

# Kofax Communication Server

## TCOSS Application Module Manual

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The KOFAX logo is rendered in a bold, blue, sans-serif font. The letters are thick and closely spaced, with a clean, modern aesthetic. The 'K' and 'F' are particularly prominent due to their size and weight.

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# Table of Contents

Preface.....	9
Documents.....	9
Configuration.....	9
Receiver.....	10
Originator.....	10
Channel.....	10
Channel Group.....	10
Related Documentation.....	11
<b>Chapter 1: Interfaces.....</b>	<b>12</b>
DotDot Interface.....	12
User Communication.....	12
List of Commands.....	13
List of Parameters.....	14
List of Acknowledgments.....	15
Document References.....	19
Detailed Description of Commands.....	20
Internal Commands.....	41
TCSI (TC Client Server Interface).....	51
Fax Number Conversion.....	51
Using the Abbreviation Directory (NN99).....	52
Using the Address Book Entries for Events.....	53
Handling of Invalid Recipients.....	54
Custom Fields in Mail Entry (SO #331).....	54
New Log Entries for TC/MA.....	56
Mail Auditing.....	59
Login Auditing.....	62
User Profile Auditing Overview.....	64
User Profile Rights Auditing.....	64
User Profile Auditing of Recipient Fields.....	72
User Profile Auditing of Events.....	73
Enhanced Recipient Folder.....	75
<b>Chapter 2: Mail System.....</b>	<b>76</b>
Overview of Sending a Document.....	77
Send Options.....	79

Send Status.....	79
Receiver.....	82
Circular Letters.....	85
Mask Feature.....	85
Including a Document.....	89
Original Message in Notification.....	90
Cover Sheets.....	91
Rich Text Support for FAX Cover Sheets.....	95
Description of the User Interface.....	96
Additional Cover Sheet Variables.....	98
Changed Syntax of "To" and "cc" Lists in RTF Cover Sheets.....	98
Restrictions to Use of Cover Sheet Variables in RTF Covers.....	98
Trace Options.....	99
Performance.....	99
Execute Sending.....	100
Automatic Numbering.....	101
Automatic Send Copy Printout, Back Reception.....	101
Automatic Generation of References.....	101
Automatic Distribution of Send Copies.....	102
The Sending Log File.....	102
Automatic Erasure.....	102
Active Acknowledgment.....	103
Layout of the NOTPA Field.....	103
Field Description.....	103
Explanation.....	104
Standard Masks.....	107
Determining Fees, Cost Center Accounting.....	109
Cost Center Designation Configuration Options.....	110
Message Cost Center.....	110
In-Event Cost Center.....	110
Non-In-Event Cost Center.....	110
Cost Center Designation Example.....	111
Short Term Archive.....	111
All Send Attempts in Short Term Archive.....	111
Reduce Short-Term Archive to Fixed Duration.....	112
Cost Center Designation Example.....	113
<b>Chapter 3: User Profiles and Addresses.....</b>	<b>114</b>
Kofax Communication Server User IDs.....	114

---

TCTECH User.....	116
Deletion and Re-Creation of User Profiles.....	116
Create User Profiles with Group Name.....	116
Gateway User, Number Locking.....	117
User ID Definitions.....	118
Extended User ID.....	119
Sending to Internal Users.....	120
User Events.....	121
Alerts.....	123
Automatic Rejection of Messages.....	131
Directory Synchronization for LDAP.....	132
User Groups Support.....	132
Numerical Password Encryption.....	132
Address Book.....	133
Enhanced Distribution Lists.....	133
User Address Book Rights.....	134
Services.....	134
Resolve Services.....	135
Dial by Name.....	135
FIS Folder Rights Check.....	136
Queue Age Monitoring.....	137
<b>Chapter 4: Directories.....</b>	<b>138</b>
Contents Directory.....	138
Setup Contents Directory.....	138
System Status.....	140
Log Files.....	145
Setup of the Log File.....	145
Setup of a Log File Entry.....	146
Abbreviated Number Directory NN99.....	150
Abbreviated Number Directory with TCFW Services.....	151
Abbreviated Number Directory with TC/LINK-SM.....	152
Automatically Created Entry Section Within NN99.....	153
Distribution Directory VV99.....	154
Multiple Distribution of an Incoming Telex.....	157
Mailbox.....	157
Number Series Directory tt99.....	158
System Account Policy Directory +MAIL5V/App99.....	160
Password Expiry.....	161

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Account Lockout.....	162
Minimum Password Length.....	163
Password Complexity.....	163
Password History.....	164
User Profile Directory uu99.....	164
FAX Scanning Within a Two-Instance ASP System.....	168
Correlation Between TCfW and uu99 Entries.....	170
Using termId as User Recognition.....	171
FAX Scan Command Possibilities.....	172
Routing Number Directory rr99.....	173
Step by Step Routing.....	174
Inbound Routing via rr99.....	175
Cost Accounting Directory kk99.....	177
Tariff Classes.....	178
Cost Optimization Feature.....	180
Low Priority Definition with TCFW / TCLINK.....	182
Cost Center of Received Messages.....	182
Handling of Unexpected Fax Send Interruption.....	183
Cost Center Tables.....	183
Enhanced Number Locking Directory LN99.....	184
Time Zone Support.....	185
UTC or Coordinated Universal Time.....	185
Time Base Setting.....	185
Standard Time Zone Definitions.....	186
Time Zone System Directory tz99.....	186
Customized Time Zone Settings.....	187
Customer-Specific Time Zone Definitions.....	187
System Default Time Zone.....	188
Recipient / Originator - Time Zone Mapping.....	188
TCOSS Time Zone Definition.....	188
Update Existing TCOSS Systems to Work with Time Zones.....	188
Time Zone Mapping Functionality.....	190
Time Zone of a Message.....	190
Masks and Cover Sheets.....	191
Mask and Cover Variables for Time Zone.....	191
Fax Header Line Parameters.....	192
Time Zones in an ASP System.....	192
Time Zones in an LCR System.....	193

TC/Archive Server Update.....	193
<b>Chapter 5: Least Cost Routing via TCP/IP.....</b>	<b>194</b>
Features.....	194
Applications.....	194
Maintenance.....	195
Loop Detection.....	195
Restrictions.....	195
Transfer Module Configuration.....	197
User Definitions for Remote Nodes.....	197
String Representation of KCS User.....	198
r99 Setting for Routing of KCS User.....	198
Operation of Transfer Module.....	199
Cost Accounting.....	199
Support of REGISTERED Sending.....	200
Routing Error Handling.....	200
Least Cost Routing Example.....	201
<b>Chapter 6: Location-Based Routing.....</b>	<b>204</b>
Branch Box Failsafe Configuration.....	206
Maximum Store Capacity of Location Based Routing.....	209
Error Handling.....	210
<b>Chapter 7: Internal Character Set.....</b>	<b>211</b>
Character Set.....	211
Page Formats.....	211
TCOSS - Lines.....	212
Format Control Characters.....	212
Line Make-Up.....	212
Conversion Possibilities.....	213
TCOSS Codepages.....	214
Rendering of Code Pages Other Than TCOSS 0 or 1.....	214
TCOSS Code Page 0.....	216
TCOSS Code Page 0 Reference Table.....	217
TCOSS Code Page 1.....	225
TCOSS Code Page 1 Reference Table.....	227
TCOSS System Files.....	235
<b>Chapter 8: Capacities.....</b>	<b>237</b>
Disc Space and Memory Usage.....	238
Maximum Number of Files.....	239
Mail Entries.....	239

Large Systems.....	239
Required Hardware.....	239
Operating System.....	240
Disk Cache Settings.....	240
Performance Data.....	241
Restrictions.....	254

# Preface

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

The TAM (TCOSS Application Module) is the heart of the software and provides the user with essential functions. The user (or the user module) activates a function by entering a COMMAND and then receives an ACKNOWLEDGMENT as answer.

Some of the terms which occur repeatedly in the description of various commands are described below. These terms are discussed in detail later in the manual.

## Documents

A document is a text stored on a TCOSS system disk. The term envelop is sometimes used instead of document. It has the same meaning.

Documents are created either via document entry commands or via the reception of a document.

Documents can be:

- created, received
- modified (with client software, such as TCfW only)
- erased and
- sent (examined)

If documents are created via TCSI (TC client server interface - used by TCfW or TC/LINK), additional information, such as originator, recipients, send options, are stored.

Pseudo-documents:

- Pseudo-documents are stored in the system differently from normal documents. You can, however, read (send, examine, copy) them as with normal documents.
- The reference of a pseudo-document begins with '+'.

**CAUTION:** Mask files are normal documents.

## Configuration

Many functions of TAM can be controlled by means of "config" parameters. Unless stated otherwise, all "config" parameters are described in the *TCOSS Configuration Manual*.

## Receiver

Receiver is a term concerning the sending of a document. The receiver consists of two parts:

1. Channel entry: Determines the sending channel.
2. Selection number: For example, telex number, multiplexer selection number, and more.

## Originator

Originator is a term which determines the receiver of an active acknowledgment.

## Channel

TAM supports 1010 logical channels which can be selected via their channel number. The channel number system maps the 1010 channels to the 2-character codes 00 ..99, A0 ..A9, B0 ..B9, ..., Z0 ..Z9, 0A ..0Z, 1A ..1Z, ..., 9A ..9Z, AA ..AZ, BA ..BZ, ..., OA ..OZ.

Theoretically, you can connect any of the available hardware interfaces (telex line, asynchronous interface, or others) to any logical channel (via a corresponding user module).

The arrangement of hardware interface - user module type - logical channel number is determined by the configuration of the system.

## Channel Group

At the configuration, each channel can be allocated to one or more of 26 channel groups. The letters 'A' to 'Z' activate the channel groups. When a channel group is indicated instead of a specific channel, such as when sending a document, the system randomly selects an available channel of this group.

**Example:**

group	X	All telex channels
	F	All telefax channels

# Related Documentation

This document refers to the following documents:

- *TCOSS Configuration Manual*: Includes configuration parameters of all modules (channel types) and the system.
- *TCOSS System Manual*: System overview and basic functionality.
- *Client Applications Administrator's Manual*
- *TCfW Communication Server Client User 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](https://docshield.kofax.com/Portal/Products/en_US/KCS/10.3.0-SihMvq5oti/KCS.htm)

## Chapter 1

# Interfaces

The application module supports two different kinds of interfaces. The DotDot interface and the newer TCSI interface (TC client server interface).

DotDot interface does not support Unicode.

## DotDot Interface

This kind of interface uses only readable text lines (maximum length 254 characters). Since all commands have to start either with ".." or "/" it is called DotDot interface. This interface is used by all user modules, such as Fax, Telex, Asynchronous Module, and more. It is described in detail in this chapter.

The TAM itself has a common part that is used by both interfaces, and two interface specific parts. The following table provides a brief overview about the features of both interfaces.

Feature	DotDot interface	TCSI
log files	yes	no
cost accounting (cost calculation according to kk99)	yes	no
number series	yes	no
masks	yes	no
user administration	no	yes
address book administration	no	yes
license administration	no	yes
service administration	no	yes
create, delete files	yes	yes
modify files	no	yes
creation of text format lines (++TXT, ++HLN, ...)	yes	The feature is available via TCSI but is not yet used by TCfW or other applications.

## User Communication

The user communicates with the system by means of commands (also "..commands") and acknowledgments. A specific command activates a specific function which in turn activates an acknowledgment.

Supported languages are German and English. The desired language can be determined by configuration. In addition, the language can be indicated directly with any `$(COMMAND)` where

`COMMAND` is any command, with the exception of `nnn`

`$(` must be replaced by the language number.

Supported language numbers are:

German	1
English	2

Acknowledgments are always given in the configured language. Their acknowledgment numbers provide unambiguous designations so that the acknowledgments can be processed automatically.

Headlines in the contents and the system status text appear in the language of the channel which they are sent on. Log file headlines are written in the language of the channel which creates the log file.

## Command Syntax

Generally, a command has the following setup:

`COMMAND, PARAMETER=VALUE, PARAMETER=VALUE . . .`

Where:

`COMMAND` is the "command reference" which indicates the kind of command. It can be in the form `..command` or `//command`. If a command begins with `..`, the blanks are suppressed automatically and small letters are converted to capital letters. If `//` is at the beginning of the command, no conversions are carried out.

`PARAMETER` is a "parameter reference" indicating the type of parameter.

`VALUE` is the desired value for the parameter. If a comma is required as parameter value it must be replaced by a double comma.

There are commands with no parameter, with one parameter, or with various parameters. Some command parameters have "default values", which are assumed when no parameter is specified.

The acknowledgments to commands can be divided into four groups.

Message number	Meaning
100 - 199	Command executed
200 - 299	Command partly executed
300 - 399	Command cannot be executed at the moment
400 - 999	Command cannot be executed

## List of Commands

English	Abbreviation	German	Abbreviation
CHAIN	CH	CHAIN	CH

English	Abbreviation	German	Abbreviation
CHECK		CHECK	
CMDON		CMDON	
CONT	CO	WEITER	WE
CONTENT	C	INHALT	I
END		ENDE	
EOT		EOT	
ERASE	E	LOESCHEN	L
ERROR	ER	ERROR	ER
ESEITE	ES	ESEITE	ES
LIST	L	MUSTER	M
LOG		LOG	
LOGOFF	LF	LOGOFF	LF
LOGON	LN	LOGON	LN
PRESET	P	VORGABE	V
QUERY	Q	ABRUFEN	AB
REROUTE	RR	REROUTE	RR
SEND	S	SENDEN	S
SSEITE	SS	SSEITE	SS
TELEX	T	TELEX	T
USER	U	USER	U
WAIT	W	HALT	HA

## List of Parameters

English	Abbreviation	German	Abbreviation
AUTHOR	A	AUTOR	A
BREAK	BR	ABBR	AB
CHANNEL	C	CHANNEL	C
CHCNT	CH	ZZAHL	ZZ
CORR	CO	KORR	KO
COSTC	CC	COSTC	CC
CTIME	CT	VZEIT	VZ
CYCLE	CY	ZYKL	ZY
DATE	D	DATUM	D
DISK		DISK	

English	Abbreviation	German	Abbreviation
DPNR	DP	DSNR	DS
EC		FC	
END	E	ENDE	E
FROM	F	VON	V
MODE	M	MODUS	M
NODES	ND	NODES	ND
NOTIF	NF	NOTIF	NF
NOTPA	NP	NOTPA	NP
NRS		NRS	
NUMBER	N	NUMMER	N
ORDER	O	LFDNR	L
ORIGI	OR	ORIGI	OR
POSDU	PD	POSDU	PD
PRIOR	P	PRIOR	P
RECORD	RC	RECORD	RC
REFERENCE	R	KENNUNG	K
STOP	S	STOP	S
STYP	ST	STYP	ST
TERMINATION	TE	TERMINATION	TE
TIME	T	ZEIT	Z
TO		BIS	B
TYP		TYP	T

## List of Acknowledgments

### Acknowledgments on executed commands

100	OK
101	10 digits reference of document, blank, 6 digits date, blank, 6 digits time, blank, "OK"
102	text begin
103	text end
104	line length exceeds 72 characters
105	(the complete record of the user profile uu99 is shown)
106	STX
107	ETX

**Acknowledgments on partly executed commands**

200	send orders deleted partially
201	texts deleted partially
202	send orders re-routed partially

**Acknowledgments on commands which cannot be executed at the moment**

300	reference already exists
301	reference does not exist
302	too many files
303	too many send orders
304	file locked
305	send order(s) not deleted
306	file(s) not deleted
308	disk full
310	memory full
311	abbreviated number does not exist
312	abbreviated numbers file does not exist
313	text too long
314	drive does not exist
315	disk error
316	abbreviated numbers file locked
317	wrong command
318	no message
319	no record
320	loop detected
321	send order(s) not re-routed

**Acknowledgments on commands which cannot be executed**

400	bad command syntax
401	bad parameter
402	missing parameter
403	bad reference
404	bad correction mode
405	bad number
406	bad channel
407	bad date

408	bad time
409	bad low value
410	bad high value
411	bad number series
412	bad actual number
414	bad value for last value of number series
415	bad value for file number
416	bad author
417	bad mode
418	(bad break parameter )
419	(bad error code)
420	(bad document- and page-number)
421	bad type
422	(bad END-code)
423	bad stop parameter
424	(bad CTIME)
425	(bad CHCNT)
426	bad termination parameter
427	bad nodes
428	bad originator
429	bad user id
430	bad notpa
431	bad cost center
432	bad posdu
433	bad send typ
434	bad priority
435	bad notif
436	bad record (= record too long)

**Additional Acknowledgments on Client Server Interface (TCSI)**

500	different object versions (save conflict!)
501	no object exist for the specified handle
502	internal: truncate with wrong length
600	call of function is not permitted
601	too less memory to perform operation

602	save attempt to an object without parent object
603	type does not allow this kind of operation
604	invalid time value
605	invalid sub object specifier
606	invalid number series
607	invalid channel specifier
608	connection to server could not be established
609	invalid user ID
610	wrong password
611	not possible to maintain connection
612	server temporary busy
613	passive session was cancelled
614	selector object is invalid
615	corrupted entry
616	a receiver entry could not be accepted
617	wrong originator
618	status change not possible
619	the end of block is reached
620	wrong function for that object call
621	registration limit reached
622	illegal ASCII object format
623	invalid syntax for path
624	incompatible program versions
626	folder name too long for local folder
630	DISC_IND_T received at connect
631	no call confirmation from server
700	session was cancelled
701	stream was cancelled by control frame
702	disconnect for any reason
750	maximum data size exceeded
751	invalid TCTI handle
752	temporarily no SAP available
754	sending queue full
755	line disconnected
756	illegal frame received

757	disconnect indication received
758	disconnect due to line problems
759	call indication received (no error)
760	call confirmation received (no error)
761	data indication received (no error)
762	control data received (no error)
770	error during connect
771	error during disconnect
772	server could not be started
801	maximum possible level of object nesting reached
802	internal object buffer overrun
803	wrong index into a list
804	wrong index into a list
805	number of session wrong
806	CIF internal problem
807	ENV internal
808	ENV internal
851	OHH produced entry without content
852	wrong function code sent to OHL
853	lock of memory failed
854	container has no child left
855	OHH produced corrupted stream
889	cannot initialize stream (tcti, file, ...)

## Document References

The parameter REFERENCE refers to one or more documents. Because of its frequent occurrence, a full description of this parameter is provided.

The system knows every stored document by name, by its so-called "reference".

The reference can have a length between 1 and 11 characters. (letter, digits, plus). The drive (A up to Z) designation at the beginning of the document can precede the reference. If no drive is indicated, drive A is assumed.

Examples:

- TEXT1
- +MAIL/BTEXT2
- +MAIL5V/1TEXT

## Wild cards

Wild cards in the document name are shown as '?' (such as A:TEXT? or B:?0108??) or asterisk '\*' (such as TEX\* or +MAIL/\*). With various commands, you can use wildcards in the reference to call up more than one document simultaneously with a single command.

With wild cards all the documents whose names are identical to the indicated one - except on those positions where a wild card is indicated - are called up. If an asterisk is used in the document reference, all following positions will be searched by TCOSS (compare it with DOS command DIR AUTOEX\*. \*). No wild card can be indicated for the drive.

Examples:

Ambiguous references	Actually references called up by these
TEXT?	A:TEXT1,
B:?0107??	A:TEXTa,
+MAIL/*	A:TEXT,
+USER/F*	B:J010715
TF*	B:J010716,
	B:I010702,
	B:I010704,
	(all log files from July 2001)
	all documents in folder +MAIL
	all user profiles starting with letter F in folder +USER
	all documents in folder +MAIL5V starting with letter TF

## Detailed Description of Commands

This section provides the description of commands.

### Creating a Document(..TELEX)

#### Command format

```
..TELEX, REFERENCE=ffff/xxx, AUTHOR=xxx
```

#### Abbr. form

```
..T, R=fff/xxx, A=xxx
```

#### Function

The command `..TELEX` creates a new document. The name of the document is indicated by the parameter `REFERENCE`; no other document with this name may exist. All text lines following the command are stored in the document. After the text has been entered the document must be closed with the command `..END`.

All documents are stored in the envelop format. Some ++ control lines may not be listed in the order they were entered, and some parameters of ++ control lines may be listed with a slightly different value. This does not affect the function of the control lines.

## Parameters

R=fff/xxx	<p><b>fff</b>: Indicates the folder, up to 8 characters, letters or digits. Take care that only files within the +MAIL or +MAIL5V folders can be sent. The extended reference can be used in the ++INC command (see UTF chapter) to include documents from any folder.</p> <p><b>xxx</b>: Indicates the document reference, up to 11 characters also digits allowed. This mandatory parameter determines the name of the subsequent document. A specific reference can be created only once. It is possible to use references with blanks inside the name.</p> <p>Example:</p> <pre>+MAIL5V/TEST TEXT or +MAIL/BDOC ONE</pre>
A=xxx	<p>You can add a comment to any document being created and this comment will appear in the contents directory. This text is named "author" and can be indicated with this parameter. The system does not evaluate the author, and the author is not sent within the text. The author field is 31 positions long; all characters from blank to 'z' (TCOSS Code) may be used</p> <p>If documents are created by TCfW, the subject is stored both in the document content and in the author field. This allows using more than 31 characters for the subject. The author field is also shown in the subject field of mail folders.</p> <p>Examples:</p> <pre>..T,R=TEXT1</pre> <p>The text lines that follow are stored in the document named "TEXT1" on drive A in folder +MAIL5V (default folder).</p> <pre>..T,R=+MAIL/1TEXT,A=TESTTEXT</pre> <p>The text lines that follow are stored in the document named "1TEXT" in folder +MAIL. The entry in the contents directory (also called contents here) for this document is the author text "TESTTEXT".</p> <pre>..T,R=F:TESTMESSAGE,A=FISTEST</pre> <p>The text lines that follow are stored within the document "TESTMESSAGE" in KCS FIS folder. The author of that message is "FISTEST".</p>

## Expected acknowledgments

100 300, 302, 308, 310, 313, 314, 315, 400, 401, 402, 403, 404, 416

All text lines entered after a "..TELEX" command is stored in the opened document. A text line is a line which begins with neither ".." nor "///".

After entering a line with more than 72 characters an acknowledgment is displayed (depends upon configuration).

The acknowledgment is intended to call the user's attention to the fact that this line will be made up into two lines if sent as teletex in upright format.

If the document was opened in normal mode" (with "..TELEX") the entered text lines are, in principle, stored immediately on disk. The operating system, however, carries out an automatic optimization (buffering) so that real access to the disk occurs only if the "block size" is reached. Furthermore, in this case the text must be closed with "..END". Otherwise it will not be stored on disk. All commands except

for "..END" result in an error message. If the error "disk full" occurs during text input the document is discarded completely with the ..END command.

**Expected acknowledgments:**

104  
310  
313  
315  
317

## Closing a Document(..END)

**Command format**

..END

**Abbr. form**

none

**Function**

The command ..END closes a document which has been opened with " ..TELEX".

**Parameters**

none

**Example**

..T,R=TEXT1

*This text is stored in the document named "TEXT1" on drive A*

..END

**Expected acknowledgments**

100  
315  
400, 401

## Sending a Document(..SEND)

**Command format**

..SEND, REFERENCE=fff/xxx, NUMBER=cccccccc:xxx,  
DATE=xxx, TIME=xxx, FROM=xxx, TO=xxx, STOP=x, TERMINATION=xxxxxx,  
NODES=xxx, ORDER=xxx, ORIGI=xxx, NOTPA=xxx, COSTC=xxx, POSDU=x,  
STYP=xxx, PRIOR=x, NOTIF=x, MODE=x

**Abbr. form**

.S,R=ffff/xxx,N=cccccccc:xxx,D=xxx,T=xxx,F=xxx,TO=xxx,S=x,  
TE=xxxxxx,ND=xxx,O=xxx,OR=xxx,NP=xxx,CC=xxx,PD=x,ST=xxx, P=x,NF=x,M=x

**Function**

The command ..SEND enables you to send or examine the document indicated by the parameter REFERENCE. If one of the parameters NUMBER, DATE or TIME is indicated, a send order is established

which the system then automatically carries out. If these three parameters are missing, the document is examined, (that is, the text of the document is immediately sent to the user who gave the command).

Only documents in the folders +MAIL, FIS and +MAIL5V can be sent. Documents in other folders such as user folders can be sent by using the ++INC command!

### Parameters

<b>R=fff/xxx</b>	fff is the folder (only +MAIL or +MAIL5V). The FIS folder has to be specified with F:. This mandatory parameter determines the folder and the name of the document to be sent; the document with this name must already exist. The name of the document can contain "wild cards". In this case all documents which the indicated ambiguous name refers to are sent. This is, however, not possible when you are examining a document. If no folder is specified, the default folder +MAIL5V is used.
<b>N=cc:xxx</b>	The parameter NUMBER indicates the receiver who the document is to be sent to. If this parameter is missing the local channel becomes the receiver
<b>D=xxx</b>	You need the parameter DATE only if you want "pre-programming" which indicates the day the document is to be sent on. The date is indicated in the form "yymmdd" (year, month, and day). The system then verifies the date's validity. When this parameter is missing the actual date is assumed
<b>T=xxx</b>	You need the parameter TIME only if you want "pre-programming" which indicates the time the document is to be sent at. The time is indicated in the form "hhmm" (hour, minute). The system then verifies the time's validity. When this parameter is missing, the actual date is assumed.  A second use of this parameter is to specify a special time (which must be configured in the input channel) to tell the system that low priority sending is requested. This "Time Mapping feature" is required for applications, which do not support the priority parameter, to use the cost optimization feature (see Priority parameter).
<b>F=xxx</b>	The parameter FROM indicates which line the document will begin on when it is sent. In other words, if you indicate a value of 3, the first 2 lines of the document will not be sent. This value can have a maximum of 8 digits (1 - 99999999). When this parameter is missing the document is sent from the first line on
<b>TO=xxx</b>	This parameter indicates the last line of the document to be sent. In other words, if you indicate 40 here and the document is 50 lines long, its last 10 lines will not be sent. The value can have a maximum of 8 digits (1 - 99999999). When this parameter is missing the document is sent up to its last line.
<b>S=x</b>	This parameter controls what the channel does at the end of transmission.  With telex lines you can enter any value between 0 and 9 (minutes). It indicates whether or not or how long a pause shall be kept at the end of the transmission until the connection is separated. Accordingly the parameter indicates the waiting period in minutes. Within this waiting period the telex partner can write an answer or cut the line without causing an error recognition which would lead to a repeated sending of the message  This parameter has no meaning with none telex channels (such as Fax).

<b>TE=xxxxx</b>	<p>This parameter controls the action after completion of a send order (SO). It must always be given as a 5 digit number, each figure being between 0 and 3. Each position controls a function:</p> <p>1st position: deleting of send order                  2nd position: generation of delivery/non delivery notification                  3rd position: deleting of documents with figure-reference                  4th position: generation of short term archive entries                  5th position: generation of send order for back received documents</p> <p>For exact syntax of termination, please refer to the TCOSS Configuration Manual. If this parameter is not specified, a default value from configuration line 41 of the sending channel will be used.</p>						
<b>ND=xxx</b>	<p>This parameter specifies the list of all nodes the document already has passed (1 node = 1 character; max. field length = 19). When a send order is created the specified (or empty) node list is extended with the configured node of that channel, where the send command has been entered</p> <p><b>Example:</b></p> <table border="1" data-bbox="428 779 1463 873"> <tr> <td>channel 00:</td> <td>config line 7:</td> <td>A</td> </tr> <tr> <td>channel 01:</td> <td>config line 7:</td> <td>B</td> </tr> </table> <p>When send command is entered via channel '00:' (..S,R=TEST,N=01:) and executed via channel '01:' the ND parameter is filled with 'A'.</p> <p>If the new node is already contained 2 times in the node list (double loop) the acknowledgment '320 loop detected' is sent.</p>	channel 00:	config line 7:	A	channel 01:	config line 7:	B
channel 00:	config line 7:	A					
channel 01:	config line 7:	B					
<b>O=xxx</b>	<p>This parameter specifies the serial number of the send order (max. field length = 6).</p> <p><b>Note</b> Some channels require a serial number of fixed length for sending. For example, Fax channels require a 3-digit serial number.</p>						
<b>OR=xxx</b>	<p>This parameter specifies the originator of the document. Pay attention to the fact, that the originator is the receiver of the active acknowledgment (default = channel + ':' + mask as configured; max. field length = 128).</p> <p>For normal send orders this parameter specifies the receiver of an active acknowledgment. It is normalized by the rr99 process before it is stored in the send order. The default originator is set in config line 42</p> <p>When an active acknowledgment is generated this parameter is set to the number parameter of the sent document. This means that the active acknowledgment has the exchanged number and originator parameter of the original send order</p>						

<b>NP=xxx</b>	This parameter specifies the notification parameters which consist of following parts:		
	Position	Length	
	1	8	corr. information: internal send order nbr
	9	10	internal send order ID
	19	5	delivery information: '3NON-' or '2 '
	24	24	author of document
	48	1	break code
	49	2	error code
	51	10	date/time of sending
	61	2	sending channel number
	63	6	transmission fee
	69	31	answer back
	100	1	sending priority
	101	6	number of characters
	107	6	file size in K-Bytes
113	6	connection time	
119	20	node list	
139	32	reserved (spaces)	
	<p>The notification parameter field of the send order contains all information for the delivery notification. It can be accessed by mask parameters.</p> <p>With normal send orders (<code>NOTIF = 0</code>), the notification parameter field is filled automatically at sending time (correlation information) and when an active acknowledgment is generated (delivery information). It can also be set using parameter <code>NOTPA</code> in the <code>SEND</code> command</p>		
<b>NF=x</b>	<p><b>NOTIF=0 ... normal send order</b>  <b>NOTIF=1 ... routing send order</b></p> <p>Routing send orders differs in 3 cases from normal send orders:</p> <ol style="list-style-type: none"> <li>1. The correlation information in the notification parameter is not set automatically at sending time. It has to be entered using parameter <code>NOTPA</code>; otherwise it would be set to spaces in the active acknowledgment</li> <li>2. Any active acknowledgment is generated with 'NUMBER=e', e = entry node, instead of 'NUMBER = originator'</li> <li>3. After successful routing (<code>..EOT, BREAK=7</code>) the send order will not wait for a delivery notification. It is processed as in the case of <code>..EOT, BREAK=0</code> (marked with '+' or deleted) but no active acknowledgment will be generated</li> </ol>		

<b>NOTIF=2</b>	<p><b>notification</b></p> <p>The ". . SEND" command with parameter NOTIF=2 has 2 functions:</p> <ol style="list-style-type: none"> <li>1. If the normalized number is not the configured own node: It is treated as a normal send order with NOTIF=1</li> <li>2. If the normalized number is the configured own node: The original send order (which is waiting for a notification) is searched and if found ,updated and put back into the channel's queue for completion (log file entry, cost center accounting, active acknowledgment and more). The reference from the ..SEND command is taken as back received document for an active acknowledgment</li> </ol> <p>A negative notification is always processed like a . . EOT command with BREAK=5 independent of the actual break code (1 ..5) contained in the notification.</p> <p>If no matching send order can be found, a send order to the final routed number is created. (It is treated as a send order with NOTIF=1). The routing directory (+MAIL5V/Arr99) should have an entry which routes the notifications to a default receiver</p>				
<b>CC=xxx</b>	<p>This parameter specifies the cost center (max. field length = 10).</p> <p>The parameter COSTC sets the cost center. If it is not specified in the..SEND command, the cost center will be taken from the document's author or from the reference</p>				
<b>PD=x</b>	<p>Parameter POSDU sets the initial value of the 'possible duplicate message' flag (max. field length = 1).</p> <p>Possible values:</p> <table border="1" data-bbox="428 999 1463 1094"> <tr> <td data-bbox="428 999 943 1045">'0'</td> <td data-bbox="943 999 1463 1045">off (= default value)</td> </tr> <tr> <td data-bbox="428 1045 943 1094">'1'</td> <td data-bbox="943 1045 1463 1094">on</td> </tr> </table>	'0'	off (= default value)	'1'	on
'0'	off (= default value)				
'1'	on				
<b>ST=xxx</b>	<p>With parameter STYP the initial send state can be set to values between '1' and '9' (max. field length = 4;. 1st position start type, 2nd to 4th position reserved, default value is '9').</p>				
<b>P=x</b>	<p>This parameter specifies the priority (max. field length = 1).</p> <p>0 = low 1 = normal 2 = high</p> <p>If a send order is created with low priority and without specified sending time and the receiver is not a KCS user, the sending time may be set automatically to the lowest tariff time for the given number according to the used cost center table (kk99). See chapter cost accounting for more details</p>				
<b>M=x</b>	<p>this parameter is used to send a document in hex dump mode. Send commands with mode=1 produce a hex dump of file "xxxx" without mask or included document</p>				

**Tip** For document name, wild cards, send status, user profile, least cost routing and active acknowledgments: see separate chapter.

**Examples**

. . S, R=TEXT1	Sends a document TEXT1 from folder +MAIL5V
. . S, R=+MAIL/TEXT1, N=135361/tpcal	Sends a document TEXT1 from folder +MAIL to a telex number

<code>..S,R=TEXT1,N=08:135361/ tpcal,T=1400,STOP=5</code>	Sends a document TEXT1 from folder +MAIL5V to a channel number 08 with TIME and STOP parameters
<code>..S,R=TEXT1,FROM=10,TO=20</code>	Send lines 10 to 20 from document TEXT1 located within folder +MAIL5V
<code>..S,R=1TEXT,N=12345/ ABC,TERMINATION=33310</code>	Sends a document 1TEXT with termination parameter defined, active acknowledgment, delete text and send order
<code>..S,M=1,R=TEST</code>	Sends a document TEST and displays a hex dump of that file - useful for problem detections

**Expected acknowledgments**

100, 103

303, 304, 311, 312, 314, 315, 316

400, 401, 402, 403, 405, 406, 407, 408, 409, 410, 412, 423, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435

**Deleting a Document(..ERASE)****Command format**`..ERASE,REFERENCE=fff/xxxxxx,NUMBER=xxxxxx`**Abbr. form**`..E,R=fff/xxxxxx,N=xxxxxx`**Function**

The command `..ERASE` not only enables you to erase one or more documents (see erasing a document) but also enables you to erase one or more send orders. To identify the send order or send orders the reference of the document to be sent and its receiver are used. An erase command is not stored; if it cannot be executed immediately because the send order momentarily cannot be erased it is lost. A send order cannot be erased, if it is either just being executed, or is marked as not erasable (possible in cases of automatically generated send commands).

**Parameters**

<b>R=fff/xxx</b>	This mandatory parameter indicates the folder (fff) and the name of the document (xxx) which the send order refers to. You can indicate wild cards in the document name. In this case, all send orders belonging to documents which the ambiguous reference applies to be considered
<b>N=xxxxx</b>	the parameter NUMBER indicates the receiver of the send order. Its set-up is described in a separate chapter. The parameter is entered the same way as the send order. Abbreviated numbers can also be used. If this parameter is missing, the document and all send orders for this document are erased
<b>Caution:</b> If an ambiguous reference is used, make sure you do not erase send orders inadvertently. To be safe, we recommend you call up a contents directory beforehand. These contents should be scanned in order to check all references which your ambiguous reference applies to. If a wrong number has been used for the send command the same wrong number has to be used to erase it. This is the only way to identify the send order	

**Example**

<code>..E,R=TEXT1,N=111388/tcint a</code>	Deletes the send order for document TEXT1 but not the document
---	--

<code>..E,R=B:0104??,N=03:</code>	Deletes all send orders for journal files on drive B from April 2001 which were sent to channel, the journal files remain untouched
<code>..E,R=TEXT1</code>	Deletes the file TEXT1 with all send orders if there are any
<code>..E,R=F:DOCUMENT</code>	Deletes the file DOCUMENT from the FIS folder

**Expected acknowledgments**

100, 200

301, 304, 305, 311, 312, 314, 315, 316

400, 401, 402, 403, 405, 406

**Listing Documents(..LIST)****Command format**

```
..LIST, REFERENCE=fff/xxx, NUMBER=xxx, DATE=xxx, TIME=xxx,
FROM=xxx, TO=xxx, STOP=x, TERMINATION=xxx, NODES=xxx,
ORDER=xxx, ORIGI=xxx, NOTPA=xxx, COSTC=xxx, POSDU=x, STYP=xxx, PRIOR=x, NOTIF=x
```

**Abbr. form**

```
..L,R=fff/xxx,D=xxx,T=xxx,F=xxx,TO=xxx,ST=x,TE=xxx,ND=xxx,
O=xxx,OR=xxx,NP=xxx,CC=xxx,PD=x,ST=xxx,P=x,NF=x
```

**Function**

The command `..LIST` is identical with the command `..SEND`, except that the document, even if its name begins with a digit, will not be erased after sending

**Caution:** To be safe, it is recommended to call up the contents directory first

**Parameters**

See the `..SEND` command.

**Example**

<code>..L,R=TEXT1</code>	Lists the content of document TEXT1
<code>..L,R=TEXT1, FROM=10, TO=20</code>	Lists only the lines 10 to 20 from document TEXT1
<code>..L,R=B:01041??,N=01:</code>	Lists all journal files from April 2001 on drive B and sends the output to channel 01:

**Special example:** All TCOSS configuration files can be viewed by following command:

```
..2L,R=+TECH/ATAMCONFxxCC, FROM=aa, TO=bb
```

xx = channel number

aa = start line (optional)

bb = end line (optional)

**Expected acknowledgments**

See the `..SEND` command.

## Rerouting Existing Send Orders(..REROUTE)

### Command format

```
..REROUTE, CHANNEL=xxx, ORIGI=xxx, NUMBER=xxx, STYP=xxx,
POSDU=x, PRIOR=x, COSTC=xxx, DATE=xxx, TIME=xxx TERMINATION=xxxxxx
```

### Abbr. form

```
..RR, C=xxx, OR=xxx, N=xxx, ST=xxx, PD=x, P=x, CC=xxx, D=xxx, T=xxx, TE=xxxxxx
```

### Function

The ..REROUTE command can be used to re-route all specific send orders with send status '0'-'9' defined by number set in parameter CHANNEL (USER ID) to the new number set in parameter **NUMBER**. Only the channel (USER ID) of the original number is checked instead of the complete number. Send orders with send status '+', '0' and those currently being processed (send status SY, SX, SL or SR) are not re-routed.

Parameters CHANNEL and NUMBER are mandatory, STYP, POSDU, PRIOR, COSTC, USERID, DATE and TIME are optional.

### Parameters

<b>C=xxx</b>	Parameter <b>CHANNEL</b> (can be <b>USER ID</b> ) specifies the original receiver, whose send orders are to be re-routed. If the original send order was created using alternative numbers, only the currently active one is concerned. Parameter CHANNEL itself should not contain alternative numbers. If done so, however, only the first alternative is used. Please note that CHANNEL has to be defined WITHOUT colon (:) at the end.
<b>OR=xxx</b>	Specifies an originator for the re-routed send commands. If no originator is specified, it remains unchanged.
<b>N=xxx</b>	Parameter NUMBER specifies the new receiver for all send orders to be re-routed. Alternative numbers and short numbers can be specified without restriction in this parameter.
<b>ST=xxx</b>	If specified, it sets the start type ('0'-'9') for all (re-routed) send orders generated by this command.
	If not specified, the send status of all send orders re-routed remains unchanged except for those with send status '0', which is set to '9'
<b>PD=x</b>	Parameter POSDU sets the initial value of the 'possible duplicate message' flag (max. field length = 1). Possible values: <ul style="list-style-type: none"> <li>• '0' - off (= default value)</li> <li>• '1' - on</li> </ul>
<b>P=x</b>	This parameter specifies the priority (max. field length = 1). <ul style="list-style-type: none"> <li>• 0 = low</li> <li>• 1 = normal</li> <li>• 2 = high</li> </ul> <p>If a send order is created with low priority and without specified sending time and the receiver is not a KCS user, the sending time may be set automatically to the lowest tariff time for the given number according to the used cost center table (kk99). See chapter cost accounting for more details</p>
<b>CC=xxx</b>	This parameter specifies the cost center (max. field length = 10).

	The parameter COSTC sets the cost center. If it is not specified in the ..SEND command, the cost center will be taken from the document's author or from the reference
<b>D=xxx</b>	The date is indicated in the form "yymmdd" (year, month, day). The system then verifies the date's validity. When this parameter is missing the actual date is assumed
<b>T=xxx</b>	The time is indicated in the form "hhmm" (hour, minute). The system then verifies the time's validity. When this parameter is missing, the actual date is assumed  <div style="background-color: #e0e0e0; padding: 5px;"> <p><b>Note</b></p> <ul style="list-style-type: none"> <li>• If a date or time parameter is specified, it replaces the corresponding parameter by all send orders to be re-routed</li> <li>• If any of these parameters are not specified, the corresponding parameters of all send orders re-routed remains unchanged</li> </ul> </div>
<b>TE=xxxxx</b>	The parameter termination can be used in a ..Reroute command. The original termination value of the send order remains unchanged if "termination" is not defined. If "termination" is defined partially (not all 5 positions are defined), blank positions are filled from configuration and a new termination value is set in the re-routed send order.

**Example**

<code>..RR,C=A1,N=F:86353899</code>	Reroutes all documents with an send order to channel or user ID A1 to a new channel F: with number 86353899
<code>..RR,C=TCTECH,N=01:+A,ST=3,P=2</code>	Reroutes all documents with a send order to channel or user ID TCTECH to a new channel 01 with a KCS mask +A, additional switches are used
<code>..RR,C=DEFAULT,N=F:86353899,CC=SALES,D=01</code>	Reroutes all documents with a send order to channel or user ID DEFAULT to a new channel F with number 86353899, additional switches are used.

**Expected acknowledgments**

- 100
- 202
- 301, 319
- 400, 401, 402, 403, 405, 407, 408, 428, 429, 431, 432, 433, 434

**How to Delete (Reroute) Multiple Send Orders**

1. Make sure your wconfig program is installed and working correctly.
2. Start the wconfig program with switch -a (such as `C:\MT\74000\wconfig.exe c:\temp\blah -a`)
3. Open software/hardware assignment, select any free channel, click on it and select a "NU NULL channel"
4. Keep in mind that the NU NULL channel automatically belongs to channel group U
5. Use 1.0 as slave allocation as this indicates that the channel runs directly on the master.
6. Exit the configuration, upload it to the KCS server and restart the server.
7. Create a KCS mask (such as +1) within folder +MAIL5V via TCFW, define \$R\$ as body text and do not define any \$X\$ at the end.

8. Whenever you have to reroute and therefore delete documents from one specific KCS queue, use the following syntax:

```
..2rr,c=f,n=U:+1,TE=30300
```

or

```
..2rr,c=any user ID,n=U:+1,TE=30300
```

**Note** Subsets of documents (such as all TF83\*) cannot be re-routed, only all documents leading to a specific queue.

Take care that the original channel, from where the send orders are re-routed has to be specified without colon ":" (such as c=f)

## Query Command(..QUERY)

### Command format

```
..QUERY,NUMBER=xxx,TIME=xxx,DATE=xxx
```

### Abbr. form

```
..Q,N=xxx,T=xxx,D=xxx
```

### Function

The **standard QUERY command** enables you to activate send orders which are arranged in any of the queues (only the parameter NUMBER is used).

The command can only be used when the channel is configured for query. In this case the channel does not carry out send tests automatically. A ..QUERY command is needed to execute a send order on the channel. The commands ..WAIT and ..CONT have no effect on this channel.

If there is no send order ready for sending in the queue defined by the ..QUERY command the pseudo-document "A:+EMPTY" is sent. This consists of only one line of text which is acknowledgment 318.

Since it is possible to process only the first send order in a queue the message 318 also appears if this first send order is already being processed by another channel.

The **extended QUERY command** is used to activate a specific send order, defined by the parameters NUMBER (only channel indication is used), DATE and TIME.

In the following cases, the pseudo-document "A:+EMPTY" with acknowledgment "318 no message" is sent:

no send orders to specified channel exist  
no send order with specified date and time exists  
selected send order is locked (processed by another channel)  
receiver is locked  
selected send order has status '+' or '0'  
or is waiting for an acknowledgment from the CF or a slave KCS (error codes 'SX' or 'SL')

### Parameters

<b>N=xxx</b>	The parameter NUMBER defines a channel number or a channel group whose queue is to be called up. The format of the parameter is identical to that of the number parameter of the ..SEND command (see also description of receiver). Only the indicated channel, however, is used. If a selection number is defined, it is only used to determine a default channel  You can also specify an abbreviated number. If this number occurs more than once in the abbreviated number directory the one to appear first is used. When no number is specified, the local channel number is assumed
<b>T=xxx</b>	Time value

<b>D=xxx</b>	If DATE or TIME (or both) are specified, date and time must match the send order's date and time as shown in the contents directory. If several send orders meet all conditions, the one listed first in the contents directory is activated Default values are current date and time
--------------	---

**Tip** For receiver and abbreviated number see separate chapters. The command is mainly intended for communication with host programs which, with the query command, can control the stream of data by handling the reception of sent documents.

**Note** As it is possible to specify any queue, send orders which are assigned to another channel may be 'snatched away'.

It can happen that a QUERY command is answered with the document ++ EMPTY although send orders are available in the corresponding queue. There are two possible reasons for this: either the time of sending has not been reached yet, or the first send order in the queue is already being processed by another channel.

### Example

The following send orders were created on channel 03:

..S,R=TEXT2,N=K:	is put in queue K
..S,R=TEXT3,N=03:	is put in queue 03

The following commands are entered on channel 03:

..QUERY	the document TEXT3 is sent
..QUERY,N=K:	the document TEXT2 is sent

### Expected acknowledgments

document or pseudo-document A:+EMPTY

311, 312, 315, 316, 317, 318

400, 401, 402, 405, 406

## End of Transmission(..EOT)

### Command format

```
..EOT, BREAK=x, ORDER=xxx, EC=x, DATE=xxx, TIME=xxx, AUTHOR=xxx,
DPNR=x, CTIME=xxx, CHCNT=xxx
```

### Abbr. form

```
..EOT, BR=x, O=xxx, EC=x, D=xxx, T=xxx, A=xxx, DP=x, CT=xxx, CH=xxx
```

### Function

The ..EOT command is used to confirm the transfer of a document. You have to enter it after a transmission which was activated by a send order (not after examining). In any case, the user module usually generates this command automatically (see interface control). For example, with the

asynchronous module, it can be configured whether an internal EOT should be generated automatically or not.

### Parameters

<b>BR=x</b>	<p>The parameter BREAK defines whether the document was sent correctly or not:</p> <p>BREAK=0, transmission completed properly</p> <p>BREAK=1, call collision</p> <p>BREAK=2, busy</p> <p>BREAK=3, out of order</p> <p>BREAK=4, break during transmission</p> <p>BREAK=5, fatal error</p> <p>BREAK=6, document transferred to slave</p> <p>BREAK=7, routed successfully, works like BREAK=6, with some exceptions (see parameter NOTIF of the send command).</p> <p>The value you enter for the BREAK parameter determines whether the send order is considered executed, transferred to the slave or put back with a new send status in the corresponding queue (see send status). The default value for this parameter is 0. (= ok.).</p> <p>The task of a user module is, among other things, to evaluate the external acknowledgments during sending and to create the corresponding BREAK values</p>
<b>O=xxx</b>	<p>The specified serial number overwrites the automatically generated or with the ..SEND command entered serial number of the send order. It appears in all further send attempts</p> <p>If the same number should appear in the log file and in the contents directory, parameter DPNR can be used to set this number accordingly: ..EOT,ORDER=xxx,DPNR=xxx</p>

**Caution:** Some channels require a serial number of fixed length for sending. For example, the Fax channels require a 3-digit serial number.

<b>EC=x</b>	2 digit error code. With this parameter the error code will be transmitted to the TAM. The error code will be shown in the log file and in the send command line of the contents
<b>T=xxx</b>	Time value
<b>D=xxx</b>	date and time. The time of the send attempt can be transmitted to the TAM. The value TIME=xxx will be entered in the log file and the send command line of the contents.
<b>A=xxx</b>	If specified, the AUTHOR will be shown in the answer back field of the contents directory Value range: 24 characters, all TCOSS characters
<b>DP=x</b>	With this parameter the last acknowledged page number will be transmitted to the TAM. The format has to be "document number - page number", such as 123-001
<b>CT=xxx</b>	<p>This parameter is used for cost accounting and is normally generated automatically by the user modules</p> <p>It informs the TAM about the transmission time</p> <p>Layout: 6 digits, leading zeros, transmission time in seconds (max. count is 3000).</p>

<b>CH=xxx</b>	This parameter is used to inform the TAM about the number of transmitted 64-byte units and is normally generated automatically by the user modules. With UIF this parameter may be used to provide the advice of charge (AOC) information for cost accounting Layout: 6 digits, leading zeros, number of transmitted 64-byte units
---------------	---

**Tip** This command is mainly designed for communicating with host programs which can use `..EOT` to confirm the transfer of sent documents. This ensures that no documents are lost.

### Examples

<code>..S,R=TEXT2,N=K:</code>	Send order goes to queue K.
<code>..QUERY,N=K:</code>	Document TEXT2 is sent.
<code>..EOT,BREAK=1</code>	Send order goes back to queue K with the same status and sending time.
<code>..QUERY,N=K:</code>	Document is resent.
<code>..EOT</code>	Send order is considered executed.

### Expected acknowledgments

317,  
400, 401, 402, 407, 408, 416, 418, 419, 424, 425

## Command Mode(..CMDON)

### Command format

`..CMDON`

### Abbr. form

none

### Function

The command `..CMDON` enables you to activate the command mode when receiving a document. It can be set by configuration whether the command is accepted or not.

A channel is not usually in the command mode during document reception. This means that all incoming lines are simply stored in the incoming document. Lines beginning with `..` are not specially handled.

As soon as the command line `..CMDON` appears in the incoming text, the system switches to the command mode; all lines beginning with `..` are interpreted as command lines and execute their corresponding functions.

Independent from this all received lines (also the `..commands`) are stored in the received document in the command mode as well.

**Note** The command can be used for remote maintenance via telex line.

### Parameters

none

**Tip** It is possible to switch off this function by configuration - see Config Manual for details.

**Example**

This is the text of a received telex.

..CMDON

..C (now, a contents directory has been queried, is sent via telex)

**Expected acknowledgments**

100

## Content Listing(..CONTENT)

**Command format**

CONTENT, REFERENCE=fff/xxx, NUMBER=xxx, DATE=xxx  
 TIME=xxx, FROM=xxx, TO=xxx, STOP=x, MODE=x, DISK=x, CHANNEL=xx

**Abbr. form**

C, R=fff/xxx, N=xxx, DATE=xxx, T=xxx, F=xxx, TO=xxx, S=x, TE=xxx, M=x, D=x, C=xx

**Function**

**Function:** The command ..CONTENT enables you to send or examine the contents directory (abbreviated below as contents) of a defined drive. The content is the most important element for administrating the system. It contains all information concerning

*all stored documents (of the drive) and  
 all send orders for these documents.*

The content listing does not show the folder. Files in the folder +MAIL5V are displayed as *d:rrrrrrrrrr*, files in other folders as *rrrrrrrrrr*.

The ..CONTENT command can be used to show the files in any folder. Visible TCOSS files are in the folder +MAIL5V, invisible program and config files in folder +TECH and envelopes sent by a client in folder +MAIL. The user store is organized around the folder +USER.

The contents is administrated as pseudo-file with the reference +INHALT (see 'directories' for its detailed set-up and meaning)

With the exception of the parameters REFERENCE, MODE and DISK the command "..CONTENT" corresponds to the command

`..LIST, REFERENCE=+INHALT`

Entering one of the parameters NUMBER, DATE or TIME creates a send order; if these three parameters are missing, an examination of the contents results.

**Parameters**

<b>R=fff/xxx</b>	fff indicates the folder, such as +MAIL or +TECH. This optional parameter indicates a selection code for the document references to be called up in the contents. The name can be between 1 and 11 characters long. If a folder is used, the drive can be indicated before the name. In addition, you can enter wild cards. Only those documents are shown in the contents which the ambiguous reference refers to  The default value for this parameter is "+MAIL5V/A*". It will not be used with Mode's 3 to 6! (All files are selected)
<b>M=x</b>	The parameter MODE offers another possibility of selectively calling up the contents:
<b>M=0</b>	Documents and send commands in the contents (complete)



<code>..C,C=TCTECH,M=6</code>	As 4, short term archive entries of user TCTECH
<code>..C,R=+MAIL5V/*</code>	Normal content
<code>..C,R=USER1/*</code>	Show message store of user USER1
<code>..C,R=+MAIL/*</code>	All messages in the +MAIL folder
<code>..C,R=TT*</code>	List all references starting with TT
<code>..C,R=*TT*</code>	List all references with TT anywhere

**Expected acknowledgments**

100

303, 311, 312, 314, 315, 316

400, 401, 402, 403, 405, 406, 407, 408, 409, 410, 417, 423

**Setting System Parameters(..PRESET)****Command format**

```
..PRESET,DATE=xxx,TIME=xxx,NRS=x,FROM=xxx,TO=xxx, ORDER=xxx,CYCLE=xxx
```

**Abbr. form**

```
..P,D=xxx,T=xxx,NRS=xxx,F=xxx,TO=xxx,O=xxx,CY=xxx
```

**Function**

The command ..PRESET enables you to set system time and date set parameters (from, to, current, cycle) of a number series

These 5 partial functions are completely independent of each other. The parameters indicate which system parameters should be set

**Parameters**

<b>D=xxx</b>	If this parameter is given the system date is set to this value. The value is indicated in the form "YYMMDD"(year, month, day).
<b>T=xxx</b>	If this parameter is indicated the system time is set to this value. The value is indicated in the form "HHMM" (hour, minute).
<b>NRS=x</b>	This parameter has to be indicated when a number series parameter should be set in order to determine which number series is meant. A letter A..Z indicates the number series
<b>F=xxx</b>	When indicated, this parameter determines the initial value (smallest value) of the number series. This value can have 1 - 6 digits
<b>TO=xxx</b>	When indicated, this parameter determines the final value (largest value) of the number series. This value can have 1 - 6 digits
<b>O=</b>	When indicated, this parameter determines the current value of the number series. This value can have 1 - 6 digits

<b>CY=</b>	When indicated, this parameter determines the cycle value of the number series. This value can have 1 - 6 digits
------------	--

**Caution:** The following rules apply if one of the parameters FROM, TO, ORDER, CYCLE is changed:

- **FROM** must be less-than **TO** ( $F < TO$ )
- **FROM** must be less than or equal to **ORDER** ( $F \leq O$ )
- **ORDER** must be less-than or equal to **TO** ( $O \leq TO$ )
- **CYCLE** must be less-than or equal to **TO minus FROM** ( $CY \leq T-F$ )
- The number of digits must be the same for all parameters.

Correlation between parameters and TCFW:

- FROM correlates to the Start value
- TO correlates to the End value
- ORDER correlates to the Current value
- CYCLE correlates to the Keep always value

Series:	Start value:	End value:	Current value:	Keep always:
Z	0000	9999	0000	0020

**Tip** Even though stated above that the CYCLE (Keep always) value might be set equal to the TO (End) value do not set it to equal value as it might lead to Problems specially with back-received documents. For a 4 digit number series define max. 8000 to 9000 as keep always value. If this is not enough, use a 5 digit number series. For example, Start value 00000 End value 99999 keep always 30000).

**Background:** TCOSS handles the cyclical erasure in the following way: The document reference, which will be deleted (because of the keep always setting), is defined at the beginning of the creation of a backreception document - but it will be deleted at the end of the backreception. If now, for example, a very long (FAX) message is sent, while on other channels (using the same number series) a large number of short (FAX) messages are sent, it might happen, that the cyclical deletion at the end of the first transmitted (large) message is done with a new created backreception document (one of the short messages sent later).

To avoid such a situation, the keep always value must be a smaller than the end value. The same situation applies for reception as well.

**Examples**

..P,D=010715,T=0800	Sets a new system date and time
---------------------	---------------------------------

<pre>..P,NRS=Z,F=0010,TO=8888,O=0</pre>	<p>Changes the number series Z from the values displayed above, to following values:</p> <p><b>Original setting</b></p> <table border="1" data-bbox="643 401 1318 533"> <thead> <tr> <th>Series:</th> <th>Start value:</th> <th>End value:</th> <th>Current value:</th> <th>Keep always:</th> </tr> </thead> <tbody> <tr> <td>Z</td> <td>0000</td> <td>9999</td> <td>0000</td> <td>0010</td> </tr> </tbody> </table> <p><b>New setting</b></p> <table border="1" data-bbox="643 611 1318 743"> <thead> <tr> <th>Series:</th> <th>Start value:</th> <th>End value:</th> <th>Current value:</th> <th>Keep always:</th> </tr> </thead> <tbody> <tr> <td>Z</td> <td>0010</td> <td>8888</td> <td>0100</td> <td>0040</td> </tr> </tbody> </table>	Series:	Start value:	End value:	Current value:	Keep always:	Z	0000	9999	0000	0010	Series:	Start value:	End value:	Current value:	Keep always:	Z	0010	8888	0100	0040
Series:	Start value:	End value:	Current value:	Keep always:																	
Z	0000	9999	0000	0010																	
Series:	Start value:	End value:	Current value:	Keep always:																	
Z	0010	8888	0100	0040																	
<pre>//L,R=tt99</pre>	<p>Shows the content of the number series file via ..commands instead of TCFW</p>																				

**Expected acknowledgments**

100

315

400, 401, 402, 407, 408, 409, 410, 411, 412, 414, 415

**Deactivating a Send Channel(..WAIT)****Command format**

```
..WAIT,CHANNEL=xx
```

**Abbr. form**

```
.WAIT,C=xx
```

**Function**

You can use the command ..WAIT to stop sending of documents on the specified channel (does not stop reception on this channel).

