outgoing faxes are routed to his mailbox and not to the Fax channel.

Now, the following two registry keys define which user names cannot be created.

| Registry key | Type | Default | Description |
|----------------------------|----------|---------|--|
| USRIO\ SecurityLevel | DWORD | 2 | This registry key is created by Setup (if Dirsync is enabled). 0: Do not check names 1: Forbid only names from the list InvalidUserNames 2: Forbid all “standard” TCOSS system object names 3: Forbid both |
| USRIO\ InvalidUserNames | MULTI_SZ | | This registry key must be created manually. List of invalid user names (case insensitive) |

Standard TCOSS system object names (SecurityLevels 2 and 3) are:

- Names starting with +
- Names consisting of 2 digits only
- Names consisting of 1 alphanumeric character only

The InvalidUserNames list is treated in a case insensitive way. For example, an entry “AB” means that the following names are invalid: AB, ab, Ab, aB.

Dirsync uses these 2 registry keys to check if the ID of a KCS object (user or addressbook entry) is allowed. Objects with invalid names can neither be created nor deleted. Dirsinc returns the error code 3505 (“User has dirsinc allowed flag not set”). TCLINK reacts to this error by writing an eventlog warning, but does not report the error to the special link DLL. This means that no immediate dirsinc retry is triggered.

Periodic Update Dirsinc

Some link types, such as TC/LINK-LN can be configured to update dirsinc daily. This type of dirsinc covers only changes that were done to the mail user profile after the last dirsinc.

Error Handling

The following errors may occur while writing a single user or address book entry to TCOSS.

| Code | Description | Remark | Standard Handling (LDAP Dirsync) | Standard Handling (native Dirsync) |
|------|--|---------------------------------|----------------------------------|------------------------------------|
| 3501 | Dirsync preparation error, such as memory allocation failure | | retry next DS time | depends on mail system |
| 3502 | No name found in string | not ignored in previous version | ignore | ignore |
| 3503 | No template found in string | | ignore | ignore |
| 3504 | Template not existing | not ignored in previous version | ignore | ignore |
| 3505 | Dirsync allowed flag not set | | ignore | ignore |
| 3506 | wrong function (allowed functions: Modify, Add, Delete) | | retry next DS time | depends on mail system |
| 3507 | Tried to touch user from different mail system | | ignore | ignore |
| 3508 | obsolete | replaced by 3509 and 3510 | | |
| 3509 | Group not existing | new | retry next DS time | depends on mail system |
| 3510 | Representative not existing | new | retry next DS time | depends on mail system |
| 3511 | Connection to TCOSS lost | new | retry next DS time | depends on mail system |
| 3512 | Maximum store capacity reached | new | retry next DS time | depends on mail system |
| 3513 | Other TCOSS errors | new | retry next DS time | depends on mail system |

All errors are logged to the application event log. There is an individual event log warning for every failed user or recipient. Additionally, a final event log warning contains the number of errors.

If periodic update dirsnc is configured, most errors lead to a dirsnc retry. This means that the next regular dirsnc includes all users that were part of the current dirsnc. An exception for this rule is TC/LINK-FI. (With TC/LINK-FI, dirsnc is always considered as successful). Refer to the *special link documentation* for details on native dirsnc.

Some errors are ignored by default. They are written to the event log but do not trigger a dirsnc retry. Examples: dirsnc not allowed for a user, different mail system.

Option: disable dirsnc retry for specific errors

To disable the dirsnc retry for all errors mentioned above, set the `General\ReportDSErrors` registry key to 0.

To disable the retry for specific errors only, set the `General\ReportDSErrors` registry key to 1 and use the `Dirsync\IgnoredErrors` registry key to configure a list of error codes that will be ignored, and thus will not trigger a dirsnc retry. The `IgnoredErrors` registry key holds a comma-separated list of error codes.

Default: errors 3502, 3503, 3504, 3505 and 3507 are ignored

Both options must be handled with care, because they lead to missing shadow users.

Errors that are not mentioned in the list, such as no dirsnc license are not configurable and always lead to a dirsnc retry.

Update System Files

If the `TOPCALL\UpdateSystemFiles` registry value is nonzero, Dirsync updates the TCOSS system files nn99 and UU99. This is only done if dirsnc was successful for all users, and if at least one user profile was modified.

For LDAP dirsnc, the update is done once a day (per default). Optionally, you can force TCLINK to update system files at every dirsnc, by setting `TOPCALL\UpdateSystemFiles` to 2.

Time Zone Support

The Time Zone support enables client and server to be in different timezones.

Time zone of user profile can be imported via dirsnc.

The Time Zone support can be Simple or Full time:

- Simple time zone support (possible with all link types):
TC/LINK regards time stamps in messages as TCOSS time (like with previous link versions).
Exception: If a fax sending copy is returned with the notification, the sending copy shows the same time stamps as the fax that was sent.
- Full time zone support is currently only possible for TC/LINK-MX7, TC/LINK-SM and variants (OC, SDD, MFP) and TC/LINK-FI:
Time stamps in messages can be interpreted according to the user's time zone.

The timezones feature is only supported for TCOSS, TC/Archive and TC/Report within Kofax Communication Server applications and for TCfW within KCS Client Applications. Timezones are not applicable for any other KCS applications yet.

Simple Time Zone Support

This section describes the simple time zone support.

Compatibility with Old Installations

TC/LINK treats time stamps in messages passed between KCS and the remote mail system as TCOSS time. This is the same behavior as with localized TCOSS servers.

Restrictions from previous link versions (for example, the Lotus Notes server and Lotus Notes client on the link computer must have same time zone) are still valid.

The times in delivery and non-delivery notification texts are TCOSS time (UTC or UTC + offset). You do not have to modify the standard notification cover sheets.

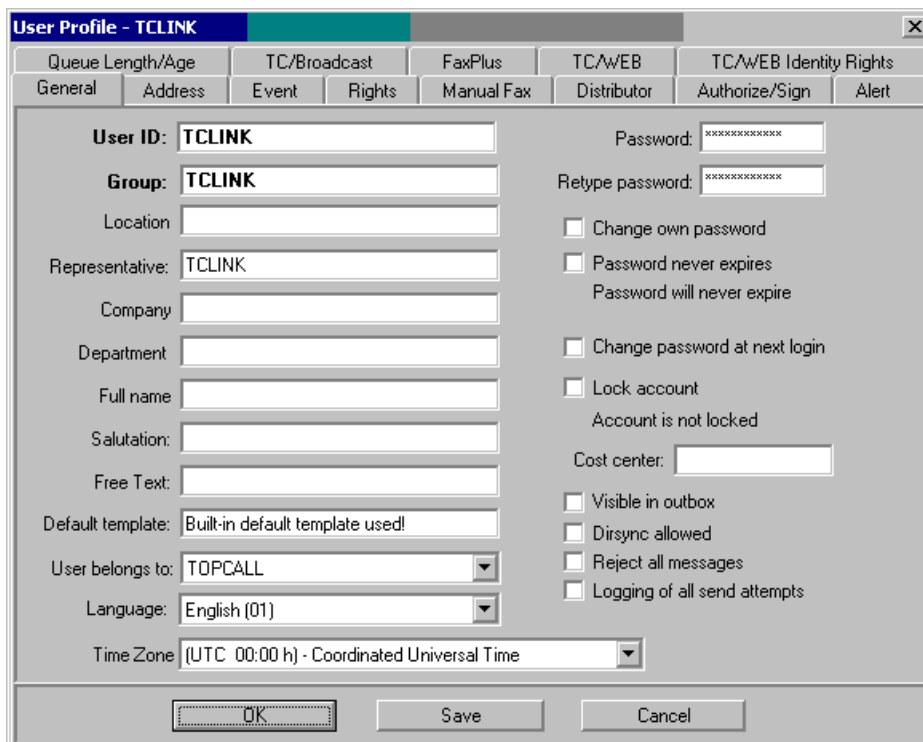
Send times and latest delivery times specified via ++ commands are interpreted as TCOSS time (UTC or UTC + offset).

If send copies are returned as part of the notifications, all time stamps in the send copies are displayed in the same way as on the original message that was sent (depending on recipient number, originator time zone and more, see *TCOSS Application Module Manual*).

Setting TCLINK User Time Zone

It is necessary to modify the TCLINK user profile on the Kofax Communication Server.

- If the TCOSS time is UTC without an offset, choose the UTC time zone.



The image shows a 'User Profile - TCLINK' dialog box with a tabbed interface. The 'General' tab is selected. The dialog contains the following fields and options:

- User ID:** TCLINK
- Group:** TCLINK
- Location:** (empty text box)
- Representative:** TCLINK
- Company:** (empty text box)
- Department:** (empty text box)
- Full name:** (empty text box)
- Salutation:** (empty text box)
- Free Text:** (empty text box)
- Default template:** Built-in default template used!
- User belongs to:** TOPCALL (dropdown menu)
- Language:** English (01) (dropdown menu)
- Time Zone:** (UTC 00:00 h) - Coordinated Universal Time (dropdown menu)
- Password:** (masked with asterisks)
- Retype password:** (masked with asterisks)
- ☐ Change own password
- ☐ Password never expires
Password will never expire
- ☐ Change password at next login
- ☐ Lock account
Account is not locked
- Cost center:** (empty text box)
- ☐ Visible in outbox
- ☐ Dirsync allowed
- ☐ Reject all messages
- ☐ Logging of all send attempts

At the bottom, there are three buttons: OK, Save, and Cancel.

- If the TCOSS time is UTC with an offset (updated system), choose the TCOSS time zone.

The image shows a 'User Profile - TCLINK' dialog box with the following fields and options:

- General Tab:**
 - User ID:
 - Group:
 - Location:
 - Representative:
 - Company:
 - Department:
 - Full name:
 - Salutation:
 - Free Text:
 - Default template:
 - User belongs to:
 - Language:
 - Time Zone:
- TC/Broadcast Tab:**
 - Queue Length/Age:
 - Event:
 - Rights:
- FaxPlus Tab:**
 - Manual Fax:
- TC/WEB Tab:**
 - Distributor:
- TC/WEB Identity Rights Tab:**
 - Authorize/Sign:
 - Alert:
- Options:**
 - Password:
 - Retype password:
 - ☐ Change own password
 - ☐ Password never expires
 - Password will never expire
 - ☐ Change password at next login
 - ☐ Lock account
 - Account is not locked
 - Cost center:
 - ☐ Visible in outbox
 - ☐ Dirsync allowed
 - ☐ Reject all messages
 - ☐ Logging of all send attempts
- Buttons:** OK, Save, Cancel

Configuring AutoTimeZone in TC/LINK Registry

To enable the behavior described above, it is necessary to switch on automatic conversion of time stamps for all TC/LINK instances.

Use a registry editor to set the following registry value to 1:

HKLM\Software\TOPCALL\<LinkName>\TCSI\AutoTimeZone (REG_DWORD)

0 = Off (default)

1 = On

This registry value is below the link subkey, that is, it must be set explicitly for every link instance.

Full Time Zone Support

This section describes the full time zone support.

Prerequisites

The special link DLL version must support the enhanced time zone feature (currently only TC/LINK-MX7, TC/LINK-SM, TC/LINK-OC, TC/LINK-SDD, TC/LINK-MFP and TC/LINK-FI possible).

TCOSS must be UTC-based.

TCSI\AutoTimeZone configured for the link instance.

Note If the time zone is not configured for the TCLINK user, the time zone feature will not work.

Configuration

Enable this feature by specifying a non-empty value to the `General\TimeZoneToMail` (REG_SZ) registry key (default: empty string). If the registry value is an empty string, TCLINK provides only [simple time zone support](#).

Message from TCOSS to Mail System

The `General\TimeZoneToMail` registry value determines the time zone used when TCLINK hands over a message (or notification) to the special link DLL.

Possible values:

- USER (for events: time zone of shadow user, for other messages: time zone of guest user)
- UTC
- Other configured time zone names

The following fields in the resulting mail message are based on this time zone:

- Send date and time
- Absolute latest delivery time
- Message creation time
- Intended send time

For texts that are created via cover sheets (notification text, cover sheet of message to mail system), the time zone is configured in a separate registry value `General\TimeZoneNfToMail`. Possible values are:

- USER (for events: time zone of shadow user, for other messages: time zone of guest user)
- UTC
- Other configured time zone names

If the registry value is an empty string, TCLINK uses the time zone specified in `General\TimeZoneToMail`.

Thus, it is possible to pass UTC time stamps to a mail system that is based on UTC, such as MS Exchange, yet give the end user notification texts based on his own time zone.

Note Fax sending copies in notifications hold the real send time and date (branch box time).

Message from Mail System to TCOSS

If the `General\TimeZoneToMail` registry value is not empty, TCLINK uses some general rules and some link type specific logic to interpret time stamps.

General rules

The following date and time values are interpreted based on originator (or guest user) time zone:

- ++DATE, ++TIME and ++LD (absolute syntax)
- Requested send date and time
- Latest delivery time specified in default template

TC/LINK-MX7, TC/LINK-SM variants

The following date and time values coming from the mails system are in UTC time:

- Latest delivery time
- Message creation time
- Time stamps in notifications

Configuration Recommendations

| Link type | Link Package Version | TimeZoneToMail | TimeZoneNFToMail |
|--|----------------------|----------------|------------------|
| TC/LINK-MX7 | All | UTC | USER |
| TC/LINK-SM TC/LINK-OC TC/LINK-SDD TC/LINK-MFP | 2.30.00 and above | UTC | USER |
| All others | | | |

Integrated Archiving Support

With KCS Integrated Archiving, all messages sent from or within certain mail environments are automatically stored in the KCS Archive.

Archiving even internal mail messages is achieved by sending a blind copy of each message to a recipient on KCS, the so-called Archive Recipient. TC/LINK recognizes the Archive Recipient, removes it from the message and makes sure that TCOSS only activates send orders for recipients that were routed via TCLINK. Send orders to (inactive) recipients on the foreign mail system are terminated immediately by TCOSS. If no recipients on KCS were specified, no send orders are generated and the message is archived only.

The User ID of the KCS Archive recipient is configured in the `Topcall\Archive (SZ)` registry key (default "TCARCHIVE"). For Archive integration, this must be an existing KCS user. With automatic creation of dependencies, TC/LINK creates the Archive user after first link startup.

You can disable recognition of an Archive Recipient by specifying an empty string ("") in the `Topcall\Archive` registry key.

Note The messages may archived twice. This happens because the Exchange Server creates separate transfer envelopes for the normal recipients (such as a KCS user, or a fax) and the BCC Archive recipient.

Prerequisites:

- TC/LINK must be configured to allow all mail users to send messages (`Topcall\ChkDisSend = 0`). Otherwise, messages from users without shadow users will not be archived
- No additional recipients, such as authorizers shall be added via KCS default message templates. Otherwise, TCOSS creates additional send orders to these recipients when it stores the message in the KCS archive.
- Server Package (TCOSS and TC/ARCHIVE) 7.24.02 or higher (for Windows models only). If an archive user is configured with older versions the link creates an eventlog warning and continues operation.

All-for-one Key System Support

TC/LINK-FI and TC/LINK-MQ are now integrated with the All-For-One Banking Key System. This means that this Key System can be used for validation of outgoing and incoming messages. For this purpose, TCLINK uses an authorization mechanism similar to the Authorize feature in TCFW.

Banking Key Information

The information needed for banking key creation and validation is stored in a special object SET_KEYS located in the message header (SET_KEYS).

When receiving a message from the remote mail system, TCLINK passes the SET_KEYS object to TCOSS. The message originator must specify the address of the Key System as an AUTHORIZE recipient. At the moment, an MQ or FI address must be used for the Key System.

When receiving a message from TCOSS containing the banking key information, TCLINK also transfers the SET_KEYS object to the remote mail system.

Authorizing

When the All-for-one Key System gets the message, it reads the banking key data and calculates or validates the key. It returns a new type of notification to TC/LINK, containing the modified SET_KEYS, a notification status signaling success or error, the TCOSS message id of the original message, and the modified message text.

TC/LINK reads the ID of the original message and opens the original message in the KCS message store. If TC/LINK cannot access the message because it timed out, TC/LINK discards the notification (TCOSS already created a non-delivery notification).

If the notification from the Key System signals success (`int_status` is `POS_TERM`), TC/LINK authorizes the original message: The currently active recipient (the Authorizer) is set inactive. If there is another authorizer that has not yet been serviced, TC/LINK sets him active. Otherwise, all other inactive recipients are set to active. Thus, the message will be routed either to the next authorizer (if there is any) or to the real recipients. TC/LINK writes back the SET_KEYS and message body from the notification to the original message. The message is then posted to TCOSS for correction.

If the notification from the Key System signals failure (`int_status` is `NEG_TERM`), TC/LINK creates a non-delivery notification for the original message. This non-delivery notification includes the modified

SET_KEYS object and the modified message body from the notification. TC/LINK posts the non-delivery notification to TCOSS.

Error Handling

Original Message Timeout

If TC/LINK cannot open the original message, because it does not exist in the message store any more, it considers the message to be timed out and discards the notification. In this case the original message has already been negatively terminated by TCOSS.

Loss of connection to TCOSS

If the connection to the TCOSS server gets lost during authorizing or creation of a non-delivery notification, TC/LINK tells the special link software (FI or MQ) to back out the mail message and goes to idle mode.

After the idle mode, the special link software will try to transmit this message again.

Conversion Errors

If the notification from the Key System for some reason cannot be converted, but contains at least the KCS message id of the original message, TC/LINK terminates the original message via a non-delivery notification.

Corrupted Message from Key System

If the notification from the Key System does not contain the KCS message id of the original message, TC/LINK cannot correlate it to any existing TCOSS send order. It writes an event log entry and discards the notification.

Event Log Entries

| Code | Severity | Description | Corrective Action |
|------|----------|--|--|
| 5134 | Warning | Message from Key System could not be posted to TCOSS because the connection to TCOSS was lost. | A TCSI trace of the message is written to the trace file. The message will be backed out and retried later. |
| 5135 | Error | Corrupted message from Key System was discarded. | Check the trace file. It contains a TCSI trace of the corrupted message object. Check the version numbers and the configuration of TC/LINK and the Key System. |

KCS Probe Agent Support

The KCS Probe Agent (TC/PROBE, installed with KCS setup) is a server application for system monitoring. It sends periodic test messages throughout the system and monitors their performance.

The following enhancements integrate TC/LINK with TC/PROBE. For a better understanding of TC/PROBE, refer to the *TC Probe Agent Technical Manual*.

Automatic Probe Replies from TCLINK

TCLINK can be configured to terminate probe messages immediately, without passing them to the remote mail system, and to create an immediate reply.

This is useful if the customer does not want to include the remote mail system in the monitored path.

For this purpose, configure the following two settings in the TCLINK registry.

| Registry value | Type | Default | Description |
|------------------------|------|---------|--|
| Probe\ProbeAgent | SZ | | Probe agent User ID 1 to 112 characters |
| Probe\ProbeDestination | SZ | | Probe destination address |

Example:

ProbeAgent = TCPROBE
ProbeDestination = @@@PROBE

A message from TCPROBE:00235 with destination address TCLMXQI:@@@PROBE is picked up by TCLINK. As the queue name of the originator (TCPROBE) matches the configured ProbeAgent name and the address of the recipient (@@@PROBE) matches the configured ProbeDestination, TCLINK immediately terminates the message and returns a reply. The reply message has the same content as the probe message.

These addresses are not subject to address mapping.

Content conversion is done for the message.

Both registry keys must be filled (not blank) to enable this option.

Optional Dedicated Queue for Probe Messages

It is possible to define one dedicated probe message queue for every link instance. This queue will be polled in addition to the normal link queues. Thus, a dedicated link instance can be defined as a probe endpoint.

| Registry value | Type | Default | Description |
|------------------|------|---------|---|
| Probe\ProbeQueue | SZ | | Additional queue name, ending with a graphic format character, such as FI1PRBI. |

Option to Request a Probe Message Automatically

This section describes the option to request a probe message automatically.

Request Probe If No Messages Sent

TCLINK can be configured to request an immediate probe message for the following conditions:

- No message transfer from KCS to the remote mail system for more than xx minutes.

- No message transfer from the remote mail system to KCS for more than xx minutes.

In this respect, message transfer means that a message is received from one side and is posted to the other side successfully. This ignores notifications, messages that cannot be converted and messages that cannot be posted.

Configuration

| Registry value | Type | Default | Description |
|-------------------------------|----------|---------|--|
| Probe\ RequestIntervalM2TC | DWORD | 0 | Disabled if 0. > 0: duration in minutes for pause in traffic mail->TC that triggers a probe request |
| Probe\ RequestM2TC | SZ | 0 | Probe definition ID for this probe request. Must exist in the database. |
| Probe\ CodesM2TC | MULTI_SZ | | Every line defines a condition that leads to a probe request. See below for details. |
| Probe\ RequestIntervalTC2M | DWORD | 0 | Disabled if 0. > 0: duration in minutes for pause in traffic TC->mail that triggers a probe request |
| Probe\ RequestTC2M | SZ | 0 | Probe definition ID for this probe request. Must exist in database. |
| Probe\ CodesTC2M | MULTI_SZ | | Every line defines a condition that leads to a probe request. See below for details. |

Note The probe definition ID is the text displayed at the top of the probe definition details in TCMC, such as PD0000000005.

The probe request is issued by sending a message to the Probe Agent, therefore the `Probe\ProbeAgent` registry key must be defined also.

Request Probe If Error Occurs

Additionally, you can configure an automatic probe request at certain error conditions. This is done via the `CodesM2TC` and `CodesTC2M` registry values.

`CodesM2TC` defines which errors during conversion of a message from the mail system lead to a probe request.

`CodesTC2M` does the same for messages from KCS.

Both registry values consist of a sequence of strings. Every line is an error definition. The probe request can be done the first time an error occurs, or after a configured number of errors in sequence, for example, when the document conversion fails for the third time.

Every line has the format:

```
<error code> = <number of errors>
```

Example: LG=3 (when document conversion fails for the 3rd time).

You can configure the following error codes.

| Error code | Meaning | Direction |
|------------|--|---------------|
| LE | Image conversion failed | Mail -> TCOSS |
| LG | Document conversion failed | Mail -> TCOSS |
| LH | Wrong address format for recipient | Both |
| LI | Wrong address format for originator or passive recipient | Both |
| LJ | Recipient not accepted by TCOSS | Mail -> TCOSS |
| LK | Originator not accepted by TCOSS | Mail -> TCOSS |
| LL | Originator has insufficient permissions | Mail -> TCOSS |
| LM | TCOSS server inaccessible | Mail -> TCOSS |
| LY | General message conversion error | Mail -> TCOSS |
| LX | General message conversion error | TCOSS -> Mail |
| M0 | Terminated by link exit | Both |
| M1 | License limit reached | Both |
| * | All errors in this list | Both |

Implementation

For both directions of sending, TCLINK counts all errors occurring during message conversion. If a message is transferred successfully, all error counters for this direction are reset to 0.

If an error occurs and one of the error counters reaches its limit, a probe request is sent, and the error counters are reset to 0 again.

KCS Messaging Analyzer Support (TC/MA)

Important This section describes integration with the product KCS Messaging Analyzer. This product is a variant of TC/REPORT that requires additional software from HyperSoft.

Additional Information Provided When Posting Message to TCOSS

With TCOSS version 7.56.03 and above, an application can pass additional information to TCOSS via the field TS_REC_QUEUE. An application that polls a queue (like all links do) shall write the default queue name into this field.

The TC/Report Fetch agent reads this information when preparing message tracking events for KCS Messaging Analyzer. Based on the queue name passed in TS_REC_QUEUE, it is possible to show the correct media type, such as Notes message and connector name, such as TCLINKLN even though the message originator is a KCS shadow user.

TCLINK.EXE fills this field correctly.

Configurable Extension for ++ Options Attachment

The so-called “++ commands” are a basic feature of TC/LINK. It is possible to specify all ++ commands in a text attachment with a special extension (OPT). If TC/LINK encounters an attachment with this extension, it evaluates the ++ commands and then discards the attachment.

With former versions, this happened for all attachments with extension OPT. Now, the extension is configurable, because OPT attachments have a different meaning for TC/LINK-SM or TC/LINK-OC instances that are part of a KCS Messaging Analyzer installation.

The `General\OptFileExtension` (REG_SZ) registry value allows to specify the extension for attachments with ++ commands. Default is “.OPT” (the leading dot must be specified).

Default Media Type and Application Name for Queue Users Created by TCLINK

In a KCS Messaging Analyzer installation, queue users must be configured with correct media type and application name fields.

If TC/LINK is configured for automatic creation of KCS dependencies, all newly created link queues have default values for media type and application name.

The application name field is filled with the link group name (by default: the name of the link’s registry subkey).

The media type field is filled according to the link type. See the following table.

| Link type | Media type (numeric) | Media type (displayed in TCFW) | Sub domain in TC/MA reports |
|----------------------------|----------------------|--------------------------------|-----------------------------|
| TC/LINK-FI | 6 | File interface message | tcfi |
| TC/LINK-LN | 3 | Lotus Notes message | notes |
| TC/LINK-MD | 13 | SMS message | sms |
| TC/LINK-MQ | 9 | MQ message | mq |
| TC/LINK-SC, TC/LINK-SI | 10 | SAP message (via TC/LINK-SC) | sapsc |
| TC/LINK-SM | 12 | SMTP message | internet |
| TC/LINK-SDD | 12 | SMTP message | internet |
| TC/LINK-MX7 | 12 | SMTP message | internet |
| TC/LINK-SJ | 21 | Printout | print |
| TC/LINK-WM | 13 | SMS message | sms |
| TC/LINK-MFP, TC/LINK-RS | 21 | Printout | print |
| TC/LINK-OC | 12 | SMTP message | internet |

Monitoring Link Performance

For every link installed, there is a performance object with the same name as the link's registry subkey, containing a set of general performance counters.