The parameter CHANNEL indicates which channel should be closed.

A transmission being executed will not be interrupted. This command does not affect the examination of documents and acknowledgments, either. Thus, it is possible to enter commands and documents without hindrance.

The initial state of each channel can be configured. This means that the configuration can determine whether a channel starts sending immediately after the system is ready or only after the command ..CONT.

Furthermore a channel can be configured to 'QUERY'.

In this case; the commands ..WAIT and ..CONT have no effect on this channel (see ..QUERY).

**Parameters**

<b>C=xx</b>	This parameter indicates the channel to be closed. Valid channel numbers are 00 up to OZ. Insert the value for this parameter without colon. Channel groups cannot be closed If the parameter is not indicated the local channel is stopped
-------------	--

**Tip** The initial state of each channel can be configured, i.e. it can be specified if a channel starts sending immediately after power up, or only after the command `..CONT`

**Example**

<code>..WAIT,C=05</code>	Channel 05 is deactivated for sending, status changes from CONT to WAIT
--------------------------	---

**Expected acknowledgments**

100  
406

Activating a Send Channel(`..CONT`)

**Command format**

`..CONT,CHANNEL=xxx`

**Abbr. form**

`..CONT,C=xxx`

**Function**

The command `..CONT` enables you to continue sending documents on a defined channel after having deactivated the send channel with a `..WAIT` command

**Parameters**

<b>C=xx</b>	This parameter indicates which channel should be reactivated. The 2 digit channel number is indicated (00 .. OZ). Insert the value for this parameter without colon. Channel groups cannot be specified If this parameter is not specified, the local channel is reactivated
-------------	---

**Tip** See explanations of command `..WAIT` for further information

**Examples**

<code>.. CONT</code>	Activates the local channel for sending
<code>..CONT,C=05</code>	Activates the channel 05 for sending

**Expected acknowledgments**

100,  
406

## System Error Messages(..ERROR)

### Command format

```
ERROR, TYP=x, ORDER=nnn, CHANNEL=cc
```

### Abbr. form

```
ER, TYP=x, O=nnn, C=cc
```

### Function

By using the ..ERROR command, system error messages can be created. Additionally, the error state in the status will be either set or reset depending on the entered parameters

It is used by some user modules to indicate a line out of order condition

### Parameters

<b>TYP = x</b>	x = 0, no change of error state (= default value) x = 1, set error state ('X' in the status) x = 2, reset error state
<b>O = nnn</b>	This parameter specifies the number of the error message (entered in file 'SYSMESSAGES') to be sent If this parameter is not entered, no error message will be created
<b>C = cc</b>	Specifies the channel number of the defective communication line

### Example

..ER, TYP=1, O=000, C=63	Error state will be set in the status ('X') for channel 63 and system error message 000 will be created
--------------------------	---

### Expected acknowledgments

100,  
406

## Internal Commands

Internal commands are used (in addition to the commands described in the previous chapter) to control the sending and receiving activities. Basically, they are used from all communication line channels like analog FAX, ISDN FAX (basic rate and primary rate), TELEX and TELETEX (not available anymore). Whenever a FAX or TELEX arrives on KCS or is sent via KCS, the communication between TAM and TUM is based upon internal commands.

To follow that internal communication between TAM and TUM, define a TAM/TUM trace output on that specific sending/reception channel as this would show you the exact communication.

The following commands exist for receiving of messages:

```
..LOGON  
..LOGOFF
```

`..ESEITE`

The following commands exist for sending of messages:

`..SSEITE`

`..EOT`

The command `..EOT` is not only an internal command but there are some additional parameters which are normally not used by the standard user.

The internal commands can be used with an asynchronous module if the first position of config line 102 is set to '3' which enables the internal commands. By using a TCUAS channel which runs directly on the master the config line 102 is automatically changed to enable the usage of internal commands

## Opening an Incoming Document(..LOGON)

### Command format

`..LOGON, REFERENCE=xxx, TYP=x, DATE=xxx, TIME=xxx, AUTHOR=xxx, DPNR=x`

### Abbr. form

`..LN, R=xxx, TYP=x, D=xxx, T=xxx, A=xxx, DP=x`

### Function

The command `..LOGON` is used to create a received or back-received document. All text lines and commands entered after the `LOGON` command will be stored

All documents are stored in the envelop format. Some ++ control lines may not be listed in the order they were entered, and some parameters of ++ control lines may be listed with a slightly different value. The function of the control lines is not affected

### Parameters

<b>R=xxx</b>	With this parameter the reference of the document can be defined. If this parameter is not used an automatically created reference is used The automatic reference depends on the configuration and the directory of number series  If a file with this reference already exists, the system tries to delete it. If this is not possible (for example, file is active for sending or has an undeletable send order), and no reference is specified, 10 retries are made with the next references according to the used number series.		
<b>TYP=x</b>	This parameter sets the type of the document (teletex no longer supported):		
	0	=	telex reception
	1	=	teletex or fax, reception of normal document
	3	=	teletex, reception of control document
	4	=	telex back reception
	5	=	teletex or fax, back reception, sending without CF (telex- teletex
	6	=	conversion facility)
	7	=	teletex, back reception, sending with CF
<b>T=xxx</b>	If this parameter is indicated the system time is set to this value. The value is indicated in the form "HHMM" (hour, minute).		

<b>D=xxx</b>	If this parameter is given the system date is set to this value. The value is indicated in the form "YYMMDD"(year, month, day). With these parameters date and time can be transmitted to the TAM The values will be entered in the log file
<b>A=xxx</b>	Maximum 31 digits (24 answer back, 7 document- and page number). With this parameter it is possible to enter the answer back of the sender during reception. With back reception this parameter contains the reference of the sent document
<b>DP=x</b>	With this parameter the last acknowledged page number will be transmitted to the TAM. The format has to be document number - page number, such as 123-001

**Tip** see ..SEND and ..TELEX commands

**Note** Existing files can be deleted with this command

### Examples

<pre>..LN,R=TEXT1,TYP=1 101 ATEXT1 date time ok (Response from TCOSS)</pre>	All text lines entered after this command are stored in the document with reference TEXT1 as incoming fax document.
<pre>..LN,R=TEXT5,TYP=0,D=010815,T=1400 101 ATEXT5 010815 1400 OK (Response from TCOSS)</pre>	Like the example above, but emulation of an incoming telex received on August 15th, 2001 at 2 p.m.

### Expected acknowledgments

101,  
300, 302, 308, 314, 315, 317,  
400, 401, 402, 403, 407, 408, 416, 420, 421

## Closing an Incoming Document (..LOGOFF)

### Command format

```
..LOGOFF,EC=x,END=x,AUTHOR=xxxx
```

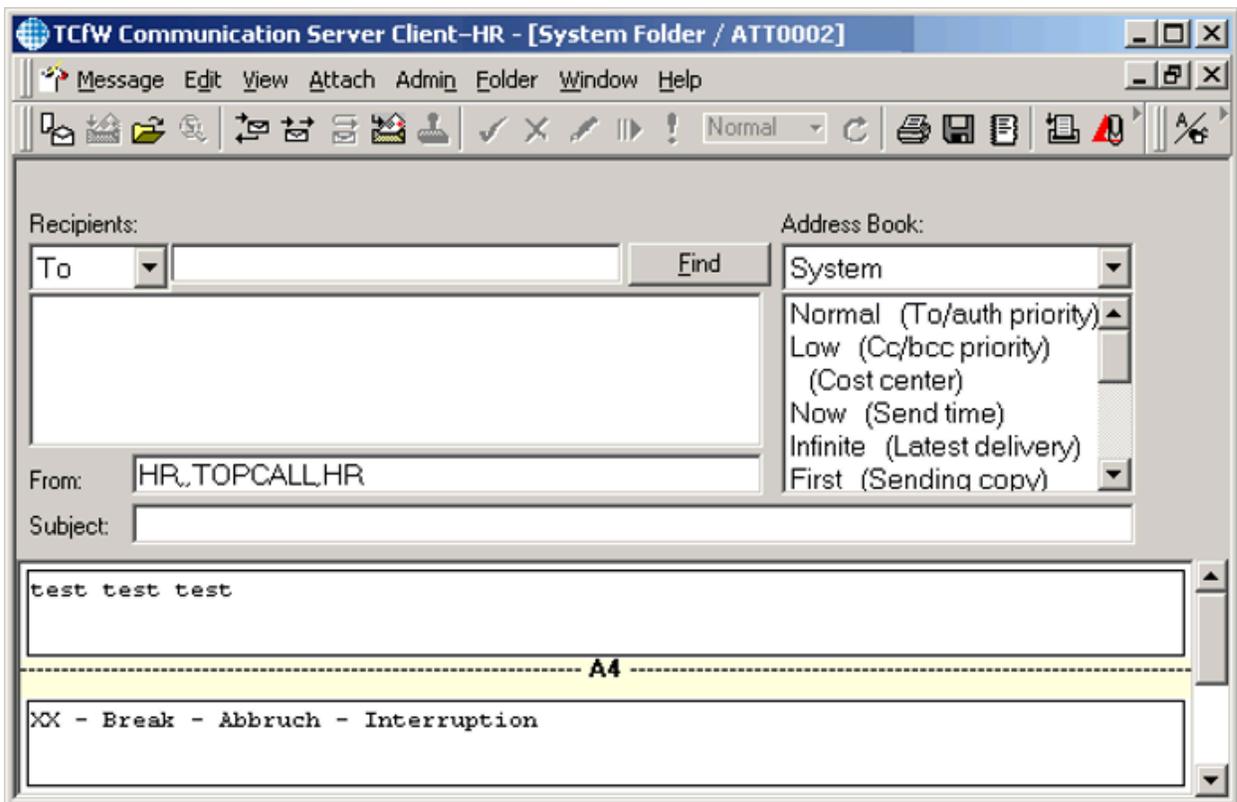
### Abbr. form

```
..LF,EC=x,E=x,A=xxxx
```

**Function**

The command ..LOGOFF is used to close and store a received or back received document which has been opened with a logon command.

If the document is closed with an error code, an additional page that indicated the erroneous reception will be appended. This page gets the A4H page format and contains a single text line that starts with the two-digit error codes specified in the EC parameter. An example is shown below:



**Parameters**

<b>EC=x</b>	2 digit error code. With this parameter the error code will be transmitted to the TAM. The error code will be shown in the log file and in the send command line of the contents.
<b>A=xxx</b>	You can add a comment to any document being created and this comment will appear in the contents directory. This text is named "author" and can be indicated with this parameter. The system does not evaluate the author, and the author is not sent within the text. The author field is 31 positions long; all characters from blank to 'z' (TCOSS- Code) may be used.  If documents are created by TCFW, the subject is stored both in the document content and in the author field. This allows using more than 31 characters for the subject.  The author field is also shown in the subject field of mail folders.

<b>E=x</b>	<p>This parameter sets how the received document should be closed:</p> <p>0 = Normal end, close file.</p> <p>1 = Normal end.</p> <p>2 = Cut off text after the last acknowledged page.</p> <p>3 = if ..LOGON, all send commands and ..LOGOFF are executed successfully: normal end (as END=0).</p> <p>If any error resulted from the above commands: delete the received document with all send orders (as END=4) and report the first error in the acknowledgment.</p> <p>4 = Delete received document with all send orders.</p>
------------	---

**Tip A** ..SEND command without reference is accepted between ..LOGON and ..LOGOFF. The reference for the send command is the reference of the received document

### Example

..LN,R=TEXT3,TYP=0	Text lines entered are stored within file TEXT3
...LF,E=0	The reception has been terminated successfully.

### Expected acknowledgments

100,  
315, 317,  
400, 401, 402, 416, 419, 422

## Information for Incoming Documents(..ESEITE)

### Command format

..ESEITE,DPNR=x

### Abbr. form

..ES,DP=x

### Function

The command ..ESEITE is used to enter the document and page number into the log file. Furthermore a "dummy-close" is done to store the already received part of the document on disk

### Parameters

<b>DP=x</b>	With this parameter the last acknowledged page number will be transmitted to the TAM. The format has to be document number - page number, such as 123-001.
-------------	--

**Caution:** Some channels require a serial number of fixed length for sending. For example, the Teletex channels requires a 3-digit serial number.

### Example

..LN,R=TEXT3,TYP=0	Text lines entered are stored within file TEXT3.
..ES,DP=123-001	This inserts a document number 123 with a page number 001 into the content directory.

..LF,E=0	The reception has been terminated successfully.
----------	---

**Expected acknowledgments**

317,  
400, 401, 402, 420

**Information for Outgoing Documents(..SSEITE)****Command format**

..SSEITE,DATE=xxx,TIME=xxx,AUTHOR=xxx,DPNR=x

**Abbr. form**

.SS,D=xxx,T=xxx,A=xxx,DP=x

**Function**

The command ..SSEITE is used to enter the sent (and already acknowledged) pages into the send command line and later into the log file

**Parameters**

<b>T=xxx</b>	If this parameter is indicated the system time is set to this value. The value is indicated in the form "HHMM" (hour, minute).
<b>D=xxx</b>	If this parameter is given the system date is set to this value. The value is indicated in the form "YYMMDD"(year, month, day). With these parameters date and time can be transmitted to the TAM. The values will be entered in the log file.
<b>DP=x</b>	With this parameter the last acknowledged page number will be transmitted to the TAM. The format has to be document number - page number, such as 123-001.
<b>A=xxx</b>	Max. 31 digits (24 for answer back, 7 for document- and page-number). The content of this parameter is entered to the send command line.

**Caution:** Some channels require a serial number of fixed length for sending. For example, the Teletex channels requires a 3-digit serial number.

**Expected acknowledgments**

317,  
400, 401, 402, 407, 408, 416, 420

**User Records(..USER)****Command format**

..USER,RECORD=xxx

**Abbr. form**

..U,RC=xxx

**Function**

The ..USER command is used to search for a record in the user profiles. This can be done either direct within the user profiles or via the system file +MAIL5V/Auu99 that will be created by TCfW after changes in the user profiles were done.

**Direct access** is done with format **RC=number [password [any string]]**. The "number" will be normalized and then compared with all **inactive addresses** of all users (after normalization). If a match is found, the password will be checked if specified. Further characters after the password are ignored.

**Search within unknown field size** is done within the uu99 file with format **RC=+field1[field2[any data]]**. It has to be defined by a the leading "+" character. In that case, fields are not separated by backslash characters in the search key and only the first two fields are compared (used as Fax PIN and Fax password), even if the string is longer.

**Parameters**

<b>RC=xxx</b>	Specifies a search key. Maximum length = 200 characters. The detailed functional description depends on the format of this parameter.
---------------	---

**Example**

..U,RC=FXI\$888	This command searches within all inactive addresses of all users and tries to find a match. The result might be 105 FXI\$888\666\DUM : \DUM:\FAX\$2200\DUM :F:\
..U,RC=+777	This command searches within the existing file uu99 located within the folder +MAIL5V. The result might be 105 777\666\DUM:\DUM:\FAX\$2200\DUM:\
...U,RC=*\*\DUM	This command searches within the uu99 file. The asterisk is used as wildcard (all fields before the search string starts must be defined). The result is 105 777\666\DUM:\DUM:\FAX\$2200\DUM:\

Correlation between ..USER command and TCFW user profile definition: Please find the TCFW address section of the user DUM stored on KCS below. The ..U command with number (service) specified, searches the address section of all user profiles.

Active	No address no.	Service	Number:
X	1	TOPCALL	DUM,
	2	FXI	888,

The ..U command with unknown field size accesses the uu99 file directly. The uu99 file is created out of the manual fax section of the same user profile. The used settings might be different though the same user profile is used!

Access number: <input type="text" value="777"/>	Default fax number (number only): <input type="text"/>
Access password: <input type="text" value="XXXX"/>	TOPCALL access number: <input type="text"/>
FIS prefix: <input type="text"/>	

This explains why you get for the same user profile different results within the example above. Take care by using the TCFW scan command as the same rule for recognizing shadow users is used.

**Expected acknowledgments**

100

317,318

## Chaining of Messages(..CHAIN)

**Command format**

..CHAIN

**Abbr. form**

.CH

**Function**

The command ..CHAIN is required for the fax chaining feature. This command can be used once during sending a document before the EOT command. It will respond with:

**100 OK**, a second send order to the same recipient (incl. channel, mask, options, answerback) exists and its sending time allows immediate sending or sending within the next 64 minutes. The send order has been locked and it will be executed immediately after the current send attempt has been finished.

**317 wrong command**, the command has not been entered during sending.

**318 no message**, there is no send order to the same recipient available.

If a channel is set from "continue" to "waiting" during sending with the chaining feature active, the channel will not interrupt the chaining and stop only after all chained documents to a particular recipient have been sent.

**Expected acknowledgments**

100,

317, 318

## Check of Recipient Information(..CHECK)

**Command format**

..CHECK, NUMBER=xxx

**Abbr. form**

..CHECK, N=xxx

**Function**

The command `..CHECK` is supported by the TAM - TC Application Module. It uses only one mandatory parameter specified as number

The purpose of the command is to route and check the specified number exactly the same way as it is done from the `..send` command, except that no send order is created. If multiple distribution via NN99 file is used, only the first number is processed

The positive response has the format "105" followed by a space and the "localized number string (after the rr99 process). The localized number string consists of 8 characters recipient queue (the unused characters are filled up with blanks), followed by a colon character and the additional recipient information

If the localized number contains alternative addresses, they are separated by a backslash character

The `..check` command is an internal command like `..logon` and is only accepted in idle state (no actual sending and reception activity). The `..check` command will be used by the FAX and TELEX module to find out whether an inbound send order which contains DID or sub-addressing digits will be accepted before the actual reception starts with `..logon`

**Parameters**

<b>N=xx</b>	The parameter NUMBER indicates the receiver who the document is to be sent to. The number might be defined as service followed by the number; a TOPCALL user ID or an abbreviated number (starts with a leading dot).
-------------	---

**Example**

<code>..check,n=FXI\$888</code>	A check is done whether a recipient exists for this number.
<code>105 DUM : ..check,n=.ERROR1</code>	A check is done whether an abbreviated number ERROR1 exists within file NN99.
<code>105 ERRINFO..</code>	In case of successful match or <b>301 abbreviated number does not exist.</b>

**Expected acknowledgments**

105  
311, 405, 406

**Log Command(..LOG)**

This command has been implemented to allow generation of user-defined log entries from the dot-dot command interface in the short term archive. It is used, for example, for logging of FIS and pure telephone connections to the fax module.

**Command syntax**

```
..LOG,ORIGI=loguser,AUTHOR=structurename,RECORD=fieldslist
..LOG,OR=loguser,A=structurename,RC=fieldslist
```

All 3 parameters are required.

The "loguser" specified with the originator parameter (max. length 127) goes into the TS\_LOG\_USER field.

The "structurename" entered as author (max. length 24) gives the name of the user-defined log entry on the first hierarchy level.

The "fieldslist" put into the record parameter (max. length 240) contains the field names and values of the second hierarchy level in the format "field\field\field.." (Backslash as separator between fields)

Each field specification consists of field name and field value in one of two possible formats:

String field:	"fieldname=Sfieldvalue"	(field value prefixed with letter "S")
Integer field:	"fieldname=Ifieldvalue"	(field value prefixed with letter "I")

If the length of the field name or field value exceeds 128 characters, it will be truncated after 128 characters without error message.

### Example

```
//LOG,OR=FAX,A=EXAMPLE_LOG,RC=field1=I35\field2=Sblabla\field3=Slall
```

Generates an archive entry like

SET_ENTRY_MS_MAIL_ARC	
INT_MSG_TYPE	... constant LOG_ENTRY
TIME_ACTION	... time of archiving (set automatically)
TS_LOG_USER	... "FAX"
BLK_BINARY	... position in short term archive (TCOSS internal)
UN_CONTENT/SET_ATTRIBUTE	... user-defined log entry

containing an attribute structure of the form

UN_CONTENT/SET_ATTRIBUTE	
UN_NAME	...
"EXAMPLE_LOG" (structure name)	
UN_VALUE/L_ATTRIBUTES	... list of fields
SET_ATTRIBUTE	
UN_NAME	... "field1" (field name)
UN_VALUE	... 35 (integer value)
SET_ATTRIBUTE	
UN_NAME	... "field2" (field name)
UN_VALUE	... "blabla" (string value)
SET_ATTRIBUTE	
UN_NAME	... "field3" (field name)

UN_VALUE	... "lall" (string value)
----------	---------------------------

The `..LOG` command is an internal command like `..LOGON` or `..CHAIN`. It is only accepted in the idle state.

After the `..LOG` command has been processed correctly the response "100 OK" is returned. Syntax errors in the fields list contained in the record parameter are answered with "436 bad record".

If a long user ID (more than 8 characters), which does not correspond to an existing TCOSS user, is passed as log user in the originator parameter the acknowledgment "609 user ID not found" is sent.

When testing it with an asynchronous channel, make sure that config line 102, 1st position is set to '3', activating internal commands. Check also that the backslash character 0x5C passes the input code table unchanged (config line 110).

## TCSI (TC Client Server Interface)

The TC client server interface is used by TCfW, TC/LINK-xx, and more.

Its functionality is documented in the TCfW Communication Server Client User Manual. This chapter only describes some special topics that are not described anywhere else.

### Fax Number Conversion

Faxes numbers may contain send options, masks, cost center information or additional characters that improve readability. To ensure proper handing by TCOSS, all numbers that were entered into the system using a service with type fax are converted with the rules described below: (if a service with any other type is used, rules 1 to 7 are not applied)

1. If option brackets ("`<>`") are found everything up to the "`>`" character will not be converted. This means that all masks are allowed before options.
2. If options are specified both in the fax number and in the send options window (for example, fine resolution) both options are combined within single brackets. (Note: As with prior releases, send options in the service prefix are not combined)
3. Alphabetic masks at the beginning of the number (`+A ..+Z`) are not converted.
4. `+` at beginning (after options and masks) is converted into `*`. All other plus characters are removed.
5. If the "remove digit zero in special cases" option is enabled by configuration, the digit zero is removed if it is found immediately after an opening parenthesis, if there are digits before this opening parenthesis and if the closing parenthesis is not at the very end of the number string.
6. Parentheses ("`(`" or `)`") are always removed.
7. Blanks, `+` and `-` are removed.
8. During rr99 normalization, masks are arranged before send options. Multiple option brackets are merged into a single option bracket.

**Note** The original number (before conversion) is still visible in the originator and recipient information field (fields To: and ...From continued in TCFW).

### Example of conversion

Number entered with TCFW	Rule 6 activated	Converted number w/o service prefix		Applied rules
		Send res. NORMAL	Send res. HIGH	
FAX,+0<>12345	don't care	+0<>12345	+0<F>12345	1
FAX,<B>12345	don't care	<B>12345	<FB>12345	2
FAX,+A12345	don't care	+A12345	+A<F>12345	3
FAX,+123+45	don't care	*12345	<F>*12345	4
FAX,0043(01)234	no	004301234	<F>004301234	6
FAX,0043(01)234	yes	00431234	<F>00431234	5, 6
FAX,043+1 2345-67	don't care	0431234567	<F>0431234567	7
FAX,<B>+A12345	don't care	+A<B>12345	+A<FB>12345	8
FAX,+43-66133 (21)	don't care	*436613321	<F>*436613321	4, 6, 7
FAX,0043(0)66133+21	no	004306613321	<F>004306613321	6, 7
FAX,0043(0)66133+21	yes	00436613321	<F>00436613321	5, 6, 7
FAX,+F++436613321	don't care	+F*436613321	+F<F>*436613321	3, 4
FAX,+0<>I45PP13#	don't care	+0<>I45PP13#	+0<F>I45PP13#	1, 6
FAX,<BH>+F(02742)123	don't care	+F<BH>02742123	+F<FBH>02742123	1, 4, 6, 7
FAX,<BH>+F(0)2742123	don't care	+F<BH>02742123	+F<FBH>02742123	1, 4, 6, 7

Rule 6 can be activated in the System configuration as described below.

System configuration, line 4, outgoing fax number conversion options:

'0,	... never remove any digit
'1,	... remove digit '0' in special cases as described above (default)

## Using the Abbreviation Directory (NN99)

For usage of NN99 short numbers as in-events or for sending with TCFW, you must do the following:

1. Create a service with:
  - a. Name ".sss" (dot + a free string sss).
  - b. Prefix empty (the prefix is not used at all).
  - c. Type free address.

2. Set In-Event of User:
  - a. Use service ".sss"
  - b. Set free address to short code "rrr"
3. Set entries in A:
  - a. NN99 like sss\$rrr,UserID:add.recipient information
  - b. sss\$rrr,FAX\$12345-answerback
  - c. sss\$rrr,free address string

**Restriction:** The short code in NN99 is limited to 8 characters, so "sss" and "rrr" together have maximum length of 7 characters, "sss" may be an empty string.

**How it works:** A free address from an envelope's header or an event list is transformed into the string xxx = "service name" + "\$" + "free address string" and put into the number parameter field (where it is entered directly with ..S,N=xxx). The check for NN99 short numbers is done if xxx starts with a dot. Then the remainder of the string (after the dot) is compared to all short codes in NN99. When a match is found in NN99 the number parameter is replaced with the number information from the NN99 line (part after the comma) and put through the routing process. Multiple send orders are generated if the same short code appears more than once in NN99.

**Note** Only NN99 entries containing an \$ can be accessed to.

**Example**

Service:	<table border="1"> <thead> <tr> <th>Name</th> <th>prefix</th> <th>address type</th> </tr> </thead> <tbody> <tr> <td>. (dot)</td> <td>empty</td> <td>Free Address</td> </tr> </tbody> </table>	Name	prefix	address type	. (dot)	empty	Free Address
Name	prefix	address type					
. (dot)	empty	Free Address					
In-Event:	<table border="1"> <thead> <tr> <th>Service</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>. (dot)</td> <td>TCALL</td> </tr> </tbody> </table>	Service	Number	. (dot)	TCALL		
Service	Number						
. (dot)	TCALL						
NN99 file:	\$TCALL,F:00494053289044 \$TCALL,F:0042222135705 \$TCALL,F:00492111746222 \$TCALL,F:0041554157721						

## Using the Address Book Entries for Events

Address book entries can be accessed with the following syntax.

.Name.+TECH	For addresses from the system address book.
.Name.UserID	For addresses from the user address book.

This means that address book entries can be used similar to abbreviated numbers (NN99) in Events. See the following example.

**Note** Only address book entries that contain an \$ in their short name can be accessed.

### Example

Service:	<b>Name</b>	<b>prefix</b>	<b>address type</b>
	. (dot)	empty	Free Address
System Address book:	<b>Short Name</b>		<b>1st active number</b>
	\$TCUK		FAX,00441628788844
In-Event:	<b>Service</b>		<b>Number</b>
	. (dot)		TCUK.+TECH

=> In events are automatically send to recipient \$TCUK from the system address book.

## Handling of Invalid Recipients

Normally, when an envelope with several recipients is posted to TCOSS, it will only be accepted if all recipients are valid. A single invalid recipient causes the whole transaction to fail.

A flag `HANDLE_INVALID_REC` (16384) is defined in the `INT_OPTIONS` child of the header, mail entries and recipient entries to change the standard TCOSS reaction to invalid recipients. If it is set, recipients which turn out to be invalid are replaced with the fixed recipient string "+INVALID:" and a retry to route and generate a send order is made. If the user "+INVALID" exists or "+INVALID:" is routed to another existing user, the generation of a send order will succeed.

If `HANDLE_INVALID_REC` is set in the `INT_OPTIONS` child of the envelope header it applies to all recipients. If it is not set in the header it may be set individually for each recipient in the recipient entry.

**Note** This feature does not change the actual recipient specified in the envelope header. Since only the recipient in the mail entry is set, it can be seen as kind of automatic re-routing.

This option is intended to be combined with the "AUTO\_REJECT" feature to produce non-delivery notifications for invalid recipients.

## Custom Fields in Mail Entry (SO #331)

The mail entry has four custom fields. The fields are specified in the message header when the message is posted. It is also possible to configure an automatic mapping of the new fields to existing originator or recipient fields. Filtering on the new fields may be optimized.

The custom fields appear in all mail entries (open mail entries, short-term archive and archive entries).

All types of mail entries (`SET_ENTRY_MS_MAIL`, `SET_ENTRY_MS_MAIL_ARC`, `SET_ENTRY_ARCHIVE`) and the message header (`SET_HEADER`) have been extended with the following new child objects:

field content	object ID	maximum length
custom field 1	TS_CORREL_1	128 characters
custom field 2	TS_CORREL_2	128 characters
custom field 3	TS_CORREL_3	128 characters
custom field 4	TS_CORREL_4	128 characters

The custom fields are stored with variable length. The total length of all four fields is limited to 320 characters. No distinction is made between empty and not existing fields.

When a message is posted, the custom fields in the mail entry are filled from the corresponding fields in the message header. If the header fields do not exist or contain an empty string a configurable default mapping to originator or recipient fields is done.

System configuration, line 20, 4 hex positions: default mapping of mail entry custom fields

Position 1	Default mapping of custom field 1
Position 2	Default mapping of custom field 2
Position 3	Default mapping of custom field 3
Position 4	Default mapping of custom field 4

The following hexadecimal values may be used on any position:

Value	Default mapping of custom field to	Parent object	Child ID
00	no default mapping	-	-
01	originator recipient ID	originator	TS_RECPC_ID
02	originator company	originator	TS_COMPANY
03	originator department	originator	TS_DEPTM
04	originator full name	originator	TS_FULLNAME
05	originator salutation	originator	TS_SALUTE
06	originator free text	originator	TS_FREETEXT
07	originator correlation 1	originator	TS_CORREL_1
08	originator correlation 2	originator	TS_CORREL_2
09	originator correlation 3	originator	TS_CORREL_3
0A	originator correlation 4	originator	TS_CORREL_4
0B	originator correlation 5	originator	TS_CORREL_5
0C	originator correlation 6	originator	TS_CORREL_6
21	recipient ID	recipient	TS_RECPC_ID
22	recipient company	recipient	TS_COMPANY
23	recipient department	recipient	TS_DEPTM
24	recipient full name	recipient	TS_FULLNAME

Value	Default mapping of custom field to	Parent object	Child ID
25	recipient salutation	recipient	TS_SALUTE
26	recipient free text	recipient	TS_FREETEXT
27	recipient correlation 1	recipient	TS_CORREL_1
28	recipient correlation 2	recipient	TS_CORREL_2
29	recipient correlation 3	recipient	TS_CORREL_3
2A	recipient correlation 4	recipient	TS_CORREL_4
2B	recipient correlation 5	recipient	TS_CORREL_5
2C	recipient correlation 6	recipient	TS_CORREL_6

Identical default mapping of two or more custom fields is not supported, that is, all non-zero values may not be used more than once in all four positions of system configuration line 20. (It makes no sense anyway to fill several custom fields with the same value).

## New Log Entries for TC/MA

If activated in the system configuration TCOSS writes log entries to the short term archive on two occasions:

- Submission of a new message
- Generation of new send orders by an in-action

## Configuration

The additional log entries for TC/MA are activated in the TCOSS system configuration:

System Configuration, line 19, 2nd position: write log entries for TC/MA:

00	No
01	Write SUBMIT log entries
02	Write ACTION log entries
03	Write SUBMIT and ACTION log entries

Default value is 00 (no additional log entries, compatible to previous releases).

## Log Entry on Message Submission

This log entry is written when a new message is posted by a client via TCSI or when a message is received on a public line channel, such as a fax. In both cases it is written at the end of the reception or posting procedure, just before the newly created send orders get active.

No log entries are written in these cases:

- Posting for correction (recipient number changed, distribution of a message by an operator)
- Message transfer to another node in an LCR system

- Posting of a notification
- Sending a message with a ..SEND command outside a reception document

The log entry contains some per-message fields plus a list of recipient fields for each individual send order of the message. If the list of recipient fields gets too long to fit into a single log entry (for example, in case of a broadcast message with a large number of recipients) it is split into two or more log entries. The per-message fields are repeated in each log entry.

#### Log entry layout:

```

SET_ENTRY_MS_MAIL_ARC INT MSG_TYPE ... constant LOG_ENTRY
  TIME_ACTION ... time of logging
  TS_LOG_USER ... "TCOSS"
  BLK_BINARY ... position in short term archive (TCOSS
                internal)
UN_CONTENT/SET_ATTRIBUTE
  UN_NAME ... "SUBMIT_LOG"
  UN_VALUE/L_ATTRIBUTES ... list of fields
  SET_ATTRIBUTE
    UN_NAME ... "TS_TC_MSG_ID"
    UN_VALUE ... "0001901315091BC3" (string value)
  SET_ATTRIBUTE
    UN_NAME ... "TS_FILE_NAME"
    UN_VALUE ... "ATT0006" (string value)
  SET_ATTRIBUTE
    UN_NAME ... "TS_REC_QUEUE"
    UN_VALUE ... "LINKLN" (string value)
  SET_ATTRIBUTE
    UN_NAME ... "TS_ORIGINATOR"
    UN_VALUE ... "00" (string value)
  SET_ATTRIBUTE
    UN_NAME ... "TS_NORMALIZED_ORIG"
    UN_VALUE ... "00:+Y" (string value)
  SET_ATTRIBUTE
    UN_NAME ... "TS_REF"
    UN_VALUE ... "test reception 001-002" (string)
  SET_ATTRIBUTE
    UN_NAME ... "INT_NPAG"
    UN_VALUE ... 2 (integer value)
  SET_ATTRIBUTE
    UN_NAME ... "INT_FILE_SIZE"
    UN_VALUE ... 460 (integer value)
  SET_ATTRIBUTE
    UN_NAME ... "TS_REC_SERV_ID"
    UN_VALUE ... "MEDIA001" (string value)
  SET_ATTRIBUTE
    UN_NAME ... "TS_REC_CHANNEL"
    UN_VALUE ... "00" (string value)
  SET_ATTRIBUTE
    UN_NAME ... "RC" (recipient)
    UN_VALUE ... "PM" (string value)
  SET_ATTRIBUTE
    UN_NAME ... "NA" (normalized address)
    UN_VALUE ... "PM:" (string value)
  SET_ATTRIBUTE
    UN_NAME ... "PJ" (priority plus JOB_HANDLING flag)
    UN_VALUE ... 49 (integer value)
  SET_ATTRIBUTE
    UN_NAME ... "RC" (recipient)
    UN_VALUE ... "HR" (string value)
  SET_ATTRIBUTE
    UN_NAME ... "NA" (normalized address)

```

```

UN_VALUE ... "HR:" (string value)
SET_ATTRIBUTE
UN_NAME ... "PJ" (priority plus JOB_HANDLING flag)
UN_VALUE ... 48 (integer value)
...

```

The attributes with "TS\_REC\_SERV\_ID" and "TS\_REC\_CHANNEL" are missing if the values (media server ID and recipient channel) are not available.

The attribute "TS\_REC\_QUEUE" can only be set when the message is posted via TCSI, so it is missing when a message is received on a public line channel, such as a fax.

## Log Entry on In-Action

This log entry is written when new send orders are created for a message because of "IN\_MAIL" events set in the user profile. No log entries are written for all other types of actions like back reception or delivery notifications.

The log entry contains two per-message fields plus a list of recipient fields for each new send order of the message. If the list of recipient fields gets too long to fit into a single log entry it is split into two or more log entries. The per-message fields are repeated in each log entry.

Log entry layout:

```

SET_ENTRY_MS_MAIL_ARC
INT_MSG_TYPE ... constant LOG_ENTRY
TIME_ACTION ... time of logging
TS_LOG_USER ... "TCOSS"
BLK_BINARY ... position in short term archive (TCOSS internal)
UN_CONTENT/SET_ATTRIBUTE
UN_NAME ... "ACTION_LOG"
UN_VALUE/L_ATTRIBUTES ... list of fields
SET_ATTRIBUTE
UN_NAME ... "TS_TC_MSG_ID"
UN_VALUE ... "0001901315091BC3" (string value)
SET_ATTRIBUTE
UN_NAME ... "TS_FILE_NAME"
UN_VALUE ... "ATT0006" (string value)
SET_ATTRIBUTE
UN_NAME ... "RC" (recipient)
UN_VALUE ... "F" (string value)
SET_ATTRIBUTE
UN_NAME ... "NA" (normalized address)
UN_VALUE ... "F:*4318635320" (string value)
SET_ATTRIBUTE
UN_NAME ... "PJ" (priority plus JOB_HANDLING flag)
UN_VALUE ... 49 (integer value)
SET_ATTRIBUTE
UN_NAME ... "RC" (recipient)
UN_VALUE ... "P" (string value)
SET_ATTRIBUTE
UN_NAME ... "NA" (normalized address)
UN_VALUE ... "P:" (string value)
SET_ATTRIBUTE
UN_NAME ... "PJ" (priority plus JOB_HANDLING flag)
UN_VALUE ... 50 (integer value)
...

```

## Mail Auditing

The mail auditing feature, if active, writes audit log entries to the TCOSS short term archive. The following user actions can be audited:

- Opening a message from the mail system or from the short term archive
- All updates of a single message, such as mark completed, cancel, correct and more.
- All updates applied to a job

Mail auditing is intended to capture user actions only. Message handling done by public line channels, such as the fax channel, or by gateway users applying the transfer envelope open and save functions, is not audited.

## Configuration

The mail auditing feature can be activated in the TCOSS system configuration. The audit log entries are grouped into 8 categories which may be activated separately. The following table lists these categories together with the appropriate configuration flag values:

Config flag	Mail auditing category	Structure name
0x01	Open message (mail system and short term archive are set in separate configuration positions using the same flag)	MSG_LOG
0x02	Update mail entry, such as reactivate, change priority	MSG_LOG
0x04	Terminate mail entry, such as cancel, reject	MSG_LOG
0x08	Mark mail entry completed	MSG_LOG
0x10	Resubmit message, such as correct, distribute	MSG_LOG
0x20	Update job, such as reactivate, change priority	JOB_LOG
0x40	Terminate job, such as cancel, reject	JOB_LOG
0x80	Mark job completed	JOB_LOG

System configuration, line 21:

1st position	The configuration flags of all mail auditing categories to be activated are added up and the resulting byte value is set in this position.	
	00 ..FF	Mail system auditing flags (default = 00 (all inactive))
3rd position	The configuration flag for message open in the short term archive is set in this position.	
	00	Short term archive auditing flags inactive (default)
	01	Audit message open

## Message Auditing

Message auditing generates log entries of type "MSG\_LOG". The following table shows when these log entries are written.

TS_ACTION value	Written on	Config flag
"OPEN"	Message is opened from the mail system or from the short term archive	0x01
"REACTIVATE"	Mail entry is reactivated	0x02
"PRIORITYCHANGE"	Priority of mail entry is changed	0x02
"UPDATE"	Mail entry update other than reactivate or priority change	0x02
"CANCEL"	Mail entry is cancelled	0x04
"REJECT"	Mail entry is rejected	0x04
"TERMINATE"	Negative termination of mail entry other than cancel or reject	0x04
"COMPLETE"	Positive termination of mail entry	0x08
"DISTRIBUTE"	Message distributed	0x10
"RETURN"	Message rejected and returned to sender	0x10
"CORRECT"	Recipient corrected	0x10

**Note** Exempt from message auditing are mail entries which are processed as part of a user action on a job (independent of the job auditing option being active or not).

Audit log entries of type "MSG\_LOG" have the following layout:

```

SET_ENTRY_ARCHIVE
  INT_MSG_TYPE ... constant LOG_ENTRY
  TIME_ACTION ... time of logging TS_LOG_USER ... "AUDITSYS"
  UN_CONTENT/SET_ATTRIBUTE
  UN_NAME ... "MSG_LOG"
  UN_VALUE/L_ATTRIBUTES ... list of attributes
  SET_ATTRIBUTE
  UN_NAME ... "TS_TC_MSG_ID"
  UN_VALUE ... string value of KCS message ID
  SET_ATTRIBUTE
  UN_NAME ... "TS_ACTION"
  UN_VALUE ... user action, such as "OPEN", "CANCEL", ...
  SET_ATTRIBUTE
  UN_NAME ... "TS_USER_ID"
  UN_VALUE ... user responsible for the logged action
  SET_ATTRIBUTE
  UN_NAME ... "TS_FILE_NAME"
  UN_VALUE ... message file name
  SET_ATTRIBUTE
  UN_NAME ... "TS_RECIPIENT"
  UN_VALUE ... message recipient
  SET_ATTRIBUTE
  UN_NAME ... "INT_ER_RECIPIENT"
  UN_VALUE ... integer value index in message header
  SET_ATTRIBUTE
  UN_NAME ... "TS_ORIGINATOR"
  UN_VALUE ... message originator
  SET_ATTRIBUTE
  UN_NAME ... "INT_STATE"
  UN_VALUE ... integer value new message state
  SET_ATTRIBUTE

```

```
UN_NAME ... "INT_PRIORITY"
UN_VALUE ... integer value new priority
```

The "TS\_TC\_MSG\_ID" field allows correlating the log entry to a specific message. The "TS\_ACTION" field lists the user action, and the "TS\_USER\_ID" field holds the user responsible for the action. The "TS\_FILE\_NAME" field gives another option to correlate log entries and messages. The "TS\_RECIPIENT" and "INT\_ER\_RECIPIENT" field provide a reference to a specific recipient, which is useful for messages with several recipients. The "INT\_STATE" and "INT\_PRIORITY" fields give further details of the user action.

## Job Auditing

Job auditing captures user actions on jobs, these actions are applied in a loop to all mail entries which belong to the job. It is not unusual for a job to consist of several thousand mail entries. Instead of auditing the action for each mail entry individually a single job audit log entry is written for the whole job.

Job auditing generates log entries of type "JOB\_LOG". The following table shows when these log entries are written.

TS_ACTION value	Written on	Config flag
"REACTIVATE"	Job is reactivated	0x20
"PRIORITYCHANGE"	Priority of job is changed	0x20
"UPDATE"	Job update other than reactivate or priority change	0x20
"CANCEL"	Job is cancelled	0x40
"REJECT"	Job is rejected	0x40
"TERMINATE"	Other negative termination of job	0x40
"COMPLETE"	Positive termination of job	0x80

Job auditing is similar to message auditing, except that the message resubmit category does not exist for jobs. Audit log entries of type "JOB\_LOG" have the following layout:

```
SET_ENTRY_ARCHIVE
INT_MSG_TYPE ... constant LOG_ENTRY
TIME_ACTION ... time of logging
TS_LOG_USER ... "AUDITSYS"
UN_CONTENT/SET_ATTRIBUTE
UN_NAME ... "JOB_LOG"
UN_VALUE/L_ATTRIBUTES ... list of attributes
SET_ATTRIBUTE
UN_NAME ... "TS_TC_MESSAGE_ID"
UN_VALUE ... string value of KCS message ID
SET_ATTRIBUTE
UN_NAME ... "TS_ACTION"
UN_VALUE ... user action, such as "OPEN", "CANCEL", ...
SET_ATTRIBUTE
UN_NAME ... "TS_USER_ID"
UN_VALUE ... user responsible for the logged action
SET_ATTRIBUTE
UN_NAME ... "TS_FILE_NAME"
UN_VALUE ... message file name (= job id)
SET_ATTRIBUTE
UN_NAME ... "TS_ORIGINATOR"
```

```

UN_VALUE ... message originator
SET_ATTRIBUTE
UN_NAME ... "INT_STATE"
UN_VALUE ... integer value new message state
SET_ATTRIBUTE
UN_NAME ... "INT_PRIORITY"
UN_VALUE ... integer value new priority

```

The layout of the job log entries is similar to the message log entries, only that the fields "TS\_RECIPIENT" and "INT\_ER\_RECIPIENT" are missing because the job action is applied to all mail entries of the job, so a reference to a specific recipient makes no sense.

## Restrictions

- **Power Failure or Process Shutdown**

Audit log entries are written after the audited action has been processed successfully, before the response is sent back to the client. This means that in case of a power failure or a TCOSS process shutdown just after an action which should be audited the audit log entry may not be written.

- **Message Open Auditing**

The "Message Open" auditing category (config flag 0x01) captures all cases where a message is opened from the mail system. This includes the case where the message is displayed by a client, but there are cases where a message is opened and not displayed. All message updates like cancel, mark completed, and others are preceded by a message open from the server. Clients may also open messages from a folder to provide a preview or to display fields from the message header.

## Login Auditing

- Successful login
- Failed login
- Logout

The login auditing feature, if active, writes audit log entries to the TCOSS short term archive.

Login auditing is intended to capture user actions only. "Hostile logout" caused by a client crash, a TCOSS shut down or otherwise is not audited.

## Configuration

The login auditing feature can be activated in the TCOSS system configuration. The audit log entries are grouped into 3 categories which may be activated separately. The following table lists these categories together with the appropriate configuration flag values.

Config flag	Login auditing category	Structure name
0x01	Successful login	LOGIN
0x02	Failed login	LOGIN_FAILED
0x04	Logout by user	LOGOUT

The configuration flags of all login and user profile auditing categories to be activated are added up and the resulting byte value is set in the system configuration, line 21, 2nd position.

System configuration, line 21, 2nd position:

00 ..F7	login and user profile auditing flags, default = 00 (all inactive)
---------	--

## Successful Login Auditing

Successful login auditing generates log entries of type "LOGIN" which have the following layout:

```
SET_ENTRY_ARCHIVE
  INT_MSG_TYPE ... constant LOG_ENTRY
  TIME_ACTION ... time of logging
  TS_LOG_USER ... "AUDITLOG"
  UN_CONTENT/SET_ATTRIBUTE
    UN_NAME ... "LOGIN"
    UN_VALUE/L_ATTRIBUTES ... list of attributes
  SET_ATTRIBUTE
    UN_NAME ... "SESSION_ID"
    UN_VALUE ... unique session id (string value)
  SET_ATTRIBUTE
    UN_NAME ... "TS_USER_ID"
    UN_VALUE ... user id(string value)
  SET_ATTRIBUTE
    UN_NAME ... "TS_WORKST_DESCR"
    UN_VALUE ... name of workstation if available (string value)
  SET_ATTRIBUTE
    UN_NAME ... "TS_APPL_ID"
    UN_VALUE ... application if available (string value)
  SET_ATTRIBUTE
    UN_NAME ... "ID_SOURCE"
    UN_VALUE ... user id source: "TYPED_IN" or "LAN_ID"
```

The "SESSION\_ID" field allows correlating the login auditing entry to a subsequent logout auditing entry. The "TS\_USER\_ID" field holds the user who logged in. The "TS\_WORKST\_DESCR" and "TS\_APPL\_ID" fields are only written if available and give the name of the workstation and the application respectively. The "ID\_SOURCE" field details how the user id was presented for login, as typed in by the user ("TYPED\_IN") or obtained from the operating system ("LAN\_ID").

## Failed Login Auditing

Failed login auditing generates log entries of type "LOGIN\_FAILED" which have the following layout:

```
SET_ENTRY_ARCHIVE
  INT_MSG_TYPE ... constant LOG_ENTRY
  TIME_ACTION ... time of logging
  TS_LOG_USER ... "AUDITLOG"
  UN_CONTENT/SET_ATTRIBUTE
    UN_NAME ... "LOGIN_FAILED"
    UN_VALUE/L_ATTRIBUTES ... list of attributes
  SET_ATTRIBUTE
    UN_NAME ... "ERROR_CODE"
    UN_VALUE ... error code: 200 ..999 (string value)
  SET_ATTRIBUTE
    UN_NAME ... "TS_USER_ID"
    UN_VALUE ... user id (string value)
  SET_ATTRIBUTE
    UN_NAME ... "TS_WORKST_DESCR"
    UN_VALUE ... name of workstation if available (string value)
  SET_ATTRIBUTE
    UN_NAME ... "TS_APPL_ID"
```

```

UN_VALUE ... application if available (string value)
SET_ATTRIBUTE
UN_NAME ... "ID_SOURCE"
UN_VALUE ... user id source: "TYPED_IN" or "LAN_ID"

```

The auditing entry written for a failed login is similar to the successful login entry, only the structure type is different and an "ERROR\_CODE" field is provided instead of a "SESSION\_ID". Typical error code values are "610" (wrong password) or "609" (invalid user id). For a complete list of error codes see [List of Acknowledgments](#).

## Logout Auditing

Logout auditing generates log entries of type "LOGOUT" which have the following layout:

```

SET_ENTRY_ARCHIVE
INT_MSG_TYPE ... constant LOG_ENTRY
TIME_ACTION ... time of logging
TS_LOG_USER ... "AUDITLOG"
UN_CONTENT/SET_ATTRIBUTE
UN_NAME ... "LOGOUT"
UN_VALUE/L_ATTRIBUTES ... list of attributes
SET_ATTRIBUTE
UN_NAME ... "SESSION_ID"
UN_VALUE ... unique session id (string value)
SET_ATTRIBUTE
UN_NAME ... "TS_USER_ID"
UN_VALUE ... user id (string value)

```

The "SESSION\_ID" field allows correlating the logout auditing entry to a previous login auditing entry. The "TS\_USER\_ID" field holds the user who logged in.

**Note** Logout auditing captures only explicit logout by the user client. All other cases of a user session getting lost, due to a client crash, a TCOSS shut down or otherwise, are not audited.

## User Profile Auditing Overview

The user profile auditing feature consists of three parts:

1. Rights auditing
2. Auditing of recipient fields
3. Auditing of user events

The three user profile auditing parts are described in the following chapters. They can be configured independently, with the restriction that part 3 is an add-on to part 1, that is, auditing of user events can only be configured in addition to rights auditing.

## User Profile Rights Auditing

The user profile rights auditing feature, if active, writes audit log entries to the TCOSS short term archive. The following actions on user profiles can be audited:

- Create new user profile
- Change rights settings of user profile

- Change password or account locked flag in user profile
- Delete user profile

## Configuration

The user profile rights auditing feature can be activated in the TCOSS system configuration. The audit log entries are grouped into 4 categories which may be activated separately. The following table lists these categories together with the appropriate configuration flag values:

Config flag	User profile rights auditing category	Structure name
0x10	Create User	USER_NEW
0x20	Delete User	USER_DELETE
0x40	Change rights	USER_CHANGE
0x80	Change password / account locked flag	USER_CHANGE

The configuration flags of all login and user profile rights auditing categories to be activated are added up and the resulting byte value is set in the system configuration, line 21, 2nd position.

System configuration, line 21, 2nd position:

00 ..F7	Login and user profile rights auditing flags, default = 00 (all inactive)
---------	---

## New and Changed User Profile Auditing

Creating new user profiles or changing the security relevant fields generates log entries of type "USER\_NEW" or "USER\_CHANGE " which have the following layout:

```

SET_ENTRY_ARCHIVE
INT_MSG_TYPE ... constant LOG_ENTRY
TIME_ACTION ... time of logging
TS_LOG_USER ... "AUDITUSR"
UN_CONTENT/SET_ATTRIBUTE
UN_NAME ... "USER_NEW" or "USER_CHANGE"
UN_VALUE/L_ATTRIBUTES ... list of attributes
SET_ATTRIBUTE
UN_NAME ... "TS_USER_ID"
UN_VALUE ... ID of the user whose settings have been changed
SET_ATTRIBUTE
UN_NAME ... "TS_ORIGINATOR"
UN_VALUE ... ID of the user who did the change
SET_ATTRIBUTE
UN_NAME ... "CHANGED_FIELDS"
UN_VALUE ... string changed fields as comma-separated list such as
"TS_PASSWORD,INT_RIGHTS_APPL"
SET_ATTRIBUTE
UN_NAME ... "TS_GROUP"
UN_VALUE ... group field of user profile
SET_ATTRIBUTE
UN_NAME ... "TS_REPRESENTATIVE"
UN_VALUE ... representative field of user profile
SET_ATTRIBUTE
UN_NAME ... "TS_COST_CENTER"
UN_VALUE ... cost center field of user profile
SET_ATTRIBUTE
UN_NAME ... "INT_RIGHTS"

```

```

UN_VALUE ... rights value string
SET_ATTRIBUTE
UN_NAME ... "INT_RIGHTS_RW"
UN_VALUE ... read/write rights value string
SET_ATTRIBUTE
UN_NAME ... "INT_RIGHTS_YN"
UN_VALUE ... yes/no rights value string
SET_ATTRIBUTE
UN_NAME ... "INT_RIGHTS_YN_2"
UN_VALUE ... yes/no 2 rights value string
SET_ATTRIBUTE
UN_NAME ... "INT_RIGHTS_USERPROF"
UN_VALUE ... user profile rights value string
SET_ATTRIBUTE
UN_NAME ... "INT_RIGHTS_APPL"
UN_VALUE ... application rights value string
SET_ATTRIBUTE
UN_NAME ... "INT_AUTO_LOGIN_ENABLE"
UN_VALUE ... auto login enable value string
SET_ATTRIBUTE
UN_NAME ... "INT_ACCOUNT_LOCKED"
UN_VALUE ... account locked value string
SET_ATTRIBUTE
UN_NAME ... "INT_ACTIONS"
UN_VALUE ... flags for each type of event
SET_ATTRIBUTE
UN_NAME ... "CHANGED_ACTIONS"
UN_VALUE ... flags for each changed event type
SET_ATTRIBUTE
UN_NAME ... "INT_FILE_ID"
UN_VALUE ... version ID of the user profile
    
```

The log entry contains all security relevant fields of the user profile entry, giving the new value. These are the following fields: TS\_GROUP, TS\_REPRESENTATIVE, TS\_COST\_CENTER, INT\_RIGHTS, INT\_RIGHTS\_RW, INT\_RIGHTS\_YN, INT\_RIGHTS\_YN\_2, INT\_RIGHTS\_USERPROF, INT\_RIGHTS\_APPL, INT\_AUTO\_LOGIN\_ENABLE, INT\_ACCOUNT\_LOCKED, INT\_ACTIONS.

The integer values containing rights flags are written as strings consisting of the value in hexadecimal notation and a descriptive string for each flag which is set. For example,

INT\_RIGHTS\_RW="143:FisRd,FisWr,UsAddRd,SysAddRd".

The TS\_PASSWORD field value is not audited, only the fact that it has been changed can be seen in the "CHANGED\_FIELDS" string. If only the password changed the rights settings of the user profile (fields TS\_GROUP ...INT\_ACCOUNT\_LOCKED) are not included.

The following group of tables shows which rights flags are defined in the INT\_... fields.