Note Additional counters can be defined for special links. Refer to the *special link documentation*.

General TCLINK performance counters

| Counter name | Description |
|--------------------------------------|--|
| Messages from TCOSS (total) | Number of messages received from TCOSS since TC/LINK was started. |
| Messages from TCOSS (last hour) | Number of messages received from TCOSS during the last hour. (1) |
| Messages from TCOSS (today) | Number of messages received from TCOSS since midnight. |
| Rejected Messages from TCOSS (today) | Number of messages from TCOSS that were rejected by TCLINK (since midnight). |
| Messages to TCOSS (total) | Number of messages received from mail system since link start. |
| Messages to TCOSS (last hour) | Number of messages received from mail during the last hour. (1) |
| Messages to TCOSS (today) | Number of messages received from mail since midnight. |
| Rejected Messages to TCOSS (today) | Number of messages from mail that were rejected by TCLINK (since midnight). |
| Notifications from TCOSS (total) | Number of notifications received from TCOSS since link start. |
| Notifications from TCOSS (last hour) | Number of notifications received from TCOSS during the last hour. (1) |
| Notifications from TCOSS (today) | Number of notifications received from TCOSS since midnight. |
| Notifications to TCOSS (total) | Number of notifications received from mail since link start. |
| Notifications to TCOSS (last hour) | Number of notifications received from mail during the last hour. (1) |
| Notifications to TCOSS (today) | Number of notifications received from mail since midnight. |
| Dirsynched Users (total) | Number of KCS user profiles created, changed or deleted by directory synchronization (since link start) |
| Time in Mail DLL (msec) | Total time spent in the mail-system specific part of TCLINK. (2) |
| Time in TOPCALL Access (msec) | Total time spent in routines accessing the TCOSS server. (2) |
| Time in TCDC (msec) | Total time spent for document conversion. (2) |
| Time in Link (msec) | Total amount of time spent in other conversions routines done by TCLINK. (2) |
| % Time in Mail DLL | Proportional share of link active time that was spent in the mail-system specific part of link. $(100 * \text{Time in Mail DLL} / \text{Active Time})$. |

| Counter name | Description |
|--------------------------|---|
| % Time in TOPCALL Access | Proportional share of link active time that was spent in routines accessing the TCOSS server. (100 * Time in TOPCALL Access / Active Time). |
| % Time in TCDC | Proportional share of link active time that was spent in document conversion. (100 * Time in TCDC / Active Time). |
| % Time in Link | Proportional share of link active time that was spent in other conversion routines. (100 * Time in Link / Active Time). |
| TCLINK Activity | The value of this counter is either 1 (link active) or 0 (link idle). |

Note

- For “last hour” counters, the counter value is updated every minute.
- The “Time in ...” counters are started at link start. The sum of all four “Time in ...” counters is called the link’s “Active Time”. Whenever the active time reaches an internal maximum (approximately 49 days), all “Time in ...” counters are reset to 0.
- All counters are reset when TC/LINK is restarted.

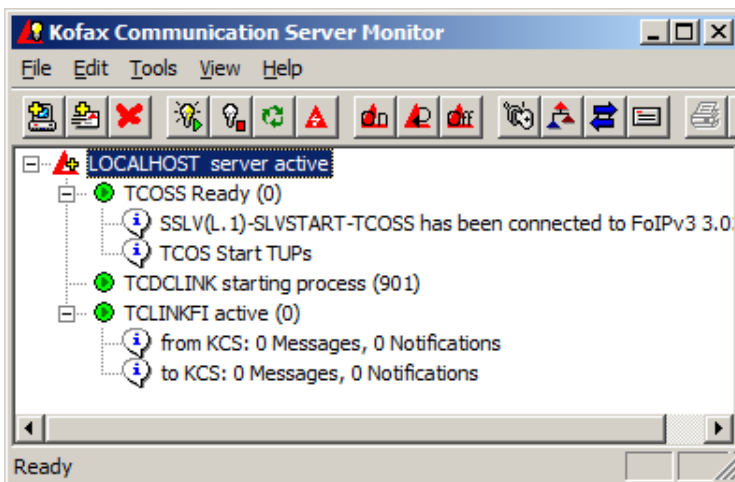
Per-process performance counters provided by TCSRVS

TCSRVS is able to create a performance counter that monitors the availability of a process. The counters are created for the object “Boot”, and the counter name is the name of the process, such as TCLINKFI, TCDCLINK, and the rest. If a process is running, its counter is set to 0, otherwise it is nonzero. For example, if it is stopped, it is set to 901, if it fails, it is set to 2900.

To enable this feature, set the HKLM\Software\Topcall\Boot\EnablePerformanceCounters registry key to 1.

Kofax Communication Server Monitor

The current status of TC/LINK is displayed in the Kofax Communication Server Monitor.



When TC/LINK is running, its status is either “active” or “no connection to KCS or Mail System”.

The “no connection to KCS or Mail System” status means that the link is not yet connected or has lost its connection to the KCS server or to the remote mail system. After a successful logon (retry), the status changes to “active”.

Two additional status lines display the number of messages and notifications sent to and from KCS since link startup.

Viewing and Changing Link Setup

TC/LINK configuration parameters are first set during link installation. The configuration is stored in the local registry, under the `HKEY_LOCAL_MACHINE \ Software\TOPCALL\ <link name> key`.

Later, they can be configured (locally and from remote) via the Windows registry editor (REGEDT32.EXE).

In the setup description, you can find the names of the registry keys.

Note TC/LINK must be stopped and restarted before the changes become effective.

Handling of Messaging Problems

This section describes the handling problems in messaging.

Non-Recoverable Errors

If one of the following situations occurs, TC/LINK logs the error to the event log and terminates:

- Link cannot start (several reasons, e.g. no license, bad configuration, not enough memory)
- Link cannot connect to KCS and remote mail system at startup
- Link loses connection to remote mail system during operation; with several links this is a recoverable error. Refer to the *special link manuals*.
- Activity timeout (only if started by TCSRVR, see [Timeout Handling](#))
- Maximum store capacity reached on TCROSS mail system (error 308 when posting a message).

The link is then restarted by TCSRVR. As a default, TCSRVR makes three retries to start TC/LINK. If TC/LINK still cannot start, TCSRVR tries to restart it once every hour.

The number of startup retries can be configured via the following two registry keys:

`HKEY_LOCAL_MACHINE\Software\TOPCALL\<Link Name>\StartupRetries1`: This integer value (default = 3) specifies the initial number of tries to start TC/LINK. This value is used if this is the first attempt or if the link ran properly for at least 10 minutes.

`HKEY_LOCAL_MACHINE\Software\TOPCALL\<Link Name>\StartupRetries2`: This integer value (default = 1) specifies the tries to start TC/LINK after previous attempts failed and TCSRVR waited one hour to restart the link.

Recoverable Connection Errors

If TC/LINK loses connection to the TCOSS server during operation, it does the following things:

- Logs the error to the event log.
- Disables message transfer for some time. The `TOPCALL\LogonRetry` registry key holds the number of poll cycles to wait.
- Restarts message transfer.

Message Conversion Problems

Mail System to KCS

- If the mail message cannot be converted to KCS format or if an unrecoverable error occurs during message conversion, TC/LINK will return a non-delivery report to the originator.
- An alternative error handling can be configured, see next section.
- Normally, TC/LINK does not stop at a message conversion problem. Nevertheless, you can configure TC/LINK to stop after any document conversion error by setting the `General\DocConvErrorIsFatal` (REG_DWORD) registry value to 1 (default = 0). The registry value is created by TCLINK at the startup.

When TCLINK stops due to a document conversion error, it writes the following message to the application event log.

| Description | Error code | Comment | Corrective Action |
|----------------------------------|------------|--|---|
| Fatal document conversion error. | 5156 | TCLINK stopped due to document conversion error. | Check status of TCDCLINK and applications used for document conversion. |

For this feature, the recommended settings of `Hk1m\Software\Topcall\TCLINKxx\Startupxxx` are:

- `Hk1m\Software\Topcall\TCLINKxx\StartupRetries1` set to 0
- `Hk1m\Software\Topcall\TCLINKxx\StartupRetries2` set to 0
- `Hk1m\Software\Topcall\TCLINKxx\StartupCycle` set to value, such as 1440 (1440 minutes = 24 hours) or any other value of the customer's choice.

KCS to Mail System

If an error occurs while a message is being converted, the KCS message will be negatively terminated.

Forwarding Failed Message to Exception Queue

Mail System to KCS

As an alternative to the standard error handling described above, TC/LINK can react to document conversion errors by forwarding the message to an exception queue.

Background

This option was implemented for the solution Kofax Communication Server – Advanced Email Capture, where all incoming emails are automatically classified and all business-critical data is extracted both from

the text of the email and from all attachments. After the data has been validated, they are passed on to relevant back-end applications.

In order to extract attachment data, file attachments are processed via the document converter while the message is being received by TC/LINK-SM.

Description

If this feature is enabled, emails with body or attachment that cannot be converted will be sent to an exception queue (a TCROSS queue or mailbox, or any other destination address), where an administrator, operator or other dedicated person can take a look at them.

Optionally, TCLINK can add a text block with metadata to the exception queue message. A document in the TCLINK message store defines which values are merged into the text. This is done in the same way as with notification cover sheets (see [Notifications into Mail](#)). If configured for automatic creation of KCS dependencies, TCLINK installs a message called EXCEPT in the TCLINK message folder, with the following content:

```
Message details:

Message      : "$ERef$"
  created by   : $UName$
  processed by : $LinkId$ ($Computer$)

could NOT be sent...
  to Receiver  : $Name$ ($Txt$)
  Reason       : $Lnote$ ($Laction$)
  at           : $Date2$ $Time1$

Extended error:
$ExtError$
```

The variable \$ExtError\$ is replaced by an error string that contains the name of the offending attachment and an error description. In case of message body conversion errors, the \$ExtError\$ is replaced with "Error converting body part text.html".

Variable \$LinkId\$ is replaced by the name of the link instance, and \$Computer\$ by the computer name.

Depending on the first active recipient of the email, different exception queues can be used. The mapping between recipient addresses and exception queues is configurable. In the message forwarded to the exception queue, original recipient addresses are set to inactive.

With standard settings, the sender receives a delivery notification (if requested) after the message has been delivered to the exception queue. The "reply-to" address of the delivery notification is the original recipient.

Alternatively, TCLINK can be configured to return a non-delivery notification instead (as the message has not been delivered to the intended recipient).

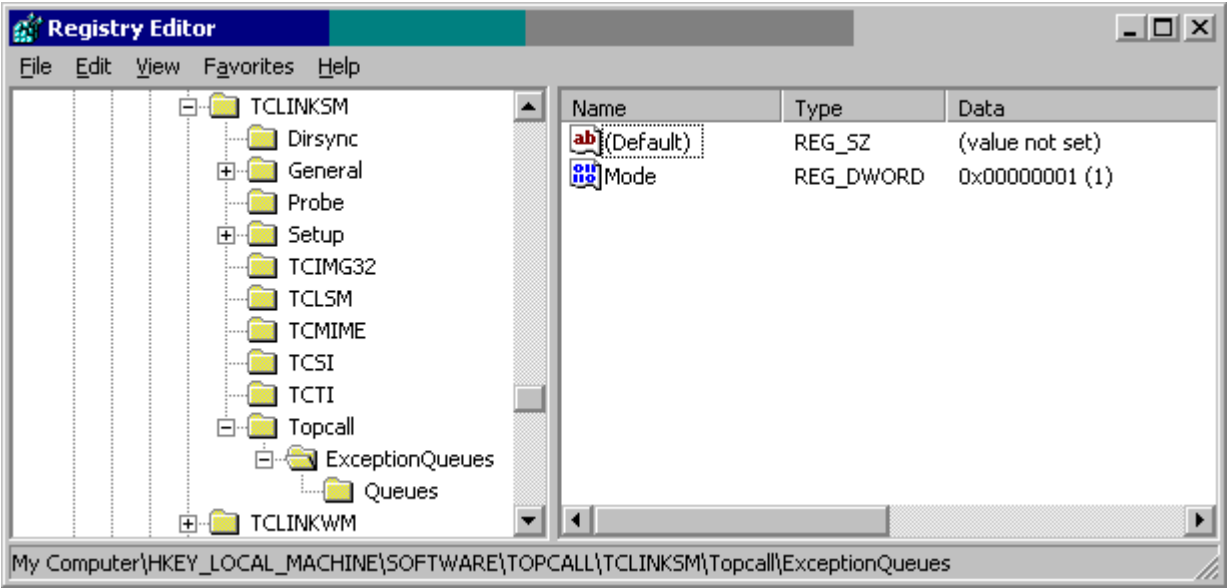
Usability for other link types

Although initially used by TC/LINK-SM only, this feature can be activated for all link types.

Caveat: Only TC/LINK-SM stores the "reply-to" information in the delivery notification. A notification created by another link type does not contain the original destination address.

Configuration

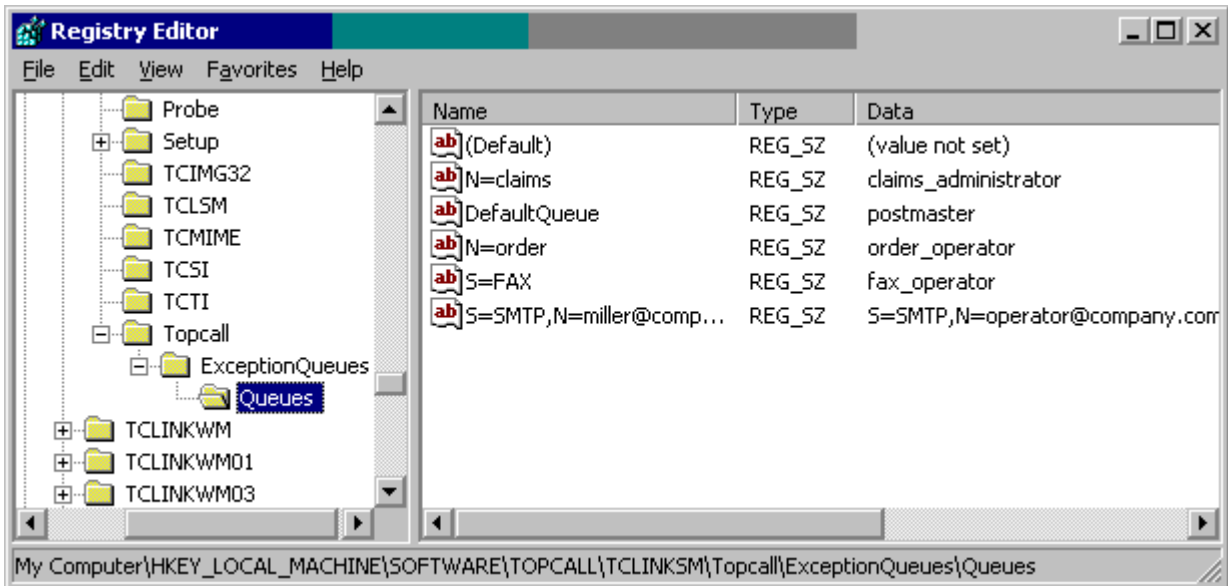
HKLM\Software\Topcall\<LinkName>\Topcall\ExceptionQueues: This registry sub key contains settings for exception queue handling.



The following values are defined below the ExceptionQueues sub key:

| Name | Type | Default | Description |
|-----------------|-------|---------|---|
| Mode | DWORD | 0 | 0: No exception queue handling 1: On body/attachment conversion error, forward message to an exception queue <div>Note In the future, additional values (error conditions) may be defined.</div> |
| Cover | SZ | | Defines the TCOSS document used to generate the optional metadata text block. Syntax: folder/filename Example: TCLINK/EXCEPT |
| SendNonDelNotif | DWORD | 0 | 0: Return a delivery notification to the sender 1: Return a non-delivery notification to the sender |
| Queues | Key | | Holds individual string values defining the correlation between recipient address and exception queue. |

Registry sub key Queues.



For each registry value below Queues, the name must match one of the following syntax descriptions. Lookup is done in exactly this order.

| Syntax | Description |
|------------------------|---|
| S=<service>,N=<number> | Specifies a complete target address. Example: S=TOPCALL,N=claims |
| N=<number> | Specifies a target address (without service) or user name. Example: N=claims |
| S=<service> | Specifies a target service only. Example: S=FAX |
| DefaultQueue | Applies if no matching value is found so far. |

The content of the registry value is either a user name, or a destination address in the format "S=<service>,N=<number>".

User name, service and number refer to TCOSS address format (that is, after address mapping). The following examples illustrate this:

- Example 1: The recipient of an email is specified as claims@kcs.company.com when the email is composed. TC/LINK-SM maps this address to the KCS user "claims". The corresponding exception queue can be specified in the registry value "N=claims", or in a registry value that also contains the TOPCALL service used in the user profile. For example, "S=TOPCALL,N=claims".
- Example 2: The recipient of an email is specified as samplefax#FAX#863530@kcs.company.com. TC/LINK-SM maps this address to service "FAX", number "863530", full name "samplefax". When looking for an exception queue, TC/LINK searches for registry values "S=FAX,N=863530", "N=863530" and "S=FAX" (in this order).
- Example 3: The recipient of an email is specified as TOPCALL#claims@kcs.company.com. TC/LINK-SM maps this address to service "TOPCALL", number "claims". When looking for an exception queue,

TC/LINK searches for registry values “S=TOPCALL,N=claims”, “N=claims” and “S=TOPCALL” (in this order).

The names of these registry values are treated in a case-insensitive way, such as “claims” and “CLAIMS” are semantically identical.

The data stored in these values is case-sensitive, though, for example, if the name of the responsible TCROSS exception queue is “claims_administrator”, you must use the same spelling (no uppercase characters).

Services specified in exception queue addresses must exist before TCLINK starts.

Related settings

This feature will apply if document conversion is enabled via one of the following mechanisms.

| Mechanism | Description |
|---|--|
| Recipient has an active address that does not support binary format | For all attachments |
| General\AltForceBinToTci = 1 | For all attachments |
| General\AltExtSuppressBinary = list of extensions | For attachments with configured extensions |

The following registry settings overrule and disable the exception queue feature.

| Registry key | Description |
|-----------------------------------|--|
| General\DocConvErrorIsFatal = 1 | Document conversion errors are treated as fatal errors. Message conversion fails and TCLINK stops. |
| General\IgnoreConversionError = 1 | This setting is used by TC/LINK-MFP. TC/LINK-MFP has its own mechanism to handle document conversion errors. |

Restrictions

The exception queue mechanism is currently only implemented for document conversion errors (affecting message body or attachments).

If an additional message conversion error is encountered, such as missing originator rights or missing license, the incoming message will be rejected and is not sent to the exception queue.

The service specified in the exception queue address must exist at link startup time. Otherwise, the email is rejected and is not forwarded to the exception queue.

Message Delivery Problems

Mail System to KCS

If TC/LINK cannot deliver a message to KCS, it returns a non-delivery report to the mail originator. If configured to return notification texts, the report includes a standard error text followed by error messages if available.

KCS to Mail System

If TC/LINK encounters a problem when sending a message to any mail system type, it will immediately cancel the message and post a retry request to TCROSS. TCROSS decrements the retry counter of the

TCOSS send order, and the last MDA-Note is filled with an error description. The retry interval depends on the retry counter.

In addition, if TC/LINK terminates a mail entry negatively, and if there is an alternate recipient address in the original message (put there by the originating channel), TCOSS sends the message to this alternate address, such as an operator.

Notification Loop Detection

In some mail systems it may happen that an automatic reply is returned for every message sent to a user, for example, via Out of Office Assistant in MS Exchange. This is a potential source of a notification loop. If TC/LINK returns a text notification for this automatic message, another automatic reply is triggered, which in turn causes a notification, and more.

Some link types, such as TC/LINK-SM can recognize automatic replies from the remote mail system via special message properties.

For link types that cannot recognize automatic replies, TC/LINK implements a general mechanism to break notification loops. By default, this mechanism will work only if the subject of the automatic reply consists of a fixed prefix followed by the original subject. Additionally, the subject of the KCS notification cover sheet must not start with a variable (see [Notifications into Mail](#)).

The following is an example of this kind of message loop:

A mail user sends a fax message and then turns on his/her automatic answering agent.

1. Original message subject:
"Important news"
2. Delivery notification from KCS:
"TOPCALL Delivery Notification: Important news"
3. Automatic reply:
"RE: TOPCALL Delivery Notification: Important news"
4. Delivery notification from KCS:
"TOPCALL Delivery Notification: RE: TOPCALL Delivery Notification: Important news"

In the resulting notification loop, the last two steps will be repeated endlessly, and the message subject will contain many repetitions of the delivery notification subject and the prefix "RE:" added by the automatic reply.

Note The automatic reply will be sent to the fax every time.

You can configure after which number of repetitions TC/LINK recognizes such a loop.

`General\NfLoopDetectionSubjects (REG_MULTI_SZ)`: To detect automatic replies with a fixed subject (not containing the original message subject), you can configure a list of notification subject strings in this registry value. If this registry value does not exist at the link startup, TCLINK will create it (empty). TCLINK is case-insensitive, that is, "request not valid" and "REQUEST NOT VALID" are treated in the same way.

When TC/LINK recognizes a notification loop, it can break the loop via two (configurable) methods:

- With link types supporting system and text notifications, only a system notification is returned.
- With link types supporting only text notifications (such as TC/LINK-FI), TC/LINK suppresses the notification completely.

`General\NfLoopDetection`: The value of this key specifies (to TC/LINK) how to break notification loops:

| | |
|---|---|
| 0 | Loop detection disabled (default) |
| 1 | Break loop by sending only system notification |
| 2 | Break loop by suppressing the notification completely |

`General\NfLoopRepeats`: This registry value specifies (to TC/LINK) at which loop repetition the loop should be broken. The default value is 2; this means that TC/LINK stops the loop when it should return a notification for the automatic reply to a notification (see step 4 in the scenario above). Values below 2 do not make sense, as they affect all notifications from KCS.

Note If the subject is part of the `NfLoopDetectionSubjects` list, the `NfLoopRepeats` setting is not relevant.

TC/LINK will create the following event log warnings if it detects a notification loop.

| Code | Severity | Description | Corrective Action | Parameters |
|------|----------|--|--|---------------------|
| 5142 | Warning | Notification loop detected. Subject is %1. | No action required. TCLINK will try to break the loop. | %1: message subject |
| 5143 | Warning | Notification loop detected, text notification discarded. | No action required. TCLINK breaks the loop by suppressing the text notification. | |
| 5144 | Warning | Notification loop detected, notification discarded. | No action required. TCLINK breaks the loop by discarding the notification. | |

Timeout Handling

The `General\AllowedDelay` (DWORD) registry key defines an allowed period of inactivity in minutes (default=10 minutes). Inactivity means no message polling, no dirsnc, no proceeding in link startup.

When TCSRv polls TCLINK for its status, TCLINK.EXE checks if the delay since the last activity (as defined above) is greater than `AllowedDelay`. If this is the case, TCLINK reports a fatal error to TCSRv and TCSRv restarts TCLINK.EXE.

To disable this feature, set the `General\NoWatchDog` (DWORD) registry value to 1 (default = 0).

There is still no check for inactivity during document converter actions.

If TC/LINK loses connection to KCS, it waits for a specified time until it tries to connect again. During this idle time, the inactivity timeout is periodically retriggered and therefore cannot expire.

Version Check

When TCLINK starts, it checks if its component software modules are up to date. If it finds a module with an incorrect version number, TCLINK does not proceed.

TCLINK uses the TCCLIENT.INF file to know which module versions are required. TCLINK checks if the checksum in TCCLIENT.INF is correct. If not, TCLINK logs a warning to its trace file, but proceeds.

Module Versions

The required TCROSS version is parameter VERSION in the [TCROSS] section of this file. The remaining module versions are in the [MODULES] section.

Examples:

```
[MODULES]
TCSI32=+2.17.00
TCLINK=1.10.00
```

Version numbers starting with '+' are minimum version numbers. All others must match exactly.

Modules

TCLINK checks the versions of the following modules:

TCLINK.EXE

Special link DLL (name depends on link type)

- TCIMG32.DLL
- TCSI32.DLL
- TCDC32.DLL
- TCDCEXE.EXE
- TCDCKEY.DLL
- USRIO.DLL
- USRDDE.DLL
- TCLIB32.DLL
- TCRPC32.DLL
- TCDDIMON.DLL

As a rule, the version of an installed module is determined via a special function provided by the module. For modules without such functionality, TCLINK examines the VERSIONINFO resource.

If any module is not represented in TCCLIENT.INF, TCLINK uses a built in default for the requested version.

Error Handling

If TCLINK encounters a module in DEBUG version (version number starting with "DEBUG "), it writes a warning to the application log (and trace file).

For every module with a wrong version, TCLINK writes an entry into the application log (and the trace file), in the format:

"Version Error in Module xy: Version is x.x.x.x instead of y.y.y.y"

If any version error was encountered, TCLINK terminates.

Error Logging and Tracing

This section describes the error logging and tracing information.

TC/LINK Error Logging

TC/LINK writes three categories of information into the Windows application event log:

Information

The links log important steps of their processing like link start, link stop, directory synchronization and creation of KCS dependencies.

Warning

The links inform the operator about problems that are not fatal, like refusing a message for security reasons, invalid message components, or problems in document conversion. If possible, the event log entry also tells why the problem may have occurred and what can be done to solve it.

Error

Error type events are events that make normal link operation impossible. After an error, the link is either stopped or in idle mode. Typical error conditions are problems in automatic creation of KCS dependencies, no connection to KCS, or no connection to remote mail system. The error text includes a detailed error description and (whenever possible) hints how to solve the problem.

All event log entries are also written to the TC/LINK trace file, regardless of the trace level.

Trace Files

TC/LINK Trace file

Additionally, TC/LINK logs its actions into a trace file. An event is logged to the trace file if its log level is smaller or equal to the trace level set in TC/LINK setup. The trace file can be found in the `C:\TCOSS\TRACE` directory, its name starts with the link name, followed by a number and the extension TRC. For example, `TCLINKLN0.TRC`.

General TCLINK trace

The trace level configured at setup (Registry `General\Tracelevel`) determines how much information is written to the trace file:

For normal operation, the trace level can be 0. At trace level 0, only error messages are written to the trace file. For problem searching, the trace level should be increased to 100.

Working set size monitoring:

Normally, TCLINK determines its working set size once per poll cycle and writes the value to the trace file (at trace level 10 or above). At trace level 100 or above, TCLINK traces the working set size in several steps during the message conversion. This may be useful for troubleshooting.

Tracing of the working set size can be disabled by setting the `General\TraceMemoryInfo` registry value to 0.

TCSI-level trace

If TCSI-level trace is activated (registry `TOPCALL\TCSIDebug = 1`), all messages received from and posted to the Kofax Communication Server are written to the trace file. This is done even at trace level 0. This feature is only for error debugging, it must be turned OFF for normal operation.

If registry value `General\TraceSmall` is 1, binary blocks are not included in the message trace.

MAIL-level trace

If MAIL-level trace is activated (registry `General\MailDebug = 1`), all messages received from and posted to the other mail system are written to the trace file. This is done even at trace level 0. This feature is only for error debugging, it must be turned OFF for normal operation.

If the `General\TraceSmall` registry value is 1, binary blocks are not included in the message trace.

Mail-Specific Trace

The mail-specific code can also log its activities to the TCLINK trace file. Depending on link type, this may include information about communication with the mail server.

The mail specific traces are activated in a different ways, depending on link type.

| Link type | Registry key | Evaluated range |
|--|--|--|
| TC/LINK-FI | <code>General\TraceLevel</code> | 0 to 255 |
| TC/LINK-LN | <code>NOTES\TraceLevel</code> | 1-10: Normal Operation 11-49: Detailed Trace 50-499: Debug Level |
| TC/LINK-MQ | <code>General\TraceLevel</code> | 0 to 255 |
| TC/LINK-SC | <code>SAP\TraceLevel</code> | interpreted bit-wise: bit 0: errors bit 1: RFC trace bit 2: function calls + open objects |
| TC/LINK-SM TC/LINK-MX7 TC/LINK-SC7 TC/LINK-SDD TC/LINK-MFP | <code>General\TraceLevel</code> <code>TCLSM\TCPDebug</code> | 0 to 255 0 or 1 |
| TC/LINK-WM | <code>General\TraceLevel</code> | 0 to 255 |

TCSI Trace

As with other KCS applications, the TCSI trace can be configured via the `TCSI\DebugLevel` registry key. Refer to the *TCSI Technical Manual - Client Server Interface* for possible settings. The TCSI trace is inserted into the link trace file.

The TCSI trace should be disabled for normal operation.

TCTI Trace

In a similar way, a TCTI trace can be configured via the `TCTI\TraceLevel` registry key. The TCTI trace is also written to the link trace file.

The TCTI trace should be disabled for normal operation.

Document Converter Trace

Refer to the *Document Conversion Technical Manual*.

TCSRVS Trace File

TCSRVS.EXE can also write a trace file. This trace can be helpful if there are problems starting the link as a service. The name of this file is `C:\TCOSS\TRACE\BOOTx.TRC`. The amount of information logged depends on the setting of the `HKEY_LOCAL_MACHINE\Software\TOPCALL\Boot\TraceLevel` registry key.

Recommended values: 0x01 (for normal operation) or 0x03 (for debugging purposes).

Size limits

The link trace files are limited in size. Size and number of trace files are configured via the `MaxTraceFileSize` and `MaxTraceFiles` registry settings. Two trace files, 1 MB each, are configured by default.

Printer Trace Files

Refer to the *Document Conversion Technical Manual*.

SNMP Support

SNMP support allows monitoring the KCS environment from industry standard SNMP management consoles like HP-OpenView and IBM-NetView. Through the use of SNMP management consoles, system administrators are able to constantly monitor the KCS environment for proper operating.

Information is provided in the form of SNMP traps and MIB (Management Information Base) objects. A trap is generated if an event log message was created. MIB objects provide information about the actual state of the system like for example the number of message transferred. With TC/SNMP they are based on performance counters.

Prerequisites

SNMP support is based on the Microsoft Windows SNMP Service. This service is installed and configured as part of the operating system installation procedure. Kofax Communication Server setup installs TC/SNMP as an extension to the Windows SNMP service.

Hint

During setup, the *.MIB files to be installed on the SNMP client are copied to the `C:\TOPCALL\SHARED\MIB` directory.

Refer to the *TC/SNMP Technical Manual* for further information.

Security

By default, any mail user is allowed to send messages via KCS. The mail user may use all KCS services and is also allowed to define a cost center for his message.

This section explains how TC/LINK can be configured to do advanced security checks.

Sending with KCS User Profile Only

`TOPCALL\ChkDisSend`: If this registry value is set to 1, only mail users with a KCS user profile are allowed to send.

Password Authentication

`TOPCALL\NeedPWD`: If this registry key is set to 1, every mail originator must be authenticated via a password specified in the `++PW` directive. The syntax is:

`++PW password`

KCS users specify the password from their KCS user profiles; other senders specify the password of the KCS guest user.

Check of User Rights

Several rights defined in the KCS user profile apply to TC/LINK operation:

- Change cost center
- Enter number directly
- Restricted use of services

By default, TC/LINK performs these actions without checking the rights of the mail originator.

`TOPCALL\CheckRights`: If this registry key is set to 1, these actions are only done if the mail originator has the corresponding rights.

- For a mail user with a KCS user profile, TC/LINK checks the rights defined in his profile.
- For a mail user without a KCS user profile, TC/LINK checks the rights defined in the KCS GUEST user.

These rights can be viewed and modified via TCFW on the Rights page of the user profile.

Change Cost Center

With several link types the user can specify the cost center of a message posted to KCS. The cost center can also be specified via the `++COST` text directive. If the mail originator (or the GUEST user) does not have the right to change the cost center, the specified per-message (or per-recipient) cost center will be ignored and TC/LINK will use the originator's default cost center.

Even the cost center defined in a default template is only taken if the originator has the right to change the cost center.

Enter Number Directly

If the originator of a message from mail (or the GUEST user, see above) does not have the right to enter a number directly, he may only send to recipients in the TCOSS recipient store. TC/LINK refuses messages with other recipients (a non-delivery notification is returned).

Restricted Use of Services

If the originator of a message from mail (or the GUEST user, see above) is only allowed restricted use of services, every recipient with an address needing authorization is set INACTIVE. If any recipient has been inactivated by this procedure, there must be an active authorizing recipient left. Otherwise, TC/LINK rejects the message and returns a non-delivery notification.

Note If there are several services for sending to a specific link, you should treat them consistently.

For example, if services SMTP and INETIFF are used for sending to the Internet in TCI and TIFF format, you should either allow sending for both or request authorization for both. Otherwise, the results may be confusing.

KCS GUEST User

You can define a special KCS user profile that holds user rights and message options for all mail originators without an own KCS user profile.

TOPCALL\GuestUser: This registry key holds the name of the KCS guest user profile.

- If the guest user profile exists, the following information is retrieved from it:
User rights, password, default cost center and default template for mail originators without KCS shadow profile.
- If the guest user profile does not exist:
 - Default template and default cost center for non-KCS originators are taken from the link user.
 - If checking of rights is enabled, originators without a shadow profile have NO RIGHTS.
 - If TC/LINK is configured for password authentication, non-KCS originators are not allowed to send.

Note TC/LINK reads the guest user profile only at startup. After changing the guest user profile, you must restart TC/LINK to make changes effective.

TCOSS Password Expiry

TCOSS version 7.33.00 and above offers a password expiry feature.

Note It is recommended to disable password expiry for the TCLINK user. This can be done via TCFW.

If password expiry is enabled for the TCLINK user, the following rules apply:

- Once a day, TCLINK checks if the password is going to expire. If the password will expire within ten days, TCLINK writes a warning to the event log.
- If TCLINK cannot login because the password has expired, it writes an error message to the event log and aborts. Use TCFW to change the password or to disable password expiry for this user. If the password was changed, the new password must be written to the `Topcall\Internal` registry key.

Eventlog messages

| Code | Severity | Description | Corrective Action |
|------|----------|---|---|
| 5138 | Warning | The password for TOPCALL user %1 will expire in %2 days. | Use TCFW to disable password expiry or to change the password. Write the new password to the <code>Topcall\Internal</code> registry key. |
| 5139 | Error | The password for TOPCALL user %1 has expired. | Use TCFW to disable password expiry or to change the password. Write the new password to the <code>Topcall\Internal</code> registry key. |
| 5140 | Error | Invalid password for TOPCALL user %1. The next attempt will lock the account. | Use TCFW to disable password expiry or to change the password. Write the new password to the <code>Topcall\Internal</code> registry key. |
| 5141 | Error | The TOPCALL user account %1 has been locked. | Use TCFW to unlock the account. Disable password expiry or change the password. Write the new password to the <code>Topcall\Internal</code> registry key. |

Changing Configured Passwords

The customer's security policy may include regular changes of Windows and TCOSS passwords. The Windows password of the TCLINK user is stored in the `Password` registry key. The TCOSS password for TCLINK is stored in the `Topcall\Internal` registry key. Both passwords are stored in encrypted format.

After a password change, it is possible to enter the new password (in plain text) via a registry editor. As soon as TCLINK has started, it writes back the encrypted passwords to the registry.

Exit Callbacks

It is possible to add nonstandard features to TC/LINK via a custom DLL (Exit DLL).

The DLL provides a callback function (*ExitCallback*), which is called by TC/LINK before and after TCLINK.EXE converts the message. In this function call (the so-called Exit), the DLL gets the TCSI handle of the current message or notification as a parameter. TC/LINK also passes the callback type as a parameter, which tells the DLL if this message is from KCS or from the remote mail system, and whether it has already been processed by TC/LINK. The callback function can change the message and tell TC/LINK to proceed with the changed message.

For example, the Exit DLL might compress or decompress file attachments or add additional recipients.

The usage of link exits is bound to special projects / requirements which must be handled via TOPValue commercial requests. Third party Exits can be used but there is no support for problems caused by these Exits.

The interface between the Exit DLL and TCLINK.EXE is defined in file EXITS.H and is documented in the TC/LINK Implementation Description.

The `General\ExitDll` (REG_SZ) registry key holds the path name of the Exit DLL.

When loading an Exit DLL, TC/LINK writes the following informational message to the Application Event Log.

| Code | Severity | Description | Parameters |
|------|-------------|--------------------|----------------------|
| 5146 | Information | Loaded Exit DLL %1 | %1: Name of Exit DLL |

TC/LINK Language File

The language file, TCL0x.LNG contains string contents that can be inserted into messages. The most important entries in this file are:

MSG_RECEIVED_FROM:

The default subject prefix for KCS messages without subject. For example, fax.

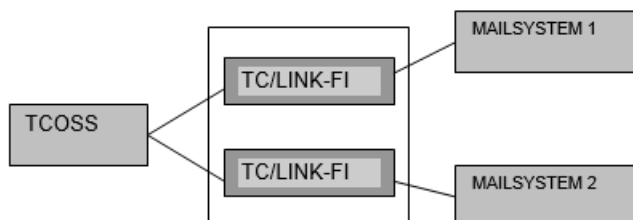
UNKNOWN_SENDER:

The default originator for a fax without TSI ("UNKNOWN").

Links in Parallel

This section describes using multiple LINKs in parallel.

Multiple Instances of the Same Link on One Workstation



- Same link computer
- Same link type
- In most cases, different mail servers

Installing multiple instances of a same link on the same computer is supported for the following links.

| Link | Supported | Remark |
|------------|----------------|--|
| TC/LINK-FI | Yes | |
| TC/LINK-LN | Yes | |
| TC/LINK-OC | not applicable | Only one instance is required. No mail server involved, receiving directly from clients. |
| TC/LINK-RS | Yes | |
| TC/LINK-SI | Yes | |

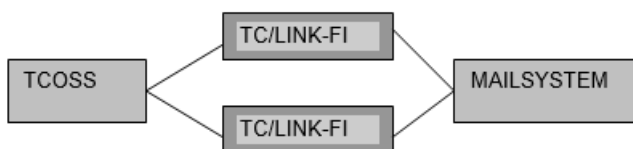
| Link | Supported | Remark |
|---|-----------|---|
| TC/LINK-SC | Yes | Access to more than one SAP R/3 client ("mandant"). Use TC/LINK-SC Configuration Tool to accomplish this. |
| TC/LINK-SJ | Yes | Access to more than one HP scanner service |
| TC/LINK-SM, TC/ LINK-SDD, TC/LINK-MX7 | Yes | Access to more than one SMTP mail server. Restriction: Messages to TCOSS are sent to one instance only, using the standard SMTP port. Remark: With 'direct delivery', only one instance is needed to send to many SMTP servers. |
| TC/LINK-WM | Yes | Access to different GSM boxes |
| TC/LINK-MQ | Yes | |

In general, it is not recommended to run more than one instance of the same link with identical configuration (sharing the same set of KCS queues and objects / directories of the remote mail system) on one workstation. This does neither improve performance nor improve fault tolerance. To improve performance or fault tolerance, install the links on two workstations.

The table above shows that for most links it is definitely not allowed to connect several links (on the same workstation) to the same set of KCS queues and mail system objects.

Only TC/LINK-LN and TC/LINK-FI may be connected to the same server, if this is really necessary. In this case, you must mark all instances as belonging to the same link group, by setting an identical value in the `General\LinkGroup` registry key. Otherwise, notifications from KCS will be misinterpreted as normal messages.

Multiple Instances of the Same Link on Different Workstations



- Different link computers
- Same link type
- Same mail server

Installing multiple instances of a same link on different workstations is supported for the following links:

| Link | Supported | Remark |
|-------------|-----------|---|
| TC/LINK-FI | Yes | |
| TC/LINK-LN | Yes | |
| TC/LINK-MD | Yes | |
| TC/LINK-MX7 | Yes | |
| TC/LINK-OC | No | No mail server involved, receiving directly from clients. Clients can configure just one mail server for sending (TC/LINK-OC acts as server). |

| Link | Supported | Remark |
|----------------------------|-----------|--|
| TC/LINK-RS | Yes | |
| TC/LINK-SC | Yes | |
| TC/LINK-SI | Yes | |
| TC/LINK-SJ | Yes | Supported on Windows drives only. |
| TC/LINK-SM, TC/LINK-SDD | Yes | Needs special DNS entry at provider. |
| TC/LINK-WM | No | Just for fault tolerance, only 1 instance active, see restrictions below . |
| TC/LINK-MQ | Yes | |

Installing two links to the same mail server improves performance and provides fault tolerance for some links (not for all.)

All links to the same mail server must use the following:

- The same link user and the same link queue users on TCOSS. Otherwise, no failover operation is possible, and each link processes its own messages from TCOSS only.
- The same registry subkey (use the default setup) or define the same group name in the `General\LinkGroup` registry key. Otherwise, notifications cannot be recognized and are converted to incoming messages.

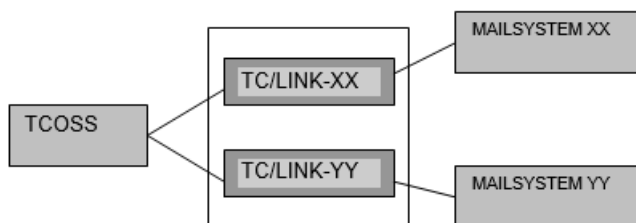
Restricted Fault Tolerance with TC/LINK-WM

For maximum fault tolerance it is possible to run multiple instances of TC/LINK-WM on different mail-servers, polling the same TCOSS-queue using the same service-name. Each TC/LINK-WM has to be connected to its own GSM-interface. (It is not possible to connect multiple instances of TC/LINK-WM to the same GSM-interface)

Nevertheless, there are some restrictions for sending from SMS to TCOSS:

- When sending from SMS to TCOSS, fault tolerance is not guaranteed. You have to send to a specific link (equals GSM box, equals phone number). This link could be temporarily out of order. In that case the SMS is stored on the chip in the SMS box. No automatic rerouting to the other numbers is possible.
- When sending from SMS to TCOSS and receiving notifications back on the mobile, it can happen that the notification is received via a different link, because they are sharing the same queue on TCOSS. This means that a different number will be displayed in the notification on the mobile. That can be confusing for the user.
- Because it cannot be guaranteed which link sends the notification to SMS, all GSM boxes connected to the links who share a TCOSS queue should connect to the same GSM provider. Otherwise restrictions in SMS delivery between the GSM providers could apply.

Single Instances of Different Links on the Same Workstation



Example: XX = MX7 for Exchange, YY = LN for Notes

- Same link computer
- Different link types
- Different mail servers

In addition to parallel operation of the same link type, it is possible to install different links on the same server. All links of different type can be installed on the same server.

Remark

Do not install TC/LINK-OC and TC/LINK-SM on one server, as TC/LINK-SM can also handle the tasks of TC/LINK-OC. Installing both links improves neither performance nor fault tolerance.

Compatibility of link versions

If several links are installed on the same link server, and one of them is updated via Setup, all others must be updated to the same version as well.

ASP Configuration

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

For TC/LINK, this means:

- Multiple instances of the same link may run on 1 computer (see [Multiple Instances of the Same Link on One Workstation](#) for a list of link types supporting parallel operation on the same workstation).
- Every link process can connect to a different remote mail server and to a different TCOSS instance.
- The mail server can be located either at the ASP or at the customer.

Running multiple link instances on the same computer

1. Copy the Kofax Communication Server setup folder to a local directory.
2. Before installing an instance, edit the DEFAULTS.INI (from DISK1) file according to the description in [Installing Multiple Instances of the Same Link Type](#).
3. Then start setup to install this link instance.

This must be repeated for every instance.

Note When reinstalling or updating the links, always check the DEFAULTS.INI parameters before starting setup.

Configuring access to a TCOSS instance on a storage server

1. During link setup, select TCTI transport type RPC and Linktype TCP/IP.
2. Enter a logical server name when asked for the name of the KCS server. This logical name is the name of the KCS server, followed by a colon and a constant defining the port number of the TCOSS instance. For example:

| Logical TCOSS server name | Description |
|---------------------------|--|
| STORAGE1:TCOSS01 | First TCOSS instance on server STORAGE1 |
| STORAGE1:TCOSS02 | Second TCOSS instance on server STORAGE1 |
| STORAGE1:TCOSS03 | Third TCOSS instance on server STORAGE1 |

Message Flow Monitoring Options

In a complex KCS environment, it can be difficult to answer questions like the following:

- From which system did a message enter the KCS server? If the sender has a KCS user profile, the sender address is overwritten by the KCS user profile data, so with standard link configuration it is not clear where the message came from?
- Via which link instance did the message enter the KCS environment? There may be several parallel instances, on several computers.
- Was originator mapping successful?
- What was the original sender address?

To help answer these questions, TCLINK optionally writes message flow information into the four custom fields of the TCOSS send order. Before enabling this feature, check if there is a custom mapping defined for any of the four custom fields.

If TCOSS was installed and configured with the KCS EasyConfig tool, the mapping is visible in this tool. “No default mapping” means that there is no custom mapping defined.

TCOSS Message Handling:

Advanced end of chain detection: No

Limit short-term archive entries: By short-term archive size

Limit short-term archive messages: By TCOSS file structure size

Archive LCR messages on exit node: ☐

Mail Header Custom Field 1: No default mapping

Mail Header Custom Field 2: No default mapping

Mail Header Custom Field 3: No default mapping

Mail Header Custom Field 4: No default mapping

Queue monitoring check cycle (sec): 0

Otherwise, look into SYSCONF line 20 and check if any of the four positions have a value other than 00 (no custom mapping).

If there is a custom mapping defined you should find out how the customer uses this mapping, because TCOSS will not do any custom mapping for custom fields written by TCLINK.

For each link instance, the following registry values below `HKLM\SOFTWARE\TOPCALL` define which information is stored in the custom fields.

| Registry value | Type | Default | Description |
|----------------|--|---------|---|
| CorrAddress | DWORD (1 to 4, or 0 to disable the feature) | 0 | Custom field ID to store the original sender address |
| CorrLinkName | DWORD (1 to 4, or 0 to disable the feature) | 0 | Custom field ID to store the link instance name, in syntax <code><Computer\LinkInstance></code> |
| CorrLinkQueue | DWORD (1 to 4, or 0 to disable the feature) | 0 | Custom field ID to store the default queue name of the link that received the message |
| CorrMapped | DWORD (1 to 4, or 0 to disable the feature) | 0 | Custom field ID to store information about success or failure of shadow user lookup (yes means success, no means failure) |

If the customer agrees that all four custom fields can be used, you can set the values as follows:

- CorrAddress: 1
- CorrLinkName: 2
- CorrLinkQueue: 3
- CorrMapped: 4

If you cannot use all four custom fields, it is possible to configure the same custom field ID for multiple items. For example, set CorrLinkName to 1 and CorrLinkQueue also to 1. The field will then hold both values separated by " – ". The information is written in the sequential order suggested by the above table, that is, CorrAddress is processed first and CorrMapped is processed last.

Note

- This information is written after address mapping.
- A link exit can overwrite this information.
- Probe replies created by TC/LINK will not contain message flow information.
- There are only four custom fields available. Other applications, such as TC/Broadcast may use them for different purposes.
- Any event or notification message triggered by the send order will contain the same custom field information as the original send order.
- Custom field values may get truncated by TCOSS. Each field can have up to 128 characters, but the total length of all four custom fields is limited to 320 characters.

Chapter 3

Performance

Refer to the *special link documentation*.

Chapter 4

Requirements

This section describes the prerequisites for installing TC/LINK.

Kofax Communication Server

- TCOSS Version: 7.08.11 or higher
- Window based Server if TC/LINK needs to be installed on the TCOSS Server.

Licenses

As TC/LINK supports only TCOSS versions 7.08.11 and above, all license checks are done by TCOSS. License keys must be entered into TCOSS via a special program (LICENCES.EXE) that is part of the KCS.

TCOSS support two licensing concepts: A “new” licensing concept introduced in 2002, and an “old” concept (from before 2002). The two concepts are not compatible, so that on a TCOSS server licenses are checked exclusively in the old or in the new system. No mixed mode in which old and new license keys may be used, is possible.

Kofax Communication Server supports both licensing methods.

Old Licensing Concept

For installation of a link server license, you need to know the local CPU number of the link server. Kofax Communication Server setup installs a program called TCCPUNR.EXE, which displays the CPU number of the local computer.

TCCPUNR.EXE is installed to the `C:\TOPCALL` directory.

The following licenses apply:

- If TC/LINK runs on a link server, you need a link server license for the maximum number of link types running on this computer.
- If TC/LINK runs on a normal workstation, you need a separate TC/LINK-XX license for every link type running on this workstation.
- For Postscript, PCL5, PDF and GIF conversion and Directory Synchronization separate (per workstation) licenses are needed.

New Licensing Concept (2002)

Per system licenses

The following licenses were counted per workstation with the old licensing concept. In the new concept, these licenses are issued with a maximum count value of 1. No counting of users, workstations, etc. is done, the existence of the license is sufficient to pass all checks.

- Directory Synchronization
- Message Wait Agent

Per user licenses

These licenses restrict the number of users sending or receiving messages via a link.

- TC/LINK-MX7
- TC/LINK-LN
- TC/LINK-MFP (one MFP device counted as one user)
- TC/LINK-FM (TC/LINK-FI for MFP, one MFP device counted as one user)

Notes:

For these link types, TCLINK itself does not need a separate license.

When sending to Exchange or Notes, a separate registration is needed for every destination address. If there are several ways to address a mail user, for example, via different address types, you should always use the same address for a single user, otherwise more than 1 registrations will be used. This is automatically done when sending via shadow users.

Even sending to nonexistent recipients needs a license, so typing mistakes may lead to additional registrations, when sending manually, for example, using TCfW.

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

The above also applies, if these mail systems are used as a relay between the TCOSS server and other systems, such as the Internet.

Per workstation licenses

These licenses count the number of workstations; any number of instances may run on each workstation.

- Postscript conversion
- PCL conversion
- GIF conversion
- PDF conversion
- TC/LINK-SM (also used for TC/LINK-SDD)
- TC/LINK-MD
- TC/LINK-FI
- TC/LINK-FI-100 (with additional limitation to 100 messages per day)
- TC/LINK-XML (is TC/LINK-FI with XML protocol)

Per workstation and 3 instances licenses

These licenses count 3 instances per workstation. The number of instances on the same workstation is rounded up to multiples of 3 and then divided by 3 to get the count for a specific workstation.

- TC/LINK-RS

- TC/LINK-SI
- TC/LINK-SC
- TC/LINK-SC7

Per channel licenses

The TC/LINK-WM license counts the number of SMS channels (GSM interfaces).

No link server licenses

The new licensing concept does not provide an equivalent for the old link server licenses.