**INT\_RIGHTS**

string	Flag constant in TCSI.H	description
User	USER	User
Tech	TECH	Tech user
Admin	ADMIN	Admin user

**INT\_RIGHTS\_RW**

<b>string</b>	<b>Flag constant in TCSI.H</b>	<b>description</b>
FisRd	R_FIS_READ	Read FIS Folder
FisWr	R_FIS_WRITE	Write FIS Folder
MsgRd	R_MESSAGE_READ	Read Message Folder
MsgWr	R_MESSAGE_WRITE	Write Message Folder
SysRd	R_SYS_READ	Read System Folder
SysWr	R_SYS_WRITE	Write System Folder
UsAddRd	R_USERADD_READ	Read User Address Book
UsAddWr	R_USERADD_WRITE	Write User Address Book
SysAddRd	R_SYSADD_READ	Read System Address Book
SysAddWr	R_SYSADD_WRITE	Write System Address Book
UProfRd	R_USERPROF_READ	Read System User Profiles
UProfWr	R_USERPROF_WRITE	Write System User Profiles
GrpAddRd	R_GROUPADD_READ	Read Group Address Book
GrpAddWr	R_GROUPADD_WRITE	Write Group Address Book
UProfOwnRd	R_UPROF_OWN_READ	Read Own User Profile
UProfOwnWr	R_UPROF_OWN_WRITE	Write Own User Profile
UProfGrpRd	R_UPROF_GROUP_READ	Read Group User Profiles
UProfGrpWr	R_UPROF_GROUP_WRITE	Write Group User Profiles
UsAddGrpRd	R_USERADD_GROUP_READ	Read Group Address Book
UsAddGrpWr	R_USERADD_GROUP_WRITE	Write Group Address Book
UsAddAllRd	R_USERADD_ALL_READ	Read All Private Address Books
UsAddAllWr	R_USERADD_ALL_WRITE	Write All Private Address Books

**INT\_RIGHTS\_YN**

<b>string</b>	<b>Flag constant in TCSI.H</b>	<b>description</b>
Srv	R_SERVER	Server
Svc	R_SERVICES	Services
Opr	R_OPERATOR	Distributor mode
RegLic	R_REGLIC	Registration / License
ExtView	R_EXTVIEW	Extended folder view
DirectNo	R_DIRECTNO	Always Enter number directly
ChgCost	R_CHGCOST	Change cost center
InAll	R_INALL	Inbox All users Open

string	Flag constant in TCSI.H	description
OutAll	R_OUTALL	Outbox All users Open
MsgAll	R_MSGALL	Message Folder All users Open
1stPage	R_FIRST_PAGE	Distributor View first page only
Print	R_PRINT	Distributor Print enabled
SaveAs	R_SAVEAS	Distributor Save as enabled
Term	R_TERMINATE	Distributor Terminate enabled
SvcRestr	R_SERVICE_RESTR	Restricted use of services
Auth	R_AUTHORIZE	May authorize
AutoTerm	R_AUTOTERMINATION	Terminate incoming
ListIn	R_OVERVIEW_IN	List Inbox All users
ListOut	R_OVERVIEW_OUT	List Outbox All users
ListMsg	R_OVERVIEW_MSG	List Message Folder All users
ListInGrp	R_OVERVIEW_IN_GROUP	List Inbox Group members
ListOutGrp	R_OVERVIEW_OUT_GROUP	List Outbox Group members
ChgHead	R_CHG_HEADER	Authorize change options and reference
ChgCont	R_CHG_CONTENT	Authorize change message content
AuthWSign	R_AUTH_W_SIGN	Authorize without signing
CorrRec	R_CORRECT_RECP	Authorize Change recipients
MsgKey	R_MSG_KEY	Authorize Enter/edit test key
AllSvc	R_ALL_SERVICES	Change sender
ListMsgGrp	R_OVERVIEW_MSG_GROUP	List Message Folder Group members
OpenInGrp	R_OPEN_IN_GROUP	Open Inbox Group members
OpenOutGrp	R_OPEN_OUT_GROUP	Open Outbox Group members
OpenMsgGrp	R_OPEN_MSG_GROUP	Open Message Folder Group members

**INT\_RIGHTS\_YN\_2**

string	Flag constant in TCSI.H	description
CorrGrp	R_CORR_GROUP	Correct Outbox Group
CorrAll	R_CORR_ALL	Correct Outbox All users
DisallowMarkComplete	R_DISALLOW_MARK_COMPLETE	May not mark complete

**INT\_RIGHTS\_USERPROF**

string	Flag constant in TCSI.H	description
ActOwn	R_INACTIONS_OWN	Write Own Events
ActGrp	R_INACTIONS_GROUP	Write Group Events

<b>string</b>	<b>Flag constant in TCSI.H</b>	<b>description</b>
ActAll	R_INACTIONS_ALL	Write All Users Events
TZOwn	R_TIMEZONE_OWN	Write Own Time zone
TZGrp	R_TIMEZONE_GROUP	Write Group Time zone
TZAll	R_TIMEZONE_ALL	Write All Users Time zone
AddOwn	R_ADDRESS_OWN	Write Own Address
AddGrp	R_ADDRESS_GROUP	Write Group members Address
AddAll	R_ADDRESS_ALL	Write All Users Address
LocOwn	R_LOCATION_OWN	Write Own Location
LocGrp	R_LOCATION_GROUP	Write Group members Location
LocAll	R_LOCATION_ALL	Write All users Location
ChgPWOwn	R_CHANGE_PW_OWN	Change own Password
ChgPWGrp	R_CHANGE_PW_GROUP	Change Group members Password
ChgPWAll	R_CHANGE_PW_ALL	Change All users Password
PWNeverExp	R_PW_NEVER_EXPIRES	Password never expires
GrpOwn	R_GROUP_OWN	Write Own Group
GrpGrp	R_GROUP_GROUP	Write Group members Group
GrpAll	R_GROUP_All	Write All users Group
RepOwn	R_REPRES_OWN	Write own Representative
RepGrp	R_REPRES_GROUP	Write Group members Representative
RepAll	R_REPRES_ALL	Write All users Representative
CostOwn	R_COSTC_OWN	Write Own Cost Center
CostGrp	R_COSTC_GROUP	Write Group members Cost Center
CostAll	R_COSTC_ALL	Write All users Cost Center
LngOwn	R_LANGUAGE_OWN	Write own Language
LngGrp	R_LANGUAGE_GROUP	Write Group members Language
LngAll	R_LANGUAGE_ALL	Write All users Language
UsContOwn	R_US_CONTENT_OWN	Write own User Profile Content
UsContGrp	R_US_CONTENT_GROUP	Write Group User Profile Content
UsContAll	R_US_CONTENT_ALL	Write All users User Profile Content

**INT\_RIGHTS\_APPL**

<b>string</b>	<b>Flag constant in TCSI.H</b>	<b>description</b>
Split	R_SPLIT	Distributor Split messages
ViewKey	R_VIEW_KEYS	View Key System Fields

string	Flag constant in TCSI.H	description
EdtKey	R_EDIT_KEYS	Edit Key System Fields
DistEdt	R_DIST_EDIT_CONTENT	Distributor change message content
Report	R_REQU_REPORT	Request Report
Job	R_POST_JOB	Post Job
MM	R_META_MAIL	Meta-Mail
RDB	R_ROUTING_DB	Routing Data Base
RDBAdm	R_ROUTING_DB_TCWEBADMIN	Routing Data Base TC/Web Admin
LocOwnRd	R_LOCATION_OWN_READ	Read Own Location
LocGrpRd	R_LOCATION_GROUP_READ	Read Group Members Location
LocAllRd	R_LOCATION_ALL_READ	Read All Users Location
AddOwnRd	R_ADDRESS_OWN_READ	Read Own Address
AddGrpRd	R_ADDRESS_GROUP_READ	Read Group members Address
AddAllRd	R_ADDRESS_ALL_READ	Read All users Address
GrpOwnRd	R_GROUP_OWN_READ	Read Own Group
GrpGrpRd	R_GROUP_GROUP_READ	Read Group members Group
GrpAllRd	R_GROUP_ALL_READ	Read All users Group
RepOwnRd	R_REPRES_OWN_READ	Read Own Representative
RepGrpRd	R_REPRES_GROUP_READ	Read Group members Representative
RepAllRd	R_REPRES_ALL_READ	Read All users Representative
CostOwnRd	R_COSTC_OWN_READ	Read Own Cost Center
CostGrpRd	R_COSTC_GROUP_READ	Read Group members Cost Center
CostAllRd	R_COSTC_ALL_READ	Read All users Cost Center
LngOwnRd	R_LANGUAGE_OWN_READ	Read Own Language
LngGrpRd	R_LANGUAGE_GROUP_READ	Read Group members Language
LngAllRd	R_LANGUAGE_ALL_READ	Read All users Language
TZOwnRd	R_TIMEZONE_OWN_READ	Read Own Time zone
TZGrpRd	R_TIMEZONE_GROUP_READ	Read Group members Time zone
TZAllRd	R_TIMEZONE_ALL_READ	Read All users Time zone

**INT\_AUTO\_LOGIN\_ENABLE**

string	Flag constant in TCSI.H	description
Yes	YES	Auto-login enabled

**INT\_ACCOUNT\_LOCKED**

string	Flag constant in TCSI.H	description

Locked	ACCOUNT_LOCKED	Account locked
--------	----------------	----------------

**INT\_ACTIONS, CHANGED\_ACTIONS**

string	Flag constant in TCSI.H	Event description
InMail	IN_MAIL	In
DelNotif	DEL_NOTIF	Delivery notification
NonDelNotif	NON_DEL_NOTIF	Non-delivery notification
BackRec	BACK_REC	Sending copy
MessWaitOn	MWON	Message waiting on
MessWaitOff	MWOFF	Message waiting off
JobStart	JOB_START	Job start
JobEnd	JOB_END	Job end
InRelease	IN_RELEASE	Inbound release
OutRelease	OUT_RELEASE	Outbound release

The flags of a particular event type in INT\_ACTIONS and CHANGED\_ACTIONS can be evaluated according to this table:

INT_ACTIONS	CHANGED_ACTIONS	Meaning
flag not set	flag not set	No events of this type in old and new version
flag set	flag not set	Events of this type exist and are unchanged
flag not set	flag set	All events of this type have been deleted
flag set	flag set	Events of this type exist in the new version and have been changed, either by adding, deleting or changing at least one event

**Delete User Profile Auditing**

Delete user auditing generates log entries of type "USER\_DELETE" which have the following layout:

```

SET_ENTRY_ARCHIVE
INT_MSG_TYPE ... constant LOG_ENTRY
TIME_ACTION ... time of logging
TS_LOG_USER ... "AUDITUSR"
UN_CONTENT/SET_ATTRIBUTE
UN_NAME ... "USER_DELETE"
UN_VALUE/L_ATTRIBUTES ... list of attributes
SET_ATTRIBUTE
UN_NAME ... "TS_USER_ID"
UN_VALUE ... ID of the user whose profile has been deleted
SET_ATTRIBUTE
UN_NAME ... "TS_ORIGINATOR"
UN_VALUE ... ID of the user who did the delete

```

## User Profile Auditing of Recipient Fields

The user profile auditing feature, if active, writes audit log entries to the TCOSS short term archive. The following actions on user profiles can be audited:

- Create new user profile - audit recipient fields
- Change recipient fields of user profile

**Note** On deletion of a user profile no extra log entry is written for the recipient fields, the "USER\_DELETE" entry already entry contains the delete information.

## Configuration

The auditing feature of user profile recipient fields can be activated in the TCOSS system configuration. The audit log entries are grouped into 2 categories which may be activated separately. The following table lists these categories together with the appropriate configuration flag values:

Config flag	User recipient fields auditing category	Structure name
0x10	Create User	RECIPIENT_NEW
0x20	Change User Recipient Fields	RECIPIENT_CHANGE

The configuration flags of all short term archive and user recipient fields auditing categories to be activated are added up and the resulting byte value is set in the system configuration, line 21, 3rd position.

System configuration, line 21, 3rd position:

00 ..33	Short term archive and recipient fields auditing flags, default = 00 (all inactive)
---------	---

## New and Changed User Recipient Fields Auditing

Creating new user profiles or changing a user's recipient fields generates log entries of type "RECIPIENT\_NEW" or "RECIPIENT\_CHANGE" which have the following layout:

```
SET_ENTRY_ARCHIVE
INT_MSG_TYPE ... constant LOG_ENTRY
TIME_ACTION ... time of logging
TS_LOG_USER ... "AUDITUSR"
UN_CONTENT/SET_ATTRIBUTE
UN_NAME ... "RECIPIENT_NEW" or "RECIPIENT_CHANGE"
UN_VALUE/L_ATTRIBUTES ... list of attributes
SET_ATTRIBUTE
UN_NAME ... "TS_USER_ID"
UN_VALUE ... ID of the user whose settings have been changed
SET_ATTRIBUTE
UN_NAME ... "TS_ORIGINATOR"
UN_VALUE ... ID of the user who did the change
SET_ATTRIBUTE
UN_NAME ... "CHANGED_FIELDS"
UN_VALUE ... string changed fields as comma-separated list, such as
"TS_COMPANY,ActiveAddress"
SET_ATTRIBUTE
UN_NAME ... "TS_COMPANY"
UN_VALUE ... company field of user profile
SET_ATTRIBUTE
```

```

UN_NAME ... "TS_DEPTM"
UN_VALUE ... department field of user profile
SET_ATTRIBUTE
UN_NAME ... "TS_FULLNAME"
UN_VALUE ... full name field of user profile
SET_ATTRIBUTE
UN_NAME ... "TS_SALUTE"
UN_VALUE ... salute field of user profile
SET_ATTRIBUTE
UN_NAME ... "TS_FREETEXT"
UN_VALUE ... free text field of user profile
SET_ATTRIBUTE
UN_NAME ... "ActiveAddress"
UN_VALUE ... active address value as "Service,Number" string, such as
"TOPCALL,ExampleUser"
SET_ATTRIBUTE
UN_NAME ... "InactiveAddress"
UN_VALUE ... inactive address value as "Service,Number" string
"FXI,827"

```

The log entry contains the following string fields from the user's recipient entry: TS\_COMPANY, TS\_DEPTM, TS\_FULLNAME, TS\_SALUTE, TS\_FREETEXT. Additionally each address is logged with an attribute named "ActiveAddress" or "InactiveAddress", depending on whether it's an active or an inactive address. The value string of this attribute lists service and number, separated by a comma. The number field is the TS\_FAX\_NUMBER, TS\_FREE\_ADDR or TS\_TC\_USERID field, depending on the type of the address.

The "CHANGED\_FIELDS" attribute is only present in a "RECIPIENT\_CHANGE" entry.

## User Profile Auditing of Events

The user profile events auditing feature, if active, writes additional audit log entries to the TCOSS short term archive. It depends on the basic user profile rights auditing configuration (create user profile / change rights setting of user profile) and is activated by additionally setting a non-zero "event auditing level".

**Note** The user profile auditing categories "audit user profile deletion" and "audit user profile password and account lock/unlock changes" never cause event auditing.

## Configuration

The auditing feature of user profile events can be activated in the TCOSS system configuration.

Config flag	User event auditing level
0x00	No auditing of events
0x40	Audit events of a specific category if this category changed
0x80	Audit events of all categories if events of any category changed
0xC0	Audit all events with any user profile rights or events change

The event categories used here are those seen in the INT\_ACTIONS flags in the user profile. A change of an event category means that an event of this category was added or removed or an existing event of this category changed or the order of existing events changed.

The configuration flags of all short term archive and user auditing categories to be activated are added up and the resulting byte value is set in the system configuration, line 21, 3<sup>rd</sup> position.

00 ..F3	Short term archive and user auditing flags, default = 00 (all inactive)
---------	---

## User Events Auditing

Creating new user profiles with events or changing a user's events generates log entries which have the following layout:

```

SET_ENTRY_ARCHIVE
INT MSG_TYPE ... constant LOG_ENTRY
TIME ACTION ... time of logging
TS LOG USER ... "AUDITUSR"
UN_CONTENT/SET_ATTRIBUTE
UN_NAME ... "EVENT_IN_MAIL", "EVENT_DEL_NOTIF" and more.
UN_VALUE/L_ATTRIBUTES ... list of attributes
SET_ATTRIBUTE
UN_NAME ... "TS_USER_ID"
UN_VALUE ... ID of the user whose settings have been changed
SET_ATTRIBUTE
UN_NAME ... "TS_ORIGINATOR"
UN_VALUE ... ID of the user who did the change
SET_ATTRIBUTE
UN_NAME ... "INT_FILE_ID"
UN_VALUE ... version ID of the user profile
SET_ATTRIBUTE
UN_NAME ... "INT_DEL_TYPE"
UN_VALUE ... delivery type filter
SET_ATTRIBUTE
UN_NAME ... "INT_ER_RECIPIENT"
UN_VALUE ... recipient position filter
SET_ATTRIBUTE
UN_NAME ... "TS_SERVICE"
UN_VALUE ... service filter
SET_ATTRIBUTE
UN_NAME ... "TS_DOCUMENT_ERR"
UN_VALUE ... reception error filter
SET_ATTRIBUTE
UN_NAME ... "TS_COMPANY"
UN_VALUE ... company field of event recipient
SET_ATTRIBUTE
UN_NAME ... "TS_DEPTM"
UN_VALUE ... department field of event recipient
SET_ATTRIBUTE
UN_NAME ... "TS_FULLNAME"
UN_VALUE ... full name field of event recipient
SET_ATTRIBUTE
UN_NAME ... "TS_SALUTE"
UN_VALUE ... salute field of event recipient
SET_ATTRIBUTE
UN_NAME ... "TS_FREETEXT"
UN_VALUE ... free text field of event recipient
SET_ATTRIBUTE
UN_NAME ... "INT_TERMINATION"
UN_VALUE ... termination flags of event send order
SET_ATTRIBUTE
UN_NAME ... "INT_AUTO_TERMINATION"
UN_VALUE ... auto termination setting of event
SET_ATTRIBUTE
UN_NAME ... "ActiveAddress"
UN_VALUE ... active address value as "Service,Number" string, such as

```

```

"TOPCALL,ExampleUser"
SET_ATTRIBUTE
UN_NAME ... "InactiveAddress"
UN_VALUE ... inactive address value as "Service,Number" string
"FXI,827"

```

The log entry name depends on the type of the event, it's one of the following: "EVENT\_IN\_MAIL", "EVENT\_DEL\_NOTIF", "EVENT\_NON\_DEL\_NOTIF", "EVENT\_BACK\_REC", "EVENT\_JOB\_START", "EVENT\_JOB\_END", "EVENT\_IN\_RELEASE", "EVENT\_OUT\_RELEASE", "EVENT\_MWON", "EVENT\_MWOFF".

The log entry contains the following fields from the event's filter, if set: INT\_DEL\_TYPE, INT\_ER\_RECIPIENT, TS\_SERVICE, TS\_DOCUMENT\_ERR.

The log entry contains the following string fields from the event's recipient entry: TS\_COMPANY, TS\_DEPTM, TS\_FULLNAME, TS\_SALUTE, TS\_FREETEXT. Empty strings are not logged.

Additionally each address is logged with an attribute named "ActiveAddress" or "InactiveAddress", depending on whether it's an active or an inactive address. The value string of this attribute lists service and number, separated by a comma. The number field is the TS\_FAX\_NUMBER, TS\_FREE\_ADDR or TS\_TC\_USERID field, depending on the type of the address.

A separate log entry is written for each event. The INT\_FILE\_ID field links the event entries to a particular version of the main user auditing entry (USER\_NEW or USER\_CHANGE).

## Enhanced Recipient Folder

### Additional child objects and filtering options

The recipient store entries (SET\_ENTRY\_RS) returned by a regular recipient folder (that is, not a folder of type CHANGES or ADDRESS\_MAP\_FLDR) contain the following read-only child objects:

TS_SERVICE	Service of first active address
TS_FREE_ADDR	Number string of first active address

It is possible to filter recipients on service and address string of the first active address with all the usual wildcard options. Filtering on both fields is case insensitive.

Internal hash tables for TS\_SERVICE and TS\_FREE\_ADDR allow fast searching if no wildcards are used (exact match but still case insensitive).

If a recipient has no active address the TS\_SERVICE and TS\_FREE\_ADDR fields in the recipient store entry will contain empty strings. Filtering on an empty service is possible. Filtering on an empty address is not supported, if the address filter holds an empty string it will be ignored.

## Chapter 2

# Mail System

If a time pre-set (TIME or DATE parameter) or a receiver (another channel or a selection number) are indicated in the send command, a "send order" is established.

The system puts the send orders in their proper queues (every channel and every channel group has its own queue). The channel's queue or channel group's queue then sends the document(s).

If a send order has an execution time that is in the future, it will be put into a special deferred sending queue. All other send orders are arranged according to their priority and sending times.

**Example:** (current time is 16:00:00)

priority	time (hh:mm:ss)	remark
high	16:00:00	beginning of queue, to be sent first
normal	15:50:10	
normal	15:50:11	
low	15:40:00	end of queue, to be sent last
don't care	20:00:00	will be transferred to sending queue at 20:00:00

Every channel configured to "not QUERY" checks periodically (such as every 10th second, the value can be configured) to see whether a send order is due for it or its channel group. A send order is due if the time for the next sending or selection attempt has come. If more than one send order is due the send order at the beginning of the queue will be taken first.

The locking of recipient numbers can be activated by configuration. Locking means that the number of send orders which can be active concurrently is bound by some maximum value. With basic number locking that maximum value is one, with enhanced number locking the maximum is the value defined in the LN99 system directory (see [Enhanced Number Locking Directory LN99](#))

If a recipient is locked, it will not be selected even if the send order is due. A checksum (32bit) of every recipient is held in memory. This allows a fast check without the need of a disk access.

Side effect: In the improbable case that two different recipients have the same internal checksum, sending to both recipients is not possible at the same time or restricted to the maximum number of lines set in the enhanced number locking directory!

The locked recipient number is the localized address without channel specification, mask, send switches and answerback, i.e. the actually dialed number.

**Example:** Sending with service "FAX", fax number 00492111746222, answerback "abc" gives the localized number F:<F>00492111746222-abc, number locked: 00492111746222

A channel configured to 'QUERY' does not check its queue(s) automatically. Nevertheless, you can use the ..QUERY command to check any queue for send orders which are due.

If the document cannot be sent successfully (telex subscriber busy, line disconnected ...), a waiting period is added to the current system time and the send order with this new sending time is once again arranged in the queue. The waiting period varies depending on the severity of the defect and on the number of unsuccessful send attempts already made.

The send orders are administrated in the pseudo-file +INHALT and can be examined with the command "..CONTENT".

After a successful transmission send orders are either erased automatically or designated as executed in the contents directory (can be configured). You can also erase them with "..ERASE".

## Overview of Sending a Document

For clarification following description shows the function of all send parameters.

### Generation of the Send Order

The parameters were initialized with the following default values.

DATE, TIME	current date and time
TERMINATION	config line 41
ORIGI	config line 42
PRIOR	'1'
NOTIF	'0'
STYP	'9'
POSDU	'0'
all other Parameters	blanks

When a '..SEND' command is entered with correct parameters, every specified parameter replaces its default value. Additionally the following actions will be done:

- The originator will be normalized by the rr99 process
- The own node (config line 7) will be appended to the node list in the parameter NODES. If the new node is already contained 2 times in the node list (double loop) the send order will not be accepted.
- The number parameter will be normalized and routed. The intermediate result after normalization is written into the "Hidden normalized number field". This field can only be accessed by a mask parameter. The final result goes into the localized number field.
- The send status will be set to the first position of Parameter STYP (default is 9).
- If the parameter NOTIF is set to '2' and the normalized number is the own node the send order is treated as notification. This means that if the original send order can be found (by using the correlation information in NOTIF) it will be updated and put back into the channel's queue for completion.

**Note** No send order will be created. The notification will be handled as a back received document of the original send order. If the original send order cannot be found, the notification is treated as a send order with NOTIF = 1 and will be subject of the routing mechanism. The rr99 should be set up to deliver such messages to an operator.

**At the beginning of a send attempt**

If the parameter ORDER is not specified, it will be set to the value of the configured number series for sending documents (config line 10) after incrementing its current value.

If the NOTIF Parameter is '0' (normal send order) the correlation information of NOTPA will be set to the current date, time and the value of the ORDER parameter.

**At the end of a send attempt**

The activities at the end of a send attempt depend on the resulting send status. Therefore two types of send attempts will be separated.

non terminating send attempt	means that further send attempts will follow
terminating send attempt	send status goes to '0' or '+'.

**At the end of a non-terminating send attempt**

- If the sending will be terminated with break code 6 or break code 7 and NOTIF is 0 the send order will wait for a notification from the Slave (with Master/Slave) or any other KCS within a routing network.
- The new send status will be set according to the break code and config lines 43 to 47. If the send status will reach 0 it will restart with the next alternative number and the send status will be set to the first position of STYP. The date and time of the next send attempt will be calculated.

**At the end of a terminating send attempt**

- Depending on configuration, a send journal entry and send orders to the back received document (if any) will be made.
- The costs will be calculated using the kk99 file.
- The delivery section of the NOTPA parameter will be updated.

If the cost center accounting is configured and the costs are not zero the monthly cost center file KKxx will be updated in one of the following cases (case a) has priority):

1. If Parameter COSTC has any non blank character the COSTC Parameter will be used as cost center designation independent on configuration
2. The cost center designation will be taken from the document author (if it is within parentheses) or from the document reference. The length of the cost center will be limited by the value in config line 8.

- An active acknowledgment will be generated if it is specified in the termination Parameter. It will be created as a send order to the normalized and routed originator or entry node (if NOTIF is not 0). The notification parameter (NOTPA) will be copied and the originator will be taken from the number field of the original send order. The reference will be taken from the reference of the back received document. If no back received document exists an empty document will be generated.
- The document and/or send order will be deleted depending on the termination parameter.

## Send Options

Various send options controlling how the message is handled by the Application Module can be specified. There are two different kinds of send options:

- Termination parameter: It can be used both via TCSI and DotDot interface. See [..SEND command](#) for more details.
- Additional send option flags that can be set via TCSI only. These flags are described below:

Option	Description
Registered Sending	If messages are sent to KCS users, the message remains visible in the sender's out-box until it has been read by the recipient.
Sending to Authorizer	Allows tracking of the message by the originator. The message remains visible in the sender's out-box like a message sent to a fax channel or a mail gateway user.
Archive only	Causes immediate auto-termination of the message in the recipient's inbox. The message goes into the short term archive and is also transferred to the archive server.

**Note** Send options in the number field are user module specific. Refer to description of the appropriate user module (such as UTF) for more details.

## Send Status

The send status supplies information on the state of a send order. It tells you if send attempts have been made and in which intervals further attempts will be made or if the send order has already been successfully executed.

The send status is displayed by a digit (0..9) or a '+' and shown in the contents directory.

A new send order gets the default status 9. With the parameter STYP of the send command the initial status can be set between 1 and 9. Every subsequent unsuccessful send attempt reduces this status by one or more depending on the error.

A send status of 0 means that successful sending was impossible and that no further send attempts will be made.

Depending on the configuration, the send order will be either erased or marked as executed (send status '+'), after its successful sending.

With the so-called "expanded" selection retries (configurable) the status does not go to 0, but remains at 1, provided the errors are correctable (for example, when the line is busy).

As long as the status changes, the waiting periods between selection attempts increase continuously. The smaller the status, the greater the waiting period. With a standard configuration, after the 1st attempt (status was 9) one minute is added, then 4/9/16/25/36/49/64 minutes are added. After this, the intervals between selection attempts stay at 64 minutes. By configuration it is possible to increase or reduce this values.

## How Does the Status Work

In the standard operation the initial status is 9. Depending on the error (weak or fatal) it is configurable how much the status has to be reduced. For this purpose you have to distinguish between 5 error cases. According to the following standard configuration the functionality is explained.

### Standard configuration

Config. line 43	<b>87654321-</b>	BREAK=1	Describes how the status has to be reduced in cases of errors with break code 1 (weak errors).
Config. line 44	<b>87654321-</b>	BREAK=2	Describes the same function but for errors with break code 2.
Config. line 45	<b>-----1-</b>	BREAK=3	Describes the same function but for errors with break code 3.
Config. line 46	<b>-----10</b>	BREAK=4	Describes the same function but for errors with break code 4.
Config. line 47	<b>-----10</b>	BREAK=5	Describes the same function but for errors with break code 5.

**Note** For a certain error message, such as XU error for fax, the break code is described in the user modules for fax, telex, and others.

The field length is 9 positions.

Position 1	The old send status was 9. In case a digit ('0', '1', ... '8') is entered, it defines the new send status (0, 1, .. 8). In case a minus (-) is entered the next positions are searched for a digit that defines the new status. If no digit could be found, the send status remains unchanged. Possible values: '0', '1', ... '8' and '-'
Position 2	The old send status was 8 (or 9 and 1. pos is '-'). In case a digit ('0', '1', ... '7') is entered, it defines the new send status (0, 1, .. 7). In case a minus (-) is entered the next positions are searched for a digit that defines the new status. If no digit could be found, the send status remains unchanged Possible values: '0', '1', ... '7' and '-'
Position 3	The same functionality like 2.pos. Possible values: '0', '1', ... '6' and '-'
Position 4	The same functionality like 2.pos. Possible values: '0', '1', ... '5' and '-'
Position 5	The same functionality like 2.pos Possible values: '0', '1', ... '4' and '-'
Position 6	The same functionality like 2.pos. Possible values: '0', '1', ... '3' and '-'
Position 7	The same functionality like 2.pos. Possible values: '0', '1', ... '2' and '-'
Position 8	The same functionality like 2.pos Possible values: '0', '1', and '-'

Position 9	The same functionality like 2.pos Possible values: '0' and '-'
------------	---

**Note** In case the whole config. line consists of minus (-), the status will stay at the initial value.

In case the 9.pos. consists of a minus (-), the status will not go down to zero (0) and "expanded" selection retries can be realized.

**Example:** '87----21-,

The send status changes (if the same break code occurs with each call retry) from its initial value 9 to 8, 7, 2 and then it remains on status 1.

## How Does the Time Interval Work

### Standard configuration:

Config. line 13 9

### Explanation:

The time interval between two send attempts is calculated in minutes according to the following formula:

$$\text{time interval} = \frac{(9 - \text{new status}) * (9 - \text{new status}) * (\text{ASC}(\text{config value}) - 48)}{9} \quad [\text{minutes}]$$

The time interval (in minutes) is added to the current time (resolution 1 second) to give the time of the next send attempt which is stored (also with a resolution of 1 second) in the send order.

The config value can be set in config line 13. The following chart gives you an overview of all possible config values with corresponding ASCII values (value range: '1' .. 'T'):

Config value	ASCII value						
1	49	:	58	C	67	L	76
2	50	;	59	D	68	M	77
3	51	<	60	E	69	N	78
4	52	=	61	F	70	O	79
5	53	>	62	G	71	P	80
6	54	?	63	H	72	Q	81
7	55	@	64	I	73	R	82
8	56	A	65	J	74	S	83
9	57	B	66	K	75	T	84

### Example 1:

Old status:	5
-------------	---

Fax error:	XH = line occupied by local telefax unit
Break code:	1
Calculation:	For break code 1, see config. line 43. For old status 5, see the 5th position. Line 43 Position 5 shows 4.
New status:	4

$$\text{Time interval: } \frac{(9 - 4)2 * (\text{ASC}("9") - 48)}{9} = \frac{52 * (57 - 48)}{9} = 25 \text{ minutes}$$

**Example 2:**

Old status:	7
Telex error:	T4 = <der> signal
Break code:	3
Calculation:	For break code 3, see config. line 45. For old status 7, see the 3rd position. Line 45 Position 3 shows a minus (-) => go to next position. Line 45 Position 4 shows a minus (-) => go to next position. Continue up to line 45 Position 8 Line 45 Position 8 shows 1.
New status	1

In case the error occurs again, the status will stay at 1 and will not be reduced to zero (0). Time interval:  
 $(9-1)2 * (9/9) = 64 \text{ minutes}$

**Note** For details of errors and break codes, refer to the 'Interface control (user modules)' chapter of the *TCOSS System Manual*.

## Receiver

The parameter NUMBER indicates the receiver in the send command (that is, where and on which channel the document is to be sent). The receiver is restricted to a maximum of 128 characters.

The receiver consists of two parts:

**Channel indication:** Determines which channel should send the document. (The channel indication can also be omitted, see below).

**Selection number:** For example, telex number, fax number, and more. For the precise meaning of the selection number, see description of user modules.

**Format:**

ccc:nnnn with ccc (indication of channel) nnnn ... (selection number)

OR

nnnn with nnnn (selection number)

OR

nnnn with nnnn (abbreviated number)

OR

ssss\$nnnn with ssss (service) nnnn (number)

**Abbreviated number:** see separate chapter

**Services:** see separate chapter

**Channel indication:** channel number, channel group or user id

- Channel number: '00','01', ...'99','A0','A1', ..'A9','B0'...'B9', ..., 'Z0'..'Z9', '0A' ..'0Z', '1A' ...'1Z', ..., '9A' ...'9Z', 'AA' ...'AZ', 'BA' ...'BZ', ..., 'OA' ...'OZ'
- Channel group: 'A', 'B',...'Z'
- User id: 'TCTECH', 'USER1', 'LongUserName', .....

**Note** If more than 2 characters are used, the channel ID must be a valid KCS User ID (see separate chapter).

**Selection number:**

- for telex: number/reference
- for fax: number-reference

If no channel is indicated the channel is determined automatically by the selection number:

- if a '/' appears: channel group "X" (telex number!)
- if a '=' appears: channel group "T" (teletex number; not supported)

if no selection no. is indicated, local channel number; otherwise: unidentified receiver.

**Note** Due to restrictions on the TAM/TUM interface, the number will be truncated after 40 character after the double point, for all User Modules (such as UAS, UTF, UIF, UMM, UTX, ...). If alternative numbers are used this restriction applies only to the current alternative number.

This restriction does not exist if the number is send as text with mask parameter \$N\$. (such as for host connections via UAS)

**Alternative Numbers:** They may contain several alternative numbers in the parameter NUMBER of a send command in the format 'N=number\number\number...'. A short number has to be an only alternative 'N=.short' but may be converted into several alternatives by an entry in NN99: 'short,number\number..'

**Example:**

allowed:	.2S,R=TEST,N=.SHORT
NN99:	SHORT,NUMBER\NUMBER\NUMBER
not allowed:	..2S,R=TEST,N=.SHORT1\..SHORT2

The number of alternatives is only limited by the number field size. The field size is 128 characters for release 5.20 and higher (43 characters for release 5.08 and lower).

When a send order is created an internal counter is set to the number of alternative numbers.

If sending to one number is completed unsuccessfully (next state = '0') the counter is decremented, and if it is still greater than 0 the number is rotated to the next alternative and the original sending state is restored. The send order is only completed unsuccessfully after sending attempts to each of the alternative numbers have failed.

If the currently active alternative does not contain a personal reference, the personal reference from another alternative is taken instead, if at least one personal reference exists.

The currently active number of all the alternatives stored in the number field is used for the \$N\$ mask parameter and will be displayed as first in the contents.

In the case of successful routing of a send order (..EOT with BREAK=7) the internal counter for alternative numbers is set to 1. This means that further alternatives are not considered after sending to one alternative was terminated with ..EOT,BREAK=7.

**Examples:** for standard configuration

Asynchronous device:	05:
Telex-receiver:	08:111388/tcint a X:135361/TP 111388/tcint a
Teleprinter (as local printer)	X: 08:
Fax receiver:	F:0222676209 F:0222676209-TCINT
Fax, internal via PBX:	F:133
Fax, local printout:	F: 11:
Alternative number:	111388/TCINT\3222330=TCINT 08:\10:+A\F:6613321 .ALT(can be converted in the abbreviated number directory to several alternative numbers) <b>Incorrect:</b> .ALT\TEST\AS400

### Abbreviated numbers

It is possible to store frequently used receiver data and to call them up by indicating a short code, the so-called abbreviated number.

When entered, an abbreviated number is marked by a preceding period. The real abbreviated number consists of one to eight characters. For example, **N=.TOP**

An abbreviated number always replaces the entire receiver information - channel indication and selection number.

The abbreviated numbers are stored in the NN99 abbreviated number directory or in the recipient store. For example:

<b>N=.TOP</b>	the directory +MAIL5V/ANN99 is used
<b>N=.TOP.USER1</b>	access user1 recipient store
<b>N=.TOP.+TECH</b>	access the system recipient store

In the abbreviated number directory, pairs consisting of an abbreviated number and the corresponding receiver are stored (for the exact format see [Abbreviated Number Directory NN99](#)). When an abbreviated number is used, the corresponding directory is scanned. When the desired abbreviated number is found it is replaced by the allocated receiver information.

If you enter non-existing abbreviated numbers or invalid numbers into the directory of abbreviated numbers, an error message will occur.

## Circular Letters

Circular letters (several receivers for one send order) can be realized by means of abbreviated numbers in the NN99 directory. When an abbreviated number is used the NN99 directory of abbreviated numbers is scanned for ALL entries with the indicated abbreviated number. A corresponding send order is generated for each occurrence.

Note that the recipient store can't hold multiple entries with the same recipient ID, so generating multiple send orders from a single abbreviated number is only possible using the NN99 directory.

## Mask Feature

It is possible to extend texts with a header and a trailer. This can be done on any channel by choosing an applicable mask. Header and trailer may contain constant text as well as text variables.

**Note** The [Cover Sheets](#) feature offers a similar functionality.

A mask is a text with a two-character reference ('+A'-'Z', '+0' - '+9'). Normally it is generated at system generation time.

Use of masks is controlled by the first two positions of the number parameter.

The drive on which masks are stored is set by configuration (config line 40).

**Example:** `..S,R=Test,N=+X111388/tcint a`

In this case the text with reference 'd:+X' will be used as a mask , (d: according to configuration)

If the number parameter does not specify a mask, a default mask for this channel will be used if configured.

If a default mask is configured and you do not want to use this mask (you want to send without mask), the send order should be given with a mask, which does not exist.

**Example:** `..2S,R=TEST,N=08:+06613321`

Send order to send without mask to number '6613321'

Default mask on channel '08:' is '+F'.

'+0' mask does not exist.

When using masks, the number parameter may additionally specify a personal reference. To do so, the name of the addressee must be appended to the number enclosed in parentheses. The personal reference can be read out with the \$B\$ parameter.

**Example:** ..S,R=Test,N=+X111388/tcint a (DR.MILLER)

#### Parameters allowed within a mask

\$A\$, \$Axyy\$	Author (as given in the Author-Field)
\$B\$, \$Bxyy\$	Personal reference as specified in the number parameter (without parentheses)
\$C\$, \$Cxyy\$	Cost center (max. field length = 10)
\$D\$, \$Dxyy\$	Date in format YY-MM-DD
\$E\$	Original file name of the posted envelope (TS_ENV_NAME_POSTED). This field does not change if a send order is corrected with TCfW (\$A\$ in a notification mask produces a different result after a send order has been corrected with TCfW). If the original file has been created by using ..commands, the first character of this field represents the drive.
\$H\$, \$Hxyyy\$	Hidden normalized number (max. field length = 128)
\$I\$, \$Ixyyy\$	Notification parameters (max. field length = 172, see <a href="#">Layout of the NOTPA Field</a> for more details)
\$L\$, \$Lxyy\$	Node list (max. field length = 20)
\$N\$, \$Nxyy\$	Number parameter of the sending order (excluding personal reference) in format: `channel,.,mask,number` <b>Example:</b> 05:+X01234567 TCTECH:

Up to 8 characters are used for the channel definition.

\$O\$, \$Oxyyy\$	Channel with spaces to a fixed length of 8 characters + originator (max. field length = 128), compare \$N\$ parameter
\$P\$, \$Pxyy\$	Empty at first attempt of sending, "possible duplicate message" on any further attempt after 'clear during transmission'
\$P any string\$	It is replaced by an empty string at the first sending attempt, and set to 'any string' on any further attempt after clear during transmission <b>Example:</b> \$PThis \$Stored Message\$P may be a Duplicate\$ 1st sending: Stored Message 2nd sending after clear during transmission: This Stored Message may be a Duplicate
\$Qs\$, \$Qsxyy\$	Current number of the number series' s
\$R\$, \$Rxyy\$	Document reference

\$S\$, \$Sxxyy\$	Document number of the number-series which is configured for the channel or the channel group
\$T\$, \$Txxyy\$	Time of day in format HH:MM:SS
\$U\$	Extended user ID of recipient
\$V\$	Extended user ID of originator
\$W\$, \$Wxxyy\$	Field with answer back and error message
\$X\$	Text to be sent. The parameter \$X\$ is only detected at the first position of a line without any other text or parameters. The text will always start on a new line and the end will finish a line
\$Y\$	Priority (max. field length = 1)
\$DS\$, \$DSxxyy\$	Reception start date in format "yy-mm-dd"
\$TS\$, \$TSxxyy\$	Reception start time in format "hh:mm:ss"
\$DE\$, \$DExxyy\$	Reception end date in format "yy-mm-dd"
\$TE\$, \$TExxyy\$	Reception end time in format "hh:mm:ss"
\$DD\$, \$DDxxyy\$	Delivery date in format "yy-mm-dd" (93-01-01 if not available)
\$TD\$, \$TDxxyy\$	Delivery time in format "hh:mm:ss" (00:00:00 if not available)  <b>Note</b> The delivery time variables \$DD\$ and \$TD\$ take the delivery date/ time from the notification parameters (like \$I5156\$ and \$I5760\$) and convert it to the time zone of the original message. This time zone can also be indicated using \$Z1\$ or \$Z2\$.
\$Z1\$	Time zone offset from UTC in hh:mm, such as "+01:00"
\$Z2\$	Time zone name, such as "UTC"  <b>Note</b> The time zone variables \$Z1\$ and \$Z2\$ may only be used after a date or time variable (to which the zone applies), not in front of the date/time variable or stand-alone.
\$..\$	Will be replaced by '..' This is for generating ..commands
\$//\$	Will be replaced by '/' This is for generating //commands
\$Axyy\$	Specifies start and ending position for part of a parameter <ul style="list-style-type: none"> <li>• xx = first position (01 - 99)</li> <li>• yy = last position (01 - 99)</li> </ul> <p>If xyy is not specified, trailing blanks will be omitted. If xyy is specified only part of the variable is inserted into the text</p> <p><b>Note:</b> In this case the variable will be inserted with constant length, (max. length is field length, such as 31 for author field)</p>
\$Axyyyy\$	Specification of start and ending position also can have 6 digits

%secondary number%	<p>If this parameter is specified, the secondary number will be used to establish the connection and not the number specified in the number parameter.</p> <p>The secondary number must be put on the first position of the first line of the mask without any other text or parameters. This line will not be part of the text sent.</p> <p>In all other lines percent signs are treated like normal text.</p> <p>For special protocols as sending on leased lines this parameter can be empty (%%).</p> <p><b>Note</b> A specification of a channel in the secondary number is not allowed as it is already specified in the number parameter of the sending order.</p>
--------------------	---

**Error handling:**

If the specified mask does not exist sending will be performed without mask.

If the mask contains a syntax error, the incorrect parameter will be ignored and sent like normal text.

**Note** This enables '\$' -characters to be part of a fixed text in a mask.

**Example:** (config-line 40 = `BX,)

Document `B:+X':

%%	;no dialing
----	-------------

STORED MESSAGE \$P\$

\$D\$ \$T0105\$	;date and time (HH:MM)
-----------------	------------------------

RECEIVER-ID=\$N0699\$; dialing information, parameter without channel and mask

DEAR \$B\$ THIS MESSAGE IS SENT BY \$A\$.

\$X\$	;text (variable length)
-------	-------------------------

PS:

WE TAKE OUR VACATION FROM ... TO ...

The send command:

..S,R=TEST,N=05:+X112233 (MR. SMITH)

gives the following result on the leased line:

STORED MESSAGE

92-01-02 12:00

RECEIVER-ID=112233

DEAR MR. SMITH THIS MESSAGE IS SENT BY A. MILLER. T

EXTLINE 1

TEXTLINE 2

TEXTLINE 3

PS:

WE TAKE OUR VACATION FROM ... TO...

## Including a Document

The ++INC command can be used in documents or masks to include other documents at sending time.

### Format

++INC Folder/Reference

++INC Reference (only for folder +MAIL5V)

The string '++INC' starts at the 1st position of the line (no leading spaces). There is at least one space between '++INC' and the reference, there may be spaces after the reference. The reference is case sensitive, without wild cards, and may include a drive specification (default drive is A :).

### Examples of valid ++INC commands

++INC TEST **or** ++INC +MAIL5V/TEST

++INC A:TEST **or** ++INC +MAIL5V/ATEST

++INC B:TEST2 **or** ++INC +MAIL5V/BTEST2

++INC FIS/DOCUMENT1 (DOCUMENT1 from FIS folder is used)

++INC TCTECH/ATAMCONF00CC (Config file of channel 00)

### Examples of invalid ++INC commands

++INC test (lower case letters)

++INCTEST (no space)

++INC TEST (not in 1st position)

++INC A:T??? (wildcards)

The ++INC commands are resolved when sending, but not when examining a document.

The ++INC command can be used in the document or in a mask. In masks it is evaluated after the mask parameters have been evaluated. Example:

The mask parameter '\$X\$' may be replaced by '++INC \$R0101\$:\$R0211\$'.

The included document may contain further `++INC` commands. The maximum nesting depth is 5. From the 5 implemented nesting levels 1 is used for the sending document itself and 1 may be used for the mask.

If a `++INC` command cannot be resolved because the document specified does not exist, is locked for editing or if the maximum nesting depth has been reached, it will be sent as normal text.

## Original Message in Notification

It is possible to include the original message in a notification using a mask parameter.

Control line in a notification mask which includes the original message:

```
++INC $F$
```

The mask parameter `"$F$"`, intended for use in a `++INC` command, is resolved to a reference to the original message. This reference contains the file position and Id, allowing access to files in the "confirmed mail" area which are already deleted as visible files, but still accessible via the short-term archive.

The reference to the original message generated by the mask parameter `"$F$"` is evaluated in the `"++INC"` control line and will include the original message as long as it is not deleted from the "confirmed mail" area, that is, for a couple of weeks or month after the message has been sent, depending on the size of the mail area and the message throughput of the system.

If the delivery of the notification is somehow delayed until after the original message has been deleted from the system, the `"++INC"` line will show up in the notification. Example:

```
++INC 0000006B/@00002813
```

If the `"++INC $F$"` control line is used outside a notification mask, such as in a mask for sending the actual message, it cannot be resolved and will be printed out like this:

```
++INC FFFFFFFF/@00000000
```

### Example:

Mask `"D"` used for printing delivery notifications:

This message has been delivered:

```
++INC $F$
```

A message containing the single line "test message" is sent with delivery notification option "all" or "positive". The message originator has a "DelNotif" event set in the user profile, with a "FREE" address to "00:+D".

Printout on channel 00:

This message has been delivered:

test message

## Cover Sheets

Merge values in cover sheets allow users to automatically insert certain variable components into outgoing messages without typing them in each time. Cover sheets must be created with TCfW. You can insert merge values (variables) into it by enclosing specific abbreviations within dollar signs (\$). The following text lists all cover sheet variables supported by TCOSS. For a detailed description about cover sheets refer to the Client Applications Administrator's Manual.

If the syntax \$xxx\$ of the merge value is used, the actual length of the converted merge value depends on the length of the variable represented by the merge value. If the form \$xxx\_\_\_\_\_ \$ is used, the length including the \$ signs is fixed. Merge values that are too long are automatically truncated in such fields.

### Merge values are taken from the receiver of the message

\$SNam\$	Short name of the receiver
\$Comp\$	Company of the receiver
\$Dept\$	Department of the receiver
\$Name\$	Full name of the receiver
\$Sal\$	Salutation of the receiver
\$Txt\$	Free text (comment)
\$Corr1\$, \$Corr2\$,...\$Corr6\$	Correlation fields of receiver (6)
\$AddnXXXX\$	Address part-n of service XXXX (n=0 all parts in one string) For example: \$Add0FAX\$, \$Add1TELEX\$, \$Add2TELEX\$ \$Add1LETTER\$ .. \$Add6Letter
	<b>Note</b> Only the first alternate of each service is used.
\$To<\$Sal\$ \$Name\$>	produces a list of all To: receivers.
\$Cc<\$Sal\$ \$Name\$>	produces a list of all cc: receivers.
\$to<...> or \$cc<...>	as \$To.. or \$Cc.. but distribution lists are shown as a single line with the \$Name \$ and other fields taken from the distribution list \$L1anystring\$ is converted to "anystring" in the first entry of a recipient list but does not appear in all other entries. \$L2anystring\$ does not appear in the first entry of a recipient list, but is converted to "anystring" in all other entries.
	<b>Note</b> The merge values of each receiver as shown above can be used within brackets. The \$To and \$cc line must fit on one line.

### Merge values taken from the user profile of the logged in user

\$USNam\$	Short name of the sender
\$UComp\$	Company of the sender

\$UDept\$	Department of the sender
\$UName\$	Name of the sender
\$USal\$	Salutation
\$UTxt\$	Free text
\$UAddnXXXX\$	Address part-n of service XXXX (see \$AddnXXXX\$)
\$UCorr1\$, ...\$UCorr6\$	Correlation fields of the sender (6)
\$ENam\$	Name of the message
\$MsgId\$	Message ID (16 hexadecimal digits)
\$ERef\$	Subject field of the message
\$Epg\$	Number of pages of the message
\$Cctr\$	Cost Center

**General information**

\$P\$ or \$Pstring\$	Inserts "possible duplicate message" or a string of your choice (following the P) if possible duplicate transmission occurred	
\$Docnr\$	Serial sending number (works like mask parameter \$\$).	
\$Datef\$	f=format	1=YY-MM-DD and hh:mm:ss; 2= DD-OCT-YYYY and hh:mm:ss
\$Time1\$	Date and time of actual sending	
	\$Date0nffffffffffffffffffff\$ or \$Date0nffffffffffffffffffff_____ \$	
	n	Windows locale identifier (LCID)
	ffffffffffffffffffff	format string
	\$Time0nffffffffffffffffffff\$ or \$Time0nffffffffffffffffffff_____ \$	
	n	Windows locale identifier (LCID)
	ffffffffffffffffffff	format string
	Examples	"\$Date09dddd, yyyy-MMMM-dd\$" is resolved to "Tuesday, 1998-July-21" "\$Time09hh: mm:ss tt\$" is resolved to "09:58:20 AM"

Language	locale identifier	text block code page	NT ANSI code page
Basque	45	0	1252
Catalan	3	0	1252
Czech	5	1	1250
Danish	6	0	1252
Dutch	19	0	1252
English	9	0	1252
Finnish	11	0	1252

Language	locale identifier	text block code page	NT ANSI code page
French	12	0	1252
German	7	0	1252
Hungarian	14	1	1250
Icelandic	15	0	1252
Indonesian	33	0	1252
Italian	16	0	1252
Japanese	17	932	932
Norwegian	20	0	1252
Polish	21	1	1250
Portuguese	22	0	1252
Romanian	24	1	1250
Slovak	27	1	1250
Slovenian	36	1	1250
Spanish	10	0	1252
Swedish	29	0	1252

This feature is only supported for the combinations of Windows and text block code pages listed above. A Japanese edition of Windows NT is required for locale ID 17. Using locale identifiers not listed above or with other combinations of text block and Windows ANSI code page will produce either an empty string or an incorrectly converted string.

### Format controls for date

The letters must be in uppercase or lowercase as shown in the table (for example, "MM" not "mm").

d	Day of month as digits with no leading zero for single-digit days.
dd	Day of month as digits with leading zero for single-digit days.
ddd	Day of week as a three-letter abbreviation in the selected language
dddd	Day of week as its full name in the selected language
M	Month as digits with no leading zero for single-digit months.
MM	Month as digits with leading zero for single-digit months.
MMM	Month as a three-letter abbreviation in the selected language
MMMM	Month as its full name in the selected language
y	Year as last two digits, but with no leading zero for years less than 10.
yy	Year as last two digits, but with leading zero for years less than 10.
yyyy	Year represented by full four digits.
gg	Period/era string. This element is ignored if the date to be formatted does not have an associated era or period string.

**Format controls for time**

The letters must be in uppercase or lowercase as shown in the table (for example, "ss" not "SS").

h	Hours with no leading zero for single-digit hours; 12-hour clock
hh	Hours with leading zero for single-digit hours; 12-hour clock
H	Hours with no leading zero for single-digit hours; 24-hour clock
HH	Hours with leading zero for single-digit hours; 24-hour clock
m	Minutes with no leading zero for single-digit minutes
mm	Minutes with leading zero for single-digit minutes
s	Seconds with no leading zero for single-digit seconds
ss	Seconds with leading zero for single-digit seconds
t	One character time marker string, such as A or P (depends on selected language)
tt	Multicharacter time marker string, such as AM or PM (depends on selected language)

<code>\$CDate1\$, \$CTime1\$</code>	Message creation date and time, with same format options as <code>\$Date..\$, \$Time..\$</code> above
<code>\$RDate1\$, \$RTime1\$</code>	Reception end date and time, with same format options as <code>\$Date..\$, \$Time..\$</code> above
<code>\$IDate1\$, \$ITime1\$</code>	Intended sending date and time, with same format options as <code>\$Date..\$, \$Time..\$</code> above

**Example:****Cover Sheet:**

New date formats:

```

-----
E.g. Tuesday, 21-August-1998, 9:2:7 PM (English)
$Date09dddd, dd-MMMM-yyyy$, $Time09h:m:s tt$
E.g. Tuesday, 21-August-1998, 9:2:7 PM (Japanese)
$Date017dddd, dd-MMMM-yyyy$, $Time017h:m:s tt$
E.g. Tue, 21-AUG-98, 09:20:07 (English)
$Date09ddd, d-MMM-yy$, $Time09hh:mm:ss$
E.g. Tue, 21-AUG-98, 09:20:07 (Japanese)
$Date017ddd, d-MMM-yy$, $Time017hh:mm:ss$
E.g. 1-08-1998, era or period (English)
$Date09d-MM-yyyy gg$
E.g. 1-08-1998, era or period (Japanese)
$Date017d-MM-yyyy gg$

```

Transmitted image (TCOSS running on Japanese Windows NT)

**New date formats:**

Eg. Tuesday, 21-August-1998, 9:2:7 PM (english)  
 Thursday, 10-September-1998, 10:3:20 PM

Eg. Tuesday, 21-August-1998, 9:2:7 PM (japanese)  
 木曜日, 10-9月-1998, 10:3:20 午後

Eg. Tue, 21-AUG-98, 09:20:07 (english)  
 Thu, 10-Sep-98, 10:03:20

Eg. Tue, 21-AUG-98, 09:20:07 (japanese)  
 木, 10-9-98, 10:03:20

Eg. 1-08-1998, era or period (english)  
 10-09-1998

Eg. 1-08-1998, era or period (japanese)  
 10-09-1998

**Note** The era is empty when using the Gregorian calendar (see control panel -> regional settings -> date)

**Important**

- Merge values only work in cover sheets; they don't work in normal messages.
- Merge values are case sensitive. You have to enter them exactly as they appear in this section.
- In the image view of TCfW \$Docnr\$ is replaced with an empty string if a message is viewed before sending, because the serial number is only set at the time of sending. If a message is opened from the archive, \$Docnr\$ is replaced with the document-page number field. This field contains the serial sending number and, depending on the sending channel, an additional page number. (Fax channels include the page number, telex channels do not.) Thus the image view of TCfW is in some cases not 100% identical with the originally transmitted message.

## Rich Text Support for FAX Cover Sheets

With SO #240 TCOSS was enhanced to render Rich Text (RTF) cover sheets. The RTF cover sheet is created with TCfW by attaching a RTF file to a message (option "attach as file") and then saving it as a cover sheet.

The RTF Cover sheet may include all cover sheet variables that can be included in a standard cover sheet. The only exception is that the syntax of \$to< > and \$cc < > will change a little bit (see [Changed Syntax of "To" and "cc" Lists in RTF Cover Sheets](#)). A message with a RTF cover sheet may be previewed with the preview function in TCfW 5.0 (or higher).

Any RTF attachments outside the message cover, that is, in the message body, are treated as before - they are not rendered and are therefore not visible in the preview and in the final output on the fax line.

## Description of the User Interface

This section describes the user interface.

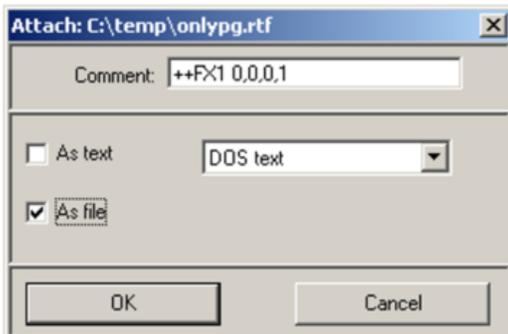
### Create Rich Text Cover Sheets

1. Create a Rich Text file on your local hard disk with the extension ".rtf".  
We strongly recommend that you use WordPad for creation. WordPad itself uses the standard rich edit control, which is also used by KCS. This ensures maximum compatibility. You can use Microsoft Word and save the result as "Rich Text Format", however, you may encounter compatibility troubles (see chapter restrictions).
2. Select **Page Setup** from the file menu to create a document.  
The **Page Setup** dialog appears.
3. Set top, bottom, left and right margin to 0 and click **OK**.  
A window may appear warning you that your margins are outside the printable area.
4. Click **Ignore**.
5. Select **Save As** from the File menu and select **Rich Text Format**.
6. Create a new message with TCfW.
7. Attach your Rich Text file (as file, not as text) to your message.
8. Choose **Attach** from the Menu in TCFW and click on file.
9. Choose your Rich Text file in the **Attach File to** dialog box.
10. Select **As file** in the Attach dialog box and clear **As text**.
11. Choose **Message** and then **Save As** from the menu in TCFW.
12. In the **Save As** dialog box, select **Save As Coversheet** and select the folder you want to use for storing the cover sheet.

### Create Rich Text Cover Sheets as Overlays

To create a Rich Text coversheet which is used as an overlay, proceed as described above.

1. in the Attach dialog box, write a control line in the **Comment** field such as "++FX1 0,0,0,1"
2. To attach a file, select **As file**.
3. Clear **As text**.

4. Click **OK**.

The "++FX1" control line in the comment field specifies the overlay parameters in the format "+FX1 x-pos, y-pos, startpage, pages". The same format is used for a regular image overlay. Refer to "Syntax of FAX form specification" in the *TCOSS System Manual* for a detailed description.

The "++FX1 0,0,0,1" line used as an example above specifies an overlay to be used on the current page only. The "startpage" value (page position relative to the current page) of zero means the overlay applies to the current page, a "pages" value (number of pages which should use the fax form) of 1 means it applies to this page only.

## Usage with Messages Created with TCFW

If you want to use your cover sheet for a message which you have created with TCFW select it as cover sheet in the send options of your message. If you want to preview the cover sheet switch to image mode. TCFW will show you an image of the whole message including the cover sheet.

Your Rich Text cover sheet shows the same behavior as any "normal" cover sheet. For example you can include overlays, normal text, images and coversheet variables just as in ordinary cover sheets. Keep in mind that your Rich Text attachment can include cover sheet variables.

An Rich Text attachment attached to your message which is not in your cover sheet is treated as an ordinary binary attachment and not displayed when you switch to image mode, just as any other binary attachment.

## Usage with Messages Transferred to TCOSS by a Link

You can use cover sheets containing Rich Text attachments with any Link in exactly the same way as you use normal cover sheets. For example you can create a template on TCOSS which includes your Rich Text cover sheet. When you create your message you have to specify that your Link shall use this template. For example in the Link-Fi you can specify your template in the TEMPLATE variable. TCOSS will use this template including your Rich Text cover sheet for your message.

The behavior of all Links relating to cover sheets and templates remains unchanged. Please refer to the manual of the appropriate Link to get a description of how to select a cover sheet or a template.

## Additional Cover Sheet Variables

The following additional cover sheet variables are used within "To" and "cc" lists of both standard and RTF cover sheets:

- `$L1anystring$` is converted to "anystring" in the first entry of a recipient list but does not appear in all other entries.
- `$L2anystring$` does not appear in the first entry of a recipient list, but is converted to "anystring" in all other entries.

These variables should only be used within the brackets of the `$To<...>`, `$to<...>`, `$Cc<...>` and `$cc<...>` cover sheet list variables. Their purpose is to add a descriptive string like "To: " to the first recipient list entry and a different string, such as spaces to keep the indent, to the following list entries.

## Changed Syntax of "To" and "cc" Lists in RTF Cover Sheets

In a line where `$To` (or `$to`) is used, `$To` should be the first sequence of characters in this line. In this way, `$To` marks the beginning of a line. The closing square bracket `>` may be on a different line following the line containing the `$To<`. It actually has to be on the next line if one wants to have a separate line for each recipient.

The `$To<...>` command in RTF covers is interpreted in the following way: `$To<` and `>` are removed. The remaining rich text between these markers (possibly containing line feeds) is copied as many times as there are recipients, or removed altogether if the list is empty. All cover sheets variables are resolved, including the newly defined `$L1...$` and `$L2...$` variables.

In contrast to RTF covers recipient lists of standard cover sheets are limited to one line, the closing bracket has to be on the same line, and the text before the `$To<` variable is set to spaces in all list entries except the first.

The processing of recipient lists in RTF cover sheets is not line oriented, so the "Line feed" sequence has to be included by putting the closing bracket on the next line if necessary. The text before the `$To<` variable is not set to spaces for extra entries like in the standard cover, so one uses the `$L1..$` and `$L2..$` variables instead.

Example of recipient list in an RTF cover sheet:

```
$To<$L1To:$L2 $ $Name$, $Comp$, $Dept$
>$cc<$L1cc:$L2 $ $Name$, $Comp$, $Dept$
>
```

Resulting view:

```
To: John Smith, ACME Ltd., Export
cc: Hans Meyer, Export International PLC, Contracts
Peter Best, Best Company & Co, Sales
```

## Restrictions to Use of Cover Sheet Variables in RTF Covers

The variables in RTF cover sheets must not be interrupted by RTF command sequences. This could happen if the style changes within the variable as in the following example which is partially bold:

"\$name\$" would not be a valid variable and therefore not resolved because in the RTF stream it would come out like "\$n\b ame\$".

Cover sheet variables may be given in any style or font, which is then applied to the replacement string but the variable has to be uniform.

### Page Format

It is only possible to use Rich Text documents in portrait format in your cover sheet. There is no support for landscape format.

If you want to use a Rich Text document in portrait format your document should have the width of A4 format (that is 210 mm). If the width of your document is smaller than 210 mm it is automatically widened to 210 mm when it is attached to your cover sheet. On the other hand your document does not have to have the height of A4 format (= 297 mm). If the height of the Rich Text document is smaller it is attached to your cover sheet with no changes to its height.

Do not use Rich Text documents which are wider than 210 mm. Loss of text or word- line- or page breaks in the preview/fax which differ from your original RTF document will occur.

## Trace Options

In case of RTF conversion problems please create the following registry key:

```
HKLM\Software\TOPCALL\TCOSS\rtfTraceLevel REG_DWORD 0
```

rtfTraceLevel is bit-wise interpreted. The meaning of the single bits is defined as below:

0x01	Errors (if any bit is set errors are traced)
0x02	Warnings
0x04	Info on memory allocated - freed
0x08	Info on (gdi/window) objects used
0x10	Info on thread execution
0x20	Common info
0x80	Trace Info - output of info concerning trace classes (not implemented yet)

## Performance

Since RTF conversion produces a high CPU and memory usage, you have to be very careful, when using the RTF cover feature with many lines. The following table gives you an overview about the additional required memory for each channel that may be used with RTF cover conversion.

Additional memory for each channel with RTF conversions	1.2 Mbyte
Additional virtual memory for each channel with RTF conversions	3.5 Mbyte

### Restrictions

Depending on total system load, slightly reduced throughput for fax sending.

Only the RTF features supported by Microsoft's riched20.dll version 5.30.22.2300 are supported.

This is not compatible to all RTF features supported by MS Word.

For example, tables created or inserted with MS Word may look very differently on your cover sheet than in MS Word. Your FAX output may get a hundred pages long even though your cover sheet consists only of one page. So **do not** use tables.

Riched20.dll seems to ignore margins set in RTF code via the `\margl \margt \margr` and `\margb` command. Therefore, **set all margins to 0** in the page setup of your editor when creating your rtf file.

**Realize margins with blanks and tabs.**

Only graphic objects inserted into your RTF document in Word with menu Insert/Object will be sent, if you insert them for example with menu Insert\Picture\ClipArt the graphic will get lost.

Avoid writing directly at the right/left margin. If the paper of the receiving FAX machine is not properly put into the machine, loss of text might be the result.

Be aware of memory usage. For example, 120 FAX channels on TCOSS which support RTF cover sheets will take approximately 250 MB memory.

Overlays, header- and footer lines are not supported by TCRtf.

Any fonts not included in standard NT must be manually installed on the KCS server, TC/LINK server and any client PC that provides KCS FAX Preview.

As mentioned above - cover sheet variables may not be interrupted by rtf command sequences.

As mentioned in the last chapter, do not use Rich Text documents which are wider than 210 mm. Loss of text or word- line- or page breaks in the preview/fax which differ from your original RTF document will occur.

RTF files containing characters which are not included in 7-bit ASCII code must specify ANSI Codepage 1250, 1252 or 932 in the `\ansicpg` statement.

You have to create your RTF document according to the rules for page format as previously described. If you disobey them, parts of your document may be lost when attaching it to your cover sheet and word- line- or page breaks may differ. This means especially that you have to use a portrait Rich Text document. There is no support for landscape.

Cover sheets of delivery notification created by a Link may not include RichText.

## Execute Sending

When a channel recognizes that one of its send orders is due it automatically starts sending the document.

Executing sending differs from examining a document in that the following functions are provided:

- Establishing connection with selection procedure (for telex, fax and others)
- Automatic numbering of the documents sent
- Back reception, automatic send copy printout

- Log file keeping
- Cost center fee accounting

The following chapters contain a detailed description of these functions.

## Automatic Numbering

You can allocate a number series to each channel in order to facilitate the numbering of outgoing documents. Several channels can use the same number series.

The document, or rather its send command, is numbered at the first selection attempt. This number remains intact until the document has been sent or erased. Erasing a send order which has already been provided with a number causes a gap in the number series.

Instead of using number series the serial number of a document can be specified with the parameter ORDER of the send command. Only if this parameter is missing the document is numbered by the number series.

This number is written on the head of the document during the transmission - in accordance with the user module in use.

## Automatic Send Copy Printout, Back Reception

If a document is sent via telex, telefax or asynchronous module it is possible to store the document in the form in which it has been sent. This is called back reception. The automatic reference generation and the erasing procedure for back-received documents correspond to the procedures for reception.

By configuration, it is possible to generate an automatic send command for back received documents - this will result in the so-called automatic send copy.

## Automatic Generation of References

The system automatically generates the document reference under which an outgoing message is stored (back reception). For this purpose the first position of the reference (A-Z or 0-9) and a number series A - Z is allocated to each channel by configuration. The drive on which the received documents shall be stored can also be configured.

The automatic reference looks like this:

XYnnnn

Where

X = letter A-Z or digit 0-9 (default = T)

Y = letter A-Z, in accordance with the number series

nnnn = current number of the number series, 1-6 positions. See number series directory.

## Automatic Distribution of Send Copies

The configuration can be set up to scan a configurable number of lines of incoming documents for keywords (maximum 254 lines). Also the whole document can be scanned for keywords (unlimited number of document lines to be checked). When a keyword is found, a corresponding send command is generated.

The keywords along with the corresponding receiver data are stored in the distribution directory with the reference [Distribution Directory VV99](#)).

The document is scanned during back reception. The system checks whether the character string of any keyword occurs in the first configured number of lines of the document. If a keyword is found a send command is generated to the receiver allocated to it. If more than one keyword is found the one occurring first in the distribution directory is used. And if no keyword is found the first one stored in the distribution directory is used.

It does not matter whether you use small or capital letters for the comparison.

Optional a multiple distribution for generation of multiple send commands may be used. See [Distribution Directory VV99](#) for more details.

The system is designed for a maximum of 2000 keywords.

If message are sent from a KCS user, events can be used to make user specific send copies. Refer to the *Client Applications Administrator's Manual* for more details about events.

## The Sending Log File

A log file is a document in which an entry is made every time a message is sent or received on one or more channels.

For each disk drive there are 36 general log files (0 - 9, A - Z) which can contain the combined information on sending and receiving activities.

Configuration determines whether and in which log file a channel will enter its transmission.

For the set-up and reference of log file, see [Log Files](#).

## Automatic Erasure

The way send orders are handled after sending is laid down at send order generation time depending on the configuration of the input channel of the send command or on the configuration of the channel which generated the send order automatically. The first three config positions control the erasing of the send order, the generation of an active acknowledgment and the erasing of the document (if the first character of its reference is a digit) after successful or unsuccessful sending.



qqq	12	filename (w/o folder name)
rrr	8	media server name
sss	4	time zone
tt	2	sending time seconds

**Note**

- A Non-delivery notification will only be generated when the send status decreases to 0. This should be considered when setting the call retry sequences (refer to the TCOSS Configuration Manual).
- The field 'ddd..' shows the contents of the author field of the original document. This can be a cost center designation, which has been entered in brackets.
- The author of the back received document is the reference of the original document.
- The field 'jjj..' contains either the answer back of the receiver (such as '135361 tpcal a') or an error message (such as 'OCC', if the receiver was occupied). It shows the contents of the corresponding field of a send command line in the contents listing.

## Explanation

The following example shows the functionality of the active acknowledgment including the different meaning of the merge values for transmitted documents and active acknowledgments:

```
Text 'T': created with ..2t,r=t,a=schuetz(bern)
```

test please ignore

**Send command:**

```
..2S,R=T,N=F:+TI830(TEXT),TE=333,OR=35:+T(BACK),PD=1,P=2,UI=1234
```

**Contents:**

```
930827 1352 REFERENCE DATE TIME A:T 20 SCHUETZ(BERN) 930826 1259
+TI830(TEXT)\F :+T661338 930827 0000 I 9
```

**rr99 at line:**

```
**ROUTE F:I~,I:I~\F:66133~
```

**Mask '+T':**

```
Test mask for printing all available mask parameters
=====
par. description contents
-----
A author >$A$<
B personel reference >$B$<
C cost center >$C$<
D current date >$D$<
H normalized number >$H$<
I notification par. = correlation info + delivery info
  correlation info
    001-008: CIF number >$I0108$<
    009-018: CIF ID >$I0918$<
  delivery info
    019-023: "2 "/"3NON" >$I1923$<
    024-047: author >$I2447$<
```

```

048      : break code >$I4848$<
049-050: error code >$I4950$<
051-056: send date >$I5156$<
057-060: send time >$I5760$$I171172$<
061-062: send channel >$I6162$<
069-099: answer-back >$I6999$<
100      : priority >$I100100$<
101-106: no. of char. >$I101106$< blocks
107-112: file size >$I107112$< kBytes
113-118: connec. time >$I113118$< seconds
119-138: node list >$I119138$<
L node list >$L$<
N number parameter >$N$<
O originator >$O$<
P possible dupl. message >$P$<
QX value of serie X >$QX$<
R reference >$R$<
S serial number for send >$S$<
T time for sending >$T$<
U Ext. Recep. user Id >$U$<
V Ext. Orig. user Id >$V$<
W answer back >$W$<
Y priority >$Y$<

Text (mask parameter X)
$X$
End of test.

```

**Transmitted message:**

```

Test mask for printing all available mask parameters
=====
par. description contents
-----
A author >SCHUETZ (BERN)<
B personal reference >TEXT<
C cost center >BERN<
D current date >93-08-27<
H normalized number >F:+T*43166133830 (TEXT)<
I notification par. = correlation info + delivery info
  correlation info
    001-008: CIF number >00000012<
    009-018: CIF ID >000000123456<
  delivery info
    019-023: "2 "/"3NON" > <
    024-047: author > <
    048 : break code > <
    049-050: error code > <
    051-056: send date > <
    057-060: send time > <
    061-062: send channel > <
    069-099: answer-back > <
    100 : priority > <
    101-106: no. of char. > < blocks
    107-112: file size > < kBytes
    113-118: connec. time > < seconds
    119-138: node list > <
L node list >A<
N number parameter >I :+TI830<
O originator >35 :+T(BACK)<
P possible dupl. message >possible duplicate message<
QX value of serie X >0009<
R reference >AT<
S serial number for send >930<

```

```
T time for sending >13:52:39<
U Ext. Recep. user Id >I<
V Ext. Orig. user Id >35<
W answer back ><
Y priority >2<
```

```
Text (mask parameter X)
test please ignore
End of test.
```

### Active acknowledgment without back received document:

```
Test mask for printing all available mask parameters
=====
par. description contents
-----
A author >A:T 930-001<
B personal reference >BACK<
C cost center >BERN<
D current date >93-08-27<
H normalized number >35:+T(BACK)<
I notification par. = correlation info + delivery info
  correlation info
    001-008: CIF number >00000012<
    009-018: CIF ID >000000123456<
  delivery info
    019-023: "2 "/"3NON" >2 <
    024-047: author >SCHUETZ(BERN) <
    048      : break code >0<
    049-050: error code ><
    051-056: send date >930827<
    057-060: send time >135248<
    061-062: send channel >06<
    069-099: answer-back > 930-001<
    100      : priority >2<
    101-106: no. of char. >278 < blocks
    107-112: file size > 0< kBytes
    113-118: connec. time >28 < seconds
    119-138: node list >A <
L node list >A<
N number parameter >35:+T<
O originator >I :+TI830(TEXT)\F :+T66133830(TEXT)<
P possible dupl. message ><
QX value of serie X >0010<
R reference >ATB6047<
S serial number for send >371<
T time for sending >13:53:37<
U Ext. Recep. user Id >35<
V Ext. Orig. user Id >I<
W answer back ><
Y priority >1<

Text (mask parameter X)
...
(back received document is not shown here)
...
End of test.
```

The following table shows the changed meaning of the merge values for transmitted documents and active acknowledgments.

Parameter	Transmitted document	Active acknowledgment
\$E\$	Original file name of posted envelope	Reference to the original document with serial number
\$B\$	Value in parentheses of NUMBER field of original send command	Value in parentheses of ORIGI field of original send command
\$H\$	Normalized original NUMBER field	Normalized original ORIGI field
\$I2447\$	Blank	\$A\$ of transmitted document
\$I5156\$	Blank	\$D\$ of transmitted document
\$I5760\$	Blank	\$T\$ of transmitted document
\$I6999\$	Blank	From receiver fax
\$I100100\$	Blank	\$Y\$ of transmitted document
\$I119138\$	Blank	\$L\$ of transmitted document
\$L\$	Node list of transmission	node list of back reception
\$N\$	From original send command w/o \$B\$	\$O\$ of transmitted document w/o \$B\$
\$O\$	From original send command	\$N\$ of transmitted document after rr99
\$P\$	From original send command	From active acknowledgment
\$R\$	Original document	Back received document
\$S\$	Serial number for sending	Serial number for active ack.
\$T\$	Transmission time of original doc.	Transmission time of active ack.
\$U\$	User ID of doc. receiver	User ID of doc. originator
\$V\$	User ID of doc. originator	User ID of doc. receiver
\$Y\$	From original send command	From active acknowledgment

## Standard Masks

### Mask +A

```
R:$R$ A:$A$ D:$D$ T:$T$
$X$
```

This mask is used as active acknowledgment by various host connections.

### Mask +D

```
$I2023$DELIVERY REPORT of message: $A0111$ to FAX number: $O$ terminal ID: $I6999$
at: $I5152$-$I5354$-$I5556$ $I5758$:$I5960$ (time of last attempt) from FAX: $I2447$
at: $I0102$-$I0304$-$I0506$ $I0708$:$I0910$ error code: $I4950$ sending channel:
$I6162$
transmission fee: $I6368$ connection time: $I113118$
```

This mask can be used as delivery or non-delivery report for the Transputer fax server and router functions.

### Mask +T

This mask is designed to be used by the technician only for learning or error location purposes. It contains every available mask parameter. The content of this mask may be changed in future releases without being mentioned in a release description.

### Mask +X

```

$..$2END
$..$2E,R=$$$
$..$2T,R=$$$,A=$D0102$$D0405$$D0708$$T0102$$T0405$
STORED MESSAGE NR. $$$
$P$
$X$
$..$2END
$..$2S,R=$$$,N=$N1249$

```

This mask is used for KCS Master/Slave protocol. (Connection between KCS via V.24).

### Mask +Y

Standard mask of TCOSS master disk:

```

1.$I1919$: TCOSS $I2023$DELIVERY NOTIFICATION
1: CORRELATION INFORMATION: $I2425$-$I2627$-$I2829$-$I3031$: $I3233$/ $E0211$
3: DELIVERY INFORMATION: = $I6999$
4: TIME OF DELIVERY: $I5152$-$I5354$-$I5556$-$I5758$: $I5960$
6: NOTE: $I4848$ $I4950$ $I6162$$I6468$
$X$

```

Active acknowledgment (example shows TC-Master-Slave-Link):

```

1.2: TCOSS DELIVERY NOTIFICATION
1: CORRELATION INFORMATION: 92-01-09-14:16/0127
3: DELIVERY INFORMATION: = 135361 tpcal a
4: TIME OF DELIVERY: 92-01-09-14:19
6: NOTE: 0 08

135361+ (back-received-text)
135361 tpcal a
....

```

Active acknowledgment (example shows sending of text 'T'):

```

1.2: TCOSS DELIVERY NOTIFICATION
1: CORRELATION INFORMATION: SC-HU-ET-Z(:BE/T
3: DELIVERY INFORMATION: = 135361 tpcal a
4: TIME OF DELIVERY: 92-01-09-14:19
6: NOTE: 0 08

135361+ (back-received-text)
135361 tpcal a
....

```

### Mask +Z

```

ACK 0$I4848$ $A0310$ $I6468$ $I6992$ 2ACK 0$I4848$ $A0310$ $I4950$ $I6992$ E

```

This mask is used for active acknowledgments from the Memo Module.

## Determining Fees, Cost Center Accounting

The system can calculate the fees that accumulate from sending messages by telex and/or telefax and distribute them to cost centers.

**Note** Costs are calculated according to normalized numbers in case of using the normalization or routing function (rr99).

Every channel can be configured to either provide this function or not to.

### Transmission fee

The transmission fee is computed after each send attempt according to the length of transmission or number of transmitted characters. It is then entered into the sending log file, if one is available. The costs for the send order can also be taken from the delivery notification (sum of all send attempts) and the transmission journal (current sum of all send attempts).

### Cost center accounting

Cost center accounting enables you to allocate the computed fees for the sent documents to the individual cost centers. For this purpose, a monthly cost center sum is kept for every cost center. These monthly sums are stored together in a separate document. This cost center table is created with the reference +MAIL5V/AKKxx (xx.. number of the month). The cost centers and fees per cost center are shown in this table. In addition, the operator needs the document +MAIL5V/Akk99 to determine the amounts of the fees and the area codes for the various classes of fees (see [Cost Accounting Directory kk99](#)).

The transmission fee calculation is activated by configuring the length of the cost center designation to a non-zero value.

The cost center designation is usually taken from the message header if the message is posted by TCfW or a link.

If working with ..commands the cost center designation can be entered in the parameter COSTC of the send command. Example:

```
..S,R=TEST,N=F:6613321,COSTC=SUPPORT
```

The cost center designation can also be specified in parentheses anywhere in the author field of the document. This designation will only be used in case the parameter COSTC is missing. Example:

```
..TELEX,REFERENCE=X, AUTHOR=(CDEP)
```

In case the cost center designation is neither specified in the parameter COSTC nor in the author field the name of the cost center will be taken from the reference of the document to be sent. The length of the name and its position within the reference can be configured. Example: cost center file for August 1993: reference. +MAIL5V/AKK08

```
10 00000820
AS 00000099
BR 00000113
```

## Cost Center Designation Configuration Options

The procedure to determine the cost center designation of a TCOSS message provides some optional steps which can be activated in the system configuration. Some standard steps can be deactivated in the system configuration.

### Message Cost Center

The cost center of a TCOSS message is determined by the following steps. Most steps depend on flag settings in the system configuration. Processing starts with the first step and continues with steps 2 to 5 until a non-empty cost center is found.

Step	Action	Condition in sysconf line 19, 3rd pos
1	Get cost center from recipient user profile	Flag 2 set
2	Get cost center from message header	-
3	Get cost center from recipient user profile	Flag 1 set
4	Look for cost center in author field	Flag 4 not set
5	Get cost center from document reference	Flag 8 not set

### In-Event Cost Center

The rules for setting the cost center of send orders generated by in-events in the user profile are as given in the following table. The steps are performed until a non-empty cost center is found.

Step	Action	Condition in sysconf line 19, 3rd pos
1	Clear cost center and go to step 5	Flag 0x10 set
2	Get cost center from recipient user profile	Flag 2 set
3	Get cost center from event user profile	-
4	Get cost center from recipient user profile	Flag 1 set
5	Look for cost center in author field	Flag 4 not set
6	Get cost center from document reference	Flag 8 not set

### Non-In-Event Cost Center

The rules for setting the cost center of send orders generated by events other than in-events (delivery, non-delivery, and other events) are as given in the following table. The steps are processed until a non-empty cost center is found.

Step	Action	Condition in sysconf line 19, 3rd pos
1	Get cost center from event user profile	-
2	Look for cost center in author field	Flag 4 not set
3	Get cost center from document reference	Flag 8 not set

## Cost Center Designation Example

Assume that sysconf line 19, 3rd position (cost center designation options) is set to '1E' (hexadecimal).

An incoming fax is routed to a KCS user "TestUs" that has the cost center "TestCC" set in the user profile. This message will get the cost center "TestCC" because step 1 "get cost center from recipient user profile" is active (flag 2 is indeed set in the config value 1E). Further steps are not processed because in step 1 a non-empty cost center is found.

Now let us assume that the received fax triggers an in-event because the user "TestUs" has an active in-event set which forwards received messages to a Notes mailbox. The send order generated for this in-event will get an empty cost center. Step 1 "clear cost center and go to step 5" is active (flag 10 is set in 1E) and sets the cost center empty. Step 5 "look for cost center in author field" is not active because the associated condition "flag 4 not set" is not true, flag 4 is actually set in 1E. The same will happen in step 6 "get cost center from document reference", it will not be processed because the config condition "flag 8 not set" is not true. So, the cost center ends up empty.

## Short Term Archive

TCOSS includes a short-term archive functionality which may be used to keep terminated messages for certain period of time available on the system. The short term archive uses a fixed amount of space for meta data (configured in common configuration line 13) and the unused space in +MAIL area for message archive.

The short term archive is additionally used as buffer for TC/Archive or TC/Report. Therefore, if one of these applications is used, the size of the short term archive must be large enough to cover possible out-of-order periods of TC/Archive or TC/Report.

### All Send Attempts in Short Term Archive

Since version 7.46.10, TCOSS logs all attempts to send a message in the short term archive (with previous releases only the final send attempt was logged). For a fax line, this would mean that all cases where the distant subscriber was busy or not reachable for some other reason would now be documented in the short term archive.

The logging of all send attempts in the short term archive is controlled by the new flag "logging of all send attempts" in the recipient's user profile, such as user "F" for the fax queue. If there is no user profile for the recipient, the "logging of all send attempts" flag will be set by default. This will also apply to send orders directed to a specific line number (such as recipient "07" instead of "F") if the appropriate user profile (user "07") does not exist.

The additionally logged send attempts will not show up in a regular out-folder. New out-box view options have been implemented in the TCfW client, such as "All send attempts" which displays all positive and negative send attempts from the short term archive.

This feature is not configurable and is active after the release update for all queues without a user profile. The size of the short term archive should be increased if necessary.

## Reduce Short-Term Archive to Fixed Duration

By default, the short-term archive used a certain amount of space. This means that the archive duration (age of oldest available entry) varies depends on various factors like system throughput, message size and the available space in +MAIL area.

Some company security policies may define that messages should not remain on the system for a period longer than a certain time span. After that time the messages should be deleted. In order to support these policies (since version 7.87.00) it is possible to restrict the short term archive duration as described below.

Both the age of short-term archive entries (information, such as from, to, subject, and more) and the short-term archive content (actual content of message, such as received fax image) can be restricted individually with common configuration line 22. Here are some sample configuration values. Refer to the *TCOSS Configuration Manual* for more details.

Configuration value	Description
00 00 00 00	The age of short-term archive entries and contents is restricted by the available size only. This is the default.
00 00 02 D1	Hide content of messages after 30 days (0x02d1=30*24+1).
00 00 82 D1	Delete content of messages after 30 days
00 19 80 01	Do not archive content of messages. Hide message entries after 1day (0x0019 = 1*24+1)

Here are some hints/side effects when using this feature.

- Short term archive entries are also used by TC/Archive and TC/Report. If you restrict the age of these entries, TC/Archive and TC/Report may not be able the fetch all data from TCOSS.
- If the age of short-term archive entries is restricted, the content may still be opened from the system folder if the message file is a visible file. For example, reception documents starting with none-digit reference are visible until they are deleted by the corresponding number series. Do avoid this problem, such documents should use a digit reference. In that case the document will be invisible after all send orders have been terminated. (See description of Termination parameter for details.)
- If you are using notifications that include the original message content, and the maximum age of short-term message is less than the time required to deliver the notification, the notification will be sent without original message content.
- If short-term archive entries/contents are hidden, they may still exist on disk and they may be available again the TCOSS is restarted with changed values in common configuration line 22. If the message content is deleted (flag 0x8000 is set in position 3&4) it is irreversibly lost.
- The deletion of short-term archive entries by its age is currently not implemented. Instead you can reduce the size of the short-term archive which reduces the total number or archived entries. Remark: To reduce an existing short-term archive its file (+MAILSYS/ AARCHIVFILE0) must be deleted with TCDEL. This will cause a short-term archive lost state in TC/Archive and TC/Report which must be handled.

## Cost Center Designation Example

Assume that sysconf line 19, 3rd position (cost center designation options) is set to '1E' (hexadecimal).

An incoming fax is routed to a KCS user "TestUs" that has the cost center "TestCC" set in the user profile. This message will get the cost center "TestCC" because step 1 "get cost center from recipient user profile" is active (flag 2 is indeed set in the config value 1E). Further steps are not processed because in step 1 a non-empty cost center is found.

Now let us assume that the received fax triggers an in-event because the user "TestUs" has an active in-event set which forwards received messages to a Notes mailbox. The send order generated for this in-event will get an empty cost center. Step 1 "clear cost center and go to step 5" is active (flag 10 is set in 1E) and sets the cost center empty. Step 5 "look for cost center in author field" is not active because the associated condition "flag 4 not set" is not true, flag 4 is actually set in 1E. The same will happen in step 6 "get cost center from document reference", it will not be processed because the config condition "flag 8 not set" is not true. So, the cost center ends up empty.

## Chapter 3

# User Profiles and Addresses

This section describes user profiles and addresses.

## Kofax Communication Server User IDs

Some applications, such as TCfW and FXDPro use KCS user IDs which are stored in a special folder called "+USER" on KCS hard disk. To create, modify or delete these users, the TCfW application is necessary.

At first system start up after initial installation, the user TCTECH, which is a standard default user with all rights, exists automatically in the folder +USER. With this user it is possible to create other users which should work with the KCS system.

**Note** For the creation of users refer to the TCfW Communication Server Client User Manual.

During initializing the hard disk, you must define the **capacity of the user folder** and the maximum number of **user entries** for your KCS system. These entries depend on customer's requirements, such as how many users work with KCS, Private user folders and more.

The value "user entry" is used for the maximum possible number of user profiles and the maximum number of channel queues in the short-term archive.

Take care that every user which is created gets an entry in the system address book.

User profiles without corresponding entry in the system address book are deleted during system start-up. (Except for the TCTECH user does not need an address book entry.)

**Note** If the address book is cleared by deleting file "+TECH/ARECEIVERFIL", all user profiles will be deleted as well at the next system startup. In this case a complete backup of addresses and user profiles will be needed for the restore operation.

The size of the recipient and user store is defined by configuration.

System configuration, line 13:

Positions 5,6	Maximum number of user store entries (in units of 1000 / default 3000 users)
Positions 7,8	Maximum number of address book entries (in units of 1000 / default 7000 rec.)

If a user (or recipient) is stored in KCS, you may get error 308 (store full) even if there are enough free space in the User and recipient space (according to disk usage). There are following rules.

1. Every user needs also one Recipient entry, therefore the number of recipient entries configured within the SYSCONF, config line 13, pos 7+8 must be higher than the number of users configured within SYSCONF, config line 13, pos 5+6.

So the number of "real" recipients (= no users) is SYSCONF 13, pos7/8 - SYSCONF 13, pos 5/6

2. The address space needed for the user's addresses is defined only by the configured number of users:

Number of users (SYSCONF, line 13, pos 5+6) \* 3 Addresses \*16 characters per Address.

If you have users with more or longer addresses (such as one TOPCALL Address with maximum 20 characters, one FXI address with 4 characters, one Exchange address with maximum 50 characters), a rough calculation can be done as follows (assuming total number of users = 5000):

TOPCALL Address	20 characters	needs 2 Addresses	(2*16 > 20)
FXI Address	4 characters	needs 1 Address	(1*16 <= 4)
Exchange Address	50 characters	needs 4 Addresses	(4*16 >= 50)

Total number of Addresses per user	7 Addresses
Total number of Addresses for all users (5000)	35.000 Addresses

So, instead of 5000 Users, you have to configure:

35.000 Addresses / 3 Addresses per User =~ 12000 Users

If you get problems with ONE of these limits, the system configuration must be changed.

**Note** By deleting a user's entry in the recipient store, the user's private message folder, its entry in the user store and its private address book are also deleted automatically.

User IDs are case insensitive with the following exceptions:

- Selection in outbox and inbox for user IDs with 1 or 2 characters
- Selection in outbox and inbox of terminated mail entries (short term archive) for user IDs of up to 8 characters.
- Folder (such as message folder of users) and File names are case sensitive.

User profiles were not fully case insensitive. If there was an existing user, such as "TEST", and one tried to save a user profile that differed in case only, such as "test", TCOSS created a new profile for the user, but still used the old profile.

Now the existing user profile is overwritten (after the warning "object already exists (300), do you want to overwrite the object?") and the case of the existing user, such as "TEST" is not changed. Any duplicate user profiles, that were created by previous releases (<7.31.00) because of this error, are deleted at system start up.

It is still not possible to change the actual upper/lower case writing of an existing user ID. In this case the user has to be deleted before creating a new user with different upper/lower case writing.

## TCTECH User

The following exceptions (compared to all other KCS users) were made for the TCTECH user.

- It will be installed automatically during first initialization. It can be re-installed (existing TCTECH will be overwritten!) by shut-down TCOSS and executing `C:\tcoss\system\tcoss /i`. This option is useful if no other user is available for log-in.
- The user TCTECH does not have an entry in the system address book and is therefore not listed as user in one of the following cases:
  - The file structure was initialized with TCOSS from KCS 9.0 or older
  - The TCECH user was deleted and reinstalled with "`tcoss /i`"
- An invisible TCTECH user can be detected by checking if the file `+USER/TCTECH` exists. This can be done using following methods:
  - With TCUAS command (while TCOSS is running): `..2C,R=+USER/TCTECH`
  - With "`TCDIR +USER/TCTECH`" (while TCOSS is running)
- You can delete this invisible TCTECH by
  - Creating an user TCTECH so that you get a visible TCTECH user
  - Deleting the TCTECH user

## Deletion and Re-Creation of User Profiles

If a user is deleted with the TCfW user administration the user's entry in the recipient store and with it the user's private message folder and its private address book are also deleted automatically. Open mail entries are cleaned up at the next TCOSS restart.

Deleting a user and recreating it with the same name (or restoring it from a backup) works differently for users with names of up to 8 characters and longer user ids, at least in regard to entries in the short-term archive:

### Users with IDs of up to 8 characters

These user IDs are stored internally "as is". This has the effect that a deleted and recreated user can access entries in the short-term archive created by the "old" user.

### Users with IDs longer than 8 characters

In this case the user ID is represented internally by a unique number. This has the consequence that a deleted and recreated user can't access entries in the short-term archive created by the "old" user, because the "new" user got a different unique number. See [Extended User ID](#).

**Note** There is no such distinction in the long-term archive. TC/Archive stores all user IDs as strings, so a deleted and recreated user can always see all entries for its user ID.

## Create User Profiles with Group Name

When working with group names of up to 8 characters it is not necessary to create a user profile with the group name. If a user profile exists, it may be deleted and re-created without affecting the group views of the mail system.

Group names longer than 8 characters must be created as user profiles before the long group name can be referenced in a user profile of a group member. If the user profile of the group is deleted references to the long group name (which are stored in an 8 Bytes short form like "#000178A") can no longer be resolved and the short form appears in the mail entries and in the user profiles of the group members. If the group is then re-created with the same name, it is seen as a different group. Existing mail entries will not be changed to refer to the new group. Existing user profiles of group members must be edited to insert the reference to the new group.

We recommend that you use only group names of up to 8 characters length.

## Gateway User, Number Locking

Users with 8 characters or fewer and '+' as first character, such as +ENVELOP, will be handled as GATEWAY users. Any other user can be turned into a GATEWAY user by checking the "Visible in outbox" flag in the user profile (see the TCfW User Administration screen shot below).

Documents sent to GATEWAY users are visible in the sender's out-box until terminated by the recipient. (Sending to GATEWAY users looks like internal sending of previous TCOSS releases.)

Number locking means that out of two or more send orders to the same number only one can be active at any time. The number checked for this is the localized number (after routing), without masks or send switches.

The number locking may be activated for a specific queue by setting a flag in the user profile. If activated, the locking covers all send orders within that queue, it does not interfere with send orders in other queues.

## User ID Definitions

The maximum length of recipients and user IDs is 127 characters. An overview of special characters which must not be part of a user ID is shown in the following table.

Character	Position	Problem with short (<= 8) user IDs	Problem with long (> 8) user IDs	Problem only with commands	Reason
'\' backslash	any	x	x		uu99 field separator
':' colon	any	x			separator in number field
'.' dot	1st			x	NN99 short number

Character	Position	Problem with short (<= 8) user IDs	Problem with long (> 8) user IDs	Problem only with commands	Reason
'+' plus	1st	x			system folders (+TECH, +MAIL and more)
'#' hash	1st	x			internal representation of long user IDs
'/' slash	any	x			++INC folder/filename
'*' asterisk	any	x	x		wildcard
'?' question mark	any	x			wildcard

## Extended User ID

If the length of the user exceeds 8 characters it is called extended user ID.

The extended user ID may be entered in the parameters NUMBER, ORIGI, CHANNEL and in the folder part of parameter REFERENCE.

### Examples:

```
..C,M=3,C=verylonguserid (in-folder)
```

```
..C/* (private message folder)
```

```
..S,R=X,N=verylonguserid: (send to user)
```

```
..S,R=X,N=.longrecipientid.+TECH (access system recipient store)
```

In case of accessing a user's private recipient store, an extended user ID may be present twice in the number parameter. For example:

```
..S,R=X,N=.longrecipientid.longuserid
```

The extended user id may be used in a ++INC control line to specify a user's private message folder. For example:

```
++INC VERYLONGUSERID/FILENAME
```

### New mask parameters.

\$U\$	Extended user ID of recipient
\$V\$	Extended user ID of originator

The new mask parameters have been provided to complement \$N\$ (recipient) and \$O\$ (originator) which retain the fixed format of 8-character user ID + ':' + number.

### Internal representation of extended user IDs

User IDs with up to 8 characters are represented by the full user ID as before. User IDs with more than 8 characters are converted into an 8-character-string composed of '#' and a 7-digit hex number.

The internal user representation does not normally show up on the TCfW user interface. If a user ID with more than 8 characters is used without being defined in the system address book, error "Specified User ID not found (609)" will be reported.

The internal user representation will be visible in the content directory, log files, mask parameters \$N\$ (number), \$O\$ (originator) and \$H\$ (normalized number), and in the listing of ++INC lines. It may be used instead of the extended user ID in ..commands, except when accessing the recipient store with a short number. **Example:**

```
..S,R=X,N=verylonguserid:
```

OR

```
..S,R=X,N=#0010007:
```

It has been assumed that the recipient IDs in the recipient store have an average length of 15 characters or less. If the actual average is higher, fewer recipients can be created.

**Example with standard system configuration:**

7000 users/recipients with an average length of 15 characters or less

OR

3612 users/recipients with an average length of 30 characters

OR

1000 users/recipients with an average length of 111 characters

Since creating of send orders to undefined users is not possible, the following users must be created.

1. If the fax scan function is used, the user "+ENVELOP" must exist
2. Some input queues used by gateway applications (such as TCGATE uses TCGWQ) must have a recipient entry (with type user) but must not exist as a user.

This can be done by creating the user and then deleting the user profile from the KCS system folder (such as file +USER/TCGWQ)

Second way: Reduce the length of the queue name to a maximum of 2 characters.

## Sending to Internal Users

The following is a short overview about what happens in the in and out-folder of TCfW if one KCS user sends a message to another KCS user.

Out Folder	Messages to KCS users are now set to "sent ok" at the time of sending (normally immediately if no date / time was specified). The sender will not be informed of whether the recipient reads the message. The sender cannot cancel an internal message after it has been delivered
In Folder	Terminated messages appear in the order of reception and with the reception time (instead of termination time)

## User Events

Different user events can be performed automatically by the mail system. Events are optional and must be defined for every user in his user profile (possible with TCfW only).

You can use these events to print messages on a LAN-printer, to send LAN-Break messages, to copy files to a file server and many more.

Events	Occurs if a user..	originator field
In-Mail	receives a document	UserID: old originator 2)
msg. waiting on	receives a document and his mailbox was empty	UserID:
msg. waiting off	acknowledges the last incoming document of his mailbox	UserID:
delivery	send order was terminated successfully 1)	
non-delivery	send order was terminated unsuccessfully 1)	UserID: orig. number 3)
back reception	send order creates a back received document 1)	

The (non-)delivery and back reception actions additionally depend on the termination parameter:

old originator = originator field of the incoming mail (such as UserID + answerback).

orig. number = receiver of the original document.

**Note** The number field is taken from the user profile. The erasability and NOTPA parameter are taken from the original send order. This means:

- In Mail actions are erasable if the send orders for the automatic reception printout of the received channel is erasable.
- Back reception, delivery and non-delivery send orders are erasable if an active acknowledgment of the sending channel is erasable.

In-mail, delivery, non-delivery and back reception events may depend on the used Service and delivery type.

In case of delivery, non-delivery or back reception events the delivery type (TO\_ , CC\_ , and others) is taken from the original send order. The service is taken from the first alternative of the original send order's recipient.

## Auto-Termination for GATEWAY Users

In the following the term "GATEWAY user" refers to users which have the "GATEWAY" flag set in the INT\_ACTIONS child of the user profile (shown as "Visible in OutBox" by TCfW).

Auto-termination is also possible for GATEWAY users. It is done if there is at least one action for the particular event (In, DelNotif or others) in the user profile with auto-termination active and if all actions could be performed (send orders created). No auto-termination is done if there are no actions at all, or if there are only actions with auto-termination inactive, or if an action defined in the user profile can't be performed (for example, because the specified recipient does not exist).

The auto-termination handling of a GATEWAY user is independent of the type of event. Normal (non-GATEWAY) users always auto-terminate DelNotif, NondelNotif and Sending Copy events, except for the error case that an action defined in the user profile can't be performed.

### Overview of auto-termination handling

Event	Normal user	GATEWAY user
Normal incoming message (no additional flags)	Auto-termination model 1	Auto-termination model 1
DelNotif, NondelNotif, Sending Copy	Auto-termination model 2	Auto-termination model 1
Incoming with option flag AUTO_TERMINATE (such as message sent to TCARCHIVE)	Auto-termination model 3	Auto-termination model 3
Incoming with termination flag GATEWAY (such as message sent to authorizer)	No auto-termination	No auto-termination

#### Auto-termination model 1

Auto-terminate if there is at least one action for that event in the user profile with auto-termination active and if all actions could be performed (send orders created). No auto-termination is done if there are no actions at all, or if there are only actions with auto-termination inactive, or if an action defined in the user profile can't be performed (for example, the specified recipient does not exist).

#### Auto-termination model 2

Auto-terminate always, except for the error case that an action defined in the user profile can't be performed (for example, because the specified recipient does not exist). This error handling case may be explored by deliberately defining an action with a non-existing recipient to switch auto-termination off.

#### Auto-termination model 3

Auto-terminate always. Do not perform any action (skip all defined actions).

#### Events filtered on reception error

It is now possible to define actions in a user profile, such as for inbound messages, which depend on the message's reception error code. This allows to handle messages with reception errors (which are probably incomplete and will be received again) differently from completely received messages.

#### Example

**User Profile - RM**

General | Address | **Event** | Rights | Manual Fax | Distributor | Authorize/Sign | Alert | Queue Length Log

Event: In Service: TOPCALL

User ID: RM

Node:

Filter: all

Used for: all  
without reception error  
with reception error  
with specific reception error

Recipient number: type:

Active  
 Archive entry  
 Auto termination  
 Registered

Delete Addr Save Addr

Active	Event	Service	Number	Archive	Auto	Registered	Deliver	Sender	Filter

OK Save Cancel

Events can be filtered by using one of the following filtering options:

- all (with or without reception error)
- without reception error
- with reception error
- with specific reception error, such as "XY"

**Note** Use TCfW 5.07.00 with TCSI 2.43.00 (or higher) for administration.

## Alerts

It is possible to have TCOSS generate alerts if the number of messages waiting in a queue exceeds configurable limits. The same can be done for the queue age and the number of queued pages. There are two kinds of alert messages: actual warnings if limits have been exceeded and all-clear messages informing that the situation has gone back to normal.

Alerts can be set in two places:

- In the user profile defining the queue which is to be supervised. For example warnings for the fax queue can be set in the profile of user "F".
- In the user profile of the originator or originator group, if the alert is filtered on originator or originator group.

If both options are possible, one should choose the queue which tends to be smaller (for better overall performance). For example, if there are several users who send mostly faxes and want separate alerts for

their outgoing messages, it will be better to define the alerts in the user profiles of the originators, because the individual outbox queue of a user tends to be smaller than the combined fax queue seen by user 'F'.

The alerts contain a link to a message which is stored separately in a folder. The originator of the alert message is always the user who has already been entered as originator into the alert message and not the user for whom the queue alert was generated. The alert message is actually a template which may contain variables, such as for the queue or the originator. These variables are resolved when the alert message is posted.

TCOSS alerting provides the following features:

- There are 3 types of alerts to monitor queue length, queue age and the number of queued pages.
- Inbox- or outbox-centric definition
- Alerting covers messages in all five internal states. These states are "deferred", "wait for document conversion", "active", "at next node" and "terminated".
- Alerts may be filtered by message state, priority, originator and originator group, recipient and recipient group.
- Alerts may be repeated after a user-defined period of time if the alerting condition persists.
- sub-alerts (fired only if no higher level alert is fired)
- The alerting message includes the current value of the monitored property, that is queue length, queue age, or queued pages.
- If an alert is triggered, a TCOSS log entry will be written (in addition to sending the alert message).
- The administrative user interface allows defining alerting levels by grouping alerts with identical filter but different threshold settings.
- Active / inactive switch per alert
- Global on / off switch for all alerts

## Monitoring Interval

The queue monitoring interval can be set in seconds in the system configuration, line 18, 3rd position. The program default check cycle (if a value of zero is configured) is 60 seconds.

If one of the advanced filtering options (filter by state other than "active", originator / originator group, recipient / recipient group) or page-based monitoring is actually used,

or if there is a large number of alerts (more than 100), the monitoring interval should not be set to a value below 60 seconds. Otherwise the server's performance may degrade because of the CPU intensive queue monitoring.

## Queue Monitoring Performance Trace

A flag in the TCOSS TraceLevel may be used to activate a trace which allows to assess the performance impact of the queue monitoring task.

Registry Value "HKLM\Software\TOPCALL\TCOSS\TraceLevel" (REG\_DWORD), flag 0x80000: queue monitoring trace

### Example trace snippet:

```
12/15:18:06.991 (c38/8e0) queue monitoring: 125 ms for 9000 alerts and 0 logs in 1000 groups, posted 0 messages
```

```
12/15:19:07.038 (c38/8e0) queue monitoring: 172 ms for 9000 alerts and 0 logs in 1000
groups, posted 0 messages
```

A single trace line is written every time the queue monitoring is called (depending on the configured check interval). The "ms" value should normally remain below 1000. The number of alerts and the number of logs show how many of each are currently being active. The number of groups corresponds to the number of lookups done in the internal queues.

## User Interface

To define alerts, a system administrator must take the following three steps:

1. Create a user profile for the queue which is to be supervised (if this user profile does not exist already).  
This step will not be required if the alert is set in the user profile of the message originator (outbox centric definition).
2. Create a warning message.
3. Set an alert in the user profile with a link to the warning message.

### Creating a User Profile

In case of inbox-centric alert definition a user profile needs to be created for fax and telex sending queues. If faxes are routed to, for example, "F:", create a user profile with user ID "F". Make sure that this user profile has the option "Visible in outbox" checked, otherwise faxes to be sent will disappear immediately from the out box of the sender. No address, rights or event settings are required.

### Creating a Warning Message

The warning message is created in the usual way with the TCFW client (menu "Message" - "New"). Enter an appropriate warning text and all recipients of the warning. All send options such as priority, cover sheet, and others may be used.

If you entered more than one recipient, use the send option "Ignore invalid recipients" to prevent the warning message from not being sent at all in case only one recipient is invalid. Check if the user "+INVALID", which is required for the "Ignore invalid recipients" option, exists. Make sure that the message originator (field "From:") gives a valid user or queue (if the originator user has been deleted, the warning cannot be sent anymore). It is used as originator when an alert is created.

Instead of posting the warning message immediately, use the menu "Message" - "Save as" option to save it to any KCS folder. It is recommended to store it in the FIS folder or in the system folder "+MAIL5V" or in the supervised user's own message folder. Do not store it in another user's private message folder where it may be deleted if that user is removed. Note down the chosen folder and file name for the next step.

#### Variables in Alert Message Template:

The alert message template defined for an alert may contain alert variables in the following recipient fields: Department, Full name, Free text, and in the KCS User ID within a TOPCALL address.

These alert variables may be used here:

Variable in Recipient	Replaced by this field from alert definition
{QueueRecipient}	TS_RECIPIENT / TS_RECIPIENT_GROUP

Variable in Recipient	Replaced by this field from alert definition
{QueueOriginator}	TS_ORIGINATOR / TS_ORIGINATOR_GROUP
{AlertFreetext}	TS_FREETEXT

The alert variables are resolved, that is, replaced by the appropriate string field, when the alert message is posted. An exact match is required for variables to be detected and resolved, the variable name has to be put into the template exactly as defined, without prefix or postfix.

**Alert message variables are used for two purposes:**

1. In the "User ID" address field: to send the alert message to that user
2. In all other fields: to get the field value into the message using cover variables. This is a two-hop process. The alert variable gets the value into the message header so that it is stored with the message. Later, when the alert is viewed with a cover sheet, an appropriate cover variable can pull the value into the message text.

**Example of recipient in alert template:**

Active	No	Service	Number:
X	1	TOPCALL	{QueueOriginator}

In this example the alert message is sent to the originator (or originator group) set in the alert filter. The queue name is put into the "Full name" field and the alert text variable into the "Free Text" field. These two fields can then be used in the alert message cover, the queue name with "\$Name\$" (because it is in the "Full name" field) and the alert text variable with "\$Txt\$" (because it is in the "Free Text" field).

**Current Value in Alert Message:**

The current value of the monitored property, that is, the queue length, queue age or number of queued pages, may be included in the alert message by using cover variables.

When an alert is generated by TCOSS the current value is filled into predefined fields of the send order. If the alert message is prepared to contain a cover with the proper cover variables, the current value will be included in the alert message.

The following fields and cover variables are used to access the current value:

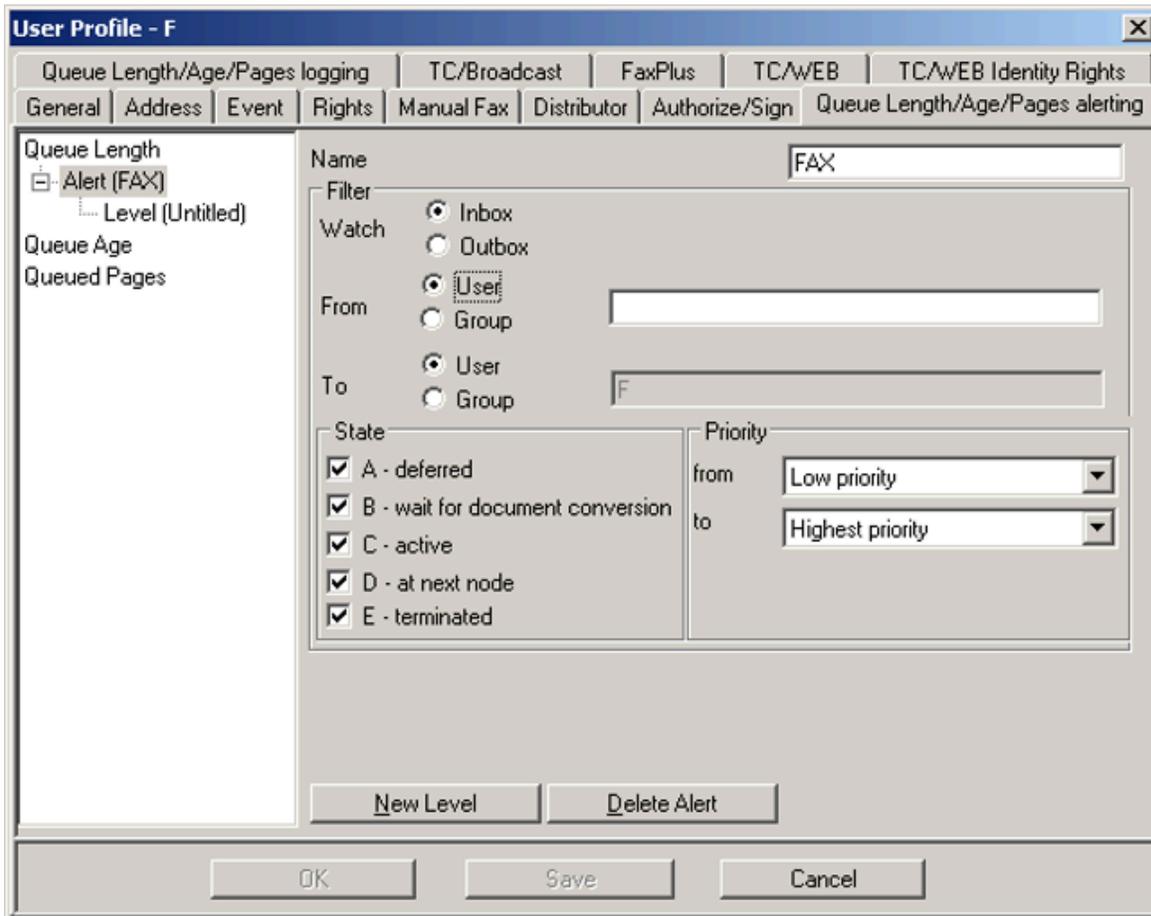
Alert type	Value	Field in send order	Cover variables
Queue length	Number of messages	Envelope name posted	\$ENam\$
Queue age	Queue age in seconds	Envelope name posted	\$ENam\$
Queue age	Scheduled send time of oldest message in queue	File creation time	\$CDate\$, \$CTime\$
Queued pages	Number of pages	Envelope name posted	\$ENam\$

For the queue length and queued pages alerts the current value is converted into a decimal number string and put into the "envelope name posted" field to be retrieved with the \$ENam\$ cover variable.

For the queue age alerts the monitored value is the delay (in seconds) of the longest waiting message in the queue. This value is also put into the "envelope name posted" field as a decimal number string. Additionally, the scheduled send time of the message that is waiting longest is put as an absolute date / time value into the "file creation time" field, from where it can be retrieved with the \$CDate\$ and \$CTime\$ cover variables.

**Set an Alert in the User Profile**

Edit the queue user profile which was created in step 1 or already existed in case of a link queue. In case of outbox-centric alert definition, edit the user profile of the message originator or originator group. With Tcfw.exe version 5.23.00 a new tab, the Queue Length/Age/Pages alerting property page, was introduced to enter the parameters of an alert.



The above example shows an inbox-centric alert definition (Watch Inbox selected). For an outbox-centric definition select "Watch Outbox" after opening the originator's user profile to hold the alert.

The inbox-centric alert allows filtering by originator (user or group), while the outbox-centric alert can be filtered by recipient (user or group).

An inbox-centric alert filtered by originator is functionally equivalent to an outbox-centric alert filtered by recipient. But keep in mind that the performance impact of the two possibilities may not be the same and select the definition where you expect the queue length to be lower before filtering.

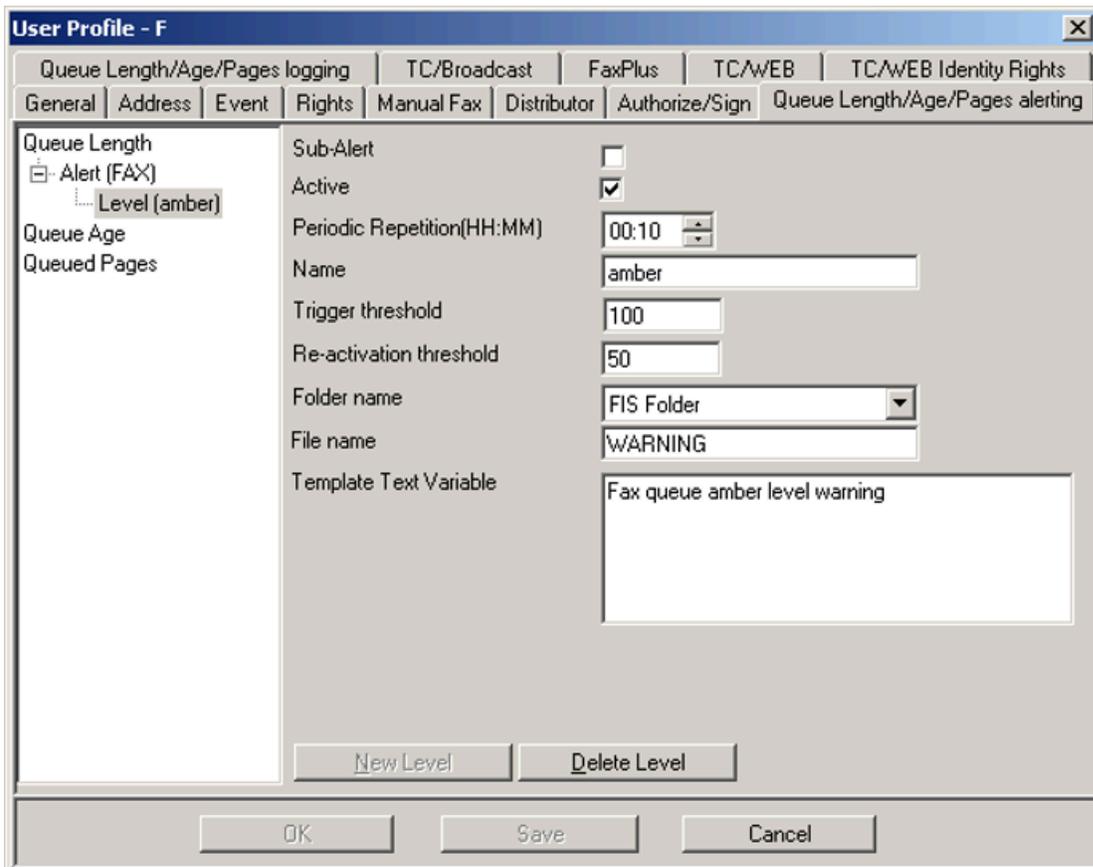
**Alert properties**

<b>Name</b>	The name of the alert.
-------------	------------------------

<b>State</b>	Specifies the state of a message Messages to be sent out by TCOSS are in one of the following 5 states:												
	<table border="1"> <thead> <tr> <th>State</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Deferred</td> <td>Waiting for the intended time of sending</td> </tr> <tr> <td>Wait for document conversion</td> <td>Waiting to be picked up by the TCOSS document converter</td> </tr> <tr> <td>Active</td> <td>Being sent out or waiting for a send retry</td> </tr> <tr> <td>At next node</td> <td>Already transferred but waiting for a confirmation</td> </tr> <tr> <td>Terminated</td> <td>Sending failed, no further send retries.</td> </tr> </tbody> </table>	State	Description	Deferred	Waiting for the intended time of sending	Wait for document conversion	Waiting to be picked up by the TCOSS document converter	Active	Being sent out or waiting for a send retry	At next node	Already transferred but waiting for a confirmation	Terminated	Sending failed, no further send retries.
	State	Description											
	Deferred	Waiting for the intended time of sending											
	Wait for document conversion	Waiting to be picked up by the TCOSS document converter											
	Active	Being sent out or waiting for a send retry											
	At next node	Already transferred but waiting for a confirmation											
Terminated	Sending failed, no further send retries.												
<b>Priority</b>	The message counting may include messages of all priorities, or it may be restricted to messages with a specific priority or a range of priorities.												

**Alert levels**

An alert can have multiple levels but must have at least one level. If a new alert is created, the first level is automatically created. Enter the values for the alert level.



**Sub-Alert:** If selected, the alert is triggered if another level with a higher trigger threshold is active.

**Active:** If selected, activates an alert level.

**Periodic Repetition (HH:MM):** The specified time after which the alert message is repeated if an alert is triggered and the alerting condition persists. No periodic repetition will be done if this configuration parameter is below 10 minutes.

**Folder name** and **File name:** Enter the folder and file name of the warning message created in step 2. This message is posted when the warning or all-clear message is triggered.

**Note**

- If folder FIS is shown, the TCOSS file +MAIL5V/F<File name> will actually be used.
- If folder SYS is shown, the TCOSS file +MAIL5V/A<File name> will actually be used.
- Otherwise, the folder and file names indicate the used TCOSS file name without conversion.

**Trigger threshold** and **Re-activation threshold:** If the number of queue entries reaches the trigger threshold, the alert will be triggered, and it is not checked again until the number of queue entries has fallen to the re-activation threshold. The trigger threshold is higher than the re-activation threshold. Both fields accept input values between 0 and 2147483647.