New event log entries for license problems.

| Code | Severity | Description | Corrective Action |
|------|----------|--|---|
| 5149 | Warning | "TCLINK_FI_100: 100 messages sent today. Message discarded." | Obtain matching license. |
| 5150 | Warning | "TCLINK_FI_100: Cannot access message count. Message discarded." | Restart all instances of TCLINKFI_100. Stop all other applications. |
| 5151 | Error | "Per user license expired. Unable to register user %1" | Obtain matching license. |

Restrictions with TCOSS Versions

| Feature | Minimum Server Package version |
|---|--------------------------------|
| Licensing concept 2002 | 7.47.00 |
| Special sendcopy option for TC/LINK-SDD | 7.41.00 |
| ++INVALID feature | 7.40.00 |
| Latest delivery timeout | 7.30.00 |
| Voice Integration | 7.29.00 |
| Japanese character set support | 7.25.00 |
| Integrated archiving | 7.24.02 |
| Enhanced originator mapping | 7.22.00 |

Link Computer

This section describes other applications required for installing TC/LINK.

Operating System and Software Requirements

KCS links can be installed on any the following operating systems:

- Windows Server 2008

- Windows Server 2012

.NET Framework 4 is necessary if you want to use the built-in Kofax Converter for document conversion. Kofax Converter is the default option for new installations.

If the operating system requirements are met, the KCS links can be installed on any mail server, be it a TCOSS server, mail server or any “normal” computer.

Additional software requirements

- The appropriate networking software for connection to TCOSS must be installed (TCP/IP or NETBIOS).
- If used with the KCS document converter, the applications used for document conversion must be installed locally.
- JetForm Integration: The JetForm Print Agent must be installed on the TC/LINK computer. The version of JFMERGE.EXE should be 5.2.290.2 or higher. The customer is responsible for obtaining a valid JetForm Print Agent license.
- For special link types, there may be additional requirements. Refer to the *special link documentation*.

Refer to the *Environment Guide - Platform System Manual* for general requirements of KCS applications.

Support of Virtual Machines

Refer to the *Environment Guide - Platform System Manual* for information about KCS on virtual environment.

Other Applications on the Link Computer

You may use other software on the TC/LINK computer. In case of problems, Kofax Support may request that any other of these third party software is completely removed from the TCOSS / Link / Archive servers in order to isolate the problem.

Maximum Number of Parallel Links

There is always a limit to the number of links installed in parallel on one workstation.

This limit depends on registry configuration and link type. Windows allocates a system-wide 48 MB buffer for desktop heap space. With the default configuration of the operating system, every link instance started by TCSRVR uses 3 MB from this buffer. As other processes use heap space, too, this means that about 11 links may run in parallel.

You can configure Windows to use a smaller heap space per desktop (that is, per link) by changing the value of the `HKLM\System\CurrentControlSet\Control\Session Manager\Subsystems\Windows` registry key.

Note Do not miss the blank between “Session” and “Manager”.

This registry value contains a string like “SharedSection=1024,3072 ”. To allow Windows to use 512 KB per desktop heap, change this string to “SharedSection=1024,3072,512 ”.

Note The minimum value that the heap can be set to is 128 KB.
You may experience problems if the configured heap size is too small.

Mail Server

Mail Server requirements depend on the type of the connected mail system. Refer to the *special link documentation*.

Chapter 5

Installation

This section describes the installation of TC/LINK.

Windows User Accounts Needed by KCS Links

For TC/LINK setup and operation, three different users can be defined.

TCSRVR User

This is the Windows account used by the TCSRVR service. KCS setup configures TCSRVR to use the System Account, which is the recommended configuration. You can use the Windows Services console to verify this.

TC/LINK User

For many link types, special user rights, such as access to network drives, mail servers and more, are needed for the TC/LINK process. Therefore, Setup needs an account that will be used for starting TC/LINK. If a TC/LINK user is configured, TCSRVR must run under the System Account.

If TC/LINK cannot be started with the specified user account, TCSRVR generates an entry in the event-log and the process is not started.

The TC/LINK user must be member of the link PC's Administrators group and must have the right to "logon as a batch job" at the link PC.

1. Use **Control Panel | Users and Passwords** to add the link user to the Administrators group.

2. To grant the right to **logon as a batch job**, use either option:
 - **Control Panel | Administrative Tools | Local Security Settings** if not on a domain controller.
 - **Domain Controller Security Settings** if on a domain controller.

The following picture shows where to find this right in the Local Security Settings.



TCDCEXE User

For installation under Windows 2008, you need a dedicated user account for document conversion. This account is only used for conversion of MS Office documents.

Refer to the *Document Conversion Technical Manual* for more details.

Accounts Used During Setup

| | TC/LINK-WM | TC/LINK-FI TC/LINK-MQ TC/LINK-RS TC/LINK-SJ TC/LINK-LN TC/LINK-SC TC/LINK-SI | TC/LINK-SM TC/LINK-OC TC/LINK-MX7 TC/LINK-SC7 TC/LINK-SDD |
|---------|--|--|---|
| Step 1: | --- | Create TCDCEXE user See Note - points 1, 6. | Create TCDCEXE user See Note - points 1, 6. |
| Step 2: | Create TC/LINK user See Note - point 2. | Create TC/LINK user See Note - point 2. | --- |

| | TC/LINK-WM | TC/LINK-FI TC/LINK-MQ TC/LINK-RS TC/LINK-SJ TC/LINK-LN TC/LINK-SC TC/LINK-SI | TC/LINK-SM TC/LINK-OC TC/LINK-MX7 TC/LINK-SC7 TC/LINK-SDD |
|---------|--|--|--|
| Step 3: | Logon as an ADMINISTRATOR and run SETUP | Log on as TCDCEXE user (foreground DocConv) or ADMINISTRATOR (background DocConv) and run SETUP See Note - point 3. | Log on as TCDCEXE user (foreground DocConv) or ADMINISTRATOR (background DocConv) and run SETUP See Note - point 3. |
| Step 4: | After testing, configure TCSRVR for automatic start See Note - point 4. | After testing, configure TCSRVR for automatic start See Note - point 4. | After testing, configure TCSRVR for automatic start See Note - point 4. |
| Step 5: | --- | --- | --- |
| Step 6: | --- | --- | --- |
| Step 7: | --- | Remove TCDCEXE user from Administrators See Note - points 5, 6. | Remove TCDCEXE user from Administrators See Note - points 5, 6. |

Note

1. For foreground document conversion and for conversion of MS Office documents on Windows 2008 server. Create the TCDCEXE user, if possible, as a domain user. Add this user to the local Administrators group (via Active Directory Users and Computers). Login as this user and install all applications needed for the document converter.
2. Create a TC/LINK user. Give this user all the rights and network drive mappings needed for this link type. This user must have the right to "logon as a batchjob", and should be part of the Administrators group (as TC/LINK writes to the registry).
3. If TC/DC shall run in background, you can use a local Administrator account for Setup.
4. Use the Windows Services console to configure automatic startup for TCSRVR.
5. Only needed for foreground mode document conversion. To increase system security, remove the TCDCEXE user from the Administrators group.
6. Only needed if TC/DC shall run in foreground.

Preparation for JetForm Integration

This section describes the preparation for JetForm integration.

Installation of JetForm Program Files

1. Make sure that JetForms is installed on the link computer.
2. Create a new directory `C:\JetForm\Server` and copy the following files to this directory:
 - JFMERGE.EXE
 - JFMERGE.INI
 - The log file configured in JFMERGE.INI (section [JetForm], key LogFile)

Note All the three files are normally available in the JetForm Server directory.

3. Update the path name of the *LogFile* parameter in JFMERGE.INI, so that it points to the new directory.

JetForm Forms

The JetForm Forms (MDF-Files) contain the form description used by JFMERGE to process JetForm Data Files.

It is recommended to copy these files to a local directory on the link computer. This approach bypasses problems with inaccessible network drives, insufficient permission and slow network connections.

The drawback of this solution is that each time the forms are changed by the customer, they must also be copied to this directory. It is recommended to use the `C:\JetForm\Forms` directory structure if the files are copied locally.

Customize Setup Defaults

This section describes how to customize setup defaults.

DEFAULTS.INI

KCS Setup includes a file called DEFAULTS.INI file that holds default values used by Setup. You can create customized versions of this configuration file for similar installations and thus avoid using the Advanced Installation mode.

It is not necessary to update the file list in TCCLIENT.INI after modifying DEFAULTS.INI because the Setup program does not check the date and time of DEFAULTS.INI.

In any case you should check the FAX and TLX service prefix. If they are different to "F:" and "T:" and you want to use the automatic creation of dependencies, change the prefix settings in DEFAULTS.INI before running Setup.

Installing Multiple Instances of the Same Link Type

This section describes the installation steps for TC/LINK-SC and other links.

Installing for TC/LINK-SC:

1. Install the first link using the default Setup.
2. Use the KCS Monitor Add-On to duplicate the link and configure multiple instance instances.
For detailed information, refer to the *TC/LINK-SC Technical Manual*.

Installing other links:

1. Install the first link using the default Setup.
2. For each additional instance do the following:
 - a. Make changes in DEFAULTS.INI, section [TCLINKxx_INSTANCE]:
 1. Change the registry sub key name, for example, from TCLINKFI to TCLINKFI2.
 2. Change the display name, for example, from TC/LINK-FI to TC/LINK-FI 2 to get a second icon.
 - b. Make changes in DEFAULTS.INI, section [TCLINKxx]:
 1. Change the section name according to the new sub key name, for example, from TCLINKFI to TCLINKFI2.
 2. Change the KCS queue name, for example, from TCLFIQ to TCLFI2Q
 3. Change the service name, for example, from TCFI to TCFI2
3. Start Setup to install the additional instance of the link.

Example: Installation of two TC/LINK-FI instances

DEFAULTS.INI for first instance (no changes required)

```
[TCLINKFI_INSTANCE]
RegistrySubkeyName=TCLINKFI
DisplayName=TC/LINK-FI [TCLINKFI]
TOPCALL\queue=TCLFIQ
Setup\ServiceFI\Name=TCFI
```

DEFAULTS.INI for second instance (changes are bold)

```
[TCLINKFI_INSTANCE]
RegistrySubkeyName=TCLINKFI2
DisplayName=TC/LINK-FI2 [TCLINKFI2]
TOPCALL\queue=TCLFI2Q
Setup\ServiceFI\Name=TCFI2
```

Note If you installed parallel instances of a link, check the DEFAULTS.INI parameters before running Setup.

Installing Objects on the Kofax Communication Server

TC/LINK needs several KCS objects in order to work properly:

- Link user
- Queue user(s)

- Default services
- ONLYIMG template
- Cover sheets for notifications
- Guest user (optional)
- Templates for dirsync (optional, some links only)
- Service(s) used to send via link (optional)
- Other TCOSS objects (for special link types)
- “rr99” entries for inbound routing (NOT CREATED AUTOMATICALLY)

These objects are further referred to as dependencies. With TCOSS versions below 7.22, the Link user had to be created manually via TCFW. With higher versions, this user is created automatically during TCOSS installation. The changes in the rr99 system file (for inbound routing) have to be done manually after Setup. All other KCS dependencies are created automatically the first time the link is started. This means that installation is less time consuming.

Automatic Creation of KCS Dependencies

Creation of dependencies is based on ASCII image files. These image files are delivered with KCS Setup and contain very simple default settings. They have the same format as the ASCII backup created by TCFW. All language dependent parts of the dependencies, such as the text in notification covers, are English. With some precautions (line length in text blocks, avoid non-ASCII characters), they can be edited with a text editor. It also is possible to replace them by own image files before starting the link the first time. Thus you can customize the created TCOSS objects. Refer to the release description of the *TCGENDEP tool* for details.

If TC/LINK encounters a problem during dependency check, it writes the error reason to the event log. It proceeds with the next KCS dependency, but terminates after dependency check. Thus, the operator will see all problems in the event log. He can then remove the reason of the problem and start TC/LINK again. TC/LINK will then repeat the dependency check.

Creation of dependencies is an optional feature. You can enable this feature either during Advanced Setup, or by setting the `Setup\CreateDependenciesTopcall` (DWORD) registry key to 1. Whenever TC/LINK starts and finds this key set to 1, it checks and creates the dependencies. TC/LINK does not reset this flag, so the dependencies are checked at every link start. See [Automatic Creation of Dependencies](#) for more information about KCS dependencies.

To disable automatic creation of dependencies, set this key to 0.

Manual Changes on Kofax Communication Server

Link User

Starting with TCOSS 7.22, TCOSS Setup automatically creates the user TCLINK (password: TCLINK). This user can then be specified as KCS link user in KCS Setup. If this user does not exist or if you want to use a different link user, just create a user via TCFW.

The link user must have an active address of type "TOPCALL Address".

| Active | No | Service | Numbe |
|--------|----|---------|--------|
| X | 1 | TOPCA | TCLINK |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

TCOSS number series

Increase the TCOSS numbers series to a number higher than the expected maximum of recipients within one mail message. Otherwise, some notifications to mail can get lost.

Optional default recipient for undeliverable messages

Optionally, you can configure an operator as alternate recipient address for messages sent to the link's queue(s). This can be done by inserting a line into the **ROUTE section of rr99:

```
LINKQ~: , LINKQ~: \OPERATOR:
```

Where LINKQ~ is the link's queue and OPERATOR is the KCS operator.

Optional rr99 changes for inbound routing

The entries for inbound routing have to be made manually.

The ****INBOUND** section is used for routing via shadow users having inactive proxy addresses.

The ****ROUTE** section can be used, for example, for routing without shadow users.

Note The service names are replaced by the service prefix automatically in the ****SENDMODE** section. Always use the service prefixes instead of service names in the sections below.

Refer to the *TC/LINK-SM Technical Manual* for more information about rr99 changes.

Example rr99 file:

```
**SENDMODES

**NORMALIZE

**ROUTE

,,routing O=SAP to TC/LINK-SC (no TC shadow
  users)
TCLX4QI:c=at;a=umi-at;p=comp;o=sap~,TCLSCQI:X400:c=at;a=umi-at;p=comp;o=sap~
,, configure alternate recipient (send to operator)

TCLLNQI:~,TCLLNQI: ~\OPERATOR:

,, reroute SMTP addresses with local domain to SMTPIN
  service
TCLSMQI:~@charlie.company.com,postmaster:~,
TCLCQI:~@charlie.company.com,postmaster:~,

**NODES

**INBOUND

,,FAX inbound routing
FXI:~, inbound fax routing
FXI:~,DIST:FaxDID~,
  default recipient
,,SMTPIN inbound routing
postmaster:~, search for SMTPIN aliases,
  non-matching to postmaster
,, no default required because prefix already is
  postmaster user
,,Optional SMTP inbound routing, local reroutes for SMTP
TCLSMQI:~,
  search for local SMTP aliases (full SMTP addresses)
,, not found: no inbound
  routing required, send to SMTP
,,SMTPOC inbound routing for TC/LINK-OC
TCLCQI:~, search for local
  SMTPOC aliases (full address)
TCLCQI:~,invalid, address not found locally
  -> non-delivery
,,X.400 inbound routing
TCLX4QI:c=at;a=umi-at;p=comp~, search for
  X400 aliases
TCLX4QI:c=at;a=umi-at;p=comp~,helpdesk:, default recipient
```

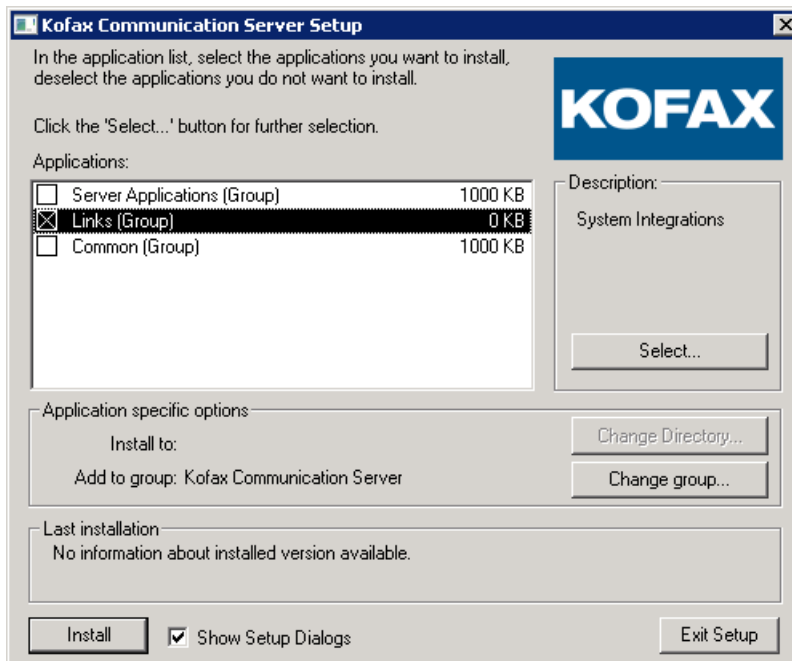
KCS shadow users

If TC/LINK works without dirsyntax, you can manually configure addresses and events of KCS shadow users.

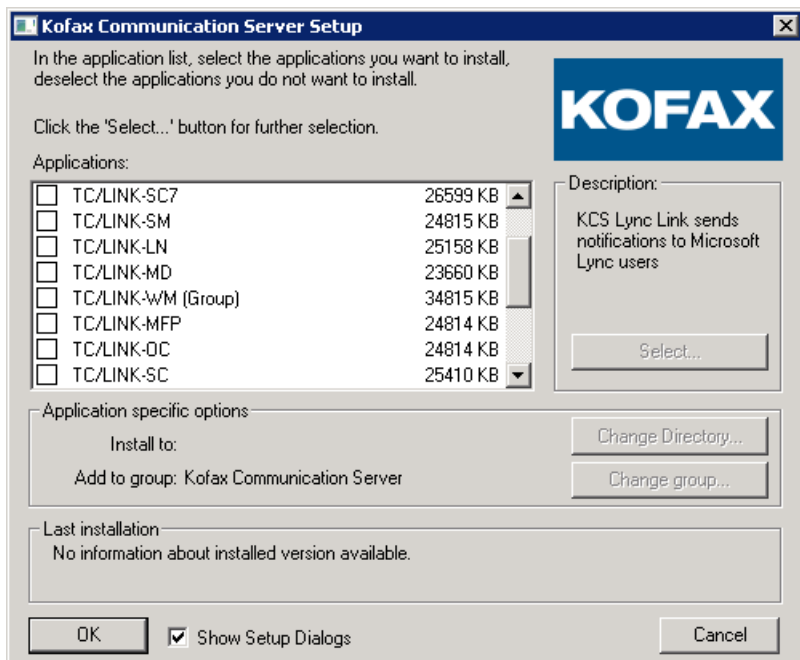
Links Setup Program

Links are installed via Kofax Communication Server Setup.

Go to the Links group.



The second Setup screen displays the available link types.



TC/LINK-XML, TC/LINK-FM (MFP via FI) and TC/SOAP are not displayed as separate link types. To install these links, choose TC/LINK-FI. TC/LINK-FI setup later allows to choose these features.

The selected TC/LINKs are installed into the directory `C:\TCOSS\TCLP`.

Files that are used by both packages (KCS and KCS Client Apps) are copied to the “Shared” directory (default: `C:\TOPCALL\SHARED`).

The Links group also includes the Message Wait Agents for Exchange and Lotus Notes. These products are not covered in this documentation. Separate documentation is available.

Unattended Setup: If you clear the “Show Setup Dialogs” check box, the setup windows and information message boxes are not displayed. Default values are used for new installation. For upgrades, existing configuration is used. Error messages and the Setup Finished window is displayed anyway. The “Show Setup Dialogs” check box is selected by default.

Note Installers and tools launched during the installation can still require user interaction, even if the setup runs in unattended mode.

The following description of Setup steps explains only the steps common for all links. There will be additional setup options available for individual links (as described in the special link’s manual).

The common Setup steps ask for information about general link settings, KCS settings, document conversion, and directory synchronization. All general link configuration data is written into the Windows registry and can be edited later via a registry editor.



The first message box tells you to close all other applications and to stop TCSRVR. This means that no KCS applications are allowed to run during setup. The document converter executable (TCDCEXE) must also be closed.

KCS Setup installs shared files, such as DLLs, OCXs, and others, which can be used by more applications which might be in different packages. To ensure that a file can be updated by Setup, it must not be in use by any other process. Therefore, you must stop all KCS applications, services, and all other processes which could possibly load shared binaries. Use the Windows Task Managers Process View to see a list of running processes.



If you experience problems like the above message box during the setup, check for running processes which are locking the shared file(s). Take care of applications like TC/Dialer which are started automatically at system start. The SNMP Service of Windows locks shared KCS binaries if TC/SNMP was installed.

Installation Modes:

One of the first Setup input windows offers two installation modes.

- **Easy installation:** Select this mode for standard installations and version updates. This Setup mode only asks for the most vital configuration parameters. All other values are set to default values (or existing configuration data) automatically. The easy installation is used by default; you can select the advanced installation mode via a checkbox on the first Setup window.
- **Advanced installation:** Select this mode if you need several non-standard configuration values, like special notification settings, or a non-standard set of default services.

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

The advanced features can be configured after running the easy installation mode at any time by restarting Setup.

Basic Parameters

TC/LINK-FI - BASIC parameters

Enter or modify the parameters below

KCS type: Single server

Current TCOSS Version: TCOSS >= 7.20

TCTI transport type: RPC

Linktype to [primary] KCS: TCP/IP

Name of [primary] KCS: TOM

PC Codepage: 437

☒ Unicode supported

☒ Configure Advanced Features

OK Cancel

KCS type

Available choices are Single Server and Tandem (Alternative Path).

Current TCOSS Version

Part of the information asked by Setup depends on the TCOSS version. Choose the best matching alternative: "TCOSS >= 7.20" or "TCOSS >= 7.08.11 and < 7.20"

TCTI transport type

(Registry: TCTI\Transport)

Available transport types are RPC and Native.

Linktype to (primary) KCS

(Registry: TOPCALL\Path)

Available Linktypes are NETBIOS, TCP/IP, IPX/SPX and LOCAL.

Name of (primary) KCS

(Registry: TOPCALL\Path, TOPCALL\Server)

Enter the computer name or the TCP/IP (v4) address in dotted format (such as 165.27.144.111).

PC Codepage

(Registry: HKLM\Software\TOPCALL\TCLPSetup\Parameters\PCCodepage)

This setting is only needed for certain link types, such as FI, MQ, where the code page used for the messages is not defined by any protocol.

Examples:

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

When writing the PC codepage to `General\PCCodepage` (evaluated by TC/LINK), Setup takes the ANSI equivalent of the specified DOS codepage: codepages 437 and 850 become 1252, codepage 852 becomes 1250.

Note TC/LINK-FI Setup offers an option to use the specified DOS codepage instead of the equivalent ANSI codepage.

Unicode supported

(Registry: `General\UnicodeSupported`)

This checkbox is displayed if the link type supports Unicode. If the check box is enabled and the KCS server uses UTF-8, all characters from the Unicode character set can be used in messages without character loss.

If the check box is disabled or the KCS server does not use UTF-8, characters that cannot be converted to the KCS server legacy code page, such as code page 0, will get lost.

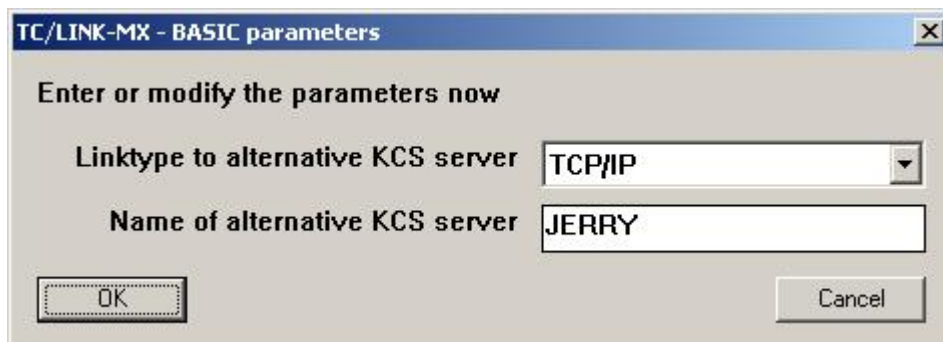
The feature is enabled by default.

Configure Advanced Features

If this checkbox is clear, setup only asks for the most vital information.

Basic Parameters (Alternative Server) (Optional)

The following window is only displayed if the TCROSS server type is "Tandem":



Linktype to alternative KCS server

(Registry: TOPCALL\Path)

Used only with Tandem TCOSS systems.

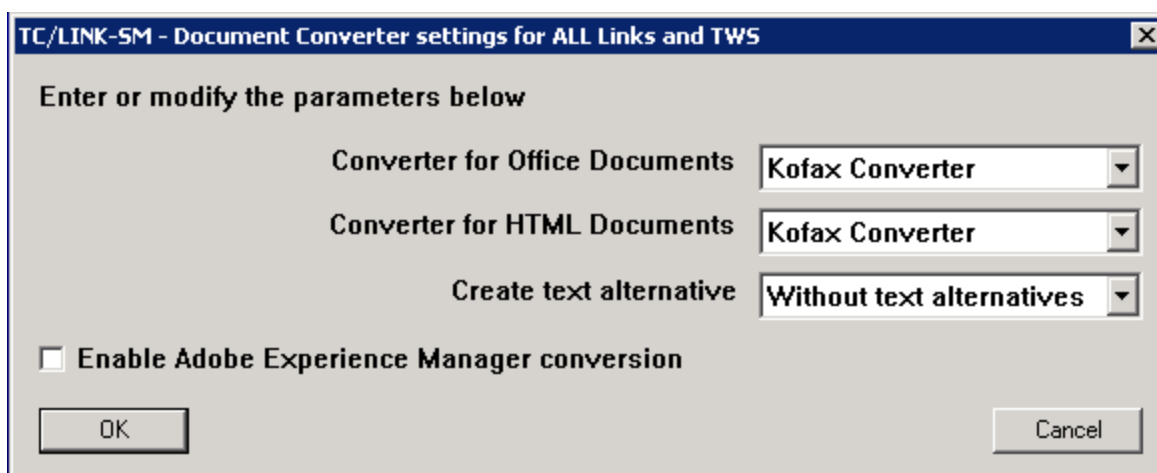
Name of alternative KCS server

(Registry: TOPCALL\Path)

Used only with Tandem TCOSS systems.