For an all-clear message, which is triggered on falling queue length, two thresholds are defined as well, but in this case the trigger threshold is lower than the re-activation threshold. The all-clear message will be triggered if the queue length falls to the trigger threshold and the check is suspended until the queue length has risen to the re-activation threshold.

**Note** The trigger threshold and the re-activation threshold must be different. The difference between the two thresholds should be large enough to avoid the creation of too many alerts.

Warning: Trigger threshold = 1000, Re-activation threshold = 500: The warning message will be posted if the queue length rises to 1000 or above. If the queue length then oscillates between 1100 and 900, no further warning will be given (the alert may be repeated though according to its periodic repetition setting). Only after the queue length has fallen to 500 or below a second warning will be posted if it then rises to 1000.

All-clear message: Trigger threshold = 500, Re-activation threshold = 1000: If the system starts with an almost empty queue, the check is suspended. Only after the queue length has risen to 1000 or above the check is activated and the all-clear message will be posted if the queue length subsequently falls to 500 or below.

**Template Text Variable:** A string field which is accessible in the alert template with the "{AlertFreetext}" variable. See "Variables in Alert Message Template".

## Restrictions and Error Cases

- The trigger limits are checked in fixed, configurable intervals, by default once a minute. This means that warnings may be generated with a maximum delay of the configured check interval. If the trigger limit is passed only for a short period of time which falls between two checks, the warning will not be generated at all.
- The total number of alerts of all users must not exceed a maximum of 10000. If more alerts are set, some of them will be ignored (An error message and an event log entry will be generated in this case).

- If the warning message specified with folder and file name in the user profile does not exist, no alert, but an error message and an event log entry will be generated.
- If the originator or some or all of the recipients defined in the header of a warning message do not exist at the time the alert is triggered, the alert will not be sent, but an error message and an event log entry will be generated.
- After system start up the first check is done assuming that the alert is in the "not triggered" state. This means that warning messages may be repeated after a power failure. All-clear messages may be lost.
- If a new alert is added to a user profile, the first check will be done assuming that the alert is in the "not triggered" state.
- If any parameter of an existing alert is changed, it will be treated as a new alert.

## Automatic Rejection of Messages

An auto-reject flag can be set in the user profile. Any user that has this flag set will automatically reject all messages in its in-box. These messages get the usual handling for negative termination, non-delivery notifications and archive entries are generated as requested.

The automatic rejection affects three fields of the mail entry:

- The state is set to "rejected".
- The 2-byte error code is set to "SI".
- The response is set to "invalid recipient".

Before doing the negative termination, an auto-reject user will perform all actions set in its user profile. **If any of the actions has auto-termination activated, the message will be auto-terminated and not auto-rejected (auto-terminate overrides auto-reject).** This is only stated for completeness, it has no practical use so far.

The TCOSS user with ID "+INVALID" will get the auto-reject flag automatically. This allows to create an auto-reject user before a client able to handle the new flag is available.

**Note** The Auto-reject flag will be cleared whenever the user profile is changed by TCfW that to not support it.

**Example:** To get the SMTP link to accept messages with several recipients, of which some cannot be routed to existing users, you must:

1. Set the TCService of the SMTP link to "SMTPIN" (during setup or in registry key ". . \TOPCALL \TCLINKSM\TOPCALL\TCService").
2. Create TCOSS user "+INVALID" (no rights or addresses required, it only has to exist)
3. Define the TCOSS service "SMTPIN" with prefix "POSTMASTER:"
4. The following lines should be used in the rr99 Inbound to route invalid recipients to user +INVALID.

```
**INBOUND
POSTMASTER:~, , Search inact.addr.type SMTPIN
POSTMASTER:~,+INVALID:, Create Nondelivery
```

The idea behind these settings is that the link will map valid recipients to TOPCALL addresses and route invalid recipients to the TCOSS user "+INVALID" which will in turn immediately reject any messages in its in-box and provide the non-delivery notification for these recipients.

**Note** For fax/telex inbound: If you want to reject invalid fax/telex did numbers, do not use an Auto-reject user as shown in the SMTP example above. It will not work. Instead invalid DIDs/sub-addresses must be routed to invalid number as shown in the following rr99 example route sections sample:

```
**INBOUND
FXI:~, ,
FXI:~,invalid, reject Fax with invalid DID
X:TXI~, ,
X:TXI~,invalid, reject telex with invalid sub-address
```

## Directory Synchronization for LDAP

The address book can be synchronized with an external LDAP directory by using TC/SX-LDAP server extension. To ease update, changes are kept in ring buffer in memory. The buffer stores the last changes of the address store.

An unlimited number of external directories (such as TC/SP-LDAP) can use the buffer to retrieve the address book changes. If synchronization gets lost, the address book must be read completely.

This can happen in the following cases:

- TCOSS will be rebooted.
- An entry in the buffer was cyclically erased before it was read by the server extension.

The size of ring buffer is 10 percent of configured address book entries for model/1xx. Models/xx uses a fixed buffer size of two entries.

## User Groups Support

Groups are supported in the TCOSS mail system. There are two views on the mail system: group in-box and group out-box.

Idea of operation: When a new mail entry is created in the mail system, the group information of recipient and originator is taken from the respective user profile and stored in the mail entry. The recipient group information may also change when an existing mail entry is re-directed to an alternative address. If no user profile exists for a recipient or originator (channel number or channel group), the group field will be left empty.

## Numerical Password Encryption

A user's numerical password, which is used by fax commands and voice mail, was visible in an ASCII backup of the user profiles and in the TCOSS system file "Auu99".

The numerical password may now be encrypted by the server when a user profile is read. You must switch on this feature with the following registry setting:

Registry value: "TCOSS\Security\EncryptNumericalPassword" (REG\_DWORD)

0	No action on voice password: passed on unchanged, encrypted or plain text (default value, compatible to previous releases)
1	Encrypt voice password unless already encrypted

If numerical password encryption is enabled in TCOSS, the password is always read in encrypted format from a user profile. This means it is also stored encrypted if the user profile is written back later on.

The `EncryptNumericalPassword` registry value is read during TCOSS start only. If you are using a Tandem Server, the registry value must be set both on the primary and the secondary server. If you are using an ASP model, the registry key can be used for each storage server individually.

Password encryption requires TC/VMail 3.01.01 (from KCS release 7.49.02) or higher.

**Note** After the numerical password encryption has been activated a **release downgrade** of TCOSS or TC/VMail requires a restore of user profiles with unencrypted numerical passwords. It is therefore recommended to back up user profiles before switching on the password encryption.

## Address Book

The addresses of all KCS users and recipients are stored in the Address book. Each user may have its private addresses.

The addresses can be created via directory synchronization or TCfW. Distribution lists can be created by TCfW only. Distribution list may contain receiver from the address book or any other distribution list.

**Note** Distribution lists are restricted to a maximum of 30.000 entries. If you need more than 30.000 recipients you must built sub-lists (list of distribution lists).

There is no way to view, change or delete entries from the address book via DotDot interface, but they can be used as recipients as shown in the examples below:

<b>N=.TOP.+TECH</b>	Access the system recipient store
<b>N=.JIMMY.MAX</b>	Access the recipient "JIMMY" from the private address book of user "MAX"

Refer to the *Client Applications Administrator's Manual* for further information.

## Enhanced Distribution Lists

The functionality of the distribution lists which are kept in the recipient store has been enhanced:

- Distribution lists can hold a virtually unlimited number of elements.
- Distribution lists show the number of entries.
- Members of distribution lists show in how many lists they are used.
- It is possible to get a view of all lists containing a specific element.

The general behavior of the distribution lists of the recipient store has not been changed. A list may hold recipients or other lists as elements. The lists only store links to objects already existing in the recipient store. By deleting a recipient or list it is also removed from all distribution lists which were holding it as an element.

The new functionality requires additional memory to be allocated at system start up time. This release allocates 36 Bytes more per recipient than the previous release; the total amount allocated by the recipient store may be calculated with this formula:

Required memory =  $187.6 * \text{max\_recipients} + 88 * \text{max\_users} + 60$  [Bytes]

The maximum number of recipients and users is set in the system configuration.

The TCOSS startup trace of the recipient store has been extended to show how much of the additional memory allocated for distribution list indices is in use:

Recipient store 5147 recipients (max 7000), 16 users (max 8000), ID strlen 39698 (max 112000), 10 addr (max 24000), addr strlen 63 (max 384000), **5870 list elements (max 14000)**

The new trace information "xxxx list elements (max yyyy)" gives the current total number of direct list elements in all distribution lists and its maximum value, which is twice the maximum number of recipients. A distribution list contained in another list is counted as a single element, that is, the nested lists are not resolved.

The hard coded limit for distribution list elements as twice the maximum number of recipients means that each recipient or list may be contained in 2 lists on average. If this limit has been exceeded in an existing installation, TCOSS start up after the release upgrade will fail with the internal error message "amrecini12". In this case, the maximum number of recipients set in the system configuration has to be increased until the "amrecini12" error message disappears. The trace described above is not written in the startup error case.

## User Address Book Rights

In previous releases no right was defined for access to the private address books of all users. This right is required for an administrator to backup and restore addresses.

The right to all private address books is now granted to users who have the right to access all user profiles. Read and write accesses are handled separately. A user for example, who may read all user profiles, is now allowed to read all addresses in private address books of all users.

## Services

A service defines a community of receivers and senders. KCS has a directory of sending services. Each service has a unique name and defines the address type, prefix and the types of supported documents.

After initial installation of a new system the following services are available.

Service	Description	Document class	Prefix	Address type
FAX	Fax	RTI	F:	Fax
FREE	Free format	RTIB		Free format
FXI	Fax inbound	RTI	FXI:	Fax
SCAN	Scanner	RTI		TOPCALL
TLX	Telex	R	X:	Telex
TOPCALL	KCS users	RTIB		TOPCALL
TTX	Teletex (not supported)	RT	T:	Teletex

The services can be modified with TCfW. Refer to the *Client Applications Administrator's Manual* for more details.

Services can be used within receiver to define the prefix of TOPCALL address.

For example, `. . 1S, R=TEST, N=FAX$66133899` can be used to send document TEST to "F:66133899".

## Resolve Services

All number fields that contains a service are converted into a single number (routing step \*\*SENDMODES in rr99).

Services are always present if the number has been entered via TCSI interface. They can be optionally specified with dot dot commands using the syntax: {Service}\${Number}

The conversion rules depend on the address type assigned to the service. But, in every case the prefix defined for the service is always taken as first part of the converted number without any modifications.

Address type	DotDot interface	TCSI
Free format	{prefix}{number}	{prefix}{number}
TOPCALL	{prefix}{number}	{prefix}{UserID}:' or {prefix}{node}'-{UserID}:' 1)
Fax	{prefix}{number}	{prefix}{number}'-{Answerback} 2)
Telex	{prefix}{number}	{prefix}'/{number}
Teletex (not supported)	{prefix}{number}	{prefix}'={number}
X.400	{prefix}{number}	{prefix}{X.400 address} 3)
Postal	{prefix}{number}	{prefix}

**Note** This second syntax is used for least cost routing via TCP/IP. It is used if a node is specified AND a separation character between node and UserID is configured in the system configuration. This description assumes that minus (-) is used as separation character.

All fields of X.400 addresses must be copied into a single X.400 Address field before posting an envelope.

## Dial by Name

### Configuration of Fields

The recipient fields which are indexed for dial-by-name are selected by the following TCOSS system configuration:

System Configuration line 19, 1st position, dial-by-name flags:

00 (default)	Use program default (selects full name only)
01	Take full name for dial-by-name search
02	Take recipient ID for dial-by-name search

03	Take both full name and recipient ID for dial-by-name search
----	--

### Dial by name search

The configured fields of each recipient in TCOSS are split into words, such as "Larry Nunn" into "Larry" and "Nunn" or "James Tiberius Kirk" into "James", "Tiberius" and "Kirk". Each of the words of a name is transformed into its vanity representation, such as "Larry" -> "52779", "Tiberius" -> "84237487". An index is created automatically.

This gives TCOSS the possibility to search for "James Kirk" and also for "Kirk James Tiberius". The filter string specified in TS\_FULLNAME\_VANITY is always handled as if it had a wildcard at the end, for example "547" (Kir) will return "Kirk" and "Kirmet" but it will not return "Kim".

The vanity representation is based on the ITU standard E.161 Option A (05/95) which specifies the following keypad mapping:

1	2 A B C	3 D E F
4 G H I	5 J K L	6 M N O
7 P Q R S	8 T U V	9 W X Y Z
*	0	#

The standard does not define blanks. Therefore TCOSS allows "0" and "1" as blanks, but it is not necessary to put a blank between 2 names. For example, 527796866 is also recognized as Larry Nunn.

### Restrictions:

- Digits in names are supported, but "0" and "1" are handled as blanks. This means that it is possible to call "Kirk4711" (54754711), but the search will be done on "Kirk47" returning also "Kirk470" and "Kirk4710" and more.
- Only the first 32 characters of the full name field are used for the dial by name search.
- Each configured field is split into words with a maximum of 10 words per field.
- Letters with diacritical signs (accent, dieresis, and more) are handled like the base letter in the dial by name search. The handling is done according to TCOSS code page 0.

## FIS Folder Rights Check

The shortened FIS prefix kept in the user profile entry has been cut from a maximum length of 12 characters to 8 characters. This is the part of the FIS prefix which is used for the server's rights check.

The reduced length of the FIS prefix for rights checks should not cause problems in usual configurations. The file name, which is checked for the FIS prefix, has a maximum length of 12 characters. In the FIS folder the first character of the file name is 'F', followed by the FIS prefix, the remaining characters may be used to create a sub-folder. This means that a FIS prefix of 10 characters would leave only one character in the file name which could be used freely in the sub-folder. So it is quite unlikely that more than 8 characters have been assigned to a FIS prefix.

The FIS prefix is still stored with its full length (32 characters) in the user profile content.

## Queue Age Monitoring

This release supports queue age monitoring. Depending on the client it is possible to enable NT performance counters and set alerts on the queue age in the user profile, the handling is similar to queue length monitoring.

The "queue age" is defined as the time difference between the first message in the queue (the message which is waiting longest) and the current time. It is always specified in seconds unless stated otherwise.

If queues of different priority are monitored together the queue age of the collection is defined as the maximum queue age of all its members.

The age of the fax queue goes up due to the following reasons:

- There are not enough free lines to handle the outgoing traffic.
- Number locking is active and there are several messages for the same recipient being sent on the limited number of lines defined in LN99 (not enough free lines at the recipient's side).

## Chapter 4

# Directories

This section describes directories.

## Contents Directory

The system keeps a directory (called the contents directory or just contents) containing the most important information on the documents and send orders stored on the drive.

The contents of a drive are available to the user in form of a pseudo-document with the reference +INHALT. You can examine and send this pseudo-document as any other document.

### Setup Contents Directory

Lines 1 and 2	Blank lines; only if no headline is configured
Line 3	11-position date and time YYMMDD HHMM
Line 4	Maximum 75-position for column headline
Line 5	Up to last line: <ul style="list-style-type: none"><li>• One line for every document entry: 72 positions</li><li>• One line for every send order: 75 positions</li><li>• Last line: blank line; only if the parameter "TO" is not used in the send command</li></ul>

#### Example (+INHALT)

```
920110 1210
REFERENCE DATE TIME
B:TT0091 104 232-3222330=TCINT 068-001 920104 1553
B:I920104 175 920104 1610
B:TR0026 579 A:TESTDOC1 920105 1749
B:TESTDOC1 47 920105 1321
232-3222330=TCINT 920105 1321 T9
B:TT0090 317 10182 RAI A NL STORED MESSAGE 8 920106 1015
B:I920110 532 920110 0915
920111 0000 009
```

**Note** Teletex is no longer supported.

#### Setup of a document line

Position	Length	Content of field
1	1	A or B depending on drive

Position	Length	Content of field
2	1	Colon
3-12	10	Reference, left justified
13-17	5	Blank or reserve
18-25	8	Length in bytes, right justified must not be used as "end of file" criterion by the computer program, because it is dependent on the internal representation
26	1	Blank
27-57	31	Creator of the document or, for teletexes, 24-character answer back and 7-character document and page number
58	1	Blank
59-69	11	Date and time of writing YYMMDD HHMM
70	1	Blank
71-72	2	Blank or error code, 'SY' during reception

#### Setup of a send order line

Position	Length	Content of field
1	1	blank
2-25	24	teletex: number, =, alphabetical part of the answer back
		telex: 18-position number 6-position answer back
		fax: 24 positions number + answer back
		other: direct selection of channel
26	1	blank
27-57	31	telex, fax: acknowledgment, left justified
		teletex: 24-position answer back and number
		7-position document and page number
58	1	blank
59-69	11	date and time of execution YYMMDD HHMM
70	1	blank
71-72	2	error code according to list ('SY' = active)
73-74	2	first and second character of channel
75	1	type or number of outstanding selection attempts

(0..9) or '+' (send order executed)

## System Status

The system administrates a pseudo-document named "+STATUS" for each drive. The system status shows all kind of errors of a specific channel with an 'X' in the position before the 'W', 'C' or 'Q'. Possible errors are:

- line error (such as telex line not connected)
- user module timeout (possibly sw hang-up in user module)
- user module not loaded (link failure in connection to node)

### Example (+STATUS) of a TCOSS system

```
+++++A:+STATUS
System Status T C O S 10.1.1.0.0.1234 CPU: 007C332D80B2
Time: 09-04-29 / 14:21:30
Drive: ?
  occupied free total          Read Write
Files: 40 4835 4875 disk acc. : 5k 3k
K-Bytes: 22592 37360 59952 CTRL slow : 0 0
Send Com.: 0 3000 3000 disk retry: 0 0

Channel: 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19
Send St.: C - - - - - - - - C C C C C C C C C C

Channel: 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39
Send St.: C C C C C C C C C C C C C C C C C C C C

Channel: 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59
Send St.: - - - - - - - - - - - - - - - - - - -

Channel: 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79
Send St.: - - - - - - - - - - - - - - - - - - -

Channel: 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99
Send St.: - - - - - - - - - - - - - - - - - - -

Channel: A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 B0 B1 B2 B3 B4 B5 B6 B7 B8 B9
Send St.: - - - - - - - - - S S S S S S S S S S

Channel: C0 C1 C2 C3 C4 C5 C6 C7 C8 C9 D0 D1 D2 D3 D4 D5 D6 D7 D8 D9
Send St.: - - - - - - - - - - - - - - - - - - -

Channel: E0 E1 E2 E3 E4 E5 E6 E7 E8 E9 F0 F1 F2 F3 F4 F5 F6 F7 F8 F9
Send St.: - - - - - - - - - - - - - - - - - - -

Channel: G0 G1 G2 G3 G4 G5 G6 G7 G8 G9 H0 H1 H2 H3 H4 H5 H6 H7 H8 H9
Send St.: - - - - - - - - - - - - - - - - - - -

Channel: I0 I1 I2 I3 I4 I5 I6 I7 I8 I9 J0 J1 J2 J3 J4 J5 J6 J7 J8 J9
Send St.: - - - - - - - - - - - - - - - - - - -

Channel: K0 K1 K2 K3 K4 K5 K6 K7 K8 K9 L0 L1 L2 L3 L4 L5 L6 L7 L8 L9
Send St.: - - - - - - - - - - - - - - - - - - -

Channel: M0 M1 M2 M3 M4 M5 M6 M7 M8 M9 N0 N1 N2 N3 N4 N5 N6 N7 N8 N9
Send St.: - - - - - - - - - - - - - - - - - - -

Channel: O0 O1 O2 O3 O4 O5 O6 O7 O8 O9 P0 P1 P2 P3 P4 P5 P6 P7 P8 P9
Send St.: - - - - - - - - - - - - - - - - - - -
```

```

Channel: Q0 Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 R0 R1 R2 R3 R4 R5 R6 R7 R8 R9
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: S0 S1 S2 S3 S4 S5 S6 S7 S8 S9 T0 T1 T2 T3 T4 T5 T6 T7 T8 T9
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: U0 U1 U2 U3 U4 U5 U6 U7 U8 U9 V0 V1 V2 V3 V4 V5 V6 V7 V8 V9
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: W0 W1 W2 W3 W4 W5 W6 W7 W8 W9 X0 X1 X2 X3 X4 X5 X6 X7 X8 X9
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: Y0 Y1 Y2 Y3 Y4 Y5 Y6 Y7 Y8 Y9 Z0 Z1 Z2 Z3 Z4 Z5 Z6 Z7 Z8 Z9
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: 0A 0B 0C 0D 0E 0F 0G 0H 0I 0J 0K 0L 0M 0N 0O 0P 0Q 0R 0S 0T
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: 0U 0V 0W 0X 0Y 0Z 1A 1B 1C 1D 1E 1F 1G 1H 1I 1J 1K 1L 1M 1N
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: 1O 1P 1Q 1R 1S 1T 1U 1V 1W 1X 1Y 1Z 2A 2B 2C 2D 2E 2F 2G 2H
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: 2I 2J 2K 2L 2M 2N 2O 2P 2Q 2R 2S 2T 2U 2V 2W 2X 2Y 2Z 3A 3B
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: 3C 3D 3E 3F 3G 3H 3I 3J 3K 3L 3M 3N 3O 3P 3Q 3R 3S 3T 3U 3V
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: 3W 3X 3Y 3Z 4A 4B 4C 4D 4E 4F 4G 4H 4I 4J 4K 4L 4M 4N 4O 4P
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: 4Q 4R 4S 4T 4U 4V 4W 4X 4Y 4Z 5A 5B 5C 5D 5E 5F 5G 5H 5I 5J
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: 5K 5L 5M 5N 5O 5P 5Q 5R 5S 5T 5U 5V 5W 5X 5Y 5Z 6A 6B 6C 6D
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: 6E 6F 6G 6H 6I 6J 6K 6L 6M 6N 6O 6P 6Q 6R 6S 6T 6U 6V 6W 6X
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: 6Y 6Z 7A 7B 7C 7D 7E 7F 7G 7H 7I 7J 7K 7L 7M 7N 7O 7P 7Q 7R
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: 7S 7T 7U 7V 7W 7X 7Y 7Z 8A 8B 8C 8D 8E 8F 8G 8H 8I 8J 8K 8L
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: 8M 8N 8O 8P 8Q 8R 8S 8T 8U 8V 8W 8X 8Y 8Z 9A 9B 9C 9D 9E 9F
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: 9G 9H 9I 9J 9K 9L 9M 9N 9O 9P 9Q 9R 9S 9T 9U 9V 9W 9X 9Y 9Z
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: AA AB AC AD AE AF AG AH AI AJ AK AL AM AN AO AP AQ AR AS AT
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: AU AV AW AX AY AZ BA BB BC BD BE BF BG BH BI BJ BK BL BM BN
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: BO BP BQ BR BS BT BU BV BW BX BY BZ CA CB CC CD CE CF CG CH
Send St.: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Channel: CI CJ CK CL CM CN CO CP CQ CR CS CT CU CV CW CX CY CZ DA DB

```

```

Send St.: - - - - -

Channel: DC DD DE DF DG DH DI DJ DK DL DM DN DO DP DQ DR DS DT DU DV
Send St.: - - - - -

Channel: DW DX DY DZ EA EB EC ED EE EF EG EH EI EJ EK EL EM EN EO EP
Send St.: - - - - -

Channel: EQ ER ES ET EU EV EW EX EY EZ FA FB FC FD FE FF FG FH FI FJ
Send St.: - - - - -

Channel: FK FL FM FN FO FP FQ FR FS FT FU FV FW FX FY FZ GA GB GC GD
Send St.: - - - - -

Channel: GE GF GG GH GI GJ GK GL GM GN GO GP GQ GR GS GT GU GV GW GX
Send St.: - - - - -

Channel: GY GZ HA HB HC HD HE HF HG HH HI HJ HK HL HM HN HO HP HQ HR
Send St.: - - - - -

Channel: HS HT HU HV HW HX HY HZ IA IB IC ID IE IF IG IH II IJ IK IL
Send St.: - - - - -

Channel: IM IN IO IP IQ IR IS IT IU IV IW IX IY IZ JA JB JC JD JE JF
Send St.: - - - - -

Channel: JG JH JI JJ JK JL JM JN JO JP JQ JR JS JT JU JV JW JX JY JZ
Send St.: - - - - -

Channel: KA KB KC KD KE KF KG KH KI KJ KK KL KM KN KO KP KQ KR KS KT
Send St.: - - - - -

Channel: KU KV KW KX KY KZ LA LB LC LD LE LF LG LH LI LJ LK LL LM LN
Send St.: - - - - -

Channel: LO LP LQ LR LS LT LU LV LW LX LY LZ MA MB MC MD ME MF MG MH
Send St.: - - - - -

Channel: MI MJ MK ML MM MN MO MP MQ MR MS MT MU MV MW MX MY MZ NA NB
Send St.: - - - - -

Channel: NC ND NE NF NG NH NI NJ NK NL NM NN NO NP NQ NR NS NT NU NV
Send St.: - - - - -

Channel: NW NX NY NZ OA OB OC OD OE OF OG OH OI OJ OK OL OM ON OO OP
Send St.: - - - - -

Channel: OQ OR OS OT OU OV OW OX OY OZ
Send St.: - - - - -

```

**Set-up of the status**

Position	length	content of field
<b>1st line</b>		
1 - 29	29	Headline
30 - 53	24	TCOSS version code
54 - 59	6	Note regarding CPU number

Position	length	content of field
60 - 71	12	12 hexadecimal digits serial number. The serial number is read from UN1 chip on TC90/95 connected to the TP80 or printer port. If the number can't be read the field is filled with zeros
<b>2nd line</b>		
1 - 8	8	Note regarding date and time
9 - 27	19	Date and time in the format YY-MM-DD / HH:MM:SS
<b>3rd line</b>		
1 - 8	8	Note regarding drive
9	1	Designation of drive
<b>4th line</b>		
1 - 36	36	Headline
<b>5th line</b>		
1 - 12	12	Note regarding files
13 - 20	8	Number of occupied file entries
21 - 28	8	Number of free file entries
29 - 36	8	Number of all possible file entries
37 - 56	20	Note regarding disk accesses
57 - 60	4	Number of read accesses performed until now (in thousands).
61 - 70	10	Number of write accesses performed until now (in thousands).
<b>6th line</b>		
1 - 12	12	Note regarding storage capacity in K-byte
13 - 20	8	Number of occupied K-bytes
21 - 28	8	Number of free K-bytes
29 - 36	8	Total capacity
37 - 56	20	Note regarding slowed down disk accesses
57 - 60	4	Number of read disk accesses being slowed down because the hard disk could not support the required data transfer speed. This value does not give information about hard disk quality, actually. It just tells us to choose the configuration for normal SCSI speed when there are frequent fails
61 - 70	10	Number of write disk accesses being slowed down
<b>7th line</b>		
1 - 12	12	Note regarding sending orders
13 - 20	8	Number of occupied send command entries
21 - 28	8	Number of free send command entries
29 - 36	8	Number of all possible send command entries

Position	length	content of field
37 - 56	20	Note regarding disk retries
57 - 60	4	Number of retries because of disk read errors. This error can be caused by bad hard disk sectors or other device failures The disk is to be changed when there are frequent errors
61 - 70	10	Number of retries because of disk write errors
<b>8th line</b>		
1	1	Space
<b>9th line</b>		
1-58	46	Headline for channels 0 - 19
<b>10th line</b>		
1-10	10	Note regarding send status for channel 0 - 19
11-70	60	Channel state for each channel: <ul style="list-style-type: none"> <li>• W : channel state after ..WAIT</li> <li>• C : channel state after ..CONT</li> <li>• Q : channel state is 'query'</li> <li>• - channel is not installed</li> <li>• XC : telex channel 'out of order'</li> <li>• S : Client Server channel</li> </ul>
<b>11th line</b>	1	1 : Space
<b>12th line</b>	like line 9 but for channels 20 - 39	
<b>13th line</b>	like line 10 but for channels 20 - 39	
<b>14th line</b>	space	
...		
<b>158th line</b>	like line 9 but for channels OQ -OZ	
<b>159th line</b>	like line 10 but for channels OQ -OZ	

For tandem operation the values disk access, CTRL slow and disk retry are additionally split up to show both logical drive 0 and logical drive 1. This line then appears as follows:

```
...
Send Com.: 1 2999 3000 disk fails: 0/0 0/0
...
```

The values preceding the slash ("/") stand for log drive 0, other one for drive 1.

**Note** The full number of channels is supported by TCfW in KCS Client Applications 5.27.xx or higher only.

## Log Files

A log file is a sequential file in which one or more channels enter its or their sending or receiving activities. Log files are kept on a day to day basis. A separate document is automatically created for each day on which a corresponding activity is carried out.

If desired, the system can be configured to create an automatic non-erasable send command upon the generation of the log file. This send command is provided with a time pre-set for the beginning of the next day. Because of the non-erasable send command, it is also not possible to erase the log file until the command has been executed.

Log files with a figure as first digit in the reference will be deleted automatically after they have been sent successfully (as any other documents with this kind of reference).

It can be set by configuration whether log files should be erased cyclically or not. A number of days can be set, for which a certain type of log file should be kept.

The cyclical erasure occurs each time a new log file is created. It works only if at least one new log file of a certain type is created within any 10-days interval.

You can handle 36 different log files per drive (and per day). The log files have the following names:

```
0yyymmdd
  . . . . .
  . . . . .
 9yyymmdd
Ayyymmdd
Byyyymmdd
  . . . . .
  . . . . .
Zyyymmdd
```

### Where

0 - 9, A - Z = log file reference 0-9, A-Z (can be configured)

yyymmdd = year month day

With log file keeping, every channel can be configured in sending and receiving directions. For every channel and for every direction it is possible to indicate whether a log file should be kept and in which of the possible log files (0-Z) and on which drive the entries shall be made.

## Setup of the Log File

A log file consists of a head and the individual log file entries. A log file entry describes a sending or receiving activity and consists of one, two or three lines.

### Setup of Line 1

It is now possible to select by configuration whether the 1st line of the log file header shows the date with 2 or 4 digits. Depending on the configuration in the system configuration line 18, 1st position.

Position	Length	Content of field
1	1	blank
2 - 9	8	date in the format yy-mm-dd
10	1	blank
11 - 34	24	headline of log file
	1	1 : blank
2 - 11	10	date in the format yyyy-mm-dd
12	1	blank
13 - 36	24	headline of log file

Example 1: 1st line of log file 'A', system configuration line 18, 1st position = 00:

```
05-07-22 ===== JOURNAL A =====
```

Example 2: 1st line of log file 'A', system configuration line 18, 1st position = 01:

```
2005-07-22 ===== JOURNAL A =====
```

### Setup of Line 2

Position	Length	Content of field
1	1	blank
2 - 65	64	headlines of columns

### Setup of Line 3

Position	Length	Content of field
1	1	blank

### Setup of Line 4 to Last Line

Position	Length	Content of field
		Log file entries

## Setup of a Log File Entry

The first line of the log file entry is always present. Up to 6 additional lines may be configured by adding up the corresponding switches. Refer to the *TCOSS Configuration Manual* for more details.

### Setup of Line 1 (valid for all formats)

Position	Length	Content of field
1-10 or 12	10 or 12	reference of document
11 or 13	1	blank

Position	Length	Content of field
12 or 14 - 35	24 or 22	identifier of the foreign terminal or selection number in the contents, if no identifier (answer back) has been received from the distant terminal
36 - 42	7	telex: current no., right justify teletex, fax: doc. no., "-", page no
43	1	blank
44 - 49	6	date in the format YYMMDD
50	1	blank
51 - 54	4	time in the format HHMM
55	1	blank
56 - 60	5	fee (includes fee of possible prior unsuccessful send attempts), only with transmissions configured to fee accounting, if not, blank
61	1	blank
62 - 63	2	channel number or channel group as in the contents
64 - 65	2	error code for teletex as in contents
66	1	blank
67	1	kind of entry (direction):
blank:		outgoing document
+:		incoming document

### Setup of Line 2

Position	Length	Content of field
1	1	blank
2 - 25	24	local answer back
26 - 34	9	blanks
35 - 42	8	number of transmitted 64-byte blocks
43	1	blank
44 - 49	6	duration of connection in seconds
50 - 61	12	blanks
62 - 63	2	channel number (shows used channel number instead of channel group)

**Note:** The number of transmitted 64-byte blocks is always zero for telex channels.

### Setup of Line 3

Position	Length	Content of field
1	1	blank
2 - 25	24	author of document
26	1	blank
27 - 66	40	normalized number

#### Setup of Line 4 (called 2nd line alternative format in KCS 7.02.02)

Position	Length	Content of field
1	1	blank
2 - 5	4	user id
6	1	blank
7 - 16	10	cost center
17	1	blank
18 - 145	128	originator

#### Setup of Line 5 (called 3rd line alternative format in KCS 7.02.02)

Position	Length	Content of field
1	1	blank
2 - 171	170	notification parameters

#### Setup of Line 6

Position	Length	Content of field
1	1	blank
2-32	32	recipient info (shown as To: in TCfW out-box)
33	1	blank
34-73	40	local number (shown ...To continued in TCfW out box)

**Note** It is possible to configure whether the reference in the log file will be stored with a length of 8 or 10 characters maximum (standard configuration is 8 characters).

**Tip** For details of normalized numbers refer to separate chapter.

## Special Notes on Incoming Log Files

The following fields are taken from the first send order to the received document.

Line type	Fields
Third line standard	normalized number
Fourth line	recipient info and local number

**Note**

1. If there is both an inbound send order and automatically copy of the received message (config line 27) only the inbound send order will be considered.
2. If the abbreviation directory (NN99) is used only the first send order is considered.
3. If there is no automatic reception send order, the fields shown above are set to blanks.
4. The connection duration shows the time between ..LOGON and ..LOGOFF commands. When receiving a fax the following delays are not part of the connection duration:
  - a. Ringing time (typically 7s with analogue a/b fax, 1s with E&M, 0s with ISDN)
  - b. DID, DDI, DTMF reception time (typically up to 10s)
  - c. Initial fax identification phase (until reception of Digital Command Signal (DCS) from the transmitter. (typically 8s)

**Examples****Incoming journal - config value 11**

```

+++++A:I050808
05-08-08 ===== JOURNAL I =====
REFERENCE IDENTIFIER      DNR-SNR DATE TIME C EC
A:TF6186 +44(0)753-552225 002 050808 1103 06 +
                               55 06
.FX13                        PK:(Erich Polak)
A:TF6187 +43166133800      001 050808 1215 08 +
                               30 08
FXI$99                       Fox Mulder

```

**Outgoing journal - config value 03**

```

05-08-08 ===== JOURNAL J =====
REFERENCE ANSWERBACK      DNR-PNR DATE TIME C EC
0:0000012301 +43-1-66133-21 008-001 050808 1411 2 06
FAX A+B / send + receive      16      19      06
Test with Journals 06:<F>66133899-
A:TEST4 66133899              050808 1412 0 F XJ
FAX A+B / send + receive      0        0      07
                               F:66133899
A:TEST4      +43-1-66133-21 009-001 050808 1414 2 F
FAX A+B / send + receive      16      19      06
                               F:66133899

```

**Outgoing journal - config value 0F**

```

05-08-08 ===== JOURNAL J =====
REFERENCE ANSWERBACK      DNR-PNR DATE TIME C EC
0:0000015373 +43-1-66133-21      015-001 050808 1453 2 06
FAX A+B / send + receive      16      19      06
Journal Test with TOPCAL 06:<F>66133899-
DEVELOP      TCTECH:
050808145359015 2 Journal Test with TOPCAL0 050808145306

```

```

2+43-1-66133-21      015-0012000016      0000019A
A:TEST1      +43-1-66133-21      016-001 050808 1455      2 F
FAX A+B / send + receive      16      19      06
                        F:66133899
      T      00:+Y
050808145515016      2      0 050808145506
2+43-1-66133-21      016-0011000016      0000019A

```

### Outgoing journal - config value 0C

```

05-08-08 ===== JOURNAL J =====
REFERENCE ANSWERBACK      DNR-PNR DATE      TIME      C EC
0:0000014349 +43-1-66133-21 013-001 050808 1437 2 06
      DEVELOP      TCTECH:
050808143727013      2      TCFW Test with TOPCALL 0 050808143706 2+43-1-66133-21
013-0012000016 0000019A
A:TEST1      +43-1-66133-21 014-001 050808 1442 3 F
      T      00:+Y
050808144228014      2      0 050808144206      3+43-1-66133-21
014-0011000016      0000031A

```

The directory of abbreviated numbers is a normal document with the reference +MAIL5V/ANN99.

## Abbreviated Number Directory NN99

The directory of abbreviated numbers is a normal text document with the reference +MAIL5V/ANN99. It is created with TCFW and stored within the folder +MAIL5V. Important is that the drive specification ANN99 or BNN99 must be specified.

All directories have the same setup and contain a series of allocation pairs:

### Abbreviated number of receiver information

Setup of a NN99 line: kkkkkkkk,nnnnnnnn

Where

kkkkkkkk is symbolic name, = abbreviated number, 1-8 characters, digits or letters

nnnnnnnn denotes valid receivers; channel + selection number, (abbreviated number is not allowed; alternative numbers are allowed)

Lines with syntax errors are ignored. The number of lines is not limited. But, take care that the abbreviation directory is read completely each time an abbreviation number has to be resolved. This may cause performance problems - especially if fax inbound via NN99 is used with many users.

An abbreviated number can occur in more than one line. When this happens it defines more than one receiver. Multiple distributions of incoming documents are possible.

It is recommended to use only capital letters for abbreviated numbers, because of the conversion of lower case to upper case letters when using '..' - commands.

Whenever you store a NN99 file with a TCFW user, be sure that no coversheet is defined and that the leading A4H line has been removed and that you use folder +MAIL5V and as filename ANN99!

**Example of a NN99 file**

ERROR1,ERRINFO:	ERROR1 messages are sent to recipient ERRINFO
ERROR4,USERxx:	ERROR4 messages are sent to USERxx
ERROR5,F:123/G:123/H:123	ERROR5 with alternative numbers functionality
JOUR,TCLSMQI:user@domain	JOUR generates a send order to SMTP link
JOUR,SMTP\$user@domain	Same send order but Service instead of prefix
A\$GRP,SMTP\$USERD@DOMAIN	Special, described later
A\$GRP,SMS\$0676123456789	Special, described later
A\$GRP,TOPCALL\$USERD:	Special, described later
D\$SUPP,TOPCALL\$USERA:	Special, described later
D\$SUPP,TOPCALL\$USERB:	Special, described later
D\$SUPP,TOPCALL\$USERC:	Special, described later
FX555,POP3\$USERX:	Special, described later
FX666,POP3\$USERY:	Special, described later
TXIN,USERA: TXIN,USERB: TXIN,USERC:	TXIN generates a multiple send order to three recipients
PRINTER,P:BHF093	PRINTER generates a send order to channel group P with switches
FXIN,DIST:	FXIN generates a send order to user DIST
FX,DIST:	FX generates a send order to user DIST
*,*	All following entries are automatically created by TCfW and should not be changed.
FX123,USERA:	Test User A
FX456,USERB:	Test User C
FX789,USERC:	Test User C
FX159,USERD:	Test User D

## Abbreviated Number Directory with TCFW Services

In the previous example the following abbreviated numbers have been defined:

```
A$GRP,SMTP$USERD@DOMAIN
A$GRP,SMS$0676123456789
A$GRP,TOPCALL$USERD:
```

This is a special correlation between abbreviated number directory, KCS services and user events which have to create multiple send orders. It requires a service .A (note leading dot) to be defined within KCS service store. See the following image.

<b>Service</b>	<input type="text" value=".A"/>	<b>Type</b>	<input type="text" value="Free Format"/>
<b>Description</b>	<input type="text" value="NN99 short number"/>	<b>Prefix</b>	<input type="text"/>
<input checked="" type="checkbox"/> Image	<input checked="" type="checkbox"/> Restricted Text	<input type="button" value="Delete"/> <input type="button" value="Save"/>	
<input checked="" type="checkbox"/> Text	<input checked="" type="checkbox"/> Binary		
<input type="checkbox"/> OCR Conversion			

It can be used as event defined within a user profile on KCS. This event will look as displayed in the image.

<b>Event:</b>	<input type="text" value="In"/>	<b>Service</b>	<input type="text" value=".A"/>
<b>Free address:</b>	<input type="text" value="GRP"/>		<input checked="" type="checkbox"/> Active <input checked="" type="checkbox"/> Archive entry <input checked="" type="checkbox"/> Auto termination

If a message arrives at this user's inbox, the event is triggered and according to the NN99, three send orders are created.

**Note** The short code in NN99 is limited to 8 characters, so "service" and "free address" together can have a maximum length of 7 characters, "service" can be an empty string.

A free address from an envelope's header or an event list is transformed into the string xxx = "service name" + "\$" + "free address string" and put into the number parameter field (where it is entered directly with ..S,N=xxx). The check for NN99 short numbers is done if xxx starts with a dot. Then the remainder of the string (after the dot) is compared to all short codes in NN99. When a match is found in the NN99 file, the number parameter is replaced with the number information from the NN99 line (part after the comma) and put through the routing process. Multiple send orders are generated if the same short code appears more than once in NN99.

**Note** the "free address string" is case sensitive, so do not mix lower and capital characters.

## Abbreviated Number Directory with TC/LINK-SM

In the previous example the following abbreviated numbers have been defined:

```
D$SUPP, TOPCALL$USERA:
D$SUPP, TOPCALL$USERB:
D$SUPP, TOPCALL$USERC:
```

This can be used additionally from an e-mail client, such as outlook 98 or outlook 2000, to send to a "distribution list" on KCS - a feature which is not available for the TCLINK's (addressing to distribution lists is not possible). It requires a service .D (note leading dot) to be defined within KCS service store. See the following image.

The send order from the mail client, such as outlook 2000, will be created as displayed in the following image.

After the message has been sent to KCS, three send orders are created automatically. The usage is more or less the same as in the first example; it just shows an alternative usage of that functionality.

**Note** In this case also, the send order is case-sensitive.

## Automatically Created Entry Section Within NN99

The section after the string \*,\* is a section within the NN99 file which is created automatically from TCFW. Please note that whenever you manually change or add entries within that section, these changes are all lost the next time it is updated from TCFW.

For this purpose, the FAX channel which is used for reception has to be configured with the used prefix, in our case .FX is used. The FAX configuration might look like below:

```
' .FX + , 235
:03 ,236
```

Within TCFW, the user must have a FAX address which is either marked as "active" or "inactive" and the number must start with a **hyphen**. See the following image.

Active	No address no.	Service	Number:
X	1	INT	USER A,
	2	FAX	-123,

After you save this FAX address and close the user profiles within TCFW, a question appears whether TCFW should update the KCS system files. Confirm this with yes, and check afterwards the file NN99. You'll find a new entry at the end within the automatically created section of the NN99 as below

```
FX123,USER A:
```

## Distribution Directory VV99

Incoming Text-documents can be scanned for keywords allocated to specific receivers. This allows incoming documents to be automatically distributed. The number of document lines to be scanned can be configured between 0 and 254. Additionally there is the option to scan the whole document for keywords.

The distribution directory is a normal text document with the reference +MAIL5V/AVV99. It is created with TCFW and stored within the folder +MAIL5V. Important is that the drive specification AVV99 or BVV99 must be specified.

Whenever you store a VV99 file with a TCFW user, be sure that no coversheet is defined and that the leading A4H line has been removed and that you use folder +MAIL5V and as filename AVV99!

The distribution directory contains the keywords and their receivers. A keyword and a receiver form a pair and occupy a line. (This pair is called distribution entry). The distribution directory is divided into three sections. The sections are separated by the control lines \*\*LINES and \*\*MULTIPLE. The order of the sections must not be changed.

### Overview of distribution directory layout:

```
default receiver entry
single distribution entries
**LINES
line filter keywords
**MULTIPLE multiple distribution entries
```

### Single distribution

The single distribution section is always the first section in the distribution directory after the default receiver, which occupies the first line. The line filter and multiple distribution sections are optional. A distribution directory without control lines consists only of the default receiver entry and the single distribution section.

The single distribution section generates only one send command, if any. The incoming document is scanned for keywords in the order they are specified in the directory VV99. The first matching keyword results in a send command and the search for further keywords is stopped.

### Multiple distribution

The multiple distribution section generates multiple send commands. Any matching advanced distribution entry generates a send command. Any matching normal distribution entry generates a send command, if the receiver specified in VV99 is different from any other already activated (including the receiver of the single distribution section).

If a distribution entry matches once in a line, there is no search for further matches of this entry in the same line. This is only a restriction for advanced distribution entries.

### Line filter

The line filter limits the scope of the multiple distribution. Only lines where at least one of the keywords is found are passed on to the multiple distribution search. (The single distribution section is independent

of the line filter) The line filter section is optional. If it is missing there is no restriction for the multiple distribution search.

If no matching keyword can be found in both single and multiple distribution sections, the default receiver specified in the first line of VV99 is activated. The default receiver may be empty (only one comma as first line of VV99). In this case no default distribution occurs. An automatically created empty back-reception document will not be distributed to the default receiver.

**Note:** The distribution directory may contain up to 2000 lines. Lines with syntax errors are ignored. Any lines over the 2000th line are also ignored. A maximum of 30 send commands are generated by the automatic distribution

**Setup of a normal distribution entry:**

```
ssssssssssss,eeeeeeee
```

Where

ssssssssss	Keyword, 1-16 characters, special characters (except comma) allowed, small letters are converted to capital letters during comparison. Wild cards ('?') can be used, the positions with question-marks do not influence the comparison
,	Defined as separation character between keyword and receiver
eeee	Receiver, 1-12 characters, also short number are allowed

**Setup of an advanced distribution entry:**

```
ssssssssss\dd,aaaa\bbbb
```

Where

ssssssssss	Basic search keyword (for the "\dd" sequence itself no searching will be done)
\	Defined as control character. It informs about a specific character sequence which occurs immediately behind the found basic search keyword (ssssssssss) in a document line. This character sequence is copied up to one of the defined delimiter characters (see definition of delimiter characters below) are found. This string is now placed to the position in the receiver part of the defined VV99 line which is also marked with a "\" character. If there is no control character in the receiver part of the VV99 defined, no character sequence from the document will be copied. In this case the whole sequence "ssssssssss\dd" is being searched for occurrence in the document.
dd	This character sequence is defined as a maximum of two delimiter characters. As described above, the character sequence from the document line will be copied till one of these defined delimiter characters are found in the document. If none of these delimiter characters are found, the character sequence is copied till the end of the document line is reached! If no delimiter characters are defined in the VV99, the character sequence from the document line is copied up to the first occurrence of a space character - 20HEX - or till the end of the document line is reached!
,	Defined as separation character between keyword and receiver
aaaa	Defined as free character sequence (can be left empty or defined as channel number or channel group or others)

\	Defined as a control character. It specifies the position in the receiver part of the VV99 line in which the character sequence from the document should be copied in. The character "\" itself is not part of the document
bbbb	Defined as free character sequence (can be left empty or defined as special number parameters or others)

**Setup of a line filter keyword:**

ssssssssssssssss

Where

ssssssssss	Keyword, 1-16 characters, special characters (except comma) allowed
------------	---

**Setup of the default receiver entry:**

,eeeeeeeeee

Where

,	Comma
eeeeee	Receiver, 0-12 characters, also short number are allowed

**Example of a VV99 file**

,	(default entry, all documents with no match found are sent to this receiver)
---	--

31	\,F:0031\ (advanced distribution entry)
32	\,F:0032\ (advanced distribution entry)
33	\,F:0033\ (advanced distribution entry)

TEXT,.PRINTER	(search for string "TEXT" and generate send order to abbr. number .PRINTER)
---------------	---

<b>**LINES</b>	(start of line filter section)
TO:	(: is not required)
AN:	
CC:	

<b>**MULTIPLE</b>	(start of multiple distribution section)
-------------------	--

USERA,USERA:

USERA,USERA:

USERB,USERB:

USERC,USERC:

**CAUTION:** While using in the VV99 directory lines with the "\" character, take care for using the properly configured asynchronous module. The standard German configuration for the asynchronous module performs the input conversion of the character "\" (5C HEX) into 99 HEX and the output conversion from 99 HEX back to 5C HEX. As a result, examining the VV99 directory shows the correct control character "\" but actually it will be converted into code 99 HEX. In this case all lines in the VV99 directory that contain the control character "\" don't perform their expected function!

#### Protections of distribution send commands against power failure:

All send commands from multiple distribution entries are executed immediately (stored permanently on disk) when the line with the matching keyword is received. The send command resulting from the single distribution section and the send command for the default receiver are stored after the number of lines configured for the search has been received.

## Multiple Distribution of an Incoming Telex

See below an example of an incoming telex message:

```
050808 2049
#
111388 TCINT A
111111 TEST
000810/2049 NR. 0060

FROM: TEST USER
TO: USERA
TO: USERB
CC: USERC

THIS TELEX MESSAGE SHOULD BE DISTRIBUTED TO THREE USERS
ACCORDING TO THE VV99. THEN IT IS WORKING PROPERLY

THANK YOU VERY MUTCH AND REGARDS:

TEST USER
```

It contains two TO: lines and one CC: line. As both TO: and CC: entries are part of the line filter section, the following strings are passed to the multiple distribution section. Afterwards three send commands to three independent users will be created.

## Mailbox

A mailbox can be created with the help of channel designations which are not assigned to a physical channel. It is recommended to use the designations 'A0, A1..A3, B0,.....Z3' only, because they can be assigned neither to a physical channel nor to a channel group (see chapter 'Receiver').

Received (and back-received) documents can be routed automatically to a mailbox by using the distribution and the abbreviated numbers directory.

The mailbox can be checked with a query command whether it contains any messages.

**Example:** (valid for use with KCS PC software)

VV99:	NN99:
-------	-------

Miller,.MI	MI,A0:Miller
Bush,.BU	BU,M3:

A received document containing the keyword 'Miller' will be routed automatically to mailbox A0.

The mailbox can be checked either by using

```
..Q,N=.MI
```

or by using

```
..Q,N=A0:
```

If the mailbox is empty, the pseudo-document ++EMPTY will be received.

## Number Series Directory tt99

The directory of number series contains 26 lines. Each line channel (FAX, TELEX, and TTX) uses this directory to get information about the file number which is defined within that directory. Every line contains all parameters of a number series.

Furthermore it is used to define how many documents of as specific number series, such as F TCOSS should store before the cyclical deleting starts.

The number series directory is set in the system folder +MAIL5V/Att99 and can be accessed directly by the ..PRESET command or more comfortable via TCFW

The number series directory is a normal text document with the reference +MAIL5V/Att99. It is created automatically during TCOSS start up as it is a system file. Important is that the drive specification Att99 or Btt99 must be specified and that the file name contains lower letter characters.

### Setup of a line within tt99

```
$ nnnnnn aaaaaa eeeee zzzzzz
```

Where

		Format
<b>\$</b>	Number series, any letter from A to Z	
<b>nnnnnn</b>	Current number (last used number) also called ORDER	Right justified, leading zeros up to the length of eeeee
<b>aaaaaa</b>	Lowest possible number also called FROM	Right justified, leading zeros up to the length of eeeee
<b>eeeeee</b>	Highest possible number also called TO	Right justified, leading blanks, determines the length of nnnnnn and aaaaaa
<b>zzzzzz</b>	Number of files for cyclic erasure also called CYCLE	Right justified, leading blanks

Use TCFW or the "..PRESET" command to change or reset all the parameters of a given number series.

**Note** The drive for received/back received documents must be configured for all channels using this number series on the same drive.

**Restriction:** One number series must not be used for documents stored on both drives. For example, the following configuration is not allowed:

Number series 'R' for received documents of channel '07:' stored on drive 'A:'.

Number series 'R' for received documents of channel '08:' stored on drive 'B:'.

If the KCS system is configured in this way, the cyclical erasure does not work and it results in a disk capacity overrun.

**Example of a tt99 file**

```
A 59665 00000 99999 0200
B 5568 0000 9999 1000
C 0354 0000 9999 0100
D 0659 0000 9999 0100
.....
X 0091 0000 9999 0010
Y 0000 0000 9999 0010
Z 0000 0000 9999 0010
```

Keep the following rules in mind whenever changes are necessary:

- **FROM** must be less-than **TO** ( $F < TO$ )
- **FROM** must be less than or equal to **ORDER** ( $F \leq O$ )
- **ORDER** must be less-than or equal to **TO** ( $O \leq TO$ )
- **CYCLE** must be less-than or equal to **TO** minus **FROM** ( $CY \leq T-F$ )

Correlation between parameters and TCFW

- FROM correlates to the Start value
- TO correlates to the End value
- ORDER correlates to the Current value
- CYCLE correlates to the Keep always value

Series:	Start value:	End value:	Current value:	Keep always:
Z	0000	9999	0000	0020

**Tip** Even though stated above that the CYCLE (Keep always) value might be set equal to the TO (End) value do not set it to equal value as it might lead to Problems specially with back received documents. For a 4-digit number series define maximum 8000 to 9000 as "Keep always" value. If this is not enough, use a 5-digit number series (such as "Start value" 00000, "End value" 99999, "Keep always" 30000).

**Background:** TCOSS handles the cyclical erasure in the following way: The document reference, which will be deleted (because of the keep always setting), is defined at the beginning of the creation of a back reception document - but it will be deleted at the end of the back reception. If now, for example, a very

long (FAX) message is sent, while on other channels (using the same number series) a large number of short (FAX) messages are sent, it might happen, that the cyclical deletion at the end of the first transmitted (large) message is done with a new created back reception document (one of the short messages sent later). To avoid such a situation, the keep always value must be a smaller than the end value. The same situation applies for reception as well.

```
..P,NRS=Z,F=0010,TO=8888,O=0100,CY=0040
```

Changes the number series Z from the values displayed above, to following values:

#### Original setting

Series:	Start value:	End value:	Current value:	Keep always:
Z	0000	9999	0000	0010

#### New setting

Series:	Start value:	End value:	Current value:	Keep always:
Z	0010	8888	0100	0040

## System Account Policy Directory +MAIL5V/App99

The system account policy directory is a normal text document in the system folder +MAIL5V with the reference App99. It is created during initial installation of TCOSS with default entries. It can be edited manually with TCfW or TC/Web. Whenever you store it, make sure that no coversheet is defined, the leading A4H line is removed, use folder +MAIL5V and filename as App99. The system account policy directory is loaded at TCOSS system start up and also when it is modified or deleted.

#### Example of system file "+MAIL5V/App99" (default after installation)

```
Password expires after 0 days
Account lockout after 0 bad logon attempts
Minimum password length 0 characters
Minimum 0 lower-case letters (a..z)
Minimum 0 upper-case letters (A..Z)
Minimum 0 numerical digits (0..9)
Minimum 0 other characters
History holds last 0 passwords
```

The file App99 contains control lines for specific policies. If policy is used, the corresponding missing control lines should be entered as a separate lines without leading spaces. Lines with an apostrophe (') as first character are comment lines only. Control lines can be arranged in any order. Each control line contains a value that can be changed in order to activate any restriction. The supported value range and a link to further details is displayed in the following table.

#### Value range

Control line, where 'n' is the configuration value	Min. value	Max. value	Description
Password expires after n days	0	32767	<a href="#">Password Expiry</a>
Account lockout after n bad logon attempts	0	32767	<a href="#">Account Lockout</a>
Minimum password length n characters	0	15	<a href="#">Minimum Password Length</a>
Minimum n lower-case letters (a..z)	0	15	<a href="#">Password Complexity</a>
Minimum n upper-case letters (A..Z)	0	15	
Minimum n numerical digits (0..9)	0	15	
Minimum n other characters	0	15	
History holds last n passwords	0	32767	<a href="#">Password Complexity</a>

- If a line is missing or its value is zero, the corresponding policy is ignored. For example, "Password expires after 0 days" means that the password never expires.
- If a specified value is outside the supported range, it will be substituted with the nearest supported value

## Password Expiry

The maximum password age is set globally in the system file "+MAIL5V/App99". Additionally, there is a flag "password never expires", which may be set for individual users in the user profile. If a password is expired, login is only possible if the password is changed at the same time.

It is also possible to create a new user profile (or store an existing profile) with its password already expired. In this case, the user has to change the password with the first login. The "change password at next logon" feature is independent from the global maximum password age setting and applies also to the users which have the "password never expires" flag set in their user profile.

The password validity period always ends at midnight and includes the day of the password change as full day.

**Example:** If the system setting is "Password expires after 5 days" and you change your password on Monday, password will be valid on Friday, but is already expired on Saturday.

No password expiry check is done for users whose password is not checked at all because they specify a LAN user ID and have the "auto login enable" right set.

If the password expiry feature is activated later, the password validity period will start with the day of the last password change.

If the password will expiry within the next 14 days, the user gets the following message box after login, so that he is alerted to change its password.



## Account Lockout

An account gets locked if a certain number of consecutive logon attempts with wrong passwords are made. A successful logon resets the counter of bad logon attempts (which did not reach its trigger value in this case). It does not matter how much time passes between the logon attempts, the counter is not cleared with a timeout.

Locking of an account will be reported by a system error message (with error level 2 = warning) and an event log entry. The "account locked" flag will be stored permanently in the user profile.

After an account has been locked, logon is no longer possible (even with the correct password). The account lock may be reset manually by a system administrator. The account lock will also be reset if the password of the user is changed by an administrator.

It is possible for a system administrator to explicitly lock a user's account. No system error message and no event log entry are generated in this case.

Setting or resetting the account lock requires the "write user profiles" right.

The only parameter for the account lockout feature, the number of bad logon attempts, is set globally in the system file "+MAIL5V/App99" (see above). Switching off the account lockout feature will not unlock already locked accounts.