Note To allow alternative routing, the TOPCALL\Path registry value can contain alternative path strings separated by '|' characters. For example "TCP/IP,TOM|TCP/IP,JERRY".

Document Converter Settings

**Converter for Office Documents**

Select which tool should be used for converting Microsoft Office documents. Available options:

- Kofax Converter (default for new installations)
- Microsoft Office

Converter for HTML Documents

Select which tool should be used for converting HTML documents. Available options:

- Kofax Converter (default for new installations)
- Internet Explorer
- Microsoft Office

Create text alternative

By default, KFXConverter is used for creating text alternative. If the application supports scripting like Microsoft Office, you can use a script that creates a text alternative. If configured to add text alternatives, TC/LINK also creates a text representation for MS Office, Open Office (ODP, ODT and ODS formats) and HTML attachments. If the KCS Archive is installed, users can do a full text search including the text in these documents.

Available options:

- With text alternatives
- Without text alternatives (Default)

Enable JetForm Integration (registry `TCDCLINK\JetForm\EnableJetForm`, default: NO).

If YES is selected, Setup enables JetForm integration and displays another window for JetForm configuration.

Note

- The JetForms program files must be installed separately. See [Installation of JetForm Program Files](#).
- Only available on Windows Server 2008 32-bit

Enable Adobe Experience Manager Server conversion

(Registry: `General\ALCConversion`)

If selected (default: Clear), setup enables conversion of PDF attachments with XFA forms using a third party Adobe Experience Manager server. Setup displays another configuration window for Experience Manager connection parameters.

In order to use Microsoft Office applications on Windows Server 2008 (or later), it is necessary to configure a user for the Document Converter (TCDCLINK) process. The same user has to be configured with the Windows tool "Dcomcnfg".

TC/LINK-FI - Document Converter settings for ALL links

Enter or modify the parameters now

UserId to start TCDCLINK process (necessary for Office conversion)

Domain/Computer of this user

Password of this user (default or '*' leaves existing setting)

UserId to start TCDCLINK process (necessary for Office conversion)

(Registry: `TCDCLINK\UserId`)

User to start the TCDCLINK process with (default: empty).

Domain/Computer of this user

(Registry: `TCDCLINK\Domain`)

Domain/Computer of above user (default: empty).

Password of this user (default or "*" leaves existing setting)

(Registry: `TCDCLINK>Password`)

Password of above user (default: empty).

Adobe Experience Manager Connection

This setup screen is only displayed if you enabled “Adobe Experience Manager Server conversion”.

Note If support for Adobe LiveCycle is available, you can also use Adobe LiveCycle for conversion of XFA Forms.

The screenshot shows a Windows-style dialog box titled "TC/LINK-SM - Document Converter settings for ALL Links and TWS". Inside the dialog, there is a prompt "Enter or modify the parameters below". Below this, there are three input fields: "Adobe Experience Manager Output Service URL", "User ID", and "User password (default or '*' leaves existing setting)". The "User password" field contains an asterisk (*). At the bottom left is an "OK" button, and at the bottom right is a "Cancel" button.

Adobe Experience Manager Server URL

URL of the Adobe Experience Manager server (registry value `ALCServerOutputURL`).

User ID

User name for connecting to the Adobe Experience Manager server (registry value `ALCUserName`).

User password

Password for connecting to the Adobe Experience Manager server (registry value `ALCUserPassword`).

Configure JetForm Integration

This Setup screen is only displayed if JetForm integration was selected.

The screenshot shows a Windows-style dialog box titled "TC/LINK-FI - JetForm Settings for All Links". Inside the dialog, there is a prompt "Enter or modify the parameters now". Below this, there are four input fields: "Extension of JetForm Files" (containing "XYZ"), "Path to forms", "Path to JFMERGE", and "Path to JFMERGE.INI". At the bottom left is an "OK" button, and at the bottom right is a "Cancel" button.

Extension of JetForm Files

(Registry: TCDCLINK\JetForm\Extension)

Enter an extension not used by another application on the system (default: XYZ). The Document Converter and TCLINK will use this extension to recognize JetForm Data Files.

Note This is the default extension for all link instances. You can override this setting for a specific link instance via registry key `General\JetFormExtensionForBody`.

Path to forms

(Registry: TCDCLINK\JetForm\FormsPath)

The path to the forms used by JFMERGE to create the output. Although this directory may also be located on a network drive, it is recommended to use a local directory to avoid problems with inaccessible network drives, insufficient security and so on.

Path to JFMERGE

(Registry: TCDCLINK\JetForm\JFMergePath)

Enter the full path name of the JFMERGE.EXE file, for example "C:\JETFORM\JFMERGE.EXE".

Path to JFMERGE.INI

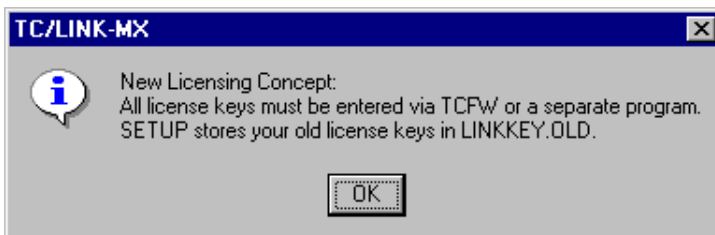
(Registry: TCDCLINK\JetForm\JFMergeIni)

Enter the full path name of the JFMERGE.INI file.

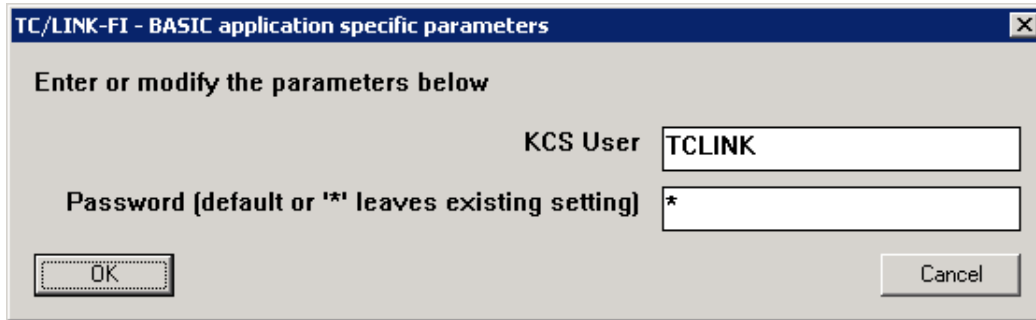
Licensing Reminder

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

If this is an upgrade of such an old installation, Setup writes the existing licensing information into a file (C:\TCOSS\TCLP\LINKKEY.OLD) and displays a message box. LINKKEY.OLD will contain the information needed for running LICENCES.EXE.



KCS Link User



The screenshot shows a Windows-style dialog box titled "TC/LINK-FI - BASIC application specific parameters". Inside the dialog, the text "Enter or modify the parameters below" is displayed. There are two input fields: "KCS User" with the text "TCLINK" entered, and "Password (default or '*' leaves existing setting)" with a single asterisk "*" entered. At the bottom left is an "OK" button, and at the bottom right is a "Cancel" button.

KCS User

(Registry: TOPCALL\User)

Used for login to the Kofax Communication Server.

Password

(Registry: TOPCALL\Internal)

Used for login to the Kofax Communication Server.

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

ADVANCED: Link Specific Parameters

This Setup screen is only available in Advanced Setup.

TC/LINK-FI - ADVANCED link specific parameters

Enter or modify the parameters below

Link Queue (without format character)

Default Graphic Format

Image formats polled by TC/LINK-FI

Poll Cycle (seconds)

Set Entry AT NEXT NODE

Enable Document Converter (TDCD)

☐ Support MetaMail

☒ Enable VRS

☒ Create dependencies on TCOSS server

☒ Create dependencies on mail server (if supported)

Link Queue (without format character)

(Registry: TOPCALL\Queue)

TCLINK polls the TCOSS queues starting with the name entered here. The name of the KCS queue user consists of this name with an additional last graphics format character. For example, enter "TCLMXQ" for TCI Link Queue "TCLMXQI". Depending on the last character, images will be converted to the graphics format defined by the last character. For example, images sent to TCLMXQ3 will be converted to TIFF G3 without EOL.

Default queue names

TCLxxQ (where xx are the link-specific ID characters)

Default Graphic Format

(Registry: TOPCALL\NotifGraphic)

This registry key determines which default graphic format is used in notifications to mail. There must be a KCS queue user for this format. For example, if I is selected, the queue user TCLMXQI must exist. Default value depends on link type:

- 4 (TIFF G4): TCLINKFI, TCLINKSC, TCLINKMX7, TCLINKSC7, TCLINKSI, TCLINKRS
- I (TCI): All other links

Image Formats polled by TC/LINK-xx

(Registry: Setup\QueueFormats)

Define which graphic formats can be used when sending incoming faxes to the remote mail system. For every graphic format, there must be a KCS queue user. If configured for automatic creation of KCS dependencies (see below), TCLINK creates these queues automatically. Possible formats are: TCI (I or J), TIFF (0 to 4), BMP (B), PCX (P), GIF (G), DCX (D) or MODCA (M or N), PDF (F), JPEG (C). Default: queues for all image formats are created.

Poll Cycle (seconds)

(Registry: General\Pollcycle)

Defines the time TCLINK waits after performing a full transfer cycle for all activated mails. Default: 30.

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

Set Entry AT NEXT NODE

(Registry: TOPCALL\NotifMail)

If set to YES, TC/LINK requests notifications (delivery, non-delivery) when sending a message to the remote mail system. The mail entry will be terminated at the receipt of a (non)delivery notification.

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

Enable Document Converter

(Registry: General\DocConv)

Enable or disable the document converter. The document converter is used to convert attached document files to TCI format.

Default: YES.

Support MetaMail

(Registry: General\ExitDLL, Topcall\FetchSingleSendOrder)

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

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

MetaMail needs additional configuration in the TC/LINK registry and in the KCS user profiles of the end users, see the *TC/MetaMail Configuration Manual* for more information.

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

Enable VRS

(Registry: TCLINKxx\TCIMG32\VRS\Enable)

You can enable VRS to increase image quality. Refer to the *TC/LINK-MFP Technical Manual* for more information.

Create dependencies on TCOSS server

(Registry: Setup\CreateDependenciesTopcall)

If selected, TCLINK creates all needed KCS objects automatically after startup. For new installations, this feature is activated by default.

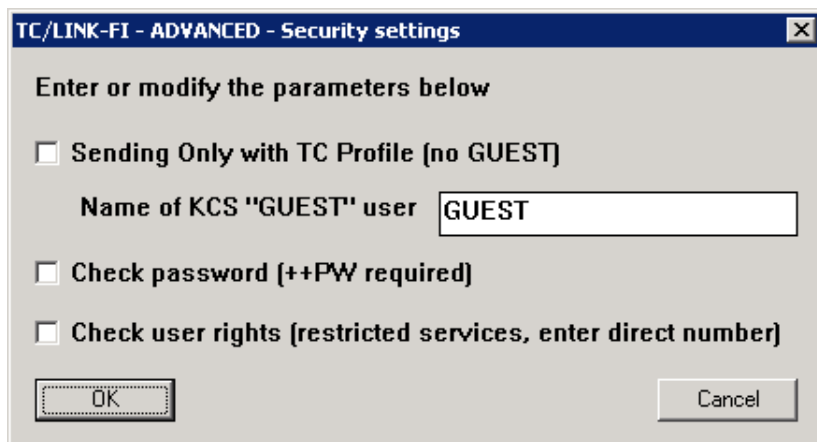
Create dependencies on mail server

(Registry: Setup\CreateDependenciesMail)

The dependencies on the mail specific side can also be created automatically. It depends on the specific DLL if this feature is supported. Refer to the *mail specific release description* for detailed information. For new installations this feature will be activated by default.

ADVANCED: Security Settings

This setup screen is available only in Advanced Setup.



Sending Only with TC Profile

(Registry: TOPCALL\ChkDisSend)

If this option is selected, only users configured in the KCS user store are allowed to send from the remote mail system. If a user who is not allowed to send via KCS tries to send, TCLINK will return a non-delivery notification.

(Default: not selected)

Name of KCS "GUEST" user

(Registry: TOPCALL\GuestUser)

The guest user profile holds the rights and default options for non-KCS users. If there is no guest user defined, TC/LINK takes the default send options for non-KCS users from the link user.

See [Guest User](#) and [KCS GUEST User](#) for more information about guest user, password checking and rights checking.

(Default: empty)

Check password (++PW required)

(Registry: TOPCALL\NeedPWD)

If this option is selected, every mail originator must provide a password via the ++PW text directive. For non-KCS users, this is the password of the guest user profile. (Default: not selected)

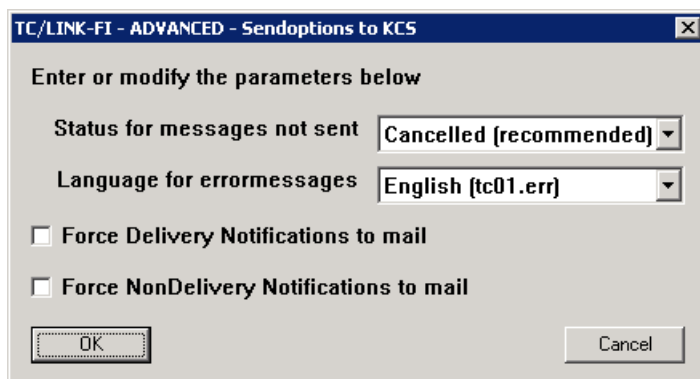
Check user rights

(Registry `TOPCALL\CheckRights`)

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

ADVANCED: Sendoptions to KCS

This setup screen is available only in Advanced Setup.

**Status for messages not sent**

(Registry `TOPCALL\ArcNeg`, `TOPCALL\DelEnvNeg`, `TOPCALL\DelEntNeg`)

If a message sent from the remote mail system cannot be delivered, the TCOSS send order can either be cancelled or set to "Inactive-Problems". (Default: Cancelled)

Language for error messages

(Registry: `General\Language`)

Determines the language used for certain string constants in messages sent to the remote mail system. For example, error descriptions in non-delivery notifications. (Default: English)

Force Delivery Notifications to mail

(Registry: `TOPCALL\SOForceDelNotif`)

If selected, KCS returns delivery notification for all messages from the remote mail system, independent of the notification level requested by the originator. (Default: Clear)

Force Non-delivery Notifications to mail

(Registry: `TOPCALL\SOForceNonDelNotif`)

If selected, KCS returns non-delivery notifications for all messages from the remote mail system, independent of the notification level requested by the originator. (Default: Clear)

ADVANCED: Notifications from KCS

This setup screen is available only in Advanced Setup of certain link types.



Notifications to the remote mail system are only created if the originator requested them. In this Setup page, you can configure whether a report text shall be returned together with the notification. Depending on the remote mail system, this text will either become part of the notification or be sent as an additional message. The report contains information about message transmission (formatted via a cover sheet), and (optionally), a copy of the original message or of its text components.

Contents of KCS Delivery Reports

(registry: TOPCALL\DelNfTxtToMail, TOPCALL\DelNfOrigToMail, TOPCALL\DelNfOnlyText)

Select which type of KCS delivery report shall be returned. Possible values are as given in the table.

| | |
|------------------------------|--|
| NONE | No KCS delivery report |
| Cover only (default) | KCS delivery report with delivery cover sheet text only |
| Cover + sendcopy / msg text | KCS delivery report with cover and text from send copy (or from original message, if no send copy available) |
| Cover + sendcopy / full msg | KCS delivery report with cover and full send copy (or original message, if no send copy available) |
| Cover + orig. msg / msg text | KCS delivery report with cover and original message text |
| Cover + orig. msg / full msg | KCS delivery report with cover and full original message |
| Orig.msg / full msg only | KCS delivery report with full original message, but without cover |
| Sendcopy / full msg only | KCS delivery report with full send copy (or original message, if no send copy available), but without cover |

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

This Setup item sets the following registry values under subkey TOPCALL.

| | DelNfTxtToMail | DelNfOrigToMail | DelNfOnlyText |
|-----------------------------|----------------|-----------------|---------------|
| NONE | 0 | 0 | 0 |
| Cover only | 1 | 0 | 0 |
| Cover + sendcopy / msg text | 1 | 1 | 1 |
| Cover + sendcopy / full msg | 1 | 1 | 0 |
| Cover + orig.msg / msg text | 1 | 2 | 1 |
| Cover + orig.msg / full msg | 1 | 2 | 0 |
| Orig.msg / full msg only | 0 | 2 | 0 |

| | | | |
|--------------------------|---|---|---|
| Sendcopy / full msg only | 0 | 1 | 0 |
|--------------------------|---|---|---|

Other combinations are not allowed.

Contents of KCS Non-Delivery Reports

(Registry: TOPCALL\NonDelNfTxtToMail, TOPCALL\NonDelNfOrigToMail, TOPCALL\NonDelNfOnlyText)

Select which type of KCS non-delivery report shall be returned. Possible values are as given in the table.

| | |
|------------------------------|---|
| NONE | no KCS non-delivery report |
| Cover only (default) | KCS non-delivery report with delivery cover sheet text only |
| Cover + sendcopy / msg text | KCS non-delivery report with cover and text from sendcopy (or from original message, if no sendcopy available) |
| Cover + sendcopy / full msg | KCS non-delivery report with cover and full sendcopy (or original message, if no sendcopy available) |
| Cover + orig. msg / msg text | KCS non-delivery report with cover and original message text |
| Cover + orig. msg / full msg | KCS non-delivery report with cover and full original message |
| Orig.msg / full msg only | KCS non-delivery report with full original message, but without cover |
| Sendcopy / full msg only | KCS non-delivery report with full send copy (or original message, if no send copy available), but without cover |

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

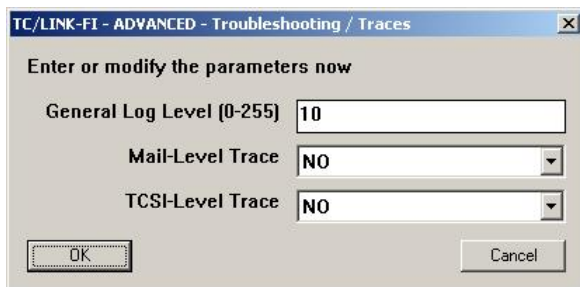
This setup item sets the following registry values under subkey TOPCALL.

| | NonDelNfTxtToMail | NonDelNfOrigToMail | NonDelNfOnlyText |
|------------------------------|-------------------|--------------------|------------------|
| NONE | 0 | 0 | 0 |
| Cover only | 1 | 0 | 0 |
| Cover + sendcopy / msg text | 1 | 1 | 1 |
| Cover + sendcopy / full msg | 1 | 1 | 0 |
| Cover + orig. msg / msg text | 1 | 2 | 1 |
| Cover + orig. msg / full msg | 1 | 2 | 0 |
| Orig.msg / full msg only | 0 | 2 | 0 |
| Sendcopy / full msg only | 0 | 1 | 0 |

Other combinations are not allowed.

ADVANCED: Troubleshooting / Traces

This Setup screen is available only in Advanced Setup.

**General Log Level**

(Registry: General\TraceLevel)

Determines how much information is written to the trace file. The value may be from 0 to 255 (higher values are mapped to 255). Default: 10.

Mail-Level trace

(Registry: General\MailDebug)

Determines whether the messages passed between the mail-specific DLL and TCLINK.EXE are written to the trace file. Default: NO.

Note Activating the mail-level trace slows down TCLINK and produces a large trace file. This option should be deactivated for normal operation.

TCSI-Level Trace

(Registry: TOPCALL\TCSIDebug)

Determines whether the messages passed between TCLINK.EXE and the TCOSS server are written to the trace file. Default: NO.

Note

Activating the TCSI-level trace slows down TCLINK and produces a large trace file. This option should be deactivated for normal operation.

ADVANCED: Default Services

This Setup screen is available only in Advanced Setup.

TC/LINK-MX - ADVANCED - Default Services

Enter or modify the parameters now

| | |
|-------------------------|---------|
| Default FAX Service | FAX |
| Default TELEX Service | TLX |
| Default TELETEX Service | TELETEX |
| Default KCS Service | TOPCALL |
| Default FREE Service | FREE |
| Default X400 Service | X400 |
| Default SMTP Service | SMTP |
| Default NOTES Service | NOTES |
| Default VOICE Service | VOICE |

OK Cancel

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

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

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

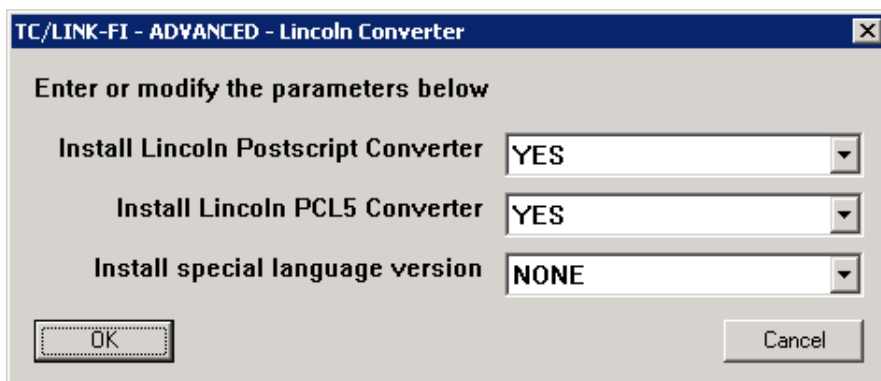
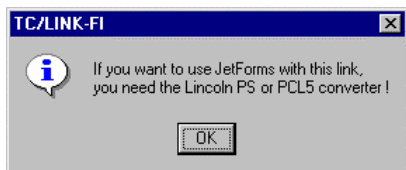
If automatic creation of KCS dependencies is enabled, the default FREE service and the default KCS service are created after link start. Depending on link type, other default services may also be created automatically.

ADVANCED: Lincoln Converter

This Setup screen is available only in Advanced Setup.

Reminder message box (Lincoln Converter needed)

If JetForm Integration is enabled and no PS or PCL converters were installed during the last link installation, a message box reminds you to install at least one of these converters.



Install Postscript Converter

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

Install PCL5 Converter

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

Install special language version

Select a special language version: NONE (default), GREEK or JAPANESE.

Note Font files matching the selected language must be already installed on the computer.

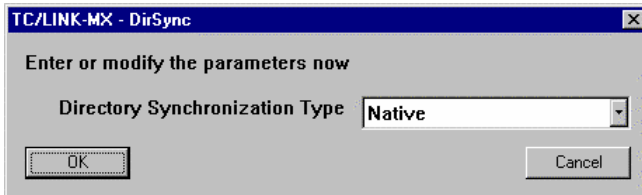
For Greek, Setup expects the Greek version of the following font files in the WINNT\FONTS directory:

COUR.TTF
COURI.TTF
COURBD.TTF
COURBI.TTF

For Japanese, Setup expects the Japanese version of the following font files in the WINNT\FONTS directory:

MSMINCHO.TTC
MSGOTHIC.TTC

Directory Synchronization Type



Directory Synchronization Type

(Registry: Dirsync\Type)

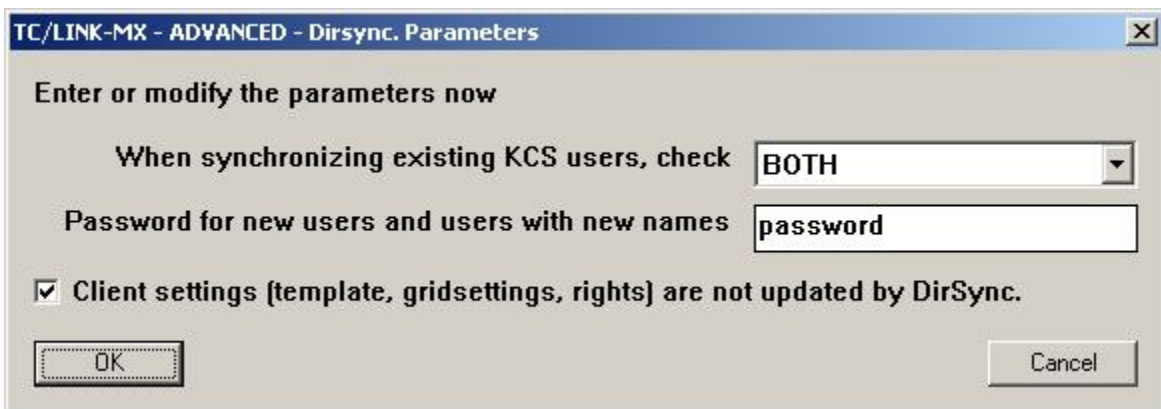
Available choices are:

- Native (only available for LN, FI, MQ)
- None
- Microsoft Active Directory
- LDIF Import

Refer to the *LDAP Directory Synchronization Technical Manual* for configuration of Dirsync with Microsoft Active Directory and LDIF Import. This manual only covers the common dirsync settings.

ADVANCED: Common Dirsync Parameters

This Setup screen is available only in Advanced Setup of links supporting directory synchronization.



The configuration steps for directory synchronization depend on the link type. There are three configuration values that are common for all links supporting dirsinc:

When Synchronizing existing KCS users, check

Registry: USRIO\ChangeAllUsers

Specify if existing KCS users shall be changed by dirsinc. Possible values:

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

- Choose Dirsync Allowed option if LDAP dirsinc is to be used with various templates belonging to different mail systems.
- Choose “BOTH” or “NONE” for standard link dirsinc.

Password for new users and users with new names

Registry: USRIO\DefaultPassword

Password for new KCS users. (Default: password)

Note This password is stored in encrypted format. If this password is changed, the new password can be written to the registry as plain text and will be encrypted by TCLINK.

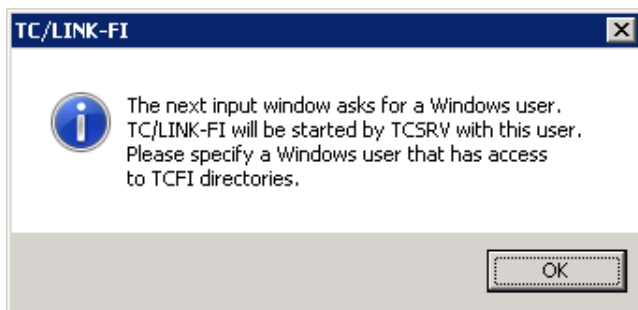
Client settings (template, gridsettings, rights) are not updated by DirSync

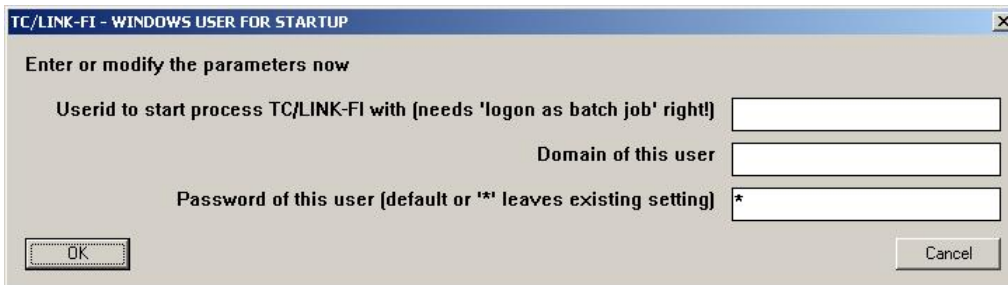
Registry: USRIO\ClientSettings

If this checkbox is clear, variables(\$variable\$) are evaluated in the Default Template field of the dirsinc template. (Default: checked (client settings not updated)).

Windows User for Startup

This Setup window is only available for certain link types. It asks for the account that TCSRv uses for starting a specific link. If a TC/LINK user is configured, TCSRv must run under the SystemAccount.



**User ID to start process TC/LINK-xx with**

(Registry: `UserId`)

The TC/LINK user must be member of the local Administrators group and must have the right to “logon as a batch job” at the link PC. Enter the name of this user.

Domain of this user

(Registry: `Domain`)

The domain of the TC/LINK user.

Password of this user

(Registry: `Password`)

The password of the TC/LINK user is stored encrypted.

Additional Informational Message Boxes

Before proceeding with the link-type specific steps, Setup displays a message box reminding you that the TCSRVS service is configured for manual startup after the first installation.



Special Link Setup

The remaining setup steps depend on the link type. Refer to the *link specific manual* for more information.

Note

Setup may ask you if the address mapping file shall be overwritten. This happens when the new map file from the Setup medium is different than the map file stored on the link computer. If you used the standard map file, just let Setup overwrite it. If you used a customized map file, do not let Setup overwrite it. Instead, compare both files and check if the customized map file must be adapted.

Steps to Do After Setup

This section describes the post installation procedure.

Upgrade from 1.19.xx or “Legacy Package”: Copy Custom Scripts

If you upgraded from Link Package 1.19.xx or from a link from the “Legacy Package”, Setup changes the directory where TC/LINK is installed. If you used customized or non-standard scripts for document conversion, you must copy them manually from the old directory (C:\TCOSS\TCLINK\SCRIPT) to the new one (C:\TCOSS\TCLP\SCRIPT).

Upgrade from 2.07.04 or Below: Edit Custom Scripts

If you upgraded from Link Package 2.07.04 or below, all custom scripts must be changed manually.

The following table gives you a summary of the changes.

| Previous versions | Now | Explanation |
|---------------------------|---|---|
| Sub main() | Dim TCInFilename Sub main(filename) TCInFilename = filename | Before the main() call, declare a global variable. Change the main() call so that it has a parameter. Assign this parameter to the global variable as first statement in the main() call. |
| TCParameter.GetInFilename | TCInFilename | Replace all occurrences of TCParameter.GetInFilename with TCInFilename. |

Configuring the TCSRVS Service

1. After Setup, you can start TC/LINK in interactive mode by clicking the new “TC/LINK-??” icon in the Kofax Communication Server group. In this mode, TC/LINK writes trace output to its console window. Thus it is easier to locate configuration problems.
2. Once TC/LINK has proved to be successfully installed, it should run in background mode, started by the TCSRVS service. Use **Control Panel / Services** to set the TCSRVS service to automatic mode. The link will then be started automatically after every reboot.

After installation of TC/LINK, TCSRVS is configured to use the System Account, without interaction with the desktop, and with manual startup. These are also the default settings for TCOSS. If other software needs different settings for TCSRVS, you must change the TCSRVS configuration via **Control Panel / Services**.

If this is a new installation and TCDC is configured for background operation, you should do a test conversion for all document types with TCSRVS set to “interact with desktop”. Respond to all message boxes that appear during conversion.

Configuring Applications for Document Conversion on Windows 2008

Refer to the *Document Conversion Technical Manual* for a detailed description.

Remote Installation

With the product ControlIT from company Computer Associates International (current version: 4.6) you can install, update, or administer TC/LINK from remote. Install the ControlIT server on the link computer, and install the client on the remote workstation. The client screen, keyboard and mouse can be switched to the server now. Input is redirected to the server and the server screen also is visible on the client. Programs can be started and executed directly on the server as if you would sit in front of it.

Different connection types are supported, like TCP/IP or dial up connection.

How to contact Computer Associates International

Postal:

World Headquarters Computer Associates International, Inc.
One Computer Associates Plaza Islandia, NY 11749, USA

Tel: 001-516-342-5224

Email: info@cai.com

Web site: www.cai.com/upgrade/universal_controlit.htm

Automatic Creation of Dependencies

In the following sections, the creation of dependencies is explained in detail.

As a general rule, the dependencies are created as following:

- If an object already exists, it will not be changed.
- If an object does not exist, TC/LINK creates it.
- If an object cannot be created, TC/LINK logs an error and terminates. You can then choose a different dependency name or property or disable the creation of this dependency and restart the link

Queue User(s)

TC/LINK checks if all KCS queues needed by the link instance exist. A set of formats for queues can be specified in advanced Setup. By default, all formats are selected.

Error condition: If there is already a normal user or address book entry with the same name.

Default Template

KCS setup installs a default template in the message store of the link user. This will become the default template for the guest user and for the dirsyntax template user.

Setup copies the default template to file DEFTMP in the message folder of the link user. It has the following characteristics:

- Low priority for all recipients
- Sending copy: ALL
- No cover sheet

Guest User

In advanced Setup, a guest user can be defined. When transmitting messages from a mail user without KCS shadow profile, TC/LINK uses the default template and user rights of the guest user. If the name of a guest user is defined (registry `TOPCALL\GuestUser`), TC/LINK checks whether a KCS user profile with this name exists.

Error condition: A recipient with the same name exists.

The default name of the guest user is GUEST.

ONLYIMG Template

TC/LINK uses the cover of the ONLYIMG template (stored in the message store of the link user) for mail messages that do not start with a text. The default ONLYIMG template has no cover sheet.

The name of the ONLYIMG template has to be ONLYIMG. Do not change the name.

Cover Sheets for Notifications

Most link types use special notification cover sheets to create transmission reports (transmitted to mail together with notifications). The names of these cover sheets are configured in the `TOPCALL\DelCover` and `TOPCALL\NonDelCover` registry keys. The cover sheets must be in the message store of the TC/LINK user.

Dirsync Templates

All links capable of directory synchronization use special KCS user or recipient templates for this purpose. During update of dependencies, TC/LINK can create these templates.

Dirsync Template User

If a dirsync template user is configured (registry key name depends on link type), TC/LINK checks if the KCS user specified there exists.

Dirsync Template Recipient

If a dirsync template recipient is configured (registry key name depends on link type), TC/LINK checks if the KCS recipient specified there exists.

The following default names are used.

| Dirsync type | User template | Recipient template |
|----------------------------|---------------|--------------------|
| Exchange, Active Directory | ADUSER | ADRECIP |
| Lotus Notes | LNUSER | LNRECIP |

For TC/LINK-FI directory synchronization no standard template users are available.

Services

In most installations, KCS users use one or more special services to send messages to TC/LINK. Name and address type of these services depend on the link type. Most link types also need several default KCS services, for example, for Fax, Telex and others.

For every service object defined in `Setup\CreateTCObjects`, TC/LINK checks whether the service already exists. TC/LINK checks if service name, address type and prefix match.

Error condition: There is already a service with the same name but a different prefix or type.

The following service names are used by default.

| Link | Service(s) |
|------|-----------------------|
| FI | TCFI |
| LN | NOTES |
| MQ | MQ |
| MX7 | MX7 |
| OC | SMTP* |
| SC | SCFAX, SCSMTP, SCX400 |
| SI | SAP |
| SJ | SCANJET* |
| SM | SMTP |
| WM | SMS |

"*": No messages can be sent to these links. The services are used for enhanced originator mapping only. You can enter proxy addresses with these services to shadow user profiles.

Remark: The length of the service names is restricted to 31 characters.

Use-Case File for TIFF Printing

TC/LINK creates a sample use-case definition message UCIDTIFF in the message folder of the link user, with comments that explain the use-case definition syntax.

Other Dependencies

Refer to the *link specific release descriptions* for information about link specific dependencies, like the 'postmaster' user for TC/LINK-SM.

Registry Subkey "Setup"

For automatic creation of KCS dependencies, Setup stores some information in registry subtree *Setup*. (For example, which queues and services shall be created, file names for default template, cover sheets, and more.) This information is used by TC/LINK.

As a special feature, all string values in the *Setup* subtree may be references to other registry values. Such a reference consists of an “=” sign followed by the name of a registry key (relative to HKEY_LOCAL_MACHINE\Software\TOPCALL\<LinkName>).

For example, “=TOPCALL\GuestUser” means the content of the TOPCALL\GuestUser registry key. The referenced registry value may again contain a reference.

Subkey *Setup* contains the following values.

| Name | Type | Default | Description |
|---------------------------|----------|----------------------|---|
| CreateDependenciesTopcall | DWORD | 1 | 1: TC/LINK checks and (if needed) creates KCS dependencies after startup. |
| CreateDependenciesMail | DWORD | 1 | 1: TC/LINK checks and (if needed) creates mail system dependencies after startup. |
| QueueFormats | SZ | I01234PBDGMNF | Valid image formats for queue users. |
| CreateTCObjects | MULTI_SZ | Depends on link type | List of KCS objects that TC/LINK shall create. |

The multi string value *CreateTCObjects* holds a list of KCS objects that TC/LINK shall create. These objects may be users, recipients, messages or services. They are defined in registry subtrees called *Setup\<name>*, where <name> is one of the strings in *CreateTCObjects*. Every object contains *Type* and *Name* subkeys. An object is only installed if it has a valid type and a non-empty name. The objects are created in the same sequence as TC/LINK finds their names in this multistring list.

Standard objects installed for most link types:

- OnlyImgTemplate
- DefaultTemplate
- GuestUser
- DelNotifCover
- NonDelNotifCover

Objects installed for links capable of dirsnc:

- DSUserTemplate
- DSRecipTemplate

Additional objects for special links:

Link services, postmaster user, and more.

Registry values for KCS objects:

Every object definition has a *Type* value, which defines whether the object to be created is a message (type M), user (type U), recipient (type R) or service (type S).

For message objects.

| Name | Type | Default | Description |
|------|------|---------|-------------|
| Type | SZ | M | M = message |

| Name | Type | Default | Description |
|------------|------|---------|--|
| Name | SZ | | file name for the KCS message |
| Folder | SZ | FIS | TCOSS folder for the KCS message |
| ImgEntryMS | SZ | | Path to file with ASCII image of the message |

For user objects.

| Name | Type | Default | Description |
|----------------|------|--|--|
| Type | SZ | U | U = user |
| Name | SZ | | User ID |
| Password | SZ | 2B3D2E2D280F1306 (means "password") | Optional. Setup writes the password in encrypted format, but it may also be written as plain text (via a registry editor). If not specified, the password will be "password". |
| TemplateName | SZ | | Optional. File name of the user's default template. If empty, user gets the default TCOSS template (like in TCFW). |
| TemplateFolder | SZ | FIS | Optional. Folder of the user's default template. Only valid if TemplateName is specified. |
| ImgEntryUS | SZ | | Path name of ASCII image with user store entry. |
| ImgEntryRS | SZ | | Optional. Path name of ASCII image with recipient store entry. <ul style="list-style-type: none">• For normal users, this parameter should be omitted. TC/LINK then creates 1 local address for this user.• For dirsinc template users, the ImgEntryRS is needed, because the address of the template user holds placeholders for mail-system variables. |

For recipient objects.

| Name | Type | Default | Description |
|------------|------|---------|--|
| Type | SZ | R | R = recipient |
| Name | SZ | | Recipient ID |
| ImgEntryRS | SZ | | Path name of ASCII image with recipient store entry. |

For service objects.

| Name | Type | Default | Description |
|------------|------|---------|---|
| Type | SZ | S | S = service |
| Name | SZ | | Service name |
| Prefix | SZ | | Optional service prefix, converted to uppercase by TC/LINK. Overrides the prefix in the image file. |
| ImgEntrySS | SZ | | Path name of ASCII image with service store entry. |

Example for Registry Subkey Setup

```

CreateTCObjects DefaultTemplate
    OnlyImgTemplate
    DelNotifCover
    NonDelNotifCover
    GuestUser
    DSUserTemplate
    DSRecipTemplate
    ServiceTCI
    ServiceTIF
    ServiceFree
    ServiceFax
    ServiceTC

CreateDependenciesTopcall 0x1
QueueFormats I4D

DefaultTemplate
    Folder    =TOPCALL\User
    ImgEntryMS C:\TCOSS\TCLP\Setup\DefTemp.asc
    Name      DefTemp
    Type      M
DelNotifCover
    Folder    =TOPCALL\User
    ImgEntryMS C:\TCOSS\TCLP\Setup\DelCvr.asc
    Name      =TOPCALL\DelCover
    Type      M
DSRecipTemplate
    ImgEntryRS C:\TCOSS\TCLP\Setup\DSRecip.asc
    Name       =Exchange\DSRecipTemplate
    Type       R
DSUserTemplate
    ImgEntryRS C:\TCOSS\TCLP\Setup\DSUserRS.asc
    ImgEntryUS C:\TCOSS\TCLP\Setup\DSUserUS.asc
    Name       =Exchange\DSUserTemplate
    Password
    TemplateFolder =Setup\DefaultTemplate\Folder
    TemplateName   =Setup\DefaultTemplate\Name
    Type          U
GuestUser
    ImgEntryUS C:\TCOSS\TCLP\Setup\GuestUS.asc
    Name       =TOPCALL\GuestUser
    Password
    TemplateFolder =Setup\DefaultTemplate\Folder
    TemplateName   =Setup\DefaultTemplate\Name
    Type          U
NonDelNotifCover Folder    =TOPCALL\User
    ImgEntryMS C:\TCOSS\TCLP\Setup\NDelCvr.asc
    Name       =TOPCALL\NonDelCover
    Type       M
OnlyImgTemplate
    Folder    =TOPCALL\User
    ImgEntryMS C:\TCOSS\TCLP\Setup\OnlyImg.asc
    Name      ONLYIMG
    Type      M
ServiceTCI
    Name      EXTCI
    Prefix    TCLMXQI:EX:
    ImgEntrySS C:\TCOSS\TCLP\Setup\ServTci.asc
    Type      S

```

```
ServiceTIF
  Name    EXTIF
  Prefix  TCLMXQ4:EX:
  ImgEntrySS  C:\TCOSS\TCLP\Setup\ServTif.asc
  Type    S
ServiceFree
  Name    =TOPCALL\FreeService
  Prefix
  ImgEntrySS  C:\TCOSS\TCLP\Setup\ServFree.asc
  Type    S
ServiceFax
  Name    =TOPCALL\FaxService
  Prefix  F:
  ImgEntrySS  C:\TCOSS\TCLP\Setup\ServFax.asc
  Type    S
ServiceTc
  Name    =TOPCALL\TcService
  Prefix
  ImgEntrySS  C:\TCOSS\TCLP\Setup\ServTC.asc
  Type    S
```

Chapter 6

Hints and Troubleshooting

This section describes hints and troubleshooting.

TCMIME.DLL with TCOSS < 7.23.02

If TCOSS older than version 7.23.02 is installed on the TC/LINK computer, you should copy TCMIME.DLL from the TOPCALL\SHARED directory to C:\TCOSS\SYSTEM before installing links.

The server components POP3 and IMAP need the old version of TCMIME.DLL.

TCOSS Number Series

Increase the KEEP value of all number series characters configured as backreception character at any TUM channel, such as fax, telex, async, and the rest, in order to prevent loss of notifications to mail. If the number of notifications waiting to be transferred to the link exceeds the KEEP value, they are deleted by TCOSS before they are transmitted to TCOSS.

Up to now it just was recommended to increase the TCOSS “R” number series, which is used for fax channels by default. This is not sufficient because any TCOSS channel can complete send orders. The notification files are named, for example, ATR* or ATU*, depending on the terminating channel.

Note Specifying a KEEP value of 1000 really occupies 1000 mail entries. These entries cannot be seen in the outbox, just in the ‘file usage’ screen of TCfW. You can reduce the number of mail entries by specifying a number as first character, such as A0R* files. The files are then deleted immediately after they are sent by the link. Please refer to the current *TCOSS System Manual* for details.

Option for Periodic Removal of Temp Files

TC/LINK can be configured to remove temporary files created by applications used for document conversion, such as the Lincoln Converter. The General\FilesToRemove (MULTI_SZ) registry key holds a list of path names including wildcards. For example, “C:\TCOSS\TCLP\bd*” or “C:\TCOSS\TCLP\TMP\TCLINKSM*.*”. If this list exists, then after every poll cycle, TC/LINK tries to delete all files matching the patterns described in the list.

By default, the registry key is empty and no files are deleted automatically.

Foreground Document Converter Learns

During foreground conversion, keystrokes and mouse-clicks are stored. Use remote administration or stop the links when working on this computer to avoid conflicts during document conversion.

Examine the TCDC.INI (Windows directory) file if you need to know whether TC/DC stored any unwanted keystrokes.

TC/LINK Version

The version reported in the TC Link's headerline is taken from the TCCLIENT.INF file. The real versions of TCLINK.EXE and the used DLL's are reported in the link's trace file.

Line Breaks

It is possible that the line breaks for long text lines of messages coming from mail are not shown the same as they are in mail. The reason of this problem is that some mail systems insert line breaks into the message text, for example, after the 79th character.

Some mail systems insert line breaks into the message text, for example, after the 79th character. Therefore, the line breaks for long text lines of messages coming from mail may not be displayed the same as they are in mail.

TCSI Error 428 (Bad Originator)

The reason of an error 428 that occurs while sending from the remote mail system to KCS without shadow user may be a missing queue user. The queue user for the default graphic format (`TOPCALL\NotifGraphic`) must always exist.

Dirsync Performance

Before starting a full dirsync in large installations, you should change the TCOSS configuration on the TCOSS server. Otherwise, dirsync can be very slow.

1. Create a registry value to specify the TCOSS cache size in kB:
`HKLM\Software\TOPCALL\TCOSS\Drive0\DataBaseCacheSize (DWORD)`
2. Set it to the number of users. For each user, approximately 1kB of cache is required. For example, for 30,000 users, 30,000 kB is required. The throughput is around 1 user / second.

Shared Directory

Kofax Communication Server uses a common directory to hold shared files. In very old versions, these files were stored in separate directories: `C:\TCOSS\SYSTEM` for server components, and `C:\TCOSS\TCLINK` for link components.

Currently, shared files are in the "`C:\TOPCALL\SHARED`" directory. The name of the shared directory is stored in the `HKLM \Software\TOPCALL\SharedDirectory (SZ)` registry value.

Setup overwrites existing shared files only if the version of the new file has a higher version number. Thus, the Shared directory always holds the newest versions.

Additionally, this directory is added to the system path. This is required for the programs to find these modules.

KCS Setup copies a number of files to this directory, and deletes their equivalents from both former directories:

SC.EXE
TCCPUNR.EXE
TCGENDEP.DLL
TCGENDEP.EXE
TCIMG32.DLL
TCLIB32.DLL
TCMIME.DLL
TCMON32.EXE
TCMSG.DLL
TCRPC32.DLL
TCSI32.DLL
TCSNMP.CNF
TCSNMP.DLL
TCSR.V.EXE
TCTI32.DLL
TFC32.DLL
TP80.DLL
TPLINK.SYS

Hints for Document Conversion

For document conversion issues, refer to the Troubleshooting section in the *Document Conversion Technical Manual*.

Hints for Lincoln Converter

For additional information about the Lincoln Converter (configuration, error codes), refer to the *KCS Document Conversion Technical Manual*.

Hints for JetForm

JetForm is only available on Windows Server 2008 32-bit.

Disable JetForm Central

If you have installed the whole JetForm Central, please disable the “JetForm Central Control Service”.

The “JetForm Central Control Service” has a serious impact on the system performance and the two applications, Link and JetForm, both use the same resources locking and influencing each other.

JetForm and TC/LINK-SC

To use the JetForm integration for the TC/LINK-SC, you must configure SAP R/3 that simple (=RAW) ASCII Text is used for Fax. Select an ASCII Printer Driver and give OTF to RAW conversion the highest priority. For further details, refer to the *TC/LINK-SC Technical Manual*.

JetForm: Performance Impacts

Since the KCS JetForm Integration is a two pass conversion of firstly the JetForm Data Stream to Postscript or PCL and secondly to the TCI image, the performance is limited by the performance of JFMERGE and of the Lincoln Converter.

Former tests results showed us that approximately 1500 fax pages per hour are converted on a Pentium II 266 with the Lincoln Converter.

JFMERGE has also an impact on the system performance so that the overall performance is reduced to around 1000 fax pages per hour.

This value depends on the used environment and the amount of workload of other application running on this machine.

JetForm: Version Used for Development

The version of JFMERGE used for development was 5.2.290.2. The version 5.0 of JFMERGE does not offer the functionality needed for TCDC and is thus not supported.

Other versions were not tested. Update at least to JetForm Central Version 5.2 if you experience problems with your version.

Dirsync Problems with Long User IDs

Long user IDs for the shadow users may lead to dirsyntax problems. TCOSS assumes that the average user ID length is 16 bytes per entry. Using longer strings can lead to the error message "308 - disk full, object could not be stored" even though there are more than 50 % of user entries free on that system. This situation is by long user IDs, because the corresponding addresses exceed the maximum defined string length. See also Hint #5890 in the Errors Database.

Performance Counters May Disappear After Operating System Errors

The `HKLM\System\CurrentControlSet\Services\TCSR\Performance\Disable Performance Counters` registry value controls the performance objects created by KCS applications. Normally, this value is 0 and performance objects work as expected.

If Windows detects problems, it may spontaneously set the value to 1, and thus disable all performance counters for KCS applications.

Additionally, the registry value may be 1 after booting from the “Last valid configuration” (because then a different control set is used).

In these cases, it helps to reset the value to 0 via a registry editor. If this does not help, try resetting the respective registry values for all control sets: “`HKLM\System\ControlSet00x\Services\TCSR\Performance\Disable Performance Counters`” (where x is 1 to 3).

Recommended Configuration for Sending PK7 Attachments

TC/LINK configuration for sending signed attachments to the mail system:

Make sure that TC/LINK really uses the PK7 representation of the attachment.

Configure the `General\FmtFileAttachment` registry value to use the binary representation as the preferred one. The value starts with character B, such as “BIT”. This is the default configuration for most link types. Otherwise, the recipient will not get the PK7 file.

With TC/LINK-SDD, the default configuration is to use the image representation. The value starts with character I.

Change it to B(PK7)I. For example, “B(PK7)IT”.

With TC/LINK-SDD, change the `General\ConvertToPDF` registry value from “AlwaysComplete:STB” to “AlwaysComplete:ST”. Otherwise, TC/LINK-SDD removes the PK7 attachments.

With TC/LINK-SDD, the PK7 files will be included in the sending copy.

Chapter 7

Restrictions

This section describes the restrictions of TC/LINK.

Restrictive Error Handling in Forced Document Conversion

If you force document conversion via `General\AltForceBinToTCI`, `General\AltForceBinToPDF` or `General\AltExtSuppressBinary` registry keys, TCLINK rejects messages with unconvertible attachments.

In previous releases, this was handled in a less restrictive way; the document conversion errors were simply ignored.

Now, document conversion errors are only ignored, if the attachment type is one of those configured in the `TCDCLINK\General\IgnoredExtensions` registry key.