**Restriction:** The account lockout feature is currently not supported by TC/Archive.

### Example of system error message

```
TOPCALL System Error Message
***** Internal Problem Report *****
Date: 03-08-14 Time: 07:12
B1: TAM-account of user "PM" has been locked after 3 bad logon
    attempts
```

### Example of an event log entry



### Client Logon Retries

The automatic client logon retries should be taken into account when setting the maximum number of bad logon attempts in the system account policy file "+MAIL5V/App99".

### Processes Triggering Account Lockout

The problem that processes using a fixed password may eventually trigger the account logout because of the logon retries has been solved by the following improvement:

A global list holding the last 10 wrong passwords is kept in memory. If the same wrong password is tried again with the same user name, the bad attempts count is not incremented.

## Minimum Password Length

The minimum password length feature ensures that short passwords are rejected by the server. The minimum password length is set globally in the system file "+MAIL5V/App99".

The checks is only done when the password is changed and a new password is entered. It does not apply to existing passwords. It is also not active if passwords are changed by a user profile restore (as the backup only contains the encrypted password which does not provide information on the actual length and content of the plain text password.)

## Password Complexity

Whenever the minimum password length is checked, it is possible define how many characters from a specific set of characters must be part of the password. An example is shown below:

```
Minimum 0 lower-case letters (a..z)
Minimum 1 upper-case letters (A..Z)
Minimum 1 numerical digits (0..9)
Minimum 2 other characters
```

The above example configuration enforces that new passwords must have at least one upper-case letter, one digit and two other characters. Note that letters are restricted to standard US letters as indicated in the brackets. The rule "Minimum .. other characters" also counts blanks, vowel mutations (for example, 'ä') and punctuation characters (comma, point, and more.)

**Note**

- Letters are restricted to standard US-ASCII letters as indicated in the brackets.
- The rule "Minimum .. other characters" also counts blanks, vowel mutations (for example, 'ä') and punctuation characters (comma, point, and more.)
- If the sum of all four complexity values (for example, 4 in the example above) exceeds the minimum password length, the minimum password is automatically increased.
- The password must not start with hash ("#").
- If you want to use the new checks after update from KCS 10.0.1 (or lower), the new lines must be added manually with TCFW or TC/Web.
- The password complexity checks are ignored if an old client (before KCS 10.1) is used.

## Password History

The password history feature ensures that a new password of a user is different from a number of previous passwords which were valid for this account.

The only parameter for the password history feature, the number of passwords in the history list, is set globally in the system file "+MAIL5V/App99" (see separate chapter).

The password history is stored internally in the user profile. It can't be accessed (read or written) by any client. The password history does not show up in a user profile backup and can't be restored. Deleting a user profile clears the user's password history.

Restoring user profiles with an outdated password may fail because of the password history check. In this case one could delete the user profile before restoring it, or switch the password history check temporarily off by editing the system file "+MAIL5V/App99".

## User Profile Directory uu99

The user profile directory is used to define unique settings which belong to a specific user account on KCS. It might get its definitions from a TCFW user profile section "manual FAX" or it can hold a list of manually created entries, both described later.

The main purpose of the user profile directory is a centralized file which holds the definition of all users belonging to a KCS system. Various processes like "scan via FAX, "mailbox commands" or "FAX server commands" directly access this file to get the proper settings of the user account which uses these processes.

The user profile is set in the system folder +MAIL5V/Auu99 and can be accessed directly by the ..USER command. By using user ID and password protection unauthorized users have no access to your KCS system

By using the command ..USER, a record can be searched for. A sequential search is performed until a matching record is found. In case the entered record values are correct you will receive a positive acknowledgment enabling you to continue working.

The user profile directory is a normal text document with the reference +MAIL5V/Auu99. It is created automatically via TCFW and stored within the folder +MAIL5V or it is created manually with the TCFW text editor. Important is that the drive specification Auu99 or Buu99 must be specified and that the file name contains lower letter characters.

Whenever you store a uu99 file manually with a TCFW user, be sure that no coversheet is defined and that the leading A4H line has been removed and that you use folder +MAIL5V and as filename Auu99.

### Setup of a uu99 entry

```
userid\password\username\termid\originator-address\default-address\prefix\low-
tariff-time\user-channel-group\reference-of-files\cost-center\ASP-customer-information
\comments
```

**Note** Bold printed fields are mandatory entries

<b>userid</b>	Specifies the user ID. Is used in the send command of the fax server functions as cost center and as merge value for the active acknowledgment. If no user ID is specified everyone can route a fax to the originator address (if the appropriate access level is configured). In this way sending to registered users can be enabled. Example:	
	userid:	777
	fax server command:	3 8635321
	cost center field:	777
	active acknowledgment:	777
<b>password</b>	Specifies the password. The password must match with the entered password of the USER command. Example:	
	userid:	777
	password:	666
	user command:	..U,RC=+777111
	acknowledgment:	319 no record
	user command:	..U,RC=+777666
	acknowledgment:	105 777/666\...
<b>username</b>	Specifies the name of the user. This field is a comment only and is used to find user definitions in an easy way. Example:	
	user name :	JOHN:
<b>termid</b>	Specifies the terminal ID. Everyone can route a fax from this terminal ID(fax machine) to any receiver (if the appropriate access level is configured) In this way sending from registered fax machines can be enabled. Example:	

	terminal id:	+43-1-66133-21
	sending terminal ID:	+43-1-66133-21 routing command accepted
	sending terminal ID:	+47-3-556927679 routing command not accepted
<b>originator-address</b>	Specifies the address of the originator (receiver of the delivery or non-delivery information). Example:	
	originator:	F:004318635321
	fax server command:	3 8635321
	originator field:	F:004318635321
	If this field shows NO, no messages are accepted from the fax machine specified within field termid. Example:	
	originator:	NO
	termid:	+43-1-86353-21
	sending terminal ID:	+43-1-86353-21 routing command not accepted
	Specifies a registered receiver. Example:	
	originator:	F:004318635321
	fax server command:	3 8635321 routing command accepted (number matches after normalization)
	fax server command:	3 556927679 routing command not accepted
	The originator address should always include a mask ('+Y' or '+D').	
<b>default-address</b>	Specifies a default address. It is used for the mailbox commands of the fax server functions for the NUMBER parameter of the SEND command in case no receiver is specified by routing commands. Example:	
	default-address:	FAX\$<B>+43-1-86353-21
	fax server command:	71
	number field:	F:<B>+43-1-86353-21
<b>prefix</b>	Specifies the prefix of the parameter NUMBER for the fax server commands. Example:	
	prefix:	FAX\$
	fax server command:	3 8635321
	number field:	F:<B>8635221
	If the prefix field in the user record contains "+" the string will be replaced depending on the entered command	
	71 show mailbox command:	replace "+" by "+1"
	72 empty mailbox command:	replace "+" by "+2"

	73 deliver text nnnn:	replace "+?" by "+3"
	If no 7x command has been entered (routing command only):	replace "+?" by "+9"
<b>low-tariff-time</b>	Specifies the low tariff time. It is used in the fax server functions for the TIME parameter of the SEND command for low priority routing. Example:	
	low-tariff-time:	2200
	fax server command:	4 8635321
	time field:	2200
<b>user-channel-group</b>	Specifies the mailbox of the user. It is used in the fax server functions for the CHANNEL parameter of the CONTENT command for the mailbox command 71 (show mailbox contents) and 72 (empty mailbox). Only the values before the ':' are used. Example:	
	user-channel-group:	DUM:
	fax server command:	71
	channel field:	DUM
<b>reference of files</b>	Specifies the reference of the file for the parameter REFERENCE of the SEND command for the mailbox command 73 (deliver text xxxx). The reference must be specified by using question marks instead of the entered number of the fax server command. Example:	
	reference of file:	F:IS???
	fax server command:	73 123
	reference field:	F:IS123
<b>cost-center</b>	Defines the cost-center of the user. If this field is defined in the user record, it is used as cost-center parameter	
<b>ASP-customer-information</b>	Is used for application service provider customers that have more than one TCOSS instance running and want to use FAX routing commands (FIS document retrieval, TSI based routing / Show mailbox ....) The field consists of a valid channel (preferable 1 or two characters), a colon and the customer ID of the TCOSS instance on the storage server to be selected. The valid channel here does not have a special function, it is only required to pass the test for a valid recipient in the //CHECK command. Any channel may be used, preferable one which is not modified by the rr99 routing process. The ASP customer ID must be specified in the correct upper / lower case writing as the customer routing process is case sensitive. Example:	
	A:	Test customer
	YY:	customer02
	ZZ:	Best company
	Note that the channel specified here must be a valid recipient on both storage and media server and should not be modified by the rr99 routing process. This condition is reached by any one or two letter string which is not actually used as a channel group or user	
<b>comments</b>	Specifies any comment according to this line	

**Example of a uu99 file**

(all following entries are created manually via TCFW)

```
00\00\Public \\\FAX$<BH>\1900\F:IS0??
024\024\TC Spain \P:+DBHF93 (TCE)\.024\FAX$<BH>\1900\F:IS???
028\028\TC USA \P:+DBHF93 (TCUSA)\.028\FAX$<BH>\1900\F:IS???
032\032\Power \P:+DBHF93 (POWER)\.032\FAX$<BH>\1900\F:IS???

456\456\TU:\+43186353601\TU:Test User\FAX$\2200\TU:\F:IS???9876543210
87\87\USER B:\USER B:\FAX$\2200\USER B:\F:IS???YY:customer02

*(all following entries are automatically created by TCfW and shouldnt
be changed!)

777\666\DUM:\DUM:\FAX$<B>+43-1-86353-21\FAX$\2200\DUM:\F:IS???
456\456\USERB:\USERB:\FAX$<B>+43-1-86353-21\FAX$\2200\DUM:\F:IS???
```

The user profile is set in the system file +MAIL5V/Auu99 and can be accessed by the ..USER command. By using user ID and password protection unauthorized users have no access to your KCS system. Internally the user profile is used for the fax router functions and for TCfW users (such as the scanning from a FAX machine). The user profile can be handled with TCfW.

## FAX Scanning Within a Two-Instance ASP System

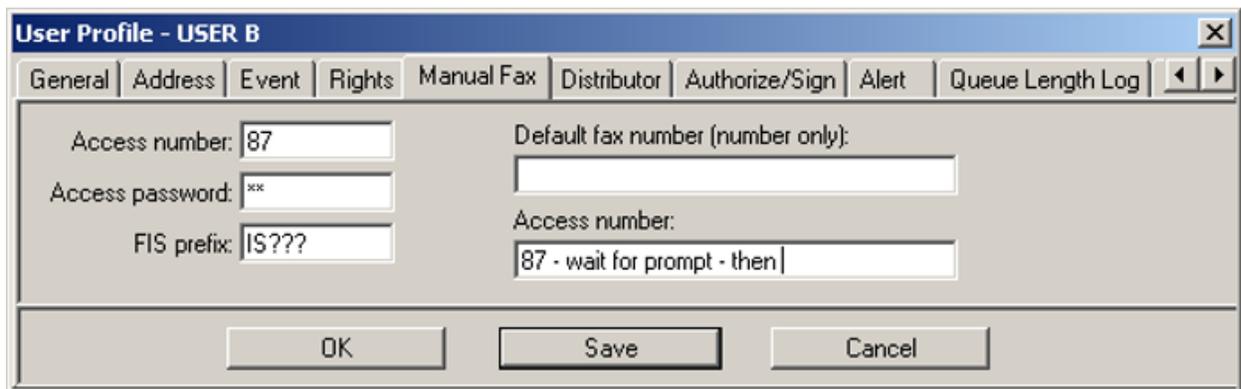
The first thing to keep in mind is that the FAX scanning does only work with the system file uu99 in combination with an ASP KCS server (only via the uu99 file it is possible to set a "user to customer" relationship

Therefore the config line 235 (DDI and DID) and 238 (DTMF) position 6...9 of all MEDIA servers remote FAX channels must be set to a + on position 6. The + defines the prefix for the FAX command which is used with 8xxxx commands. The + defines that the user ID and password information should be read from system file uu99.

```
'FXI$ + FAX$, 235 ** DDI or DID
'FXI$ + FAX$, 238 ** DTMF
```

As we do not have an ISDN line with DDI information, the following tests have been performed with an ISDN PTMP line with MSN digits and DTMF prompt enabled. The USER B with MSN information 87 located on TCOSS STORAGE server 02 wants to scan a FAX.

As first step, we login with TCFW to that STORAGE server 02 and modify the section "manual FAX" from USER B as displayed below.



Save the user profile, exit the user profile window and click on yes to "update the KCS system files". This will create the following file Auu99 with the system folder of the STORAGE server 02.

```
*
87\87\USER B:\USER B:\FAX$\2200\USER B:\F:IS???
```

Highlight the complete line displayed above and copy it to the clipboard using <ctrl><c>.

Now start another instance of TCFW and login with TCTECH to the **MEDIA server**, open the system folder and open the file Auu99. Paste the information from the clipboard with <ctrl><v> **in front of the asterisk** (manual section) into the uu99 file as displayed below:

```
87\87\USER B:\USER B:\FAX$\2200\USER B:\F:IS???
```

and additionally add the following manually at the end of that entry

```
87\87\USER B:\USER B:\FAX$\2200\USER B:\F:IS???\YY:customer02
```

The uu99 file has been extended with a so called "ASP customer information field. This field is marked bold above. It contains a one or two digit channel definition which does not exist (be sure to use a letter combination which does not fit to any valid channel on that system) and a valid customer information.

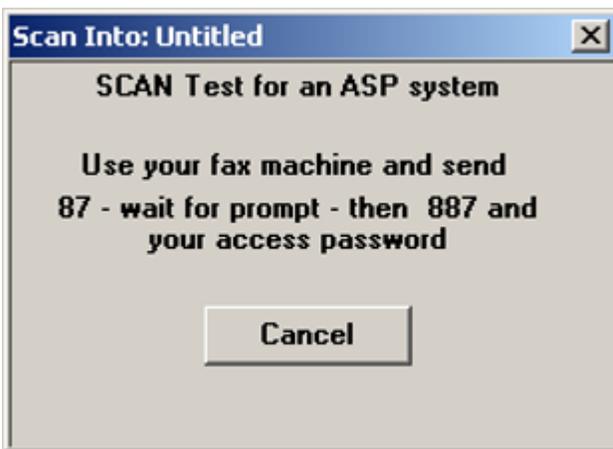
Important to know is that the bold entry above (customer02) MUST be identical to the registry value CustomerID on the storage server.

**Registry entry for TCOSS02**

```
HKEY_LOCAL_MACHINE\SOFTWARE\Topcall\TCOSS02\ "CustomerID"="customer02"
```

The same rule is valid for a user on STORAGE server 01 but then all definitions must be done with customer01.

Now login with USER B via TCFW to the STORAGE server 02, open a new message and click on the SCAN button. A message window pops up with the following information:



Afterwards, the FAX trace / TAMTUM trace on the MEDIA server will show the following:

```
[TCOSS] N3/T4CB 2.00=04:MOD RxGain1 1
```

[TCOSS] N3/T4CB .001=04:MOD sound 700, 60	** DTMF prompt
[TCOSS] N3/T4CB .605=04:MOD sound 880, 30	** DTMF prompt
[TCOSS] N3/T4CB 1.78=04:MOD rx_dtmf res=1, *pch=8	** digits for scan
[TCOSS] N3/T4CB 1.32=04:MOD rx_dtmf res=1, *pch=8	** digits for scan
[TCOSS] N3/T4CB .372=04:MOD rx_dtmf res=1, *pch=7	** digits for scan
[TCOSS] N3/T4CB .771=04:MOD rx_dtmf res=1, *pch=8	** digits for scan
[TCOSS] N3/T4CB .579=04:MOD rx_dtmf res=1, *pch=7	** digits for scan
[TCOSS] N3/T4CB 1.47=04:MOD rx_dtmf res=1, *pch=#	** end
[TCOSS] 04:TAM ICmd 2//2USER,RC=+8787<	
[TCOSS] 04:TAM Resp 2105 87\87\USER B:\+4318635373542\USER B:\\FAX \$2200\USER B:\F:IS???\YY:customer02 <	
[TCOSS] 04:TAM ICmd 2// 2CHECK,N=YY:customer02<	
[TCOSS] 04:TAM Resp 2105 YY :customer02<	
[TCOSS] 04:TAM Resp 2100 OK<	
[TCOSS] 04:TAM ICmd 2//2LOGON,MODE=1,OR=FAX<	

The above sequence shows a successful SCAN attempt from a user located on STORAGE server 02.

## Correlation Between TCfW and uu99 Entries

The automatically entries created within the file uu99 are based upon the TCFW user profile entries within section "manual FAX", see below:

User ID: <input type="text" value="DUM"/>	Password: <input type="password" value="XXXXXXXXXX"/>
Access number: <input type="text" value="777"/>	Default fax number (number only): <input type="text" value="+43-1-86353-21"/>
Access password: <input type="password" value="xxx"/>	TOPCALL access number: <input type="text" value="8"/>
FIS prefix: <input <="" td="" type="text" value="IS???"/> <td></td>	

The uu99 file which is created according to these definitions will look like displayed below. While the access password is hidden with TCFW, it is displayed as "clear text info" within the uu99 file.

```
777\666\DUM:\DUM:\FAX$<B>+43-1-86353-21\FAX$\2200\DUM:\F:IS???
```

In our next example, the user DUM accesses a file 001 via FAX router commands which is stored within the FIS folder.

A mailbox command to send a FIS document 001 has been generated with following settings:

```
8 777 666 73 001 1 86353601
```

The FAX module generated following TAM sequence to get that information from KCS:

```
TAM //2USER,RC=+77766673001186353601
TAM 105
  777\666\DUM:\FAX$<B>+43-1-86353-21\DUM:\FAX$\2200\DUM:\F:IS???
TAM //2S,R=F:IS001,N=FAX$86353601,OR=DUM:,TE= 3,P=1
TAM 100 OK
TAM Send F :86353601 /001220/125748/233 /FIS001 /0/0/S/
TAM Txt FIS Document for 73xxx mailbox command
TAM //1LOGON,TYP=5,AUTOR=F:IS001 ,DATUM=001220,ZEIT=125748
TAM 101 BTB0227 001220 125748 OK
TAM 107 ETX
TAM //1ESEITE,DSNR=233-001
TAM 100 OK
TAM //1SSEITE,DSNR=233-001
TAM 100 OK
TAM //1EOT,VZEIT=000026,ZZAHL=000031,ABBR=0,FC= ,AUTOR=+43186353601
TAM 100 OK
TAM //1LOGOFF,FC= ,ENDE=2
TAM 100 OK
```

## Using termId as User Recognition

A more advanced requirement might be to use a FAX termid as originator whenever a mailbox command must be used. This guarantees that only FAX machines with an entry within the uu99 can access the KCS server. Therefore the following settings must be done

Config line 237 and 240 of the FAX module must be set to 00 01 01. The important thing is not to set the first position to 01 otherwise always a user specification using the 8 command is necessary.

Config line 235 and 238, second part set to + (positions 6..10) to use the uu99 and not automatic generation of user records upon

The uu99 entry for this user must be modified manually in the following way, you must additionally specify the TSI of the sender fax, see following example:

```
456\456\TU:\+43186353601\TU:Test
  User\FAX$\2200\TU:\F:IS???9876543210
```

A send order for a routing command given as 3-863538136, sent from a fax machine with TSI +43 1 86353 601:

```
TAM ..2USER,RC=* \* \* \+43186353601\<
TAM 105 456\456\TU:\+43186353601\TU:Test
  User\FAX$\2200\TU:\F:IS???9876543210 <
TAM 2//1LOGON,TYP=1,AUTOR=+43186353601 <
TAM 101 BTF0379 010123 130342 OK<
TAM 2//2S,N=FAX$863538136,OR=TU:Test User,CC=9876543210,TE= 3,P=2<
TAM 100 OK<
TAM //1ESEITE,DSNR= -001<
TAM 100 OK<
TAM //1LOGOFF,FC= ,ENDE=0,AUTOR=+43186353601
```

You see that the FAX module's TAM part uses now another user record command to find the appropriate user on KCS.

### Disadvantages of using the TSI authentication

Only one user per fax machine, the assignment user <--> fax machine is fixed and a specific user cannot do the routing from another fax machine.

High effort for administering unique TSIs for all used fax machines.

No possibility to use the new configuration mode for fax server command configuration (FXI\$ in 2nd position of config line 235), therefore possible performance problems.

No automatic administration of the TSI setting for each user in TCfW (no field in the user profile to enter this value).

## FAX Scan Command Possibilities

The scan command can be performed via uu99 or via rr99 (described later).

1. First of all you must have a user profile with following settings.

Active	No address no.	Service	Number:
X	1	TOPCALL	DUM,
	2	FXI	888,

Access number:	<input type="text" value="777"/>	Default fax number (number only):	<input type="text" value="+43-1-86353-21"/>
Access password:	<input type="text" value="xxx"/>	TOPCALL access number:	<input type="text" value="8"/>
FIS prefix:	<input style="width: 100px;" type="text" value="IS???"/>		

2. Decide whether the rr99 or the uu99 file should be used for scanning. This should be done via the FAX configuration line 235/238. Especially position 6 to 9 defines whether the user ID and password should be read from the user profile directly or via the uu99.

Config line 235 can be set in one of the following ways.

- **Example 1 - FXI\$ FXI\$ FAX\$**

The inbound routing and the server commands use the prefix FXI. Therefore the user information will be taken from the (invisible part) of rr99. Users without DID extension cannot use the scan command. This is the default configuration for newly created fax channels.

- **Example 2 - FXI\$ FXC\$ FAX\$**

The DID extension (if present) differs from the access number (if present). Inbound routing uses FXI\$. The inactive address with service FXI in the user profile is used to specify the user. Fax server commands (including scanning) use the prefix FXC\$. The access code is specified in the inactive address with the service FXC. This requires that the user profile must have two inactive addresses.

- **Example 3 - FXI\$ + FAX\$**

This is new inbound routing and usage of Fax Server Commands or scanning with the PIN code taken from the user ID field "Access number". Update of system files i.

## Routing Number Directory rr99

The routing directory is set in the system folder +MAIL5V and is used for the inbound FAX distribution, inbound SMTP distribution via TC/LINK-SM and least cost routing functions. It additionally can be used to insert special send switches for problem FAX numbers which should only be used for these specific FAX numbers.

The routing number directory is a normal text document with the reference +MAIL5V/Arr99. It is created automatically after TCOSS start up and contains default entries. It can be edited manually with the TCFW text editor. Important is that the drive specification Arr99 or Brr99 must be specified and that the file name contains lower letter characters.

Whenever you store a rr99 file manually with a TCFW user, be sure that no coversheet is defined and that the leading A4H line has been removed and that you use folder +MAIL5V and as filename Arr99.

### Setup of an rr99 entry

The routing process has four steps which are separated by the control lines '\*\*xxxxx':

**SENDMODES	(conversion of text into receiver specification)
**NORMALIZE	(conversion into standardized format)
**ROUTE	(re-conversion into local format)
**NODES	(abbreviated numbers)
**INBOUND	(inbound routing)

The rr99 file must always contain all control lines as shown in the example above.

In all entries except in the NODES section, a comment can be added after the second comma, lines starting with 2 commas are treated as comment lines only. The comment may contain commas.

All steps of the routing directory work in the same way: Search for and replace strings.

The tilde (~) represents a part of a string which is left unchanged. It may be either within or at the end of the search string. The part of search string until tilde must match with the beginning of the number. If there is a part of search string after the tilde, it must match with the end of the number. All parts are compared case insensitive.

The entries are checked in the order they were defined within the routing directory. If a match is found, the appropriate conversion is performed and all other entries of that section are skipped. Additional rules apply to the SENDMODES (see [Step by Step Routing](#)) and INBOUND (see [Inbound Routing via rr99](#)) sections.

**Note** Blanks at the end of the search string are not considered during compare. The added length of all conversion strings (including commas, excluding comments) must not exceed 100.000 characters.

The intermediate results after normalization are written into a new field in the send order and can be accessed by a mask parameter or via TCFW's outbox view. The result after the routing process is written into the normal number field of the send order (and is checked for a valid channel). See below the TCFW overview.

Local Address	Normalized Address
F :+0<F>G1503-	F:+0<F>*4311503-

**Note** The "Normalized Address" shows the number information after the section **\*\*NORMALIZE** has been passed, while the "Local Address" shows the number after the complete routing directory has been passed.

If the number contains a mask, such as '+0' or send control switches, such as '<F>', these are separated from the number before rr99 routing process starts. Masks must be immediately after the channel specification. The mask is re-inserted into several intermediate (normalized) or final result (local address), if this number contains no mask. The send control switches are re-inserted, if the number remained at least partially unchanged, that is, if no matching entry was found or if the end part of the string was preserved by an entry ending with tilde. The mask is inserted at the beginning after the channel specification while the send switches are inserted behind the mask definition.

**Note** The first two steps of rr99 routing, "send mode" and "normalization", are also carried out for the parameter 'ORIGI' (= originator).

If a number or originator contains several alternatives, each alternative is processed and may be converted into a number of alternative numbers. All alternatives are kept in the result. If the number field size is not enough to store all alternatives an error ("405 bad number") is reported. The length of the number field size is limited to 128 characters.

Example:

```
**ROUTE
number to be routed,routed number\alternative 1\alternative 2\ .
```

**Note** Sometimes, using "\" as the separator for alternative numbers is not sufficient. For example, in case of multiple IPPrinter addresses, use "&" as an additional separator at the end of an address:

```
IPPRINT:printer=10.18.3.1,IPPRINT:printer=10.18.3.1&\IPPRINT:printer=10.1.1.10&
```

To erase a specific send order, the NUMBER parameter in ERASE command should be the same as entered in the SEND command. The send orders for erasing are identified by a matching normalized number.

**Note** For the rr99 routing process there is no difference between routing and final sending. The sending channel takes care of this and returns BREAK=0 for successful sending or BREAK=7 for routing with the EOT command.

The routing directory is loaded at system start-up and will be kept in memory during operation. It will be reloaded automatically after changes were done or at first creation of the routing directory.

## Step by Step Routing

This section is an overview of step by step routing.

For clearance, the complete routing process when entering a receiver is described below:

1. If an abbreviation number is specified (starts with a dot), the receiver will be taken from the NN99 file or address book (only with ..Send commands, not supported via TCfW).
2. The number will be modified using the first rr99 section, SENDMODES.
3. If no match could be found in the SENDMODES section and the number contains a "\$" character, the part from the beginning of the number until the "\$" is treated as service. This part of the number will be replaced by the service prefix defined for this service.

**Note** The address type defined for the service will not be used.

4. The number will be modified using the second rr99 section, NORMALIZE. The result of this step is stored as "normalized number".
5. The number will be modified using the ROUTE and NODES sections. The result after the ROUTE section is used for least cost routing only.
6. The number will be modified using the INBOUND section. In this section the user profiles may be accessed for routing. If a match is found, steps 2 to 5 are performed again.

The inbound routing step is skipped for send orders created by actions set in the user profile (in-event, delivery-event, and others). This is required to avoid looping send orders with KCS users.

**Note** If you create the +MAIL5V/Arr99 with TCfW and you keep the leading page break -----A4----- at the beginning of the document, you will have an invisible line break after the 85th character for every line! This line break will cause problems with rr99 routing entries which are longer than 85 characters, such as mapping of X.400 addresses.

## Inbound Routing via rr99

Inbound routing is used to identify a KCS user by its inactive FAX address defined within its user profile. This inactive FAX address is also called KCS proxy address.

### Example:

A KCS user has a proxy address that represents his FAX DID number. This is defined within the user profile, "Address" section, see below:

Active	No address no.	Service	Number:
X	1	TOPCALL	DUM,
	2	FXI	888,

If FAX inbound routing via rr99 is activated, the received document is routed directly to the user (according to the address book). No additional routing files, such as NN99, have to be maintained.

The address book specific routing is done via the INBOUND section of the rr99 routing directory. It has the following special function:

If a conversion line has an empty right side and the left side matches, the routing via proxy addresses will be called. This means that the number is searched (case insensitive) in all inactive addresses defined within the recipient store. The service of the inactive addresses is resolved for the comparison, but no

rr99 routing applied to the inactive addresses. If there is a match the number is replaced by all active addresses of the recipient. If there is no match, processing will continue with the next conversion line in the inbound section (as for other non-matching lines).

If there is a match, all other sections (SENDMODES to NODES) are done again.

**Note** The new inbound routing is incompatible with previous releases of TCOSS, 7.07 or older. The routing directory rr99 has to be adapted (inbound section added). With an unchanged rr99 the inbound routing via inactive addresses will be switched off. This could cause that all incoming messages are re-sent in an infinite loop.

Missing lines in the rr99 may easily cause infinite looping of incoming messages. To avoid looping you **MUST** have a default receiver for all kinds of inbound messages (such as Fax, SMTP, X.400, and more). The default recipient can be a valid KCS number, such as distributor user or an invalid number ("invalid" is recommended) if inbound messages to none existing users should be rejected.

#### Example for fax inbound:

Prefix for service FXI is defined as FXI: This is also the standard service whenever a new KCS server is installed and started the first time. The default rr99 routing directory might look as in the example displayed below.

```
**INBOUND
FXI:~, ,          routing via recipient store
FXI:~,DIST:FXI~, default recipient (if no match in rec. store)
```

Furthermore be sure that all FAX channels are configured properly to use the inbound distribution via the rr99 routing directory. This is done via FAX config line 235, first 4 positions. As we are using the service FXI, this config line must be set to the following value:

```
'FXI$ FXI$ FAX$, 235
```

For all services that are used for inbound routing, it is recommended to always use at least two entries. The first entry is used for distribution to a specific user via the address store. The second entry defines the default recipient in case no routing information has been found. Note that both lines have the same content "FXI:~" on left side. They are used as service dependant filter and must start with the service prefix defined for the used inbound services, such as FXI: for KCS service FXI

**Note** Additional memory space for the inbound routing information will be allocated according to the configured number of users: add. memory = 15 \* number of users. The number of bytes used by an inbound routing entry can be calculated by: 5 + length of service + length of extension.

If there is insufficient memory for the inbound routing entries during system start up, a warning message will be generated, and the KCS system will work with the part of the routing entries it could load. If the insufficient memory problem occurs when creating or changing a user's recipient definition, the operation will fail with error code 308 (ERR\_STORE\_FULL).

## Cost Accounting Directory kk99

The file +MAIL5V/Akk99 contain all information required for cost accounting with a KCS server. It is loaded into memory automatically after it has been created or changed.

The cost accounting directory is a normal text document with the reference +MAIL5V/Akk99. It is created with TCFW and stored within the folder +MAIL5V. Important is that the drive specification Akk99 or Bkk99 must be specified and that the file name contains lower letter characters.

Whenever you store a kk99 file with a TCFW user, be sure that no coversheet is defined and that the leading A4H line has been removed and that you use folder +MAIL5V and as filename Akk99.

The document kk99 contains

- a line for every tariff class in which the amount of the fees is indicated (via the fee parameter)
- a list for every tariff class and their corresponding area codes

The area code list has a maximum length: the sum of all the area codes' characters plus 3 characters per area code must not exceed 5000.

The system searches the appropriate list of prefixes (telex or fax) from the beginning and in the order defined in the file +MAIL5V/Akk99 to find a match with the selection number (parameter NUMBER of the command (SEND)). Letters in the selection number are not considered for the comparison.

When sending to a telex subscriber via the teletex-telex conversion facility (CF) the list of telex-prefixes is used, and the duration of the telex connection is calculated from the number of characters sent to the CF. (The fee calculation is activated upon reception of a telex delivery notification).

In case of using the routing table 'rr99' the cost center accounting uses the normalized number for the area code search. Cost center accounting can be used normally in the exit node of a KCS routing network. In the entry node costs can be calculated upon reception of a positive notification using only the number of characters sent to the next node as input for the calculation.

### Fees parameters

<b>PO</b>	Additional fees per connection (in 1/100 units) Value range: 0 ... 100000
<b>P1</b>	Fee per minute (in 1/100 units) Value range: 0 ... 200000
<b>P2</b>	Rounding out the time to n seconds Value range: 1 ... 3000
<b>P3</b>	Minimum duration of connection (in seconds) Value range: 0 ... 3000
<b>P4</b>	Fee per 1024 characters (in 1/100 units) The cost calculation is based on the number of 64-byte frames transmitted. 1024 characters correspond to 16 64-byte-frames.

**Note** As mentioned above the values for P0, P1 and P4 must be entered in 1/100 units.

**Hint:** If you want to have the fees shown in '\$' in the monthly cost center tables, you have to enter the fees in 'CENT' in the kk99.

If you want to have them in 'CENT', you have to enter the fees in '100 \* CENT' in the kk99

**Fees calculation**

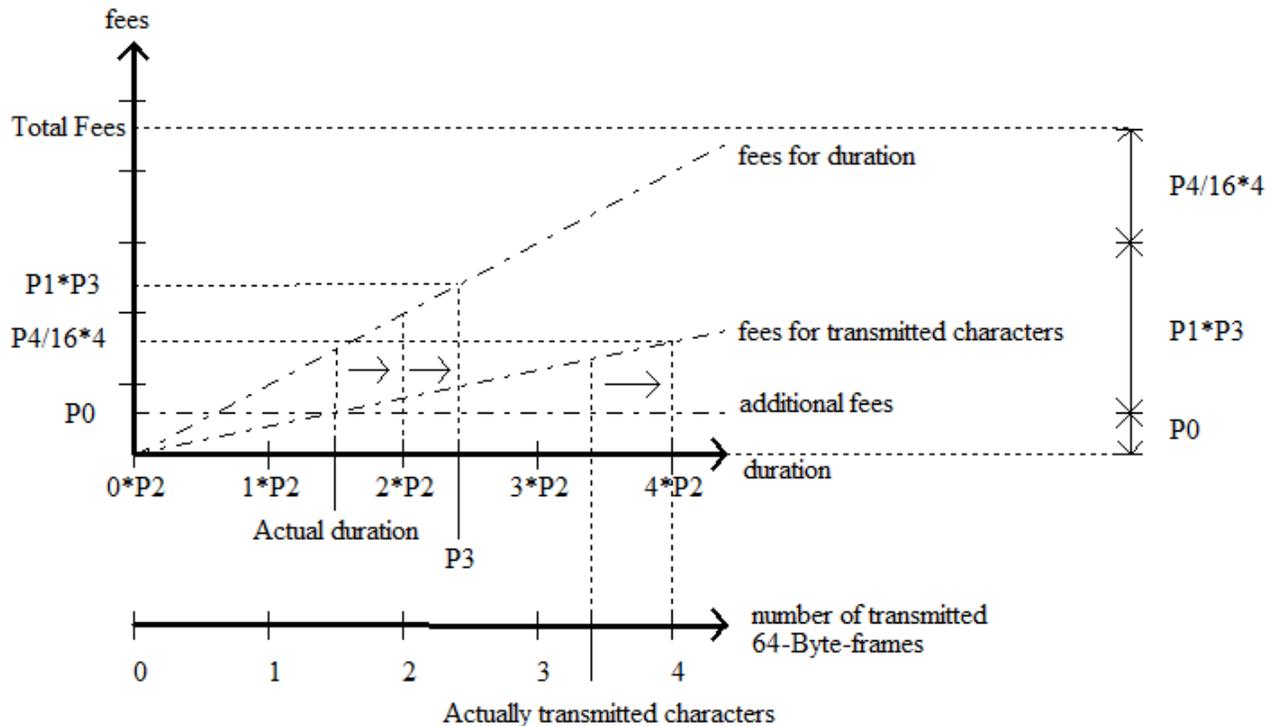
Duration of connection is rounded up to the next multiple of P2. If this rounded value is shorter than P3, P3 is used for calculation.

Fees for *duration of connection* are calculated on base of the duration (see above) and on P1.

Fees for *transmitted characters* are calculated on base of transmitted 64-Byte-frames and on P4.

The whole fees is calculated as sum of fees for duration of connection, fees for transmitted characters and additional fees per connection.

**Diagram**



**Tariff Classes**

Setup of the corresponding line in kk99 is as follows:

x, P0, P1, P2, P3, P4

x	Number of the tariff class (0-63)
---	-----------------------------------

<b>PO-P4</b>	Parameter for the computation of fees
--------------	---------------------------------------

Allocating an area code to a tariff class:

<b>Telex:</b>	aaaaa/x aaaaa/xNy aaaaa/xNyPz
<b>Telefax:</b>	aaaaa-x aaaaa-xNy aaaaa-xNyPz

Please note that other combinations for the allocation of tariff classes such as xPzNy or xPz are not supported.). Whether a channel belongs to telex or fax is decided by config line 3 of the corresponding channel.

<b>aaaaa</b>	Area code
<b>x</b>	Corresponding tariff class - normal rate
<b>y</b>	Corresponding tariff class - night rate
<b>z</b>	Corresponding tariff class - peak rate

It is possible to use both letters and digits for the area codes in the cost center file. Thus it is possible to discern between internal and external sending.

A digit in the cost center file will be compared with the next digit in the number parameter (characters other than digits will be skipped as with previous versions).

A letter in the cost center file will be compared with the next character in the number parameter.

### Setting the periods for night and peak rates

```
NIGHT bb-ee, PEAK bb-ee, LOW bb-ee, HIGH bb-ee
bb      time (hours) beginning of period
ee      time (hours) end of period
```

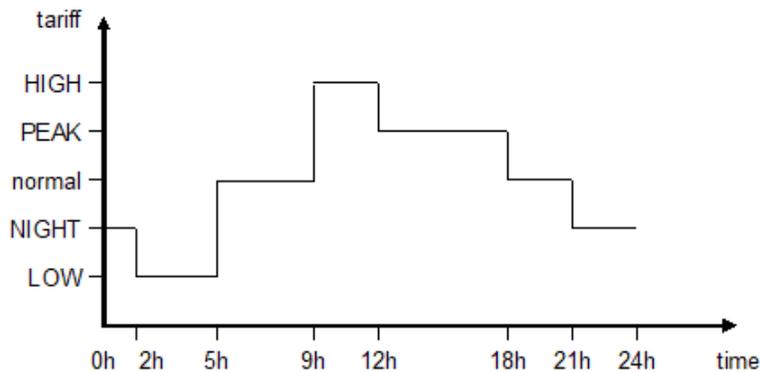
Default setting is: NIGHT 18-08, PEAK 10-12, LOW 00-00, HIGH 00-00

Period settings may be overlapping. They are evaluated from right to left. This means that for a given time it is checked first if it falls into the HIGH period, then LOW, PEAK and finally NIGHT. If it does not fall into any of these, normal tariff is assumed. All parameters are optional.

### Example for Germany

```
NIGHT 21-05, PEAK 09-18, LOW 02-05, HIGH 09-12
```

Allocating an area code to a tariff class (Example: for Fax, area code aaaaa):



aaaaa	x	(normal tariff x, night x, peak x, low x, high x)
aaaaa	xNy	(normal tariff x, night y, peak x, low x, high x)
aaaaa	xNyPz	(normal tariff x, night y, peak z, low x, high x)
aaaaa	xNyPzLI	(normal tariff x, night y, peak z, low l, high x)
aaaaa	xNyPzLIHh	(normal tariff x, night y, peak z, low l, high h)

These are all possible specifications, the order normal - night - peak- low - high is important and must not be changed. For telex use "/" as delimiter instead of "-".

Comments may be included into the kk99 file according to the following rules:

- A comment **must not** contain digits (digits could be interpreted as a tariff class in lines with an area code - tariff class allocation)
- A comment may be **delimited** by an asterisk sign (or by any other non-digit character)

## Cost Optimization Feature

The cost optimization sends messages automatically at the lowest tariff time.

Subject to cost optimization are all send orders with low priority (INT\_PRIORITY = LOW via TCSI, PRIOR=0 or P=0 on ..command interface), with no sending time specified and if the receiver is either a channel group (example: "F:" where user "F" may exist) or a two-character channel that does not exist as KCS user account (example: "AB:" where user "AB" must not exist).

For those send orders the tariff structure as set in kk99 is checked. If there is a low tariff period for the given area code, the sending time will be set to the beginning of the low tariff period. The sending time will be set to the current time, if the current time is in the low tariff period or if there is no low tariff for this area code.

There are 3 separate groups of area codes in the kk99 file, telex, teletex (not supported) and fax. The first character of the normalized recipient number (= channel group) will determine which prefix group is used for the cost optimization:

first character of normalized number	prefix group
'X'	telex
'T'	teletex (not supported)

first character of normalized number	prefix group
other than 'X' or 'T'	fax

The area code is also taken from the normalized number.

**Note** For the actual cost calculation after a message has been sent, the prefix group information is taken from the configuration of the sending channel (config line 3 "channel type").

If the area code can be found in the kk99 file and if it has 2 or more different tariff classes allocated, fee parameters P0, P1 and P4 (fee per connection, per minute and per 1024 characters) of each tariff class will be added and the sum compared to find the class with the lowest tariff.

### ISDN fax channels using the "advice of charge" feature

In this case a different prefix group (normally teletex) of the kk99 file is used for cost calculation and its setting does not represent the real tariff structure. Be sure that the normal fax area code and tariff class setting is also included into the kk99 file and that the fax prefix group is used for the cost optimization check (channel group of ISDN fax channels not set to 'X' or 'T').

### Example of a kk99 file

NIGHT 18-08, PEAK 10-12, LOW 20-06, HIGH 00-00

0,0,2000,30,30,0	(tariff class 0 with parameters)
1,0,4000,15,15,0	(tariff class 1 with parameters)
2,0,5000,12,12,0	(tariff class 2 with parameters)
.....	
63,0,0,1,0,10000	(last tariff class 63 with parameters)
0=63	(AOC definition for ISDN fax)
.....	
9=63	(AOC definition for ISDN fax)
*43166133-34	(normalized FAX number with corresponding tariff class)
*4311-35	
*4312-35	
*4313-35	
I-34	(FAX for internal sending, usually did not cause costs)
8-35	(various FAX numbers with corresponding tariff class)
998-36N37	
907-36N37	
.....	
00966-44N45	
0090-42N43	
00-46	(various FAX numbers with corresponding tariff class)

3/2N21	(various telex numbers with corresponding tariff class)
4/3N22	
5/3N22	
61322/4	
61324/1N20	
6133/2N21	
6134/3N22	

## Low Priority Definition with TCFW / TCLINK

Assuming, that the priority is set correctly within TCFW, the following actions are performed by TCOSS to decide whether to use normal or low priority.

The following is a short example of kk99 entries:

```
NIGHT 20-06
1,0,6000,1,0,0 *tariff class
2,0,3000,1,0,0 *tariff class
1-1N2
2-1N2
...
```

2 tariff classes are defined, independent from the fax number. When creating a FAX send order with a number starting with 1, the following happens:

1. TCOSS will find the entry 1-1N2. TCOSS assumes a fixed transmission time and calculates the costs for both defined tariff classes 1 and 2. The 2 calculated costs are compared to find the cheaper one (in this case 2).
2. TCOSS checks the time setting for this tariff class (in our example N between 6pm and 6am). If the current time is already inside this time, TCOSS sets the sending time to the current time.(time=9pm will be 9pm). If the current time is outside this night sending time, TCOSS sets the time at the beginning of the night sending time (time=5pm will be 6pm).

## Cost Center of Received Messages

The cost center of incoming messages can default to the cost center of the receiving user, that is, it is taken from the recipient's user profile if it is not set otherwise.

This feature is activated in the system configuration:

Line 19, 3rd position, user receive options:

00	No
01	Set user's cost center as default in received messages.

Default value is 00 (no additional options, compatible to previous releases).

The feature is intended for cost accounting of received faxes and telexes. It should work independent of whether the message is routed directly to the recipient or manually distributed by a distributor user. In

the second case the cost center of the distributor user has to be empty so that the cost center of the final recipient is inserted after distribution.

**Attention:** If the cost center of the distributor is not empty, then this cost center (not the cost center of the final recipient) is inserted after distribution, which is usually not wanted.

## Handling of Unexpected Fax Send Interruption

The fax transmission costs are updated at the end of each transmitted page. This means that in case of a node reboot, only the costs for the last partially transmitted page (that was interrupted by the node reboot) will not be included.

If you are using the fax chaining features (send multiple documents to the same recipient without redialing), each document will get its correct costs.

## Cost Center Tables

When the system uses cost center accounting a cost center table with the reference +MAIL5V/AKKxx (xx.. number of the month) is created for each month. The table contains the cost centers and the fees accumulated up to the current time. At the end of the month you can print out the document. It must be erased before the same month the following year; otherwise the new values will be added to the old ones.

The cost center designation can be entered in the parameter COSTC of the send command. For example:

```
..S,R=TEST,N=F:6613321,COSTC=SUPPORT
```

The cost center designation can also be specified in parentheses anywhere in the author field of the document. This designation will only be used in case the parameter COSTC is missing. For example:

```
..TELEX,REFERENCE=X, AUTHOR=(CDEP)
```

In case the cost center designation is neither specified in the parameter COSTC nor in the author field the name of the cost center will be taken from the reference of the document to be sent. The length of the name and its position within the reference can be configured.

The texts 'KKxx' are only generated automatically. The user may not create or edit them.

### Setup

1st line:	Blank line	
2nd - last line:	42 pos.	Cost center accounting, left justified(only 12 used, last 30 blank)
	1 pos.	Blank
	8 pos.	Fee (filled up with zeros)
	11 pos.	1 Blank
	10 pos.	Telex or fax number which could not be allocated

The field of the cost center accounting is always expanded to 42 characters.

If the fee for a certain transmission could not be computed because the area code is not contained in the document kk99, this number's first 12 positions are shown after the fee at the corresponding cost center. If this occurs more than once at a cost center the preceding number will be overwritten.

**Example (KK01)**

```
ABC 00003726
  FDS 00000453
  XYZXYZ123456 00007691
```

**Note** In releases previous to TCOSS 7.40.00, the cost center designation was only 10 characters long. The length is now configurable in the SYSCONF file. The default for new installations of TCOSS 7.40.00 or higher is 42 positions (where 12 are used and the last 30 are filled with blanks).

If only a release update to 7.40.00 or higher is done, the length is not changed automatically. If this setting is changed manually, the cost center tables also have to be adapted. Refer to the SYSCONF chapter in *TCOSS Configuration Manual* for more details.

Only 10 positions of the cost center designation are shown in log files for compatibility reasons.

## Enhanced Number Locking Directory LN99

The enhanced number locking feature allows defining the maximum number of channels that are used for concurrent sending to a specific fax number.

The feature is controlled by the new system file "ALN99" in the "+MAIL5V" folder. This file contains a list of fax numbers with an associated maximum line count. All LN99 lines have the syntax

```
ffffffffffffffffffff,nnn
```

where `ffffffffffffffffffff` is the fax number (localized number without channel specification) and `nnn` is the maximum number of lines used for concurrent sending to this fax destination.

Both values are separated by a comma.

**Example:**

```
018635320,3
  I23,2
```

The fax number specified in LN99 entries is the localized number (after routing) without the channel, mask, send switches (if within "<>"), answerback separator ('-', '/' or '=') and answerback. This means that the dialed number without options is specified. Wildcards are not allowed. If there are several alternative addresses in the localized number field only the first alternative address is taken. If the number in the LN99 file contains a mask, send switch (within "<>") or answerback.

The system file "ALN99" is automatically loaded after creation or at system start up and reloaded after any change.

Changes in "ALN99" get active immediately after the document has been saved. A decrease in the maximum number of lines in "ALN99" does not interrupt ongoing transmissions. An increase in the maximum number of lines in "ALN99" for a specific fax number will cause messages already queued for that number to be released immediately until the increased line count maximum is reached.

The number of entries in LN99 is limited to 10000, if there are more entries only the first 10000 are loaded without a warning or error message. Syntactically incorrect entries are ignored, also without warning. If there are several entries for the same fax recipient only the first entry is loaded.

The enhanced number locking feature is only active if the basic number locking is switched on in the channel configuration (config line 11 = '1,'). For fax numbers not found in the system file "ALN99" a maximum line count of one is used.

## Time Zone Support

Time zone support is an optional TCOSS feature which is inactive by default. To activate time zones configure TCOSS to be based on UTC. Updating an existing installation to work with time zone requires some extra procedures, read details below.

**Note** If an existing TCOSS server is updated and re-configured to be based on UTC, all clients have to be updated also. Old clients would display the local time without accounting for daylight saving periods, that is, during summer the time would be off by one hour.

### UTC or Coordinated Universal Time

Coordinated Universal Time (abbreviated as UTC, and therefore often spelled out as Universal Time Coordinated and sometimes as Universal Coordinated Time) is the standard time common to every place in the world.

Formerly and still widely called Greenwich Mean Time (GMT) and also World Time, UTC nominally reflects the mean solar time along the Earth's prime meridian. (The prime meridian is 0° longitude in the 360 lines of longitude on Earth. There are 179 meridians toward the East and 179 toward the West. The 180th meridian is also called the International Date Line.)

The prime meridian is arbitrarily based on the meridian that runs through the Greenwich Observatory outside of London, where the present system originated. The UTC is based on an atomic clock to which adjustments of a second (called a leap second) are sometimes made to allow for variations in the solar cycle.

Coordinated Universal Time is expressed using a 24-hour clock but can be converted into a 12-hour clock (AM and PM). UTC is used in plane and ship navigation, where it is also sometimes known as Zulu. UTC uses the Gregorian calendar.

UTC was defined by the International Radio Consultative Committee (CCIR), a predecessor organization of the ITU-TS, and is maintained by the Bureau International des Poids et Mesures (BIPM).

### Time Base Setting

With previous TCOSS releases, the TCOSS time was based on the local time provided by the operating system. The following configuration option allows to base TCOSS times on the server's UTC:

Registry value "HKLM\Software\Topcall\TCOSS\TimeBase" (REG\_SZ).

Possible values:

"Local"	... based on local time, this is the default
"UTC"	... based on UTC

In both cases, the registry value "HKLM\Software\Topcall\TCOSS\TimeOffsetMinutes" (REG\_SZ) defines an offset which is added to UTC / local time to calculate TCOSS time.

The range for TimeOffsetMinutes is from -780 (= -13 hours) to 780 (= 13 hours).

If time zones are defined as described in the following chapter, the TCOSS time must be based on UTC. The TimeOffsetMinutes setting is used to prevent a time leap when updating existing installations. In new installations, this value must be zero (or not set at all).

**Note** The registry values "HKLM\Software\Topcall\TCOSS\TimeBase" and "HKLM\Software\Topcall\TCOSS\TimeOffsetMinutes" (if required) have to be created manually as string values (REG\_SZ).

## Standard Time Zone Definitions

Standard time zones are defined in the new system file "A:tz99". A time zone definition consists of a name, a standard offset from UTC, and an ordered list of daylight saving periods.

Daylight saving start and end times are specified in local time. Time zone names are limited to a maximum of 4 characters. Strings that are longer than 4 characters are automatically truncated to 4 characters. An alternate name which is used during daylight saving periods may be added with a slash as separation character.

The alternate time zone name is shown by time zone mask and cover variables as appropriate. Otherwise only the standard name is used, such as for location to time zone mappings.

The offset of daylight saving periods to standard time is fixed: plus one hour.

## Time Zone System Directory tz99

A "A:tz99" file with all European and North American time zones will be provided and kept up-to-date by Kofax. The customer's "A:tz99" system file should not be edited in order to allow updating it later without losing user-specific settings.

**Note** Time zone abbreviations are not standardized, and some of them are ambiguous. For example "EST" or "Eastern Standard Time" is used both in North America (for UTC - 5 hours) and in Australia (for UTC + 10 hours). For this reason, the "A:tz99" file contains only some major time zones and not all time zones worldwide.

The "A:tz99" file is loaded at system start up and also after changes of the routing directory "A:rr99". If the Atz99 file is not available and no customer specific time zones are defined in the file Arr99, no time zone can be specified for user profiles.

Example of system file "A:tz99":

```
**TIMEZONE,NAME=CET/CEST
Comment: Central European Time / Central European Summer Time
Add to UTC: +01:00
```

```

Daylight Saving times:
2000-03-26 02:00 - 2000-10-29 03:00
2001-03-25 02:00 - 2001-10-28 03:00
2002-03-31 02:00 - 2002-10-27 03:00
2003-03-30 02:00 - 2003-10-26 03:00
2004-03-28 02:00 - 2004-10-31 03:00
2005-03-27 02:00 - 2005-10-30 03:00

**TIMEZONE,NAME=WET/WEST
Comment: Western European Time / Western European Summer Time
Add to UTC: +00:00
Daylight Saving times:
2000-03-26 01:00 - 2000-10-29 02:00
2001-03-25 01:00 - 2001-10-28 02:00
2002-03-31 01:00 - 2002-10-27 02:00
2003-03-30 01:00 - 2003-10-26 02:00
2004-03-28 01:00 - 2004-10-31 02:00
2005-03-27 01:00 - 2005-10-30 02:00

```

## Customized Time Zone Settings

Customer-specific time zone settings are entered into the routing directory "A:rr99". These settings include:

- Customer-specific time zone definitions
- A system default time zone
- Recipient / Originator - Time Zone Mappings
- The "TCOS" time zone in case of update of existing TCOSS systems

All new time zone sections in the routing directory A:rr99 are optional. If present the time zone sections should be placed at the end of the routing directory after all the routing sections.

## Customer-Specific Time Zone Definitions

The system file "A:rr99" may hold additional, customer-specific time zone definitions. These time zones are defined in the same syntax as used for the standard time zones in the "A:tz99" file (see [Standard Time Zone Definitions](#))

### Example of a customer-specific time zone definition in "A:rr99"

```

**TIMEZONE,NAME=NPT
Comment: Nepal Time
Add to UTC: +05:45

```

It is also possible to redefine a time zone defined in "A:tz99" by including a time zone definition with an identical name in "A:rr99". For example, the system file Arr99 contains the definition for the Central Standard Time (North America):

```

**TIMEZONE,NAME=CST/CDT
Comment: Central Standard Time / Central Daylight Time
Add to UTC: -06:00

```

The CST abbreviation can also be used for the Central Standard Time of Australia, with an UTC offset of +09:30. If the CST time zone for Australia should be used, the redefinition must be done in the Arr99 file, because the Atz99 file is overwritten when the server is updated.

## System Default Time Zone

A system default time zone may be defined in the A:rr99 routing directory using the control line. For example:

```
**TIMEZONEDEFAULT, NAME=CET
```

## Recipient / Originator - Time Zone Mapping

Recipients (such as phone numbers dialed by the voice link) may be mapped to specific time zones using the new "MAP2ZONE" section in the routing directory "A:rr99". The normalized recipient number is taken and compared with the mappings defined in the "MAP2ZONE" section to determine the recipient time zone. The same applies to the originator number, that is, the normalized originator number is taken and compared with the mappings to determine the originator time zone.

In the "MAP2ZONE" mapping no special handling of mask and send switches is done, that is, masks and send switches are not removed before trying a match with the conversion lines and not reinserted after a match has been found.

The recipient / originator time zone mappings play a role in determining the time zone of a message. The voice link usage example of this feature (determining the time zone of the recipient to call at a convenient time) is not yet implemented in the voice link.

## TCOSS Time Zone Definition

The system file "A:rr99" may also hold the "TCOS" time zone in case of update of existing TCOSS systems.

### Example of time zone sections in the routing directory "A:rr99"

```
**MAP2ZONE
VL: *43~, CET
VL: *33~, CET
VL: *39~, CET
VL: *44~, WET

**TIMEZONE, NAME=TCOS
Add to UTC: +01:00
Daylight Saving times:
2000-03-26 02:00 - 2000-10-29 03:00
2001-03-25 02:00 - 2001-10-28 03:00
2002-03-31 02:00 - 2002-10-27 03:00
2003-03-30 02:00 - 2003-10-26 03:00

**TIMEZONEDEFAULT, NAME=WET
```

## Update Existing TCOSS Systems to Work with Time Zones

The idea of the update rule is to avoid any leap in the TCOSS time because of the update. The TCOSS time after the update is based on UTC, but the offset defined in "TimeOffsetMinutes" is adjusted to compensate for the difference between UTC and local time:

The server's local standard time, that is, without the effect of a daylight saving period, has a certain offset from UTC, say x minutes (UTC plus x minutes gives the local time). The value of "TimeOffsetMinutes"

before the update was  $y$ . Then set the "TimeOffsetMinutes" value to  $x+y$  after the update. Add the registry value "TimeBase" and set it to "UTC".

A special time zone definition has to be entered manually into the system file "A:rr99" for the correct conversion of TCOSS timestamps to UTC. This time zone definition is done with the name "TCOS". It holds all daylight saving periods observed before the update took place. If the update is done while daylight saving is active this period is defined to end at the time of the update. The "Add to UTC" setting in the "TCOS" time zone reflects the offset configured in the "TimeOffsetMinutes" registry value.

### Example 1

A system has been running on Central European Time since the year 2000. It's a single instance so the TimeOffsetMinutes registry value was not used. It is updated to run on UTC in December 2003.

Registry settings after update:

"TimeBase" (REG_SZ)	... "UTC"
"TimeOffsetMinutes" (REG_SZ)	... "60"

"A:rr99" time zone settings after update:

```
**TIMEZONE, NAME=TCOS
Add to UTC: +01:00
Daylight Saving times:
2000-03-26 02:00 - 2000-10-29 03:00
2001-03-25 02:00 - 2001-10-28 03:00
2002-03-31 02:00 - 2002-10-27 03:00
2003-03-30 02:00 - 2003-10-26 03:00
**TIMEZONEDEFAULT, NAME=CET
```

The time zone default setting is optional. The "TimeOffsetMinutes" value of "60" keeps the TCOSS system time 1 hour ahead of UTC. This one hour difference is also entered into the "TCOS" time zone definition as "Add to UTC: +01:00". The "TCOS" time zone holds the daylight saving periods observed before the update, assuming that the system time had been (automatically or manually) adjusted for summer time in the years 2000 - 2003.

If the update to UTC in the above example was done during summer time, such as on 2003-08-15 at 19:00, the settings would be identical, except that the daylight saving period in 2003 would be set to end at the time of the update:

```
**TIMEZONE, NAME=TCOS
Add to UTC: +01:00
Daylight Saving times:
2000-03-26 02:00 - 2000-10-29 03:00
2001-03-25 02:00 - 2001-10-28 03:00
2002-03-31 02:00 - 2002-10-27 03:00
2003-03-30 02:00 - 2003-08-15 19:00
**TIMEZONEDEFAULT, NAME=CET
```

### Example 2

A system has been running on Pacific Standard / Daylight Time since 1999. It is updated to run on UTC on June 20th, 2004 at 8 pm.

Registry settings after update:

"TimeBase" (REG_SZ)	... "UTC"
"TimeOffsetMinutes" (REG_SZ)	... "-480" (note the minus sign)

"A:rr99" time zone settings after update:

```

**TIMEZONE, NAME=TCOS
Add to UTC: -08:00
Daylight Saving times:
1999-04-04 02:00 - 1999-10-31 02:00
2000-04-02 02:00 - 2000-10-29 02:00
2001-04-01 02:00 - 2001-10-28 02:00
2002-04-07 02:00 - 2002-10-27 02:00
2003-04-06 02:00 - 2003-10-26 02:00
2004-04-04 02:00 - 2004-06-20 20:00
**TIMEZONEDEFAULT, NAME=PST

```

The "TimeOffsetMinutes" value of "-480" keeps the TCOSS system time 8 hours behind UTC. The "TCOS" time zone definition has been obtained by copying the "PST" time zone from the tz99 standard definitions, renaming and editing it. It already contained the eight-hour difference "Add to UTC: -08:00". The current daylight saving period (2004) has been changed to end at the time of the update, all future daylight saving periods have been deleted.

## Time Zone Mapping Functionality

A new TCOSS function allows to access the mapping functionality provided by the MAP2ZONE section in A:rr99. This feature may be used for the synchronization of user profiles, determining the user's time zone from some other information like a phone area code which can be mapped to a time zone.

Example of rr99 system file

```

**MAP2ZONE
D$201, EST
D$202, EST
D$203, EST
D$204, CST
D$205, CST
D$206, PST
D$207, EST
D$208, MST
...

```

The MAP2ZONE section is used in this example to map US phone area codes to time zones. The prefix "D\$" is added to distinguish directory synchronization mappings from recipient / originator mappings which are also contained in the MAP2ZONE section.

## Time Zone of a Message

The message's time zone set in the mail entry is used for

- Resolving mask and cover variables
- Inactivity periods observed by the voice link so that a recipient in a distant time zone is not called up at midnight (not yet supported by the voice link)

The message's time zone is determined when the message is posted using (with falling priority)

- the recipient's user profile
- the normalized recipient number zone mapping (MAP2ZONE section in A:rr99)
- the originator's user profile
- the normalized originator number zone mapping (MAP2ZONE section in A:rr99)
- the system default time zone

If no time zone is found after the above steps the message's time zone remains empty, that is, cover variables show unconverted TCOSS time with a blank time zone name string.

## Masks and Cover Sheets

The time stamps produced by mask and cover sheet variables are converted to a local time in the message's time zone.

Example of branch box using a fixed time zone:

A branch box located in London uses the (main) channel group 'G'. Create a user "G" and set its time zone field to "WET" to have Western European Time in the cover of all messages sent by this branch box.

**Note** Like any other queue user the user 'G' in the above example has to be created with the "visible in out box" option set. It does not require any rights settings.

Alternatively, do not create a user 'G' but enter the following line into the "\*\*\*MAP2ZONE" section in the A:rr99 routing directory:

```
**MAP2ZONE
G:~,WET
```

### Example of branch box using time zone of the message originator

A branch box located in London uses the (main) channel group 'G'. Do not create a user "G", or create it without a time zone field. Assign the proper time zone to all originator users or work with the MAP2ZONE section in A:rr99 to map normalized originator numbers to time zones.

### Example of rr99 system file

```
**MAP2ZONE
TCTECH:~,CET
NYUser:~,EST
LAUser:~,PST
...
```

## Mask and Cover Variables for Time Zone

The new cover variables "\$TZone1\$" and "\$TZone2\$" insert the actually used time zone in two different formats. In masks the same functionality is provided by the new mask variables \$Z1\$ and \$Z2\$.

Cover variable	Mask variable	Definition	Example
\$TZone1\$	\$Z1\$	Offset from UTC in hh:mm	+01:00

Cover variable	Mask variable	Definition	Example
\$TZone2\$	\$Z2\$	Time zone name	CET

They are intended to be used after date and time variables to unequivocally specify the time stamp by adding the time zone.

**Example:**

```
$Date1$ $Time1$ $TZone1$      03-11-11 09:35:00 +01:00
$Date2$ $Time1$ $TZone2$      11-NOV-2003 09:35:00 CET
```

**Note** The time zone variables may only be used **after** a date or time variable (to which the zone applies), not in front of the date / time variable or stand alone.

## Fax Header Line Parameters

Similar to mask and cover variables two new fax header line parameters have been defined to insert the time zone in two different formats into the fax header line.

Fax header line parameter	Definition	Example
%U%	Offset from UTC in hh:mm	+01:00
%Z%	Time zone name	CET

Time Stamps not converted to Local Time Zone.

The following time stamps are always given in TCOSS server time without any conversion:

- Time on DotDot interface
- Time in +CONTENT, +STATUS listings
- Time in log file entries
- Tariff times in A:kk99
- The creation of system files (one log file per day, one A:KKnn per month and so on) is based on TCOSS server time.

## Time Zones in an ASP System

In an ASP system all time zone settings are done in the customer's TCOSS instances on the storage servers. The storage server instances hold all user data, so the time of the media server is irrelevant.

Only in case that TC/Report is used to fetch log entries from the media servers, such as for fax reception statistics, the media servers should be upgraded also and based on UTC.

The "TimeOffsetMinutes" registry value on the storage server, which was previously used to put different customer's instances into different time zones, is now only used for update purposes. In new systems all instances should be based on UTC allowing them to co-exist on the same server without resorting to additional offset values.

## Time Zones in an LCR System

In a least cost routing system all nodes should be based on UTC and hold identical time zone definitions. The time zone used in a message cover is determined at the entry node. The cover time zone name is passed on to the exit node in the routing process. The message's cover is resolved in the exit node relying on the locally defined time zones. That's why the time zone definitions of all nodes should be identical.

With previous TCOSS releases least cost routing systems worked well only if all nodes were in the same local time zone. The new release based on UTC supports different local times zones without affecting the routing process between nodes because all internal time stamps are in UTC.

The case of a least cost routing system containing a mix of UTC based and local time based nodes is not supported.

## TC/Archive Server Update

If a TC/Archive server connects to a TCOSS instance which is configured to work with time zones, the TC/Archive installation should be updated to use the new TCSI32.DLL (release 2.51.00 or later, copy into `c:\topcall\shared`).

The "`TCSI\AutoTimeZone`" registry value should not be set (or set to 0) on the archive server so that the archive stores all TCOSS time stamps without any conversion.

## Chapter 5

# Least Cost Routing via TCP/IP

With Least Cost Routing via TCP/IP a number of KCS servers can be connected via an existing network.

## Features

- The connected KCS servers form an integrated mail network
- Fully transparent message exchange between the servers, including all attachment types and send options
- Fully transparent status handling, same behavior for TCfW user for single or multiple KCS network when a message is sent
- Fully supported cost accounting
- One standard currency for all nodes, the cost accounting must be configured in units of standard currency for each node
- Costs are always calculated at the exit node and summed up according to cost center at the entry node
- At the exit node, a cost center per entry node is generated; the cost for traffic coming from other nodes is calculated for each entry node separately
- Alternative routing
- A number of alternate routes can be specified. For example, route first to node A, then to node B, then send locally
- Cost calculation is always done at the exit node, so it is correct even if an alternate route has been taken
- Messages are sent only once to the next node even if there are a number of active recipients at this node
- Cover sheets are embedded into the message at the originating node, so they can be maintained on at each node locally
- Delivery notifications can be generated/printed at the entry node. This can be controlled depending on the service the message was sent. TC/GATE can even return the original message in the notification, so that the sending copy does not have to be sent back from the exit node.
- The TCP/IP connection can be routed over leased-line WAN links or the Internet
- Functionality is included in standard TCOSS
- Contact Kofax sales for information about pricing and licenses

## Applications

- Least Cost Routing of Faxes, Telexes, and others.

- Organizations with WAN links to their small subsidiaries can place KCS servers without PTT lines at their outposts. The clients always connect to their own local KCS, giving fast response to the users and lessening the burden on the WAN link. Messages are only transferred once, and at background priority, on the WAN link.
- In general, when KCS servers are connected via Least Cost Routing they form a tightly coupled email system that is also capable of Least Cost Routing for external mail.

## Maintenance

Maintenance can be done either locally or remotely via TCfW Communication Server Client that connects to each node via TCP/IP.

KCS nodes form a network of independent nodes. Messaging will continue to work if single nodes or the whole TCP/IP network go down. Independent function also requires that there are no global dependencies that require a synchronized update of routing tables or the like.

The following are configured independently for each node:

- **Cost accounting:** On each node, only the local cost information is required.
- **Routing:** On each node, only the local routing information is required.
- **Covers:** The covers are only required at the respective entry node.

## Loop Detection

When the routing tables are not configured correctly looping conditions may exist. Such a condition is always detected and corrected automatically. Loop detect happens when a message arrives twice at the same node in the same routing chain.

### **Corrective actions:**

- Loop detect for messages: The send order is negatively terminated and a notification to the originator (at the entry node) is sent.
- Loop detect for notifications: The notification send order is negatively terminated. The send order for the corresponding message (at the entry node) stays at `at_next_node`.

## Restrictions

- User/recipient synchronization between KCS nodes is not implemented at the moment
- TCOSS does not generate notifications containing the original message (only supported by TC/GATE, see above)
- 36 nodes (node letters A-Z and 0-9)

Notifications are sent back to the entry node with normal retries. Nevertheless it can happen, if the routing is not configured correctly or if the retries expire, that a notification cannot be delivered back to the entry node. In this case the original entry (at the entry node) stays at `at_next_node` indefinitely.

## Example

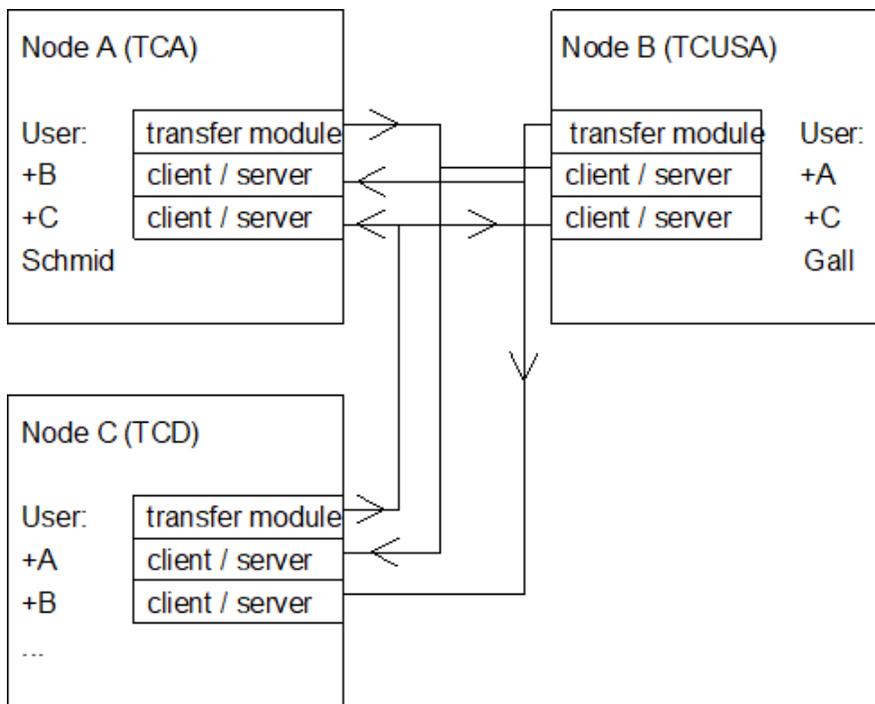
On each node, a transfer module will be configured which transfers messages and notifications to all remote nodes.

For each remote node, a user (of type GATEWAY) will be defined. It is used for the following:

- Login of transfer module from that node
- Cost center definition for send orders from that node

The gateway user must start with "+" and needs no rights. It must not have an address of type TOPCALL with his own user ID as number, such as +A.

## Configuration example



## Example of Operation

On node 'A' (TCA) a message to user Gall on node 'B' (TCUSA) is posted. The normalized address "TCUSA-Gall:" will first be routed to 'B' (via rr99, section \*\*ROUTE) and finally put into the queue "+B" (via rr99, section \*\*NODES).

The transfer module on node 'A' poll's the queues "+B" and "+C". It finds the message in queue "+B" and establishes a connection to node 'B' (path contained in localized number after "+B:"). It logs in as user "+A" (user ID and password are also contained in the localized address) and transfers the message to node 'B'. On node 'B' the normalized address "TCUSA-Gall:" will be routed to "Gall:" and the message put into the in-box of user Gall.

The resulting delivery notification, which is generated on node 'B', will be routed to queue "+A" and sent back to node 'A' by the transfer module of node 'B'.

## Transfer Module Configuration

The transfer module is created as client/server module (UC0). The resulting channel configuration is then changed (using the line editor) from the standard client server module into a transfer module.

### Example for Configuration of node 'A'

(All lines except line 1 may differ from the standard client/server channel and are changed with the line editor):

Line 1	'3,	Client/server channel
Line 2	+',	First character of polled queues. Also serves as switch between normal client/server and transfer module.
Line 6	'BC,	Second character of polled queues for up to 24 remote nodes. A comment may be included separated by a space from the node list. For more than 24 remote nodes a second transfer module must be created. <b>Hint:</b> For better performance the nodes letters should be distributed symmetrically over the 2 transfer modules in this case.
Line 14	'0A,	Send test interval 10 minutes: Change value only for dialup or slow connections, else keep the default ":32"
	01 .. 1F	Send test interval in minutes (1 .. 31 minutes)
	20 .. FF	Send test interval in 0.1 seconds (3.2 .. 25.5 seconds) <b>Note</b> Bit 7 is not used as in a normal public line channel configuration.
Line 7	'A,	The node letter (config line 7) has to be set in the common configuration file (operating system, system parameters). Own node

In order to simplify configuration of least cost routing installations, the node letter of the system ('A' .. 'Z' and '0' .. '9') may now be set in the system configuration. With previous releases, the node letter had to be set separately (but identically) for each channel in the channel configuration.

It is still possible to have channels with different nodes on the same system for testing purposes: If the node in the system configuration is set to ' ' (space), the node setting from the channel configuration (line 7) will be used.

## User Definitions for Remote Nodes

Example for remote node 'B' as defined on node 'A':

- User-ID: "+B" ("+" as 1st character causes automatic setting of GATEWAY flag)
- password: "passwordB" (as set in remote node B for login)
- cost center: "NODEB"

## String Representation of KCS User

The conversion of addresses of type SET\_TC\_ADDRESS into strings (before being put through the routing process) depends on the system configuration:

System configuration line 16, 1 hex position

:00,	Node of KCS address not included (standard configuration)
:2D,	Node included. Node and user ID separated by "-" Model: ts_tc_node + separation character + ts_tc_userid + ":" Example: "TCA-Scully:"

The inclusion of the node specification will be switched on only in least cost routing networks and requires an appropriate Arr99 setting.

## r99 Setting for Routing of KCS User

The rules for the inclusion of comments in Arr99 have been changed to allow the specification of a path containing commas:

Inclusion of comments in Arr99 is no longer possible in the section after \*\*NODES, except for comment only lines starting with 2 commas.

The normalized originator or users (User ID longer than 2) must include the node. Otherwise an error "428 bad originator" may occur when sending to another node. In the normalized originator of channel groups and channel numbers the own node is optional.

Therefore, the normalization section of the rr99 must insert the local node name if no node is specified. This must be done in both the following cases:

1. Number starts with separation character (such as "N=-USER1:" - receiver created with TOPCALL address type)
2. Number has no separation character (such as N=USER1: - receiver created with .. commands, free service, in-event).

Case 2 can be implemented in the normalize section as last line after all known node names and node characters.

### Example for rr99 on node 'A' (= TCA), remote nodes 'B' (=TCUSA) and 'C' (=TCD)

```
**SENDMODES
**NORMALIZE
~,TCA~~      , insert local node if not specified (case a)
TCA~~,TCA~~,  , list of valid nodes
TCUSA~~,TCUSA~~
TCD~~,TCD~~
A,A          , list of node characters
B,B
C,C
```

```

~,TCA-~, , insert local node (case b)
**ROUTE
TCA-~,~ , remove local node
TCUSA-~,B , node B
TCD-~,C , node C
**NODES
      B,+B:TCP/IP,1.2.3.4;+A,passwordA
      C,+C:TCP/IP,5.6.7.8;+A,passwordA
**INBOUND
      FXI:~, ,
      FXI:~,DIST:FaxDID~,

```

## Operation of Transfer Module

The transfer module polls all configured queues and transfers messages and notifications to the remote nodes. The send test interval is configurable. On the remote node a normal client/server module is accessed.

The transfer module appears in the channel overview (L\_CHANNEL\_STATUS) like a normal public line channel and may be set to WAIT / CONTINUE (INT\_ACTIVITY).

Messages are only transferred once to the next node even if there are a number of active recipients at this node.

If there are two or more messages for a particular node at a particular time, they are sent in one connection.

Cover sheets and other attached documents (attached by reference) are embedded into the message at the originating node.

### Implementation:

The transfer module connects to the remote node using the path parameter from the localized number of the send order. User-ID and password for the login on the remote node are also contained in the localized number. It uses a new INT\_CLIENT\_TYPE (=TC) for login, which does no registration and has rights limited to message transfer. The password is sent in encrypted form.

## Cost Accounting

All nodes use the same currency. Costs are calculated at the exit node, the cost of the links between the nodes is not taken into account.

At the exit node the costs for send orders from distant nodes are added to the cost center set in the user definition for that node.

At the entry node the costs are taken from the notification and added to the cost center as specified in the envelope's header.

**Note** The cost accounting for least cost routing via UAS will be changed and also follow the same new model.

## Support of REGISTERED Sending

The flag REGISTERED in INT\_TERMINATION is passed on to the exit node by the transfer module. In case of sending REGISTERED to a KCS user on a remote node, the delivery notification from that node will be generated when the user reads the message (state change from ST\_UNREAD to ST\_READ). The state of the mail entry in the entry node will stay on ST\_SENT (int\_status AT\_NEXT\_NODE) until the delivery notification is received. There is no intermediate state change informing the sender that the message has been put into the recipient's in-box.

## Routing Error Handling

### No connection to remote node

If the connection to the remote node cannot be established, the affected mail entries will get error code "SE". Retries will be done as for break code 3. The error code returned by the function tct\_connect() will be put into the field LAST\_MDA\_NOTE (shown as "Response" in the TCfW outbox).

If subsequent retries fail (number depends on configuration), alternative numbers will be activated. Alternatives may contain a different routing path (maybe indirect routing) or direct sending via public lines.

Possible negative response codes include:

```
623 invalid path          (invalid syntax for path)
702 no connection        (no response from remote node)
755 connection error     (error in establishing connection)
609 user ID not found    (user ID for login does not exist on remote node)
610 wrong password       (wrong password for login on remote node)
```

### Connection interrupted during message transfer

If the connection to the remote node fails during message transfer, the affected mail entries will be marked with error code "SP" and the INT\_SUSP\_DUPL flag set to YES. The transfer will be tried again after 1 hour without decreasing the retry counter INT\_OPEN\_RETRIES.

### Message not accepted at remote node

If, for any reason, the message or notification transferred is not accepted at the remote node, the affected mail entries will get error code "SE" and state ST\_REJECTED (int\_status NEG\_TERM). The acknowledgment received from the distant node will be put into the field LAST\_MDA\_NOTE. There are no retries in this case, but possibly alternative numbers which will be activated.

Possible negative acknowledgments include:

```
303 too many send orders
308 disk full
320 loop detected
406 bad channel          (For example, if the specified recipient does not exist.)
428 bad originator       (Should only happen if Arr99 is not set up correctly.)
```

## Least Cost Routing Example

### Least cost routing example with 4 nodes and 2 transfer modules

Four KCS systems located in USA (Irvine), South Africa (Cape Town), Ethiopia (Addis Ababa) and Hungary (Budapest) are connected via TCP/IP least cost routing.

USA	Ethiopia	South Africa	Hungary
USA	ETH	ZA	HU
IP 10.20.111.1	10.20.111.25	10.20.111.27	10.20.111.36
Country code 001	Country code 0025	Country code 0027	Country code 0036
Area code 949	Area code 11	Area code 21	Area code 1
Local phone 78399xx	Local phone 86645xxx	Local phone 66133xx	Local phone 86353xxx
Escape digit 0	Escape digit 0	Escape digit 0	Escape digit 0
Int. prefix 011	Int. prefix 00	Int. prefix 00	Int. prefix 00

### System configuration

Optionally set line 19, pos.4 to 01 in order to archive LCR messages on exit node.

line 7 'A,	line 7 'Y,	line 7 '0,	line 7 '9,
line 16 :2D,	line 16 :2D,	line 16 :2D,	line 16 :2D,
line 19, pos.4:01	line 19, pos.4:01	line 19, pos.4:01	line 19, pos.4:01

Configuration changes for first UC0 (transfer module), such as channel B9:

Change line 14 from default ":32" to ":0A" only for dialup or slow TCP/IP connections.

line 2 '+,	line 2 '+,	line 2 '+,	line 2 '+,
line 6 'Y,	line 6 '09	line 6 'AY	line 6 'A,

Configuration changes for second UC0 (transfer module), such as channel B8:

Change line 14 from default ":32" to ":0A" only for dialup or slow TCP/IP connections.

line 2 '+,	line 2 '+,	line 2 '+,	line 2 '+,
line 6 '09,	line 6 'A	line 6 '9	line 6 'Y0,

### Gateway users:

No addresses, no events and no rights need to be set for the gateway user.

UserID: +Y	UserID: +A	UserID: +A	UserID: +A
Password: pwyd	Password: pwda	Password: pwda	Password: pwda
Costcenter: NODE_Y	Costcenter: NODE_A	Costcenter: NODE_A	Costcenter: NODE_A

UserID: +0	UserID: +0	UserID: +Y	UserID: +Y
Password: pwd0	Password: pwd0	Password: pwdy	Password: pwdy
Costcenter: NODE_0	Costcenter: NODE_0	Costcenter: NODE_Y	Costcenter: NODE_Y
UserID: +9	UserID: +9	UserID: +9	UserID: +0
Password: pwd9	Password: pwd9	Password: pwd9	Password: pwd0
Costcenter: NODE_9	Costcenter: NODE_9	Costcenter: NODE_9	Costcenter: NODE_0

Routing directory rr99:

USA - Node A	Ethiopia - Node Y	South Africa - Node 0	Hungary - Node 9	Comments
**SENDMODES	**SENDMODES	**SENDMODES	**SENDMODES	
**NORMALIZE	**NORMALIZE	**NORMALIZE	**NORMALIZE	
F:*~,F:*~,	F:*~,F:*~,	F:*~,F:*~,	F:*~,F:*~,	Normalize Fax numbers
F:011~,F:*~,	F:00~,F:*~,	F:00~,F:*~,	F:00~,F:*~,	
F:1~,F:*001~,	F:0~,F:*25~,	F:0~,F:*27~,	F:0~,F:*36~,	
F:~,F:*001949~,	F:~,F:*2511~,	F:~,F:*2721~,	F:~,F:*361~,	
USA~~,USA~~,	USA~~,USA~~,	USA~~,USA~~,	USA~~,USA~~,	Known node aliases
ETH~~,ETH~~,	ETH~~,ETH~~,	ETH~~,ETH~~,	ETH~~,ETH~~,	
ZA~~,ZA~~,	ZA~~,ZA~~,	ZA~~,ZA~~,	ZA~~,ZA~~,	
HU~~,HU~~,	HU~~,HU~~,	HU~~,HU~~,	HU~~,HU~~,	
A,A,	A,A,	A,A,	A,A,	Known nodes
Y,Y,	Y,Y,	Y,Y,	Y,Y,	
0,0,	0,0,	0,0,	0,0,	
9,9,	9,9,	9,9,	9,9,	
--,USA~~,	--,ETH~~,	--,ZA~~,	--,HU~~,	Insert local node for TCSI
~,USA~~,	~,ETH	~,ZA~~,	~,HU~~,	Insert local node for..command
**ROUTE	**ROUTE	**ROUTE	**ROUTE	
F:*25~,Y,\F:01125~	F:*1~,A\F:001~,	F:*1~,A\F:001~,	F:*1~,A\F:001~,	Route Fax \ alt. number
F:*27~,0\F:01127~	F:*27~,0\F:0027~,	F:*25~,Y\F:0025~,	F:*25~,Y\F:0025~,	
F:*36~,9\F:01136~	F:*36~,9\F:0036~,	F:*36~,9\F:0036~,	F:*27~,0\F:0027~,	
F:*001949~,F:~,	F:*2511~,F:~,	F:*2721~,F:~,	F:*361~,F:~,	Localize Fax

F:*001~,F:1~,	F:*25~,F:0~,	F:*27~,F:0~,	F:*36~,F:0~,	
F:*~,F:011~,	F:*~,F:00~,	F:*~,F:00~,	F:*~,F:00~,	
USA-~,~,	USA-~,A,	ZA-~,~,	HU-~,~,	Remove Local Node
ETH-~,Y,	ETH-~,~,	USA-~,A,	USA-~,A,	Routing to nodes
ZA-~,0,	ZA-~,0,	ETH-~,Y,	ETH-~,Y,	
HU-~,9,	HU-~,9,	HU-~,9,	ZA-~,0,	
**NODES	**NODES	**NODES	**NODES	No comments in this section
Y,+Y:TCP/ IP,10.20.111.25; +A,pwda	A,+A:TCP/ IP,10.20.111.1; +Y,pwdy	A,+A:TCP/ IP,10.20.111.1; +0,pwd0	A,+A:TCP/ IP,10.20.111.1; +9,pwd9	<= this is a single line
0,+0:TCP/ IP,10.20.111.27; +A,pwda	0,+0:TCP/ IP,10.20.111.27; +Y,pwdy	Y,+Y:TCP/ IP,10.20.111.25; +0,pwd0	Y,+Y:TCP/ IP,10.20.111.25; +9,pwd9	<= this is a single line
9,+9:TCP/ IP,10.20.111.36; +A,pwda	9,+9:TCP/ IP,10.20.111.36; +Y,pwdy	9,+9:TCP/ IP,10.20.111.36; +0,pwd0	0,+0:TCP/ IP,10.20.111.27; +9,pwd9	<= this is a single line
**INBOUND	**INBOUND	**INBOUND	**INBOUND	
FXI:~, ,	FXI:~, ,	FXI:~, ,	FXI:~, ,	
FXI:~,DIST:~,	FXI:~,DIST:~,	FXI:~,DIST:~,	FXI:~,DIST:~,	

**Remarks:**

- Insert local node (such as ~,USA~, ) should always be at the end of the \*\*NORMALIZE section
- System configuration line 19, pos.4 set to 01 on all nodes ( archive LCR messages on exit node) helps monitoring/ troubleshooting during the installation phase
- For IPv6 connections to nodes, specify the IP address inside square brackets, such as 0,+0:TCP/IP,[fd96:eb5f:7508:3:2d0:68ff:fe07:a27];+Y,pwdy

## Chapter 6

# Location-Based Routing

Location-based routing means that the routing process of the recipient may depend on the location of the message originator.

**User Profile - RM**

Queue Length/Age | TC/Broadcast | FaxPlus | TC/WEB | TC/WEB Identity Rights  
General | Address | Event | Rights | Manual Fax | Distributor | Authorize/Sign | Alert

**User ID:**  **Password:**

**Group:**  **Retype password:**

**Location:**   Change own password

**Representative:**   Password never expires

**Company:**   Change password at next login

**Department:**   Lock account

**Full name:**

**Salutation:**

**Free Text:**

**Cost center:**

**Default template:**  **Language:**  ▾

**User belongs to:**  ▾

Visible in outbox  
 Dirsync allowed  
 Reject all messages  
 Logging of all send attempts

OK Save Cancel

The location of a user is stored in the **Location** field in the user store entry. It has a maximum length of 8 characters.

The user location field is supported by TCfW client releases 5.10.00 and later.

The routing process is controlled by the system file "+MAIL5V/Arr99". Its format has been extended with location dependent sub-sections. Each of the five rr99 section (SENDMODES, NORMALIZE, ROUTE, NODES and INBOUND) may now contain sub-sections for specific locations.

**Example for NORMALIZE section**

```

**NORMALIZE, LOCATION=RIO
F:*~, F:*~
F:00~, F:*~
F:0~, F:*55~
F:~, F:*5521~
**NORMALIZE, LOCATION=BANGKOK
F:*~, F:*~
F:001~, F:*~
F:0~, F:*66~
F:~, F:*662~
**NORMALIZE
F:*~, F:*~
F:00~, F:*~
F:0~, F:*43~
F:~, F:*431~

```

In this example local fax numbers are normalized depending on the user's location. The general NORMALIZE section is always processed, in this case it does the default normalization for a user based in Vienna.

In each routing step, the sub-section for the specific location, if found in rr99, is processed first. The general section is done afterwards, independent of the sender's location.

The sub-sections for specific locations have to be specified before the respective general section in rr99. The match between location specifications in rr99 and in the user profiles is case insensitive.

When a message is posted the originator of the message is routed first, without applying location-dependent sections. Then the location of the routed originator is looked up in the user store and applied in the routing process of all recipients.

**Example of a location-dependent routing section**

```

**ROUTE, LOCATION=BRANCH1
F:*431~, G:~
F:*43~, G:0~
F:*~, G:00~
**ROUTE, LOCATION=BRANCH2
F:*431~, H:~
F:*43~, H:0~

```

```
F:*~,H:00~
**ROUTE
F:*431~,F:~
F:*43~,F:0~
F:*~,F:00~
```

In this example fax messages from users located in branch offices BRANCH1 and BRANCH2 are routed to different channel groups ('G' and 'H') which correspond to branch boxes installed in the respective offices. Fax messages originating in the head quarter retain channel group 'F' and are sent from there.

## Branch Box Failsafe Configuration

A system with branch boxes may be configured in a way that in case of failure of a branch box the messages normally sent by this branch box are picked up by other branch boxes or fax channels. The idea of the fail save configuration is that messages waiting in a send queue longer than a configurable timeout are handled by other channels. The timeout may be reached because a branch box fails or because it is too slow to handle its traffic.

The following example illustrates this case. Let's assume we have a system with two branch boxes, one located in Bangkok and one in Rio de Janeiro. The server is set up in Vienna and also has some direct fax lines connected to it. Three channel groups represent the branch boxes and the direct fax lines:

1. Channel group 'F': direct fax lines on Vienna server
2. Channel group 'G': branch box in Bangkok
3. Channel group 'H': branch box in Rio de Janeiro

All fax channels of a group have all other groups set as additional channel groups, so that they can pick up messages from those groups.

Config line	Position	Meaning
2		
	1st position	Main channel group
	2nd .. 26th position	Additional channel groups, unused positions set to spaces.
14		The timeout for the fail over case is set in config line 14:
	2nd position	The "time overdue" value in minutes for additional channel groups, 00 ..FF = 0 ..255 minutes "time overdue" value

Channel group 'F' configuration example:

Config line	Position	
2	'FGH	Main group F, additional groups G,H
14	:FF 3C,	Timeout 1 hour

The fax channels of group 'F' have groups 'G' and 'H' set as additional channel groups, to pick up messages from there which have been waiting for an hour or more. Similarly channels of group 'G' must be configured to serve 'F' and 'H' as additional channels, and so on.

The fax traffic may be distributed between the three groups using least cost routing rules or location based routing. In both cases the routing section does not remove the international prefix from the fax number; the normalized number is passed on to the fax channels.

### Example of rr99 using location-based normalization and least cost routing

```
**NORMALIZE, LOCATION=RIO
F:*~, F:*~
F:00~, F:*~
F:0~, F:*55~
F:~, F:*5521~

**NORMALIZE, LOCATION=BANGKOK
F:*~, F:*~
F:001~, F:*~
F:0~, F:*66~
F:~, F:*662~

**NORMALIZE
F:*~, F:*~
F:00~, F:*~
F:0~, F:*43~
F:~, F:*431~

**ROUTE
F:*66~, G:*66~, route faxes to Thailand to Bangkok branch box
F:*55~, H:*55~, route faxes to Brazil to Rio branch box
,, all other faxes are sent from Vienna
```

### Example of location-based routing

NORMALIZE section same as above

```
**ROUTE, LOCATION=Bangkok
F:~, G:~

**ROUTE, LOCATION=Rio
F:~, H:~
**ROUTE
```

All FAX channels now get the normalized number for dialing, such as "\*4318635321" for a fax recipient in Vienna.

Analog FAX channels have to be configured (depending on their location) to remove the international prefix from national numbers. This is done in the fax number conversion table in config lines 254 ..283.

### Example of analog FAX channel configuration of group 'F' (located in Vienna)

```
'8*43186353~ = I~ , internal
'8*431~ = ~ , local
'8*43~ = 0~ , national
'8*~ = 00~ , international
```

### Example of analog fax channel configuration of group 'G' (located in Bangkok)

```
'8*662~ = ~ , local
'8*66~ = 0~ , national
'8*~ = 001~ , international
```

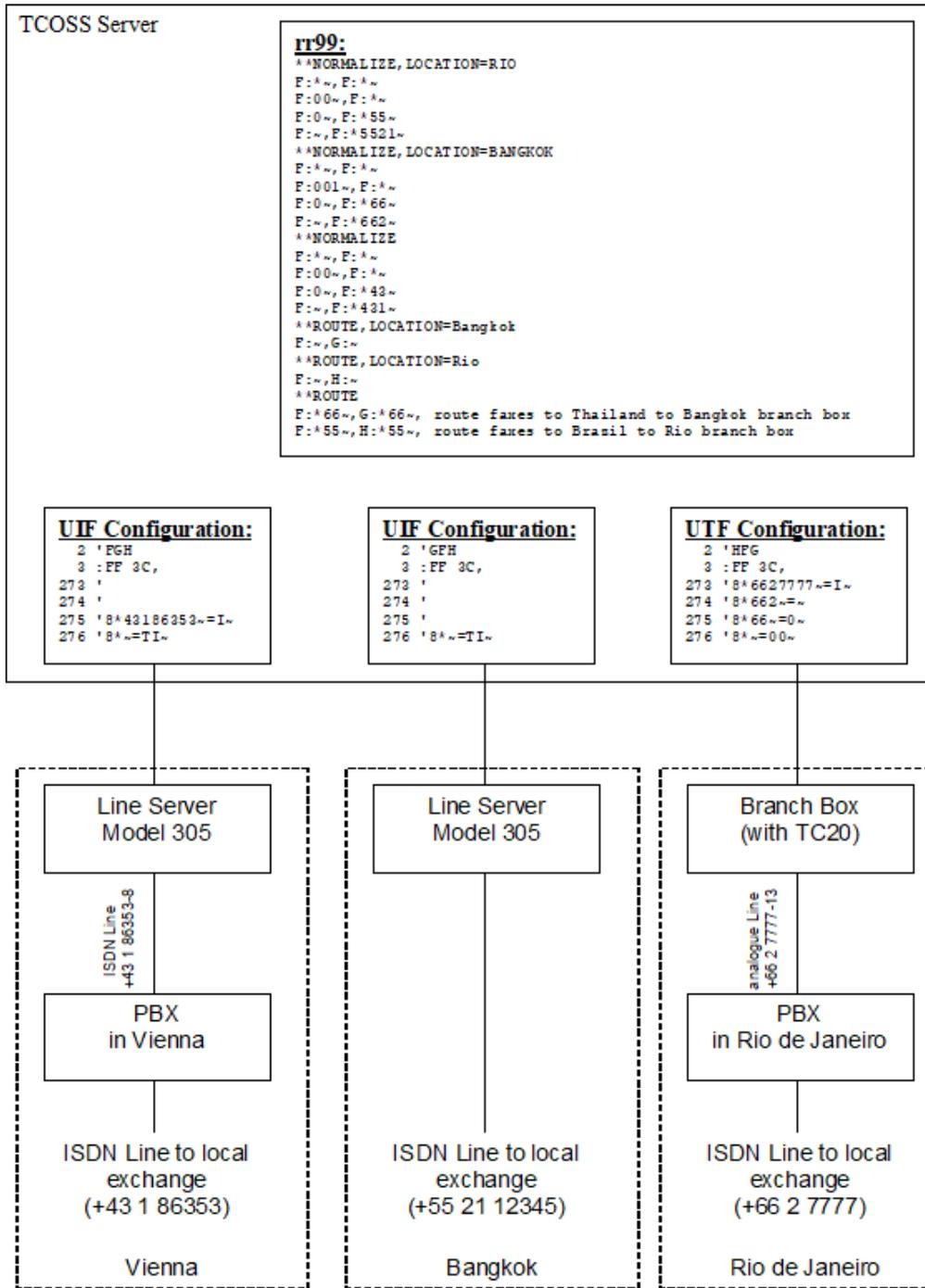
ISDN fax channels can handle the normalized number with the standard configuration because the following entry in the fax number conversion table converts the asterisk prefix to an international number format (config line 276):

```
'8*~=TI~ ,
```

Only a conversion line for internal routing needs to be added to ISDN fax channels, like in the group 'F' example above:

```
'8*43186353~=I~ , internal
```

Configuration example:



## Maximum Store Capacity of Location Based Routing

The routing process has two fixed storage limits:

- String space containing all conversion strings. The maximum total length is 100000 characters.

- The maximum number of routing sections (general and location specific) is 1000.

If one of the above limits is reached, the current and all following conversion lines and steps in rr99 are not loaded and an error trace is written:

```
ID:16037 ROUT-rr99 out of space
```

An event log entry is also generated.

This handling is unchanged from previous releases; only the second limit (maximum number of routing sections) is new.

## Error Handling

Invalid or duplicate section specifications in rr99 are ignored. All following conversion lines are skipped until a valid section specification is found. Trace lines are written to the trace file if any non-zero trace level is set.

Examples of error traces caused by rr99 control lines:

```
rr99 unknown conversion step **STANDARDIZE
rr99 unknown section type **NORMALIZE,SITE=LINZ
rr99 duplicate section **ROUTE,LOCATION=branch1
```

If the location specified in rr99 exceeds the maximum length of 8 characters it will be truncated to 8 characters and the section is handled as valid. No trace is generated in this case.

If a general section, such as SENDMODES and NORMALIZE does not exist in rr99, such case is handled like an empty section case.

## Chapter 7

# Internal Character Set

**Note** Teletex is no longer supported.

## Character Set

An 8-bit-code, TCOSS-code is used as internal character set which expands the 7-Bit ASCII-code or the 8-bit IBM/PC-Code (see code table) so that teletex texts can also be represented without information being lost.

The TCOSS-code provides a very simple, uniform, internal representation of text information. Data stored in the TCOSS-code can be converted into other codes relatively easily. This facilitates the connection of external devices. In addition, the TCOSS-code allows you to store teletexes in their original form; a received document sent via teletex again is printed out without being changed. The produced teletex code, however, does not necessarily have to be identical to the initial one.

## Page Formats

The TCOSS code supports the following teletex-compatible page formats.

Page format	Abbreviated term	Characters/line	Lines/page (TTX)
A4 upright	A4H	77	59+1
A4 broadside	A4Q	110	38+1
Basic service upright	BDH	77	55+1
Basic service broadside	BDQ	105	38+1

When a teletex document is received, a call identifier line is automatically inserted as the first line of every page. The maximum number of lines per page thus consists of the maximum number of text lines (which varies from one format to the next) + 1 call identifier line. For example:

A4H: 59 text lines + 1 call identifier line

The page formats for telefax are configurable.

The page formats for telefax, transputer fax and laser printer module are configurable individually for ++A4H, ++A4Q, ++BDH and ++BDQ. The layout of the page can be defined and you can select between two fonts in landscape and portrait orientation.

## TCOSS - Lines

The storage of the TCOSS code is line-oriented. A TCOSS-line consists of the following:

- First character: "format control character" for determining the position of the cursor or the printer head and the page format to be used.
- Any number of displayable characters
- Break character for line separation (00H)

A document in the TCOSS-code consists of a series of TCOSS-lines.

## Format Control Characters

The following table provides the name of the control characters and the line at which the character pointer must be positioned prior to line output.

Name	Position of the character pointer
A4H	1st line of a new page, A4-upright
A4Q	1st line of a new page, A4-broadside
BDH	1st line of a new page, basic service upright
BDQ	1st line of a new page, basic service broadside
LF0	Same line, no line feed
LF1	Next line, 1/2 line feed
LF2	Next line, 2/2 line feed
LF3	Next line, 3/2 line feed
BS0	Same line, no line feed, 5 char. left of margin
BS1	Next line, 1/2 line feed, 5 char. left of margin
BS2	Next line, 2/2 line feed, 5 char. left of margin
BS3	Next line, 3/2 line feed, 5 char. left of margin

## Line Make-Up

The TCOSS file format has been extended to support an unlimited line length. Lines longer than 254 characters can only be created with TCfW (uses TCSI interface). Upon sending or viewing a document with a user module (not with TCfW) there is a line make up function used.

This function works as follows:

The default line length is 254 characters. If the document contains a ++TXT control line (text format line) the length is set to the specified value and stays valid until another ++TXT format line is found. The line length setting in an included document also affects the following text in the main document and in documents included afterwards.

The line length setting is defined for backspace lines (lines with format control BS1 ..BS3). Lines with format control LF1 ..LF3 are made up to a line length limit 5 characters less than the valid line length setting. All make up lines carry the same format control as the original line.

The minimum line length is 6, the maximum 253. Values outside this range set the line length to the appropriate limit (6 or 253).

Lines are separated at the position of a space character, if any space can be found. This one space character does not appear in the output. If no space is found, line separation occurs at the line length limit.

For telex channels (channel type set to 'X' in config line 3) the following additional features have been implemented:

If the current line length setting is 69 or more and if the actual line length is 115 or more, the line is made up for a line length of 69 characters. In that case the line make-up is done correctly by telex module.

The byte-string conversion of the standard configuration is taken into account if a line is made up.

**Note** This make up is not intended to work with overlay lines.

After line make-up of the application module, the lines may be divided again by the user module. Both line make-up functions are used if both cases listed below occur.

The current line length setting is longer than the current line length of the user module (line make-up of user module is used).

Lines longer than the current line length (line make-up of application module will be used): in that case, words may be divided with UTF, ULP and UIF (because they do not make a word oriented line make-up) and lines may not use the maximum possible line width.

### Line breaking rules

The line make up implemented in the TCOSS application module uses the following line breaking rules, taking into account the code page of the text block:

- Sequences of single byte characters are only broken at the position of spaces (the space is removed)
- Line break is possible before and after any double byte character
- A sequence of single-byte characters without spaces will be broken at maximum line length.
- A fixed pitch font with double-byte characters twice as wide as single-byte characters is assumed
- The specified line length (in characters) refers to single-byte characters

## Conversion Possibilities

The user module for a device that cannot overprint characters can carry out the following simple conversions:

- All TCOSS-lines with position character LF0 or BS0 (these are the lines with overlay characters) are ignored.
- LF1-3, BS1-3, A4H-BDQ are replaced by the corresponding code for carriage return + line feed.
- Lines that are too long can be divided (line division).
- The real conversion of characters can be carried out by means of a 256-byte table.

## TCOSS Codepages

Two TCOSS code pages were designed to meet the demands of several countries as follows:

Codepage 0	The standard TCOSS code page. It is used for the following countries: A, B, CH, D, DK, E, F, GR, I, NL, S, SF, UK, and USA.
Codepage 1	The second TCOSS code page. It is used for the following countries: CZ, SK, H, PL, ROM, and TR.

We recommend that you configure all modules in the KCS system to support the same code page. If both code pages should be supported in one KCS system, take care during transferring documents between modules which are configured for different code pages.

### Hints for using code pages

- Each FAX and laser printer module is configured explicitly for code page 0 or 1. This setting takes care for appropriate assigning of character shapes to a character code in a document during sending. Also take care that the code page configuration in the FAX module doesn't influence the reception of FAX documents.
- In the Telex module a flexible byte to string conversion during sending and a string to byte conversion for reception of documents can be configured to support national characters for each country. This feature is very useful for TCOSS codes which are assigned for different character shapes in each code page. No special care must be taken for the Greek character set because the characters are placed in both code pages at the same position.
- The asynchronous module performs the appropriate byte to byte code conversion between HOST character code pages and the TCOSS code pages.
- MEMO module can be used only with code page 0.

## Rendering of Code Pages Other Than TCOSS 0 or 1

This feature allows TCOSS to work with multi-byte Windows code pages like 65001 (UTF-8, Unicode), 932 (Japanese Shift-JIS) or 950 (Chinese traditional).

The TCOSS application module can convert text with code pages other than TCOSS 0 or 1 into image blocks before passing it to the connected user module. The conversion is switched on by a new bit in the configured channel capability.

Config line 3, 2nd position

'0', '1', .. '7'	Text, image & binary capability, no rendering
'@', 'A', .. 'G'	Like '0' ..'7', with rendering

When updating to the new release, rendering is switched on for all fax channels (automatically), for other channels, this config position will remain unchanged.

For channels with no rendering configured, the resulting text after cover variable resolution and line make up is passed unchanged to the user module.

The rendering is done assuming a fixed line pitch (equal to the defaults for text block):

Line pitch ... 236 Twips corresponds to a character height of 32 pixels (fax fine mode)

The left margin and the BS-LF offset are variable; the values specified in the page object or in the text block are taken.

The font name is taken from an optional NT registry key stored under

"HKEY\_LOCAL\_MACHINE\SOFTWARE\TOPCALL\CodePages\nnn\Font" where nnn is the code page number (configured TCOSS system code page).

The font charset property is also set by TCOSS (according to the configured TCOSS system code page).

Each text line is passed to the user module as a separate image block (fine mode) using the following code:

```
++FX1 0,1  
TCI code lines  
++TXT
```

The control line ++FX1 0,1 is used by the Fax module to assure correct handling of page breaking and text top margin.

**Restrictions:**

- Broadside orientation of text blocks is not supported. Which default configuration, all rendered broadside text is ignored (see hint 4906). Do avoid the problem, that broadside pages completely disappears on, for example, Japanese systems, the FAX configuration has to be changed: ++A4Q exactly as ++A4H and ++BDQ exactly as ++BDH (config lines 137 has to be equal to 136 and 139 has to be equal to 138).
- Back reception requires full image back reception
- Text blocks in covers have to be generated in the TCOSS system code page (because header and entry fields inserted with cover variables are always in the system code page).
- Text blocks with code pages other than 0 or 1 are rendered using the configured TCOSS system code page and not the actual code page number contained in the text block.
- No rendering is done for the fax header line specified with a ++HLN or ++HLB control line. This means that the fax header line is always interpreted in the TCOSS code page (0 or 1) configured in the fax module.
- No rendering is done for masks. They are always converted into legacy code page.

TCOSS Code Page 0

TCOS CODEPAGE	0-	1-	2-	3-	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
0																
-0			SP01	0 ND10	@ SM05	P LP02	' SD13	p LP01	Ç LC42	É LE12	á LA11	ς GS03 Greek ITA2 comb.17	π GP01	K LK61	B GB02	Ξ GX02
-1			SP02	1 ND01	A LA02	Q LQ02	a LA01	q LQ01	ü LU17	æ LA51	í LI11	ς Greek ITA2 comb.23	ς SM24	π SC01	β LS81	ζ SA02
-2			SP04	2 ND02	B LB02	R LR02	b LB01	r LR01	é LE11	Æ LA52	ó LO11	' SD11	-D LD02	δ LD61	Γ GC02	Ο GO02
-3			SM01	3 ND03	C LC02	S LS02	c LC01	s LS01	á LA15	ó LO15	ú LU11	ψ GP61	ι GI01	δ LD63	Δ GD02	Π CP02
-4			SC03	4 ND04	D LD02	T LT02	d LD01	t LT01	ä LA17	ö LO17	ñ LN19	ω GC61	Η LH62	h LH61	E GE02	Ρ GR02
-5	α GA01		SM02	5 ND05	E LE02	U LU02	e LE01	u LU01	à LA13	ò LO13	Ñ LN20	- SD31	X SA07	ι LI61	Z GZ02	Σ GS02
-6	β GB01		SM03	6 ND06	F LF02	V LV02	f LF01	v LV01	á LA27	ó LU15	í SM21	ς SD23	U LI52	ι LI51	ι GI01	ι SI06
-7	γ GG01		SP05	7 ND07	G LG02	W LW02	g LG01	w LW01	ç LC41	ù LU13	è SM20	' SD29	L LL64	í LI63	H GH02	T GT02
-8	δ GD01	v GN01	SP06	8 ND08	H LH02	X LX02	h LH01	x LX01	ê LE15	ÿ LY17	ç SP16	" SD17	L LL62	í LI61	θ GT62	° SM19
-9	ε GE01	ξ GX01	SP07	9 ND09	I LI02	Y LY02	i LI01	y LY01	ë LE17	Ö LO18	Γ SP16	" SD17	3 NS03	ø LO61	ι GI02	Υ GY02
-A	ζ GZ01	ο GC01	SM04	:	J LJ02	Z LZ02	j LJ01	z LZ01	è LE13	Ü LU18	~ SM66	° SD27	OE LO52	œ LO51	Ω GO62	Φ GF02
-B	η GE61	ρ GR01	SA01	;	K LK02	I SM08	k LK01	{ SM11	í LI17	ϕ SC04	½ NF01	· SD41	K GX01	¾ NF05	K GX02	X GH02
-C	θ GT61	σ GS01	SP08	<	L LL02	I SM07	l LL01	 SM13	í LI15	£ SC02	¼ NF04	· SM26	p LT64	p LT63	Λ GL02	Ψ GF62
-D		τ GT01	SP10	=	M LM02	J SM08	m LM01	} SM14	í LI13	¥ SC05	í SP03	" SD25	T LT62	í LT61	∅ LO62	¿ NS02
-E		υ GY01	SP11	>	N LN02	^ SD15	n LN01	~ SD19	Ä LA18	P SP17	" SP17	· SD43	∅ LN62	η LN61	M GM02	λ GL01
-F		φ GF01	SP12	?	O LO02	¯ SP09	o LO01	χ GH01	Á LA28	¡ LA28	" SP18	· SD21	'n LN63	Α GA02	N GN02	

The codes are annotated with their short identifiers according to ISO 6937.

## TCOSS Code Page 0 Reference Table

The following table shows the Unicode value and Unicode name corresponding to each TCOSS 0 code.

**Note** The codes 0x09, 0x0d, 0x0e and 0x0f are currently used within TC/Link as intermediate code if a text block is converted into a TCOSS text with code page 0 or 1.