Restrictions for TCOSS Older Than 7.59.06

The current links are compatible with multiple older TCOSS versions, but there are restrictions if the TCOSS version is older than 7.59.06. The following table shows an overview.

| Feature | Minimum TCOSS version |
|--|-----------------------|
| TCDC_SIGN support | 7.59.06 |
| TC/Message Analyzer support | 7.57.04 |
| Special send copy option for TC/LINK-SDD | 7.41.00 |
| ++INVALID feature | 7.40.00 |
| Latest delivery timeout | 7.30.00 |
| Voice Integration | 7.29.00 |
| Japanese character set support | 7.25.00 |
| Integrated archiving | 7.24.02 |
| Enhanced originator mapping | 7.22.00 |

Extended Error Description Only in English

The extended error description in non-delivery notifications (inserted via the \$ExtError\$ cover sheet variable) is always in English language.

Restrictions for Advanced PDF Conversion

For each attachment one PDF file is generated. Currently, it is not possible to have one PDF file generated for all attachments (PDFs are not merged).

It is not possible to have PDF content overlaid with overlays stored on KCS.

KCS cover sheets are not supported with advanced PDF. This requires standard PDF conversion to be configured on the outbound TC/Link and will result in a separate black and white PDF file.

For rich text message bodies created via TC/LINK-LN, it is not possible to have both TCI and PDF alternatives. By default, no PDF alternatives are created.

For additional PDF conversion restrictions, refer to the *Document Conversion Technical Manual*.

Setup Input Windows

Texts in setup input windows are available in English only, even if another language is selected via the setup command line. The texts are not integrated to the setup language files yet.

TCOSS Distribution Lists

Distribution lists are not supported with the current version. If a message from mail specifies a distribution list as a recipient (via the KCS address book), this entry is ignored. Messages from KCS to mail are sent to all recipients of specified distribution lists. In this direction distribution lists are supported.

Embedded Messages Support

Only the link type SM and MX7 are able to transfer embedded messages (messages within messages) from and to KCS as embedded messages. The other links are appending the embedded message “flatly” within the actual message. Please note that the messages are transferred in any case.

JetForm: Asian Languages (Multi Byte Character Sets) Not Supported

The KCS JetForm Integration was not tested with Asian languages. Although the implementation takes care about all MBCS issues, Asian languages are currently not supported.

Number of Recipients in Mail Message

You may encounter problems when sending a mail message to a large number of recipients. There is only a limited number of TCSI handles available, and if this number is exceeded, further processing of the message (and even creation of a non-delivery notification) becomes impossible.

The maximum number of recipients may depend on other parameters (e.g. overall complexity of the message, link type). As a rule, using more than 999 recipients in a message should be avoided.

Unsupported Document Conversion Features

Document conversion in foreground and the “learn mode” feature are not supported on Windows Server 2008 and later operating systems. With TC/LINK-MX7, embedded OLE attachments in RTF messages cannot be converted (use HTML message format instead).

UAC: Interactively Started Applications Run As Administrator

If User Account Control is enabled, you can only start a link interactively after allowing it to run as an administrator (the user account control prompt is displayed).

Note Processes started as administrator use the network connections of the local Administrator user, and do not share the network connections of the logged-on user. For instance, the interface folders of TC/LINK-FI are only accessible if the local Administrator user has access to them.

Document Conversion Restrictions

- Microsoft Office applications have to be configured with “Dcomcnfg” to run either with the “Interactive User” or “This User”. If the “Interactive User” is configured, it is not allowed to log off. If “This User” is configured, the applications can’t be seen and no interaction or troubleshooting is possible, additionally the MS Office applications cannot be used by any logged on user.
- Other applications, such as Internet Explorer, do not need configuration in “Dcomcnfg”. Interaction is generally not possible as they are started via service and only interact on Session0. If the “LogonType” is “+...”, and the “Interactive Services Detection” service is running, you can however switch to Session0 and see the applications and answer dialogs.

- The default printer is set by the Document Converter as needed. It is not allowed to use the printer during Document Conversion.
- It is not allowed any more to use the Run-keys, for the MS Office applications, as using those starts Office not via Script/Automation/DCOM, but via "CreateProcess", and thus runs not in the same context.
- Foreground Mode (starting interactively, for example, from the start-menu) and Keyboard recording, Learn Mode (Help-me mode) are not supported any more on Windows Server 2008 and later operating systems.

Chapter 8

Registry Keys Used by TCLINK.EXE

Link configuration is stored under the `HKEY_LOCAL_MACHINE\Software\TOPCALL\<linkname>` key, where `<linkname>` is a placeholder for the unique identifier of the link.

See [Links Setup Program](#) for detailed information about TC/LINK configuration.

Subkey <linkname>

| Registry Key | Type | Default | Description |
|------------------|-------|---------|---|
| CommandLine | SZ | | The command line used to start TC/LINK |
| MaxTraceFileSize | DWORD | 1000 | Maximum trace file size in kilobytes. Increase this value for troubleshooting. |
| TraceToScreen | DWORD | 0 | Must be 0. |
| AppendTrace | DWORD | 0 | 0: TC/LINK starts a new trace file when starting. 1: TC/LINK appends trace output to the existing trace file. Set to 1 for troubleshooting. |
| UserId | SZ | | Optional: Windows user for TC/LINK. |
| Password | SZ | | Optional: Password for TC/LINK. |
| Domain | SZ | | Optional: Domain for TC/LINK. |
| LogonType | SZ | Batch | Must be Batch if TC/LINK started with special user. |
| Heartbeat | DWORD | 0 | 0: heartbeat event disabled. nonzero: Interval (in minutes) for heartbeat event. This event (ID=21535) is created regularly as long as the link process is active and not in idle mode. |

Subkey <linkname>\TOPCALL

| Registry Key | Type | Default | Description |
|----------------------|-------|---------|---|
| Allow++ | DWORD | 1 | 0: Text directives are treated like normal text. |
| Allow++FROM | DWORD | 1 | 0: The ++FROM text directive is ignored. |
| AllowLongLinesToMail | DWORD | | 0: Text lines in messages to mail have a maximum length of 90 characters. Should be 0 for TC/LINK-SC and probably also for TC/LINK-FI. |

| Registry Key | Type | Default | Description |
|--------------------|-------|-----------|--|
| AllowRemAsap | DWORD | 1 | 0: TC/LINK ignores the send option "remove message ASAP" (REMMSG with FI and MQ). |
| ArchiveName | SZ | TCARCHIVE | KCS User ID of the archive recipient. |
| ArcNeg | DWORD | | 1: Archive send order, if neg. terminated. |
| ArcPos | DWORD | | 1: Archive send order, if pos. terminated. |
| BackRecForAll | DWORD | 0 | <ul style="list-style-type: none"> 1: Requests backreception events if a sending copy is requested, even if no notification requested. 0: TC/LINK does not request separate backreception events to non-KCS originators. |
| CheckRights | DWORD | 0 | 1: TC/LINK checks the mail originator's rights for cost center change, direct number entry and service restrictions. |
| ChkDisSend | DWORD | 0 | 1: Only KCS users may send via the link. |
| CodePage | DWORD | | TCOSS codepage (written by TCLINK, according to TCOSS settings). |
| CodePageAutoDetect | DWORD | 1 | <ul style="list-style-type: none"> 1: TCLINK overwrites CodePage value at startup. 0: CodePage value can be configured manually. |
| CorrAddress | DWORD | 0 | <ul style="list-style-type: none"> 1-4: Custom field ID to store original sender address. 0: Does not store. |
| CorrLinkName | DWORD | 0 | <ul style="list-style-type: none"> 1-4: Custom field ID to store link computer name and instance name. 0: Does not store. |
| CorrLinkQueue | DWORD | 0 | <ul style="list-style-type: none"> 1-4: Custom field ID to store default link queue name. 0: Does not store. |
| CorrMapped | DWORD | 0 | <ul style="list-style-type: none"> 1-4: Custom field ID to store if the sender is a KCS user (yes) or not (no). 0: Does not store. |
| DelCover | SZ | | Name of delivery cover sheet (including blanks and CVR, such as LXDEL CVR). |
| DelEntNeg | DWORD | | 1: Delete entry, if neg. terminated. |
| DelEntPos | DWORD | | 1: Delete entry, if pos. terminated. |
| DelEnvNeg | DWORD | | 1: Delete envelope, if neg. terminated. |
| DelEnvPos | DWORD | | 1: Delete envelope, if pos. terminated. |
| DelNfAsMessage | DWORD | 0 | 1: Delivery notification from KCS sent as normal message. |

| Registry Key | Type | Default | Description |
|------------------------------|-------|---------|--|
| DelNfOnlyText | DWORD | | 1: Delivery notification from KCS includes only text. |
| DelNfOrigToMail | DWORD | | <ul style="list-style-type: none"> 1: Delivery notification from KCS includes original message or backreception. 2: Delivery notification includes original message even if there is a backreception (overwritten by Setup). |
| DelNfTxtToMail | DWORD | | 1: Delivery notification from KCS includes delivery cover sheet. |
| FatalErrorRetryMappingFromTC | DWORD | 0 | <p>This registry key is created at TC/LINK startup and the default break code value of all the errors is set to '0' ("LV=0 LX=0 LH=0 LI=0 M1=0".)</p> <ul style="list-style-type: none"> 1-5: Based on this break code value, the message retries are initiated. 0: No retries are done. |
| FaxService | SZ | | Default Fax service. |
| FetchSingleSendOrder | DWORD | 0 | 1: Fetch only 1 send order per message from TCOSS (needed for some link exits, such as MetaMail). |
| FineMode | DWORD | | 1: Send graphics to the mail system in fine mode. |
| FreeService | SZ | | Default Free service. |
| GuestUser | SZ | | Name of the KCS guest user profile. |
| IncludeCover | DWORD | 0 | <ul style="list-style-type: none"> 1: Cover always forwarded to mail system. 0: Cover forwarded only if image format is TCI. <p>Only used if General\CompatibilityNoCover is 0.</p> |
| Internal | SZ | | Encrypted password of the KCS link user. |
| LimitPriority | DWORD | 0 | Limit send priority to default settings from template. |
| LinesPerPageToMail | DWORD | 0 | <ul style="list-style-type: none"> Nonzero: Text pages sent to the mail system have the specified number of lines per page. 0: The default number of lines per page (59) is used. |
| LogonRetry | DWORD | | <p>The number of poll cycles TC/LINK waits in idle state after the connection to TCOSS got lost.</p> <p>After this interval TC/LINK retries to connect to TCOSS.</p> |
| NeedPWD | DWORD | 0 | 1: Mail originator must provide a password (++)PW). |
| NonDelCover | SZ | | Name of non-delivery cover sheet (including blanks and CVR, such as LXNONDELCVR). |
| NonDelNfAsMessage | DWORD | 0 | Non-delivery notification from KCS sent as normal message. |
| NonDelNfImmediate | DWORD | 1 | <p>0: Disables immediate non-delivery notifications</p> <p>Useful only if TCLSM\WaitTillPosted is not 0 – a TC/LINK-SM feature.</p> |

| Registry Key | Type | Default | Description |
|-----------------------|-------|---------|--|
| NonDelNfOnlyText | DWORD | | Non-delivery notification from KCS includes only text. |
| NonDelNfOrigToMail | DWORD | | <ul style="list-style-type: none"> 1: Non-delivery notification from KCS includes original message or backreception. 2: Delivery notification includes original message even if there is a backreception (overwritten by Setup). |
| NonDelNfTxtToMail | DWORD | | Non-delivery notification from KCS includes non-delivery cover sheet. |
| NOTESService | SZ | | Default service for messages to Lotus Notes. |
| NotifBackRecPageLimit | DWORD | 0 | Maximum number of pages for backreceived image in notifications. 0: No page limit. |
| NotifGraphic | SZ | | Default image format (used for notifications to Mail). A queue for this format MUST EXIST. |
| NotifImageFirstPage | DWORD | 0 | <ul style="list-style-type: none"> 0: Notification image file has a page break after the notification text. 1: No page break between notification text and start of original message image. |
| NotifLanguageSupport | DWORD | 0 | <ul style="list-style-type: none"> 0: No language support. 1: Global language support. 2: User specific language support. |
| NotifMail | DWORD | | 1: request notifications when sending to mail system |
| OwnAreaCodeInTSI | SZ | | Can contain the local phone number area code. If the TSI of an incoming fax consists only the area code, the message subject will be "Received from UNKNOWN". |
| Path | SZ | | TCOSS server path. May contain alternative path. |
| Queue | SZ | | "Base name" of KCS queue users for this link. This is the queue user name without the terminating format character. |
| Scopy | DWORD | | Default sending copy setting for messages to KCS. Only used if NO template used. <ul style="list-style-type: none"> 4: First 2: All 1: No |
| Server | SZ | | KCS server name. |
| SMSService | SZ | | Default service for SMS messages. |

| Registry Key | Type | Default | Description |
|-----------------------------|-------|---------|--|
| SMTPService | SZ | | Default service for messages to the Internet. |
| SOForceDelNotif | DWORD | 0 | <ul style="list-style-type: none"> 1: Delivery notifications for all messages. 0: Delivery notifications only if requested by the originator. |
| SOForceNonDelNotif | DWORD | 0 | <ul style="list-style-type: none"> 1: Non-delivery notifications for all messages. 0: Non-delivery notifications only if requested by the originator. |
| SOUseInvalid | DWORD | 1 | <ul style="list-style-type: none"> 1: If the user +INVALID exists or "+INVALID:" is routed to any other existing user, posting a message to KCS succeeds even if some recipients do not exist on KCS. Later, a non-delivery notification is returned for the non-existing recipients. 0: The feature is disabled. The message cannot be posted and an immediate non-delivery notification is returned. |
| TcService | SZ | | Default KCS internal service. |
| TCSIDebug | DWORD | 0 | 1: Trace messages passed between TC/LINK and KCS. |
| TeletexService | SZ | | Default Teletex service. |
| TelexService | SZ | | Default Telex service. |
| UpdateSystemFiles | DWORD | 0 | <p>For native (non LDAP) dirsyc:</p> <ul style="list-style-type: none"> 0: Never update system files. All other values: Update after every successful dirsync. <p>For LDAP dirsync:</p> <ul style="list-style-type: none"> 0: Never update system files. 1: Update once per day. 2: Update after every successful dirsync. |
| User | SZ | | Name of KCS link user. |
| UserSpecificOnlyimg | DWORD | 0 | 1: Search ONLYIMG cover in originator's message folder. |
| UserSpecificDefaultTemplate | DWORD | 1 | <ul style="list-style-type: none"> 0: Ignore default templates of shadow users. 1: Use default templates of shadow users. |
| X400Service | SZ | | Default X400 service. |

Subkey <linkname>\TOPCALL\ExceptionQueues

| Registry Key | Type | Default | Description |
|--------------|-------|---------|---|
| Mode | DWORD | 0 | <p>1: Forward messages with document conversion errors to an exception queue.</p> <p>0: Standard document conversion error handling: non-delivery notification to originator.</p> |

| Registry Key | Type | Default | Description |
|-------------------------|-------|----------|--|
| Cover | SZ | | Defines the TCOSS document used to generate the optional metadata text block. Syntax: Folder/filename Example: TCLINK/EXCEPT |
| SendNonDelNotif | DWORD | 0 | 0: Return a delivery notification to the sender. 1: Return a non-delivery notification to the sender. |
| Queues\ DefaultQueue | SZ | operator | Default exception queue. |
| Queues\ <address> | SZ | | Define additional exception queue mappings. See Forwarding Failed Message to Exception Queue for details. |

Subkey <linkname>\General

| Registry Key | Type | Default | Description |
|-----------------------|----------|----------------------|---|
| AdvancedRTFConversion | DWORD | 0 | 1: Enable advanced RTF conversion (RTF on cover). |
| ALCConversion | DWORD | 0 | 1: Enable support of PDF with XFA. |
| ALCServerOutputURL | SZ | | URL of the Adobe Experience Manager server. |
| ALCUserName | SZ | | User ID for connecting to the Adobe Experience Manager server. |
| ALCUserPassword | SZ | | Password for connecting to the Adobe Experience Manager server. |
| AllowedDelay | DWORD | 10 | Allowed period of inactivity (in minutes). |
| AltExtSuppressBinary | MULTI_SZ | | Extensions of files that are transmitted to KCS as Image only. |
| AltForceBinToPDF | DWORD | 0 | <ul style="list-style-type: none"> 1: Create a PDF alternative for every file attachment and message body. 2: Process PDF attachments via document converter, according to the settings of TCDCLINK (required for normalizing PDF to PDF/A and for PDF with XFA forms). |
| AltForceBinToTCI | DWORD | 0 | <ul style="list-style-type: none"> 0 : Document conversion only if a recipient cannot handle binary attachments. 1: Document conversion is done always. |
| AltForceBodyToTCI | DWORD | Depends on link type | <ul style="list-style-type: none"> 1: Force document conversion for HTML or RTF message body, even if recipients support binary attachments Default value is 1 for link types that can encounter HTML or RTF message bodies, such as LN, MX7, SM. |
| AltForceImgToTCI | DWORD | 0 | <ul style="list-style-type: none"> 0: Image alternative for graphic attachments only created if needed. 1: Graphic attachments always converted to image. |

| Registry Key | Type | Default | Description |
|--------------------------|----------|-------------------|--|
| AltImgBeforeText | DWORD | 1 | Order of alternatives for RTF message bodies. <ul style="list-style-type: none"> • 1: TCI as first alternative. • 0: Text as first alternative. |
| AltImgOnFirstPage | MULTI_SZ | | Defines which attachments are printed on the cover page. |
| AttMsgCover | SZ | | Cover sheet for attached message body text. This is a special feature of TCCCD. |
| AttPosEnabled | DWORD | 0 | 1: Store relative position of attachment in ts_content_id. This is a special feature of TCCCD. |
| AttPosSeparator | SZ | _ | Only valid if AttPosEnabled is 1. Separator character. |
| AutoDetectPCCodepage | DWORD | 1 | <ul style="list-style-type: none"> • 1: TCLINK overwrites CodePage value for the remote mail system at startup. • 0: CodePage for the remote mail system can be configured manually. |
| CharCR | DWORD | 0x0d | Reserved for future use (TC/LINK-XML). |
| CharLF | DWORD | 0x0a | <p>Determines the character to use for storing the linefeed character into TCOSS, when TCOSS CodePage is greater than 1.</p> <p>Possible values:</p> <ul style="list-style-type: none"> • 0x0a • 0x0e |
| CompatibilityOldContent | DWORD | 0 | 1: Do not create alternative attachment contents. |
| CompatibilityOldOrig | DWORD | 0 | 1: No enhanced originator mapping. |
| CompatibilityTCGATEScopy | DWORD | 0 | <ul style="list-style-type: none"> • 0: Subject of sendcopy is "Received from <fax number>". • 1: Subject of sendcopy is original message subject. |
| CompatibilityImageRes | DWORD | 0 | <ul style="list-style-type: none"> • 0: When sending a message to KCS, TCIMGIO uses the resolution defined in the send options. • 1: When sending a message to KCS, TCIMGIO always uses the highest possible resolution. |
| ConvertToBMP | SZ | SinglePage | Controls output of Fax -> BMP conversion. |
| ConvertToPCX | SZ | SinglePage | Controls output of Fax -> PCX conversion. |
| ConvertToPDF | SZ | CompleteIfGraphic | Controls output of Fax -> PDF conversion. |
| ConvertToTCI | SZ | CompleteIfGraphic | Controls output of Fax -> TCI conversion. |
| ConvertToTCIJ | SZ | MultiPage | Controls output of Fax -> TCI (subformat J) conversion. |
| ConvertToTIF | SZ | MultiPage | Controls output of Fax -> TIF conversion. |
| ConvertToDCX | SZ | MultiPage | Controls output of Fax -> DCX conversion. |

| Registry Key | Type | Default | Description |
|----------------------------|----------|------------------------|---|
| ConvertToGIF | SZ | MultiPage | Controls output of Fax -> GIF conversion. |
| ConvertToMODCA | SZ | MultiPage | Controls output of Fax -> MODCA conversion. |
| CostsPerRecipient | DWORD | 0 | Per recipient cost factor for sending to mail. 0: Disabled |
| CoverFolder | SZ | | The folder where TC/LINK shall search cover sheets specified within a message to KCS. |
| CoverForRTF | DWORD | | 1: Insert default cover sheet into mail messages starting with an RTF image. |
| DefaultExtension | SZ | BIN | The extension to be appended to attachment names without extension. |
| Directory | SZ | C:\TCOSS \TCLP | Working directory for TC/LINK. DO NOT CHANGE. |
| DLL | SZ | | Name of mail-specific DLL without path and extension. |
| DocConv | DWORD | | 1: Enable document conversion. |
| DocConvErrorIsFatal | DWORD | 0 | 1: Stop link after document conversion error. |
| EmbeddedMessages | DWORD | 0 | <ul style="list-style-type: none"> 0: Embedded mail messages in message to mail are resolved flatly. 1: Embedded mail messages in message to mail are transmitted unchanged. |
| EmptySubject | SZ | \$ReceivedFrom\$ | Replacement string for empty subject in messages from TCOSS. Can include variables \$ReceivedFrom\$, \$FileName\$ and \$Empty\$. |
| ExitDLL | SZ | | Path name of exit DLL (optional). |
| FilesToRemove | MULTI_SZ | | List of files to delete after every poll cycle. |
| FmtAdditionalimage | SZ | | <p>Possible values: 01234IF</p> <p>For messages to the mail system, TCLINK can produce an additional image of the complete message, as TIFF (0-4), TCI (I) or PDF (F).</p> <p>Only possible if the format of the send queue is configured as singlepage or multipage.</p> |
| FmtFileAttachment | SZ | "BI" (binary or image) | The representation of a file attachment sent to the mail system. |
| FmtRTFBody | SZ | "TI" (text or image) | The representation of RTF text sent to the mail system. |
| FmtBMP\ InputExtensions | SZ | BMP | The attachments (mail to KCS) that are BMP format and shall be converted via TCIMGIO. |
| FmtBMP\ OutputExtension | SZ | BMP | Extension for BMP files created by TC/LINK. |
| FmtDCX\ InputExtensions | SZ | DCX | The attachments (mail to KCS) that are DCX format and shall be converted via TCIMGIO . |

| Registry Key | Type | Default | Description |
|-----------------------------|------|----------|--|
| FmtDCX\ OutputExtension | SZ | DCX | Extension for DCX files created by TC/LINK |
| FmtGIF\ InputExtensions | SZ | | Conversion from GIF to FAX is not possible, therefore this value is empty. |
| FmtGIF\ OutputExtension | SZ | GIF | Extension for GIF files created by TC/LINK. |
| FmtJPG\ InputExtensions | SZ | JPG,JPEG | The attachments (mail to KCS) that are JPG format and shall be converted via TCIMGIO |
| FmtJPG\ OutputExtension | SZ | JPG | Extension for JPG files created by TC/LINK. |
| FmtMDA\ InputExtensions | SZ | MDA | The attachments (mail to KCS) that are MODCA format and shall be converted via TCIMGIO. |
| FmtMDA\ OutputExtension | SZ | MDA | Extension for MODCA files created by TC/LINK. |
| FmtPCL\ InputExtensions | SZ | PCL | The attachments (mail to KCS) that are PCL format and shall be converted via TCIMGIO. |
| FmtPCL\ OutputExtension | SZ | | Conversion from FAX to PCL is not possible, therefore this value is empty. |
| FmtPCX\ InputExtensions | SZ | PCX | Which attachments (mail to KCS) are PCX format and shall be converted via TCIMGIO. |
| FmtPCX\ OutputExtension | SZ | PCX | Extension for PCX files created by TC/LINK. |
| FmtPDF\ InputExtensions | SZ | PDF | The attachments (mail to KCS) that are PDF format and shall be converted via TCIMGIO. |
| FmtPDF\ OutputExtension | SZ | PDF | Extension for PDF files created by TC/LINK. |
| FmtPS\ InputExtensions | SZ | PS | The attachments (mail to KCS) that are Postscript format and shall be converted via TCIMGIO. |
| FmtPS\ OutputExtension | SZ | | Conversion from FAX to Postscript is not possible, therefore this value is empty. |
| FmtTCI\ InputExtensions | SZ | TCI | The attachments (mail to KCS) that are TCI format and shall be converted via TCIMGIO. |
| FmtTCI\ OutputExtension | SZ | TCI | Extension for TCI files created by TC/LINK |
| FmtTIF\ InputExtensions | SZ | TIF,TIFF | The attachments (mail to KCS) that are TIF format and shall be converted via TCIMGIO. |
| FmtTIF\ OutputExtension | SZ | TIF | Extension for TIF files created by TC/LINK. |
| FmtTXT\ InputExtensions | SZ | TXT | Extension for text attachments (mail to KCS) that shall be converted via TCIMGIO. |
| FmtTXT\ OutputExtensions | SZ | | Conversion from FAX to TXT is not possible, therefore this value is empty |