TC	Unicode	Unicode name
0x00	0x0000	NULL
0x01	0x0001	UNDEFINED
0x02	0x0002	UNDEFINED
0x03	0x0003	UNDEFINED
0x04	0x0004	UNDEFINED
0x05	0x03B1	GREEK SMALL LETTER ALPHA
0x06	0x03B2	GREEK SMALL LETTER BETA
0x07	0x03B3	GREEK SMALL LETTER GAMMA
0x08	0x03B4	GREEK SMALL LETTER DELTA
0x09	0x03B5	GREEK SMALL LETTER EPSILON (VERTICAL TAB)
0x0A	0x03B6	GREEK SMALL LETTER ZETA
0x0B	0x03B7	GREEK SMALL LETTER ETA
0x0C	0x03B8	GREEK SMALL LETTER THETA
0x0D	0x000D	UNDEFINED (CARRIAGE RETURN)
0x0E	0x000A	UNDEFINED (LINE FEED)
0x0F	0x000F	UNDEFINED (FORM FEED)
0x10	0x0010	UNDEFINED
0x11	0x0011	UNDEFINED
0x12	0x0012	UNDEFINED
0x13	0x0013	UNDEFINED
0x14	0x0014	UNDEFINED
0x15	0x0015	UNDEFINED
0x16	0x0016	UNDEFINED
0x17	0x0017	UNDEFINED
0x18	0x03BD	GREEK SMALL LETTER NU
0x19	0x03BE	GREEK SMALL LETTER XI
0x1A	0x03BF	GREEK SMALL LETTER OMICRON

TC	Unicode	Unicode name
0x1B	0x03C1	GREEK SMALL LETTER RHO
0x1C	0x03C3	GREEK SMALL LETTER SIGMA
0x1D	0x03C4	GREEK SMALL LETTER TAU
0x1E	0x03C5	GREEK SMALL LETTER UPSILON
0x1F	0x03C6	GREEK SMALL LETTER PHI
0x20	0x0020	SPACE
0x21	0x0021	EXCLAMATION MARK
0x22	0x0022	QUOTATION MARK
0x23	0x0023	NUMBER SIGN
0x24	0x0024	DOLLAR SIGN
0x25	0x0025	PERCENT SIGN
0x26	0x0026	AMPERSAND
0x27	0x0027	APOSTROPHE
0x28	0x0028	LEFT PARENTHESIS
0x29	0x0029	RIGHT PARENTHESIS
0x2A	0x002A	ASTERISK
0x2B	0x002B	PLUS SIGN
0x2C	0x002C	COMMA
0x2D	0x002D	HYPHEN-MINUS
0x2E	0x002E	FULL STOP
0x2F	0x002F	SOLIDUS
0x30	0x0030	DIGIT ZERO
0x31	0x0031	DIGIT ONE
0x32	0x0032	DIGIT TWO
0x33	0x0033	DIGIT THREE
0x34	0x0034	DIGIT FOUR
0x35	0x0035	DIGIT FIVE
0x36	0x0036	DIGIT SIX
0x37	0x0037	DIGIT SEVEN
0x38	0x0038	DIGIT EIGHT
0x39	0x0039	DIGIT NINE
0x3A	0x003A	COLON
0x3B	0x003B	SEMICOLON
0x3C	0x003C	LESS-THAN SIGN

<b>TC</b>	<b>Unicode</b>	<b>Unicode name</b>
0x3D	0x003D	EQUALS SIGN
0x3E	0x003E	GREATER-THAN SIGN
0x3F	0x003F	QUESTION MARK
0x40	0x0040	COMMERCIAL AT
0x41	0x0041	LATIN CAPITAL LETTER A
0x42	0x0042	LATIN CAPITAL LETTER B
0x43	0x0043	LATIN CAPITAL LETTER C
0x44	0x0044	LATIN CAPITAL LETTER D
0x45	0x0045	LATIN CAPITAL LETTER E
0x46	0x0046	LATIN CAPITAL LETTER F
0x47	0x0047	LATIN CAPITAL LETTER G
0x48	0x0048	LATIN CAPITAL LETTER H
0x49	0x0049	LATIN CAPITAL LETTER I
0x4A	0x004A	LATIN CAPITAL LETTER J
0x4B	0x004B	LATIN CAPITAL LETTER K
0x4C	0x004C	LATIN CAPITAL LETTER L
0x4D	0x004D	LATIN CAPITAL LETTER M
0x4E	0x004E	LATIN CAPITAL LETTER N
0x4F	0x004F	LATIN CAPITAL LETTER O
0x50	0x0050	LATIN CAPITAL LETTER P
0x51	0x0051	LATIN CAPITAL LETTER Q
0x52	0x0052	LATIN CAPITAL LETTER R
0x53	0x0053	LATIN CAPITAL LETTER S
0x54	0x0054	LATIN CAPITAL LETTER T
0x55	0x0055	LATIN CAPITAL LETTER U
0x56	0x0056	LATIN CAPITAL LETTER V
0x57	0x0057	LATIN CAPITAL LETTER W
0x58	0x0058	LATIN CAPITAL LETTER X
0x59	0x0059	LATIN CAPITAL LETTER Y
0x5A	0x005A	LATIN CAPITAL LETTER Z
0x5B	0x005B	LEFT SQUARE BRACKET
0x5C	0x005C	REVERSE SOLIDUS
0x5D	0x005D	RIGHT SQUARE BRACKET
0x5E	0x005E	CIRCUMFLEX ACCENT

<b>TC</b>	<b>Unicode</b>	<b>Unicode name</b>
0x5F	0x005F	LOW LINE
0x60	0x0060	GRAVE ACCENT
0x61	0x0061	LATIN SMALL LETTER A
0x62	0x0062	LATIN SMALL LETTER B
0x63	0x0063	LATIN SMALL LETTER C
0x64	0x0064	LATIN SMALL LETTER D
0x65	0x0065	LATIN SMALL LETTER E
0x66	0x0066	LATIN SMALL LETTER F
0x67	0x0067	LATIN SMALL LETTER G
0x68	0x0068	LATIN SMALL LETTER H
0x69	0x0069	LATIN SMALL LETTER I
0x6A	0x006A	LATIN SMALL LETTER J
0x6B	0x006B	LATIN SMALL LETTER K
0x6C	0x006C	LATIN SMALL LETTER L
0x6D	0x006D	LATIN SMALL LETTER M
0x6E	0x006E	LATIN SMALL LETTER N
0x6F	0x006F	LATIN SMALL LETTER O
0x70	0x0070	LATIN SMALL LETTER P
0x71	0x0071	LATIN SMALL LETTER Q
0x72	0x0072	LATIN SMALL LETTER R
0x73	0x0073	LATIN SMALL LETTER S
0x74	0x0074	LATIN SMALL LETTER T
0x75	0x0075	LATIN SMALL LETTER U
0x76	0x0076	LATIN SMALL LETTER V
0x77	0x0077	LATIN SMALL LETTER W
0x78	0x0078	LATIN SMALL LETTER X
0x79	0x0079	LATIN SMALL LETTER Y
0x7A	0x007A	LATIN SMALL LETTER Z
0x7B	0x007B	LEFT CURLY BRACKET
0x7C	0x007C	VERTICAL LINE
0x7D	0x007D	RIGHT CURLY BRACKET
0x7E	0x007E	TILDE
0x7F	0x03C7	GREEK SMALL LETTER CHI

TC	Unicode	Unicode name
0x80	0x00C7	LATIN CAPITAL LETTER C WITH CEDILLA
0x81	0x00FC	LATIN SMALL LETTER U WITH DIAERESIS
0x82	0x00E9	LATIN SMALL LETTER E WITH ACUTE
0x83	0x00E2	LATIN SMALL LETTER A WITH CIRCUMFLEX
0x84	0x00E4	LATIN SMALL LETTER A WITH DIAERESIS
0x85	0x00E0	LATIN SMALL LETTER A WITH GRAVE
0x86	0x00E5	LATIN SMALL LETTER A WITH RING ABOVE
0x87	0x00E7	LATIN SMALL LETTER C WITH CEDILLA
0x88	0x00EA	LATIN SMALL LETTER E WITH CIRCUMFLEX
0x89	0x00EB	LATIN SMALL LETTER E WITH DIAERESIS
0x8A	0x00E8	LATIN SMALL LETTER E WITH GRAVE
0x8B	0x00EF	LATIN SMALL LETTER I WITH DIAERESIS
0x8C	0x00EE	LATIN SMALL LETTER I WITH CIRCUMFLEX
0x8D	0x00EC	LATIN SMALL LETTER I WITH GRAVE
0x8E	0x00C4	LATIN CAPITAL LETTER A WITH DIAERESIS
0x8F	0x00C5	LATIN CAPITAL LETTER A WITH RING ABOVE
0x90	0x00C9	LATIN CAPITAL LETTER E WITH ACUTE
0x91	0x00E6	LATIN SMALL LETTER AE
0x92	0x00C6	LATIN CAPITAL LETTER AE
0x93	0x00F4	LATIN SMALL LETTER O WITH CIRCUMFLEX
0x94	0x00F6	LATIN SMALL LETTER O WITH DIAERESIS

TC	Unicode	Unicode name
0x95	0x00F2	LATIN SMALL LETTER O WITH GRAVE
0x96	0x00FB	LATIN SMALL LETTER U WITH CIRCUMFLEX
0x97	0x00F9	LATIN SMALL LETTER U WITH GRAVE
0x98	0x00FF	LATIN SMALL LETTER Y WITH DIAERESIS
0x99	0x00D6	LATIN CAPITAL LETTER O WITH DIAERESIS
0x9A	0x00DC	LATIN CAPITAL LETTER U WITH DIAERESIS
0x9B	0x00A2	CENT SIGN
0x9C	0x00A3	POUND SIGN
0x9D	0x00A5	YEN SIGN
0x9E	0x20A7	PESETA SIGN
0x9F	0x0192	LATIN SMALL LETTER F WITH HOOK
0xA0	0x00E1	LATIN SMALL LETTER A WITH ACUTE
0xA1	0x00ED	LATIN SMALL LETTER I WITH ACUTE
0xA2	0x00F3	LATIN SMALL LETTER O WITH ACUTE
0xA3	0x00Fa	LATIN SMALL LETTER U WITH ACUTE
0xA4	0x00F1	<b>c</b>
0xA5	0x00D1	LATIN CAPITAL LETTER N WITH TILDE
0xA6	0x00AA	FEMININE ORDINAL INDICATOR
0xA7	0x00BA	MASCULINE ORDINAL INDICATOR
0xA8	0x00BF	INVERTED QUESTION MARK
0xA9	0x2310	REVERSED NOT SIGN
0xAA	0x00AC	NOT SIGN
0xAB	0x00BD	VULGAR FRACTION ONE HALF
0xAC	0x00BC	VULGAR FRACTION ONE QUARTER
0xAD	0x00A1	INVERTED EXCLAMATION MARK
0xAE	0x00AB	LEFT-POINTING DOUBLE ANGLE QUOTATION MARK

TC	Unicode	Unicode name
0xAF	0x00BB	RIGHT-POINTING DOUBLE ANGLE QUOTATION MARK
0xB0	0x03C2	GREEK SMALL LETTER FINAL SIGMA
0xB1	0x20AC	EURO SIGN
0xB2	0x00B4	ACUTE ACCENT
0xB3	0x03C8	GREEK SMALL LETTER PSI
0xB4	0x03C9	GREEK SMALL LETTER OMEGA
0xB5	0x00AF	MACRON
0xB6	0x02D8	BREVE
0xB7	0x02D9	DOT ABOVE
0xB8	0x00A8	DIAERESIS
0xB9	0x00A8	DIAERESIS
0xBA	0x02DA	RING ABOVE
0xBB	0x00B8	CEDILLA
0xBC	0x00B7	<b>c</b>
0xBD	0x02DD	DOUBLE ACUTE ACCENT
0xBE	0x02DB	OGONEK
0xBF	0x02C7	CARON
0xC0	0x03C0	GREEK SMALL LETTER PI
0xC1	0x00A7	SECTION SIGN
0xC2	0x0110	LATIN CAPITAL LETTER D WITH STROKE
0xC3	0x03B9	GREEK SMALL LETTER IOTA
0xC4	0x0126	LATIN CAPITAL LETTER H WITH STROKE
0xC5	0x00D7	MULTIPLICATION SIGN
0xC6	0x0132	LATIN CAPITAL LIGATURE IJ
0xC7	0x013F	LATIN CAPITAL LETTER L WITH MIDDLE DOT
0xC8	0x0141	LATIN CAPITAL LETTER L WITH STROKE
0xC9	0x00B3	SUPERSCRIPIT THREE
0xCA	0x0152	LATIN CAPITAL LIGATURE OE
0xCB	0x03BA	GREEK SMALL LETTER KAPPA
0xCC	0x00DE	LATIN CAPITAL LETTER THORN (Icelandic)

TC	Unicode	Unicode name
0xCD	0x0166	LATIN CAPITAL LETTER T WITH STROKE
0xCE	0x014A	LATIN CAPITAL LETTER ENG (Sami)
0xCF	0x0149	LATIN SMALL LETTER N PRECEDED BY APOSTROPHE
0xD0	0x0138	LATIN SMALL LETTER KRA (Greenlandic)
0xD1	0x00A4	CURRENCY SIGN
0xD2	0x0111	LATIN SMALL LETTER D WITH STROKE
0xD3	0x00F0	LATIN SMALL LETTER ETH (Icelandic)
0xD4	0x0127	LATIN SMALL LETTER H WITH STROKE
0xD5	0x0131	LATIN SMALL LETTER DOTLESS I
0xD6	0x0133	LATIN SMALL LIGATURE IJ
0xD7	0x0140	LATIN SMALL LETTER L WITH MIDDLE DOT
0xD8	0x0142	LATIN SMALL LETTER L WITH STROKE
0xD9	0x00F8	LATIN SMALL LETTER O WITH STROKE
0xDA	0x0153	LATIN SMALL LIGATURE OE
0xDB	0x00BE	VULGAR FRACTION THREE QUARTERS
0xDC	0x00FE	LATIN SMALL LETTER THORN (Icelandic)
0xDD	0x0167	LATIN SMALL LETTER T WITH STROKE
0xDE	0x014B	LATIN SMALL LETTER ENG (Sami)
0xDF	0x0391	GREEK CAPITAL LETTER ALPHA
0xE0	0x0392	GREEK CAPITAL LETTER BETA
0xE1	0x00DF	LATIN SMALL LETTER SHARP S
0xE2	0x0393	GREEK CAPITAL LETTER GAMMA
0xE3	0x0394	GREEK CAPITAL LETTER DELTA
0xE4	0x0395	GREEK CAPITAL LETTER EPSILON

TC	Unicode	Unicode name
0xE5	0x0396	GREEK CAPITAL LETTER ZETA
0xE6	0x03BC	GREEK SMALL LETTER MU
0xE7	0x0397	GREEK CAPITAL LETTER ETA
0xE8	0x0398	GREEK CAPITAL LETTER THETA
0xE9	0x0399	GREEK CAPITAL LETTER IOTA
0xEA	0x03A9	GREEK CAPITAL LETTER OMEGA
0xEB	0x039A	GREEK CAPITAL LETTER KAPPA
0xEC	0x039B	GREEK CAPITAL LETTER LAMDA
0xED	0x00D8	LATIN CAPITAL LETTER O WITH STROKE
0xEE	0x039C	GREEK CAPITAL LETTER MU
0xEF	0x039D	GREEK CAPITAL LETTER NU
0xF0	0x039E	GREEK CAPITAL LETTER XI
0xF1	0x00B1	PLUS-MINUS SIGN
0xF2	0x039F	GREEK CAPITAL LETTER OMICRON
0xF3	0x03A0	GREEK CAPITAL LETTER PI
0xF4	0x03A1	GREEK CAPITAL LETTER RHO
0xF5	0x03A3	GREEK CAPITAL LETTER SIGMA
0xF6	0x00F7	DIVISION SIGN
0xF7	0x03A4	GREEK CAPITAL LETTER TAU
0xF8	0x00B0	DEGREE SIGN
0xF9	0x03A5	GREEK CAPITAL LETTER UPSILON
0xFA	0x03A6	GREEK CAPITAL LETTER PHI
0xFB	0x03A7	GREEK CAPITAL LETTER CHI
0xFC	0x03A8	GREEK CAPITAL LETTER PSI
0xFD	0x00B2	SUPERSCRIPIT TWO
0xFE	0x03BB	GREEK SMALL LETTER LAMDA
0xFF	0x0098	UNDEFINED

## TCOSS Code Page 1

The codes are annotated with their short identifiers according to ISO 6937.

TCOS CODEPAGE 1	0-	1-	2-	3-	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0			SP01	ND10	SM05	LP02	SD13	LP01	LC42	LE12	LA11	CS03 Greek-ITA.2 comb.17	GP01	LD81	GB02	Ε
-1			SP02	ND01	LA02	LC02	LA01	LC01	LU17	LL12	UI11	Greek-ITA.2 comb.23	LB01	LD62	LS61	Ι
-2			SP04	ND02	LB02	LR'02	LB01	LR01	LE11	LL11	LO11	SD11		LD22	GO02	Ο
-3			SM01	ND03	LC02	LS02	LC01	LS01	LA15	LO15	LU11	GP81	GI01	LE19	GD02	Π
-4			SC03	ND04	LD02	LT02	LD01	LT01	LA17	LO17	LA44	GO81	LR12	LD21	GE02	Ρ
-5	α GA01		% SM02	ND05	LE02	LU02	LE01	LU01	LU27	LU22	LA43	LA12	LU12	LN22	Z02	Σ
-6	β GB01		& SM03	ND06	LF02	LV02	LF01	LV01	LC11	LL21	LZ22	LA16	LA24	LI12	GM01	μ
-7	γ GG01		' SP05	ND07	LG02	LW02	LG01	LW01	LC41	LS12	LZ21	LE22	LA23	LI16	GE62	Τ
-8	δ GD01	ν GN01	( SP08	ND08	LH02	LX02	LH01	LX01	LL81	LS11	LE44	LS42	LR11	LE21	GT62	Θ
-9	ε GE01	ξ GX01	) SP07	ND09	LI02	LY02	LI01	LY01	LE17	LO18	LE43		LU28		GI02	Υ
-A	ζ GZ01	ο GO01	* SM04	SP13	LJ02	LZ02	LJ01	LZ01	LO26	LU18		LN11	LY11	LR22	GO62	Φ
-B	η GE61	ρ GR01	+ SA01	SP14	LK02	SM06	LK01	SM11	LO25	LT22	LZ11	LN21	GM01	LR21	GO02	Χ
-C	θ GT61	σ GS01	, SP08	SA03	LM02	SM07	LM01	SM13	LI15	LT21	LC22	LS22	LY12	LG23	GL02	Ψ
-D		τ GT01	- SP10	SA04	LN02	SM08	LN01	SM14	LZ12	LL82	LS41	LZ30	LT41	LT42	LG24	
-E		υ GY01	. SP11	SA05	NO2	SD15	NO1	SD19	LA16	LO12	LO16	LZ29	SM24	LU28	GM02	Μ
-F		φ GF01	/ SP12	? SP15	LO2	SP09	LO01	GH01	LC12	LC21	LN12	LS21	LU25	GA02	GN02	Ν

The codes are annotated with their short identifiers according to ISO 6937.

## TCOSS Code Page 1 Reference Table

The following table shows the Unicode value and Unicode name corresponding to each TCOSS 1 code.

TC	Unicode	Unicode name
0x00	0x0000	NULL
0x01	0x0001	UNDEFINED
0x02	0x0002	UNDEFINED
0x03	0x0003	UNDEFINED
0x04	0x0004	UNDEFINED
0x05	0x03B1	GREEK SMALL LETTER ALPHA
0x06	0x03B2	GREEK SMALL LETTER BETA
0x07	0x03B3	GREEK SMALL LETTER GAMMA
0x08	0x03B4	GREEK SMALL LETTER DELTA
0x09	0x03B5	GREEK SMALL LETTER EPSILON (VERTICAL TAB)
0x0A	0x03B6	GREEK SMALL LETTER ZETA
0x0B	0x03B7	GREEK SMALL LETTER ETA
0x0C	0x03B8	GREEK SMALL LETTER THETA
0x0D	0x000D	UNDEFINED (CARRIAGE RETURN)
0x0E	0x000A	UNDEFINED (LINE FEED)
0x0F	0x000F	UNDEFINED (FORM FEED)
0x10	0x0010	UNDEFINED
0x11	0x0011	UNDEFINED
0x12	0x0012	UNDEFINED
0x13	0x0013	UNDEFINED
0x14	0x0014	UNDEFINED
0x15	0x0015	UNDEFINED
0x16	0x0016	UNDEFINED
0x17	0x0017	UNDEFINED
0x18	0x03BD	GREEK SMALL LETTER NU
0x19	0x03BE	GREEK SMALL LETTER XI
0x1A	0x03BF	GREEK SMALL LETTER OMICRON
0x1B	0x03C1	GREEK SMALL LETTER RHO
0x1C	0x03C3	GREEK SMALL LETTER SIGMA

<b>TC</b>	<b>Unicode</b>	<b>Unicode name</b>
0x1D	0x03C4	GREEK SMALL LETTER TAU
0x1E	0x03C5	GREEK SMALL LETTER UPSILON
0x1F	0x03C6	GREEK SMALL LETTER PHI
0x20	0x0020	SPACE
0x21	0x0021	EXCLAMATION MARK
0x22	0x0022	QUOTATION MARK
0x23	0x0023	NUMBER SIGN
0x24	0x0024	DOLLAR SIGN
0x25	0x0025	PERCENT SIGN
0x26	0x0026	AMPERSAND
0x27	0x0027	APOSTROPHE
0x28	0x0028	LEFT PARENTHESIS
0x29	0x0029	RIGHT PARENTHESIS
0x2A	0x002A	ASTERISK
0x2B	0x002B	PLUS SIGN
0x2C	0x002C	COMMA
0x2D	0x002D	HYPHEN-MINUS
0x2E	0x002E	FULL STOP
0x2F	0x002F	SOLIDUS
0x30	0x0030	DIGIT ZERO
0x31	0x0031	DIGIT ONE
0x32	0x0032	DIGIT TWO
0x33	0x0033	DIGIT THREE
0x34	0x0034	DIGIT FOUR
0x35	0x0035	DIGIT FIVE
0x36	0x0036	DIGIT SIX
0x37	0x0037	DIGIT SEVEN
0x38	0x0038	DIGIT EIGHT
0x39	0x0039	DIGIT NINE
0x3A	0x003A	COLON
0x3B	0x003B	SEMICOLON
0x3C	0x003C	LESS-THAN SIGN
0x3D	0x003D	EQUALS SIGN
0x3E	0x003E	GREATER-THAN SIGN

<b>TC</b>	<b>Unicode</b>	<b>Unicode name</b>
0x3F	0x003F	QUESTION MARK
0x40	0x0040	COMMERCIAL AT
0x41	0x0041	LATIN CAPITAL LETTER A
0x42	0x0042	LATIN CAPITAL LETTER B
0x43	0x0043	LATIN CAPITAL LETTER C
0x44	0x0044	LATIN CAPITAL LETTER D
0x45	0x0045	LATIN CAPITAL LETTER E
0x46	0x0046	LATIN CAPITAL LETTER F
0x47	0x0047	LATIN CAPITAL LETTER G
0x48	0x0048	LATIN CAPITAL LETTER H
0x49	0x0049	LATIN CAPITAL LETTER I
0x4A	0x004A	LATIN CAPITAL LETTER J
0x4B	0x004B	LATIN CAPITAL LETTER K
0x4C	0x004C	LATIN CAPITAL LETTER L
0x4D	0x004D	LATIN CAPITAL LETTER M
0x4E	0x004E	LATIN CAPITAL LETTER N
0x4F	0x004F	LATIN CAPITAL LETTER O
0x50	0x0050	LATIN CAPITAL LETTER P
0x51	0x0051	LATIN CAPITAL LETTER Q
0x52	0x0052	LATIN CAPITAL LETTER R
0x53	0x0053	LATIN CAPITAL LETTER S
0x54	0x0054	LATIN CAPITAL LETTER T
0x55	0x0055	LATIN CAPITAL LETTER U
0x56	0x0056	LATIN CAPITAL LETTER V
0x57	0x0057	LATIN CAPITAL LETTER W
0x58	0x0058	LATIN CAPITAL LETTER X
0x59	0x0059	LATIN CAPITAL LETTER Y
0x5A	0x005A	LATIN CAPITAL LETTER Z
0x5B	0x005B	LEFT SQUARE BRACKET
0x5C	0x005C	REVERSE SOLIDUS
0x5D	0x005D	RIGHT SQUARE BRACKET
0x5E	0x005E	CIRCUMFLEX ACCENT
0x5F	0x005F	LOW LINE
0x60	0x0060	GRAVE ACCENT

<b>TC</b>	<b>Unicode</b>	<b>Unicode name</b>
0x61	0x0061	LATIN SMALL LETTER A
0x62	0x0062	LATIN SMALL LETTER B
0x63	0x0063	LATIN SMALL LETTER C
0x64	0x0064	LATIN SMALL LETTER D
0x65	0x0065	LATIN SMALL LETTER E
0x66	0x0066	LATIN SMALL LETTER F
0x67	0x0067	LATIN SMALL LETTER G
0x68	0x0068	LATIN SMALL LETTER H
0x69	0x0069	LATIN SMALL LETTER I
0x6A	0x006A	LATIN SMALL LETTER J
0x6B	0x006B	LATIN SMALL LETTER K
0x6C	0x006C	LATIN SMALL LETTER L
0x6D	0x006D	LATIN SMALL LETTER M
0x6E	0x006E	LATIN SMALL LETTER N
0x6F	0x006F	LATIN SMALL LETTER O
0x70	0x0070	LATIN SMALL LETTER P
0x71	0x0071	LATIN SMALL LETTER Q
0x72	0x0072	LATIN SMALL LETTER R
0x73	0x0073	LATIN SMALL LETTER S
0x74	0x0074	LATIN SMALL LETTER T
0x75	0x0075	LATIN SMALL LETTER U
0x76	0x0076	LATIN SMALL LETTER V
0x77	0x0077	LATIN SMALL LETTER W
0x78	0x0078	LATIN SMALL LETTER X
0x79	0x0079	LATIN SMALL LETTER Y
0x7A	0x007A	LATIN SMALL LETTER Z
0x7B	0x007B	LEFT CURLY BRACKET
0x7C	0x007C	VERTICAL LINE
0x7D	0x007D	RIGHT CURLY BRACKET
0x7E	0x007E	TILDE
0x7F	0x03C7	GREEK SMALL LETTER CHI
0x80	0x00C7	LATIN CAPITAL LETTER C WITH CEDILLA
0x81	0x00FC	LATIN SMALL LETTER U WITH DIAERESIS

TC	Unicode	Unicode name
0x82	0x00E9	LATIN SMALL LETTER E WITH ACUTE
0x83	0x00E2	LATIN SMALL LETTER A WITH CIRCUMFLEX
0x84	0x00E4	LATIN SMALL LETTER A WITH DIAERESIS
0x85	0x016F	LATIN SMALL LETTER U WITH RING ABOVE
0x86	0x0107	LATIN SMALL LETTER C WITH ACUTE
0x87	0x00E7	LATIN SMALL LETTER C WITH CEDILLA
0x88	0x0142	LATIN SMALL LETTER L WITH STROKE
0x89	0x00EB	LATIN SMALL LETTER E WITH DIAERESIS
0x8A	0x0150	LATIN CAPITAL LETTER O WITH DOUBLE ACUTE
0x8B	0x0151	LATIN SMALL LETTER O WITH DOUBLE ACUTE
0x8C	0x00EE	LATIN SMALL LETTER I WITH CIRCUMFLEX
0x8D	0x0179	LATIN CAPITAL LETTER Z WITH ACUTE
0x8E	0x00C4	LATIN CAPITAL LETTER A WITH DIAERESIS
0x8F	0x0106	LATIN CAPITAL LETTER C WITH ACUTE
0x90	0x00C9	LATIN CAPITAL LETTER E WITH ACUTE
0x91	0x0139	LATIN CAPITAL LETTER L WITH ACUTE
0x92	0x013A	LATIN SMALL LETTER L WITH ACUTE
0x93	0x00F4	LATIN SMALL LETTER O WITH CIRCUMFLEX
0x94	0x00F6	LATIN SMALL LETTER O WITH DIAERESIS
0x95	0x013D	LATIN CAPITAL LETTER L WITH CARON
0x96	0x013E	LATIN SMALL LETTER L WITH CARON
0x97	0x015A	LATIN CAPITAL LETTER S WITH ACUTE
0x98	0x015B	LATIN SMALL LETTER S WITH ACUTE

TC	Unicode	Unicode name
0x99	0x00D6	LATIN CAPITAL LETTER O WITH DIAERESIS
0x9A	0x00DC	LATIN CAPITAL LETTER U WITH DIAERESIS
0x9B	0x0164	LATIN CAPITAL LETTER T WITH CARON
0x9C	0x0165	LATIN SMALL LETTER T WITH CARON
0x9D	0x0141	LATIN CAPITAL LETTER L WITH STROKE
0x9E	0x00D3	LATIN CAPITAL LETTER O WITH ACUTE
0x9F	0x010D	LATIN SMALL LETTER C WITH CARON
0xA0	0x00E1	LATIN SMALL LETTER A WITH ACUTE
0xA1	0x00ED	LATIN SMALL LETTER I WITH ACUTE
0xA2	0x00F3	LATIN SMALL LETTER O WITH ACUTE
0xA3	0x00Fa	LATIN SMALL LETTER U WITH ACUTE
0xA4	0x0104	LATIN CAPITAL LETTER A WITH OGONEK
0xA5	0x0105	LATIN SMALL LETTER A WITH OGONEK
0xA6	0x017D	LATIN CAPITAL LETTER Z WITH CARON
0xA7	0x017E	LATIN SMALL LETTER Z WITH CARON
0xA8	0x0118	LATIN CAPITAL LETTER E WITH OGONEK
0xA9	0x0119	LATIN SMALL LETTER E WITH OGONEK
0xAA	0x00AC	NOT SIGN
0xAB	0x017A	LATIN SMALL LETTER Z WITH ACUTE
0xAC	0x010C	LATIN CAPITAL LETTER C WITH CARON
0xAD	0x015F	LATIN SMALL LETTER S WITH CEDILLA
0xAE	0x00D4	LATIN CAPITAL LETTER O WITH CIRCUMFLEX
0xAF	0x0143	LATIN CAPITAL LETTER N WITH ACUTE
0xB0	0x03C2	GREEK SMALL LETTER FINAL SIGMA
0xB1	0x20AC	EURO SIGN
0xB2	0x00B4	ACUTE ACCENT

TC	Unicode	Unicode name
0xB3	0x03C8	GREEK SMALL LETTER PSI
0xB4	0x03C9	GREEK SMALL LETTER OMEGA
0xB5	0x00C1	LATIN CAPITAL LETTER A WITH ACUTE
0xB6	0x00C2	LATIN CAPITAL LETTER A WITH CIRCUMFLEX
0xB7	0x011A	LATIN CAPITAL LETTER E WITH CARON
0xB8	0x015E	LATIN CAPITAL LETTER S WITH CEDILLA
0xB9	0x00A8	DIAERESIS
0xBA	0x0144	LATIN SMALL LETTER N WITH ACUTE
0xBB	0x0148	LATIN SMALL LETTER N WITH CARON
0xBC	0x0160	LATIN CAPITAL LETTER S WITH CARON
0xBD	0x017B	LATIN CAPITAL LETTER Z WITH DOT ABOVE
0xBE	0x017C	LATIN SMALL LETTER Z WITH DOT ABOVE
0xBF	0x0161	LATIN SMALL LETTER S WITH CARON
0xC0	0x03C0	GREEK SMALL LETTER PI
0xC1	0x0130	LATIN CAPITAL LETTER I WITH DOT ABOVE
0xC2	0x00A2	CENT SIGN
0xC3	0x03B9	GREEK SMALL LETTER IOTA
0xC4	0x0154	LATIN CAPITAL LETTER R WITH ACUTE
0xC5	0x00DA	LATIN CAPITAL LETTER U WITH ACUTE
0xC6	0x0102	LATIN CAPITAL LETTER A WITH BREVE
0xC7	0x0103	LATIN SMALL LETTER A WITH BREVE
0xC8	0x0155	LATIN SMALL LETTER R WITH ACUTE
0xC9	0x0170	LATIN CAPITAL LETTER U WITH DOUBLE ACUTE
0xCA	0x00FD	LATIN SMALL LETTER Y WITH ACUTE
0xCB	0x03BA	GREEK SMALL LETTER KAPPA
0xCC	0x00DD	LATIN CAPITAL LETTER Y WITH ACUTE

TC	Unicode	Unicode name
0xCD	0x0163	LATIN SMALL LETTER T WITH CEDILLA
0xCE	0x00A7	SECTION SIGN
0xCF	0x0171	LATIN SMALL LETTER U WITH DOUBLE ACUTE
0xD0	0x0111	LATIN SMALL LETTER D WITH STROKE
0xD1	0x0110	LATIN CAPITAL LETTER D WITH STROKE
0xD2	0x010E	LATIN CAPITAL LETTER D WITH CARON
0xD3	0x00CB	LATIN CAPITAL LETTER E WITH DIAERESIS
0xD4	0x010F	LATIN SMALL LETTER D WITH CARON
0xD5	0x0147	LATIN CAPITAL LETTER N WITH CARON
0xD6	0x00CD	LATIN CAPITAL LETTER I WITH ACUTE
0xD7	0x00CE	LATIN CAPITAL LETTER I WITH CIRCUMFLEX
0xD8	0x011B	LATIN SMALL LETTER E WITH CARON
0xD9	0x00F8	LATIN SMALL LETTER O WITH STROKE
0xDA	0x0158	LATIN CAPITAL LETTER R WITH CARON
0xDB	0x0159	LATIN SMALL LETTER R WITH CARON
0xDC	0x011F	LATIN SMALL LETTER G WITH BREVE
0xDD	0x0162	LATIN CAPITAL LETTER T WITH CEDILLA
0xDE	0x016E	LATIN CAPITAL LETTER U WITH RING ABOVE
0xDF	0x0391	GREEK CAPITAL LETTER ALPHA
0xE0	0x0392	GREEK CAPITAL LETTER BETA
0xE1	0x00DF	LATIN SMALL LETTER SHARP S
0xE2	0x0393	GREEK CAPITAL LETTER GAMMA
0xE3	0x0394	GREEK CAPITAL LETTER DELTA
0xE4	0x0395	GREEK CAPITAL LETTER EPSILON
0xE5	0x0396	GREEK CAPITAL LETTER ZETA
0xE6	0x03BC	GREEK SMALL LETTER MU
0xE7	0x0397	GREEK CAPITAL LETTER ETA

TC	Unicode	Unicode name
0xE8	0x0398	GREEK CAPITAL LETTER THETA
0xE9	0x0399	GREEK CAPITAL LETTER IOTA
0xEA	0x03A9	GREEK CAPITAL LETTER OMEGA
0xEB	0x039A	GREEK CAPITAL LETTER KAPPA
0xEC	0x039B	GREEK CAPITAL LETTER LAMDA
0xED	0x011E	LATIN CAPITAL LETTER G WITH BREVE
0xEE	0x039C	GREEK CAPITAL LETTER MU
0xEF	0x039D	GREEK CAPITAL LETTER NU
0xF0	0x039E	GREEK CAPITAL LETTER XI
0xF1	0x0131	LATIN SMALL LETTER DOTLESS I
0xF2	0x039F	GREEK CAPITAL LETTER OMICRON
0xF3	0x03A0	GREEK CAPITAL LETTER PI
0xF4	0x03A1	GREEK CAPITAL LETTER RHO
0xF5	0x03A3	GREEK CAPITAL LETTER SIGMA
0xF6	0x00F7	DIVISION SIGN
0xF7	0x03A4	GREEK CAPITAL LETTER TAU
0xF8	0x00B0	DEGREE SIGN
0xF9	0x03A5	GREEK CAPITAL LETTER UPSILON
0xFA	0x03A6	GREEK CAPITAL LETTER PHI
0xFB	0x03A7	GREEK CAPITAL LETTER CHI
0xFC	0x03A8	GREEK CAPITAL LETTER PSI
0xFD	0x00B2	SUPERSCRIPIT TWO
0xFE	0x03BB	GREEK SMALL LETTER LAMDA
0xFF	0x0098	UNDEFINED

## TCOSS System Files

### System files assumed to be all ASCII

- "ALN99" (enhanced number locking directory)
- "Att99" (number series directory)

**System files that remain in the legacy code page**

- Log files
- "AKKnn" (cost accounting tables per month)
- "Akk99" (cost accounting directory)
- "AVV99" (distribution directory)
- "Auu99" (user profile directory)

**System files that may be created in the legacy code page or in UTF-8**

- "ANN99" (abbreviated number directory)
- "Arr99" (routing number directory)
- "Atz99" (time zone system directory)

## Chapter 8

# Capacities

This chapter provides an overview about the capacity of a KCS server.

**Note** All restrictions shown below additionally depend on the available CPU performance, disk size, RAM size and license keys. These values are described in the *KCS Model/2xx Manual [4]*.

Description	Absolute maximum	Notes
Size of KCS File Structure	1024 GB	See point 1 of note.
File size	4000 MB	
Number of files	8.000.000	See point 1 of note.
Number of mail entries / active send orders	2.000.000	See point 2 of note.
Entries in short term archive	» 12.000.000	See points 2 and 3 of note.
User entries 1)	250.000	See point 2 of note.
Address book entries 1)	4.000.000	See point 2 of note.
Number of channels	1010	
Number of Line Servers	176	
TCOSS Instances on one server	20	
Number of Services	1000	

### Note

1. Current limit can be defined by TCDISK.
2. Current limit can be configured in System configuration.
3. The number of files that can be opened is restricted due to limited number of files. The number of short term archive entries may vary depending on the archived content.

The maximum boot time of a system mainly depends on the number of configured TCOSS channels. With 180 channels, booting can take up to 22 minutes. For a 120 channel system, this value is appropriate 15 minutes.

## Disc Space and Memory Usage

The following capacity parameters can be set independently to support a great variety of KCS configurations with optimal memory usage. These must be set correctly in the system configuration file. They are used by config program to calculate the required RAM. TCOSS will not use all values - see detailed description below.

Parameter	RAM needed	Disk space required		Example	
	bytes / entry	bytes / entry	Value	RAM [kb]	Disk size [MB]
<b>Hard disk capacity</b>	272 / MB	-	3 Gbyte	816	3.000
<b>File entries</b>	29	256	150.000	4.350	39
<b>Mail entries</b>	92	2k	50.000	4.600	100
<b>Short term archive entries</b> The current used RAM and Disk size depends on the configured Archive Size only.	200 / 1000	Average 400	1.250.000	256	500
<b>Users</b> Each user also requires a recipient to hold the user's address.	196	Only existing users need disk space. Minimum 16k per user	20.000	3.920	320
<b>Recipients</b> The number of recipients includes the number of users	236	1k	30.000	7.080	30
<b>Remote fax channel</b>	100.000		10	1.000	
<b>DirCacheSize</b>				2.097	
<b>DataBaseCacheSize</b>				5.243	
<b>DocCacheSize</b>				41.934	
<b>DataBaseCacheSize</b>				5.000	
<b>Remaining process memory</b>				8.000	
			<b>Total</b>	<b>84,3 MB</b>	<b>989 MB</b> In worst case if all users are existing, the remaining disk space can be used for mail files and folder entries.

**Note** The hard disk capacity is defined during formatting with TCDISK. It can only be changed by re-formatting. If you to upgrade to a higher disk capacity you must copy the KCS File Structure to the new disk with TCDISK.

## Maximum Number of Files

There are two different values:

- The number of file entries physically reserved on the hard disk (defines used disk space).
- The maximum number of file entries currently usable by TCOSS (defines used RAM).

Both values must be set with TCDISK. The first value should be set great enough. It can only be changed by first initialization of the hard disk - this means by losing all data.

The second value can be increased at any time (to a maximum of value 1). It can be decreased to the current number of used files by TCDISK.

## Mail Entries

There are two different values:

These values are used after initial install or after erasing the corresponding file. On a running system they can be increased or decreased.

It is possible to decrease the configured number of mail entries by changing in the system configuration line 13, 1st and 2nd position to a smaller value. In that case, the system file +TECH/ACOMINFOFILE, which stores all send orders, will be compressed to the configured smaller size by removing unused entries.

**Note** Before you reduce the config value, check the number of all actually used entries (pending send orders). The new config value should not be smaller, otherwise send orders will be lost.

Send orders waiting for a notification from a mail server ("at next node") before compression was done, may not be updated if the notification arrives afterwards. The status of send order remains as "at next node" as if no notification had been received from the mail server.

## Large Systems

"Large Systems" are systems with more than 360 and up to 1010 channels.

The following sections define the hardware requirements, configuration and performance of a large system taking a system with 1000 fax lines as an example.

### Required Hardware

- Server: HP ProLiant DL380 G5
- CPU: Dual Quad-Core Intel® Xeon® Processor X5450 (3.00 GHz, 1333 MHz FSB)
- RAM: 8 GB RAID controller with 512MB Battery-Backed Write Cache (BBWC) option 4 to 8 hard disks, 7200 RPM, set up as RAID0, for a total disk space of 500 to 1000 GB
- 2 NC373i Multifunction Gigabit Network Adapters with TCP/IP Offload Engine
- The Battery-Backed Write Cache option as it considerably speeds up random disk writes

## Operating System

The main limitation that affects large TCOSS systems is the limit on virtual memory. TCOSS being a 32-bit process gets 2 GB of virtual memory under 32-bit Windows editions and 4 GB under 64-bit editions.

Use 64-bit edition of Windows Server 2008 as operating system for a 1000 channel system. Up to 500 channels also run on a 32-bit Windows Server 2003 Enterprise or Datacenter Edition (the 32-bit Windows Server 2003 Standard Edition is not sufficient because it supports only up to 4 GB of physical memory).

PAE (Physical Address Extension) has to be enabled on 32-bit Windows editions so that the physical memory beyond 4 GB can be accessed. It is not recommended to use the /3GB boot.ini switch on 32-bit Windows editions because it restricts the kernel to 1 GB of virtual memory and Windows may run out of system page table entries.

## Disk Cache Settings

Large TCOSS systems require a large disk cache. The AWE option is used to put the cache outside the virtual memory space of the TCOSS process.

### **AWE Disk Cache Option**

Address Windowing Extensions (AWE) is a set of Windows extensions that allows an application to quickly manipulate physical memory greater than 4GB. Restricting the disk cache to fit within the application's virtual memory space would be a severe restriction.

AWE solves this problem by allowing applications to directly address huge amounts of memory while continuing to use 32-bit pointers. AWE allows applications to have data caches larger than 4GB (where

sufficient physical memory is present). AWE uses physical non-paged memory and window views of various portions of this physical memory within a 32-bit virtual address space.

Registry key "HKEY\_LOCAL\_MACHINE\Software\TOPCALL\TCOSS\Drive0":

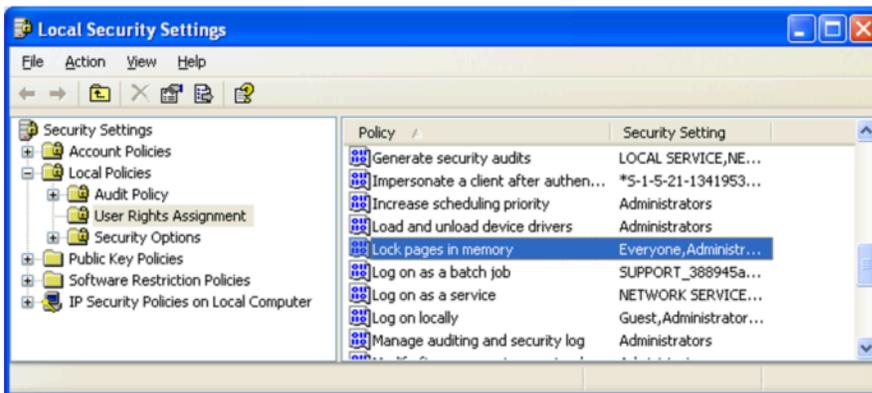
CacheAweEnable REG\_DWORD

Available AWE cache option are:

- 0 (default): Specifies that the three cache pools-directory, document and database cache-are located in conventional memory.
- 1: Specifies that the three cache pools-directory, document and database cache-are located in AWE memory.

Set CacheAweEnable to 1.

If TCOSS is running under a user account (and not under system account), the AWE option requires the "Lock pages in memory" right. Open the "Local Security Settings" window and grant this user the "Lock pages in memory" right.



### Disk Cache Size

The following cache sizes are recommended for a 1000 fax line system:

DirCacheSize 524 288 (512 MB)

DataBaseCacheSize 262 144 (256 MB)

DocCacheSize 4 194 304 (4 GB)

## Performance Data

This section describes the performance data.

### Test System Hardware

Tandem system with 2 servers (see [Required Hardware](#)). Each server with 4 Gigabit LAN connections, one dedicated LAN connects primary and secondary master, another dedicated LAN is used to connect primary / secondary master with 34 line servers.

### Test System Configuration

Operating system: 64-bit edition of Windows Server 2008

KCS file structure size: 1000 000 MB

Total number of directory entries reserved on harddisk: 16000000

Total number of directory entries: 8000000

User area: 1000000 directory entries, 100000000 KB disk space

Tech area: 10000 directory entries, 50000 KB disk space

Mail area: 4990 000 directory entries, 919949328 KB disk space

SYSCONF line 13:

:07 D0 0F A0 03 E8 07 D0

2000000 mail entries, 4 000 MB archive file size, 1000000 users, 2000000 recipients

1000 fax channels, 9 client-server channels, 1 RPC-UAS channel

Disk cache with AWE option. See "Disk Cache Size" in [Disk cache Settings](#).

## Startup

The test system with about 5 million used files in the mail area showed a total startup time (until all fax lines ready) of about 21 minutes. The time until TCOSS is ready to accept client connections is about 5 minutes.

The following table shows how the startup time is spent.

Total time	Time	Activity	System Status
00:20	00:20	Wait for secondary master	
03:02	02:42	Init Directory	
03:12	00:10	Init Recipients	
03:22	00:10	Init Users	
04:43	01:21	Init archive	
05:13	00:30	Check received messages	
05:22	00:09	Start channels	TCOSS ready
20:45	15:23	Boot 34 line servers	All fax lines ready

The "Init Directory" step takes up to 8 minutes if a significant percentage of files is larger than 400 KB. The boot time per line server is about 27 seconds.

## Test Loop with 2, 4, 6, 8, 10-Page Fax Messages

The test loop with 2, 4, 6, 8, 10-page fax message was set up with 2 user profiles "User1" and "User2" using in-events to send received messages from one user to the other. Sending was done with back-reception.

The test messages consisting of rather large "ITU-T Test Chart No. 4" pages had the following properties:

Pages	2	4	6	8	10
File size	320 400	640 400	960 400	1 280 000	1 600 000
Transmission duration	111 - 113 s	206 - 208 s	302 - 303 s	397 - 399 s	493 - 495 s

500 send orders were entered to start the test loop, 100 each for 2,4,6,8 and 10 page messages. Because shorter messages also transmit faster, more of the short messages and fewer of the long ones were handled within a given time frame.

### Physical Disk

	Average	Minimum	Maximum
% Disk Read Time	1,3	0,8	7,7
% Disk Write Time	3,5	3,1	4
Disk Read Bytes/sec	6.650	2.200	18.000
Disk Reads/sec	6	2	15
Disk Write Bytes/sec	3.128.000	2.173.000	3.561.800
Disk Writes/sec	322	243	488

### Processor

	Average	Minimum	Maximum
% Processor Time _Total	35	21	45

### Memory

	Average	Minimum	Maximum
Page Reads/sec	0	0	0
Page Writes/sec	0	0	0
Pool Nonpaged Bytes	85.907.000	85.721.000	86.073.000
Pool Paged Bytes	213. 158.000	213. 078.000	213. 299.000

### Process Tcoss

	Average	Minimum	Maximum
Handle Count	22.402	22. 363	22.429
Pool Nonpaged Bytes	1.893.400	1.886.400	1.920.000
Pool Paged Bytes	475.900	475.600	476.000
Private Bytes	1.718.617.000	1.718.563.000	1.718.665.000
Thread Count	5.367	5.367	5.368
Virtual Bytes	3.863.000.000	3.862.900.000	3.863.400.000

**TCOSS**

	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>
Sendorder created/sec	3,8	0	14,7
Sendorder reads/sec	5,5	0	32
Sendorder writes/sec	20	1,8	84
Unique ID's/sec	26	2	85

**TCOSS Disk**

	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>
Avg. local Disk ms/Read	1,9	0	12
Avg. local Disk ms/Write	0,13	0,06	0,22
Avg. remote Disk ms/Read	0	0	0
Avg. remote Disk ms/Write	0,41	0,25	0,6
Avg. remote Disk Network Delay ms	0,41	0,25	0,6
Peak local Disk ms/Read	33	16	452
Peak local Disk ms/Write	16	16	16
Peak remote Disk ms/Read	0	0	0
Peak remote Disk ms/Write	16	16	16
Peak remote Disk Network Delay ms	16	16	16
Read kB/sec	6,1	1,9	15,9
Reads/sec	5,7	1,9	14,5
Section Table Writes/sec	1,7	0	5
Update kB/sec	0	0	0
Update Write kB/sec	0	0	0
Write kB/sec	3.035	3.098	3.537
Writes/sec	314	241	507
Write Queue Length Peak	9	5	16

**TCOSS Cache Database**

	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>
Cache Hits/sec	57	18	170
Cache Misses/sec	0	0	0
Cache Read Bytes/sec	24.850	7.800	84.000
Cache Write Bytes/sec	52.400	12.700	181.000
Disk Read kB/sec	0	0	0

	Average	Minimum	Maximum
Disk Reads/sec	0	0	0
Disk Write kB/sec	55	12,7	170
Disk Writes/sec	34	10	95
IO Conflicts/sec	0,2	0	2,4

### TCOSS Cache Directory

	Average	Minimum	Maximum
Cache Hits/sec	143	51	420
Cache Misses/sec	4,5	2	13
Cache Read Bytes/sec	27.300	9.300	79.000
Cache Write Bytes/sec	12.200	3.900	30.500
Disk Read kB/sec	4,7	2	13
Disk Reads/sec	4,7	2	13
Disk Write kB/sec	48	15	119
Disk Writes/sec	48	15	119
IO Conflicts/sec	3	0	14

### TCOSS Cache Document

	Average	Minimum	Maximum
Cache Hits/sec	22.150	18.200	26.900
Cache Misses/sec	0,7	0	4,2
Cache Read Bytes/sec	4.186.000	2.589.000	5.861.000
Cache Write Bytes/sec	2.956.000	2.073.000	3.277.000
Disk Read kB/sec	1,14	0	6,3
Disk Reads/sec	0,7	0	3,9
Disk Write kB/sec	2.945	2.170	3.420
Disk Writes/sec	232	198	297
IO Conflicts/sec	0,7	0	5

Total message throughput of the test loop was about 2 messages per second (half of the "sendorder created/sec" performance counter). Keep also in mind that each message occupied two fax lines at the same time, being sent out on one line and received on the other.

The test loop produced a disk write load of about 3 MB per second, of which 1.5 MB are caused by 500 fax lines sending with back-reception and 1.5 MB by the other 500 receiving fax lines. 1000 fax lines in reception mode would also produce disk write data of 3 MB per second. 1000 sending only fax lines would generate 3 MB per second disk write data if sending without back-reception (because the messages

have to be put into the system somehow, for example, by a link) or 6 MB per second if sending with back-reception.

The test loop produced almost no disk reads because reads could be mostly handled by the TCOSS disk cache. This is essential for smooth operation of the system. Without disk cache the same test loop causes the disk read time to go up to 100% and send errors begin to appear with an error rate of up to 0.5%.

## Test Loop with 2-Page Fax Messages

This test loop was set up like the 2,4,6,8,10-pages loop, only that 2-page messages with a file size of 147 800 Bytes were sent. Transmission duration was between 64 and 65 seconds. 1000 send orders were active in the loop.

### Physical Disk

	Average	Minimum	Maximum
% Disk Read Time	1,8	0,6	3,4
% Disk Write Time	3,2	2,7	3,8
Disk Read Bytes/sec	9.100	4.400	42.000
Disk Reads/sec	7	3,2	11
Disk Write Bytes/sec	2.184.000	1.944.000	2.439.000
Disk Writes/sec	348	269	449

### Processor

	Average	Minimum	Maximum
% Processor Time _Total	23,5	18	30

### TCOSS

	Average	Minimum	Maximum
Sendorder created/sec	12,6	7,4	17,9
Sendorder reads/sec	19	11	31
Sendorder writes/sec	50	31	82
Unique ID's/sec	63	43	84

### TCOSS Disk

	Average	Minimum	Maximum
Avg. local Disk ms/Read	2,5	1,1	5
Avg. local Disk ms/Write	0,1	0,06	0,17
Avg. remote Disk ms/Read	0	0	0
Avg. remote Disk ms/Write	0,32	0,24	0,44
Avg. remote Disk Network Delay ms	0,32	0,24	0,44

	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>
Peak local Disk ms/Read	19	15	94
Peak local Disk ms/Write	16	16	16
Peak remote Disk ms/Read	0	0	0
Peak remote Disk ms/Write	16	16	16
Peak remote Disk Network Delay ms	16	16	16
Read kB/sec	8,8	6	13,6
Reads/sec	7,2	5	10,4
Section Table Writes/sec	0,016	0	0,1
Update kB/sec	0	0	0
Update Write kB/sec	0	0	0
Write kB/sec	2.114	1.879	2.318
Writes/sec	347	268	448
Write Queue Length Peak	10,5	6	16

**TCOSS Cache Database**

	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>
Cache Hits/sec	120	95	165
Cache Misses/sec	0	0	0
Cache Read Bytes/sec	52.000	37.000	76.000
Cache Write Bytes/sec	103.800	65.700	157.700
Disk Read kB/sec	0	0	0
Disk Reads/sec	0	0	0
Disk Write kB/sec	120	83	174
Disk Writes/sec	69,5	51	96
IO Conflicts/sec	3,3	0,5	7,1

**TCOSS Cache Directory**

	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>
Cache Hits/sec	294	194	448
Cache Misses/sec	4,5	2,1	7,9
Cache Read Bytes/sec	57.000	36.000	88.000
Cache Write Bytes/sec	19.300	13.300	27.100
Disk Read kB/sec	4,5	2,1	7,9
Disk Reads/sec	4,5	2,1	7,9

	Average	Minimum	Maximum
Disk Write kB/sec	76	52	106
Disk Writes/sec	76	52	106
IO Conflicts/sec	9,5	5,8	14,3

### TCOSS Cache Document

	Average	Minimum	Maximum
Cache Hits/sec	15.700	13.500	17.000
Cache Misses/sec	2,6	1,4	4,3
Cache Read Bytes/sec	1.360.000	1.130.000	1.541.000
Cache Write Bytes/sec	1.881.000	1.683.000	2.078.000
Disk Read kB/sec	4,2	1,3	6,8
Disk Reads/sec	2,6	1,2	4,1
Disk Write kB/sec	1.916	1.776	2.114
Disk Writes/sec	203	171	232
IO Conflicts/sec	3,3	0	6,6

Total message throughput of the test loop was about 6 messages per second (half of the "sendorder created/sec" performance counter), each message occupied two fax lines at the same time, being sent out on one line and received on the other.

### Test Loop with Single Page Fax Messages

This test loop is similar to 2, 4, 6, 8, 10-pages loop, only that single-page messages with a file size of 75 800 Bytes were sent. Transmission duration was between 41 and 45 seconds. 3500 send orders were active in the loop.

### Physical Disk

	Average	Minimum	Maximum
% Disk Read Time	3	0,6	6,4
% Disk Write Time	3	2,2	4
Disk Read Bytes/sec	21.600	10.500	58.000
Disk Reads/sec	18	8	30
Disk Write Bytes/sec	1.762.000	1.472.000	2.101.000
Disk Writes/sec	408	271	555

**Processor**

	Average	Minimum	Maximum
% Processor Time _Total	16	12	20

**TCOSS**

	Average	Minimum	Maximum
Sendorder created/sec	17,5	1,7	34,3
Sendorder reads/sec	26,3	8,9	43,7
Sendorder writes/sec	61	25	107
Unique ID's/sec	78,5	21	148

**TCOSS Disk**

	Average	Minimum	Maximum
Avg. local Disk ms/Read	1,4	0,4	3,4
Avg. local Disk ms/Write	0,078	0,043	0,13
Avg. remote Disk ms/Read	0	0	0
Avg. remote Disk ms/Write	0,3	0,23	0,43
Avg. remote Disk Network Delay ms	0,3	0,23	0,43
Peak local Disk ms/Read	22	16	452
Peak local Disk ms/Write	16	16	16
Peak remote Disk ms/Read	0	0	0
Peak remote Disk ms/Write	16	16	16
Peak remote Disk Network Delay ms	16	16	16
Read kB/sec	20	9	30
Reads/sec	17,8	7,8	27
Section Table Writes/sec	56	33	80
Update kB/sec	0	0	0
Update Write kB/sec	0	0	0
Write kB/sec	1630	1183	2034
Writes/sec	342	197	470
Write Queue Length Peak	12,6	5	16

**TCOSS Cache Database**

	Average	Minimum	Maximum
Cache Hits/sec	157	84	246

	Average	Minimum	Maximum
Cache Misses/sec	0	0	0
Cache Read Bytes/sec	72.200	41.700	118.000
Cache Write Bytes/sec	126.300	44.500	233.000
Disk Read kB/sec	0	0	0
Disk Reads/sec	0	0	0
Disk Write kB/sec	148	77	256
Disk Writes/sec	88	48	145
IO Conflicts/sec	5,7	0	12,4

### TCOSS Cache Directory

	Average	Minimum	Maximum
Cache Hits/sec	390	178	600
Cache Misses/sec	14,1	6,5	24
Cache Read Bytes/sec	79.000	36.000	125.000
Cache Write Bytes/sec	24.600	11.800	33.600
Disk Read kB/sec	14,1	6,6	21,6
Disk Reads/sec	14,1	6,6	21,6
Disk Write kB/sec	96	27	176
Disk Writes/sec	96	27	176
IO Conflicts/sec	14,4	1	29,8

### TCOSS Cache Document

	Average	Minimum	Maximum
Cache Hits/sec	13.600	9.700	16.400
Cache Misses/sec	3,5	0,2	6,6
Cache Read Bytes/sec	1.252.600	851.000	1.671.000
Cache Write Bytes/sec	1.340.000	1.024.000	1.650.000
Disk Read kB/sec	5,6	0,8	11
Disk Reads/sec	3,4	0,2	6,6
Disk Write kB/sec	1387	1072	1726
Disk Writes/sec	158	82	215
IO Conflicts/sec	9,6	0	19

Total message throughput of the test loop was about 9 messages per second (half of the "sendorder created/sec" performance counter), each message occupied two fax lines at the same time, being sent out on one line and received on the other.

## Test Loop with 2 TC/Link-FI instances

This test loop was set using 2 TC/Link-FI instances and 2 user profiles. An in-event in each user profile forwarded received messages to a TC/Link-FI instance which transferred it to the inbox of the other user. Single-page messages with a file size of 118 200 Bytes were sent in the loop. The speed was limited by the CPU of the link server, a model 300, which was running at 75% CPU usage.

### Physical Disk

	Average	Minimum	Maximum
% Disk Read Time	2,7	1,4	5,3
% Disk Write Time	1,4	1,3	1,5
Disk Read Bytes/sec	8.000	6.000	12.500
Disk Reads/sec	5,8	3,3	8
Disk Write Bytes/sec	1.048.000	993. 000	11.42.000
Disk Writes/sec	183	164	196

### Processor

	Average	Minimum	Maximum
% Processor Time _Total	4,8	4	8

### TCOSS

	Average	Minimum	Maximum
Sendorder created/sec	14,4	12,6	16
Sendorder reads/sec	36	32	41
Sendorder writes/sec	50,4	46	54
Unique ID's/sec	50,4	47	53

### TCOSS Disk

	Average	Minimum	Maximum
Avg. local Disk ms/Read	4,3	2	8,4
Avg. local Disk ms/Write	0,1	0,03	0,18
Avg. remote Disk ms/Read	0	0	0
Avg. remote Disk ms/Write	0,36	0,23	0,5
Avg. remote Disk Network Delay ms	0,36	0,23	0,5
Peak local Disk ms/Read	20	16	203
Peak local Disk ms/Write	16	16	16
Peak remote Disk ms/Read	0	0	0

	Average	Minimum	Maximum
Peak remote Disk ms/Write	16	16	16
Peak remote Disk Network Delay ms	16	16	16
Read kB/sec	7,5	5,4	10,3
Reads/sec	5,8	3,3	7,6
Section Table Writes/sec	6,5	3,8	9,4
Update kB/sec	0	0	0
Update Write kB/sec	0	0	0
Write kB/sec	1.008	905	1.107
Writes/sec	175	161	187
Write Queue Length Peak	5,4	4	7

### TCOSS Cache Database

	Average	Minimum	Maximum
Cache Hits/sec	108	99	115
Cache Misses/sec	0	0	0
Cache Read Bytes/sec	96.000	87.000	107.000
Cache Write Bytes/sec	103.000	95.000	110.000
Disk Read kB/sec	0	0	0
Disk Reads/sec	0	0	0
Disk Write kB/sec	101	94	107
Disk Writes/sec	50	47	53,5
IO Conflicts/sec	4,9	3,1	6,3

### TCOSS Cache Directory

	Average	Minimum	Maximum
Cache Hits/sec	114	103	139
Cache Misses/sec	3	1,7	4,6
Cache Read Bytes/sec	26.000	23.000	32.000
Cache Write Bytes/sec	4.000	3.600	4.400
Disk Read kB/sec	3	2,1	4,6
Disk Reads/sec	3	2,1	4,6
Disk Write kB/sec	15,6	14	17,3
Disk Writes/sec	15,6	14	17,3
IO Conflicts/sec	0,003	0	0,1

### TCOSS Cache Document

	Average	Minimum	Maximum
Cache Hits/sec	2.369	2.210	2.520
Cache Misses/sec	2,7	1,3	3,5
Cache Read Bytes/sec	885.000	737.000	981.000
Cache Write Bytes/sec	857.000	738.000	952.000
Disk Read kB/sec	4,4	2,1	7,8
Disk Reads/sec	2,7	1,2	3,5
Disk Write kB/sec	891	773	988
Disk Writes/sec	109	98	119
IO Conflicts/sec	10,2	7,2	14,3

Total message throughput of the test loop was about 7 messages per second (half of the "sendorder created/sec" performance counter). Note the much lower CPU usage on TCOSS, compared to a loop via fax lines.

### Tandem Update

The tandem update speed is as follows:

- 1.300 to 1.500 KB per second when all fax channels are active.
- 16.000 KB per second when all channels are idle.

Given the above data rate, a complete update of a 1.000.000 MB file structure under full load takes about 9 days. If the system is idle a complete update takes about 17 hours.

### DirSync of 250 000 Users

Creating 250 000 user profiles on the test system using TC/Link-FI "DirSync" functionality took 10 hours and 10 minutes while all 1000 fax lines were busy with a test loop. This gives an average synchronization speed of 410 user profiles per minute. The maximum synchronization speed, with about 20 000 existing users and idle fax lines, was 520 user profiles per minute.

### TC/Report

TC/Report installed on a high-performance server showed the following fetching speed:

**Note** For test purposes, the TC/Report was installed on the secondary master of the test system.

- 25 message entries per second if the "Fetch Subjects" option is active.
- 77 message entries per second without the "Fetch Subjects" option.

The test was done with only message entries in the short term archive. For fetching log entries, the speed should be the same as for message entries without "Fetch Subjects" option.

## Restrictions

The archiving speed of TC/Archive connected to the 1000 fax channel test system is too low to keep up with the message throughput produced by the fax lines. If all Operating TC/Archive with a 1000 fax line system is still possible provided that fax lines are 100% busy with a test loop the archive server can fetch only about 30 - 50% of the message volume.

- All fax lines are not busy all the time, the average busy time may be below 30%, or
- Selective archiving is used to exclude some documents, such as back-reception files, from being archived