| Registry Key | Type | Default | Description |
|-------------------------|----------|---------|---|
| IgnoreConversionError | DWORD | 0 | It is not recommended to change this value. <ul style="list-style-type: none"> 0: Standard behavior. 1: Document conversion problems are ignored. |
| IgnoreTCIMGNoData | DWORD | 0 | <ul style="list-style-type: none"> 0: TCIMGIO error 1016 ignored only if previous page was okay. 1: TCIMGIO error 1016 is always ignored. |
| JetFormExtensionForBody | SZ | | Extension for JetForm attachments built from the message body. If this key is empty, TC/LINK uses the extension defined in TCDCLINK\JetForm\Extension. |
| KeepEmptyAttachments | DWORD | 0 | <ul style="list-style-type: none"> 0: Silently ignore empty attachments. 1: Keep empty attachments in message. |
| LabCPUNr | SZ | | TCOSS CPU number. It is written by TC/LINK. |
| Language | SZ | | Language for error messages (language file ID). According to this value, TCLINK uses different error files (TC01.ERR, TC02.ERR, and more) to retrieve the "last MDA note" error text for notifications to mail. This text can be used in the (non-)delivery cover sheet via variable \$Lnote\$. |
| LineLenA4Q | DWORD | 144 | Maximum line length for landscape PDF text pages created by TCIMGIO. Maximum value is 144, 0 is interpreted as 90. |
| MailDebug | DWORD | 0 | Trace messages passed between TC/LINK and the foreign mail system. |
| MapFile | SZ | | Name of address mapping file used by TC/LINK. Without path. |
| MaxPollMail | DWORD | 10 | Maximum number of messages retrieved in a sequence from Mail before polling KCS. Maximum: 8388607 |
| MaxPollTC | DWORD | 10 | Maximum number of messages retrieved in a sequence from KCS before polling Mail. Maximum: 8388607 |
| NFLoopDetection | DWORD | 0 | <ul style="list-style-type: none"> 0: Notification loop detection disabled. 1: Break loop by suppressing text notification. 2: Break loop by suppressing notification completely. |
| NFLoopDetectionSubjects | MULTI_SZ | | List of automatic message subjects. |
| NFLoopRepeats | DWORD | 2 | |
| NoCrashRecovery | DWORD | 0 | <ul style="list-style-type: none"> 0: TCLINK stores the current message from mail in a temporary file, until it is processed. If TCLINK finds this file at program start, it assumes that a crash happened, returns a non-delivery notification for the stored message and then deletes the file. 1: For TC/LINK-LN and TC/LINK-SM. These links use a different crash recovery mechanism. |
| NoWatchDog | DWORD | 0 | 1: Disables the inactivity timeout check. |

| Registry Key | Type | Default | Description |
|-----------------------------|-------|---------|---|
| OcrFileExt | SZ | TXT | Extension for OCR attachment. |
| OcrFileName | SZ | OCR | First (up to 5) characters of file name for OCR attachment. |
| OcrPageSeparator | DWORD | 12 | Page separator character. Only valid, if OcrRendering is 0. |
| OcrRendering | DWORD | 0 | <ul style="list-style-type: none"> 0: Convert OCR text to single file attachment 1: Convert every page to a file attachment 2: Append OCR text to message text |
| OcrToMail | DWORD | 1 | <ul style="list-style-type: none"> 0: Do not include OCR texts in messages to Mail 1: Include OCR texts in messages to Mail. |
| OnlyImgOverride | DWORD | 0 | <p>Override default cover sheet for mail messages starting with an image.</p> <p>You can set the value as 0,1 or 2. See ONLYIMG Template.</p> |
| OptFileExtension | SZ | .OPT | Extension (including leading dot) for file with ++ commands. |
| PCCodePage | DWORD | | <p>Codepage used on the link PC. This key is written by setup and by TCLINK. It should not be changed manually, except for custom code page conversion.</p> <p>Example values:</p> <ul style="list-style-type: none"> 850 (DOS LATIN 1) 852 (DOS LATIN 2) 1252 (ANSI LATIN 1) 1250 (ANSI LATIN 2) 932 (JAPANESE) |
| Pollcycle | DWORD | | Poll cycle in idle mode, in seconds. |
| PreserveOriginalMDANote | DWORD | 0 | <ul style="list-style-type: none"> 0: The "ts_last_mda_note" field is replaced by the error description defined in the TC01.ERR file for the error code returned by corresponding TCLINK. 1: The "ts_last_mda_note" field contains the original Response (error code) returned from TCLINK. |
| PrintUseCaseFile | SZ | | <p>Optional use case file for TIFF printing.</p> <p>Syntax: folder/filename</p> |
| PrinterDriverResolutionFine | SZ | | <p>Resolution for TCDC conversion (fine mode). Possible values:</p> <ul style="list-style-type: none"> "DEFAULT" (use resolution configured for printer driver) "204*204" "200*200" "204*196" |

| Registry Key | Type | Default | Description |
|-------------------------------|-------|--------------------|--|
| PrinterDriverResolutionNormal | SZ | | Resolution for TCDC conversion (normal mode). Possible values: <ul style="list-style-type: none"> • "DEFAULT" (use resolution configured for printer driver) • "204*204" (is internally scaled to 204*102 dpi) • "200*200" (is internally scaled to 200*100 dpi) • "204*98" |
| RemoveRTFPages | DWORD | 0 | Only valid if <code>AdvancedRTFConversion</code> is 1. <ul style="list-style-type: none"> • 0: Page breaks in RTF text are modified (recommended). • 1: Page breaks in RTF text are removed . |
| ReportDSErrors | DWORD | 1 | 0: Directory synchronization errors do not lead to a dirsnc retry. |
| RTFBottomMargin | DWORD | | Bottom margin in 0.1 mm. Only valid if <code>AdvancedRTFConversion</code> is 1. |
| RTFTopMargin | DWORD | | Top margin in 0.1 mm. Only valid if <code>AdvancedRTFConversion</code> is 1. |
| RTFMaxBlankLinesAtEnd | DWORD | 0xFFFFFFFF | <ul style="list-style-type: none"> • 0xFFFFFFFF: All blank pixel lines remain in the message. • Other values: Only the specified number of trailing blank pixel lines remain in the message. |
| RtfPrintModeLN | DWORD | 1 | the document conversion of RTF message bodies handled by TC/LINK-LN. Possible values: <ul style="list-style-type: none"> • 1: RTF body is converted to TCI (no other formats). • 2: RTF body is converted to PDF (no other formats). • 3: RTF body is converted to TIF (no other formats). |
| SupportsReadNotif | DWORD | 1 | 0: No read notifications are requested from the mail system. |
| SuppressLeadingPageBreak | DWORD | 0 | 1: TC/LINK removes a leading formfeed, if the first element of the message is an attachment created by image conversion (TCIMGIO). |
| Tracelevel | DWORD | 10 | Trace level for TC/LINK. |
| TraceMemoryInfo | DWORD | 1 | Trace working set size. |
| TraceSmall | DWORD | 1 | 1: An object trace (TCSIDebug, MailDebug) does not contain binary blocks. |
| TxtAttCodePage | DWORD | same as PCCodePage | Used to specify the codepage of text attachments. This applies to all attachments with extension defined in <code>General\FmtTXT\InputExtensions</code> . |
| TimeZoneNfToMail | SZ | | Only valid if <code>TimeZoneToMail</code> is not empty. Determines time zone for notification texts. |

| Registry Key | Type | Default | Description |
|------------------|----------|----------------------|---|
| TimeZoneToMail | SZ | | If not empty: Time zone configuration for full time zone support. |
| UnicodeSupported | DWORD | Depends on link type | <ul style="list-style-type: none"> 1: If KCS server is configured for UTF-8 code page, all TCSI text read and write operations use UTF-8. 0: TCSI text read and write operations do not use UTF-8, even if the KCS server supports it. |
| VrsFileTypes | MULTI_SZ | | Contains file extensions without leading dot. Acts as whitelist or blacklist, depending on the value of VrsForImg. |
| VrsForImg | DWORD | 1 | 1: Do virtual rescan for fax images. |
| VrsForBin | DWORD | 0 | 1: Do virtual rescan for TIF, PDF and JPG attachments. |
| VrsToMail | DWORD | 0 | <p>Use VRS to enhance received faxes that are forwarded as TIFF or PDF files to a mail system. The binary content of the attachment is replaced with the result of VRS, even, if no image conversion is needed for the message (such as a simple email). Possible values:</p> <ul style="list-style-type: none"> 0: Disabled 1: Enabled |
| VrsUsecaseFile | SZ | | Use case file for virtual rescan. Syntax: folder/filename |
| XmlExit | SZ | | Path name of XML exit DLL. |
| XmlExitConfig | SZ | | Path name of XML exit configuration. |

Subkey <linkname>\General\Attachments\<ext>

There may be multiple subkeys for different file extensions. For example, <ext> may stand for PCL (for *.PCL).

| Registry Key | Type | Default | Description |
|--------------|-------|---------|---|
| ++Check | DWORD | 0 | 1: Binary attachments with extension <ext> are scanned for text directives. |
| EndChar | DWORD | 32 | Termination character - the first character after the ++ sequence. (0 to 255) |
| Mode | DWORD | | <ul style="list-style-type: none"> 0: Include ++cmd in file. 1: Remove ++cmd. 2: Remove line containing ++cmd. 3: Replace ++cmd by ReplaceChar. |
| ReplaceChar | DWORD | | Replacement character to be used for Mode 3. (0 to 255) |
| Unicode | DWORD | 1 | Recognize Unicode ++ commands. |

Subkey <linkname>\Probe

This registry subkey is for integration with the KCS Probe Agent.

| Registry Key | Type | Default | Description |
|----------------------------|----------|---------|--|
| Probe\ ProbeAgent | SZ | | Probe agent User ID 1 to 112 characters |
| Probe\ ProbeDestination | SZ | | Probe destination address for immediate response. |
| Probe\ ProbeQueue | SZ | | Additional queue polled for probe messages, ending with format character. |
| Probe\ RequestIntervalM2TC | DWORD | 0 | 0: Disabled. > 0: Duration in minutes for pause in traffic mail->KCS that triggers a probe request. |
| Probe\ RequestM2TC | SZ | | Probe definition ID for this probe request. Must exist in the database. |
| Probe\ CodesM2TC | MULTI_SZ | | Every line defines a condition that leads to a probe request. |
| Probe\ RequestIntervalTC2M | DWORD | 0 | 0: Disabled. > 0: Duration in minutes for pause in traffic KCS->mail that triggers a probe request. |
| Probe\ RequestTC2M | SZ | | Probe definition ID for this probe request. Must exist in database. |
| Probe\ CodesTC2M | MULTI_SZ | | Every line defines a condition that leads to a probe request. |

Subkey <linkname>\Dirsync

Most options in this registry subkey apply to LDAP dirsnc only. These options are described in the LDAP Directory Synchronization Technical Manual. The following table contains only registry values that control all dirsnc types.

| Registry Key | Type | Default | Description |
|------------------------|-------|--------------------------|--|
| Type | DWORD | 0 | <ul style="list-style-type: none"> 0 = No dirsnc (disables native dirsnc for LN). 1 = Native dirsnc (only valid for LN, FI and MQ). 2 = Microsoft Active Directory. 4 = LDIF Import. |
| IgnoredErrors | SZ | 3502,3503,3504,3505,3507 | Comma-separated list of ignored error codes. |
| MailSystemFromTemplate | DWORD | 0 | Only for native (non-LDAP) dirsnc. 1: The mail system (user belongs to) field of users created by dirsnc is taken from the template user |

Subkey <linkname>\USRIO

Refer to the *LDAP Directory Synchronization Technical Manual* for more registry values in this subkey.

| Registry Key | Type | Default | Description |
|----------------------|----------|---------|--|
| ChangeAllUsers | DWORD | | 0-3: Overrides the “allow dirsinc” flag in KCS user profiles. |
| ClientSettings | DWORD | 1 | 0: Dirsinc changes the default template name. |
| DefaultPassword | SZ | | Default password for KCS users created via Dirsinc. |
| InvalidUserNames | MULTI_SZ | | List of invalid names for TCOSS objects. (Only evaluated if <code>SecurityLevel</code> is 1 or 3). |
| KeepFaxPassword | DWORD | 0 | 1: Dirsinc does not change the fax password. |
| MapField | MULTI_SZ | | A list of mappings between mail-system user attributes and variables used in the KCS user templates for Dirsinc. |
| RemoveLeadingBlanks | DWORD | 0 | 1: Leading blanks in names of TCOSS objects created by dirsinc are removed. This registry value must be created manually, if needed. |
| RemoveTrailingBlanks | DWORD | 0 | 1: Trailing blanks in names of TCOSS objects created by dirsinc are removed. This registry value must be created manually, if needed. |
| SecurityLevel | DWORD | 2 | 0-3: Defines invalid names for TCOSS objects created by Dirsinc. |
| SignatureKey | SZ | | Only valid for LDIF dirsinc. Attribute the image data for the signature of KCS users. |

Subkey <linkname>\TCIMG32

| Registry Key | Type | Default | Description |
|----------------------------|-------|---------|---|
| AdditionalTopMarginInPixel | DWORD | 0 | Additional pixel lines on the top margin of image pages created by TCIMGIO. The following images are downsized. Not applicable to text blocks. |

| Registry Key | Type | Default | Description |
|---------------------------|-------|---------|---|
| Clockwise | DWORD | 0 | <p>This setting only applies to to-TCI conversions and only in connection with RotatelfLandscape. It defines the direction of the rotation.</p> <ul style="list-style-type: none"> 0: RotatelfLandscape rotates the image anti-clockwise by 90 degrees. 1: RotatelfLandscape rotates the image clockwise by 90 degrees. |
| Default_xres | DWORD | 0 | <ul style="list-style-type: none"> If tcimgio is configured to put more than one image on a page, and no resolution was specified for an image, this key specifies which x resolution in dpi shall be used. 0: 204 dpi are used. |
| Default_yres | DWORD | 0 | <ul style="list-style-type: none"> If tcimgio is configured to put more than one image on a page, and no resolution was specified for an image, this key specifies which y resolution in dpi shall be used. 0: 98 dpi are used. |
| DefInputXRes | DWORD | 100 | <p>Default X-resolution (in dpi) assumed by TCIMGIO in case of corrupted or no resolution data in the image header. Resolution data is considered to be corrupted, if it is greater than a certain limit (2000 dpi by default). This limit can be redefined by the 'MaxInputResolution' registry setting.</p> |
| DefInputYRes | DWORD | 100 | <p>The same as DefInputXRes, but in the Y-direction.</p> |
| force_tiff_xres | DWORD | 0 | <p>Only for to-TIFF conversions.</p> <ul style="list-style-type: none"> If not 0: The output TIFF file x-resolution in dpi. 0: The output TIFF file x-resolution will be determined by the TC/LINK default behavior. >0: Overrides the TC/LINK default behavior. |
| force_tiff_yres | DWORD | 0 | <p>Only for to-TIFF conversions.</p> <ul style="list-style-type: none"> If not 0: The output TIFF file y-resolution in dpi. 0: The output TIFF file y-resolution will be determined by the TC/LINK default behavior. >0: Overrides the TC/LINK default behavior. |
| force_NoPageFormatScaling | DWORD | 0 | <ul style="list-style-type: none"> 0: TC/LINK default behavior. 1: Overrides TC/LINK default behavior. Forces image page size in output image not to be scaled to A4/letter page size. |

| Registry Key | Type | Default | Description |
|------------------------|-------|---------------|--|
| tiff_no_pixeltransform | DWORD | 0 | <p>Only for to-TIFF conversions.</p> <ul style="list-style-type: none"> 0: Default behavior. If a the resolution changes during the conversion, the pixel pattern of the image will be transformed accordingly to keep the aspect ratio (size-x / size-y) of the image constant. 1: The pixel pattern of the image remains unchanged, even if thereby the aspect ratio of the image changes. 2: The pixel pattern of the image remains unchanged, but each pixel line will be doubled. (This setting can be used when converting a 204x98 dpi (normal fax resolution) TCI image to a 200x200 TIFF image, and we want to avoid a change in the pixel-pattern. In this way, a crude distortion of the aspect ratio can be avoided. This setting is used in TC-LINK-CCD.) <p>Normally, tiff_no_pixeltransform is used in connection with the settings force_tiff_xres, force_tiff_yres.</p> |
| IgnoreEmptyImgBlk | DWORD | 0 | <p>Used at conversions of TCSI message objects.</p> <ul style="list-style-type: none"> 0: If TCIMGIO meets an empty image-block (<i>set_blk_img</i>) after some <i>set_page</i> block, then TCIMGIO converts this empty image-block to an empty image page. (Fixes error # 11399) 1: Empty image blocks is ignored and no image page is created. |
| JPEGQuality | DWORD | 80 | <p>(to-JPEG conversions)</p> <p>"JPEG quality" of the JPEG image to be generated (allowed: 0 ... 100).</p> |
| MaxInputResolution | DWORD | 2000 | <p>Resolution-limit in dot-per-inch (dpi). If a TIFF / BMP / PCX / DCX / MODCA image contains a resolution-value greater than 2000 dpi in its image-header, then this value will be considered by TCIMGIO as corrupted and x-resolution = y-resolution = 100 dpi will then be assumed instead. With this optional registry setting, however, you can redefine this limit.</p> |
| NoScaleTolerance | DWORD | 25 | <p>Tolerance for image page length (in thousandths, compared with standard page length).</p> <p>25: No extra scaling if page length is between 97.5 and 102.5 % of standard page length.</p> |
| OutputDespiteOfError | DWORD | 1 | <p>0: Partial conversion of image leads to an error. Fixes error # 8012</p> |
| PerfLogDir | SZ | "" (disabled) | <p>If defined, a performance log file called "tcimgio_perflog.txt" is created in the given directory. It contains input/output and duration information for each performed conversion.</p> |
| PdfOutputWithThumbnail | DWORD | 0 | <ul style="list-style-type: none"> 1: The output PDF will have the 'Pages' window initially opened (on the left side, shows thumbnails of the pages) when showing the PDF file with a PDF reader. 0: The 'Pages' window is initially hidden. |

| Registry Key | Type | Default | Description |
|---|-------|---------------|--|
| PdfScalePercent | DWORD | | Possible values 1%...100% Used for conversions from PDF. The PDF content will be displayed shrunk and centered aligned on the output image. For example, 50% means that the output image will be displayed half sized. |
| ProblemPath | SZ | "" (disabled) | Directory where TC/LINK stores image files that could not be converted. |
| ProblemSize | DWORD | 1000 | Maximum size (in KB) of this directory. |
| RotateIfLandscape | DWORD | 1 | Only for to-TCI conversion. Landscape pages of the input image are automatically rotated to portrait orientation to use the maximal page surface and to avoid the down-scaling of the page. Corresponding setting: "Clockwise": direction of the rotation. |
| RotateLandscapePages | DWORD | 0 | This setting only applies to to-PDF conversions. 1: Landscape page is rotated by 90 degrees. |
| TIFF-F | DWORD | 0 | (to-TIFF conversions) 1: A TIFF-F format conform TIFF will be generated. (See also error #11650.) |
| TolerateFaultyTiffOffset | DWORD | 0 | (from-TIFF conversions) Allows conversion of TIFF files with faulty offset in its TIFF-header. (Fixes error # 7388) |
| ToleratePSError, TolerateFatalPSError, ToleratePCLError, TolerateFatalPCLError | DWORD | 0 | (from-PS/PCL conversions) <ul style="list-style-type: none"> 0: tcimg32 stops the conversion process and reports to the container that an error occurred. Value other than 0: tcimg32.dll ignores errors/fatal errors reported by the Lincoln converter for ps/pcl conversion and tries to finish the conversion process. |
| TraceLevel | DWORD | 0 | Set to 50 to get some information (input/output info, rescale-info, duration) on the performed image conversion in the process trace file. |
| useOldSubfileType | DWORD | 0 | (to-TIFF conversions) 1: The TIFF header field "OldSubfileType" will be set to 3 in case of multipage-TIFFs. |
| ValidPCLOnly | DWORD | 0 | (from-PCL conversions) Activates PCL-validity-check performed by the Lincoln Converter. 1: Only the PCLs with existing PJL header will be converted. (Some printer creates PCL without this header, so the setting ValidPCLOnly = 0 could also make sense.) |

Subkey <linkname>\TCIMG32\Timestamp

These registry keys are used only in connection with the TC/IncomingFaxTimestamp link exit. This is a link-exit that inserts the end of reception time (TCOSS Field TIME_REC_END) into the fax image to be delivered to mail.

TCIMGIO looks for timestamp information (filled by the TC/IncomingFaxTimestamp exit DLL) in such SET_BLK_IMG_FORM TCSI blocks that have no int_y_res field. When the first time timestamp text found, then the registry settings below will be created automatically by TCIMGIO, filled with the default values.

| Registry Key | Type | Default | Description |
|----------------|-----------|---------|--|
| Enable | REG_DWORD | 1 | <ul style="list-style-type: none"> 1: Enable timestamp. TCIMGIO displays the timestamp coming in the SET_BLK_IMG_FORM TCSI-block on the (first page of a) converted image 0: Disable timestamp. The timestamp display suppressed, even if timestamp data is coming in the SET_BLK_IMG_FORM TCSI-block. |
| XPosInch | REG_SZ | 1.8 | Horizontal position of the upper-left corner of the timestamp area (rectangle) on the output image. <ul style="list-style-type: none"> >0: Defines the (horizontal) distance in inch between the left image edge and the upper-left corner of the timestamp. < 0: Defines the (horizontal) distance in inch between the right image edge and the upper-left corner of the timestamp. |
| YPosInch | REG_SZ | -1.0 | Vertical position of the upper-left corner of the timestamp area (rectangle) on the output image. <ul style="list-style-type: none"> >0: Defines the (vertical) distance in inch between the upper image edge and the upper-left corner of the timestamp. < 0: Defines the (vertical) distance in inch between the bottom image side and the upper-left corner of the timestamp. |
| CharHeightInch | REG_SZ | 0,20 | Preferred character height (in inch) for timestamp display. The actual character height can be different. (The best matching Windows font will be used.) |
| CharWidthInch | REG_SZ | 0,08 | Preferred character width (in inch) for timestamp display. The actual character width can be different. (The best matching Windows font will be used.) |

| Registry Key | Type | Default | Description |
|--------------|-----------|---------|--|
| FontFamily | REG_DWORD | | Specifies the font family of the desired font. <ul style="list-style-type: none"> • 0: FF_DONTCARE • 1: FF_ROMAN (Variable stroke width, serified. Examples: Times Roman, Century Schoolbook, and more.) • 2: FF_SWISS (Variable stroke width, sans-serifed. Examples: Helvetica, Swiss, and more.) • 3: FF_MODERN (Constant stroke width, serified or sans-serifed. Examples: Pica, Elite, Courier, and more) • 4: FF_SCRIPT (Examples: Cursive, and more.) • 5: FF_DECORATIVE (Examples: Old English, and more.) |
| FontPitch | REG_DWORD | 0 | Specifies the pitch—characteristic of the desired font. Possible values: <ul style="list-style-type: none"> • 0: DEFAULT_PITCH • 1: FIXED_PITCH (=monospace) • 2: VARIABLE_PITCH |
| FontFaceName | REG_SZ | <empty> | Font face name. (The same names can be used here that are displayed, such as in the MS Word font selection combobox. Actually, the currently available font-faces installed on your Windows system.) <empty>: The best matching font to the other attributes specified, such as FontFamily, FontPitch, and more, will be used. |
| BoldFont | REG_DWORD | 0 | <ul style="list-style-type: none"> • 0: Normal (not bold) font. • 1: Bold font. |

Subkey <linkname>\TCSI

| Registry Key | Type | Default | Description |
|-------------------|-------|---------|---|
| AutoTimeZone | DWORD | 0 | <ul style="list-style-type: none"> • 0: Off • 1: On - Convert all time information to time zone of link user. |
| EnableTCOSSOffset | SZ | N | Must be N |

For other values, refer to *TCSI Technical Manual - Client Server Interface*.

Subkey <linkname>\TCTI

| Registry Key | Type | Default | Description |
|--------------|------|---------|---------------|
| Transport | SZ | | Native or RPC |

For other values, refer to *LCUSW Manual*.

Subkey <linkname>\SETUP

| Registry Key | Type | Default | Description |
|---------------------------|----------|---------|--|
| CreateDependenciesMail | DWORD | | <ul style="list-style-type: none">• 0: No Mail system dependencies created by TCLINK.• 1: Mail system dependencies are created by TCLINK. |
| CreateDependenciesTopcall | DWORD | | <ul style="list-style-type: none">• 0: No KCS dependencies created by TCLINK.• 1: KCS dependencies are created by TCLINK. |
| CreateTCObjects | MULTI_SZ | | List of objects (= subkey names) that shall be created. |
| QueueFormats | SZ | | List of format characters. TC/LINK creates KCS queue users for these formats. |

Subkey <linkname>\SETUP\<object>

| Registry Key | Type | Default | Description |
|----------------|------|---------|---|
| Folder | SZ | FIS | TCOSS folder for message objects. |
| ImgEntryMS | SZ | | Path name of ASCII image for message objects. |
| ImgEntryRS | SZ | | Path name of ASCII image with recipient store entry. |
| ImgEntrySS | SZ | | Path name of ASCII image with service store entry for service objects. |
| ImgEntryUS | SZ | | Path name of ASCII image with user store entry. |
| Name | SZ | | Name of object on KCS. |
| Password | SZ | | Password for user objects. |
| Prefix | SZ | | Service prefix for service objects. |
| TemplateFolder | SZ | FIS | Folder of the user's default template, only valid if TemplateName specified. |
| TemplateName | SZ | | File name of a user's default template. If empty, user gets the default TCOSS template. |

| Registry Key | Type | Default | Description |
|--------------|------|---------|---|
| Type | SZ | | Object type: <ul style="list-style-type: none">• M: message• R: recipient• U: user• S: service |

Subkey <linkname>\TCMIME

Most options in this registry subkey apply to TCMIME.

| Registry Key | Type | Default | Description |
|----------------------|-------|---------|---|
| KeepEmptyAttachments | DWORD | 0 | <ul style="list-style-type: none">• 0: Silently ignore empty attachments.• 1: Keep empty attachments in message. |

There is a dependency on the General and TCMIME subkey. If `TCMIME\KeepEmptyAttachments` is 1, `General\KeepEmptyAttachments` remains 1 after restart.